SUMMARY

OF

DRAFT EIA / EMP REPORT

FOR

ROUGHSTONE AND GRAVEL QUARRY

A. Project Proponent Details	
Name	APK Minerals Pvt. Ltd.
Address	1A, Manikandan Nagar, Hasthinapuram Chennai – 600 064
B. Location Details	
Extent	2.58 Ha
Location	Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu
C. Production Details	
Production	
Depth	
D. EIA/EMP details	
ToR reference	TO24B0108TN5750113N dated 29.07.2024
Baseline Monitoring	Summer Season, March - May 2024

Year	Gravel in m3	Roughstone in m3
1-5	41,250	2,88,420
6-10	-	1,02,180
Total	41,250	3,90,600

Year	Depth
1-5	22m
6-10	20m
Total	42m

CONSULTANT

CREATIVE ENGINEERS & CONSULTANTS

NABET ACCREDITED CONSULTANCY, NABL ACCREDITED TESTING LAB

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OCTOBER 2024

PRO CODE: CEC/EMP/MI-225

SUMMARY

1.1 INTRODUCTION:

APK Minerals Private Limited propose to operate Rough Stone and Gravel Quarry in S.No-263/1A, 1B, 1C, 1M1, 1M2, 1N1, 1N2, 1O, 1P1, 1P2, 1Q, 1R, 1S, 1T, 264/1, 2, 3, 4, 5, 6, 7, 8A, 8B, 9, 1O, 11A, 11B, 12A, 12B, 12C, 13, 14, 15, 16A, 16B, 17, 18A, 18B, 19, 20A, 20B, 21, 22, 265/1, 2, 3, 4 & 5 Over an area of 2.58Ha in Pazhaveri Village, uthiramerur Taluk, Kancheepuram District, Tamil Nadu. It involves the production capacity of 3,90,600m3 of Roughstone and 41,250 m3 of Gravel for 10 years upto 42mm with the annual peak production capacity of 65,625m3 of roughstone and 21,250m3 of gravel.

Besides **APK Minerals Private Limited** propose to operate Rough Stone and Gravel Quarry in S.No-207/4B, 5B, 6B, 7B, 8B, 9, 208/1A, 2A, 2B1, 2B2, 5A, 5C, 5D, 5E, 5F, 5G, 212/1L, 1M, 1N Over an area of 2.2312Ha in Pazhaveri Village, uthiramerur Taluk, Kancheepuram District, Tamil Nadu. It involves the production capacity of 1,83,780m3 of Roughstone and 31,776 m3 of Gravel for 10 years upto 32m depth with the annual peak production capacity of 68,890m3 of roughstone and 15,312m3 of gravel

Although the individual lease area of each project is less than 5 Ha, the other existing & proposed quarries within the 500m radius cluster along with this subject project works out to >5 Ha. Hence, this proposal is considered under Category – B1 and as per MoEF & CC notification necessitates preparation of EIA/EMP report and public hearing.

Considering that both the leases belong to the same proponent, homogeneous mineral area and with common extended cluster leases, combined draft EIA report with separate EMP measures is prepared for the above two mentioned projects based on the respective standard and additional Terms of Reference issued by SEIAA, Tamil Nadu and is in conformance of the generic structure prescribed by MOEF&CC in their notification of September 2006 and the approved mining plan. Salient details of the EIA/ EMP report prepared for APK Minerals Private Limited (2.58ha)project is provided below:

