

DRAFT EIA / EMP REPORT

FOR

ROUGHSTONE AND GRAVEL QUARRIES

A. Project Proponent Details

Name	APK Minerals Pvt. Ltd.	APK Minerals Pvt. Ltd.
Address	1A, Manikandan Nagar, Hasthinapuram Chennai – 600 064	

B. Location Details

Extent	2.58 Ha	2.2312 Ha
Location	Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu	

C. Production Details

Production	Year	Gravel	Roughstone	Year	Gravel	Roughstone
	1-5	41,250	2,88,420	1-5	31,776	1,58,460
	6-10	-	1,02,180	6-10	-	25,320
	Total	41,250	3,90,600	Total	31,776	1,83,780

Depth	Year	Depth	Year	Depth
	1-5	22m	1-5	22m
	6-10	20m	6-10	10m
	Total	42m	Total	32m

D. EIA/EMP details

ToR reference	TO24B0108TN5750113N dated 29.07.2024	TO24B0108TN5919768N dated 10.08.2024
Baseline Monitoring	Summer Season, March - May 2024	Summer Season, March - May 2024

CONSULTANT

CREATIVE ENGINEERS & CONSULTANTS

NABET ACCREDITED CONSULTANCY, NABL ACCREDITED TESTING LAB

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OCTOBER 2024

PRO CODE:
CEC/EMP/MI-225

REVISIONS OF EIA/EMP REPORT

Revision number	Report Status	Date of submission
00/OCT/24	Draft EIA /EMP Report	18.10.2024

Environmental Impact Assessment & Environmental Management Plan Report for Rough stone and Gravel Quarries of M/s. APK Minerals Private Limited. propose to operate two Rough Stone and Gravel Quarries (Over an area of 2.58 Ha & 2.2312 Ha) in Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu and authorized for submission by Mr. P.Giri, EIA Coordinator, CEO, of Creative Engineers & Consultants on 18.10.2024 after due review by the personnel and consultation with the project proponents. Current Revision number of the EIA/EMP report is 00/OCT/24, signifying as per the revision mentioned in the above table that this is a draft EIA/EMP report.

Signature: 

Date: 18.10.2024



PROJECT PROPONENT DECLARATION

We, APK Minerals Private Limited received Terms of Reference under EIA Notification 2006 from SEIAA, Tamil Nadu vide their letter TO24B0108TN5750113N dated 29.07.2024 for Roughstone and Gravel Quarries of APK Minerals Private Limited. over an extent of 2.58.0 Ha at S.F.Nos. 263/1A, 1B, 1C, 1M1, 1M2, 1N1, 1N2, 10, 1P1, 1P2, 1Q, 1R, 1S, 1T, 264/1, 2, 3, 4, 5, 6, 7, 8A, 8B, 9, 10, 11A, 11B, 12A, 12B, 12C, 13, 14, 15, 16A, 16B, 17, 18A, 18B, 19, 20A, 20B, 21, 22, 265/1, 2, 3, 4 & 5 in Pazhaveri Village, Uthiramerur Taluk of Kancheepuram District, Tamilnadu.

APK Minerals Private Limited received Terms of Reference under EIA Notification 2006 from SEIAA, Tamil Nadu vide their letter TO24B0108TN5919768N dated 10.08.2024 for Roughstone and Gravel Quarry of APK Minerals Private Limited. over an extent of 2.23.12 Ha at S.F.Nos. 207/4B, 5B, 6B, 7B, 8B, 9, 208/1A, 2A, 2B1, 2B2, 5A, 5C, 5D, 5E, 5F, 5G, 212/1L, 1M, 1N in Pazhaveri Village, Uthiramerur Taluk of Kancheepuram District, Tamilnadu

We have entrusted the EIA study to M/s. Creative Engineers & Consultants (CEC), Chennai who have been accredited by the National Accreditation Board for Education & Training (NABET), Quality Council of India with their accreditation valid upto 23.12.2026.

The Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) have been prepared as per the generic structure proposed in the EIA notification 2006, ToR issued by SEIAA, Tamil Nadu. The prescribed ToR along with compliance is also incorporated in the EIA/EMP Report.

This report is prepared based on the information and data obtained from the Mining Plan and other records and the field study carried out by the consultant. The data given in the EIA/EMP report are factually correct to the best of my knowledge.

Signature:

For APK Minerals Private Limited

Date: 18.10.2024



CREATIVE ENGINEERS & CONSULTANTS

(NABET ACCREDITED, NABL ACCREDITED TESTING LABORATORY,
DEPARTMENT OF INDUSTRIES AND COMMERCE REGISTERED COMPANY)

EIA Consultant Undertaking

[In compliance with MoEF Office Memorandum No. J-11013/41/2006-IA.II (I) dated 04.08.2009]

Creative Engineers & Consultants (CEC) is an NABL accredited testing Laboratory, and also NABET accredited Category–A environment consultancy organization for preparing EIA/EMP reports for the sectors Mining of minerals, Thermal power plants, Mineral Beneficiation & Cement plants.

CEC has been accredited by the National Accreditation Board for Education & Training (NABET), Quality Council of India for empanelment of EIA Consultants with accreditation valid upto 23.12.2026.

APK Minerals Private Limited received Terms of Reference under EIA Notification 2006 from SEIAA, Tamil Nadu vide their letter TO24B0108TN5750113N dated 29.07.2024 for Roughstone and Gravel Quarry of APK Minerals Private Limited. over an extent of 2.58.0 Ha at S.F.Nos. 263/1A, 1B, 1C, 1M1, 1M2, 1N1, 1N2, 10, 1P1, 1P2, 1Q, 1R, 1S, 1T, 264/1, 2, 3, 4, 5, 6, 7, 8A, 8B, 9, 10, 11A, 11B, 12A, 12B, 12C, 13, 14, 15, 16A, 16B, 17, 18A, 18B, 19, 20A, 20B, 21, 22, 265/1, 2, 3, 4 & 5 in Pazhaveri Village, Uthiramerur Taluk of Kancheepuram District, Tamilnadu.

APK Minerals Private Limited received Terms of Reference under EIA Notification 2006 from SEIAA, Tamil Nadu vide their letter TO24B0108TN5919768N dated 10.08.2024 for Roughstone and Gravel Quarry of APK Minerals Private Limited. over an extent of 2.23.12 Ha at S.F.Nos. 207/4B, 5B, 6B, 7B, 8B, 9, 208/1A, 2A, 2B1, 2B2, 5A, 5C, 5D, 5E, 5F, 5G, 212/1L, 1M, 1N in Pazhaveri Village, Uthiramerur Taluk of Kancheepuram District, Tamilnadu

The prescribed TOR is complied with and incorporated in the EIA Report and submitted. This report is based on the information and data obtained from Approved Mining Plan, other records and data from the field study by CEC. The data generated and given in the EIA/EMP Report are factually correct. The sample analyses are carried out through CEC's laboratory.

(P. Giri)

Chief Executive & EIA Coordinator

Creative Engineers & Consultants

Date: 18.10.2024

9/4b, Bharathwajar Street, East Tambaram, Chennai – 600 059.

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Annexure – VII

Declaration by Experts contributing to the EIA Report for

Combined EIA/EMP Report for Roughstone and Gravel Quarries of M/s. APK Minerals Private Limited. (over an area of 2.58 Ha and 2.2312 Ha) in Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu.

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

EIA coordinator:


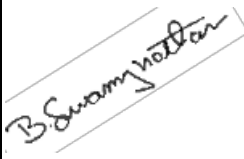
Name: **P.Giri**

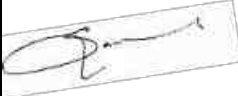
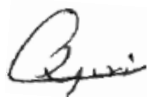



Signature and Date: 



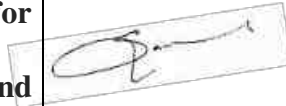

Period of involvement: **February 2024 onwards**


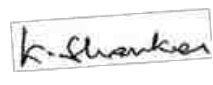
Contact information: **09444133619**

Functional area experts:

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and date
1	AP*	P.Giri	<ul style="list-style-type: none"> • Identification of baseline monitoring stations and study of the monitored data with respect to the applicable standards. • Identification of sources of air pollution comprising dust, gaseous emission due to mining & other activities • Identification of Impacts & suggestion of mitigation measures Period: February 2024 onwards	
		B.Swamynathan	<ul style="list-style-type: none"> • Data interpretation of Micro meteorological data for wind rose. • Identification of polluting source and suggestion of suitable mitigation measures. Period: March 2024 onwards	

2	WP*	G.Sandhya	<ul style="list-style-type: none"> • Study of the monitored data with respect to the applicable standards. • Identification of Water requirement & Source • Preparation of water balance diagram • Identification of Water polluting sources • Impact of the project on the water quality, both surface and groundwater • Suggestion of Mitigation measures to control water pollution <p>Period: March 2024 onwards</p>	
3	SHW*	P.Giri	<ul style="list-style-type: none"> • Quantification of mineral & waste from mining operation • Waste disposal method evaluation • Providing dump management plan • Providing Surface Runoff Management Structure Requirements. • Identification of Hazardous waste and its details of disposal <p>Period: February 2024 onwards</p>	
4	SE*	R.Baburaj	<ul style="list-style-type: none"> • Identification of villages in the study area and finalization of demographic profile of the villages within the study area. • Preparation of sections relevant to SE functional area in the EIA/EMP report <p>Period: March 2024 onwards</p>	
5	EB*	B.Swamynathan	<ul style="list-style-type: none"> • Perusal of existing data relevant to this project. • Studying the details of flora and fauna, separately for core, buffer zone and forest area based on primary field survey. • Identification of species , Indicating the Schedule of the fauna present in the study area • Assessment of impact on Biological environment and suggestion of mitigative measures • Collecting & providing details of existing and proposed Green belt development /plantation in the core zone <p>Period: March 2024 onwards</p>	
6	HG*	K.Shankar	<ul style="list-style-type: none"> • Study of existing surface drainage arrangements in the core and buffer zone, impact due to mining on these drainage courses and suggestion of mitigative measures 	

			<ul style="list-style-type: none"> • Perusal of site specific ground water table details for the core zone and the study area. • Studied the hydrological aspects of surface and groundwater in study area • Study about impact on the hydrology due to mining operation • Suggesting mitigative measures like RWH for enhancement of ground water level <p>Period: March 2024 onwards</p>	
7	GEO*	K.Shankar	<ul style="list-style-type: none"> • Study of geology of the ML area and the surrounding areas. • Provide details about Mineral composition <p>Period: March 2024 onwards</p>	
8	SC*	B.Swamynathan	<ul style="list-style-type: none"> • Study of soil profile • Assessment of Impact on soil and suggesting plantation scheme. <p>Period: March 2024 onwards</p>	
9	AQ*	G.Sandhya	<ul style="list-style-type: none"> • Quantification of emission particulars • Air quality modelling for post project impact on the air quality prediction of the study area. • Analysis of the Isopleth generated • Arriving at the post project concentration at the AAQ monitoring locations • Preparation of meteorological data in suitable form for input into the model • Simulation of model for generation of Isopleth and data interpretation. • Studying the impact on AAQ monitoring locations due to the generated emissions. • Preparation of sections relevant to AQ functional area in the EIA/EMP report. <p>Period: March 2024 onwards</p>	
10	NV*	P.Giri	<ul style="list-style-type: none"> • Identification of baseline monitoring stations and study of the monitored data with respect to the applicable standards. • Predict the noise level and vibration level due to proposed mining operation based on scientific evaluation. • Suggesting the Mitigation measures to control noise pollution, Suggesting the Mitigation measures to 	

			<p>control ground vibration Period: February 2024 onwards</p>	
11	LU	B.Swamynathan	<ul style="list-style-type: none"> • Collection of Remote sensing satellite data to study the land use pattern. • Primary field survey and limited field verification • Preparation of Land use map using Satellite data of the project area separately for the core zone and the buffer zone and providing the land use pattern. <p>Period: March 2024 onwards</p>	
12	RH*	K.Shankar	<ul style="list-style-type: none"> • Identified Major risks involved in the project Mitigation measures suggested to avoid risk. • Preparation of onsite and offsite emergency management plan <p>Period: March 2024 onwards</p>	


*One TM against each FAE may be shown

**Please attach additional sheet if required

Declaration by the Head of the accredited consultant organization/ authorized person

I, **P.Giri** hereby,confirm that the above mentioned experts prepared the EIA report for **Combined EIA/EMP Report for Roughstone and Gravel Quarries of M/s. APK Minerals Private Limited. (over an area of 2.58 Ha and 2.2312 Ha) in Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu.**

I also confirm that EIA Coordinator (EC) has gone through the report, and the consultant organization shall be fully accountable for any misleading information. It is certified that no unethical practices, plagiarism involved in carrying out the work and external data / text has not been used without proper acknowledgement while preparing this EIA report.

Signature: 

Name: **P.Giri**

Designation: **Chief Executive**

Name of the EIA consultant organization: **Creative Engineers & Consultants, Chennai – 59**

NABET Certificate No. & Issue Date: **No- NABET/EIA/23-26/RA 0331 & date 23.12.2026**

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COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

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COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

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Creative Engineers and Consultants, Chennai

9B/4, Bharathwajar street, East Tambaram, Chennai, Tamil Nadu

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA/EMP reports in the following Sectors-

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals- opencast mining only	1	1 (a) (i)	A
2.	Thermal power plants	4	1 (d)	A
3.	Mineral beneficiation	7	2 (b)	A
4.	Cement plants	9	3 (b)	A

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated May 03, 2024, 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/24/3250 dated May 24, 2024. The accreditation needs to be renewed before the expiry date by Creative Engineers and Consultants, Chennai following due process of assessment.

Issue Date
May 24, 2024

Valid up to
December 23, 2026



Mr. Ajay Kumar Jha
(Sr. Director, NABET)

Certificate No.
NABET/EIA/23-26/RA 0331

Prof (Dr) Varinder S Kanwar
(CEO-NABET)

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TERMS OF REFERENCE & ITS COMPLIANCE



सत्यमेव जयते

File No: 10913
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), TAMIL NADU)



Dated 29/07/2024



To,

K. VINOTH KUMAR
M/s. APK Minerals Private Limited
No. -1A, Manikandan Nagar, Hasthinapuram Chennai – 600 064, Chennai, CHENNAI, TAMIL NADU,
600064
apkmineralspvtltd@gmail.com

Subject: Grant of Terms of Reference along with Public Hearing under the provision of the EIA Notification 2006 as amended-regarding.

Sir/Madam,

This is in reference to your application for Grant of Terms of Reference with Public Hearing under the provision of the EIA Notification 2006 as amended-regarding in respect of project for the Proposed Rough Stone and Gravel quarry over an extent of 2.58.0 Ha at S.F.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, 10, 11A, 11B, 12A, 12B, 12C, 13, 14, 15, 16A, 16B, 17, 18A, 18B, 19, 20A, 20B, 21, 22, 265/1, 2, 3, 4 & 5 of Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu by M/s. APK Minerals Private Limited submitted to SEIAA vide proposal number SIA/TN/MIN/472412/2024 dated 19/06/2024.

Ref:

1. Online proposal No. SIA/TN/MIN/472412/2024, Dated:10.05.2024
2. Your application submitted for Terms of Reference dated: 30.05.2024.
3. Minutes of the 477th Meeting of SEAC held on 20.06.2024.
4. Minutes of the 737th Meeting of Authority held on 09.07.2024.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5750113N
(ii) File No.	10913
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	Roughstone and Gravel Quarry of APK Minerals Pvt. Ltd. (Over an area of 2.58 Ha)
(viii) Name of Company/Organization	apk minerals private limited

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

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the SEIAA for an appraisal by the SEAC in the SEIAA under the provision of EIA notification 2006 and its subsequent amendments.
4. The above-mentioned proposal has been considered by State Environment Impact Assessment Authority(SEIAA) in the meeting held on 09/07/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B, Part C EIA, EMP)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
5. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of Terms of Reference with Public Hearing under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).
6. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to grant Terms of Reference with public Hearing for instant proposal of M/s. APK Minerals Private Limited, Mr.K. VINOTH KUMAR under the provisions of EIA Notification, 2006 and as amended thereof.
7. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.
8. The Terms of Reference with public hearing to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/Regulations or Statutes, as applicable, to the project.
9. The TORs prescribed shall be valid for a period of three years from the date of issue, for submission of the EIA/EMP report as per OM No.J-11013/41/2006-IA-II(I)(part) dated 29th August 2017.
10. This issues with the approval of the Competent Authority.

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.
Stock File.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seac Conditions - Site Specific

S. No	Terms of Reference
1.1	<p>1. A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal:</p> <p>(i) Copy of the agreement forming CMC.</p> <p>(ii) The Organisation chart of the Committee with defining the role of the members</p> <p>(iii) The 'Standard Operating Procedures' (SoP) executing the planned activities.</p> <p>2. The proponent shall make necessary application to produce the NOC from the Competent Authority under the provisions of the Central Electricity Authority Notification No. CEA-PS-16/1/2021-CEI Division dt 08.07.2023 at the time of lease execution.</p> <p>3. The Proponent shall study the details of PWD rainwater drain situated adjacent to the proposed lease area such as its origin, flow direction, end point etc.,</p> <p>4. Since waterbodies are situated nearby, the PP shall carry out the scientific studies to assess the hydrogeological condition of the quarry to determine impacts of the mining operation on the ground water conditions in the waterbodies.</p> <p>5. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations.</p> <p>6. The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.</p> <p>7. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.</p> <p>8. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.</p> <p>9. The PP shall prepare a conceptual working plan accommodating the inclusion of haul road accessibility keeping the benches intact, by ensuring the slope stability of the working benches to be constructed and existing quarry wall.</p>

2. Seac Standard Conditions

S. No	Terms of Reference
2.1	<p>1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:</p> <p>(i) Original pit dimension</p> <p>(ii) Quantity achieved Vs EC Approved Quantity</p> <p>(iii) Balance Quantity as per Mineable Reserve calculated.</p> <p>(iv) Mined out Depth as on date Vs EC Permitted depth</p> <p>(v) Details of illegal/illicit mining</p> <p>(vi) Violation in the quarry during the past working.</p> <p>(vii) Quantity of material mined out outside the mine lease area</p> <p>(viii) Condition of Safety zone/benches</p> <p>(ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.</p> <p>2. Details of habitations around the proposed mining area and latest VAO certificate regarding the</p>

S. No	Terms of Reference
	<p>location of habitations within 300m radius from the periphery of the site.</p> <p>3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.</p> <p>4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.</p> <p>5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.</p> <p>6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.</p> <p>7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.</p> <p>8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.</p> <p>9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.</p> <p>10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.</p> <p>11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.</p> <p>12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,</p> <p>13. 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>14. Quantity of minerals mined out.</p> <ul style="list-style-type: none"> · Highest production achieved in any one year · Detail of approved depth of mining. · Actual depth of the mining achieved earlier. · Name of the person already mined in that leases area. · If EC and CTO already obtained, the copy of the same shall be submitted. · Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. <p>15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p> <p>16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,</p> <p>17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery</p>

S. No	Terms of Reference
	<p>including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.</p> <p>18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.</p> <p>19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.</p> <p>20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.</p> <p>21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.</p> <p>22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.</p> <p>23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.</p> <p>24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p> <p>25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.</p> <p>26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.</p> <p>27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.</p> <p>28. Impact on local transport infrastructure due to the Project should be indicated.</p> <p>29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.</p> <p>30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.</p> <p>31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.</p> <p>32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon</p>

S. No	Terms of Reference
	<p>sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.</p> <p>33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner</p> <p>34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.</p> <p>37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.</p> <p>38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.</p> <p>39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.</p> <p>40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.</p> <p>41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.</p> <p>42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.</p> <p>43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.</p>

3. Seiaa Specific Conditions:

S. No	Terms of Reference
3.1	<p>After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions and conditions in Annexure 'B' of this minutes with the specific and standard conditions</p> <p>1.Restricting the ultimate depth of mining up to 42m BGL and quantity of 3,90,600 cu.m of Rough Stone & 41,250 cu.m of Gravel are permitted for mining over a period of ten years and the annual peak production should not exceed 65,625 m³ of Rough stone considering water bodies around,</p>

S. No	Terms of Reference
	fertility of agriculture land around the mining area and the environmental impacts due to the mining, safety precautionary measures of the working personnel & sustainable mining.

4. Seiaa Standard Conditions:

S. No	Terms of Reference
4.1	<p><u>Cluster Management Committee</u></p> <ol style="list-style-type: none"> 1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry. 2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc., 3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines. 4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network. 5. The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan. 6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report. 7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner. 8. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity. <p><u>Agriculture & Agro-Biodiversity</u></p> <ol style="list-style-type: none"> 9. Impact on surrounding agricultural fields around the proposed mining Area. 10. Impact on soil flora & vegetation around the project site. 11. Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP. 12. The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horticultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem. 13. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services. 14. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock. <p><u>Forests</u></p> <ol style="list-style-type: none"> 15. The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife. 16. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna. 17. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection. 18. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests,

S. No	Terms of Reference
	<p>National Parks, Corridors and Wildlife pathways, near project site.</p> <p><u>Water Environment</u></p> <p>19. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.</p> <p>20. Erosion Control measures.</p> <p>21. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.</p> <p>22. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.</p> <p>23. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.</p> <p>24. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.</p> <p>25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.</p> <p>26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.</p> <p>27. The EIA shall include the impact of mining activity on the following:</p> <ol style="list-style-type: none"> a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams. <p><u>Energy</u></p> <p><u>Climate Change</u></p> <p>29. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.</p> <p>30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.</p> <p>31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.</p> <p><u>Mine Closure Plan</u></p> <p><u>EMP</u></p> <p>33. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs.</p> <p>34. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.</p> <p><u>Risk Assessment</u></p> <p><u>Disaster Management Plan</u></p> <p><u>Others</u></p> <p>37. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.</p> <p>38. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.</p>

S. No	Terms of Reference
	39. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.

Standard Terms of Reference for (Mining of minerals)

1.

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

S. No	Terms of Reference																																																
	mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.																																																
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.																																																
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.																																																
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.																																																
1.12	<p>Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights</p> <table border="1"> <thead> <tr> <th>S.N</th> <th>ML/Project Land use</th> <th>Area under Surface Rights(ha)</th> <th>Area Under Mining Rights(ha)</th> <th>Area under Both (ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Agricultural land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Forest Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>Grazing Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>Settlements</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>Others (specify)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>S.N.</th> <th>Details</th> <th>Area (ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Buildings</td> <td></td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td></td> </tr> <tr> <td>3</td> <td>Roads</td> <td></td> </tr> <tr> <td>4</td> <td>Others (specify)</td> <td></td> </tr> <tr> <td></td> <td>Total</td> <td></td> </tr> </tbody> </table>	S.N	ML/Project Land use	Area under Surface Rights(ha)	Area Under Mining Rights(ha)	Area under Both (ha)	1	Agricultural land				2	Forest Land				3	Grazing Land				4	Settlements				5	Others (specify)				S.N.	Details	Area (ha)	1	Buildings		2	Infrastructure		3	Roads		4	Others (specify)			Total	
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1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be																																																

S. No	Terms of Reference
	prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.
1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SO _x , NO _x and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime

S. No	Terms of Reference
	within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.
1.24	Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored
1.27	PP to evaluate the green house emission gases from the mine operation and corresponding carbon absorption plan.
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.

S. No	Terms of Reference
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.
1.38	Corporate Environment Responsibility:
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.
1.43	e) Environment Management Cell and its responsibilities to be clearly spelled out in EIA/ EMP report
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.
1.46	PP shall submit clarification from PCCF that mine does not fall under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closure plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.
1.48	Details on the Forest Clearance should be given as per the format given: Total ML Total Date Extent of Balance area for which Status of appl For

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

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 is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)

18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF& CC vide O.M. No. J-11013/41/2006-IA.II (I) dated

4th August, 2009, which are available on the website of this Ministry should also be followed.

- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -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.



सत्यमेव जयते

File No: 10826
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority(SEIAA),
TAMIL NADU)



Dated 10/08/2024



To,

K. VINOTH KUMAR
APK Minerals Private Limited
No. -1A, Manikandan Nagar, Hasthinapuram Chennai – 600 064, Pazhaveri, KANCHIPURAM,
TAMIL NADU, 600064
apkmineralspvtltd@gmail.com

Subject: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough Stone and Gravel quarry over an extent of 2.23.12 Ha at S.F.Nos. 207/4B, 5B, 6B, 7B, 8B, 9, 208/1A, 2A, 2B1, 2B2, 5A, 5C, 5D, 5E, 5F, 5G, 212/1L, 1M, 1N of Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu by M/s. APK Minerals Private Limited – under project category - “B1” and Schedule S.No.1(a) – ToR issued along with Public Hearing – preparation of EIA report – Regarding.

Sir/Madam,

This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding in respect of project Rough Stone and Gravel Quarry of M/s. APK Minerals Pvt Ltd company submitted to Ministry vide proposal number SIA/TN/MIN/469805/2024 dated 16/05/2024.

Ref:

1. Online Proposal No. SIA/TN/MIN/469805/2024, dated: 22.04.2024
2. Your application submitted for Terms of Reference dated: 25.04.2024
3. Minutes of the 467th SEAC meeting held on 16.05.2024
4. Minutes of the 726th SEIAA meeting held on 03.06.2024 & 04.06.2024
5. Minutes of the 483rd SEAC meeting held on 18.07.2024
6. Minutes of the 744th SEIAA meeting held on 05.08.2024

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5919768N
(ii) File No.	10826
(iii) Clearance Type	TOR
(iv) Category	B1

(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	Rough Stone and Gravel Quarry of M/s. APK Minerals Pvt Ltd company
(viii) Name of Company/Organization	APK Minerals Private Limited
(ix) Location of Project (District, State)	KANCHIPURAM, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the Ministry for an appraisal by the State Environment Impact Assessment Authority(SEIAA) Appraisal Committee (SEIAA) in the Ministry under the provision of EIA notification 2006 and its subsequent amendments.
4. The above-mentioned proposal has been considered by State Environment Impact Assessment Authority(SEIAA) Appraisal Committee of SEIAA in the meeting held on 05/08/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
5. The brief about configuration of plant/equipment, products and byproducts and salient features of the project along with environment settings, as submitted by the Project proponent in Form-1 (Part A & B)/ Reports/presented during SEIAA are annexed to this EC as Annexure (1).
6. The SEIAA, in its meeting held on 05/08/2024, based on information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of Terms of Reference under the provision of EIA Notification, 2006 and as amended thereof subject to stipulation of specific and general conditions as detailed in Annexure (2).
7. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the State Environment Impact Assessment Authority(SEIAA) Appraisal Committee hereby decided to grant Terms of Reference for instant proposal of M/s. APK Minerals Private Limited under the provisions of EIA Notification, 2006 and as amended thereof.
8. The SEIAA/Ministry reserves the right to stipulate additional conditions, if found necessary.
9. The Terms of Reference to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
10. **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.**
11. This issues with the approval of the Competent Authority.

Copy To

1. The Principal Secretary to Government, Environment, Climate Change and 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 - 110 032.
3. The Chairperson, 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 - 110 003.

6. The District Collector, Kancheepuram District.

7. Stock File.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seiaa Specific Conditions:

S. No	Terms of Reference
1.1	<p>After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of 1,83,780 m³ of Rough Stone & 31,776 m³ of Gravel for a period of 10 years up to the ultimate depth of 32m and the annual peak production should not exceed 68,890 m³ of Rough Stone & 15,312 m³ of Gravel as per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the following conditions and the conditions mentioned in 'Annexure B' of this minutes.</p> <p>1. This ToR is issued for the specified lease area without common boundary. Accordingly the PP shall furnish the Modified Mining Plan, duly approved by the authority concerned, accommodating the revised quantity to be excavated keeping the boundary as required to be maintained in accordance with the provisions of the Tamil Nadu Minor Mineral Concessional Rules 1959.</p>

2. Seiaa Standard Conditions:

S. No	Terms of Reference
2.1	<p><u>Cluster Management Committee</u></p> <ol style="list-style-type: none">1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.5. The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report.7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.8. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity. <p><u>Agriculture & Agro-Biodiversity</u></p>

S. No	Terms of Reference
	<p>9. Impact on surrounding agricultural fields around the proposed mining Area.</p> <p>10. Impact on soil flora & vegetation around the project site.</p> <p>11. Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP.</p> <p>12. The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horticultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.</p> <p>13. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.</p> <p>14. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.</p> <p><u>Forests</u></p> <p>15. The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife.</p> <p>16. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.</p> <p>17. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.</p> <p>18. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.</p> <p><u>Water Environment</u></p> <p>19. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.</p> <p>20. Erosion Control measures.</p> <p>21. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.</p> <p>22. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.</p> <p>23. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.</p> <p>24. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.</p> <p>25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.</p> <p>26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.</p> <p>27. The EIA shall include the impact of mining activity on the following:</p> <ol style="list-style-type: none"> Hydrothermal/Geothermal effect due to destruction in the Environment. Bio-geochemical processes and its foot prints including environmental stress. Sediment geochemistry in the surface streams. <p><u>Energy</u></p> <p><u>Climate Change</u></p> <p>29. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.</p> <p>30. The Environmental Impact Assessment should study impact on climate change, temperature</p>

S. No	Terms of Reference
	<p>rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.</p> <p>31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.</p> <p><u>Mine Closure Plan</u></p> <p><u>EMP</u></p> <p>33. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs.</p> <p>34. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.</p> <p><u>Risk Assessment</u></p> <p><u>Disaster Management Plan</u></p> <p><u>Others</u></p> <p>37. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.</p> <p>38. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.</p> <p>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.</p>
2.2	<p>A. STANDARD TERMS OF REFERENCE</p> <p>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.</p> <p>2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.</p> <p>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.</p> <p>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).</p> <p>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.</p> <p>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.</p> <p>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-</p>

S. No	Terms of Reference
	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies</p>

S. No	Terms of Reference
	<p>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).</p> <p>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.</p> <p>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.</p> <p>23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.</p> <p>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.</p> <p>25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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</p>

S. No	Terms of Reference
	<p>and native species and the species which are tolerant to pollution.</p> <p>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.</p> <p>33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.</p> <p>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.</p> <p>44) Besides the above, the below mentioned general points are also to be followed:-</p> <ol style="list-style-type: none"> 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

S. No	Terms of Reference
	<p>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.</p> <p>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.</p> <p>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.</p>
2.3	<p>In addition to the above, the following shall be furnished:-</p> <p>The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:</p> <ol style="list-style-type: none"> 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

S. No	Terms of Reference
	<p>25. Post project monitoring plan</p> <p>26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.</p> <p>27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.</p> <p>28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.</p> <p>29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.</p> <p>30. Reserve funds should be earmarked for proper closure plan.</p> <p>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.</p> <p>Besides the above, the below mentioned general points should also be followed:-</p> <p>a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.</p> <p>b. All documents may be properly referenced with index, page numbers and continuous page numbering.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.</p>
2.4	<p>SEAC Specific Condition</p> <p>1. This ToR is issued for the specified lease area without common boundary. Accordingly the PP shall furnish the Modified Mining Plan, duly approved by the authority concerned, accommodating the revised quantity to be excavated keeping the boundary as required to be maintained in accordance with the provisions of the Tamil Nadu Minor Mineral Concessional Rules 1959.</p>

Additional Terms of Reference

SEAC Standard Conditions

1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:

- (i) Original pit dimension

- (ii) Quantity achieved Vs EC Approved Quantity
 - (iii) Balance Quantity as per Mineable Reserve calculated.
 - (iv) Mined out Depth as on date Vs EC Permitted depth
 - (v) Details of illegal/illicit mining
 - (vi) Violation in the quarry during the past working.
 - (vii) Quantity of material mined out outside the mine lease area
 - (viii) Condition of Safety zone/benches
 - (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.
2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.
 3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.
 4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.
 5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.
 6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.
 7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.
 8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.
 9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.
 10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.
 11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.
 12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 14. Quantity of minerals mined out.
 - Highest production achieved in any one year
 - Detail of approved depth of mining.
 - Actual depth of the mining achieved earlier.
 - Name of the person already mined in that leases area.
 - If EC and CTO already obtained, the copy of the same shall be submitted.
 - Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
 15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
 16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,
 17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of

existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.

18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.

19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act' 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.

20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.

21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.

22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.

23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.

24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.

25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.

26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.

27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.

28. Impact on local transport infrastructure due to the Project should be indicated.

29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.

30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.

31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.

32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.

33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner

34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.

35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.

36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

TOR COMPLIANCE

1. Terms of Reference issued for Roughstone and Gravel Quarry of APK Minerals Private Limited (over an area of 2.58Ha) vide TOR Identification No. TO24B0108TN5750113N dated 29.07.2024

S.No	ToR Points	Reply	Pg. No
1.SEAC Conditions – Site Specific			
1.	A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members (iii) The 'Standard Operating Procedures' (SoP) executing the planned activities.	Will be submitted	--
2.	The proponent shall make necessary application to produce the NOC from the Competent Authority under the provisions of the Central Electricity Authority Notification No. CEA-PS- 16/1/2021-CEI Division dt 08.07.2023 at the time of lease execution.	Will be submitted	--
3.	The Proponent shall study the details of PWD rainwater drain situated adjacent to the proposed lease area such as its origin, flow direction, end point etc.,	There is a rainwater drain located on the western side of the at a distance of 10m for which safety distance of left as per precise area conditions. Earthen bund will be formed on the western side of the lease area. No major impact is envisaged on the nearby water body due to project operations.	4-15
4.	Since waterbodies are situated nearby, the PP shall carry out the scientific studies to assess the hydrogeological condition of the quarry to determine impacts of the mining operation on the ground water conditions in the waterbodies.	Hydrogeological Study is detailed under Section 3.6, Chapter-III.	3-40
5.	The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with	The details of features within 500m radius has been provided in Table 2.4, Chapter-II.	2-14



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	number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations.		
6.	The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Site photographs are provided in Photo No.2.1, Chapter-II.	2-8
7.	The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.	A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys. The details are furnished in para 3.5, Chapter III.	3-34
8.	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	EMP is prepared for the entire life of the mine. Affidavit will be provided along with the final EIA/ EMP report.	--
9.	The PP shall prepare a conceptual working plan accommodating the inclusion of haul road accessibility keeping the benches intact, by ensuring the slope stability of the working benches to be constructed and existing quarry wall.	The details regarding the same are provided under Section 4.5.1, Chapter-IV.	4-22
2. SEAC Standard Conditions			
1.	In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: a) Original pit dimension b) Quantity achieved Vs EC Approved Quantity c) Balance Quantity as per Mineable Reserve calculated. d) Mined out Depth as on date Vs EC Permitted depth e) Details of illegal/illicit mining f) Violation in the quarry during the past working. g) Quantity of material mined out outside the mine lease area h) Condition of Safety zone/benches i) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.	This is a proposed quarry. As such no mining activities have been carried out in this lease area.	2-28
2.	Details of habitations around the proposed mining area and latest VAO certificate regarding the location	VAO Letter has been provided as Annexure-3A.	