Table 1: Salient Details of the Project

Details	APK Minerals Private Limited (2.58 Ha)
A. Statutory Clearances	
Precise Area Communication	Issued by Department of Geology & Mining vide Lr.No.347/Q3/2022 dated 17.04.2024
Mining Plan Approval	Approved by Deputy Director, Geology & Mining vide Lr.No.347/Q3/2022 dated 24.04.2024
Details of Quarries within 500m radius	Obtained from Deputy Director, Geology & Mining vide Lr.No.347/Q3/2022 dated 24.04.2024
B. Application for Environmental Clearance	
Terms of Reference	TO24B0108TN5750113N dated 29.07.2024
Baseline Data Collection	Carried out by Creative Engineers & Consultants , Chennai for Winter Season (March – May 2024)
Location	Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District
Coordinates	12°44'46.0455"N" to 12°44' 52.2307"N 79°52' 4.7121"E to 79°52' 12.5749"E
Nearest Village	Sirumailur – 790m (S)
Nearest Town	Walajabad – 6.0Km (NW)
Nearest Highway	NH-132B – 2.5Km (N)
Nearest Railway Station	Pazhayaseevaram – 3.3Km (N)
Nearest Airport	Chennai Airport – 41Km (NW)
Accessibility	The lease area can be approached from Arumbuliyur – Pazhaveri road which connects to NH-132B at a distance of 2.5Km on the northern side of the lease area.
Topography	The applied lease area exhibits almost Plain topography with few outcrops of charnockite. The highest elevation is at 72 mRL.
C. Environmental Setting of the Study Area	
Nearest Water Bodies	Palar River-1.9Km-NE, Cheyyar River - 2.6Km- SW & Ninjalmadu River - 7.0Km-NE
Nearest Reserve Forests	Kavanippakkam RF- 1.6Km-S, Idaimichi RF- 5.1Km- S, Appur RF- 8.3KM-NE, Maiyur RF- 9.4km-SE, Vadakkuppattu RF-9.4km-NE
Notified Archaeologically important places, Monuments	Nil within 10km radius
Local Places of Historical and Tourism Interest	Nil within 10km radius
Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972*	Nil within 10km radius
Other industries	Other than crushers, Roughstone quarries, no other major industries are located in the study area.

1.2 Technical details:

<table>
<tr><td>Geological Reserves</td><td>Roughstone - 11,61,135m3
Gravel - 51,606m3</td></tr>
<tr><td>Mineable Reserves</td><td>Roughstone - 3,90,600m3
Gravel - 41,250m3</td></tr>
<tr><td>Mining Method</td><td>Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out.</td></tr>
<tr><td>Production</td><td>
<table>
<tr><th>Year</th><th>Roughstone (m3)</th><th>Gravel (m3)</th></tr>
<tr><td>1</td><td>47600</td><td>20000</td></tr>
<tr><td>2</td><td>47005</td><td>21250</td></tr>
<tr><td>3</td><td>65270</td><td>0</td></tr>
<tr><td>4</td><td>65625</td><td>0</td></tr>
<tr><td>5</td><td>62920</td><td>0</td></tr>
<tr><td>6</td><td>21300</td><td>--</td></tr>
<tr><td>7</td><td>24005</td><td>--</td></tr>
<tr><td>8</td><td>23305</td><td>--</td></tr>
<tr><td>9</td><td>20445</td><td>--</td></tr>
<tr><td>10</td><td>13125</td><td>--</td></tr>
<tr><td>Total</td><td>390600</td><td>41250</td></tr>
</table>
</td></tr>
<tr><td>Waste Generation and Management</td><td>There is no waste generation anticipated in these quarries since the entire excavated material will be utilized.</td></tr>
<tr><td>Ultimate Depth</td><td>42m</td></tr>
<tr><td>Manpower</td><td>12 persons directly and 50 people indirectly.</td></tr>
<tr><td>Water Requirement and Source</td><td>Water Requirement: 8 KLD
Source: The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used.</td></tr>
<tr><td>Power Requirement</td><td>No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.</td></tr>
<tr><td>Site Services</td><td>This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.</td></tr>
<tr><td>Project Cost</td><td>Rs.211.10 Lakhs</td></tr>
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Figure 1: Location Map

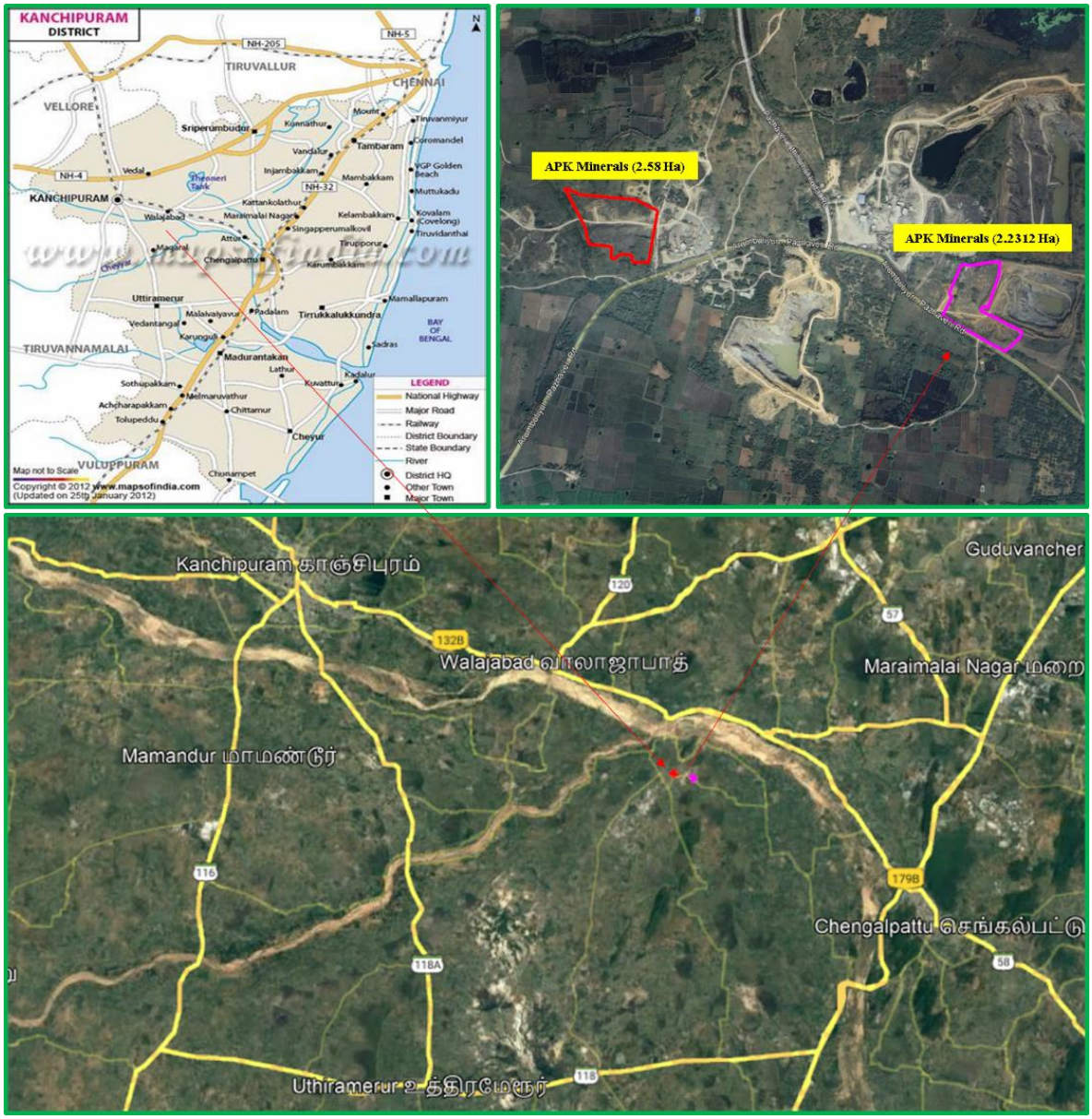


Figure 2: Lease PlanRoughstone and Gravel Quarry (Over an area of 2.58Ha)