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

	of habitations within 300m radius from the periphery of the site.		
3.	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.	The details of features within 500m radius has been provided in Table 2.4, Chapter-II.	2-14
4.	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	Hydrogeological Study is detailed under Section 3.6, Chapter-III.	3-40
5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys. The details are furnished in para 3.5, Chapter III.	3-34
6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	There area no Protected Areas, Sanctuaries, Tiger reserve etc with in 10 km radius	--
7	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.	This is a proposed quarry. As such no mining activities have been carried out in this lease area.	2-28
8	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal	Pit slope stability plan has been provided under Section 7.7, Chapter-VII	7-7



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

	while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.		
9	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/ Class mines manager appointed by the proponent.	Will be submitted along with the final report	--
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	Controlled blasting will be adopted in this project and details of the same has been provided in Section 4.4.2, Chapter-IV	4-20
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	Agreed	--
12	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,	This is a proposed quarry. No mining activities have been carried out in this lease area.	2-28
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Replied above in point no.12	--
14	Quantity of minerals mined out. •Highest production achieved in any one year •Detail of approved depth of mining. •Actual depth of the mining achieved earlier. •Name of the person already mined in that leases area. •If EC and CTO already obtained, the copy of the same shall be submitted. •Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	Replied above in point no.12	--
15	All comer 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).	<ul style="list-style-type: none"> • Satellite imagery with corner coordinates of the project area is provided in Figure 2.5, Chapter-II. • Toposheet of the lease area and buffer zone is provided in Figure 3.1, Chapter-III. • Geology, Geomorphology map of the lease area and buffer zone is provided in Figure 3.18 and 19, Chapter-III. 	<p>2-6</p> <p>3-2</p> <p>3-42</p>



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

16	The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,	Agreed	--
17	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Site photographs have been provided in Chapter-II.	2-8
18	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.	<ul style="list-style-type: none"> The details of geological and mineable reserves are provided in Table 2.8, Chapter-II. The production schedule during the plan period is provided in Table 2.11, Chapter-II. The working methodology is detailed under Section 2.15, Chapter-II. Anticipated impacts of mining operations on surrounding environment is provided under Chapter-IV. 	<p>2-26</p> <p>2-28</p> <p>2-27</p> <p>4-1</p>
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of 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.	<ul style="list-style-type: none"> The organization chart is provided as Figure No.10.1, Chapter-X. 	10-1
20	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.	<ul style="list-style-type: none"> Hydrogeological Study is detailed under Section 3.6, Chapter-III. 	3-40
21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	<ul style="list-style-type: none"> The baseline data on micro- meteorology, ambient air quality, Water quality, noise level, soil and flora & fauna are collected during Summer Season (March – May 2024) and detailed in Section 3.3 to 3.5 of Chapter-III. The details of Traffic Study is provided under Section 4.9, Chapter-IV. 	3-9
22	The Proponent shall carry out the Cumulative impact	<ul style="list-style-type: none"> The details of the quarries located within the 	A-22



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

	study due to mining operations carried out in the quarry specifically with reference to the specific 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.	500m radius of the project is given vide Annexure-4A. • A cumulative impact study has been carried out and furnished in Para 7.6, Chapter-VII. • Environmental Management Plan is provided under Chapter-X.	7-5 10-1
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	• The rain water falling in the quarries will be harvested in the sump at the lowest level of the respective quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc. • Towards surface runoff management, garland drain will be constructed which will be connected to settling ponds with silt traps. • Water requirement for this project is 8 KLD. The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used.	4-17 4-12
24	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	• The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.4, Chapter-III. • The land use pattern at present and at the end of the quarrying period has been provided under section 4.5.1, Chapter-IV. • The post mining land use has been provided in Table No. 4.19.	3-27 4-22
25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	• There is no waste generation anticipated in this quarry. As such there are no OB dumps involved.	--
26	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	• Not applicable	--
27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	• The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc.	4-18



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

		<ul style="list-style-type: none"> • Towards surface runoff management, garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users. The surface runoff management structures diagram is given in Figure No 4.4, Chapter-IV. • Details of rainwater harvesting are provided under Section 4.3.4.2, Chapter-IV. 	
28	Impact on local transport infrastructure due to the Project should be indicated.	<ul style="list-style-type: none"> • From this proposed quarry the entire output will be transported to the crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. • About 3 trips per hour of transport is envisaged. The existing road can absorb this traffic due to this project. The details of various mitigative measures towards logistical system is elaborated under Section 4.9, Chapter-IV. 	4-30
29	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under section 3.5.1, Chapter-III.	3-34
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Details of Mine Closure Plan is provided under section 7.5, Chapter-VII.	7-4
31	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under section 3.5.1, Chapter-III.	3-34
32	The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	Agreed	--
33	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest	Agreed	--



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	authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner		
34	A Disaster management Plan shall be prepared and included in the, EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	The disaster management plan has been provided under section 7.3.1, Chapter-VII.	7-3
35	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	Various risks likely to arise due to mining activities are detailed under section 7.3, Chapter-VII.	7-2
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Details of occupational health and safety aspects are given under the subsections of Para 4.8, Chapter-IV.	4-28
37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	<ul style="list-style-type: none"> • Details of the socio-economic survey conducted in the buffer zone has been provided in Para 3.2.4, Chapter-III. • Public health facilities will be further aimed to be developed through CER activities wherein periodic health checkups, medical camps for the locals will be conducted. 	3-7
38	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	<ul style="list-style-type: none"> • Nearby villages were visited for conducting study to know about socio-economic conditions, including aspirations and requirements of the people for a better living and collected relevant data. The details are provided under section 3.2.4, Chapter-III. 	3-7
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	<ul style="list-style-type: none"> • There is no litigation pending against the project. 	--
40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	<ul style="list-style-type: none"> • The Roughstone and Gravel Quarry will benefit this region in the fields of employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, health, infrastructural etc. • Direct employment to about 12 people and indirect employment to scores of people. 	8-1



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		<ul style="list-style-type: none"> By means of carrying out the socio-economic development activities, local community development is expected. Towards the same, the proponent has planned to allocate Rs.5 Lakhs for various activities under CER for all the three projects together. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited. 	
41	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional office, Chennai (or) the concerned DEE/TNPCB.	<ul style="list-style-type: none"> This is a proposed quarry. As such no mining activities have been carried out in this lease area. 	2-12
42	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	EMP is prepared for the entire life of the mine. Affidavit will be provided along with the final EIA/ EMP report.	--
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	Agreed	--
1.SEIAA Specific Conditions			
1.1	<p>After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions and conditions in Annexure 'B' of this minutes with the specific and standard conditions:</p> <p>1.Restricting the ultimate depth of mining up to 42m BGL and quantity of 3,90,600 cu.m of Rough Stone & 41,250 cu.m of Gravel are permitted for mining over a period of ten years and the annual peak production should not exceed 65,625 m3 of Rough stone considering water bodies around, fertility of agriculture land around the mining area and the environmental impacts due to the mining, safety precautionary measures of the working personnel & sustainable mining.</p>		
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, water sprinkling, tree plantation, blasting etc.,	Agreed	-
3	The List of members of the committee formed shall be	Agreed	-



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	submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.		
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	Agreed	-
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	Agreed	-
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	Agreed	-
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Agreed	-
8	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.	Agreed	-
Agriculture & Agro-Biodiversity			
9	Impact on surrounding agricultural fields around the proposed mining Area.	<ul style="list-style-type: none"> • Due to proximity of rocky hill with shrubs and bushes in the north & east of the lease area, the soil quality in the bottom of the hills near the lease area and its surrounding area is also of gravelly rocky type and not fit for agricultural activities. • As such in the lease and its immediate surrounding area no major agricultural activities are observed. • Patches of seasonal agricultural activities are practiced based on water availability more than 200m south of the lease area. • Due to poor quality of the soil, inconsistent rainfall, water scarcity, high agricultural labor cost, manpower shortage and less yield are reason for very little agricultural activity in this region. 	4-25
10	Impact on soil flora & vegetation around the project	The impact of mining on biological	4-25



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	site.	environment is provided under Table 4.15, Chapter-IV.	
11	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	The details of flora in the core zone is provided in Table 3.24, Chapter-III. There is no major clearance of vegetation or transplantation involved.	3-34
12	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.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-36
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The post mining land use has been provided in Table No. 4.19, Chapter-IV.	4-23
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	Replied in sl no 9 above.	--
15	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	Kavanippakkam R F (1.6km-S) consist of shrubs and bushes & Idaimichi R F(5.1km-S) is mostly rocky with patches of barren land. By implementing various mitigating measures given in the report no adverse impact on RF or Fauna envisaged.	3-2
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-34
17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Replied in point 20. Above	--
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks. Corridors and Wildlife pathways. near project site.	There are no national parks or corridors in the 10k radius. Reply Sl.No – 15 above.	3-3
Water Environment			
19	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on	Details of hydrogeological scenario of this project is provided under section 3.6, Chapter-III.	3-40



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	actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.		
20	Erosion Control Measures	<ul style="list-style-type: none"> • Since the entire material from the quarry face will be directly dispatched to the consumers, there will not be any stockpiles. There are no waste dumps in this quarry. As such there will not be any wash out due to stock pile or waste dumps. • Towards surface runoff management, garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps. 	4-8
21	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	<ul style="list-style-type: none"> • There are no perineal water courses in both the lease areas. In the lease area of Roughstone and Gravel Quarry of APK Minerals (over an area of 2.58Ha). • There is a rainwater drain located on the western side of the at a distance of 10m for which safety distance of left as per precise area conditions. Earthen bund will be formed on the western side of the lease area. • There is also a Thangal located at a distance of 150m on the northern side of the lease area. There is no proposal to discharge any effluents into either of these water bodies. 	4-17
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	There is no major perennial waterbody in close proximity of the lease area.	3-3
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	The post mining land use has been provided in Table No. 4.17, Chapter-IV	4-22
24	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-34



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25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	Soil samples were collected in 4 locations in the core and buffer zone to analyse the physiochemical characteristics of the soil in the area. The soil quality data is provided in Table No.3.18, Chapter-III.	3-27
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	<ul style="list-style-type: none"> • There are no perineal water courses in both the lease areas. In the lease area of Roughstone and Gravel Quarry of APK Minerals (over an area of 2.58Ha). • There is a rainwater drain located on the western side of the at a distance of 10m for which safety distance of left as per precise area conditions. Earthen bund will be formed on the western side of the lease area. <p>There is also a Thangal located at a distance of 150m on the northern side of the lease area. There is no proposal to discharge any effluents into either of these water bodies.</p>	4-17
27	The EIA shall include the impact of mining activity on the following: a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams.	The details of the same is provided in Table 4.21, Chapter-IV.	4-24
Climate Change			
29	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Certified vehicles with low carbon emissions will only be used. These equipments will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned.	4-3
30	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.	Replied in point no.29.	--
31.	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local	Replied in point no.29.	--



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	livelihood.		
EMP			
33	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs.	Detailed environmental management plan is provided under Chapter-X.	10-1
34	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	Detailed environmental management plan is provided under Chapter-X.	10-1
Others			
37	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites. Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel. river, lake pond, tank etc.	VAO Letter has been provided as Annexure-3A.	A-17
38	As per the MoEF& cc office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management plan.	Will be provided in the Final EIA/EMP Report after completion of public hearing.	--
39	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	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.	4-32
Standard Terms of Reference for Mining of Minerals			
1.1	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA)operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.	This EIA-EMP report is prepared for the annual peak production capacity of 65625m3 of roughstone and 21250m3 of gravel based on generic structure specified in EIA Notification, 2006.	1-2
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land,	<ul style="list-style-type: none"> The anticipated environmental impacts and mitigation measures are provided in Chapter-IV. Environmental Management Plan is provided 	4-1 10-1



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	biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for..... MTPA of mineral production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.	in Chapter-X along with the budget for the same. • Baseline monitoring was carried out during Summer Season (March – May 2024) and details of the same has been provided under Section 3.3, Chapter-III.	3-15
1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided	Satellite Imagery showing corner coordinates of the lease area area is provided in Figure 2.5, Chapter-II.	2-6
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also.	The study area map showing the 10Km radius of the lease area is provided as Figure 3.1, Chapter-III . These features are also provided in Table 3.2, Chapter-III .	3-2
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished	The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.4, Chapter-III.	3-27
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.	Drainage map of the study area is given vide Figure 3.17.	3-41
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ rivulet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of	Since the lease and its proximate areas are plain land, it does. not form any major catchment area. The drainage of the area is controlled by only few first order streams that too located far away from the lease area (Please refer Figure 3.17) It is proposed to form	3-41



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	major rivers. Diversion of drains/ river need elaboration in form of length, quantity and quality of water to be diverted	garland drain around the periphery of the lease area to collect rainwater falling in the surrounding area and connect it to the settling pond . Clear water overflow from the settling pond will be connected to the downstream users and ensured its flow .	
1.8	Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.	<ul style="list-style-type: none"> • The details of geological and mineable reserves are provided in Table 2.8, Chapter-II. 2-33 • Ultimate pit dimensions are provided in Table 2.15, Chapter-II. 2-28 • Yearwise production schedule is provided in Table 2.11 and the production schedule during conceptual period is provided in Table 2.13, Chapter-II. 2-22 • Geological Plan and Sections are provided in Figure No.2.11, 2.12, Chapter-II. 2-29 • Yearwise Plan and Yearwise Cross Section is provided in Figure 2.16, 2.17, Chapter-II. 2-34 • Conceptual Plan and Cross Section is provided in Figure 2.21, 2.22, Chapter-II. 2-34 • Details of Mine Closure Plan is provided under section 7.5, Chapter-VII. 7-4 	
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.	<ul style="list-style-type: none"> • Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out. The top gravel is soft and can be directly excavated. The rough stone below will be blasted and then excavated. Bench height of 5.0m & 5m width is considered. 2-26 • Details of equipments to be used are provided in Table 2.9, Chapter-II. 	
1.10	Impact of mining on hydrology, modification of	Hydrogeological Study is detailed under	3-40



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	natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.	Section 3.6, Chapter-III.	
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/ bunds, proposed diversion/re- channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.	The landuse pattern showing the existing, proposed and conceptual land use has been provided in Table 2.18, Chapter-II.	2-37
1.12	Original land use (agricultural land/forestland/grazing land/ wasteland /water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights	The entire lease area is private patta land in the PPs name. The landuse pattern showing the existing, proposed and conceptual land use has been provided in Table 2.18, Chapter-II.	2-37

S.No	Project Land Use	Area under surface rights (Ha)	Area under mining rights (Ha)	Area under both (Ha)
1	Agricultural Land			
2	Forest Land			
3	Grazing Land			
4	Settlements			
5	Others (Specify)			

S.No	Details	Area (Ha)



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	1	Buildings				
	2	Infrastructure				
	3	Roads				
	4	Others (Specify)				
		Total				
1.13	<p>Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.</p>			<p>A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys by NABET accredited expert. The details are furnished in para 3.5, Chapter III.</p>		3-34
1.14	<p>One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.</p>			<p>The baseline data on micro- meteorology, ambient air quality, Water quality, noise level, soil are carried out through NABL accredited laboratory during Summer Season (March to May 2024) and detailed in para 3.3 to 3.5 of Chapter-III.</p> <p>Copy of NABL Certificate of the Laboratory is Enclosed as Annexure 13.</p> <p>Copy of NABET Certificate is enclosed as Annexure-14.</p>		3-11
1.15	<p>Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-</p>			<ul style="list-style-type: none"> • The monitoring locations for air, water, noise and soil are provided in Figures 3.8 – 3.13, Chapter-III. • Monitoring stations were selected taking into account various CPCB guidelines. • The results of the observed values along with standards are provided in Tables 3.12 – 3.18, Chapter-III. 		3-17



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	impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.		
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided	Replied in S.No 13 above.	--
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.	The lease area can be approached through mineral transport route free from immediate habitation.	4-31
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.	Details are given in Para 3.2.4, Chapter – III.	3-7
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided	3-34



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	will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.	under Section 3.5.1, Chapter-III.	
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.	Details of occupational health and safety aspects are given under the subsections of Para 4.8, Chapter-IV.	4-29
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted	Details of hydrogeological scenario of this project is provided under section 3.6, Chapter-III.	3-40
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.	<ul style="list-style-type: none"> Hydrogeological Study is detailed under Section 3.6, Chapter-III. There are no perineal water courses in both the lease areas. In the lease area of Roughstone and Gravel Quarry of APK Minerals (over an area of 2.58Ha). There is a rainwater drain located on the western side of the at a distance of 10m for which safety distance of left as per precise area conditions. Earthen bund will be formed on the western side of the lease area. There is also a Thangal located at a distance of 150m on the northern side of the lease area. There is no proposal to discharge any effluents into either of these water bodies. The mining area consists of hard compact rock, hence no major water seepage within the mine is expected from the periphery. The ground water table in this area is below the ultimate pit level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation. 	3-40
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.	This being an opencast mine, subsidence is not applicable.	--
1.24	Detailed water balance should be provided. The breakup of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the	Water requirement for this project is 8 KLD. The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used. Water Balance diagram is provided in	4-13



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	Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.	Figure 4.3, Chapter-IV.	
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis à-vis reduction in concentration of emission for each APCEs	Towards dust suppressing, water sprinkling will be carried out by a 8KL water tanker and additionally, Wheel washing system will also be provided near the gate of the quarry. The environmental control cost has been provided in Table 10.1, Chapter-X.	10-10
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored	Since the number of equipments to be used is less, all efforts will be made to explore and materialize the same.	--
1.27	PP to evaluate the greenhouse emission gases from the mine operation and corresponding carbon absorption plan	Details are given in Table 4.21, Chapter – IV.	4-24
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.	<ul style="list-style-type: none"> • Impact assessment and mitigation measures are provided in detail in Chapter-IV. • Risk assessment is provided under Section 7.3, Chapter-VII. • Disaster Management Plan is provided under Section 7.3.1, Chapter-VII. 	4-1 7-2 7-3
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.	<ul style="list-style-type: none"> • Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out. The top gravel is soft and can be directly excavated. The rough stone below will be blasted and then excavated. Bench height of 5.0m & 5m width is considered. • Details of equipments are provided in Table 2.9, Chapter-II. • Impact on air quality is provided under Section 4.2, Chapter-IV. • Impact of mining on mineral transportation has been provided under Section 4.9, Chapter-IV. • The ground vibration effects due to blasting has been provided under section 4.4.2, 	2-26 4-2 4-30 4-21



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		Chapter-IV.	
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.	<ul style="list-style-type: none"> Impact of mining on mineral transportation has been provided under Section 4.9, Chapter-IV. Schematic diagram of mining activities and its associated impacts are provided in Figure 2.23, Chapter-II. Impact of mining operations on air quality is assessed by means of Air Quality Impact Prediction. The incremental concentration considering Mining operations and hauling are determined and provided under Section 4.2.2, Chapter-IV. This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.Considering the minimum manpower, no major pollution is expected from this front. 	<p align="center">4-23</p> <p align="center">2-27</p> <p align="center">4-3</p> <p align="center">2-27</p>
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.	<ul style="list-style-type: none"> This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.Considering the minimum manpower, as such no major pollution is expected from this front. 	2-38
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided	Towards dust suppressing, water sprinkling for at least 2 to 3 times in a day will be carried out by a mobile water sprinkler and additionally, Wheel washing system will also be provided near the gate of the quarry. The environmental control cost has been provided in Table 10.1, Chapter-X.	10-10
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre-mining status should be provided. A Plan for the ecological restoration of the mined-out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.	<ul style="list-style-type: none"> Conceptual Plan has been provided in Figure 2.21, Chapter-II. There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. In the post mining stage, mined out area will be left as water body and the rest will be covered with vegetation. Post mining Land Use is provided under Table 4.19, Chapter-IV. 	<p align="center">2-34</p> <p align="center">4-19</p>



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		<ul style="list-style-type: none"> • Details of Mine Closure Plan is provided under section 7.5, Chapter-VII. 	7-4
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.	<ul style="list-style-type: none"> • In the lease area, safety barrier 7.5m around the periphery and 10m safety zone is left. About 1300 trees will be planted in and around the lease area including mineral transportation route nearby. • The details of proposed plantation will be provided in Table 4.27, Chapter-IV. 	4-27
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.	<ul style="list-style-type: none"> • The capital and recurring cost of Environmental Management is provided in Table 10.1, Chapter-X. 	10-10
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.	<ul style="list-style-type: none"> • Mining activities will be carried out within the mine lease area only. The lease area is a patta land with no population within the lease area. Hence the question of R&R does not arise. 	7-4
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.	Towards socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.5 Lakhs which will be implemented in a phased manner in the nearby Government School.	4-21
1.38	Corporate Environment Responsibility	Towards socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.5 Lakhs which will be implemented in a phased manner in the nearby Government School.	4-28
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.	The details of Environmental Policy is provided in Section 10.2.1, Chapter-X.	10-1
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/ deviation /violation of the environmental or forest norms/conditions.	The details of Environmental Policy is provided in Section 10.2.1, Chapter-X.	10-1



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1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.	The details of the environmental management cell is provided under Section 10.2.2, Chapter-X.	10-2												
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.	The details of Environmental Policy is provided in Section 10.2.1, Chapter-X.	10-1												
1.43	e) Environment Management Cell and its responsibilities to be clearly spell out in EIA/ EMP report	The details of the environmental management cell is provided under Section 10.2.2, Chapter-X.	10-2												
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.	The details of Environmental Policy is provided in Section 10.2.1, Chapter-X.	10-1												
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.	The proponent has informed that there are no litigations pending against the project.	--												
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.	There are no sanctuaries or biospheres within the study area.	--												
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.	Copy of all clearances obtained from the Government with regards to Environmental Clearance are enclosed as Annexures to the EIA/EMP Report	--												
1.48	<p>Details on the Forest Clearance should be given as per the format given:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Total ML Project Area (Ha)</th> <th>Total Forest Land (Ha)</th> <th>Date of FC</th> <th>Extent of Forest Land</th> <th>Balance area for which FC is yet to obtained</th> <th>Status of appl for diversion of forest land</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Total ML Project Area (Ha)	Total Forest Land (Ha)	Date of FC	Extent of Forest Land	Balance area for which FC is yet to obtained	Status of appl for diversion of forest land							There is no forest clearance involved in this project	--
Total ML Project Area (Ha)	Total Forest Land (Ha)	Date of FC	Extent of Forest Land	Balance area for which FC is yet to obtained	Status of appl for diversion of forest land										
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report	This is a greenfield project and does not involve any expansion.	--												



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1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.	This draft EIA/EMP report will be submitted for Public Hearing as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.	7-1
1.51	PP shall carry out survey through drone highlighting the ground reality for at least 10 minutes	Agreed	
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.	The chronology of various statutory clearances obtained for this project are provided in Table 1.3, Chapter-I.	1-3
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)	The details are mentioned in the First Page of the EIA/EMP Report	--
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapters section.	Complied	---



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3. Terms of Reference issued for Roughstone and Gravel Quarry of APK Minerals Private Limited vide TOR Identification No. TO24B0108TN5919768N dated 10.08.2024

S.No	ToR Points	Reply	Pg. No
1. SEIAA Specific Conditions			
1.	<p>After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of 1,83,780 m³ of Rough Stone & 31,776 m³ of Gravel for a period of 10 years up to the ultimate depth of 32m and the annual peak production should not exceed 68,890 m³ of Rough Stone & 15,312 m³ of Gravel as per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the following conditions and the conditions mentioned in 'Annexure B' of this minutes.</p> <p>1. This ToR is issued for the specified lease area without common boundary. Accordingly the PP shall furnish the Modified Mining Plan, duly approved by the authority concerned, accommodating the revised quantity to be excavated keeping the boundary as required to be maintained in accordance with the provisions of the Tamil Nadu Minor Mineral Concessional Rules 1959.</p>	Agreed	--
2. SEIAA Standard Conditions			
2.1 Cluster Management Committee			
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, water sprinkling, tree plantation, blasting etc.,	Agreed	-
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Agreed	-
4	Detailed Operational Plan must be submitted which	Agreed	-



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	must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.		
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	Agreed	-
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report.	Agreed	-
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Agreed	-
8	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.	Agreed	-
Agriculture & Agro-Biodiversity			
9	Impact on surrounding agricultural fields around the proposed mining Area.	<ul style="list-style-type: none"> • Due to proximity of rocky hill with shrubs and bushes in the north & east of the lease area, the soil quality in the bottom of the hills near the lease area and its surrounding area is also of gravelly rocky type and not fit for agricultural activities. • As such in the lease and its immediate surrounding area no major agricultural activities are observed. • Patches of seasonal agricultural activities are practiced based on water availability more than 200m south of the lease area. • Due to poor quality of the soil, inconsistent rainfall, water scarcity, high agricultural labor cost, manpower shortage and less yield are reason for very little agricultural activity in this region. 	4-25
10	Impact on soil flora & vegetation around the project site.	The impact of mining on biological environment is provided under Table 4.15, Chapter-IV.	4-25
11	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so,	The details of flora in the core zone is provided in Table 3.24, Chapter-III. There is no major	3-35



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	transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	clearance of vegetation or transplantation involved.	
12	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.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-34
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The post mining land use has been provided in Table No. 4.20, Chapter-IV.	4-23
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	Replied in sl no 9 above.	--
15	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	Kavanippakkam R F (1.6km-S) consist of shrubs and bushes & Idaimichi R F(5.1km-S) is mostly rocky with patches of barren land. By implementing various mitigating measures given in the report no adverse impact on RF or Fauna envisaged.	3-3
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-34
17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Replied in point 20. Above	--
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks. Corridors and Wildlife pathways. near project site.	There are no national parks or corridors in the 10k radius. Replied in point 15. Above	3-2
Water Environment			
19	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease	Details of hydrogeological scenario of this project is provided under section 3.6, Chapter-III.	3-40



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	period.		
20	Erosion Control Measures	<ul style="list-style-type: none"> • Since the entire material from the quarry face will be directly dispatched to the consumers, there will not be any stockpiles. There are no waste dumps in this quarry. As such there will not be any wash out due to stock pile or waste dumps. • Towards surface runoff management, garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps. 	4-8
21	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	<ul style="list-style-type: none"> • There are no perineal water courses in both the lease areas. In the lease area of Roughstone and Gravel Quarry of APK Minerals (over an area of 2.2312Ha). • There is an Eri located at a distance of 190m on the southern side of the lease area. The eri remains dry for most of the year. No major impact is envisaged on the nearby water bodies due to project operations. 	4-17
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	There is no major perennial waterbody in close proximity of the lease area.	3-3
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	The post mining land use has been provided in Table No. 4.18, Chapter-IV	4-22
24	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-34
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	Soil samples were collected in 4 locations in the core and buffer zone to analyse the physiochemical characteristics of the soil in the area. The soil quality data is provided in Table No.3.18, Chapter-III.	3-27
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and	<ul style="list-style-type: none"> • There are no perineal water courses in both the lease areas. In the lease area of Roughstone and Gravel Quarry of APK 	4-17



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	farmer sites.	Minerals (over an area of 2.2312Ha). • There is an Eri located at a distance of 190m on the southern side of the lease area. The eri remains dry for most of the year. No major impact is envisaged on the nearby water bodies due to project operations.	
27	The EIA shall include the impact of mining activity on the following: a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams.	The details of the same is provided in Table 4.21, Chapter-IV.	4-24
Climate Change			
29	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Certified vehicles with low carbon emissions will only be used. These equipments will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned.	4-3
30	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.	Replied in point no.29.	--
31.	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.	Replied in point no.29.	--
EMP			
33	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs.	Detailed environmental management plan is provided under Chapter-X.	10-1
34	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	Detailed environmental management plan is provided under Chapter-X.	10-1



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Others			
37	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites. Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel. river, lake pond, tank etc.	VAO Letter has been provided as Annexure-3B.	A-20
38	As per the MoEF& cc office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management plan.	Will be provided in the Final EIA/EMP Report after completion of public hearing.	--
39	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	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.	4-32
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.	This is a proposed quarry. As such no mining activities have been carried out in this lease area.	2-28
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given	Precise area communication letter was obtained from the Assistant Director, Geology & Mining vide Rc.No.346/Q3/2022 dated 03.02.2024. (Annexure-1B)	A-7
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.	The production capacity, quantity of waste, its management and mining technology in mine plan and EIA, etc., are compatible with one another.	--
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).	<ul style="list-style-type: none"> Project coordinates superimposed in satellite imagery and given as Figure No - 2.6 in Chapter – II. The geology and geomorphology map is provided in Figure No.3.18, 3.19, Chapter-III. The Lithology map and Soil map are 	2-7



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

		<p>provided under Figure No. 3.20, 3.21, Chapter-III.</p> <ul style="list-style-type: none"> •The 10km Radius Index plan showing buffer zone is given in Figure No.3.1 in Chapter – III. 	3-2
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.	Replied in Standard ToR point no.4	--
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.	Not Applicable	--
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.	<ul style="list-style-type: none"> •The proponent will frame a well-planned environmental policy. Its details are provided under Section 10.2.1, Chapter-X. •The Mines Manager 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. The organizational chart for the same has been provided in Figure No.10.1, Chapter-X. 	10-1
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	<ul style="list-style-type: none"> • Various risks likely to arise due to mining activities are detailed under section 7.4, Chapter-VII. • This being an opencast mine, subsidence is not applicable. The impact due to ground vibrations due to blasting is given in para 4.3.2, Chapter-IV. 	7-1 4-21
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.	The study area chosen for collecting existing environmental status covers 10 km radial distance from the project periphery (Figure No - 3.1). Data given in the report is for the life of the mine.	3-2



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

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.	<ul style="list-style-type: none"> •The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.4, Chapter-III. •The land use pattern at present and at the end of the quarrying period has been provided under section 4.5, Chapter-IV. • The land use during the post mining stage is provided in Table 4.18, Chapter-IV. 	<p align="center">3-30</p> <p align="center">4-23</p>
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.	There are no OB dumps outside the lease area.	--
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.	There is no forest land in the lease area.	--
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.	There is no forest land in the lease area.	--
14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable	--
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	There are no reserved or protected forests within the buffer zone.	3-2
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,	The mining lease area and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks, biospheres, sanctuaries, etc.	4-19



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	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.	Replied in Standard ToR point No.16	--
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 study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys. The details are furnished in para 3.5, Chapter III.	3-34
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.	Not Applicable	--
20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone	Not Applicable	--



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	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 shilling of village(s) including their R&R and socio-economic aspects should be discussed in the Report.	The mining activities will be carried out within the mine lease area only. The entire mine lease area is a patta land in proponent's possession. There is no population within the ML area. Hence, the question of R& R does not arise.	7-4
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.	<ul style="list-style-type: none"> • The baseline data on micro- meteorology, ambient air quality, Water quality, noise level, soil and flora & fauna are collected during Summer Season (March – May 2024) and detailed in para 3.3 to 3.5 of Chapter-III. • Monitoring stations were selected taking into account, wind direction and location of sensitive receptors. • Free silica composition in PM10 sample has been done and the values are found to be Below Detectable Limit (DL 0.05mg/m3) which is well within the prescribed limit of 5mg/m3. 	3-12 3-36
23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	<ul style="list-style-type: none"> • Air quality modeling details are furnished in para 4.2.2 and its continuous sub paras in Chapter-IV of EIA report. • The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model developed by Lakes Environmental Software which is based on steady state Gaussian plume dispersion. • The model simulations are done for the air pollutant arising from the mining operations, namely, PM10, PM2.5. Ground Level Concentration (GLC) have been computed 	4-3



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		<p>using hourly meteorological data.</p> <ul style="list-style-type: none"> •The Isopleths of PM10, PM2.5 concentrations for with control measures scenario have also been drawn and these are given in Figure No.4.1 and 4.2. 	
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.	Water requirement for this project is 8 KLD. The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used. The water balance diagram for the same is shown in Figure No 4.3.	4-12
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Not Applicable	--
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.	<ul style="list-style-type: none"> • The rain water falling in the quarries will be harvested in the sump at the lowest level of the respective quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc. • Towards surface runoff management, garland drain will be constructed which will be connected to settling ponds with silt traps. 	4-12
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.	<ul style="list-style-type: none"> • There is an Eri located at a distance of 190m on the southern side of the lease area. The eri and the drainage channel remains dry for most of the year. No major impact is envisaged on the nearby water bodies due to project operations. • The ultimate pit depth of mining is 32m. The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation. 	4-17
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	<ul style="list-style-type: none"> •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. Since the mining area consists of hard compact rock, no major water seepage within the 	3-34



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	Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	mine is expected from the periphery. •The ultimate pit depth of mining is 32m. The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation. •Details of hydro geological study are given in Para 3.6.2 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.	Replied above in Standard ToR point No.27	--
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.	<ul style="list-style-type: none"> •The area applied for mining lease is a gentle plain terrain. •The ultimate pit depth of mining is 35 m. The ground water table in this area is below this level. 	4-17
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. Phasc-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.	In the lease area, safety barrier 7.5m around the periphery of the lease area. Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area. About 1200 trees will be planted in and around the lease area. Details of the same is provided under TableNo.4.22, Chapter-IV.	4-27
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	From this proposed quarry the entire output will be transported to the crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. Details of the traffic study is provided under section 4.9, Chapter-IV.	4-30



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Guidelines.			
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.	2-38
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.	<ul style="list-style-type: none"> • In the post mining stage, entire 1.6093 Ha of mined out area will be left as water body, 0.6219 Ha will be covered with greenbelt and plantation. • 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 in the area. 	2-38
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed	Details of occupational health and safety aspects are given under the subsections of Para 4.8, Chapter-IV.	4-29
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	<ul style="list-style-type: none"> • Details of the socio economic survey conducted in the buffer zone has been provided in Para 3.2.4, Chapter-III. • Public health facilities will be further aimed to be developed through CER activities wherein periodic health checkups, medical camps for the locals will be conducted. 	3-7
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.	<ul style="list-style-type: none"> • Towards the socio-economic development of the surrounding area, the proponent has earmarked an amount of Rs. 5 Lakhs. • The activities identified under CER will be implemented in a phased manner in the nearby Government schools. In consultation with the locals based on the need & priority it will be implemented. Its details are provided in Section 4.7, Chapter-IV 	4-28
38	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use,	Detailed Environmental Management plan and its implementation, etc., are furnished in Chapter X.	10-1



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	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.	This draft EIA/EMP report will be submitted for Public Hearing as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.	7-1
40	Details of litigation pending against the project, if any, with direction /order paced by any Court of Law against the Project should be given.	There is no litigation pending against the project.	--
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	The details of environmental management cost has been provided in Table 10.2, Chapter-X.	10-10
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	The disaster management plan has been provided under section 7.3.1, Chapter-VII.	7-3
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.	<ul style="list-style-type: none"> •The proposed Rough Stone Quarry will benefit this region in the fields of employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, health, infrastructural etc. •Direct employment to 12 people and indirect employment to scores of people. •By means of carrying out the socio economic development activities, local community development is expected. Towards the same, the proponent has planned to allocate Rs. 5 Lakhs for various social welfare activities, the villages near the lease area will be benefited. 	8-1



CHAPTER - I

INTRODUCTION

CHAPTER 1

INTRODUCTION

1.1 PURPOSE OF THE REPORT:

APK Minerals Private Limited propose to operate **two Rough Stone and Gravel Quarries** in the same Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu and has initiated action towards obtaining environmental clearance. Its details are as follows:

Table 1.1: Basic Details of the Project

Project Name	Survey No.	Area
Roughstone and Gravel Quarry of APK Minerals Private Limited (Over an area of 2.58Ha)	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	2.58 Ha
Roughstone and Gravel Quarry of APK Minerals Private Limited (Over an area of 2.2312 Ha)	207/4B, 5B, 6B, 7B, 8B, 9, 208/1A, 2A, 2B1, 2B2, 5A, 5C, 5D, 5E, 5F, 5G, 212/1L, 1M, 1N	2.2312 Ha

Although the individual lease area of each project is less than 5 Ha, the other existing and 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 MoEFCC Notifications and this necessitates preparation of EIA/EMP report and public hearing.

Considering that both the leases belong to the same proponent, in homogeneous mineral area 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.

1.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT:

1.2.1 IDENTIFICATION OF THE PROJECT:

The basic details regarding the location of the project is mentioned above in Table 1.1. The details of the production quantity as per the approved Terms of Reference has been provided



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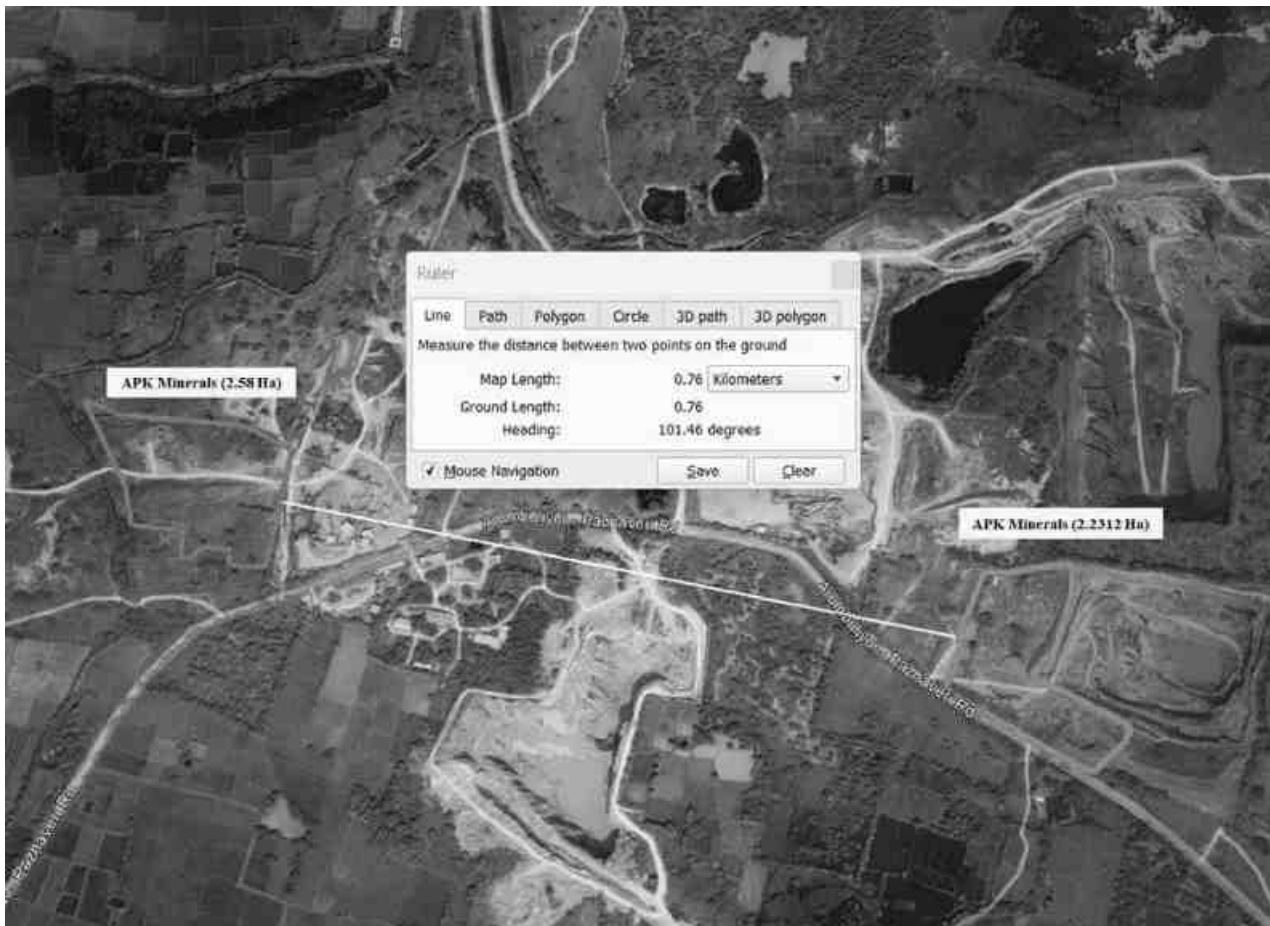
below in Table 1.2. The excavated Roughstone and Gravel will be transported to the buyers for production of crusher aggregates and M Sand. The site vicinity map of the above mentioned two projects has been provided below in Figure 1.1.

Table 1.2: Project Identification

Project Name	Roughstone and Gravel Quarry of APK Minerals Private Limited (Over an area of 2.58Ha)	Roughstone and Gravel Quarry of APK Minerals Private Limited (Over an area of 2.2312 Ha)
Total Production	Roughstone – 3,90,600m ³ Gravel – 41,250 m ³ For a period of 10 years	Roughstone – 1,83,780m ³ Gravel – 31,776 m ³ For a period of 10 years
Peak Production	65,625 m ³ of Rough stone & 21250m ³ of Gravel	68,890 m ³ of Rough Stone & 15,312 m ³ of Gravel
Ultimate Depth	42m	32m

Source: Approved Mining Plan

Figure 1.1: Proposed Roughstone and Gravel Quarries of APK Minerals Private Limited



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Source: Google Earth

Table 1.3: Statutory Clearances – APK Minerals Private Limited (2.58 Ha)

Name	Issuing Authority	Status	Letter number	Date	Reference
Precise Area Communication	Assistant Director, Geology & Mining	Received	Lr.No.347/Q3/2022	17.04.2024	Annexure-1A
Mining Plan Approval	Assistant Director, Geology & Mining	Approved	Lr.No, 347/Q3/2022	24.04.2024	Annexure-2A
VAO Letter	VAO	Obtained	--	--	Annexure-3A
Details of quarry within 500m radius	Assistant Director, Geology & Mining	Obtained	Lr.No, 347/Q3/2022	24.04.2024	Annexure-4A

Table 1.4: Statutory Clearances – APK Minerals Private Limited (2.2312 Ha)

Name	Issuing Authority	Status	Letter number	Date	Reference
Precise Area Communication	Assistant Director, Geology & Mining	Received	Rc.No.346/Q3/2022	03.02.2024	Annexure-1B
Mining Plan Approval	Assistant Director, Geology & Mining	Approved	Rc.No.346/Q3/2022	04.03.2024	Annexure-2B
VAO Letter	VAO	Obtained	--	--	Annexure-3B
Details of quarry within 500m radius	Deputy Director, Geology & Mining	Obtained	Rc.No.346/Q3/2022	04.03.2024	Annexure-4B

1.2.2 IDENTIFICATION OF THE PROJECT PROPONENT:

Table 1.5: Identification of Project Proponent

Applicant Name	APK Minerals Private Limited
Address	1A, Manikandan Nagar, Hasthinapuram Chennai – 600 064
Contact Number	9789901214
Email-ID	apkmineralspvtltd@gmail.com

The applicant company is having good financial back up and industrial experience for successful implementation of this project.

1.3 BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION & PROJECT IMPORTANCE

Table 1.6: Brief Description of the nature of the projects

Sector	1(a), Non-Coal Mining
Type	Greenfield Project
Category	B1



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Mineral to be mined	Roughstone, Gravel
Major/Minor Mineral	Minor
Mining Method	Opencast semi mechanized method of mining with jackhammer drilling, blasting, excavator, transportation by tippers.

Table 1.7: Location of the project

Particulars	Roughstone and Gravel Quarry (Over an area of 2.58Ha)	Roughstone and Gravel Quarry (Over an area of 2.2312 Ha)
Latitude	12°44'46.0455"N to 12°44' 52.2307"N	12°44'46.1684"N to 12°44' 38.8482"N
Longitude	79°52' 4.7121"E to 79°52' 12.5749"E	79°52' 42.9836"E to 79°52' 36.3755"E
Toposheet Number	57 P/13	57 P/13

Location details are elaborated in Para 2.3, Chapter-II.

1.3.1 IMPORTANCE TO THE COUNTRY AND REGION:

Rough stone and Gravel from these quarries will meet the domestic demand. The production and method of mining is planned considering the geological factors, availability of proven technology, demand for the material etc. Safety barriers as per State Government order is left in the planning stage itself. Systematic and scientific mining will be carried out. This project will provide employment opportunities to many people. The proponent will carry out CER activities which will help the surrounding villages to derive socio economic benefits. The activities will be customized based on local needs and prioritized. Hence, livelihood development and employment will arise due to this project.

1.4 SCOPE OF THE STUDY:

Particulars	Roughstone and Gravel Quarry (Over an area of 2.58Ha)	Roughstone and Gravel Quarry (Over an area of 2.2312 Ha)
Proposal no	SIA/TN/MIN/472412/2024, Dated:10.05.2024	SIA/TN/MIN/469805/2024, dated: 22.04.2024
File no	10913	10826
Terms of Reference	TO24B0108TN5750113N dated 29.07.2024	TO24B0108TN5919768N dated 10.08.2024
Baseline Data Collection	Carried out by Creative Engineers & Consultants , Chennai for Summer Season (March – May 2024)	Carried out by Creative Engineers & Consultants, Chennai for Summer Season (March – May 2024)



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Based on the terms of reference, data collection, the Environmental Impact Assessment was carried out for the project area (core zone and the buffer zone (10km radius from the core zone) and the following studies were covered:

- Collection of primary and secondary data relevant to the project.
- One-Season baseline monitoring for environmental parameters such as air, water, noise, soil, flora & fauna, etc. Analysis of parameters in in-house laboratory.
- Documentation of EIA/EMP report with inclusion of relevant studies conducted by other bodies into the EIA/EMP report.
- Identification of significant environmental parameters that are prone to get affected due to pollution. Namely, Air, Water, Noise, Soil, Biological and Land Environment.
- Evaluation and determination of suitable mitigation measures to reduce and control the said pollution.
- Prediction of post project concentration (baseline + incremental) with respect to air environment for core zone and buffer zone.
- Formulation of an Environmental Management plan including administrative aspects for proposed implementation of mitigative measures in time.

This draft EIA/EMP report will be submitted for public consultation, as per rules and procedures in this respect, as per the EIA notification 2006. The opinions, concerns and objections, if any, of the surrounding public and other stake holders connected, will be taken into consideration and compliance report thereon will be submitted to SEIAA, Tamil Nadu in the final EIA/EMP report.

* * * * *



CHAPTER - II

PROJECT DESCRIPTION

CHAPTER 2

PROJECT DESCRIPTION

2.1 TYPE OF PROJECT:

This proposal involves 2 separate leases for quarrying of Roughstone and Gravel by APK Minerals Private Limited using mechanized opencast method for the lease period of 10 years.

2.2 NEED & JUSTIFICATION FOR THE PROJECT:

There is a huge demand for construction material and the entire material produced from this quarry will be used in the local construction / infrastructure sector. Considering the following favorable factors it is practically possible to achieve the proposal within the planned period and this proposal is fully justified.

- Availability of good quality proved reserves
- Techno economic viability of the scheme
- Better approachability to the project, availability of logistic facility in proximity to the site
- Economic and Socio Economic Benefits to the region

2.3 LOCATION:

A brief description of the mining area, along with the location, coordinates, accessibility, etc. has been details below in Table No.2.1.

Table 2.1: Mine site description

Project Name	Roughstone and Gravel Quarry (Over an area of 2.58Ha)	Roughstone and Gravel Quarry (Over an area of 2.2312 Ha)
Location	Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District	Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District
Coordinates	Latitude: 12°44'46.0455"N" to 12°44' 52.2307"N Longitude: 79°52' 4.7121"E to 79°52' 12.5749"E	Latitude - 12°44'46.1684"N to 12°44' 38.8482"N Longitude - 79°52' 42.9836"E to 79°52' 36.3755"E
Nearest Village	Sirumailur – 790m (S)	Pazhaveri – 358m (SE)
Nearest Town	Walajabad – 6.0Km (NW)	Walajabad – 6.8Km (NW)
Nearest Highway	NH-132B – 2.5Km (N)	NH-132B – 3.0Km (N)
Nearest Railway Station	Pazhayaseevaram – 3.3Km (N)	Pazhayaseevaram – 3.4Km (N)
Nearest Airport	Chennai Airport – 41Km (NW)	Chennai Airport – 41Km (NW)

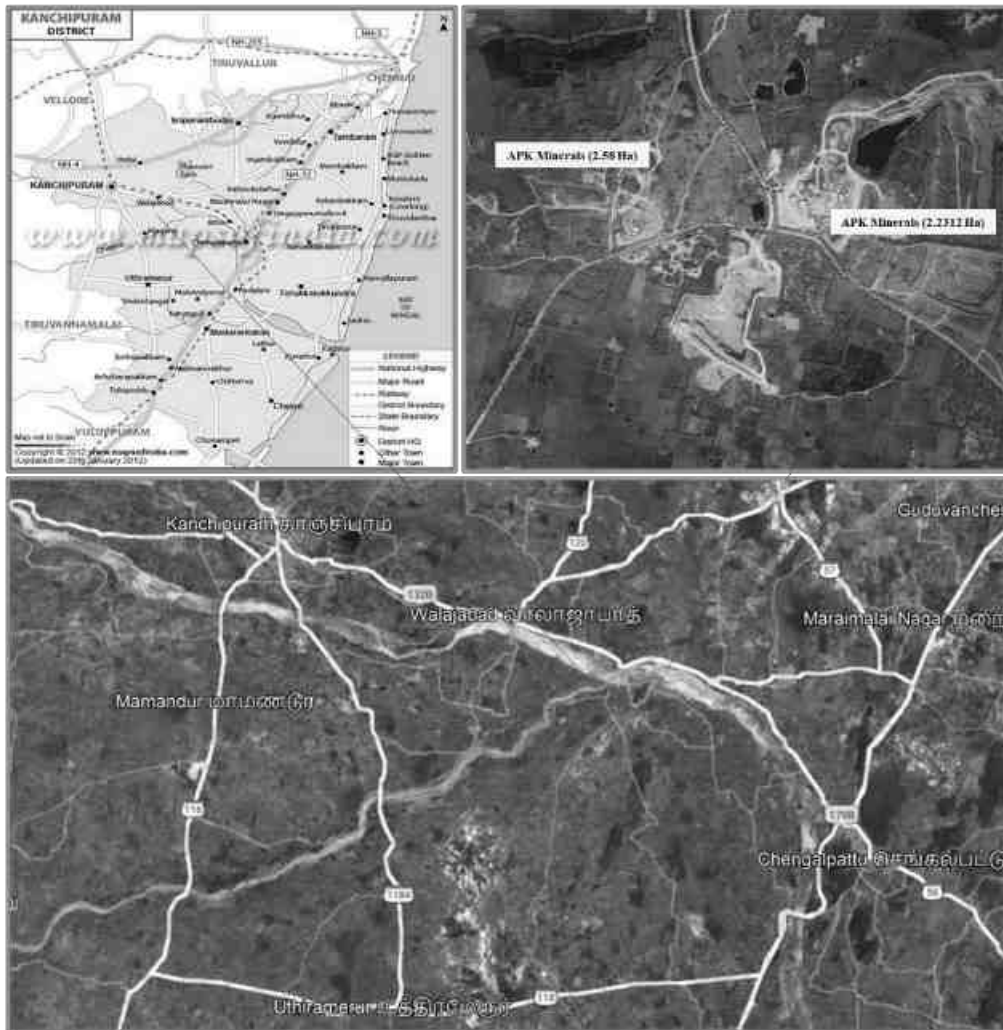


COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Accessibility	The lease area can be approached from Arumbuliur – Pazhaveri road which connects to NH-132B at a distance of 2.5Km on the northern side of the lease area.	The lease area can be approached from Arumbuliur – Pazhaveri road which connects to NH-132B at a distance of 3.0Km 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.	The area applied for quarry lease exhibits almost plain topography covered by Gravel formation and has an altitude of 68 m MSL.

Location map is provided in **Figure No.2.1**. The approachability map is provided in **Figure No.2.2**. Corner co-ordinates of the lease area and satellite imagery are shown in **Figure No. 2.3 & 2.4** respectively. Village map for 500m radius from the lease is shown in **Figure No. 2.5**.

Figure 2.1: Location Map



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 2.2: Approachability Map



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 2.3: Lease Plan – Roughstone and Gravel Quarry (Over an area of 2.58Ha)



Based on the conditions of the precise area letter, the following safety distances are left:

Table 2.2: Safety Conditions - Roughstone and Gravel Quarry (Over an area of 2.58Ha)

Feature	Safety Distance
Nearby patta lands	7.5m
Road in Government Land (S.F.No.162/1)	10m (W)
Police Shooting Range (S.F.No.268/1B)	10m (N)
Rainwater Drain in Government Land (S.F.No.162/1)	10m (W)
HT Line (S.F.No.263/1F)	50m (S)



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 2.4: Lease Plan – Roughstone and Gravel Quarry (Over an area of 2.2312 Ha)

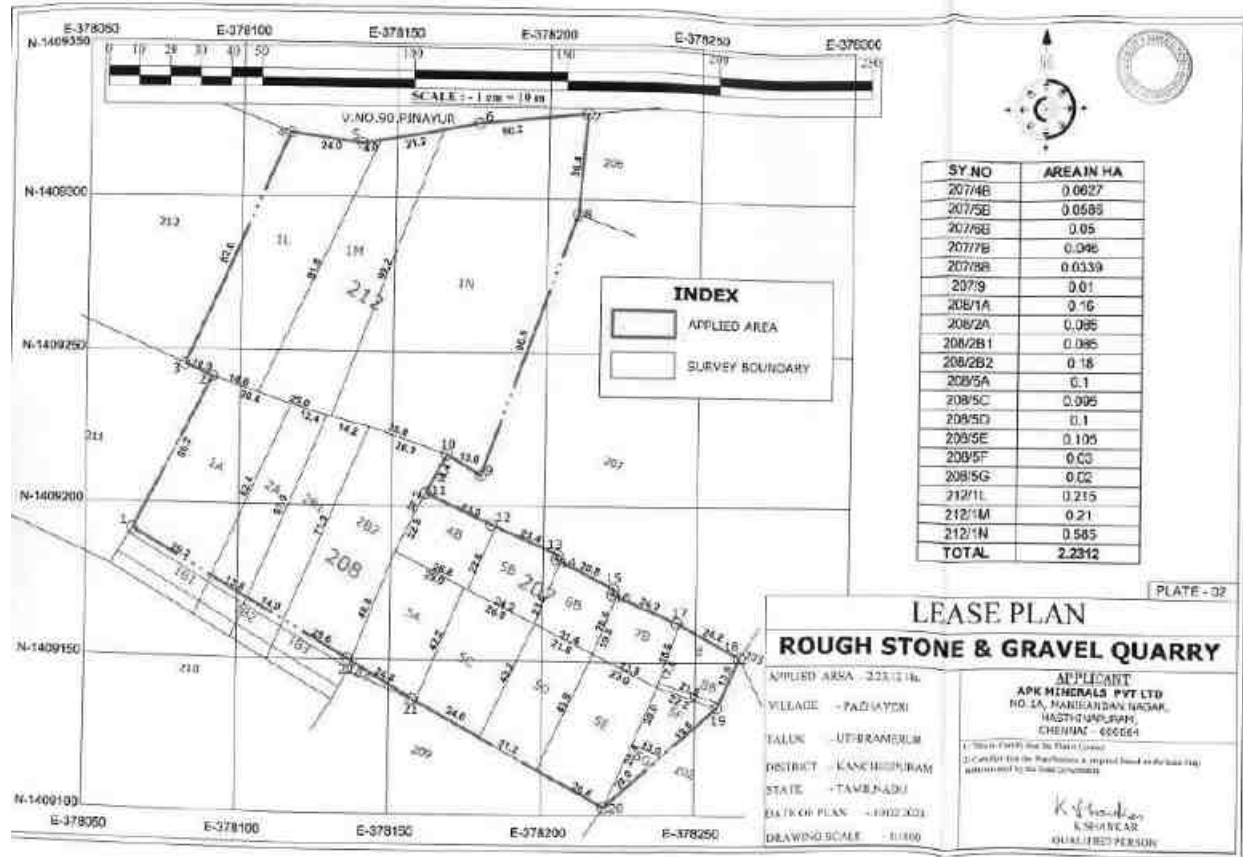


Table 2.3: Safety Conditions - Roughstone and Gravel Quarry (Over an area of 2.2312Ha)

Feature	Safety Distance
Nearby patta lands	7.5m
Footpath (S.F.No.208/4, 211/2, 209/1)	10m
Poromboke Land	10m
Roughstone Quarry (S.F.No.203,204)	7.5m



**Figure 2.5: Satellite Imagery Showing Corner Co-ordinates –
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**

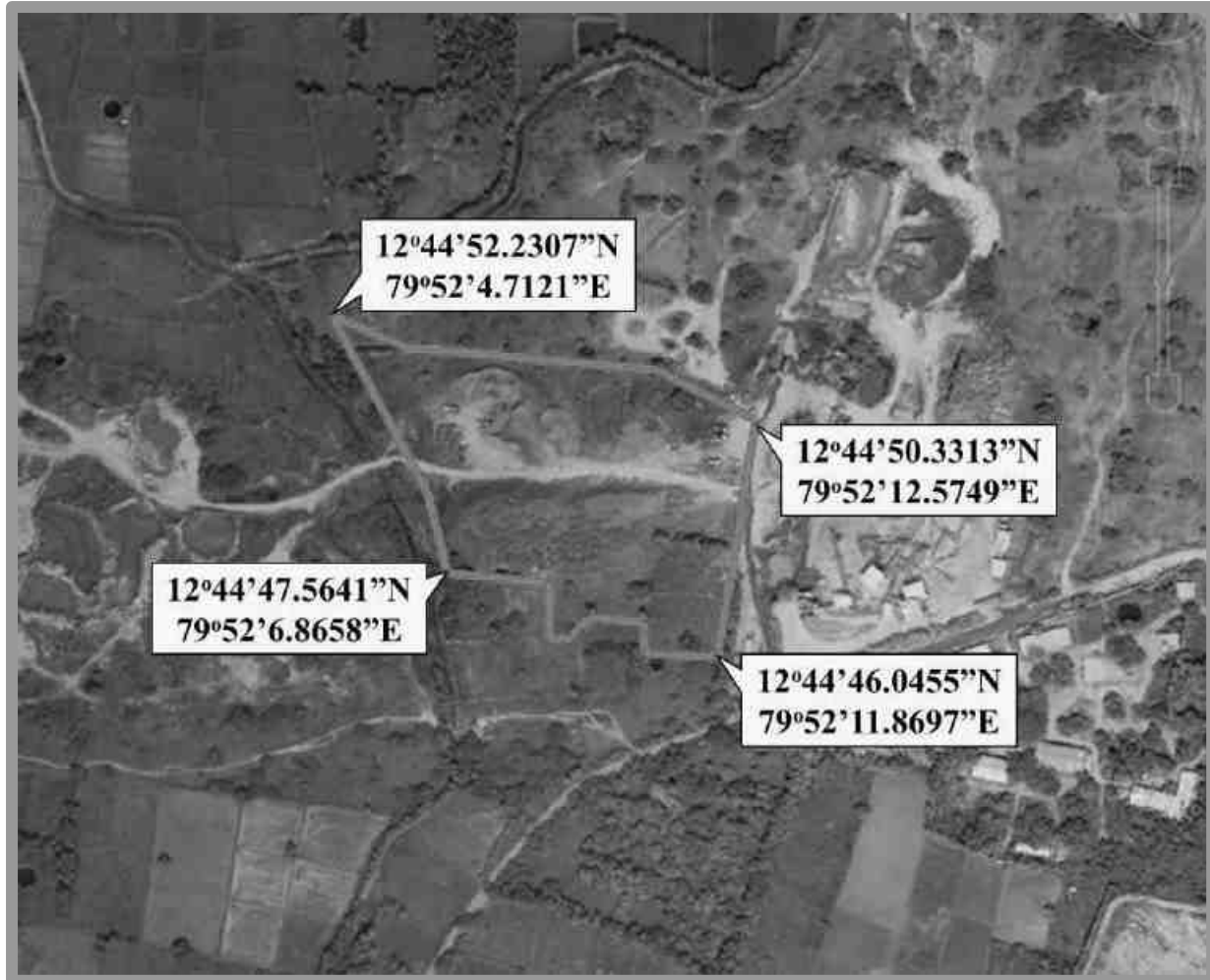
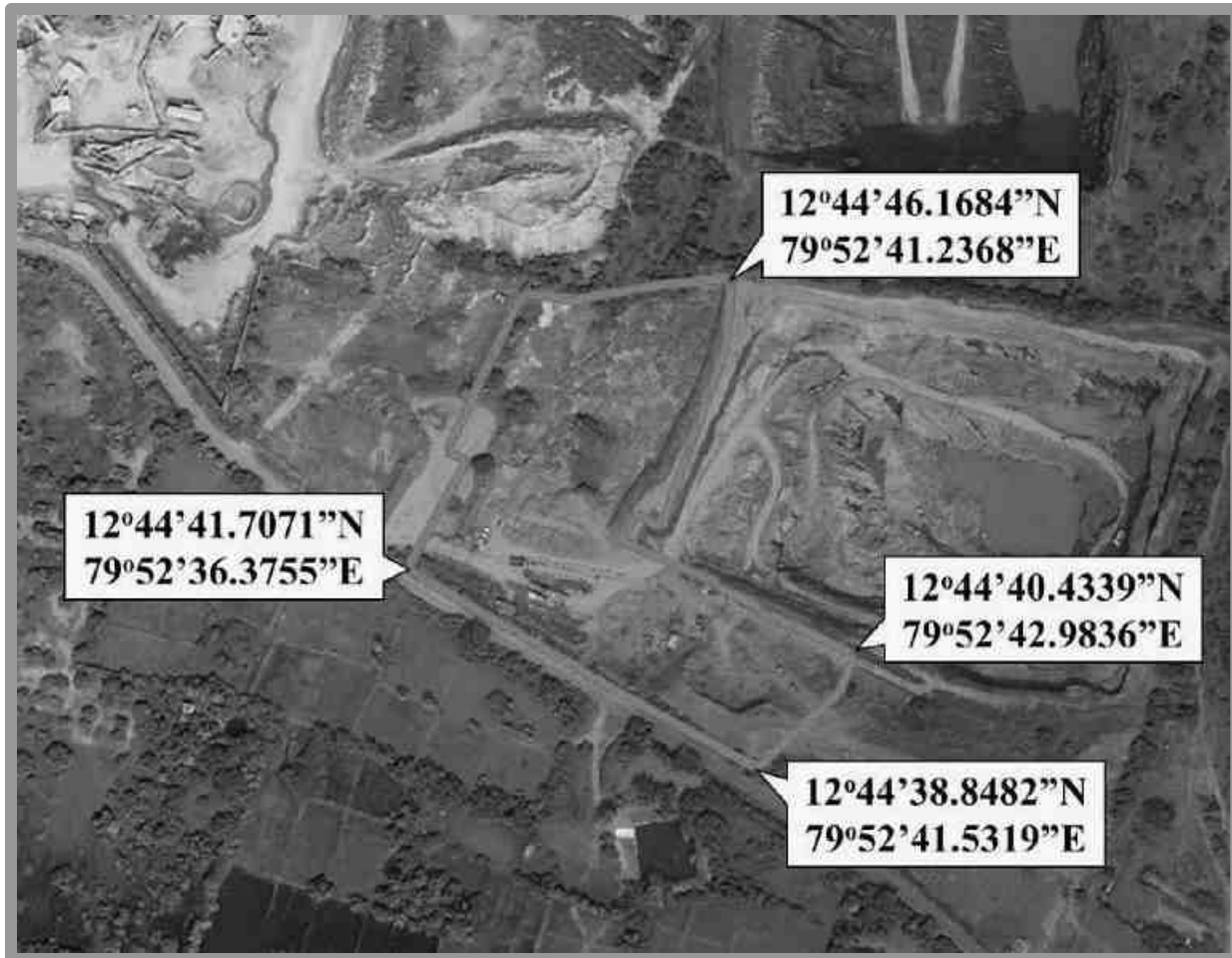


Figure 2.6: Satellite Imagery Showing Corner Co-ordinates – Roughstone and Gravel Quarry (Over an area of 2.2312 Ha)



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Photo 2.1: Site Photographs - Roughstone and Gravel Quarry (Over an area of 2.58Ha)



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Photo 2.2: Site Photographs - Roughstone and Gravel Quarry (Over an area of 2.2312 Ha)

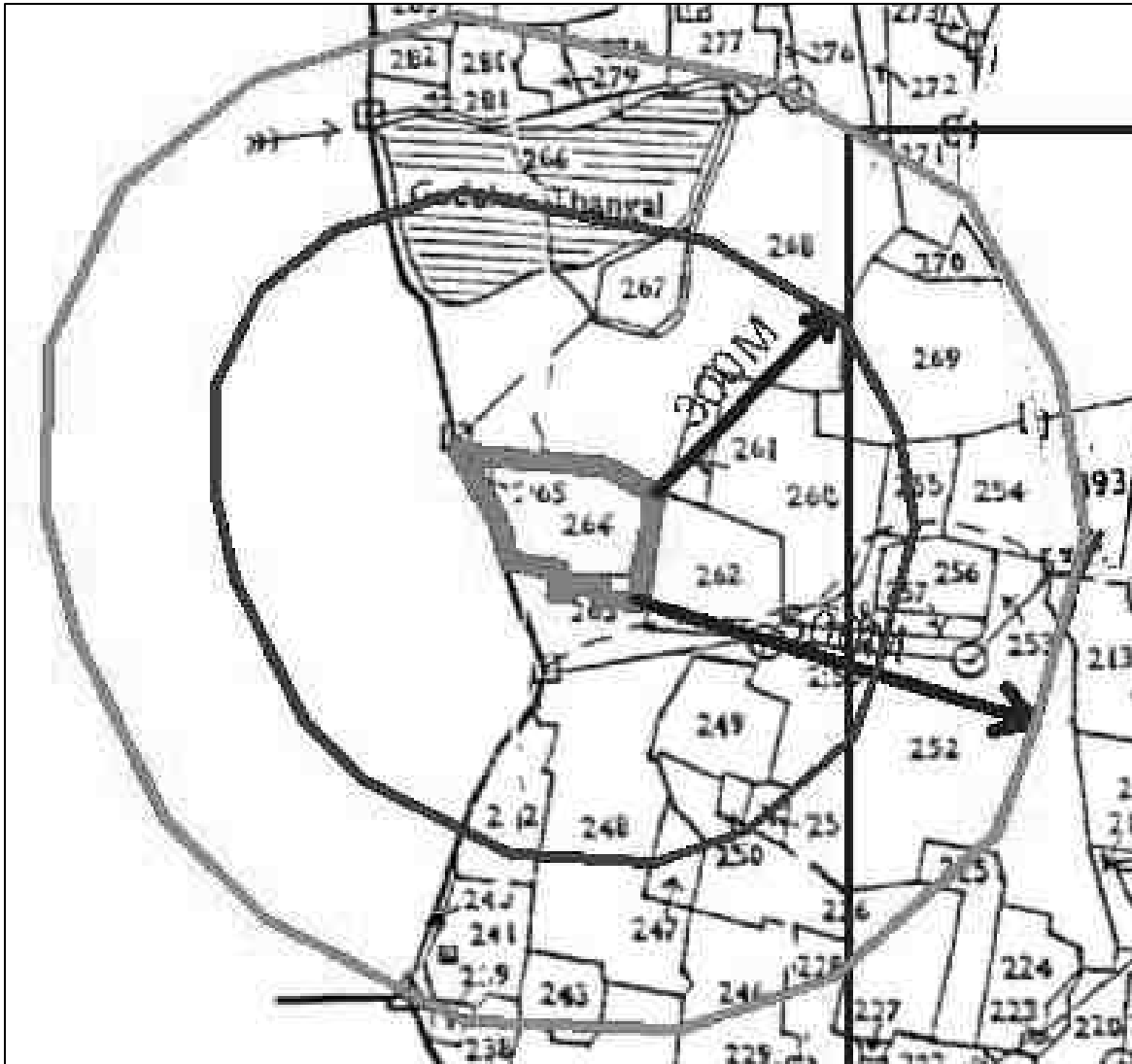


COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU



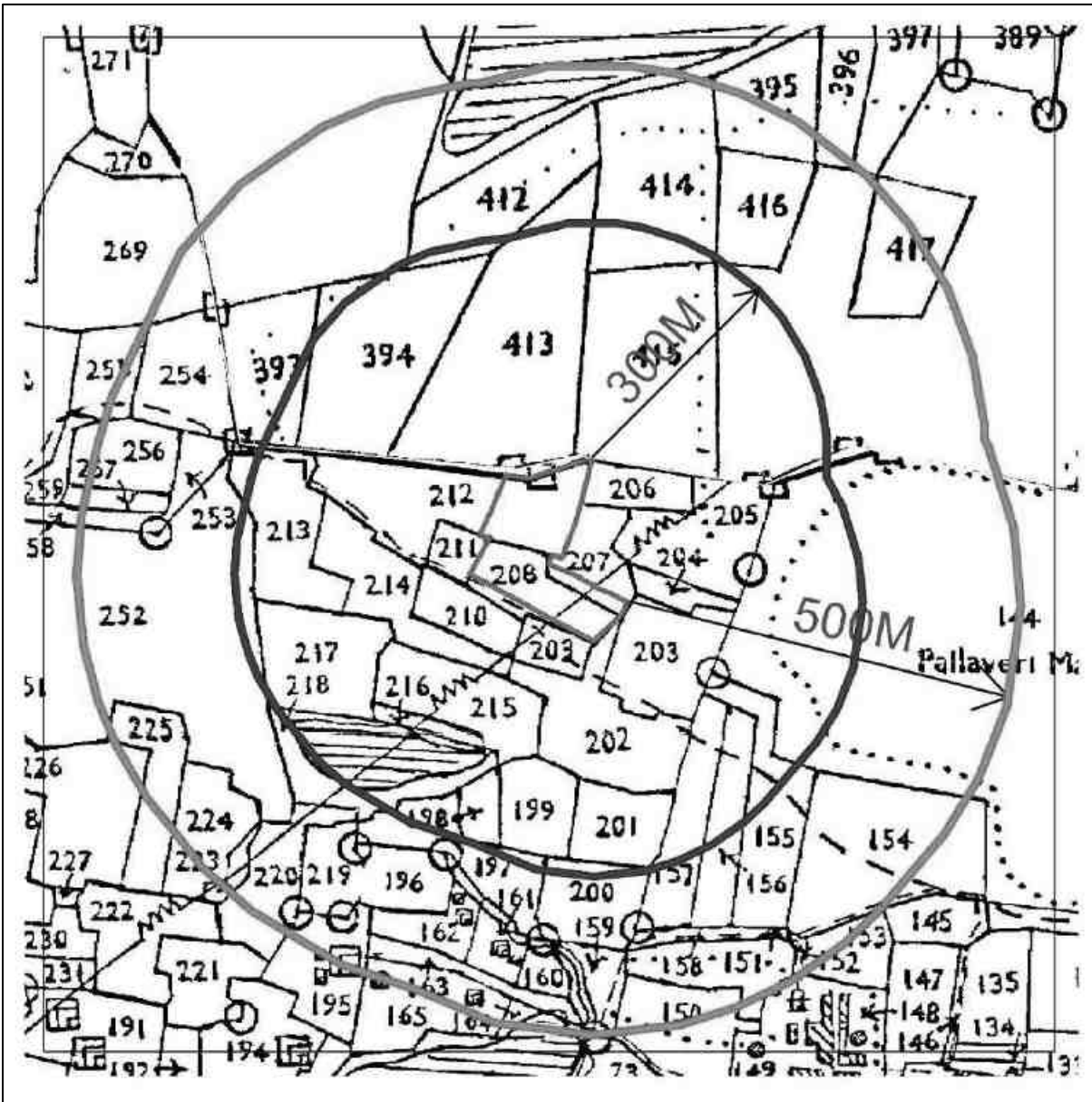
COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 2.7: Village Map - Roughstone and Gravel Quarry (Over an area of 2.58Ha)



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 2.8: Village Map – Roughstone and Gravel Quarry (Over an area of 2.2312 Ha)



**Figure 2.9: Details of features within 500m radius -
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**

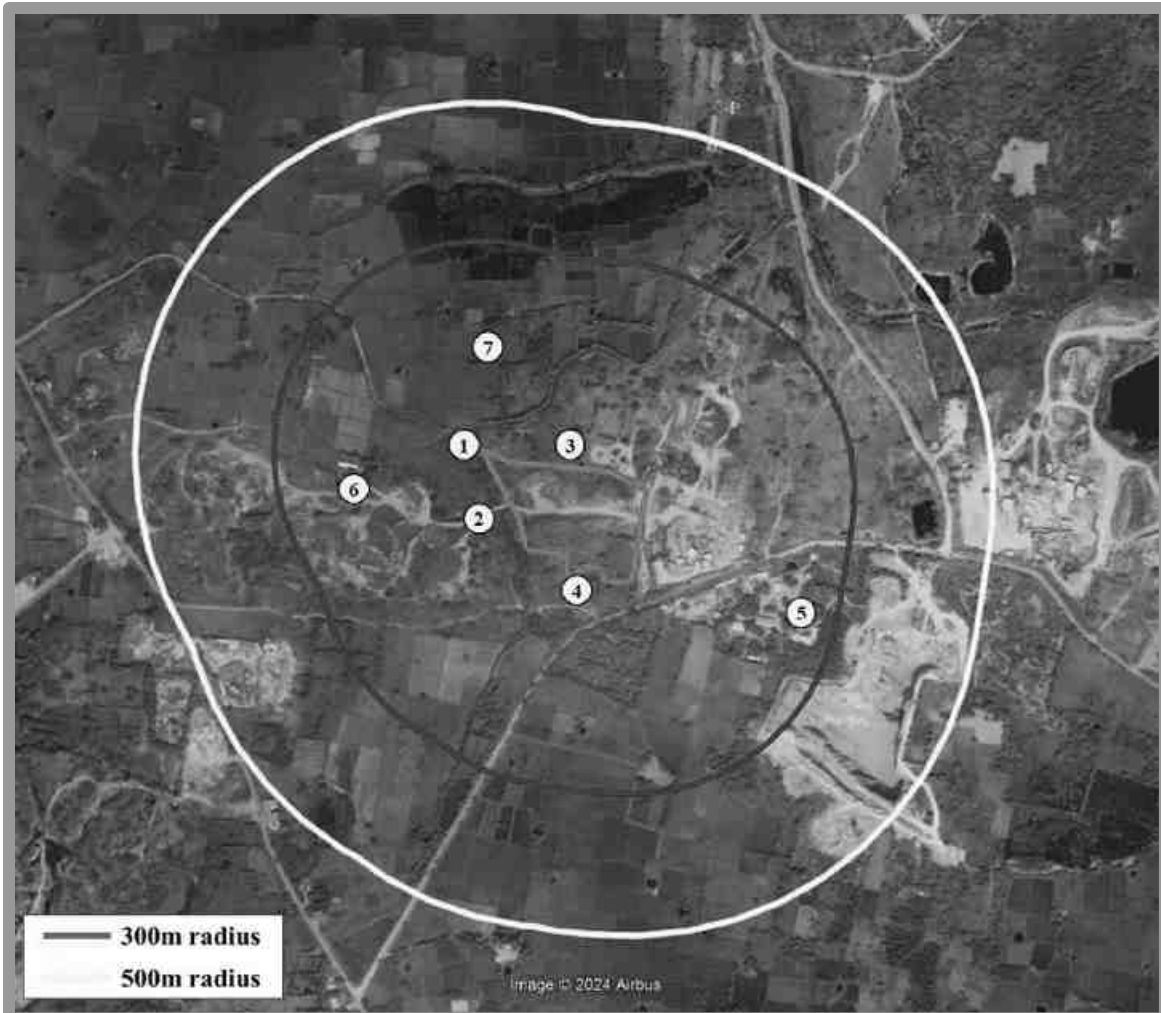







Table 2.4: Features within 500m radius -Roughstone and Gravel Quarry (Over an area of 2.58Ha)