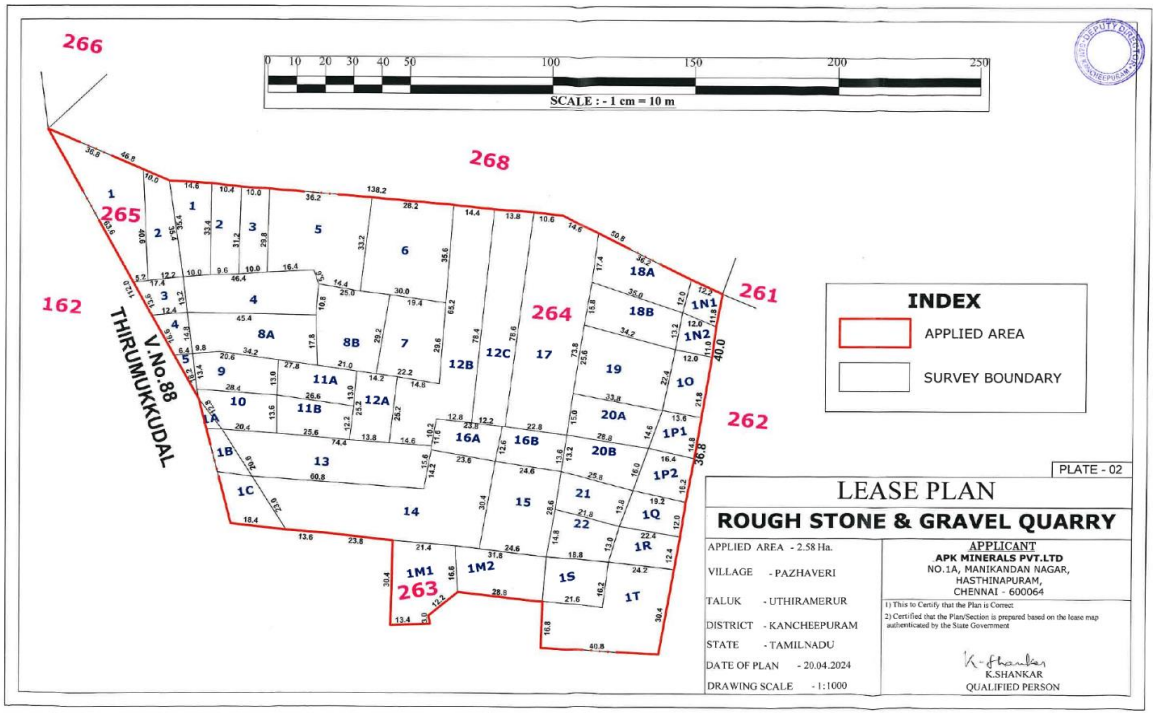


Figure 3: Satellite Imagery Showing Corner Co-ordinates – Roughstone and Gravel Quarry (Over an area of 2.58Ha)

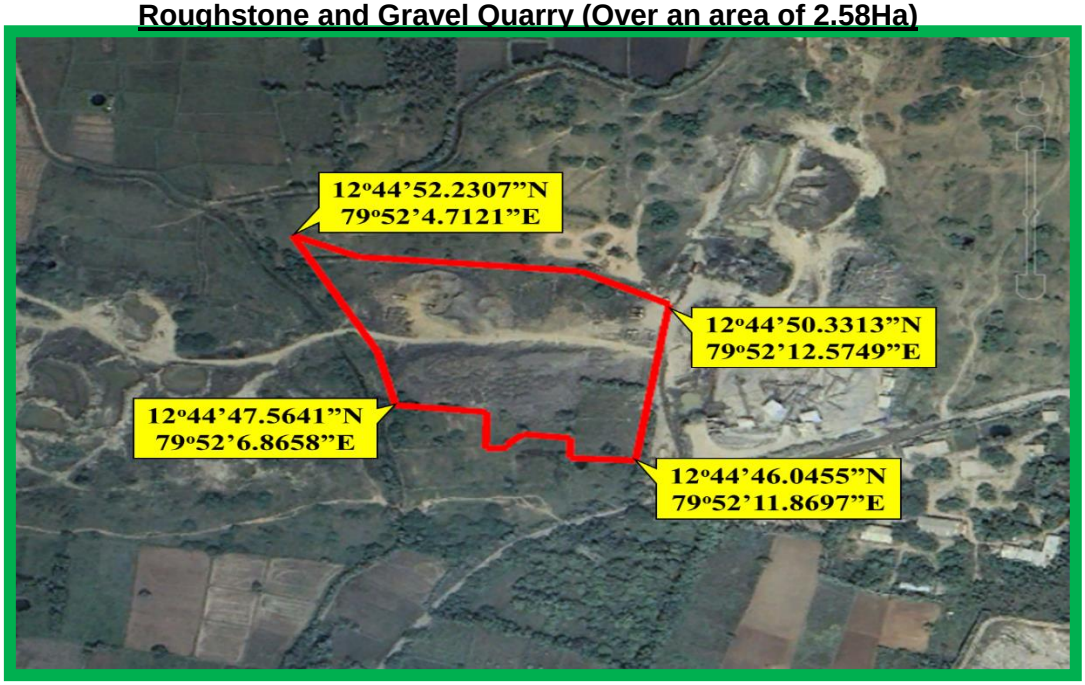
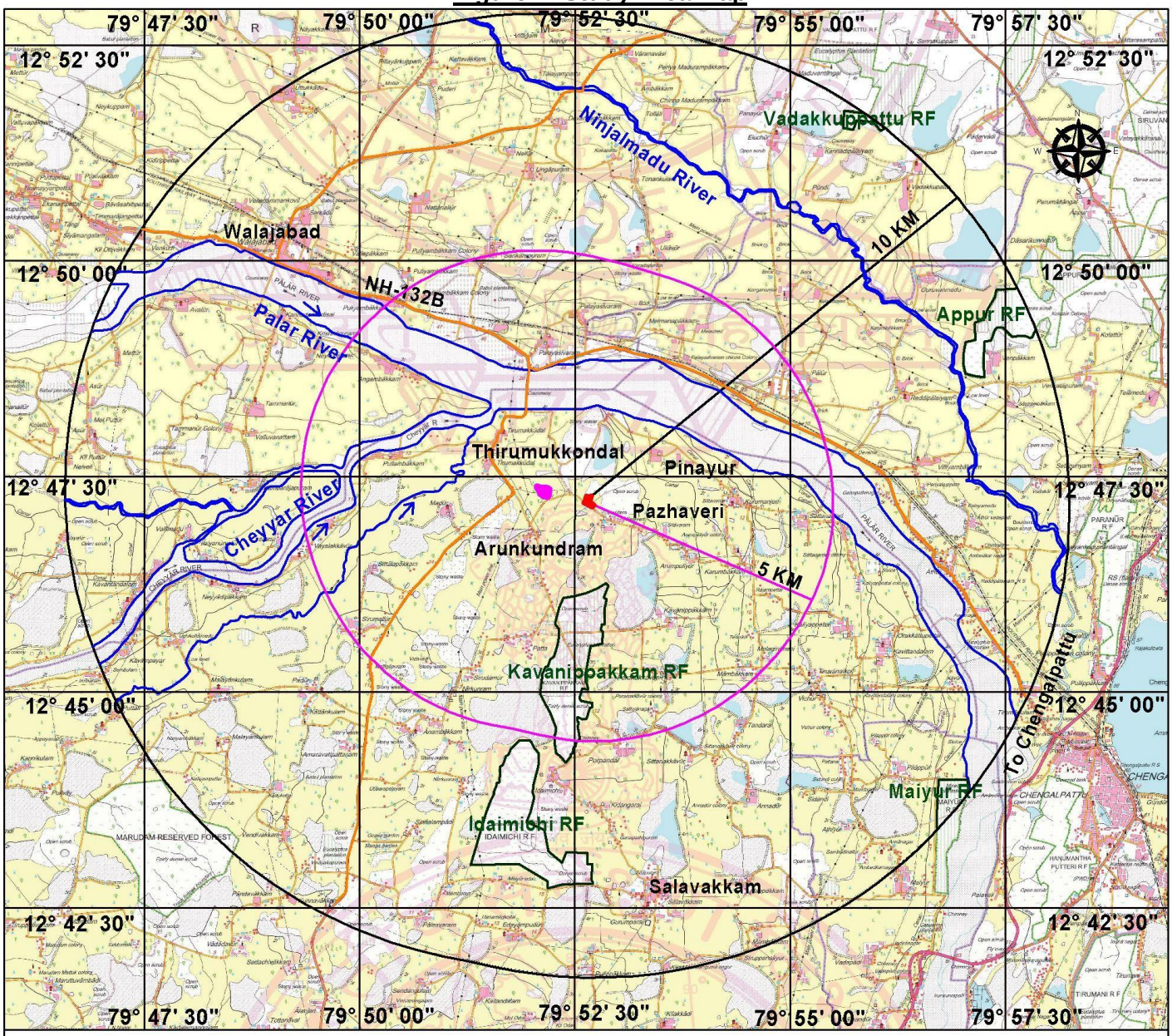