S.No	Features	Distance	Photographs
1	Rainwater Drain in Government Land (S.F.No.162/1)	10m (W)	

COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

2	Rainwater Drain in Government Land (S.F.No.162/1)	10m (W)	
3	Government Land (S.F.No.268/1B)	10m (N)	
4	HT Line (S.F.No.263/1F)	50m (S)	
5	Own Shed	155m (SE)	

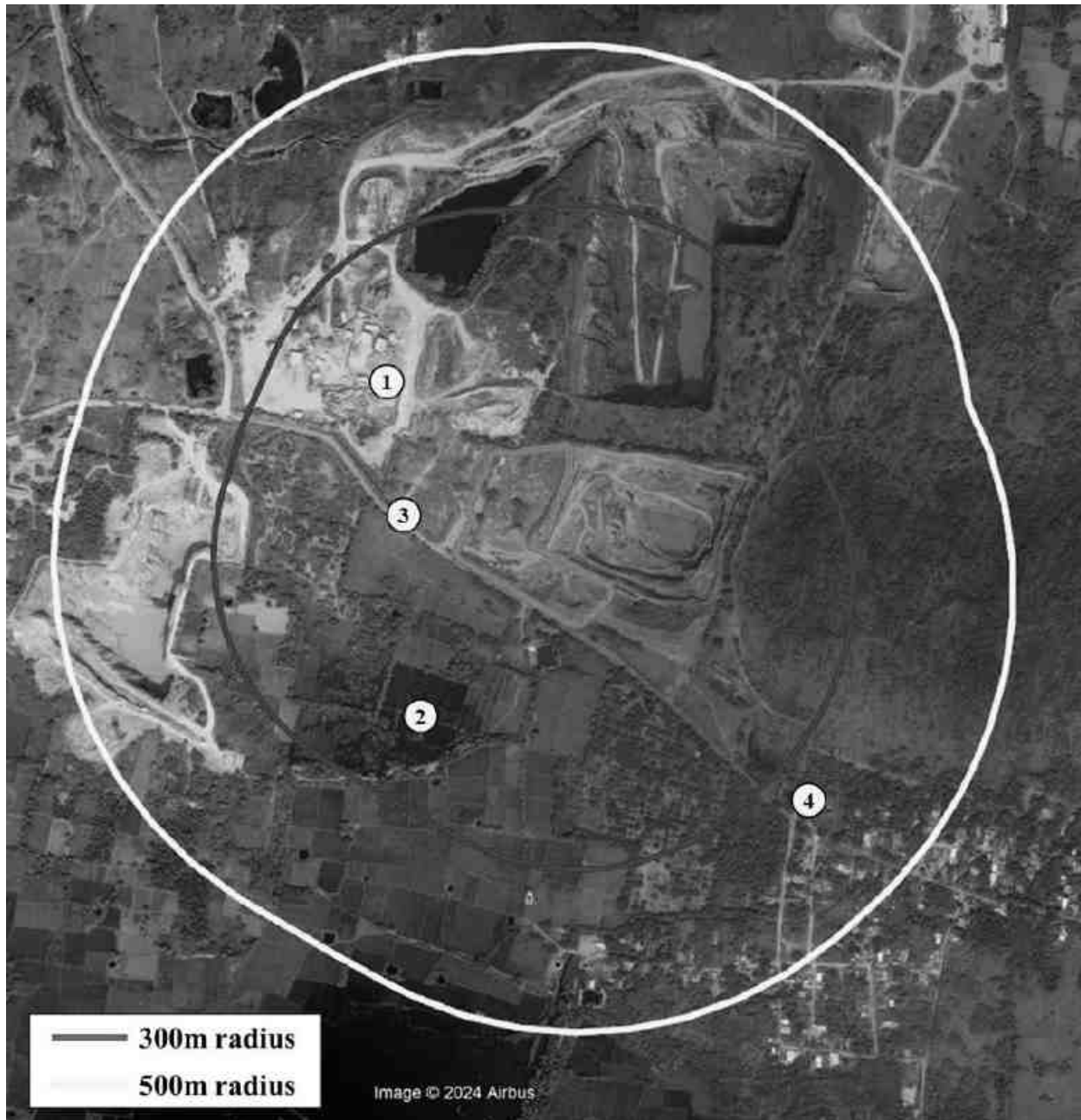


COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

6	Own Shed	185m (W)	
7	Thangal	150m (N)	






**Figure 2.10: Details of features within 500m radius -
Roughstone and Gravel Quarry (Over an area of 2.2312Ha)**




COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

**Table 2.5: Features within 500m radius -
Roughstone and Gravel Quarry (Over an area of 2.2312Ha)**

S.No	Features	Distance	Photographs
1	Crusher	170m (W)	
2	Eri	190m (S)	
3	Road	10m (S)	



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

4	Village	350m (SE)	
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2.4 LAND CLASSIFICATION:

The lease area Roughstone and Gravel Quarry over an area of 2.58Ha is a patta land in the name of the applicant vide patta no.5666 (Annexure-10). The details of the same has been provided below:

**Table 2.6: Survey Number wise Area Breakup –
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**

Survey No	Area (Ha)
263/1A	0.00.50
263/1B	0.01.00
263/1C	0.03.00
263/1M1	0.05.00
263/1M2	0.06.00
263/1N 1	0.01.50
263/1N2	0.01.50
263/1O	0.03.00
263/1P1	0.02.00
263/1P2	0.03.00
263/1Q	0.02.50
263/1R	0.02.50
263/1S	0.03.00
263/1T	0.09.50
264/1	0.03.50
264/1O	0.04.00
264/11A	0.04.00
264/11B	0.03.50
264/12A	0.03.50
264/12B	0.14.00
264/12C	0.10.50



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

264/13	0.10.50
264/14	0.19.50
264/15	0.07.50
264/16A	0.03.00
264/16B	0.03.50
264/17	0.20.00
264/18A	0.04.50
264/18B	0.04.00
264/19	0.07.50
264/2	0.03.50
264/20A	0.04.00
264/20B	0.03.50
264/21	0.03.00
264/22	0.03.00
264/3	0.03.50
264/4	0.07.50
264/5	0.11.50
264/6	0.11.50
264/7	0.06.50
264/8A	0.07.00
264/8B	0.07.00
264/9	0.04.00
265/1	0.08.50
265/2	0.04.00
265/3	0.01.50
265/4	0.01.00
265/5	0.01.00
TOTAL	2.58.0

The lease area of 2.2312 Ha is a patta land in the name of the applicant company vide Patta No.5665 and the details of the same is provided below:

**Table 2.7: Survey Number wise Area Breakup –
Roughstone and Gravel Quarry (Over an area of 2.2312Ha)**

Survey No	Area (Ha)
207/413	0.0627
207/56	0.0586
207/6B	0.05
207/7B	0.046
207/86	0.0339
207/9	0.01
208/1A	0.16
208/2A	0.085
208/2B1	0.085



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

208/ 2B2	0.18
208/5A	0.1
208/5C	0.095
208/5D	0.1
208/5E	0.105
208/5F	0.03
208/5G	0.02
212/1L	0.215
212/1M	0.21
212/1N	0.585
TOTAL	2.2312

2.5 GEOLOGY:

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. The general geological sequences of the rocks in this area are given below:

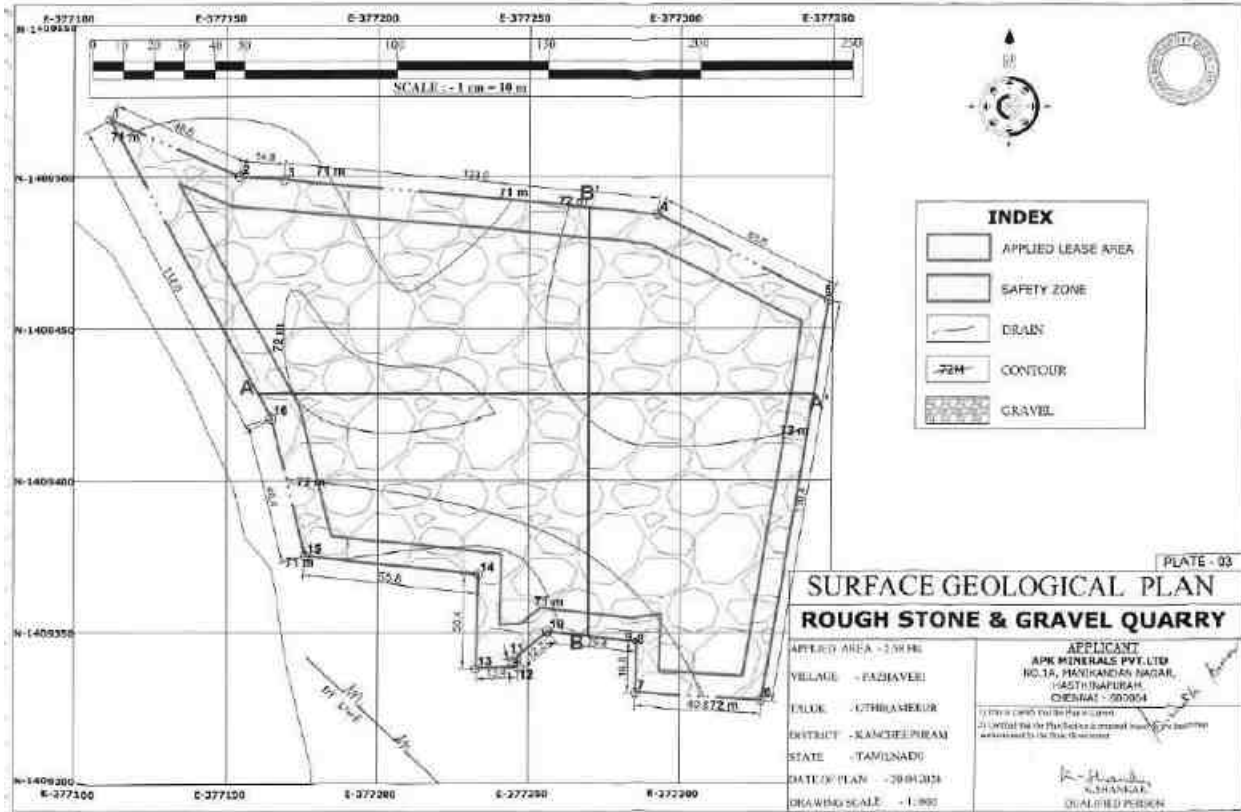
AGE	FORMATION
Recent	- Quaternary Formation (Topsoil)
-----Unconformity-----	
Archaean	- Charnockite Peninsular Gneiss complex

The area is a host of wide range of metamorphic rocks in peninsular gneissic complex. These rocks are extensively weathered and overlain by the recent valley fills and alluvium at places. The area is a host of wide range of metamorphic rocks in peninsular gneissic complex. These rocks are extensively weathered and overlain by the recent valley fills and alluvium at places. The geological formations found in the district are Archaean rocks like Gneisses, Granites, Charnokite, Granulites and calc-gneisses. The younger formations are Quartz veins and pegmatite. The rock type noticed in the applied lease area is Charnokite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnokite is part of peninsular Gneisses and is subjected to higher level of metamorphism. The strike of the Charnokite formation in North -South with dipping towards East at 45°.



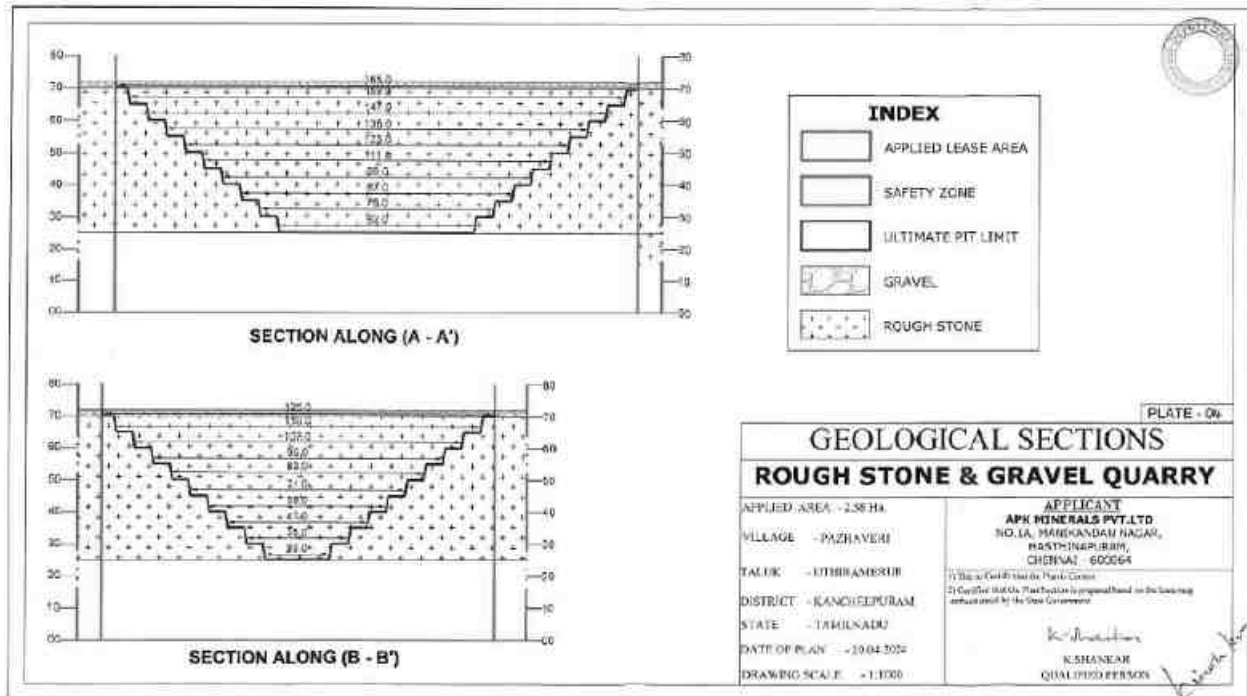
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**Figure 2.11: Surface Geological Plan-
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**



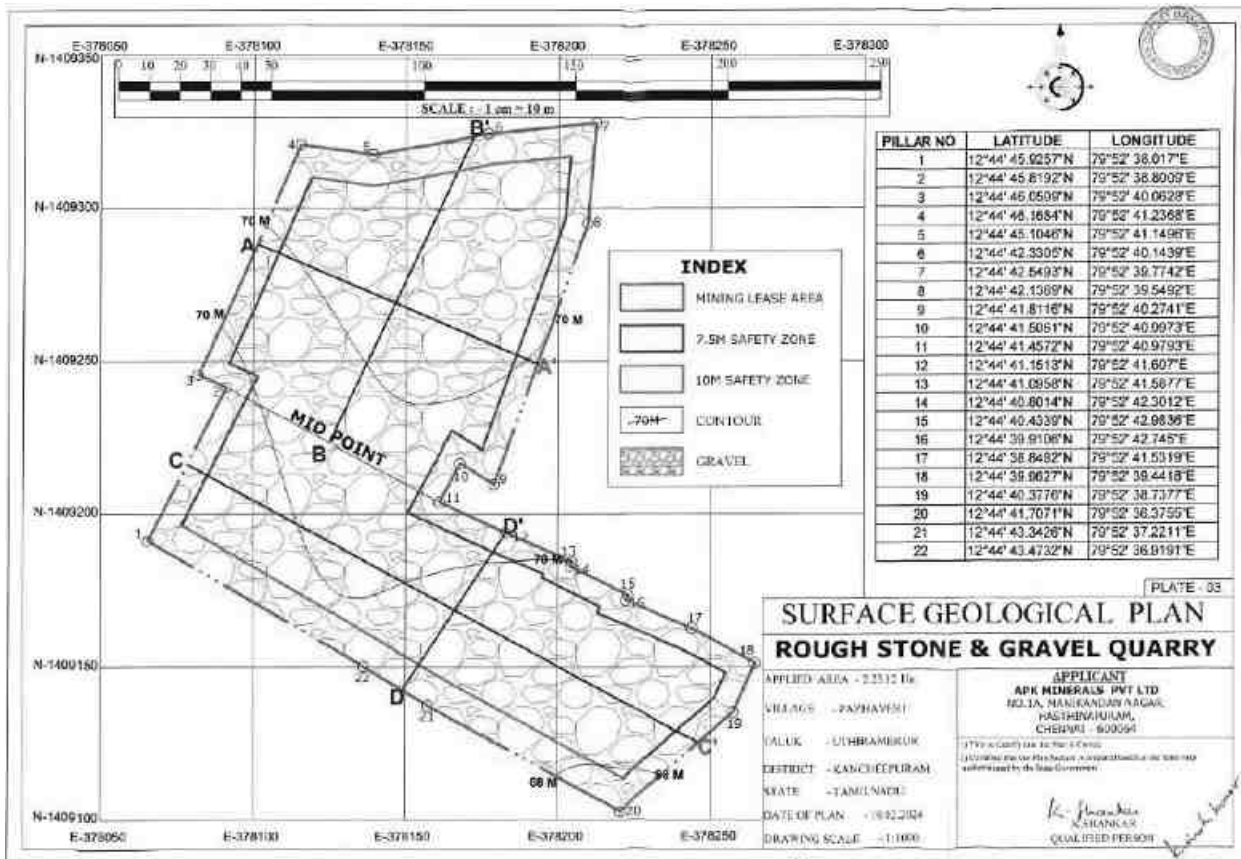
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**Figure 2.12: Surface Geological Cross Section –
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**



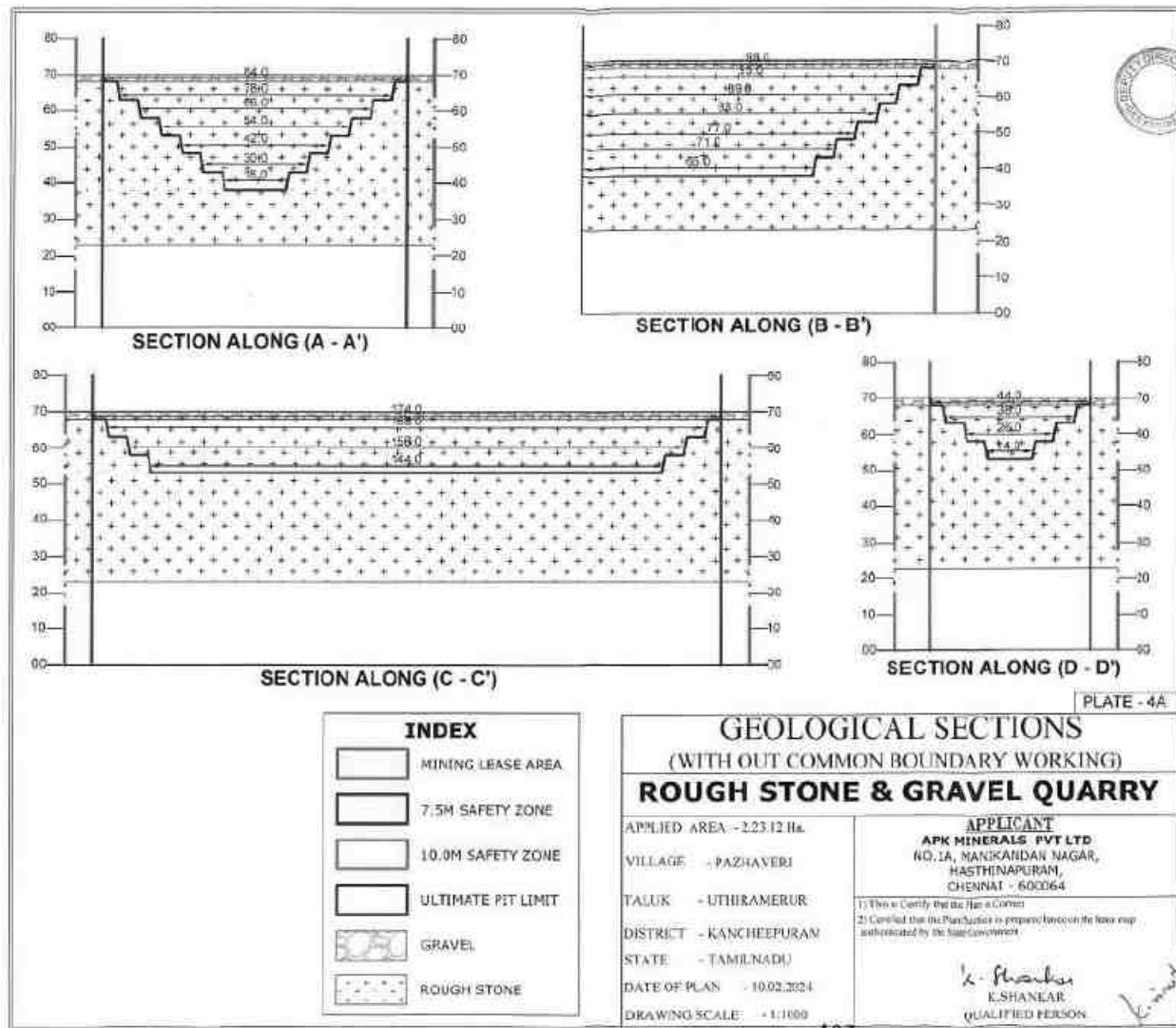
COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

**Figure 2.13: Surface Geological Plan–
Roughstone and Gravel Quarry (Over an area of 2.2312Ha)**



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

**Figure 2.14: Surface Geological Cross Section -
Roughstone and Gravel Quarry (Over an area of 2.2312Ha)**



2.6 SIZE AND MAGNITUDE OF THE OPERATION:

- The proposed mining will be done by open cast semi mechanized mining method.
- Life of mine will be 10 years.
- For Roughstone and Gravel Quarry of APK Minerals Private Limited over an area of 2.58 Ha, during the plan period of 5 years it is proposed to mine out 2,88,420m³ of Roughstone and 41,250m³ of gravel upto a depth of 22m. During the 10 year period



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

overall it is proposed to mine 3,90,600 m³ of Roughstone and 41,250m³ of gravel upto a depth of 42m.

- For Roughstone and Gravel Quarry of APK Minerals Private Limited over an area of 2.2312Ha, during the plan period of 5 years it is proposed to mine out 1,58,460m³ of Roughstone and 31,776m³ of gravel upto a depth of 22m. During the 10-year period overall it is proposed to mine 1,83,780 m³ of Roughstone and 31,776m³ of gravel upto a depth of 32m
- There is no waste generation anticipated in this quarry operation since the entire excavated material will be transported to buyers.

2.6.1 RESERVES:

Table 2.8: Geological and Mineable Reserves

Type of reserves	Roughstone and Gravel Quarry (Over an area of 2.58Ha)		Roughstone and Gravel Quarry (Over an area of 2.2312Ha)	
	Rough stone (m ³)	Gravel(m ³)	Rough stone (m ³)	Gravel(m ³)
Geological Resources	11,61,135	51,606	10,27,890	45,684
Mineable reserves as per TOR	3,90,600	41,250	1,83,780	31,776

The mineable reserves is arrived after considering the safety distance as per the Precise area letter.

2.6.2 MINING METHOD:

Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out. The top gravel is soft and can be directly excavated. The rough stone below will be blasted and then excavated. Bench height of 5.0m & 5m width is considered.

Table 2.9: Details of Equipments

EQUIPMENT	CAPACITY	Roughstone and Gravel Quarry (Over an area of 2.58Ha)	Roughstone and Gravel Quarry (Over an area of 2.2312Ha)
		REQUIREMENT	REQUIREMENT
Excavator	1.5m ³	1	1
Tipper	20 Tonnes	3	4
Jack hammer	32 mm dia	4	6



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Compressor	400 psi	2	2
Tractor mounted tanker	6000 lts	1	1

2.7 PROPOSED SCHEDULE FOR APPROVAL AND IMPLEMENTATION:

The proponents propose to implement the production immediately after obtaining all the statutory approvals such as CTE, CTO, etc. The proponent will comply with the environmental clearance conditions during mining operations. The schedule of project implementation envisaged for this project is provided below. This is a tentative schedule subject to various factor, hence unforeseen variations may occur.

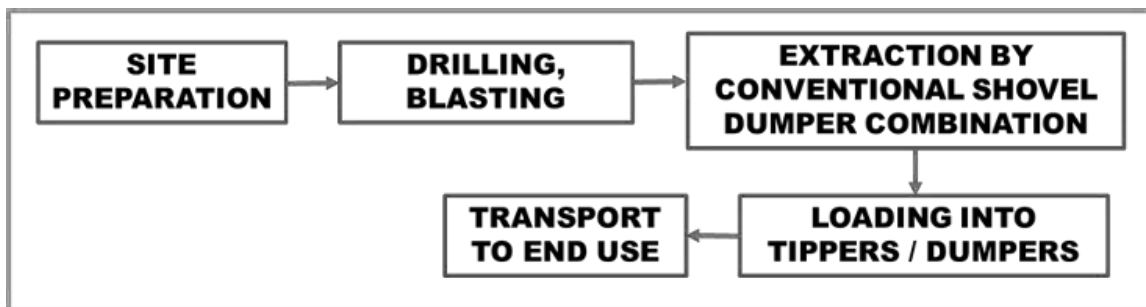
Table 2.10: Proposed Schedule of Implementation

Activities	Months					
	Zero Date	1	2	3	4	5
Obtaining Environmental Clearance						
Obtaining Consent from State Pollution Control Board						
Lease Execution						
Equipment mobilization and Commencement of Mining activity after following all the Statutory Requirements						

2.8 TECHNOLOGY AND PROCESS DESCRIPTION:

The quarry operations involve drilling, blasting, excavation, loading and transportation of Roughstone to buyers. The production of Roughstone in these quarries involve jackhammer drilling and blasting. The primary boulders are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast semi mechanized method of mining. The process flow diagram of this project is provided below.

Figure 2.15: Process Flow Diagram



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

2.9 PROJECT DESCRIPTION:

2.9.1 PAST PRODUCTION:

Both these quarries are proposed. As such, no mining activities have been carried out in either of the lease areas.

2.9.2 PLAN PERIOD:

In the Roughstone and Gravel Quarry of APK Minerals Private Limited over an area of 2.58Ha, as per the approved Terms of Reference issued by SEIAA, it is proposed to mine 2,88,420m³ of Roughstone and 41,250m³ of Gravel upto a depth of 22m during the first five years. The year wise production for both projects has been provided below:

**Table 2.11: Production Schedule During Plan Period–
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**

Year	Roughstone (m ³)	Gravel (m ³)
1	47600	20000
2	47005	21250
3	65270	0
4	65625	0
5	62920	0
Total	288420	41250

In the Roughstone and Gravel Quarry of APK Minerals Private Limited over an area of 2.2312Ha, as per the approved Terms of Reference issued by SEIAA, it is proposed to mine out 1,58,460m³ of Roughstone and 31,776m³ of gravel upto a depth of 32m.

**Table 2.12: Production Schedule During Plan Period–
Roughstone and Gravel Quarry (Over an area of 2.2312Ha)**

Year	Roughstone (m ³)	Gravel (m ³)
1	20670	10080
2	22980	6384
3	19800	15312
4	68890	0
5	26120	0
Total	158460	31776

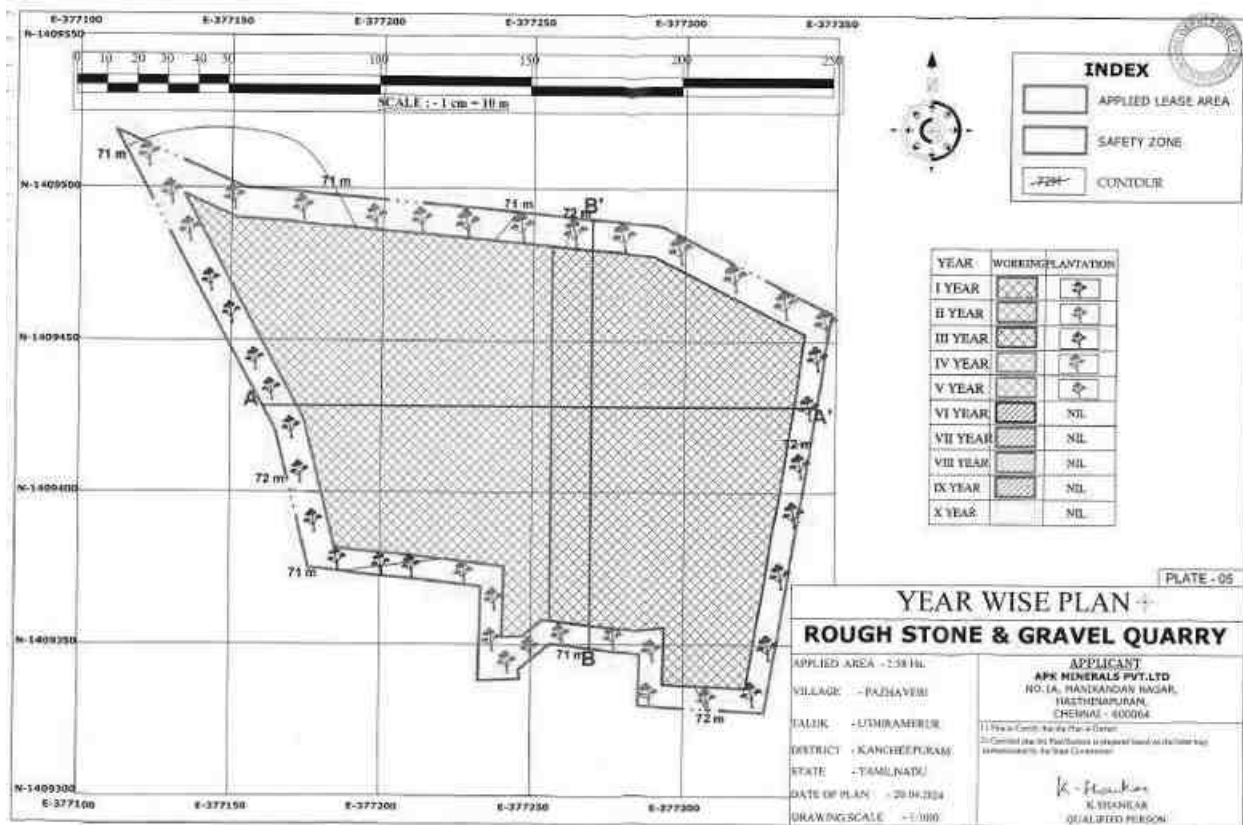


COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Waste Disposal during Plan Period:

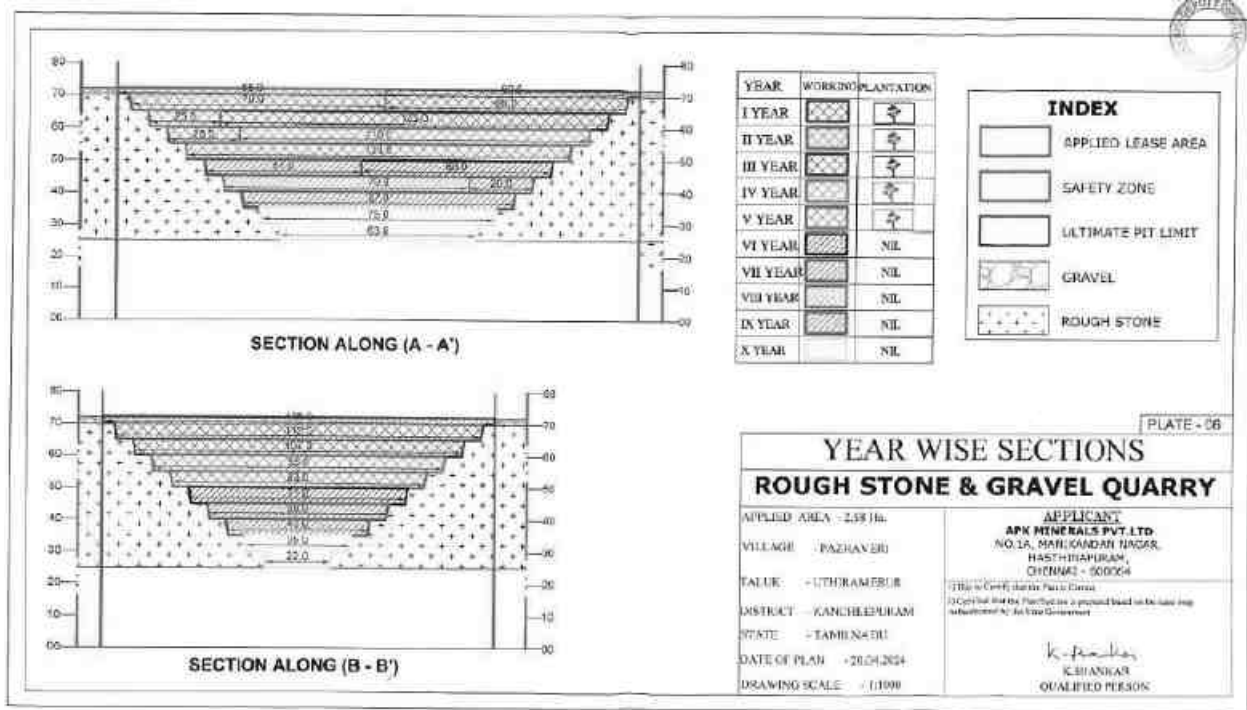
There is no waste generation anticipated in these quarries since the entire excavated material will be utilized. The top overburden in the form of Gravel and weathered rock will be loaded into tipper and marketed to needy customers on payment of necessary Fees to Government. The excavated rough stone will be excavated and loaded into tipper to the needy buyers for producing crusher aggregates, M Sand.

Figure 2.16: Year wise Plan - Roughstone and Gravel Quarry (Over an area of 2.58Ha)



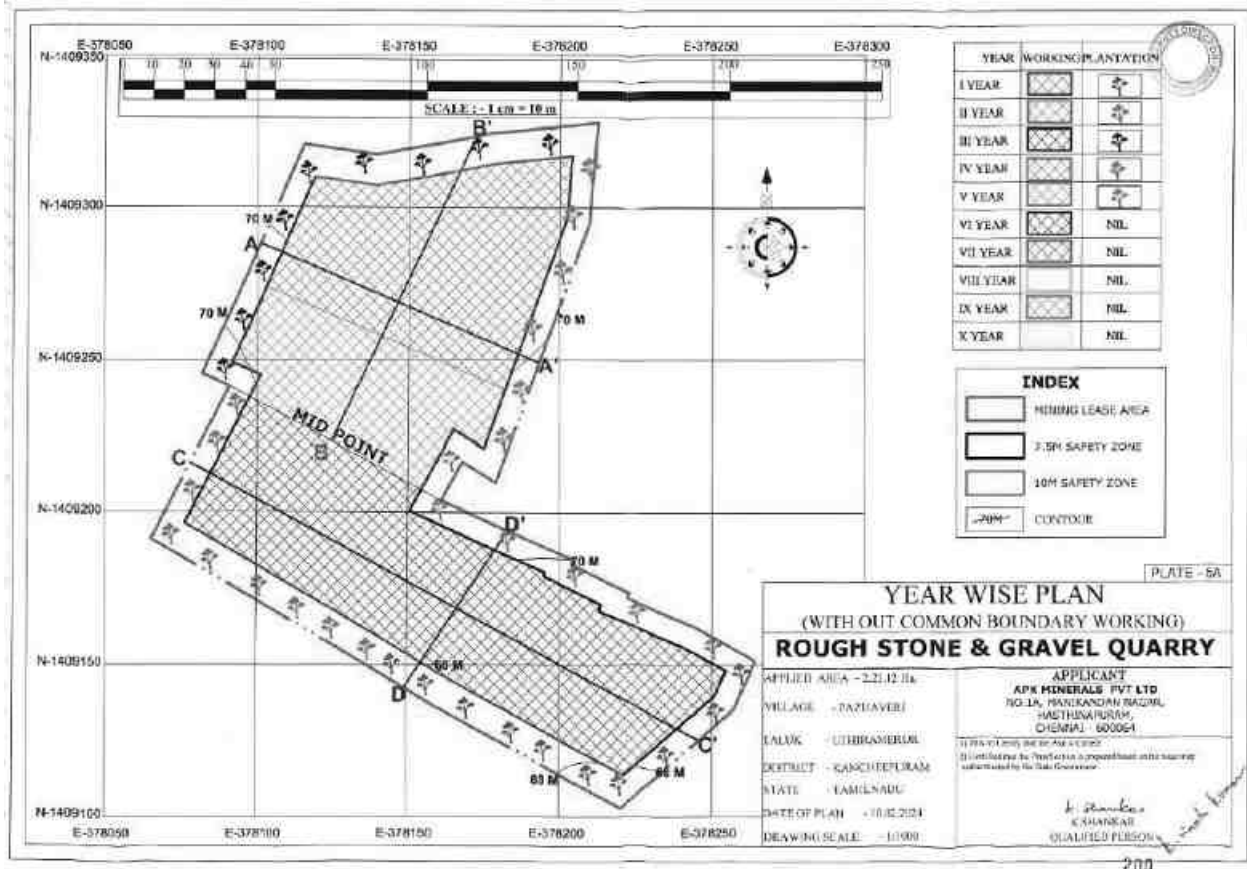
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**Figure 2.17: Yearwise Cross Section -
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**



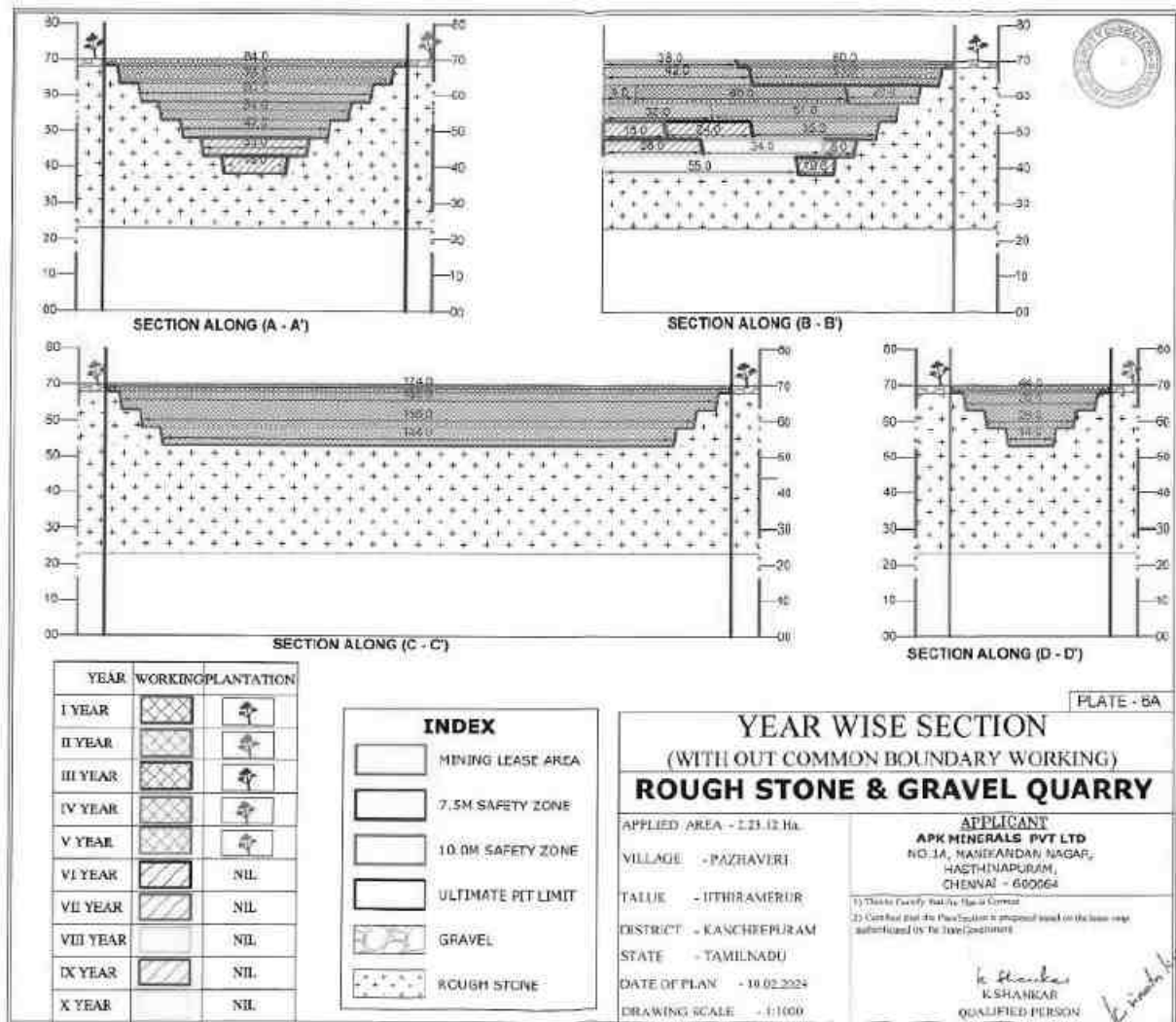
COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 2.18: Year wise Plan - Roughstone and Gravel Quarry (Over an area of 2.2312Ha)



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

**Figure 2.19: Yearwise Cross Section -
Roughstone and Gravel Quarry (Over an area of 2.2312Ha)**



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2.9.3 CONCEPTUAL PERIOD:

In the Roughstone and Gravel Quarry of APK Minerals Private Limited over an area of 2.58Ha, as per the approved Terms of Reference issued by SEIAA, during the balance 5 years it is proposed to mine 1,02,180m³ of Roughstone upto a restricted depth of 42m. The production schedule during the conceptual period is provided below:

**Table 2.13: Production Schedule during Conceptual Period -
(Roughstone and Gravel Quarry (Over an area of 2.58Ha)**

Year	Roughstone (m3)	Gravel (m3)
6	21300	--
7	24005	--
8	23305	--
9	20445	--
10	13125	--
Total	102180	--

**Table 2.14: Overall production during 10 years period -
(Roughstone and Gravel Quarry (Over an area of 2.58Ha)**

Year	Roughstone (m3)	Gravel (m3)
1-5	288420	41250
6-10	102180	--
Total	390600	41250

**Table 2.15: Ultimate Pit Dimensions-
(Roughstone and Gravel Quarry (Over an area of 2.58Ha)**

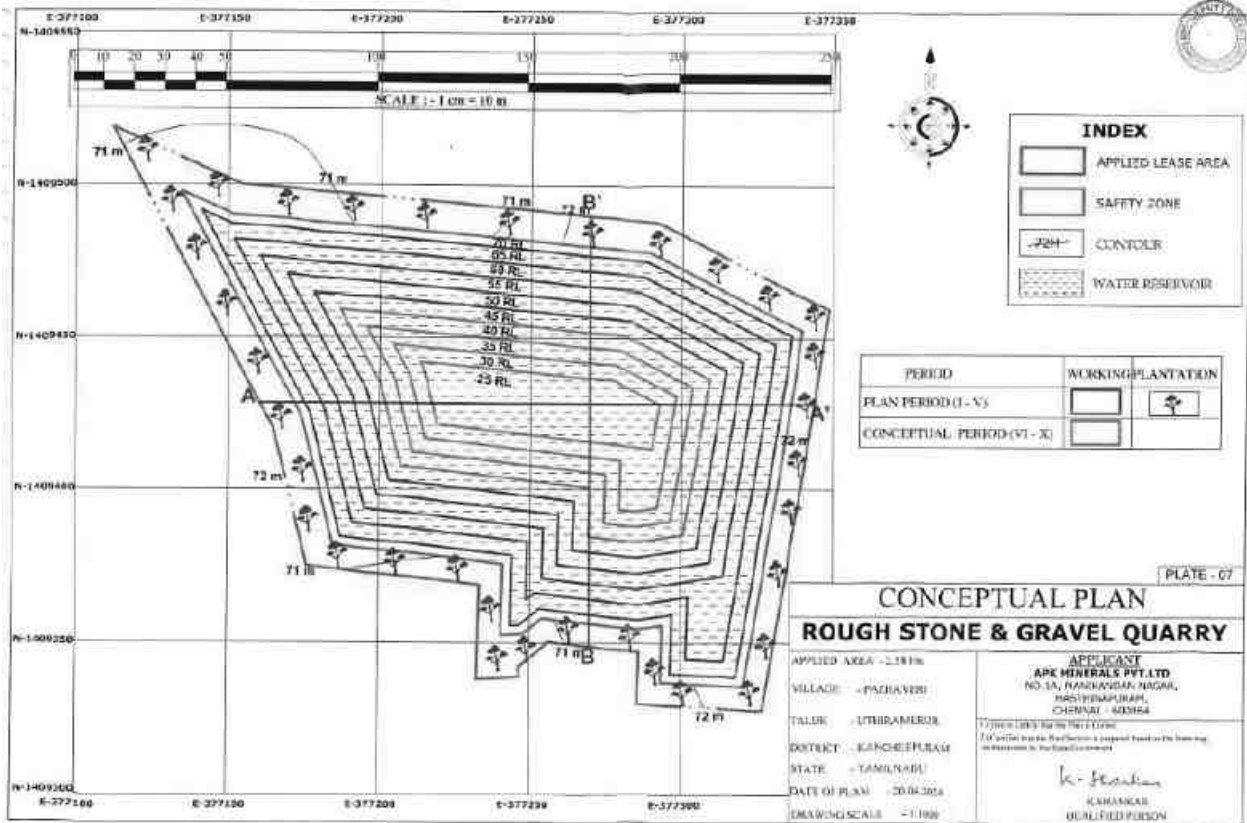
Length (m)	Width (m)	Depth (m)
125	165	42

The ultimate pit depth is 42m. The ground water table on the surface in this area is quite deeper. Hence, ground water intersection is not envisaged. The Conceptual Plan & Cross section are shown below:



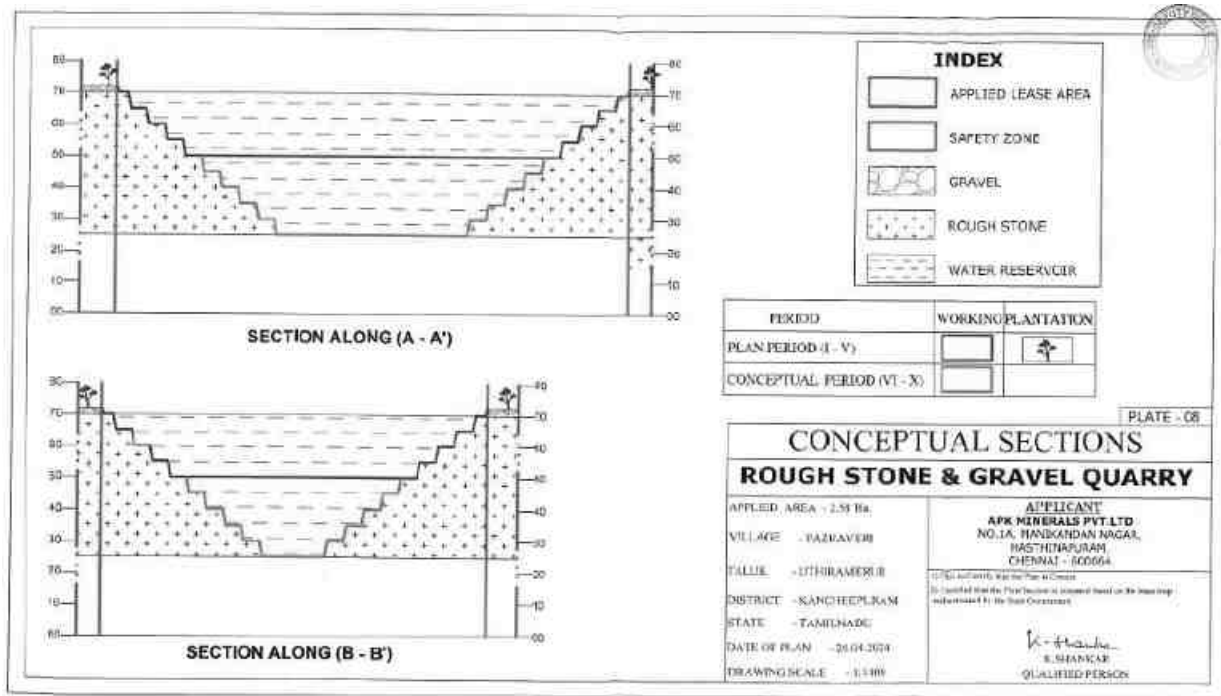
COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 2.20: Conceptual Plan - (Roughstone and Gravel Quarry (Over an area of 2.58Ha)



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

**Figure 2.21: Conceptual Cross Section -
(Roughstone and Gravel Quarry (Over an area of 2.58Ha))**



In the Roughstone and Gravel Quarry (Over an area of 2.2312Ha), overall 25,320m³ of Roughstone will be mined out during the balance 5 years period up to a overall depth of 32m. The production schedule during the conceptual period is provided below:

**Table 2.16: Production Schedule during Conceptual Period -
Roughstone and Gravel Quarry (Over an area of 2.2312Ha)**

Year	Roughstone (m ³)	Gravel (m ³)
6	5040	--
7	5130	--
8	5100	--
9	5100	--
10	4950	--
Total	25320	--

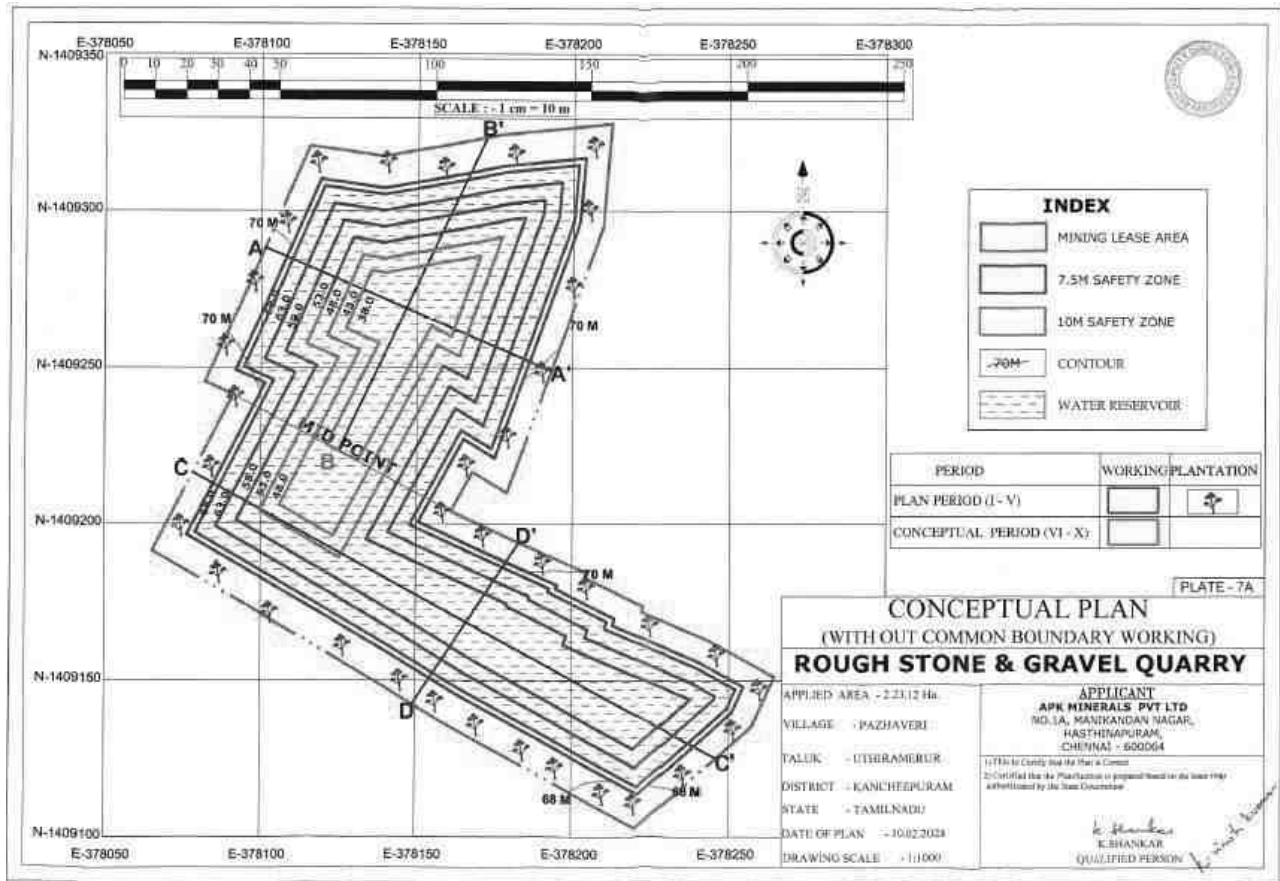


COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

**Table 2.17: Overall production during 10 years period -
(Roughstone and Gravel Quarry (Over an area of 2.58Ha))**

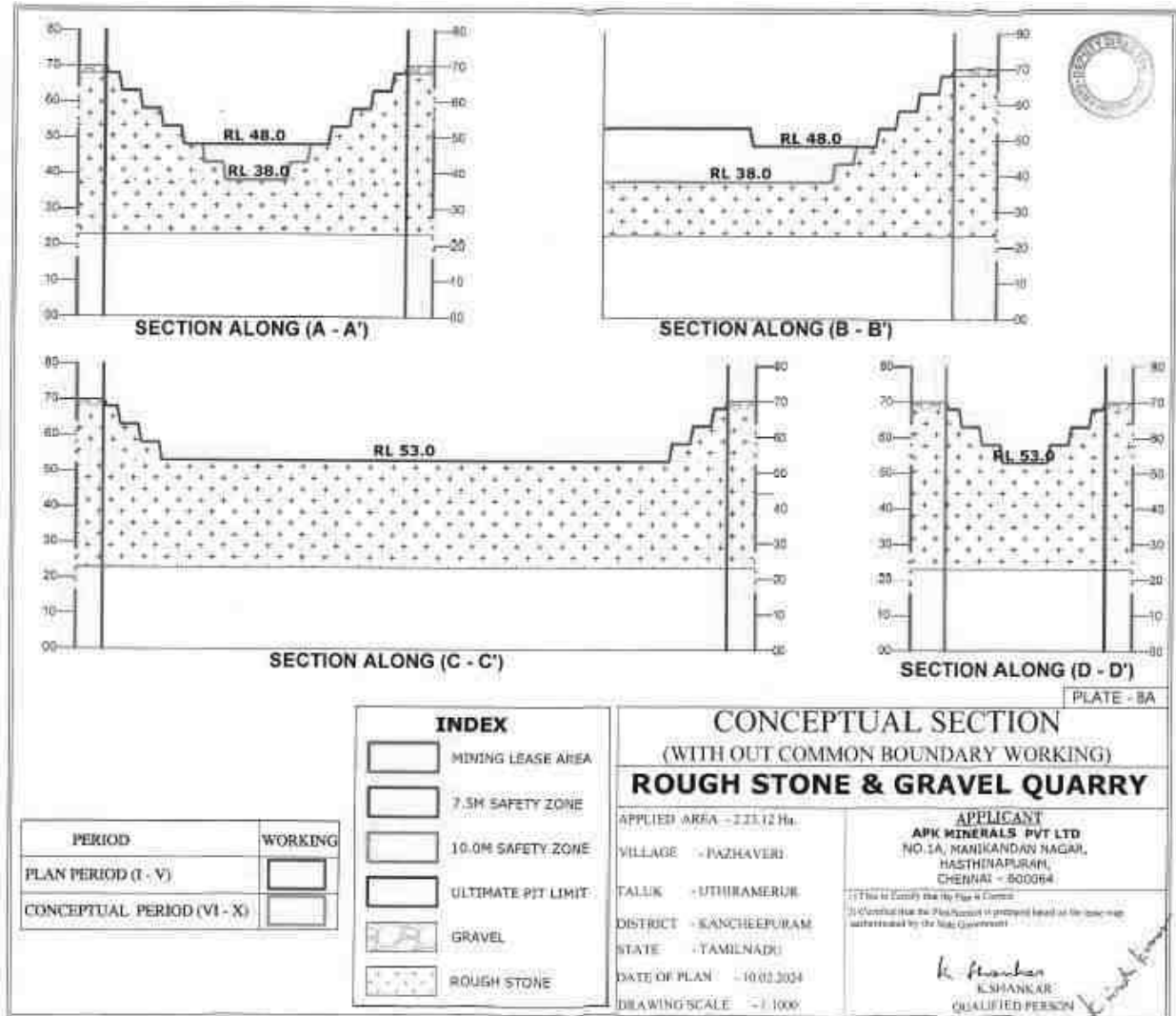
Year	Roughstone (m3)	Gravel (m3)
1-5	158460	31776
6-10	25320	--
Total	183780	31776

Figure 2.22: Conceptual Plan - Roughstone and Gravel Quarry (Over an area of 2.2312Ha)



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

**Figure 2.23: Conceptual Cross Section-
Roughstone and Gravel Quarry (Over an area of 2.2312Ha)**



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

2.9.4 LAND DEGRADATION/UTILIZATION:

The land use pattern at present and at the end of the quarrying period has been provided below.

Table 2.18: Land Use - Roughstone and Gravel Quarry (Over an area of 2.58Ha)

S.No	Land Use	Present (Ha)	At the end of plan period (Ha)	Conceptual Period (Ha)
1	Quarrying Pit	--	1.96	1.96
2	Green Belt	--	0.62	0.62
3	Unutilized	2.58	--	--
	Total	2.58	2.58	2.58

At the end of the lease period, 1.96Ha of mined out area will be left as water body and 0.62 Ha will be greenbelt area.

Table 2.19: Land Use - Roughstone and Gravel Quarry (Over an area of 2.2312Ha)

S.No	Land Use	Present (Ha)	At the end of plan period (Ha)	Conceptual Period (Ha)
1	Quarrying Pit	--	1.6093	1.6093
2	Green Belt	--	0.6219	0.6219
3	Unutilized	2.2312	--	--
	Total	2.2312	2.2312	2.2312

At the end of the lease period, 1.6093Ha of mined out area will be left as water body and 0.6219 Ha will be greenbelt area.

2.9.5 PROJECT REQUIREMENTS:

Table 2.20: Project Requirements

Project Name	Roughstone and Gravel Quarry (Over an area of 2.58Ha)	Roughstone and Gravel Quarry (Over an area of 2.2312Ha)																				
Manpower	12 persons directly and 10 people indirectly.	12 persons directly and 10 people indirectly.																				
Water Requirement and Source	Water Requirement: 8 KLD	Water Requirement: 8 KLD																				
	<table border="1"> <thead> <tr> <th>Details</th> <th>Quantity (KLD)</th> </tr> </thead> <tbody> <tr> <td>Drinking water and Domestic Use</td> <td>1.0 KLD</td> </tr> <tr> <td>Dust Suppression</td> <td>5.0 KLD</td> </tr> <tr> <td>Green belt</td> <td>2.0 KLD</td> </tr> <tr> <td>Total</td> <td>8.0KLD</td> </tr> </tbody> </table>	Details	Quantity (KLD)	Drinking water and Domestic Use	1.0 KLD	Dust Suppression	5.0 KLD	Green belt	2.0 KLD	Total	8.0KLD	<table border="1"> <thead> <tr> <th>Details</th> <th>Quantity (KLD)</th> </tr> </thead> <tbody> <tr> <td>Drinking water and Domestic Use</td> <td>1.0 KLD</td> </tr> <tr> <td>Dust Suppression</td> <td>5.0 KLD</td> </tr> <tr> <td>Green belt</td> <td>2.0 KLD</td> </tr> <tr> <td>Total</td> <td>8.0KLD</td> </tr> </tbody> </table>	Details	Quantity (KLD)	Drinking water and Domestic Use	1.0 KLD	Dust Suppression	5.0 KLD	Green belt	2.0 KLD	Total	8.0KLD
	Details	Quantity (KLD)																				
	Drinking water and Domestic Use	1.0 KLD																				
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Total	8.0KLD																					
Details	Quantity (KLD)																					
Drinking water and Domestic Use	1.0 KLD																					
Dust Suppression	5.0 KLD																					
Green belt	2.0 KLD																					
Total	8.0KLD																					
Source: The required water will be procured initially from outside	Source: The required water will be procured initially from outside																					



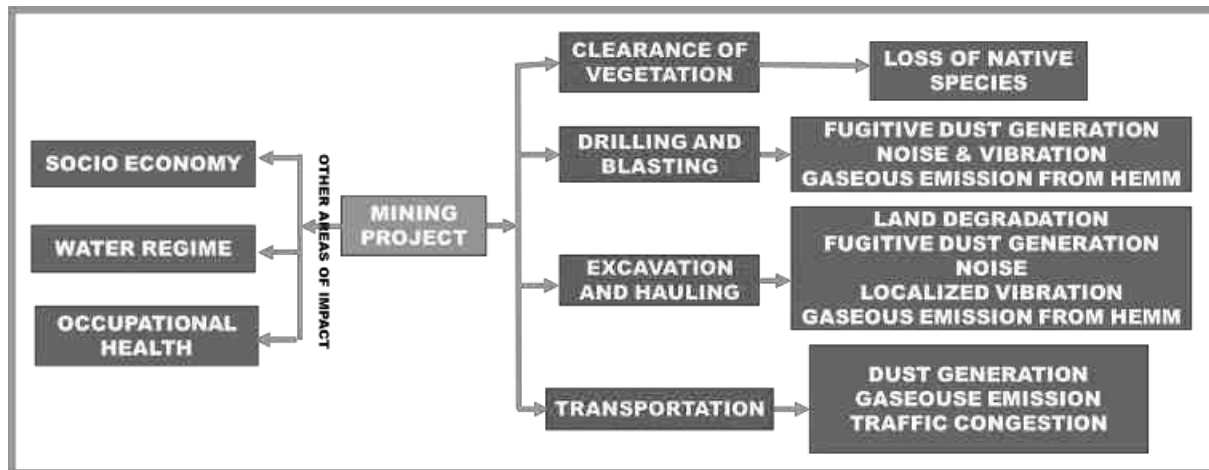
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	agencies. Later Rain water harvested in the mine sump can also be used.	agencies. Later Rain water harvested in the mine sump can also be used.
Power Requirement	No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.	No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.
Site Services	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.
Project Cost	Rs.211.10 Lakhs	Rs.230 Lakhs
Funds allocated for socio-economic development	Rs.5.0 Lakhs is allocated under CER budget.	Rs.5.0 Lakhs is allocated under CER budget.

2.10 DESCRIPTION OF MITIGATION MEASURES:

Scientific and systematic development of mines will be carried out by the project authorities for preserving as well as improving the environmental conditions in and around the mining lease area. Elaborate analysis on impacts and mitigation measures to be adopted on implementation of this project and the same has been dealt in Chapter- IV.

Figure 2.24: Schematic Diagram of mining activities and associated impacts



2.11 ASSESSMENT OF NEW & UNTESTED TECHNOLOGY:

There is no new technology that is being implemented. Opencast method of mining which is the proposed method of mining is a proven technology which is technologically and economically



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

viable. . No major technological failures are anticipated. A disaster management plan shall be put into place to take care of any unforeseen situation.

2.12 CONCLUSION:

As good environmental preservation is one of the prime motive of the project proponent. It is expected that the project activity will not have any major impact on environmental equilibrium in the study area.

* * * * *



CHAPTER - III

DESCRIPTION OF ENVIRONMENT

CHAPTER 3

DESCRIPTION OF ENVIRONMENT

3.1 GENERAL:

The existing environmental baseline data for the various environmental components were collected in the study area for the purpose of assessing the impact on present environment due to the project activities.

Monitoring was carried out systematically and meticulously as per relevant IS codes, CPCB, MoEF&CC guidelines during **Summer Season (March to May 2024)** The details of the study are given in this chapter.

For the purposes 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. The details of villages falling in the study area and other features are given in Index Plan in **Figure No - 3.1**

The primary data collection was done by means of field monitoring and the secondary data collection was obtained from published sources and Government documents. The details of the baseline data collection which has been elaborated through the course of this chapter has been concised below:

Table 3.1: Type of Baseline Data

S.No	Studies	Parameters / Study	Location
1	Socio Economy	Demographic Data from Census 2011	Core and Buffer Zone
		Sample Survey	Buffer Zone
2	Micro Meteorology	Rainfall Data from IMD, Kancheepuram	Kancheepuram
		Temperature, Humidity, Wind Speed, Wind Direction	1 Representative Location
3	Ambient Air Quality	PM10, PM2.5, SO2, NOx, CO	1 Core Zone, 4 Buffer Zone
4	Water Quality	Physical and Chemical Parameters	1 Core Zone, 4 Buffer Zone
5	Noise Levels	Ambient Noise	1 Core Zone, 4 Buffer Zone
6	Soil Quality	Physical and Chemical Parameters	1 Core Zone, 3 Buffer Zone
7	Land Use and Land Cover	Land use pattern within 10km study area using RS Satellite	Buffer Zone
		Land use based on Census 2011	Core and Buffer Zone
8	Biological Environment	Flora and Fauna	Core Zone and Buffer Zone
9	Hydrology & Hydro Geology	Hydrogeological profile of the area	Core Zone and Buffer Zone

COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 3.1: Study Area Map



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Table 3.2: Environmental Setting of the Study Area

S.No	Particulars	Details	APK Minerals -2.23.12Ha		APK Minerals -2.58Ha	
			Distance	Direction	Distance	Direction
I	Connectivity					
1.	Highway	NH-132B - Chengalpttu – Kanchipuram	2.9km	N	2.5km	N
		SH-48 - Walajabd – Vandalur	8.0Km	N	7.4Km	N
2.	Railway Station	Pazhyaseeveram	3.3 km	N	3.7km	N
3.	Airport	Chennai	40.0km	N	40.7km	N
4.	Village	Pazhaveri	0.36km	SE	1.4km	SE
		Pinayur Village	1.5km	NE	2.3km	NE
		Arunkundram Village	1.2km	SW	770m	SW
		Staff Building SE of Thirumukkodal Village	2.1km	NW	1.1km	NW
5.	Town/City	Tirumukkudal	2.1km	NW	1.1km	NW
II	Environmental Features					
6.	Water Bodies	Palar River	1.9Km	NE	1.6Km	NE
		Cheyyar River	2.6Km	SW	1.7Km	W
		Ninjalmadu River	7.0Km	NE	7.4Km	NE
7.	Reserve Forests	Kavanippakkam RF	1.6Km	S	2.2Km	S
		Idaimichi RF	5.1Km	S	5.2Km	S
		Appur RF	8.3Km	NE	9.2Km	NE
		Maiyur RF	9.4Km	SE	10.0Km	SE
		Vadakkuppattu RF	9.4Km	NE	9.8Km	NE
III	Sensitive Areas					
8.	Notified Archaeologically important places, Monuments	Nil within 10km radius	--	--	--	--
9.	Local Places of Historical and Tourism Interest	Nil within 10km radius	--	--	--	--
10.	Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972*	Nil within 10km radius	--	--	--	--
11.	Defense Installations	Nil within 10km radius	--	--	--	--
12.	Other industries	Other than crushers, Roughstone quarries, no other major industries are located in the study area.	--	--	--	--

*Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves



3.2 SOCIO-ECONOMIC CONFIGURATIONS OF THE AREA:

3.2.1 GENERAL:

The Socio-Economic details of the study area are collected through:

- Identification of villages falling from the study area map with combined Taluk map.
- Collection of primary data through sample survey, village meetings and discussion.
- Collection of the demographic pattern of villages falling in the area through NIC 2011 census data.
- Occupational structure of villages falling in the study area through NIC 2011 census data.
- Details of the amenities available in villages falling in the study area through NIC 2011 census data. The findings of the study are illustrated below::

3.2.2 SECONDARY DATA DESCRIPTION:

The proposed quarries are located in in Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District. 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 3.3: 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

COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Details	Population	Percentage
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

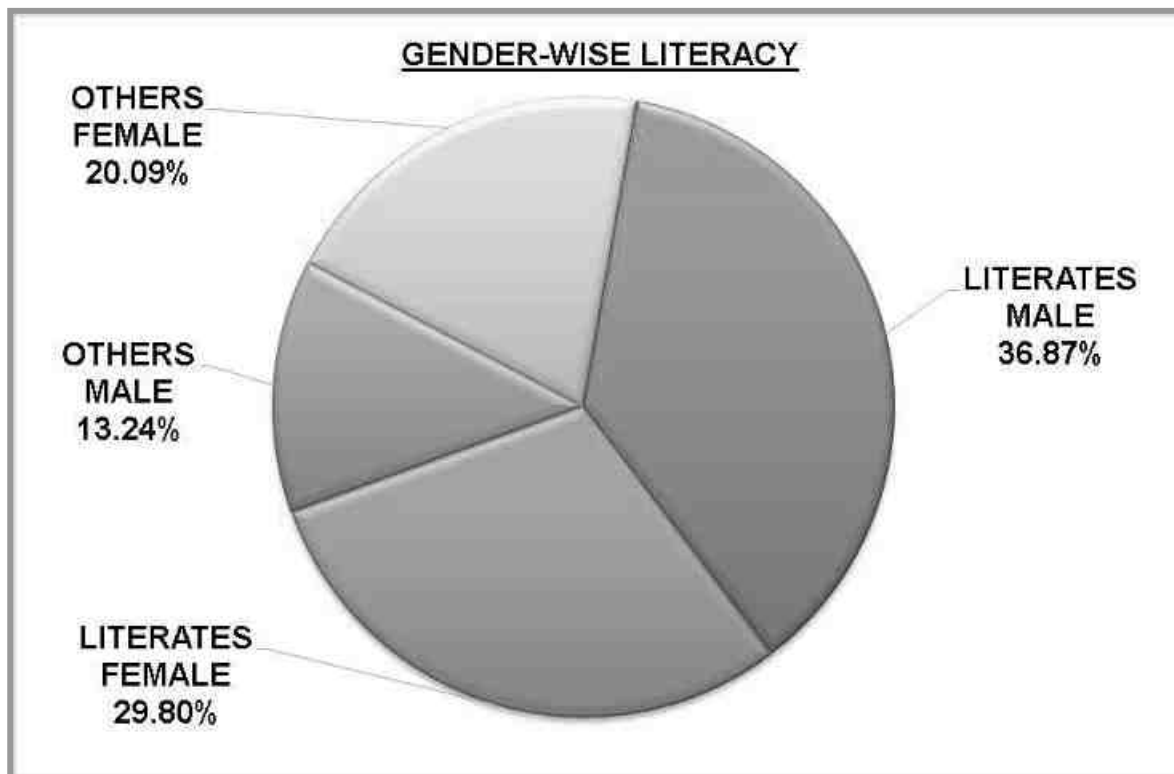
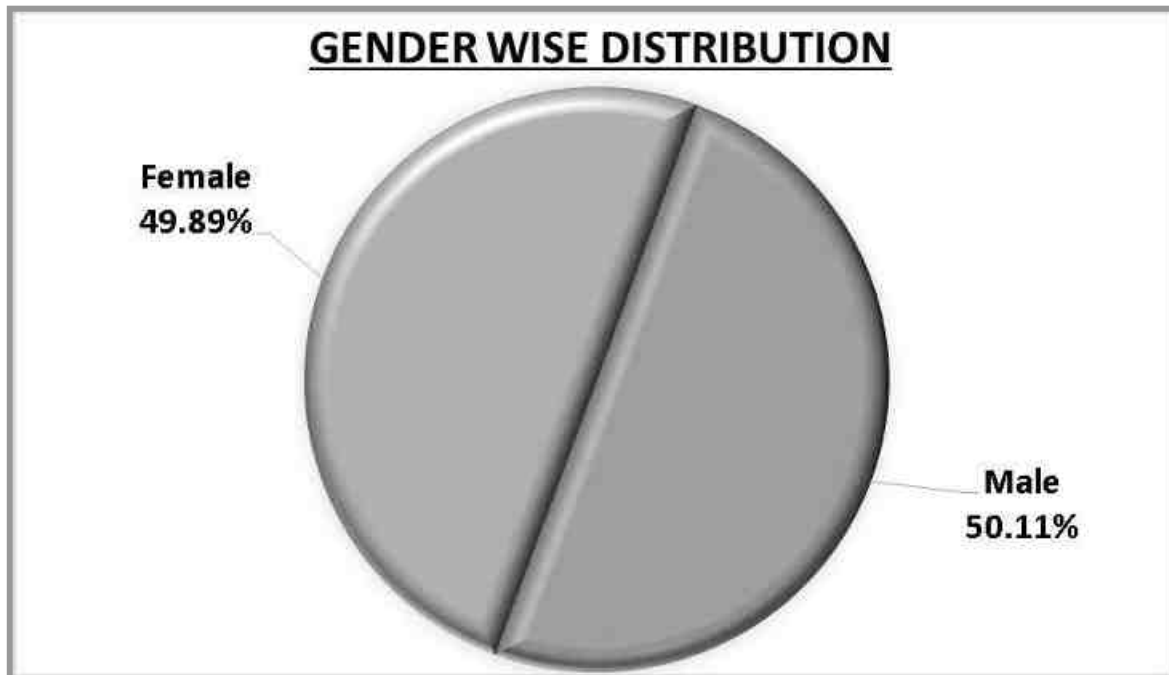
The total population of these 97 rural villages is 139238 in which the male population is 69771 (50.11%) and the female population is 69467 (49.89%). This shows that the male and female population ratio is almost equal. Among the total population 2.04% belong to Scheduled Tribes, 41.18% are Scheduled Caste and the balance 56.78% people belong to other castes. Among the total population, 66.67% of the people are literate.