Figure 4: Study Area Map



1.3 EXISTING ENVIRONMENTAL SCENARIO:

The studies and data collection have been carried out systematically and meticulously as per relevant IS codes, CPCB and MoEF&CC guidelines and as per approved ToR during Summer Season (March to May 2024). For the purpose of this study, the area has been divided into two zones, namely, core and buffer zones. The combined lease area is considered to be the core zone while the buffer zone encompasses a 10km radius from the periphery of the core zone. Based on 2011 census data, in the 10km radius there are 97 Rural villages from Five Taluks namely Uthiramerur, Kancheepuram, Chengalpattu, Maduranthakam, Sriperumbudur Taluk of Kancheepuram District and 1 urban area Walajabad (TP) of Kancheepuram Taluk. The demographic profile of the study area is given below:

Table 2: Social, Economic And Demographic Profile of the Study Area

Details	Population	Percentage
A. Gender-wise distribution		
Male Population	69771	50.11
Female Population	69467	49.89
Total	**139238**	**100**
B. Caste-wise population distribution		
Scheduled Caste	57340	41.18
Scheduled Tribes	2841	2.04
Other	79057	56.78
Total	**139238**	**100**
C. Literate and Illiterate population		
Literate Males	51331	36.87
Literate Females	41496	29.80
Total Literate Population	**92827**	**66.67**
Others Males	18440	13.24
Others Females	27971	20.09
Others Population	**46411**	**33.33**
Total	**139238**	**100**
D. Occupational structure		
Main workers	51542	37.00
Marginal workers	13451	9.70
Total Workers	**64993**	**46.70**
Total Non-workers	**74245**	**53.30**
Total	**139238**	**100**

Further developments in this area with respect to these various facilities has occurred over the years.