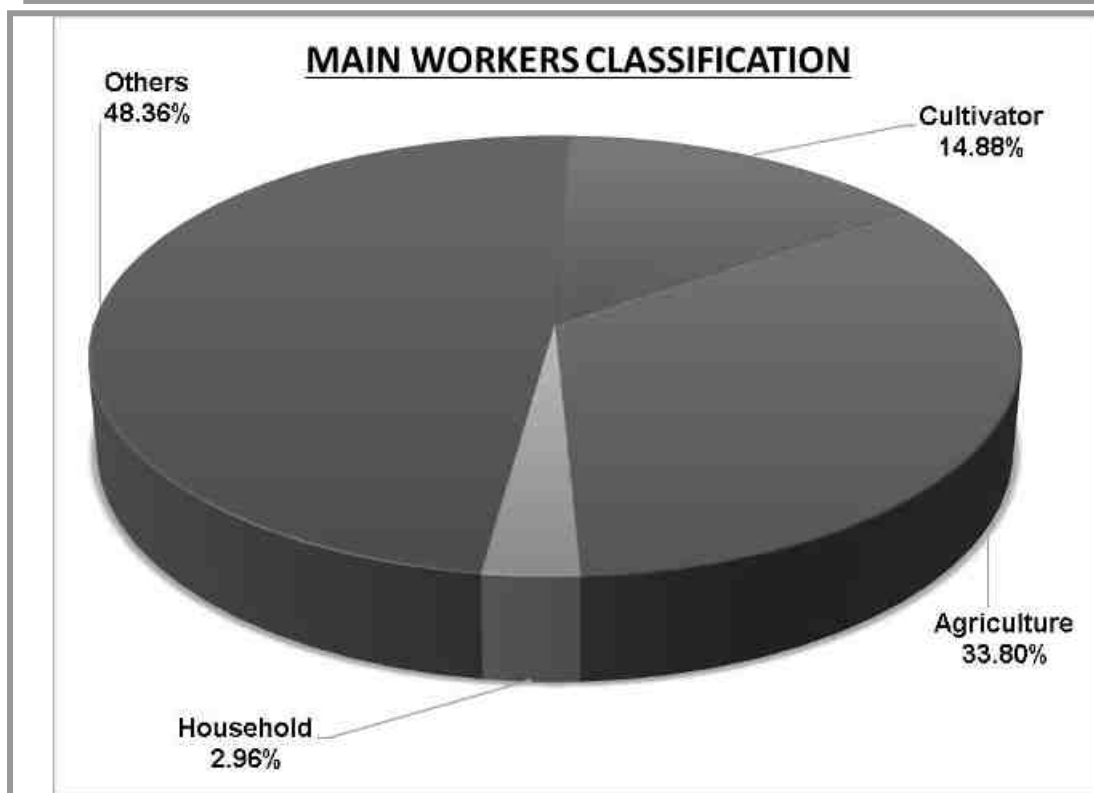
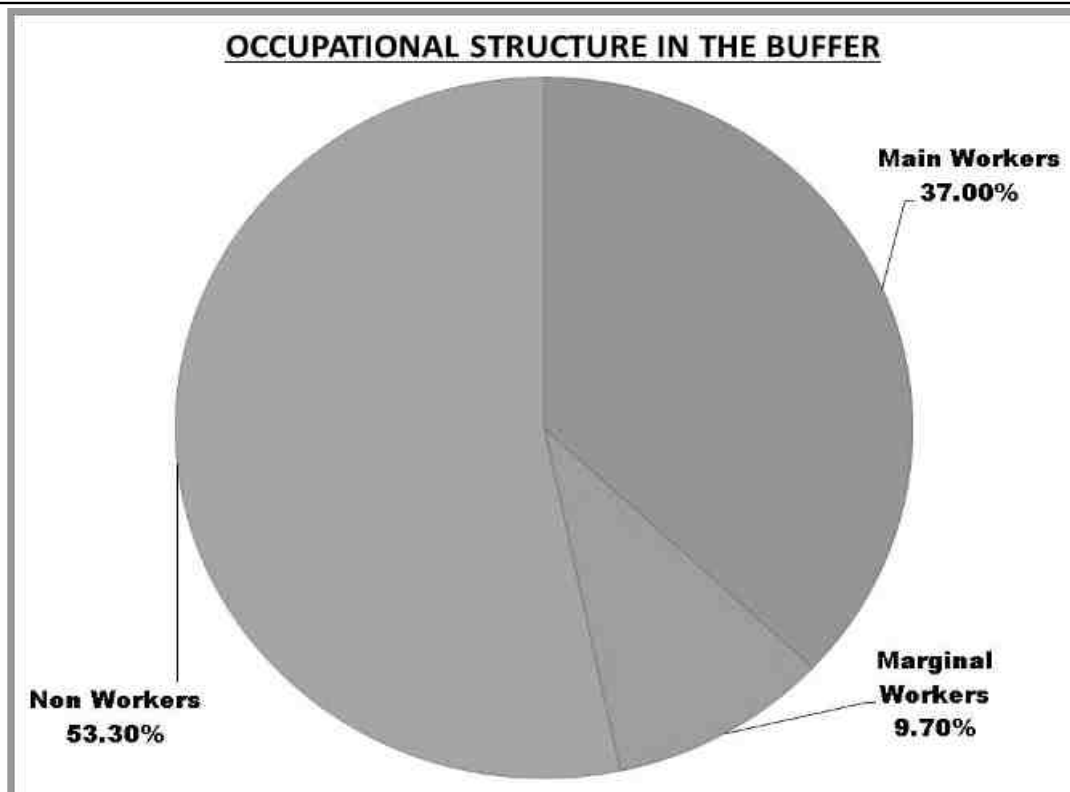
Among the total population, 36.87% are literate males and 29.80% are literate females. This shows that the male literates are slightly more than the female literates.

The village wise population, literacy levels and occupational structure details are given in **Annexures 5 and 6**. The demographic structure within the buffer zone is shown diagrammatically in **Figure No – 3.2**.



Figure 3.2: Demographic Structure in Buffer Zone





COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

3.2.3 DETAILS OF AMENITIES:

Based on 2011 census data, regarding the educational facilities, 97 rural villages out of 70 rural villages have educational facilities. Among them 61 villages have one primary school, 5 villages have 2 primary schools, 2 villages have 3 primary schools, 1 villages have 4 primary schools, 1 villages has 6 primary schools.

Table 3.4: Primary Schools in the Buffer Zone Rural Villages

S.No	No of Rural Villages	Number of primary schools	Total
1	27	0	0
2	61	1	61
3	5	2	10
4	2	3	6
5	1	4	4
6	0	5	0
7	1	6	6
Total	97		87

Table 3.5: Education Facility Availability

Particulars	Available in village
Govt Primary School	70
Govt Middle School	33
Govt Secondary School	15
Govt Senior Secondary School	4

With regards to educational facilities, from Primary School level to Senior Secondary School level, there is availability of some schools in the area.

Table 3.6: Healthcare Amenities Availability

Particulars	Available in village
Community Health Centre	0
Primary Health Centre	5
Primary Health Sub Centre	28
Maternity And Child Welfare Centre	10
TB Clinic	8
Hospital Allopathic	0
Hospital Alternative Medicine	0
Dispensary	5
Veterinary Hospital	11
Mobile Health Clinic	0
Family Welfare Centre	5

Out of 97 rural villages, 27 villages have primary health sub centers. Better medical facilities are available in the nearby larger towns.



Table 3.7: Infrastructure Facilities

Particulars	Available in village
Tap Water-Treated	87
Covered Well	19
Hand Pump	27
Tube Wells/Borehole	34
Post office	2
Bus services	76
Railway station	5
Commercial Bank	5
Cooperative bank	7

The details of the educational, medical and infrastructural facilities available in the buffer zone is provided in **Annexures- 7-9**. Further developments in this area with respect to these various facilities has occurred over the years.

3.2.4 SAMPLE SURVEY:

Study of the nearby villages to know about socio-economic conditions, including aspirations and requirements of the people show the following:

- Entire study area is well developed with reasonably good amenities like approach road bus facility, electricity, mobile phone connectivity, public distribution system, banks etc.
- Since major part of the area is rocky charnokite type quarrying and its associated activities plays a vital role in the region.
- Majority of the people are small farmers; land labourers and others are working in companies. Other occupations include construction workers, vendors, etc.
- Agriculture is predominantly rainfed, tank fed and largely dependent on the irrigation source.
- Dominant agricultural activities area observed proximate to the available irrigation source.
- Other allied activities livestock rearing and poultry farming are also found.
- Well, Bore well are the main source for drinking water. There are OHT's, Ground level tanks, public taps are available .

COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

3.2.4.3 IDENTIFIED CER ACTIVITIES:

The following activities are identified based on the survey, which will be modified and implemented based on the needs and requirements of the local people:

- Improvements in facilities in nearby schools



GOVERNMENT SCHOOL THIRUMUKUDAL



WATER TANK - PAZHAVERI



PANCGHAYAT OFFICE THIRUMUKADAL



GOVERNMENT PRIMARY SCHOOL ARUKUNDRAM



KIRAMA SEVAI MAIYAM- PAZHAVERI



RATION SHOP - PAZHAVERI



3.3 EXISTING ENVIRONMENTAL QUALITY

3.3.1 MICRO-METEOROLOGY

3.3.1.1 General:

The meteorological conditions in an area regulate the dispersion of air pollutants being released into the atmosphere. The principal variables are horizontal convective transport i.e. wind speed and direction and vertical convective transport, i.e. mixing height, stability class and topography of the area.

3.3.1.2 Historical Meteorological Data:

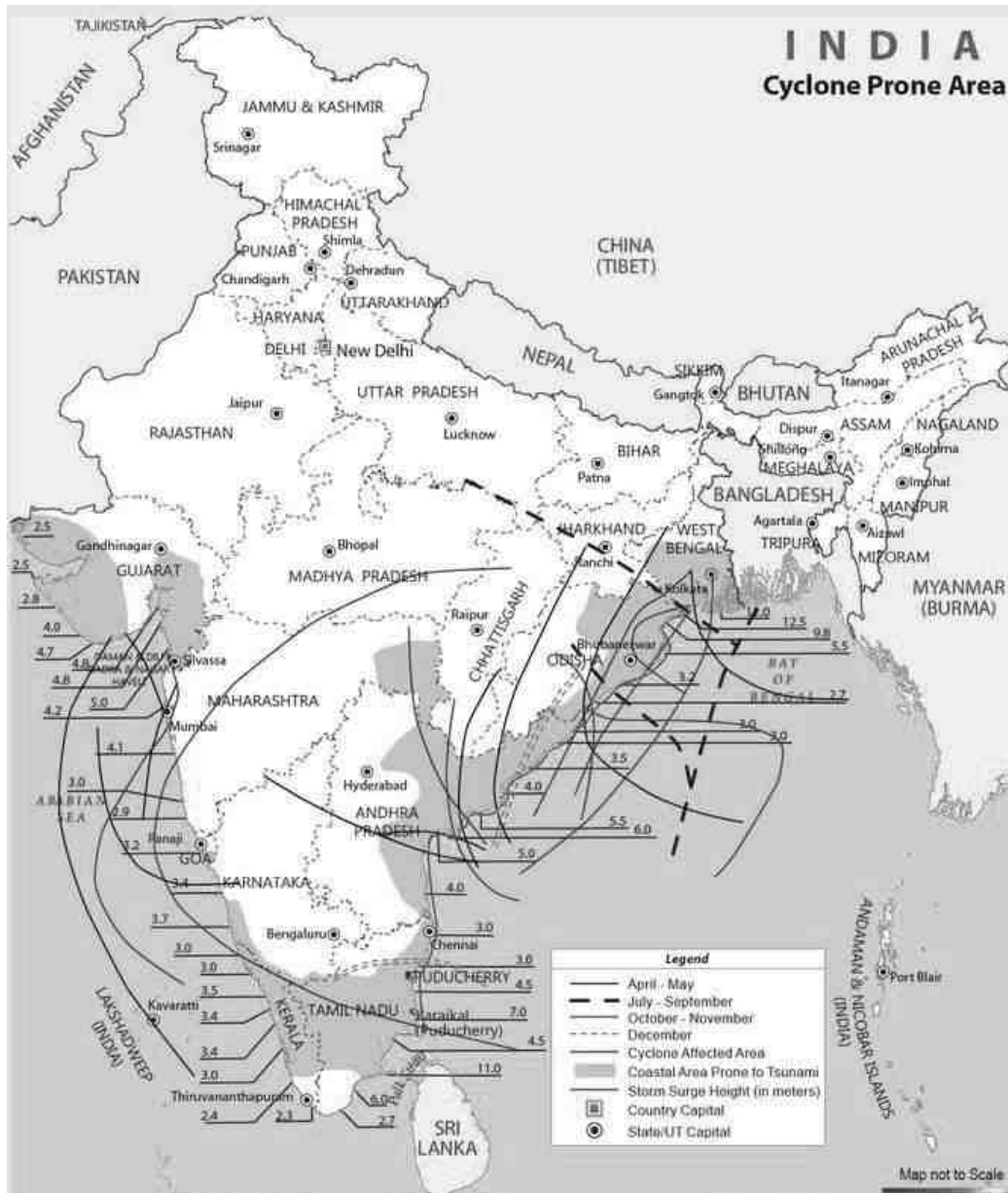
A. Cyclones And Depressions

Cyclonic storms and depressions in Bay of Bengal affect the East Coast of India. Isolated ones, forming in January to March in the South Bay of Bengal move West-North-westwards and hit Tamil Nadu coast. In April and May, cyclonic storms and depressions form in the South and adjoining Central Bay and move initially to the Northwest, then North and then recurve to the Northeast striking the Arakan coasts in April and Andhra Pradesh (AP)-Orissa-West Bengal (WB) – Bangladesh coasts in May. Most of the monsoon (June – September) storms develop in the central and in the north bay and move west – north - westwards affecting AP – Orissa – WB coasts. Post monsoon (October – December) storms form mostly in the south and central Bay, recurve between 15° and 18° N affecting Tamil Nadu – AP – Orissa – WB – Bangladesh coasts. **Figure No - 3.3** depicts the history of cyclonic storms, which have struck the Indian coast during the months of October, November and December during the last 75 years. (**Source: Vulnerability Atlas of India series, above figure accessed from www.maps of india.com**). East coast is prone to cyclonic storms round the year but mostly these occur prior to SW i.e., in May and after SW monsoon i.e., in October and November.



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 3.3: Cyclone Prone Areas

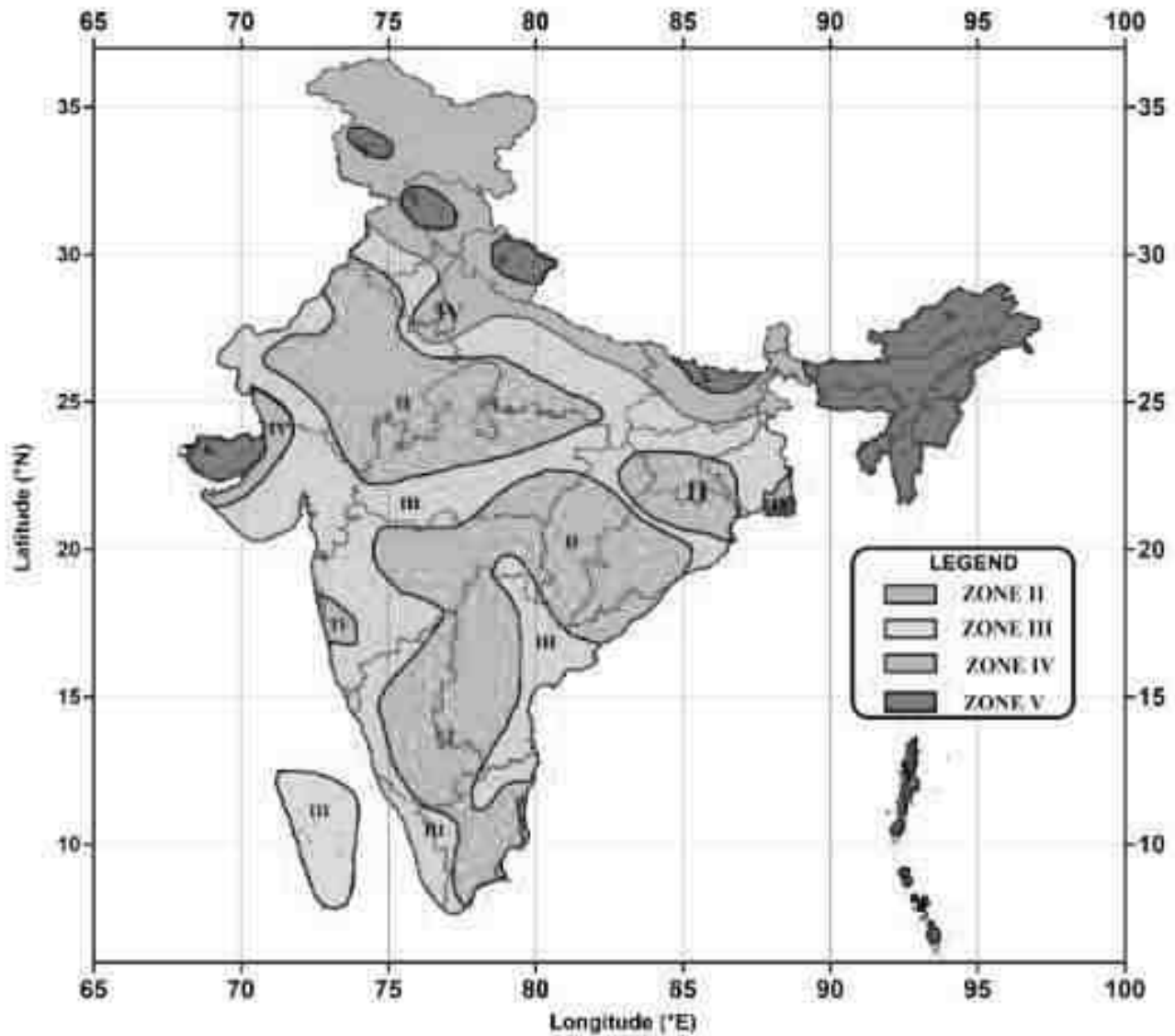


COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

B. SEISMIC DATA

From the seismic zone map of India as depicted in the **Figure No - 3.4**, it can be seen that the project site and study area falls in the Zone – II and is described as least active zone.

Figure 3.4: Seismic Zone Map of India



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

C. Climate and Rainfall Data:

Rainfall

Kancheepuram district generally experiences hot and humid climatic conditions. The district receives the rain under the influence of both southeast and northeast monsoons. Most of the precipitation occurs in the form of cyclonic storm caused due to the depressions in Bay of Bengal chiefly during northeast monsoon period. The southwest monsoon rainfall is highly erratic and summer rains are negligible. The normal annual rainfall over the district varies from 1105 mm to 1214mm.

Temperature

High relative humidities between 58 and 84% prevail throughout the year. Relative humidity is maximum in the morning and minimum in the evening. The minimum and maximum temperature are 20°C & 37°C. The daytime heat is oppressive and the temperature is as high as 43°C. Rainfall data collected by kanchipuram Rain gauge station for the period of 2011 to 2023 is given in below Table:3.8

Table 3.8: Average Annual Rainfall Data (2011 – 2020)

Year	Jan Actual (mm)	Feb Actual (mm)	Mar Actual (mm)	Apr Actual (mm)	May Actual (mm)	Jun Actual (mm)	Jul Actual (mm)	Aug Actual (mm)	Sep Actual (mm)	Oct Actual (mm)	Nov Actual (mm)	Dec Actual (mm)	Cumulative Actual (mm)
2011	6.37	51.44	0	42.51	23.82	57.75	167.88	231.13	116.9	196.37	320.6	130.94	1346
2012	4.31	0	1.8	46.05	7.7	63.62	118.63	144.5	129.86	255.19	190.05	218.88	1181
2013	0.05	28.82	13.56	0.17	19.56	68.68	132.87	139.29	160.92	141.1	126.66	70.64	902.3
2014	0.7	7.09	0	0	37.88	98.12	52.85	113.97	129.27	204.08	141.35	123.53	908.8
2015	1.03	0	0.09	54	39.83	28.01	95.28	123.29	65.75	177.14	1098.4	625.56	2308
2016	0.22	0	0	0	188.74	60.8	65.2	130.95	215.02	24.61	26.64	229.11	941.3
2017	4.87	0	0.01	0	1.85	35.26	79.09	137.3	44.71	141.31	232.8	63.62	740.8
2018	1.21	0.47	3.98	0.71	0.44	41.11	35.06	162.62	53.53	142.18	228.08	44.44	713.8
2019	0.01	0.24	0.01	0.34	3.05	34.86	140.4	127.11	93.13	317.81	204.02	212.06	1133
2020	51.19	0.45	0	9.54	1.03	32.61	197.65	67.54	90.82	153.66	496.96	256.44	1358
2021	179.77	12.09	0	17.25	32.48	34.4	145.04	140.28	111.76	259.83	950.87	114.58	1998
2022	39.98	0	4.05	0.93	43.17	70.67	110.88	133.81	74.36	187.99	400.5	224.83	1291
2023	3.05	0.37	27.86	5.87	72.49	131.44	108.69	141.33	298.11	54.23	362.54	346.12	1552
Normal	22.4	9.7	4.7	14.2	41.2	56.6	116.1	157.9	132.1	247.5	317.4	132.3	1252.1

Source – IMD GRID – Kanchipuram Report



Figure 3.5: Total Rainfall

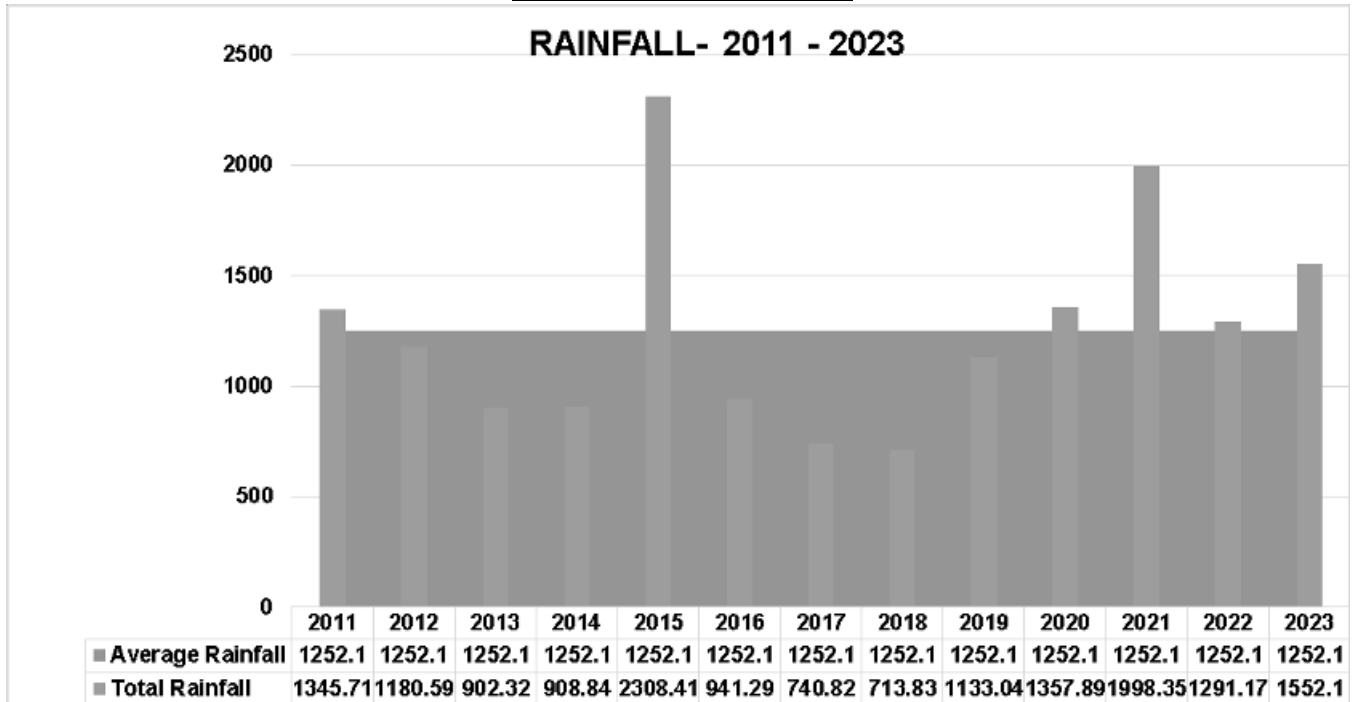
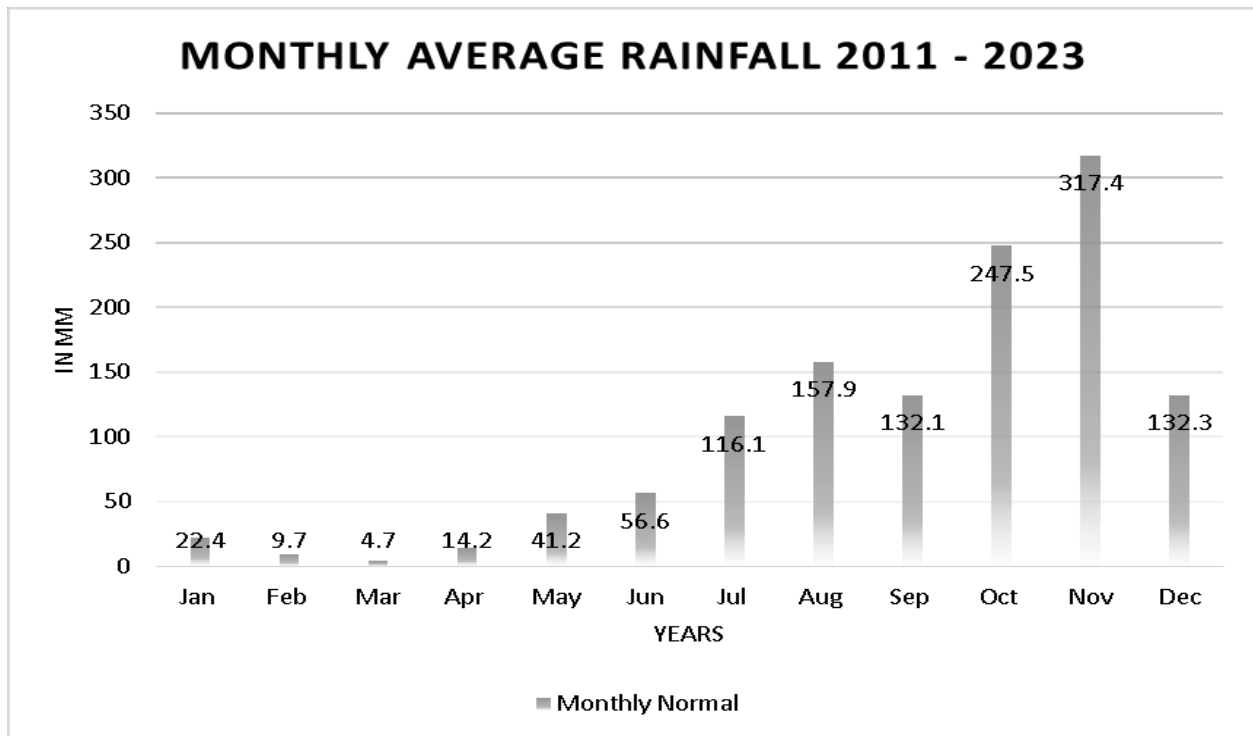


Figure 3.6: Average Monthly Rainfall



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

3.3.1.3 SITE SPECIFIC METEOROLOGICAL DATA:

Micrometeorology and microclimatic parameters were recorded by installing a weather monitoring station near mine lease area. Data of wind velocity, wind direction, ambient temperature, relative humidity, were recorded throughout the monitoring period.

DATA ANALYSIS:

The temperature in the area during the study period ranged from 24.0°C to 40.3°C while the relative humidity varied between 31.0 – 94.0%. The wind speed during the study period ranged from <1.8 to 27.7 Km/hr. The predominant wind direction is from south east. The meteorological data are presented in **Table no – 3.9**. The average wind rose is depicted in **Figure No - 3.7**.

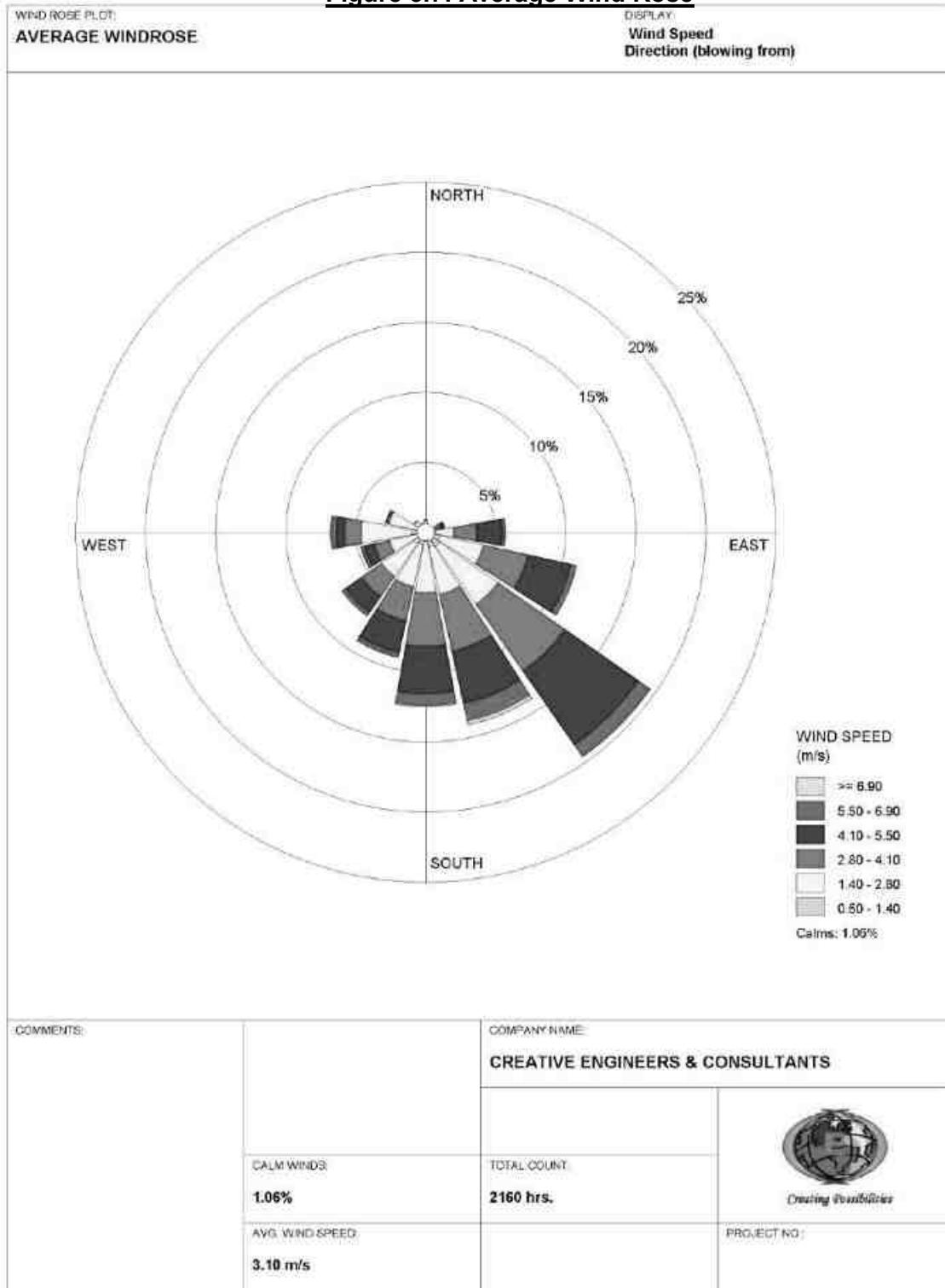
Table 3.9: Meteorological Data

Season: Winter Season, Mar 2024 to May 2024)			
S.NO	PARAMETERS	MIN	MAX
1	Temperature In °c	24.0	40.3
2	Humidity in %	31.0	94.0
3	Wind speed in km/hr	<1.8	27.7
4	Predominant wind direction from	SE	



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 3.7: Average Wind Rose



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

3.3.2 AMBIENT AIR QUALITY (AAQ):

Ambient Air quality has been assessed through a network of 5 ambient air quality stations. The following methodology has been considered for design of ambient air quality monitoring network in the area. Based on these criteria, 5 numbers of air sampling stations were selected in the area as shown below in Table No.3.10.

- ❖ Topography / terrain of study area.
- ❖ Populated areas within study area.
- ❖ Residential /sensitive areas within study area.
- ❖ Magnitude of surrounding industries.
- ❖ Representation of regional background levels.
- ❖ Representation of cross sectional distribution in down wind direction.
- ❖ Predominant wind direction and wind pattern.

Table 3.10: Air Quality Monitoring

1.	Monitoring Period	Summer Season (March 2024 – May 2024)
2.	Monitoring Location	The location map showing Ambient Air Quality study stations are shown in Figure No- 3.8 .
3.	Methodology	
	Parameter	Protocol
	a. Particulate Matter (PM10)	Gravimetric (IS 5182: Part 23:2017)
	b. Particulate Matter PM2.5	Gravimetric (IS 5182: Part 24:2019)
	c. Sulphur Dioxide	Colorimetric (West & Gaeke Method) (IS 5182: Part 02: 2017)
	d. Nitrogen Dioxide	Colorimetric(Modified Jacob & Hocheiser Method) (IS 5182: Part 06:2017)
	e. Carbon Monoxide	CO Monitor
	f. Silica	Colorimetric (Molybdate Method) NIOSH 7601 -2003
4.	Monitoring Frequency	2 days in a week, 4 weeks in a month for 3 months in a season.

Table 3.11: Air Quality Monitoring Locations

S.NO	LOCATION CODE	LOCATION	DISTANCE FROM CORE ZONE (KM)	DIRECTION	DISTANCE FROM CORE ZONE (KM)	DIRECTION
			(2.23.12Ha)		(2.58.0Ha)	
1	A1	Near Lease Area	--	--	--	--
2	A2	Pazhaveri Village	580m	SE	1.4km	SE
3	A3	Pinayur Village	1.5km	NE	2.3km	NE
4	A4	Arunkundram Village	1.2Km	SW	770m	SW
5	A5	Staff Building SE of Thirumukkodal Village	2.1Km	NW	1.1km	NW



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 3.8: Ambient Air Quality Study Stations



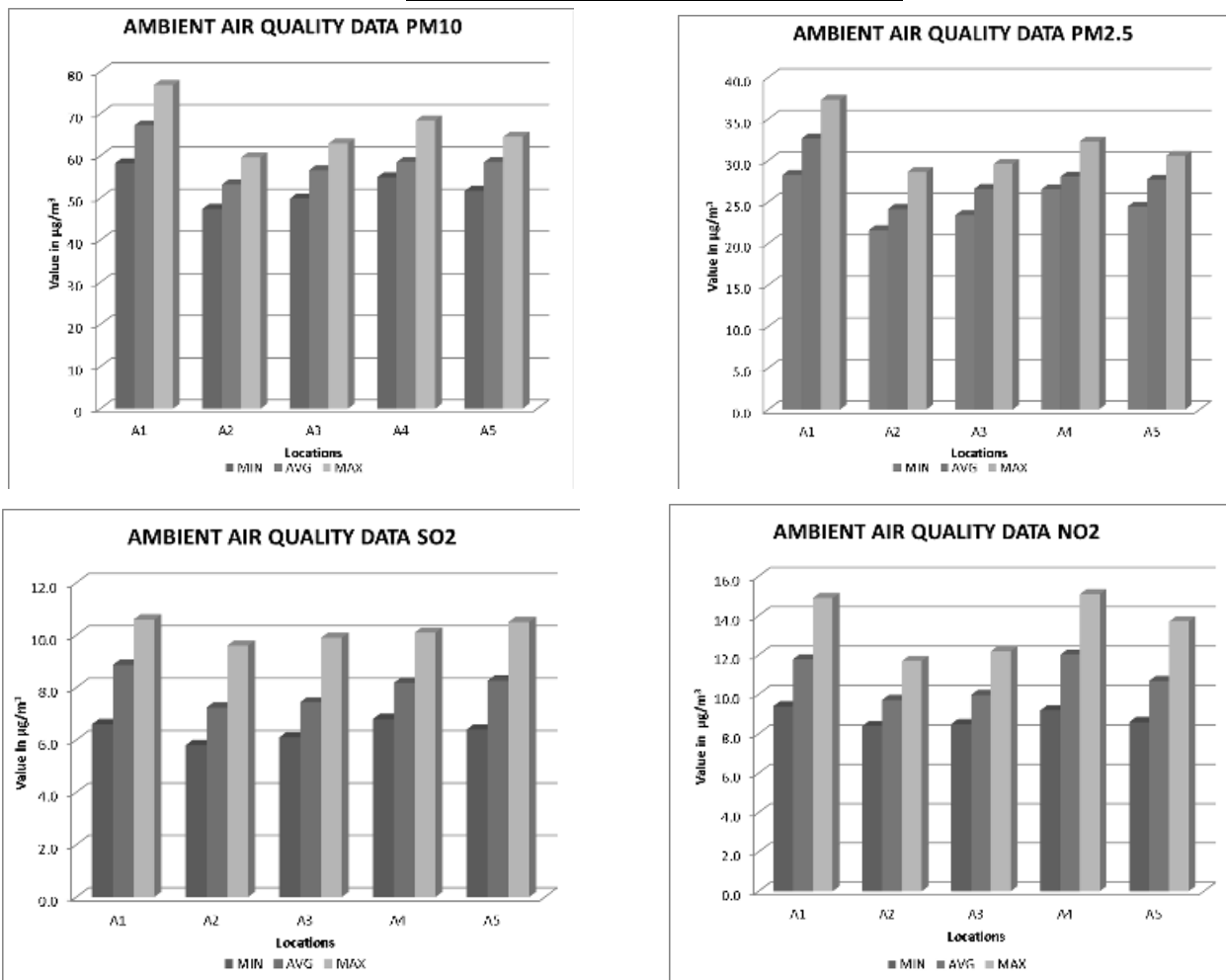
COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Table 3.12: Ambient Air Quality Data

PARAMETERS LOCATIONS	Cat.*	All Value in $\mu\text{g}/\text{m}^3$											
		PM ₁₀			PM _{2.5}			SO ₂			NO ₂		
		MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX
A1-Near Lease Area	I	58.2	67.2	76.8	28.3	32.7	37.3	6.6	8.9	10.6	9.4	11.8	14.9
A2-Pazhaveri Village	R	47.4	53.2	59.6	21.6	24.1	28.6	5.8	7.2	9.6	8.4	9.7	11.7
A3-Pinayur Village	R	49.8	56.6	62.9	23.4	26.6	29.6	6.1	7.4	9.9	8.5	10.0	12.2
A4-Arunkundram Village	R	54.9	58.5	68.4	26.5	28.1	32.3	6.8	8.2	10.1	9.2	12.0	15.1
A5-Staff Building SE of Thirumukkodal Village	R	51.6	58.4	64.5	24.5	27.7	30.6	6.4	8.3	10.5	8.6	10.7	13.7
NAAQ Limits		PM₁₀			PM_{2.5}			SO₂			NO₂		
	*	100			60			80			80		
	**	100			60			80			80		

***Note: Category: * - Industrial, Residential, Rural and other area, ** – Ecologically Sensitive Area (notified by Central Government)**

Figure 3.9: Ambient Air Quality Data



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

3.3.2.1 Results and Discussion:

The AAQ monitored data for all locations for above parameters are shown in **Table No - 3.12** and in **Figure No - 3.9**. Ambient Air Quality data during the study period is given in **Annexure-10**. From the table it is seen that, in the ambient air, the PM₁₀ values were in the range of 47.4-76.8 µg/m³. PM_{2.5} values were in the range of 21.6-37.3 µg/m³. SO₂ levels were ranging from 5.8– 10.6 µg/m³. NO₂ levels were ranging from 8.4-15.1 µg/m³.

The existing Ambient Air Quality levels for PM₁₀, PM_{2.5}, 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. Silica values in the study area are found to be below detectable limit. (Detection limit – 0.05 mg/m³)

3.3.3 WATER ENVIRONMENT:

Assessment of baseline data on water environment includes Identification of water resources, Collection of water samples and Analyzing water samples collected for physico-chemical parameters as per standards. The water sampling was carried out for 5 locations. Details of the same has been provided below:

Table 3.13: Water Quality Monitoring

1.	Monitoring Period	Summer Season (March 2024 – May 2024)					
2.	Monitoring Location	The location map showing water sampling locations are given in Figure No.3.10 .					
	Code	Location	Sample Type	Distance	Direction	Distance	Direction
				2.23.12Ha		2.58.0Ha	
	W1	Near Lease Area	Bore well	-	-	-	-
	W2	Pazhaveri Village	Bore well	580m	SE	1.4km	SE
	W3	Pinayur Village	Bore well	1.5km	NE	2.3km	NE
	W4	Arunkundram Village	Bore well	1.2Km	SW	770m	SW
	W5	Staff Building SE of Thirumukkodal Village	Bore well	2.1Km	NW	1.1km	NW
3.	Methodology	Sampling - IS 3025 Part - I					
		Analysis – IS 3025 relevant parts / APHA 23rd Edition					



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 3.10: Location of Water Sampling Stations



Table 3.14: Summary of Water Quality Data

Season	(March 2024 – May 2024)	
Monitoring Locations	5 locations	
Parameters	Range of values	Limits*
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 CaCO ₃), mg/L	105 – 450	600
Total Alkalinity (as CaCO ₃), mg/L	94.50– 266	600
Sulphates as SO ₄ ²⁻ , mg/L	18.90 – 53.20	400
Iron as Fe, mg/L	0.02 – 0.07	0.3
Nitrate as NO ₃ , mg/L	1.36 – 2.95	45
Fluoride as F, mg/L	0.21 – 0.45	1.5

3.3.3.1 Results and Discussion:

The results of the water sample analysis are shown in **Table No - 3.14**. The pH values of bore well water were ranging in between 6.95 – 7.61, TDS values were in the range of 212 – 550mg/L. Chloride values were ranging from 82.30 – 212mg/L. Iron content was found to be in the range 0.02 – 0.07mg/L. 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. The water quality data is provided in **Annexure-11**.

3.3.4 NOISE ENVIRONMENT:

Opearional phase of this project may lead to increase noise levels from the existing levels at least in and around the project area. As noise level beyond permissible limits will cause adverse impacts on the environment, it has become imperative to assess the noise levels in and around the mine area. Noise level measurements were taken at the 5 locations during the monitoring period. Details of the same are provided below:

COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

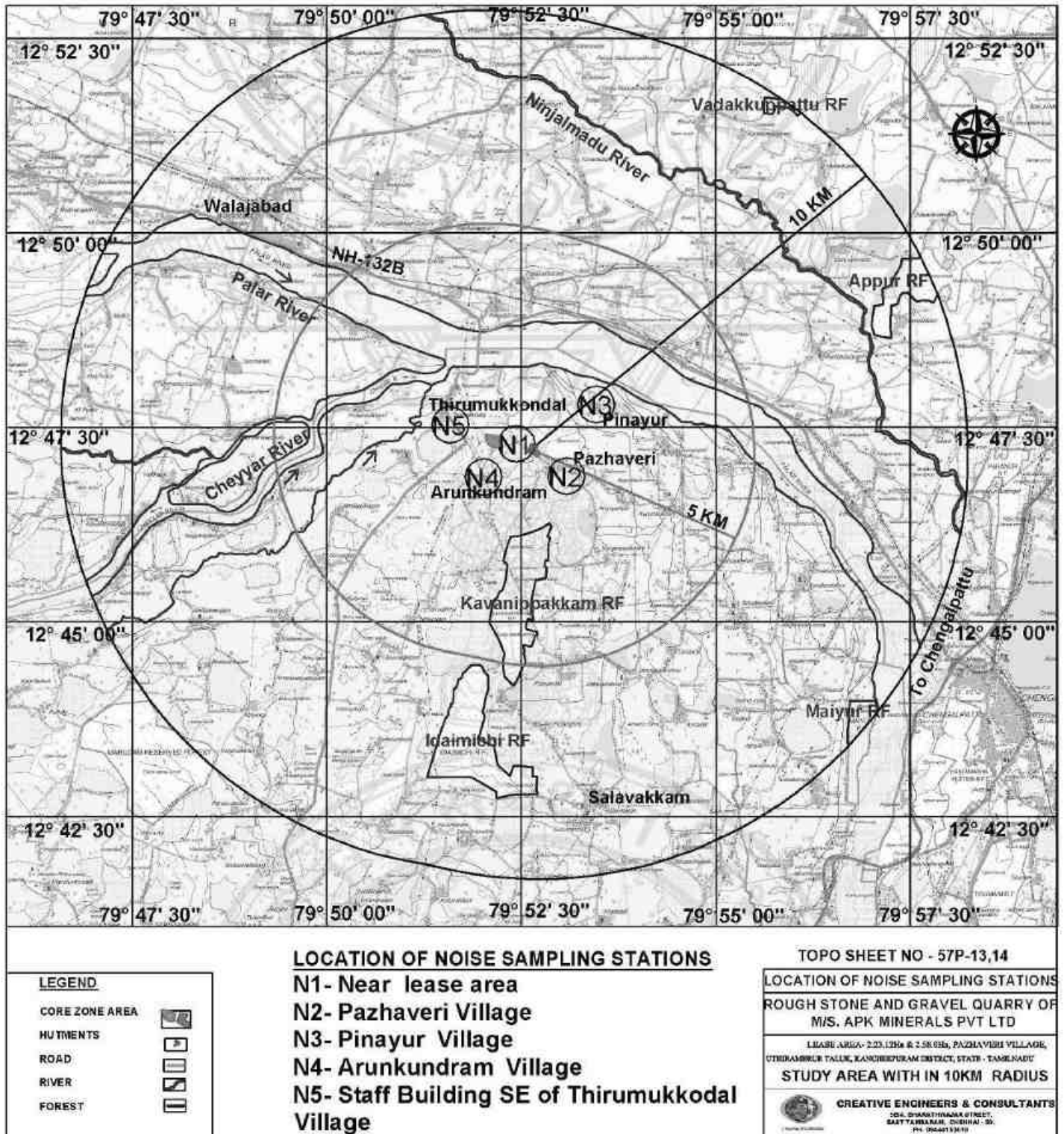
Table 3.15: Noise Level Monitoring

1.	Monitoring Period	Summer Season (March 2024 – May 2024)				
2.	Monitoring Location	The location map showing noise monitoring locations are given in Figure No.3.11.				
	Code	Location	Distance	Direction	Distance	Direction
			2.23.12Ha		2.58.0Ha	
	N1	Near Lease Area	-	-	-	-
	N2	Pazhaveri Village	580m	SE	1.4km	SE
	N3	Pinayur Village	1.5km	NE	2.3km	NE
	N4	Arunkundram Village	1.2Km	SW	770m	SW
	N5	Staff Building SE of Thirumukkodal Village	2.1Km	NW	1.1km	NW
3.	Methodology	Noise levels were measured using sound level meter manufactured by (Model No - SL- 4001, Make - Lutron). Sound Pressure Level (SPL) measurements were measured at all locations where ambient air quality monitored; one reading for every hour was taken for 24 hours.				
4.	Monitoring Frequency	Once during monitoring period				



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 3.11: Location of Noise Sampling Stations

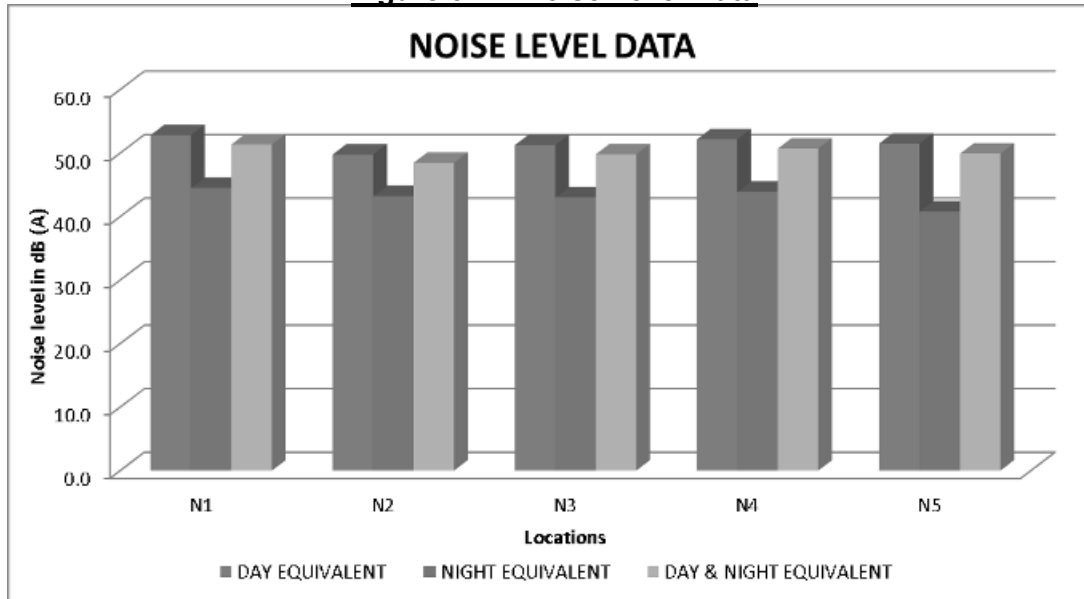


COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Table 3.16: Ambient Noise Level in dB (A)

Date and time of monitoring	N1	N2	N3	N4	N5
Day Equivalent	52.8	49.8	51.3	52.2	51.5
Night Equivalent	44.5	43.2	43.0	43.9	40.8
Day & Night Equivalent	51.4	48.5	49.8	50.7	49.9
Limits: As per CPCB: Work zone Exposure in 8 hr - 90 dB(A)					
As per MoEF&CC: Residential: Day equivalent - 55 dB(A); Night equivalent - 45 dB(A)					

Figure 3.12: Noise Level Data



3.3.4.1 Results and Discussion:

The results of noise levels for all locations are given in **Table No-3.16**. The noise values for all above locations are shown in a comparative chart given in **Figure No - 3.12**. Day Equivalent Noise (Leq-d) noise levels were ranging from 49.8 dB(A) to 52.8 dB(A) and night Equivalent Noise (Leq-d) levels ranged between 40.8 dB(A) to 44.5 dB(A). While comparing with the MOEF&CC Norm of 55 dB(A) for day time and 45 dB(A) for night time, the monitored ambient noise levels were within the limit values for Residential areas.

3.3.5 SOIL CHARACTERISTICS:

Soil samples were collected in 4 locations in the core and buffer zone to analyse the physiochemical characteristics of the soil in the area. Elaborate details of the same has been provided below.



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

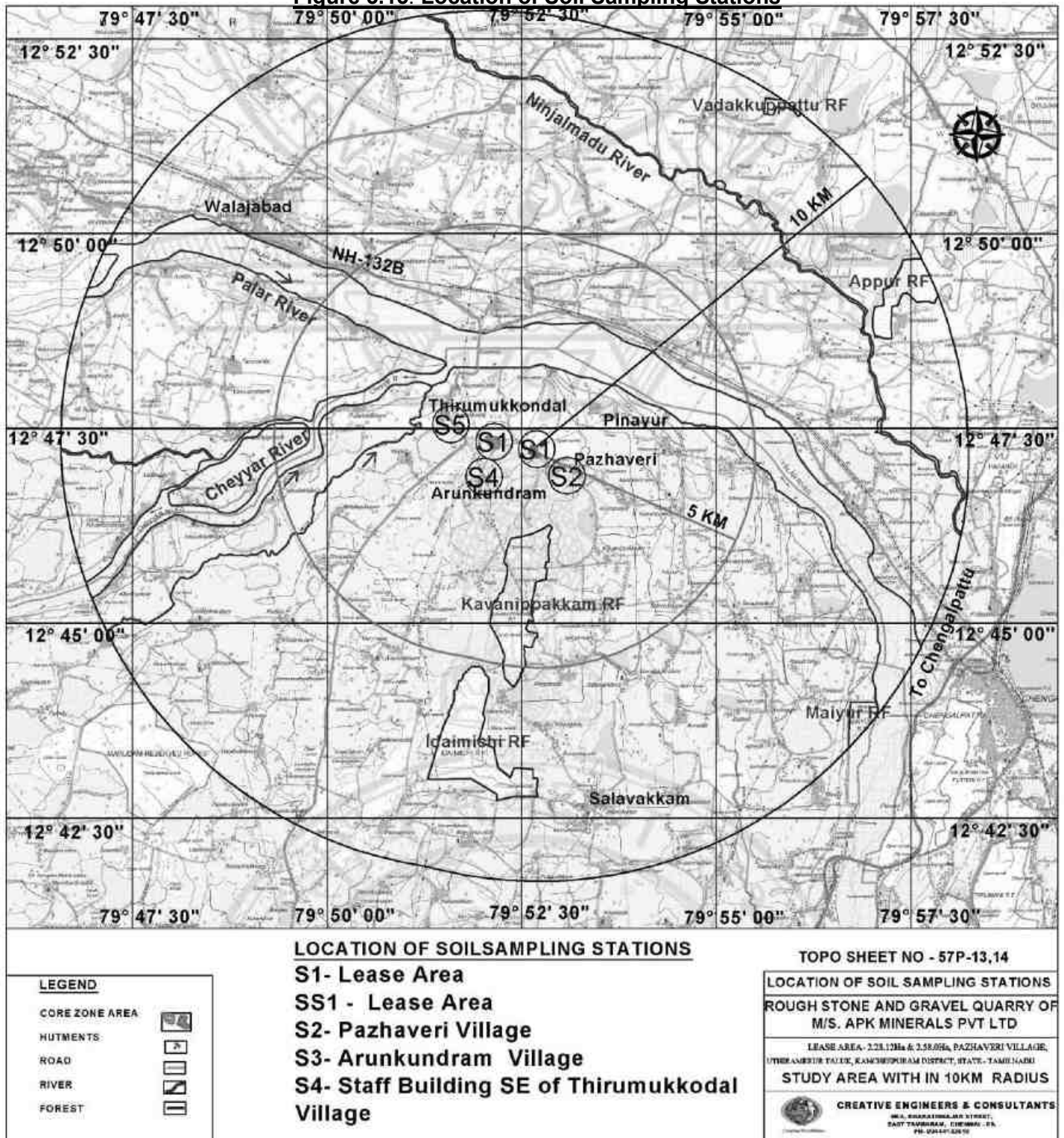
Table 3.17: Soil Quality Monitoring

1.	Monitoring Period	Summer Season (March 2024 – May 2024)				
2.	Monitoring Location	The location map showing soil sampling locations are given in Figure No.3.13.				
	Code	Location	Distance	Direction	Distance	Direction
			2.23.12Ha		2.58.0Ha	
	S1	Near Lease Area- (2.23.12Ha)	-	-	-	-
	SS1	Near Lease Area - (2.58.0Ha)	-	-	-	-
	S2	Pazhaveri Village	580m	SE	580m	SE
	S3	Arunkundram Village	1.2Km	SW	1.2Km	SW
S4	Staff Building SE of Thirumukkodal Village	2.1Km	NW	2.1Km	NW	
3.	Methodology	Composite soil samples using sampling augers and field capacity apparatus.				
4.	Monitoring Frequency	Once during monitoring period				



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 3.13: Location of Soil Sampling Stations



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Table 3.18: Soil Quality Data

S.No	Parameters	Unit	S1	SS1	S2	S3	S4
1	pH at 25°C	-	7.28	7.25	7.11	7.26	7.01
2	Electrical Conductivity	(µmhos/cm)	84.65	81.24	50.28	86.57	90.24
3	Dry matter content	%	89.74	86.47	88.52	92.41	91.63
4	Water Content	%	10.26	13.53	11.48	7.59	8.37
5	Organic Matter	%	1.26	1.21	0.92	1.34	0.86
6	Soil texture	-	SILT LOAM	SILT LOAM	SILT LOAM	SILT LOAM	SILT LOAM
7	Grain Size Distribution i. Sand	%	39.56	39.45	28.68	43.05	36.14
8	ii. Silt	%	54.69	55.31	65.58	52.33	54.16
9	iii. Clay	%	5.75	5.24	5.75	4.62	9.70
10	Phosphorous	µg/g	1.32	1.34	0.68	0.57	1.21
11	Sodium	mg/kg	740	745.00	632.00	360.00	472.00
12	Potassium	mg/kg	310	320.00	268.00	206.00	236.00
13	Total Nitrogen	mg/kg	746	751	620	561	456
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)
15	Water Holding Capacity	%	14.3	14.50	13.60	13.80	13.90
16	Porosity	%	38.0	40.00	42.00	44.00	45.00

3.3.5.1 Results and Discussion:

Results of the soil samples show that the pH values were ranging between 7.01 to 7.28 and Electrical Conductivity values were ranging between 50.28 – 90.24 µmhos/cm. Soils are generally Silt Loam type. Organic matter values were ranging between 0.86 – 1.34 %. Total Nitrogen values were ranging between 456 – 751mg/kg. Phosphorus values were ranging between 0.57– 1.34 µg/g. Potassium values were ranging between 206 -320 mg/kg. Sodium values were ranging between 360- 745 mg/kg. Total Sulphur values were observed to be BDL. The soil quality data for the 5 samples collected and analyzed are provided in **Table No – 3.18.**

3.4 LAND ENVIRONMENT - LANDUSE & LAND COVER

For preparing an impact statement, aspects of the land conditions are covered under land use. An industrial project / mine can cause changes in land use, soil process in different intensities depending upon the size of the project and distance involved between the industries and the area. Here, land use status for a radius of 10 km has been studied.



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3.4.1 DATA USED AND METHODOLOGY

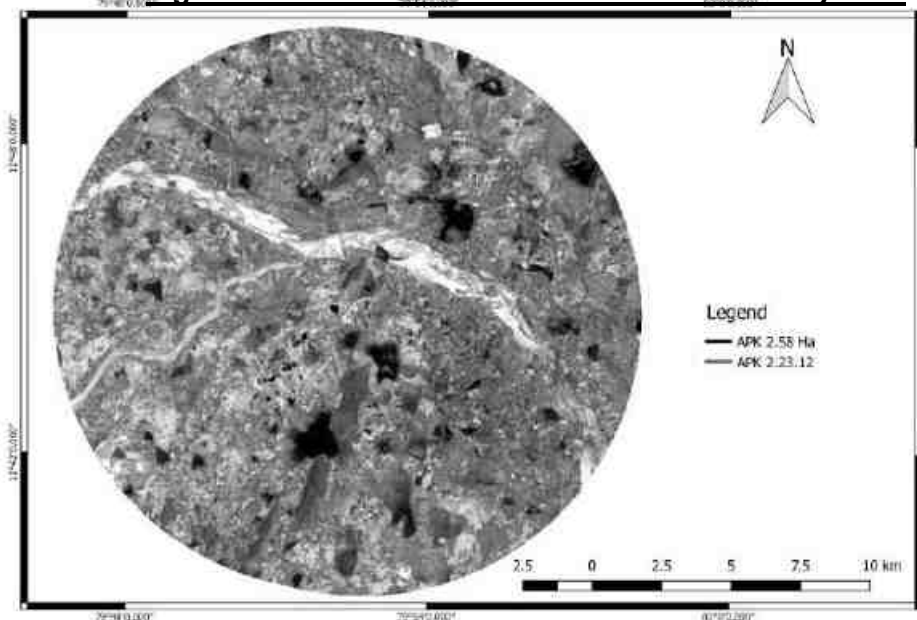
For the present study on land use pattern of buffer area around the proposed stone and gravel quarry, an archived historical data of Landsat 8 data shas been used as base data (Figure No.3.14) has been used to generate the require landuse map showing their spatial pattern within the buffer area. The table showing data used for generation of information on landuse and subsequent GIS analysis is given below

Table 3.19: RS satellite image used for the present study

S.No	Type of Data	Date	Generated Map
1.	Landsat 8	April-2024	Landuse (LU) Map showing 10 Km buffer zone

Interpretation of satellite image requires understanding of relationship between image elements and their respective terrain elements. Since, in the present study, the landuse information is obtained using visual interpretation, an interpretation key is generated. The image elements such as color, tone, texture, size, shape and associated elements have been used to delineate various landuse categories. The landuse categorization and nomenclature used in the present study is based on the national level landuse classification system, which is adopted for the entire country as recommended by National Remote Sensing Centre (NRSC), Department of Space, Government of India.

Figure 3.14 : Landsat 8 Satellite Data of the Study Area



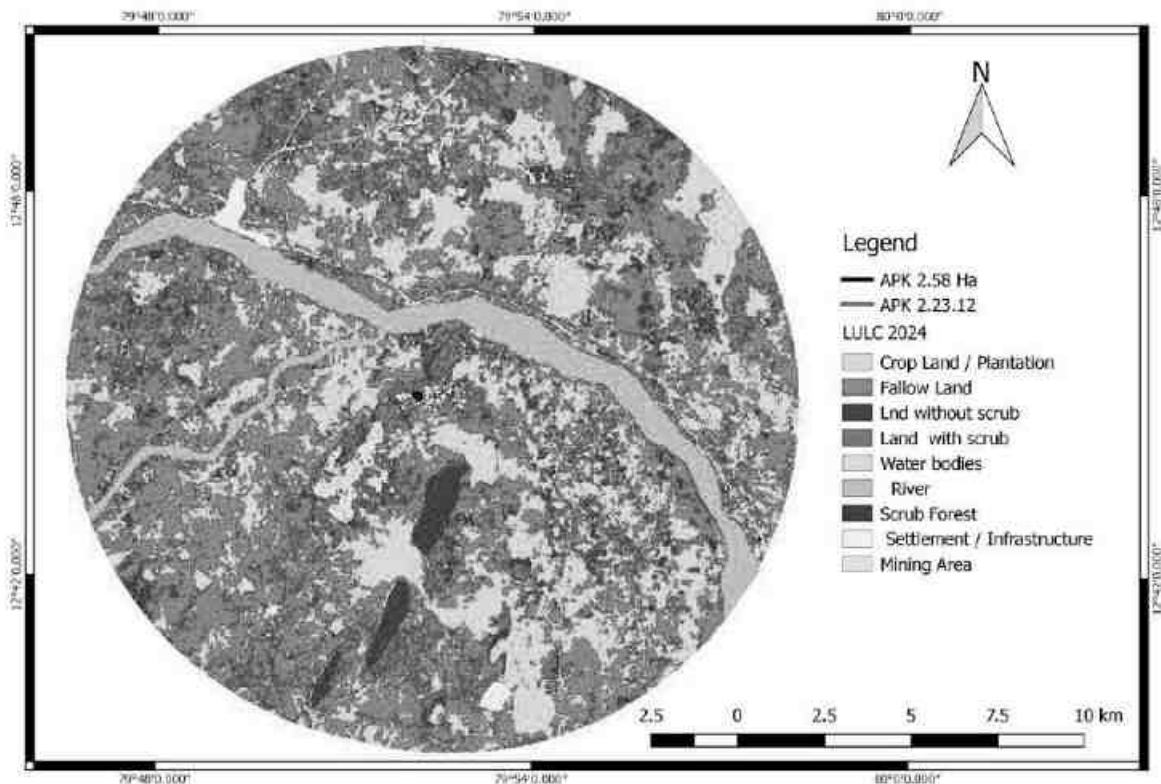
COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Table 3.20: Major Landuse Units of the Study Area

S.No	Major Category	Landuse unit
1	Built-Up Land	Village, Town, Industrial / Vacant Area
2	Agricultural Land	Crop Land Fallow Land Plantation Farm Land
3	Forest Land	Open Scrub Forest
4	Waste Land Mining Area	Land With Scrub/ Land Without Scrub Barren Rocky/ Stony Waste Quarries / Abandoned Quarries
5	Waterbodies	Tanks/ Rivers / Streams

Such LandUse and Land cover (LULC) categories have been verified using field check and identified sample sites within the buffer area, verified on field and transferred into gis geo-coordinates using observation coordinates received from hand held GPS (global positioning system) instrument. Thus, an interpreted final landuse map has been generated (Figure No. 3.15) using above such elaborate procedure and transformed into GIS environment for its spatial distribution and area estimation. Spatial nature and extent of various landuse categories within the buffer area is discussed is given below:

Figure 3.15: Map Showing Land Use Categories around 10km Buffer



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Table 3.21: Area Estimation of Landuse Categories in Buffer Zone

S.No	Landuse Feature	Area (Sq.Km)	Percentage
1	Agriculture/ Plantation	87.03	25.57
2	Fallow Land	146.04	42.92
3	Land Without Scrub	14.07	4.13
4	Land With Scrub	44.22	13.00
5	Water bodies	14.61	4.29
6	River	20.18	5.93
7	Scrub Forest	4.62	1.36
8	Settlement / Infracture	5.45	1.60
9	Mining / infrastructure	4.07	1.19
	Total	340.29	100.00

From the above table it is seen 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.



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Photograph showing Land use In Buffer Zone



Crop Land



Land without Scrub



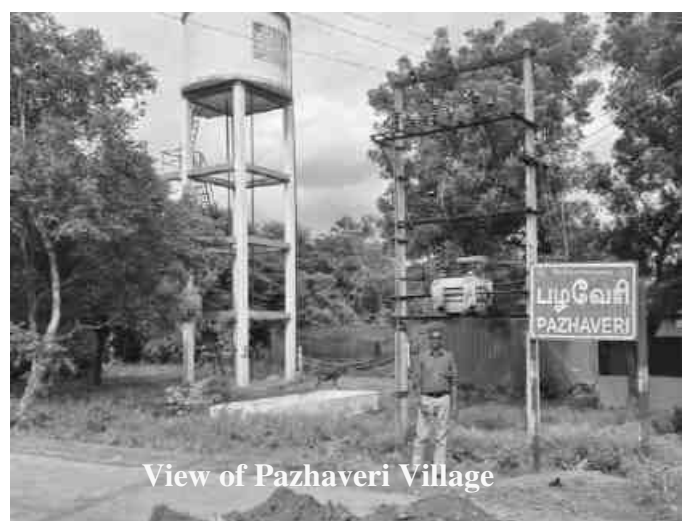
Reserve Forest



Land with Scrub



River



View of Pazhaveri Village



3.4.2 LAND USED BASED ON REVENUE RECORDS:

The lease area falls in Pazhaveri Village, Uthiramerur Taluk, kanchipuram District, Tamil Nadu state and the study area for the land use pattern (10 km radius) has been divided into four zones viz. Zone-I (0-2 km), Zone-II (2-5 km), Zone-III (5-10 km) and Zone-IV (0-10 km) respectively. The land use pattern of the rural villages in the study area falling within 10 km radius around the proposed project area is presented in Table no - 3.22. Village wise land use pattern is provided in **Annexure-12**.

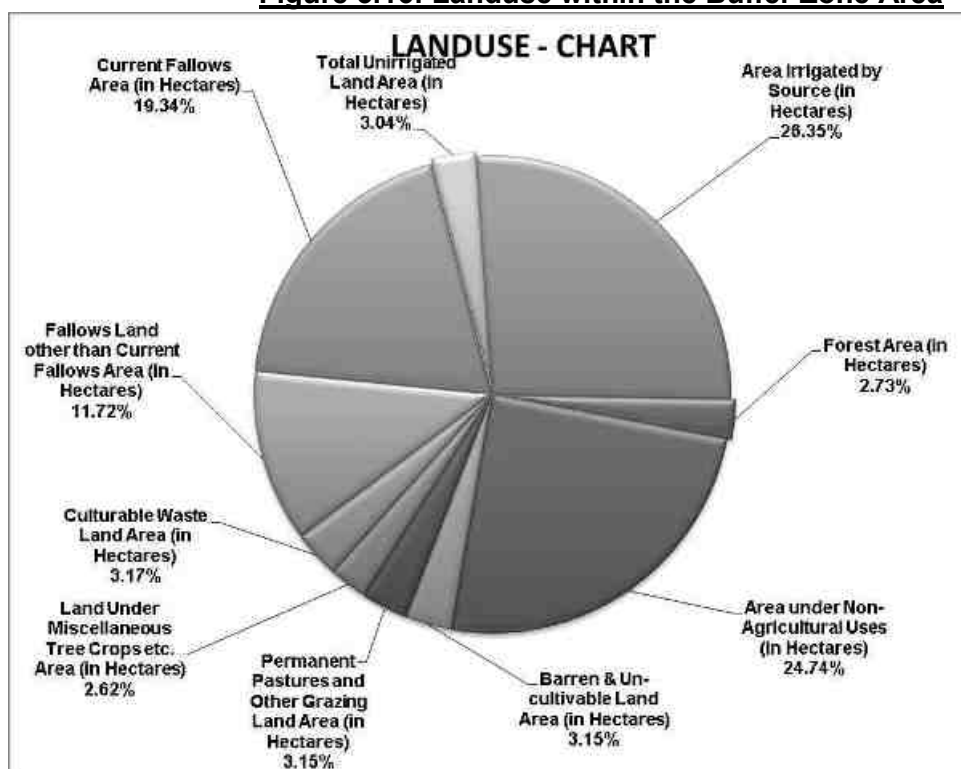


COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Table 3.22: Land Use Pattern of the Study Area Falling Within 10 Km Area in (Ha)

Distance	Total Geographical Area	Forest Area	Area under Non-Agricultural Uses	Barren & Un-cultivable Land Area	Permanent Pastures and Other Grazing Land Area	Land Under Miscellaneous Tree Crops etc. Area	Culturable Waste Land Area	Fallows Land other than Current Fallows Area	Current Fallows Area	Total Un irrigated Land Area	Area Irrigated by Source
0- 2 KM	1838.4	68	665.05	5.38	72.22	56.83	0.21	166.88	154.94	34.06	614.83
2 - 5 KM	7157.71	141.54	1167.26	551.09	91.86	134.98	217.48	911.41	1949.58	174.96	1817.55
5-10 KM	26453.49	756.88	6936.6	561.04	954.13	737.63	904.53	3074.92	4749.95	868.95	6908.86
0-10 KM	35449.6	966.42	8768.91	1117.51	1118.21	929.44	1122.22	4153.21	6854.47	1077.97	9341.24

Figure 3.16: Landuse within the Buffer Zone Area



3.5 BIOLOGICAL ENVIRONMENT:

Study of the biological environment of any area comprises of well-planned ecological survey for the floristic and faunal composition of the areas through various scientifically planned techniques.

3.5.1 FLORA:

An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. The objective of the survey is as follows:

- ❖ Generate existing data from field observations of various terrestrial floristic occurrences.
- ❖ Collect secondary data from Government records as well as through discussion with Forest officials, knowledgeable public etc.,
- ❖ Compare the data with authentic past records to identify changes, if any.
- ❖ Identify the impact of project operations on the biological aspects.

To accomplish the above objectives, a general ecological survey covering an area of 10 km radius was conducted. The locations were identified for phyto-sociological aspects to assess the current status.