1.3.1 EXISTING ENVIRONMENTAL QUALITY:

Table 3: Baseline Data

A. AMBIENT AIR QUALITY	**Monitoring Location –** 5 locations		
Parameter	**Result (µg/m3)**		***LIMIT (µg/m3)**
Location	**Core Zone**	**Buffer Zone**	
Particulate Matter (Size <10 µm)	58.2 – 76.8	47.4 – 68.4	100
Particulate Matter (Size <2.5 µm)	28.3 – 37.3	21.6 – 32.3	60
Sulphur Dioxide (as SO_2)	6.6 – 10.6	5.8 – 10.5	80
Nitrogen Dioxide (as NO_2)	9.4 – 14.9	8.4 – 15.1	80
Conclusion: The existing Ambient Air Quality levels for PM10, PM2.5, SO2 and NO2, are within the NAAQ standards prescribed CPCB limits of 100 µg/m3, 60 µg/m3, 80 µg/m3 & 80 µg/m3. The CO values in all the locations were found to be below detectable limit.			
B. WATER QUALITY	**Monitoring Location –** 5 locations		
Parameter	**Result**		***LIMIT (µg/m3)**
pH at 25 ˚C	6.95 – 7.61		**6.5-8.5**
Total Dissolved Solids, mg/L	212 – 550		**2000**
Chloride as Cl-, mg/L	82.30 – 212		**1000**
Total Hardness (as CaCO3), mg/L	105 – 450		**600**
Total Alkalinity (as CaCO3), mg/L	94.50– 266		**600**
Sulphates as SO42-, mg/L	18.90 – 53.20		**400**
Iron as Fe, mg/L	0.02 – 0.07		**0.3**
Nitrate as NO3, mg/L	1.36 – 2.95		**45**
Fluoride as F, mg/L	0.21 – 0.45		**1.5**
Conclusion: The water quality of ground water is found to be within the prescribed Permissible limits of IS: 10500 Norms in the absence of an alternative source as per Drinking Water Specifications.			
C. NOISE LEVELS	**Monitoring Location –** 5 locations		
Parameter	**RESULT dB(A)**		***LIMIT (µg/m3)**
	Day Equivalent	**Night Equivalent**	
Core Zone	52.8	44.5	**90**
Buffer Zone	49.8 – 52.2	40.8 – 43.9	**Day Equivalent - 55dB(A), Night Equivalent - 45dB(A)**
*Permissible noise for industrial workers as laid down by CPCB (at 8 hrs Exposure Time). While comparing with the MoEF&CC Norms, the monitored ambient noise levels are generally within the limit values.			
D. SOIL QUALITY	**Monitoring Location –** 5 locations		
Parameter	**Core Zone**		**Buffer Zone**
pH	7.25 – 7.28		7.01 – 7.26
Electrical Conductivity (µmho/cm)	81.24 – 84.65		50.28 – 90.24
Organic matter (%)	1.21 – 1.26		0.86 –1.34
Total Nitrogen (mg/kg)	746 – 751		456 – 620
Phosphorus (mg/kg)	1.32 – 1.34		0.57 – 1.21
Sodium (mg/kg)	740 – 745		360 – 632
Potassium (mg/kg)	310 – 320		206 – 268
Soil is of clay loam type.			

E. LAND ENVIRONMENT:

Land use pattern study carried out through remote sensing satellite data around the 10km buffer zone shows that 42.92 % of the buffer area is fallow land followed by 25.57 % classified under the Agriculture/ Plantation followed by, 13.0 % constitutes land with scrub and the balance 18.51 % falls under other land use categories

F. BIOLOGICAL ENVIRONMENT:

Flora: lease areas are covered with rocky exposures devoid of vegetation except bushes and shrubs.

Buffer Zone comprise of Seasonal Agricultural land, rocky waste land, barren land, mined out pits, forests namely Kavanippakkam R F, Idaimichi R F, Marudam R F, Cheyar River, Palar River, Ponds etc. Patches of Banana and rice cultivation are observed in the agricultural area mainly adjustant to irrigated areas. Idaimichi R F is mostly rocky with patches of barren land. Kavanippakkam R F consist of shrubs and bushes. Only general species are observed in the study area.

Fauna: There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals are commonly found. From the study it observed that the area in general consists of species of least concern only.

G. HYDROLOGICAL STUDY:

There is a drainage arrangement situated in government land Western side of APK 2.58 Ha lease, for which 10.0 meters safety distance provided. Besides, there is a thangal located about 150m north. Earthen bund will be formed within the lease area of APK 2.58 Ha lease on the western side. There is no proposal to discharge any effluent into either of these water bodies. No major impact is envisaged on the nearby water bodies due to project operations.

Study of the Water Regime shows that ground water level after good monsoon gives better yield whereas it lowers down substantially during summer season.

The occurrence of groundwater mainly in the porous soil are weathered layers, very negligible amount of groundwater percolated through the poorly fractured layer, after that there is no existence of groundwater. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected. The deeper working mines in the region confirms this scenario.

1.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The identified impacts due to this mine during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc.

1.4.1 AIR ENVIRONMENT:

The principal sources of air pollution in general due to mining and allied activities will be Excavation, Drilling, Movement of HEMM such as Excavators, tippers etc., Loading and unloading operation and transportation. In case of this mine, the following measures will be adopted to control impact on the air quality due to mining operations in the lease area:

- Regular wetting of transport road using mobile water tanker.
- Wet drilling / Covering of drill holes with wet clothes
- Use of controlled blasting techniques with Nonel to keep the dust generation within the prescribed limits.
- Proper maintenance of roads.
- Avoiding overloading of tippers
- Transportation of material by tarpaulin covered trucks
- Proper maintenance of HEMM to minimize gaseous emission
- Setting up of tyre washing facility in the lease area exit.
- Vehicular emission tests with digital smoke meter.
- Provision of green netting around the lease periphery on all sides.
- Development of green belt/ plantation in various areas within the mine lease area etc.

By adoption of all these measures, no adverse impact on air quality is envisaged due to this proposed opencast mining operation.

The impact on air quality due to the proposed cumulative project operations is estimated using AERMOD dispersion models show that the resultant added concentrations with baseline figures even at worst scenario, the values of ambient air quality with respect to PM_{10} are in the range of

52.9 μg/m3 to 80.1 μg/m3 and with respect to PM2.5 are in the range of 24.7μg/m3 to 39.2 μg/m3 which are within the statutory limits in each case.

For preservation of environment in this mine strict enforcement of management schemes will be undertaken for taking corrective actions, as needed. By adopting the effective implementation of all the mitigative measures, no adverse impact on Air quality due to the mining operation in this lease area is expected.

1.4.2 WATER ENVIRONMENT:

The total water requirement for this project will be 8.0 KLD. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose.

The domestic effluent to be generated from the project will be collected in septic tank with soak pits arrangements. This being a mining project there will not be any process effluent. Towards surface runoff management, a garland drain of length 740m for Roughstone and Gravel Quarry of of APK Minerals over an area of 2.58Ha will be constructed and will be connected to settling ponds with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users..

As already mentioned, the lease area is part of a compact rock formation with less intergranular porosity and fractures leading to less permeability and transmissivity values and as such the ground water level in this area is deep from surface. As such hence no major water seepage within the mines is expected from the periphery.

Good rainwater harvesting measures for augmenting the ground water level in the region will be implemented.

1.4.3 NOISE ENVIRONMENT:

During mining operation there will be noise generation due to working of excavators, movement of vehicles, etc. However, it will be felt near the active working area only and at away from its source it will get reduced. There will also be attenuation due to vegetation, tin sheet/ green netting to be erected by the proponent all around the lease and as such there will not be any adverse noise propagation outside the lease boundary Due to natural attenuation effects, by proper green belt development, design / maintenance of machines, etc., the impact on noise levels will be negligible and are expected to be well within the prescribed limits.

1.4.4 VIBRATION:

In the proposed mine workings, blasting & vibration effects will be controlled by adopting following measures.

- Carrying out controlled blasting using Nonel delay detonator.
- Optimum design for burden and spacing.
- The peak particle velocity (PPV) of ground vibration will be kept very low through optimally controlled blasting techniques, after necessary field trials.
- Reducing explosive charge per delay to minimum.
- Using rock breaker wherever possible
- Proper care and supervision during blasting by a competent and experienced person to be carried out.
- Besides, different blasting time for both the projects is suggested and the timing is to be mentioned in the display board in the mines entrance.

By adoption of above measures, it will be ensured that ground vibrational levels due to blasting will be maintained within the prescribed DGMS conditions of 10 mm/s for the domestic houses/structures.

1.4.5 IMPACT ON LAND ENVIRONMENT:

There is no waste generation anticipated in these quarry operations since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. Plantation will be carried out in this safety zone area. In the post mining stage, in the quarry of APK Minerals (over an area of 2.58Ha), 1.96Ha of mined out area will be left as water body and 0.62 Ha will be greenbelt area. Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. In the post mining stage the rainwater harvested in the mined out void shall be utilized.

Effective post closure monitoring will be done to ensure that there will be no adverse impact due to mining operations.

1.4.6 BIOLOGICAL ENVIRONMENT:

Since the lease area is free from useful trees, no clearance of major vegetation is involved. Since the lease area forms part of rocky formation , no major agricultural activities are possible and practiced in the lease and its nearby areas. By adoption of systematic mining adhering to all the environmental mitigation measures as explained earlier, no adverse impact on the far away agricultural or surrounding environs envisaged.

There are no migratory corridors, migratory avian-fauna, rare endemic and endangered species. Therefore, there shall be no impacts due to mining activity on them. Even though there are no adverse impact on bio diversity and flora/fauna status due to project operations, positive impacts will arise due to well-planned reclamation measures for restoration of land status in the area ultimately to productive land category with well-planned green belt development activities. In the Roughstone and Gravel Quarry of APK Minerals (over an area of 2.58Ha), about 1300 trees will be planted in and around the lease area.

1.4.7 SOCIO ECONOMIC ENVIRONMENT:

The entire lease area is own private patta land. There are no habitations or hutments in the core zone area and no rehabilitation or resettlement problems will arise here. The mining operations in the proposed mine will provide the following socio-economic benefits:

- Direct Employment for about 12 persons.
- Besides through allied opportunities in logistics, trading, repairing works etc. good employment potential will arise in this area, which will provide raising income levels and standards of living in the area through various service-related activities connected with the project operations.
- Benefit to State and central exchequer by way of royalty, taxes.
- Improvement in infrastructural facilities, providing education aids etc. in nearby schools
- Betterment of drinking water facilities.

From above details, it is clear that the project operations will have highly beneficial positive impact in the area. Towards the socio-economic development of the surrounding area, APK Minerals (over an area of 2.58Ha) have allocated Rs.5.0 Lakhs. The activities identified will be implemented

in a phased manner. In consultation with the locals based on the need & priority it will be implemented.

1.4.8 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:

The material mined out from this lease area will be directly transported to the crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. During the combined project operations, there will be 6 trips/hr. The transport route will be properly maintained to absorb this traffic due to this project. The following mitigative measures are suggested for mitigation of adverse impacts on the logistical aspect of the project:

- Water sprinkling on material in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- Plantation in consultation with the concerned department.
- Proper maintenance of transport roads and transport vehicles.
- Avoiding overloading of material
- Covering of loaded vehicles with tarpaulins sheet
- Keeping traffic regulators at vulnerable locations.
- Distribution of transport vehicles for avoiding choking of roads
- Limiting of speed
- Installation of barriers at vulnerable locations
- Provision of tyre washing facility at the mine outlet

1.4.9 WASTE MANAGEMENT:

There is no process effluent generation from this mine. Hence no liquid waste is generated. Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.

1.2 ENVIRONMENTAL MONITORING PROGRAME:

Regular, systematic and sustained programme schedules for implementation and monitoring of various control measures are devised with clear cut guidelines of various concerned plans for keeping a continuous surveillance on the various environmental quality parameters in the area.

The Mines Manager in the mine project site will be directly responsible for various environmental activities in the mine and will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality status, noise level control, plantation programme, social development schemes, etc in the mine. Towards implementation of the environmental control measures, Rs.22.0 Lakhs is allocated under capital cost and Rs.14.71 Lakhs per annum will be spent under recurring cost for Roughstone and Gravel Quarry of APK Minerals Private Limited over an area of 2.52Ha.

1.3 ADDITIONAL STUDIES:

Although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius along with this subject project works out to >5 Ha. The baseline monitoring carried out for this project reflects the cumulative impact of the existing quarries. The cumulative impact assessment of both the proposed quarries in the homogeneous mineral area with common extended cluster leases,given in the EIA/ EMP report also reflects no adverse impact on the surrounding environ on the post project basis.

Besides, these mines will be more of an alternate for the nearby expired leases of the proponent and as such no additional adverse effect is expected

CONCLUSION:

By systematic and scientific mining adhering to all the statutory norms and enforcing and strictly implementing the above said mitigation measures mentioned in this report, no adverse impact is envisaged. The proposed mining project will benefit this region in the fields of potential employment opportunities, improved income for local people, improved social welfare facilities in respect of education, medical healthcare systems, etc. in its own way and also revenue to Government through royalty, taxes etc. Besides, it will meet the raw material requirement of the construction industry also.

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