A.CORE ZONE:

The entire lease area is covered with rocky exposures devoid of maor vegetation except for peripheral plantation carried out by the proect proponent , bushes and shrubs.



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Table 3.23: List of Flora in the Core Zone – APK Minerals Pvt. Ltd (2.58 Ha).

SI.No	Species Name	Common Name	Family
Trees			
1	<i>Acacia nilotica</i>	Karuveali	Fabaceae
2.	<i>Prosopis juliflora</i>	Cimaikkaruvel	Fabaceae
3	<i>Acacia leucophloea</i>	Valvelam	Fabaceae
4	<i>Azadirachta indica</i>	Veppai	Meliaceae
5	<i>Acacia auriculiformis</i>	<i>Pencile tree</i>	<i>Fabaceae</i>
Shrubs			
1	<i>Calotropis gigantean</i>	Yerukku	Asclepiadaceae
2	<i>Ziziphus oenoplia</i>	Elanthalai	Rhamnaceae
3	<i>Lantana camara</i>	Unni chedi	Verbenaceae
4	<i>Nerium oleander</i>	Apocynaceae	Arali
Herbs			
1	<i>Sida acuta</i>	Palambasi	Malvaceae
2	<i>Abutilon indicum</i>	Thuththi	Malvaceae
3	<i>Phyllanthus niruri</i>	Keelanelli	Phyllanthaceae
4	<i>Achyranthes aspera</i>	Nayuruvi	Amaranthaceae
5	<i>Solanum xanthocarpum</i>	Kantankattiri	Solanaceae

Table 3.24: List of Flora in the Core Zone – APK Minerals Pvt. Ltd (2.23.12 Ha).

SI.No	Species Name	Common Name	Family
Trees			
1	<i>Acacia nilotica</i>	Karuveali	Fabaceae
2.	<i>Prosopis juliflora</i>	Cimaikkaruvel	Fabaceae
3	<i>Azadirachta indica</i>	Veppai	Meliaceae
Shrubs			
1	<i>Calotropis gigantea (L.) R. Br.</i>	Yerukku	Asclepiadaceae
2	<i>Lantana camara L.</i>	Unni chedi	Verbenaceae
3	<i>Vitex negundo</i>	Nochchi	Verbenaceae
Herbs			
1	<i>Phyllanthus niruri</i>	Keelanelli	Phyllanthaceae
2	<i>Abutilon indicum</i>	Thuththi	Malvaceae
3	<i>Achyranthes aspera</i>	Nayuruvi	Amaranthaceae
4	<i>Solanum xanthocarpum</i>	Kantankattiri	Solanaceae



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

PHOTOS OF CORE ZONE IN APK BLUE METALS PRIVATE LIMITED EXTEND 2.58 HA



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

PHOTOS OF CORE ZONE IN APK BLUE METALS PRIVATE LIMITED EXTEND 2.23.12 HA



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

C.BUFFER ZONE:

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 adjacent to irrigated areas. Idaimichi R F is mostly rocky with patches of barren land. Kavanippakkam R F consist of shrubs and bushes. The Dominated species in the study area are Acacia auriculiformis Pongamia pinnata, Prosopis juliflora, Morinda tinctoria, Delonix elata, Azadirachta indica etc. The detailed list of plants found in the buffer zone is given below:

Table 3.25: List of Floristic Species in the Buffer Zone

Sl. No.	Botanical name	Family	Local Name
Trees			
1	Cassia fistula	Fabaceae	Konrai
2	Borassus flabelliformis	Arecaceae	Panna-maram
3	Delonix regia	Fabaceae	Mayil konrai
4	Tectona grandis	Lamiaceae	Tekku
5	Citrus limon	Rutaceae	Lemon
6	Ficus benghalensis	Moraceae	Alai Maram
7	Peltophorum pterocarpum	Fabaceae	Perunkonrai
8	Acacia auriculiformis	Fabaceae	Pencile tree
9	Pongamia pinnata	Fabaceae	Pungai
10	Atalantia monophylla	Rutaceae	Kattu Elumeachi
11	Syzygium cumini	Myrtaceae	Naval
12	Prosopis juliflora	Fabaceae	Velikathan
13	Casuarina equisetifolia	Casuarinaceae	Savukku
14	Polyalthia longifolia	Annonaceae	Nietilingam
15	Cocos nucifera	Arecaceae	Tennai
16	Cassia siamea	Caesalpinaceae	Manjal konrai
17	Bauhinia racemosa	Fabaceae	Tataki
18	Mangifera indica	Anacardiaceae	Ma Maram
19	Morinda tinctoria	Rubiaceae	Manchanari
20	Azadirachta indica	Meliaceae	Veppai
21	Acacia horrida	Fabaceae	Karuvelai
22	Ficus religiosa	Moraceae	Arasa Maram
23	Acacia nilotica	Fabaceae	Karuveali
24	Albizia odoratissima	Fabaceae	karu-vakai
25	Musa paradisiaca	Musaceae	Valzhlai
26	Carica papaya	Caricaceae	Pappali
27	Murraya koenigii	Rutaceae	Curry leaf
28	Acacia leucophloea	Fabaceae	Valvelam
29	Terminalia chebula	Combretaceae	Kadukkai
30	Moringa oleifera	Moringaceae	Murungai
31	Acacia catechu	Fabaceae	Karanagalli
32	Bambusa vulgaris	Poaceae	Bamboo
33	Thespesia lampas	Malvaceae	Puvarasu



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Sl. No.	Botanical name	Family	Local Name
34	Tamarindus indica	Fabaceae	Puli
35	Eucalyptus grandis	Myrtaceae	Gum tree
36	Delonix elata	Fabaceae	
37	Albizza amara	Fabaceae	Vagai
Shrubs			
1	Jatropha gossypifolia	Euphorbiaceae	Seemayavanakku
2	Carissa carandas	Apocynaceae	Kalakkai
3	Euphorbia tirucalli	Euphorbiaceae	kalli
4	Hibiscus rosa-sinensis	Malvaceae	Chemparutti
5	Dodonaea viscosa	Sapindaceae	viraali
6	Streblus asper	Moraceae	Parai maram
7	Opuntia elatior	Cactaceae	Cappattukkalli
8	Opuntia dillenii	Cactaceae	Cappattukkalli
9	Ziziphus oenoplia	Rhamnaceae	Elanthai
10	Agave americana	Asparagaceae	kittanara
11	Lantana camara	Verbenaceae	Unnichi
12	Canthium didymum	Rutaceae	Nanjul
13	Strychnos nuxvomica	Loganiaceae	kagodi
14	Solanum xanthocarpum	Solanaceae	Kantankattiri
15	Cassia auriculata	Fabaceae	Avarai
16	Vitex negundo	Verbenaceae	Nochchi
17	Grewia abutilifolia	Tiliaceae	Pampukonta
18	Carissa carandas	Apocynaceae	Kalakkai
19	Calotropis gigantea	Asclepiadaceae	Erukku
20	Adhatoda vasica	Acanthaceae	Adhatoda
21	Nerium oleander	Apocynaceae	Arali
Climber			
1	Asparagus racemosus	Asparagaceae	Tannir-vittan
2	Coccinia indica	Cucurbitaceae	Kovaikkai
3	Cissus quadrangularis	Vitaceae	Pirandai
Herbs			
1	Leucas aspera	Lamiaceae	Thumbai
2	Phyllanthus niruri	Phyllanthaceae	Keelanelli
3	Cleome viscosa	Cleomaceae	Kaattu kadugu
4	Acalypha indica	Euphorbiaceae	Kuppaimeni
5	Sida cordifolia	Malvaceae	Kurunthotti
6	Lepidagathis cristata	Acanthaceae	Karappanpoondu
7	Cassia tora	Caesalpinaceae	Senavu
8	Mimosa pudica	Mimosaceae	Thottaccurungi
9	Achyranthes aspera	Amaranthaceae	Nayuruvi
10	Sida acuta	Malvaceae	Palambasi
11	Ocimum sanctum	Lamiaceae	Thulasi
12	Parthenium spp	Asteraceae	Tiruvottukkay
13	Tridax procumbens	Asteraceae	Kenathuppondu
Grasses			
1	Cyperus sp	Poaceae	Korai
2	Cynodon dactylon	Poaceae	Arugampillu
3	Cenchrus ciliaris	Poaceae	Kollukattai



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The study area is observed to be not ecologically sensitive and no endangered or endemic species as per IUCN red list is observed.

3.5.2 FAUNA:

There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals like Cows, Buffalos, Dogs, Cats etc., are commonly found. The lease and 10 Km buffer zone does not fall in the Western Ghats ESA boundary. No wild mammalian species was directly sighted during the field survey. The list of fauna within the study area is given below:

Table 3.26: List of Fauna in the Buffer Zone

SI.No	Common name	Scientific Name	Family	IUCN/WPA Schedule
A. Mammals				
1	Boar	<i>Sus scrofa</i>	Suidae	LC /IV
2	Squirrel	<i>Funambulus palmarum</i>	Sciuridae	LC /III
3	Cat	<i>Felis catus</i>	Felidae	LC /III
4	Rat	<i>Rattus rattus</i>	Muridae	LC /IV
B. Reptiles				
1	Lizard	<i>Calotes versicolor</i>	Agamidae	LC / VII
2	Krait	<i>Bungarus caeruleus</i>	Elapidae	LC / IV
C. Birds				
1	Cattle egret	<i>Bubulcus ibis</i>	Ardeidae	LC
2	Indian tree pie	<i>Dendrocitta vagabunda</i>	Corvidae	LC
3	Small blue kingfisher	<i>Alcedo atthis</i>	Alcedinidae	LC
4	Spotted owlet	<i>Athene brama</i>	Strigidae	LC
5	Crow	<i>Corvus splendens</i>	Corvidae	LC
6	Black drongo	<i>Dicrurus macrocercus</i>	Dicruridae	LC
7	Little egret	<i>Egretta garzetta</i>	Ardeidae	LC
8	Rose ringed parakeet	<i>Psittacula krameri</i>	Psittacidae	LC
9	House sparrow	<i>Passer domesticus</i>	Passeridae	LC
	Spotted dove	<i>Streptopelia chinensis</i>	Columbidae	LC

LC - Least Concern

From the study it observed that the area in general consists of species of least concern only. No threatened or endemic or endangered species are observed. The area does not form the migratory path of the birds also.

3.6 HYDROGEOLOGICAL STUDY:

This section delves into the study of the hydrogeological scenario of the study area to evaluate the impact of mining activities on the nearby areas. The study area is considered to understand the nature of the general hydrogeological conditions of the area.

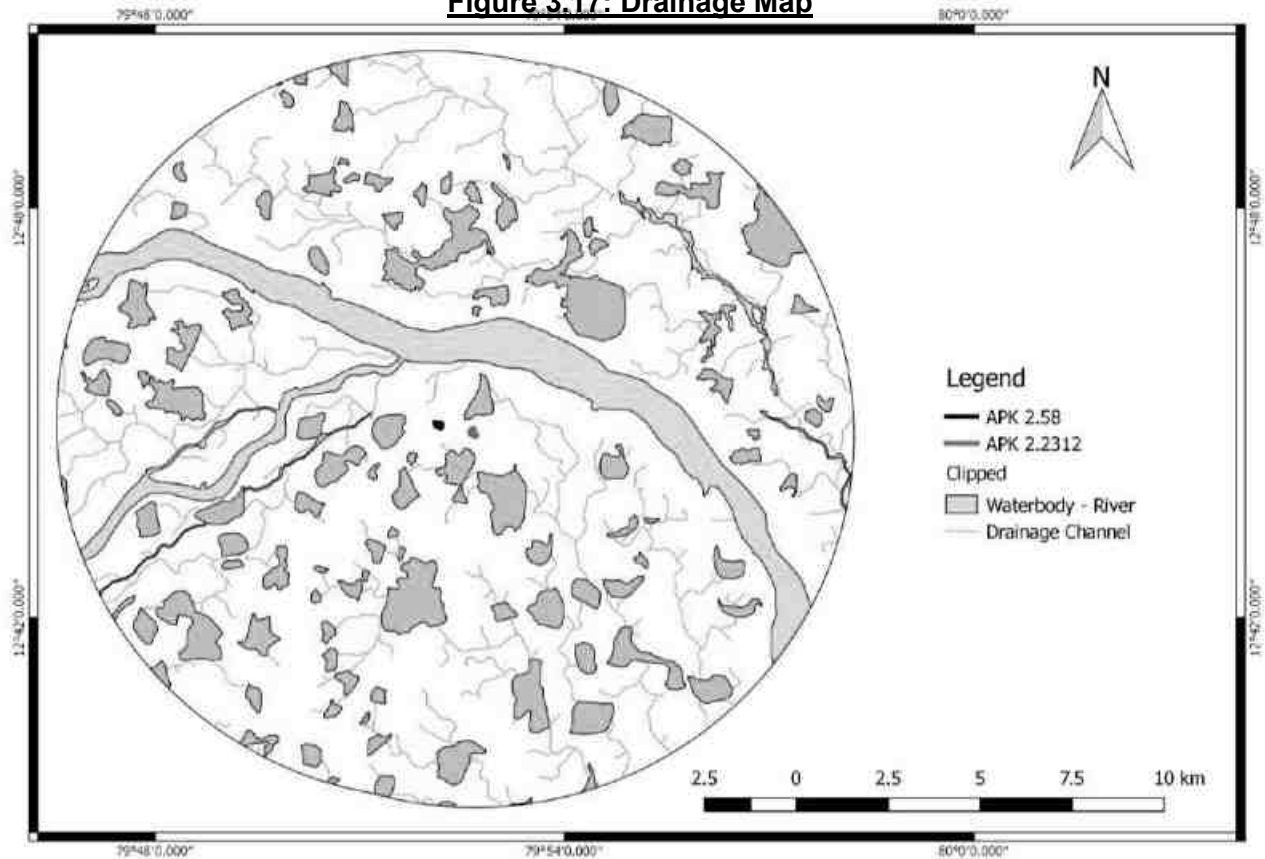


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3.6.1 PHYSIOGRAPHY AND DRAINAGE:

The applied lease area exhibits almost Plain topography with few outcrops of charnockite. The elevation of the applied lease area is 68 to 72 mRL. The drainage map of the buffer zone is given below in Figure No. 3.17.

Figure 3.17: Drainage Map



Since the lease and its proximate areas are plain land, it does not form any major catchment area. The drainage of the area is controlled by only few first order streams that too located far away from the lease area draining towards SE side. It is proposed to form garland drain around the periphery of the lease area to collect rainwater falling in the surrounding area and connect it to the settling pond. Clear water overflow from the settling pond will be connected to the downstream users and ensured its flow.

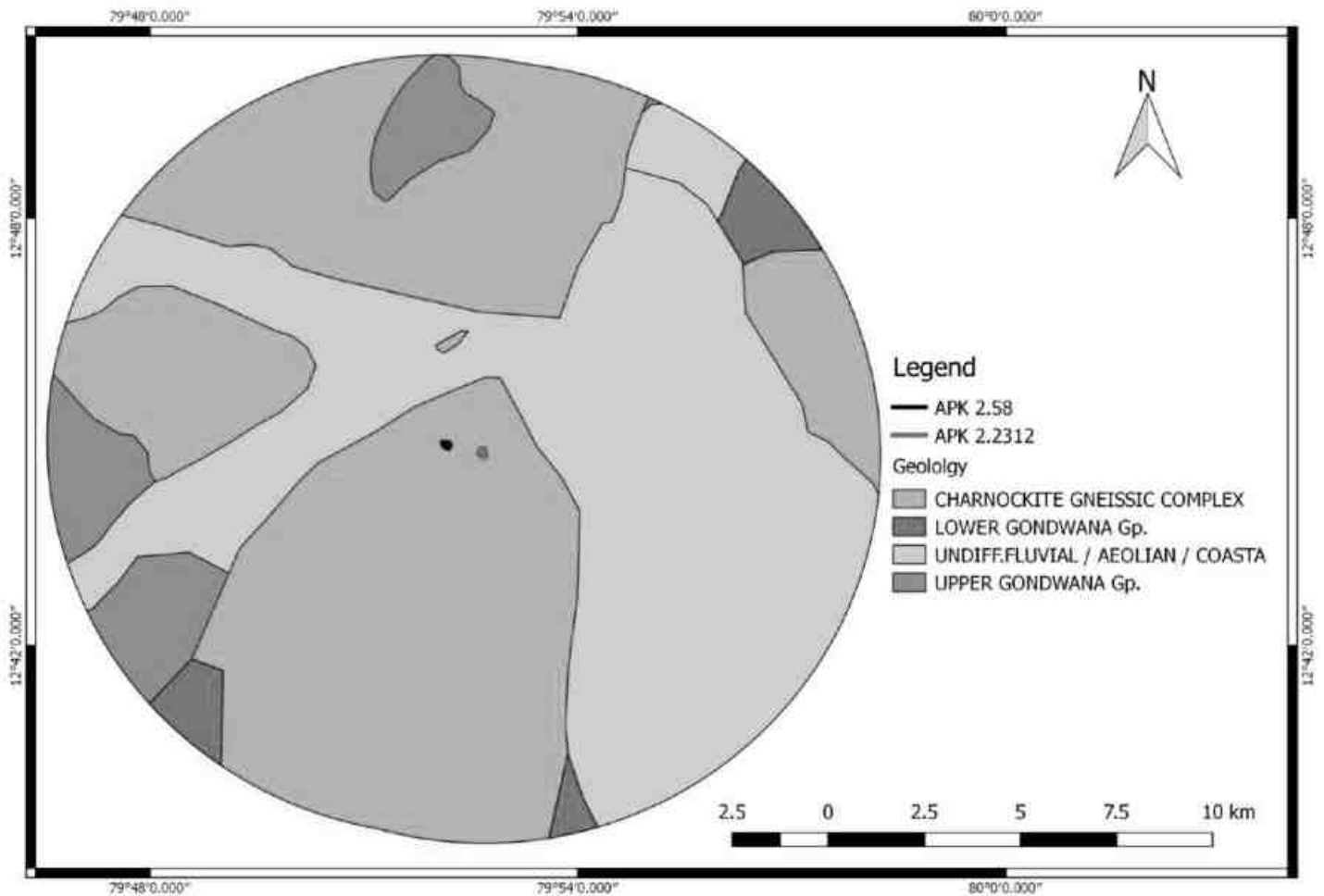


COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

3.6.2 GEOLOGY AND GEOMORPHOLOGY

Geology: The type of rock formation in the core is composed of Charnockite Gneissic and buffer zone composed Charnockite Gneissic complex and Undiffluvial category. The geological map is provided below in Figure No.3.18.

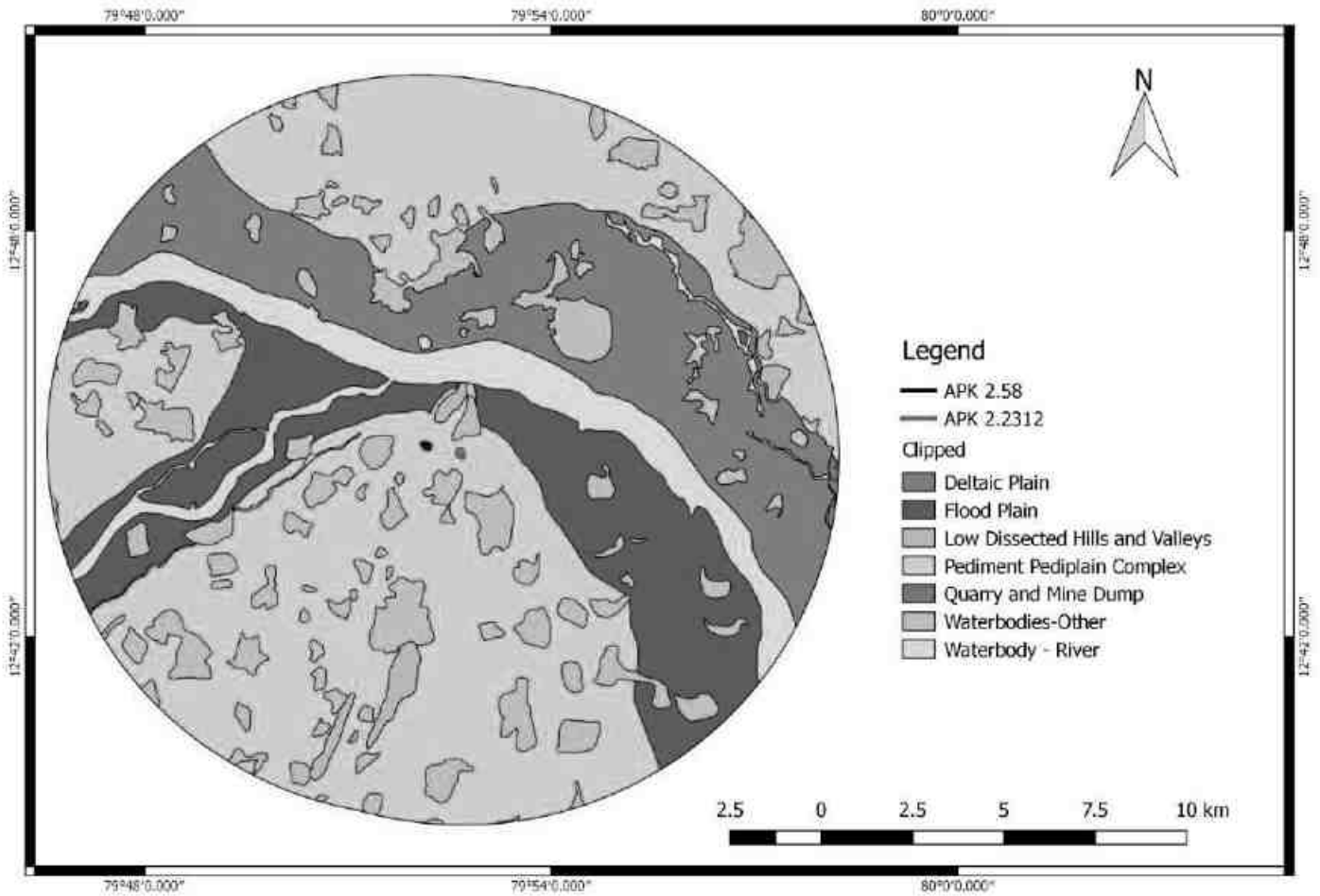
Figure 3.18: Geology Map



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Geomorphology: Pediment Pediplain complex is dominate the study area, while the lease area also falls in the Pediment Pediplain complex.

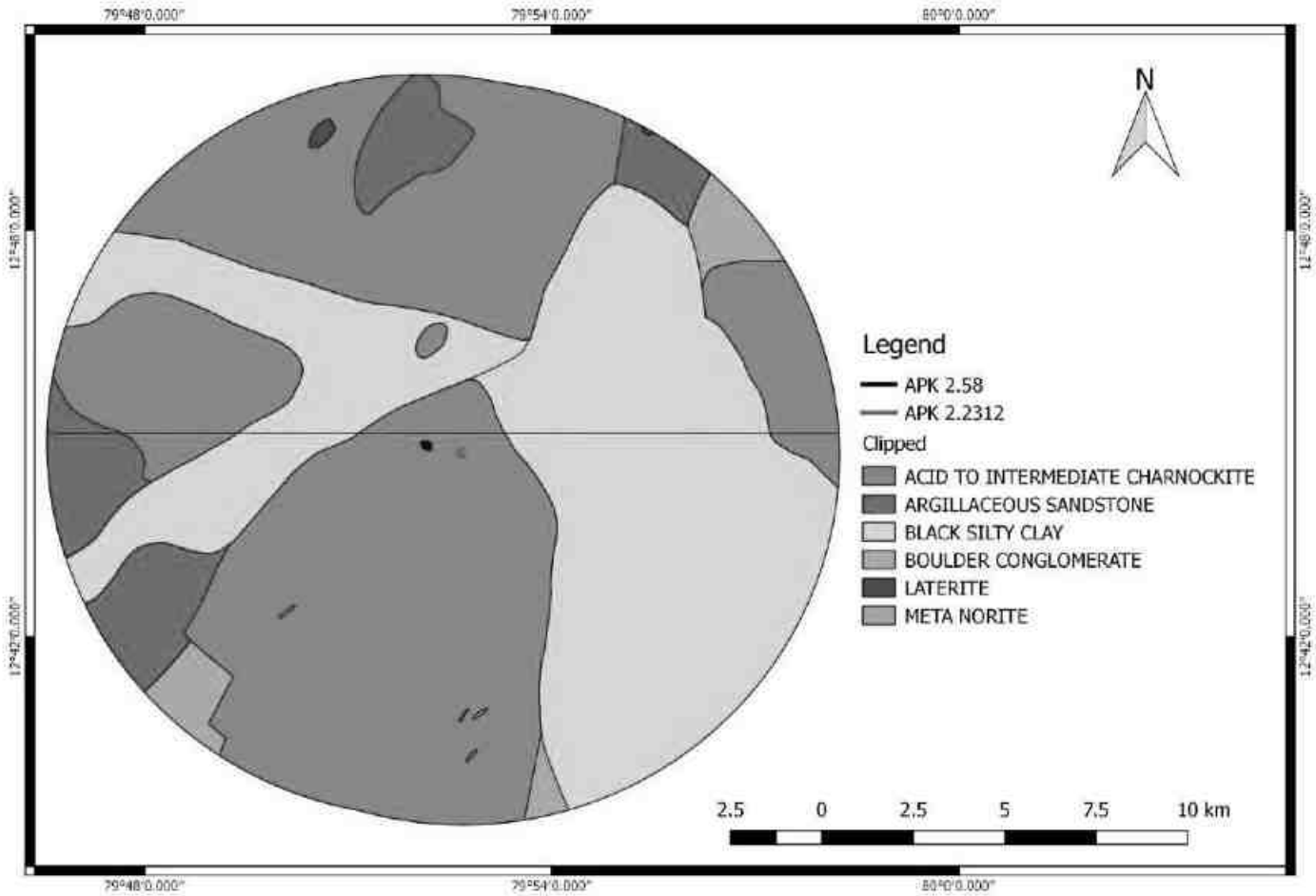
Figure 3.19: Geomorphology Map



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Lithology: The study area is mainly dominated by Acid to Intermediate Charnockite.

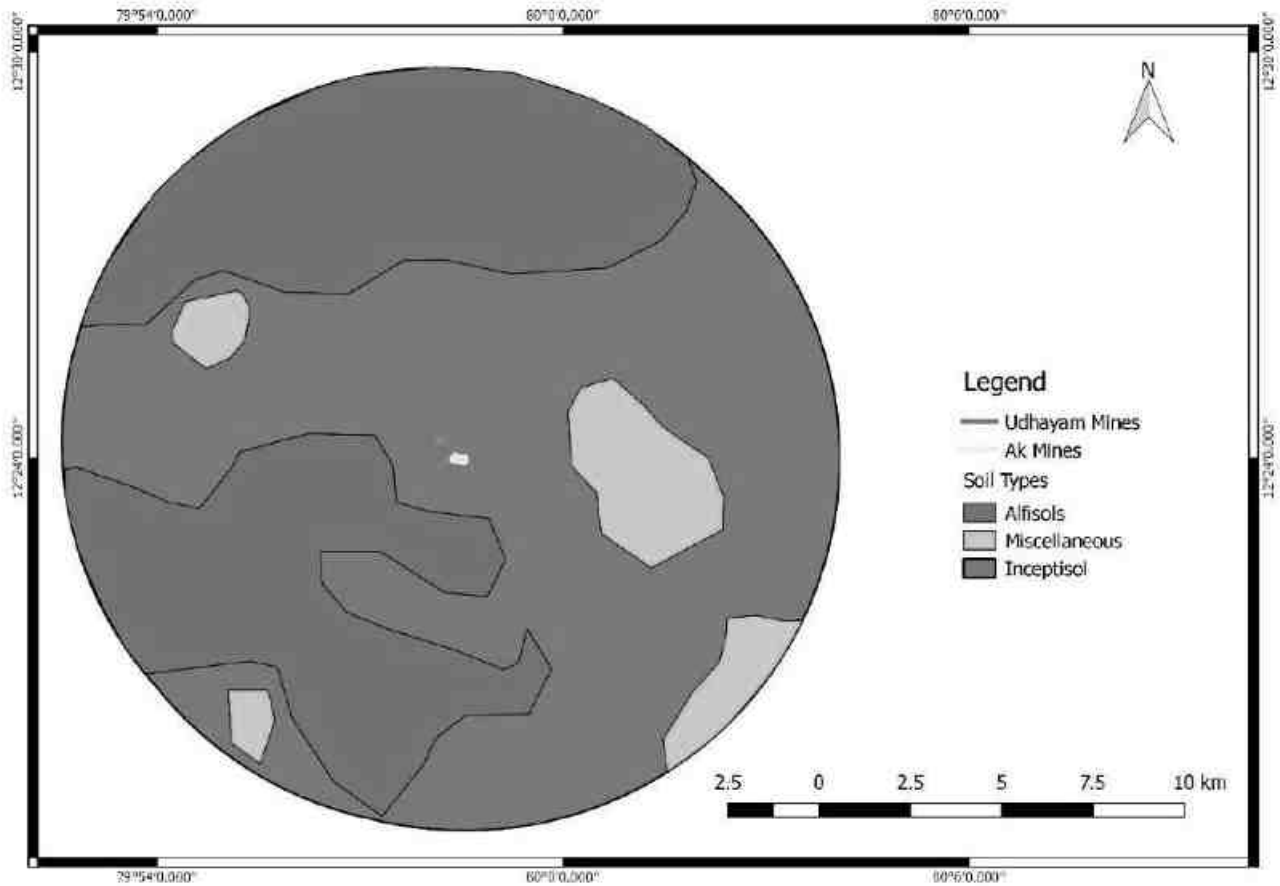
Figure 3.20: Lithology Map



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Soil: The study area is characterized by Inceptisol and Alfisols (Figure No. 3.21), the project area is dominated with Inceptisol.

Figure 3.21: Soil Map



3.6.3 HYDROLOGICAL SCENARIO OF THE STUDY AREA:

There are no perennial water courses in both the lease areas. 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 as intimated by PWD department. Besides, there is a thangal located about 150m north.

There is a pond located at a distance of 190m on the southern side of APK Blue metals 2.2312 ha lease area. It is dry, covered with silt, bushes and not interconnected from the upstreamside.



These water bodies are mainly rainwater drainage arrangements and it remains dry for most of the period.

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. The rock type noticed in the lease area is hard Charnockite type. The Charnockite is part of peninsular Gneisses, a high grade metamorphic rock. The hydrological regime of the area is studied through various published documents, study of well and borewells in the area and discussion with the locals. From the study the following are observed:



Well inventory:

Study of the depth to water table in the nearby areas show that the wells are as deep as 10ft to 40ft. Water level after good monsoon reaches almost near the surface level whereas it lowers down substantially during summer season. Bore wells are 250-350 ft deep, give better yield post monsoon whereas the yield becomes very less later.

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The groundwater has revealed that potential fractures are encountered at deeper levels

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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 .

* * * * *



CHAPTER - IV

ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

CHAPTER 4

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 GENERAL

In these projects Mechanized Open Cast mining will be carried out to quarry out Rough Stone & Gravel. 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., and the details of the same are elaborated in this chapter.

4.2 AIR ENVIRONMENT:

4.2.1 IMPACTS DUE TO PROJECT OPERATION:

The existing ambient air quality in the area has been described in Chapter-III. The proposed mining and allied operations may cause deterioration of air quality due to pollution arising from the project operation if prompt care is not taken. The principal sources of air pollution in general due to mining and allied activities will be:

- ❖ Excavation of material.
- ❖ Movement of HEMM such as Excavators, tippers etc.
- ❖ Loading and unloading operation
- ❖ Transportation

Besides, Gas emission will occur as a result of operation of diesel driven mining equipment, compressors, transporting vehicles, etc.

Particulate matter smaller than 10 microns, referred to as PM₁₀, can settle in the bronchi and lungs and cause health problems like Bronchitis, Emphysema, Bronchial Asthma, Irritation of mucus membranes of eyes, etc. Particles smaller than 2.5 micrometers (PM_{2.5}), tend to penetrate into the lungs and very small particles (<100 nanometers) may pass through the lungs to affect other organs.

Besides the above mentioned fugitive dust emissions, atmospheric pollution can occur as a result of emission of SO₂, NO_x, CO etc., from diesel driven mining equipment, generator sets, etc. Larger suspended particles are generally filtered in the nose and throat and do not cause problems. Higher concentration of SO₂, NO_x, CO may cause some health effect on the human



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beings exposed to it. In case of this mine, the following measures will be adopted in both these quarries to control impact on the air quality due to mining operations in the lease area:

Table 4.1: Impact and Mitigation Measures – Air Environment

S.No	Activity	Consequence	Mitigation Measures
1	Drilling	Dust Emanation	Usage of Drill bits in good condition
			Covering of drill holes with wet cloth
			Usage of sharp drill bits for drilling of holes.
			Provision of dust filters / mask to workers working at highly dust prone and affected areas.
2	Blasting	Instantaneous dust emanation	Well-designed blasting parameter, effective stemming to achieve optimum breakage occurs without generating fines.
			Use of appropriate explosives for blasting and avoiding overcharging of blast holes.
			Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
			Use of controlled blasting techniques with Nonel to keep the dust generation, noise as well as vibration level within the prescribed limits.
3	Excavation and Loading	Dust emanation, Gaseous Emission	HEMM will be operated as per the manufacturer's guidelines
			Enclosures for operator cabin.
			Imparting sufficient training to operators on safety and environmental parameters.
			Proper maintenance of hauling equipments.
4	Transportation	Dust emanation, Gaseous Emission	Avoiding overloading of dumpers.
			Regular wetting of transport road using mobile water tanker.
			Proper maintenance of haul road and other roads
			Setting up of tyre wash facility in the transport road.
			Avoiding overloading of tippers
			Covering of loaded tippers with tarpaulins during transportation
5	Others	Dust emanation, Gaseous Emission	Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
			Development of greenbelt / barriers around mine in the safety zone and carrying out plantation within the lease area.
			Fencing with green net as necessary will be carried out around the lease periphery on all sides.



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

The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model developed by Lakes Environmental Software which is based on steady state Gaussian plume dispersion. Details of the modeling study / estimation including the modeling technique and post project air quality values are elaborated in the following paras.

4.2.2 AIR QUALITY IMPACT PREDICTION:

The model simulations are done for the air pollutant arising from the mining operations, namely, PM₁₀, PM_{2.5}. **Ground Level Concentration (GLC)** have been computed using hourly meteorological data.

Table 4.2: Emission Sources

ACTIVITY	SOURCE TYPE
A. Mining operations	Open pit
B. Transportation	Line

4.2.2.1 Emission Factors

Quantification of particulate emissions has been carried out by the emission factor technique. Emission factor is a statistical average of the rate at which a pollutant is released during an activity. This factor when multiplied by the level of that activity in a given situation will give the overall effect. Fugitive emissions have been predicted by using standard equations given and suggested by AP-42, USEPA(1998), Coal S&T Project and for mining & allied activities and other factors. The modeling is done for the peak production to know the worst case scenario. The details of the emission factors used for the same is provided below:

Table 4.3: Emission Factors

S.No	Activity	PM10	PM2.5	Unit
1	Ore Loading	1.5×10^{-3}	2.1×10^{-4}	Kg/T
2	OB Loading	1.4×10^{-4}	1.5×10^{-5}	Kg/T
3	Hauling inside lease area	0.19	0.019	g/VKT
4	Drilling	0.1	0.04	Kg/hole



4.2.2.2 Emission Rates:

Based on the emission factors, after adopting necessary control measures like dust suppression, Proper maintenance of HEMM, using better quality diesel, using latest equipment, proper maintenance of roads, etc. the expected emission rate due to various operations in this project is calculated and is given below:

Table 4.4: Emission Rate

ACTIVITIES	Roughstone and Gravel Quarry (Over an area of 2.58Ha)		Roughstone and Gravel Quarry (Over an area of 2.2312Ha)	
	PM ₁₀ (g/sec)	PM _{2.5} (g/sec)	PM ₁₀ (g/sec)	PM _{2.5} (g/sec)
Excavation	0.03	0.00	0.01	0.00
Drilling	0.13	0.05	0.13	0.05
Hauling	0.12	0.02	0.07	0.03
Total	0.28	0.07	0.21	0.08

- A. Emission Source Coordinates:** The center of mine was assumed (0, 0) in the mathematical modeling.
- B. Meteorological Conditions Used In Predictions:** The hourly meteorological data has been generated for the monitoring period and the same has been used in the predictions.

4.2.2.3 Results and Discussions

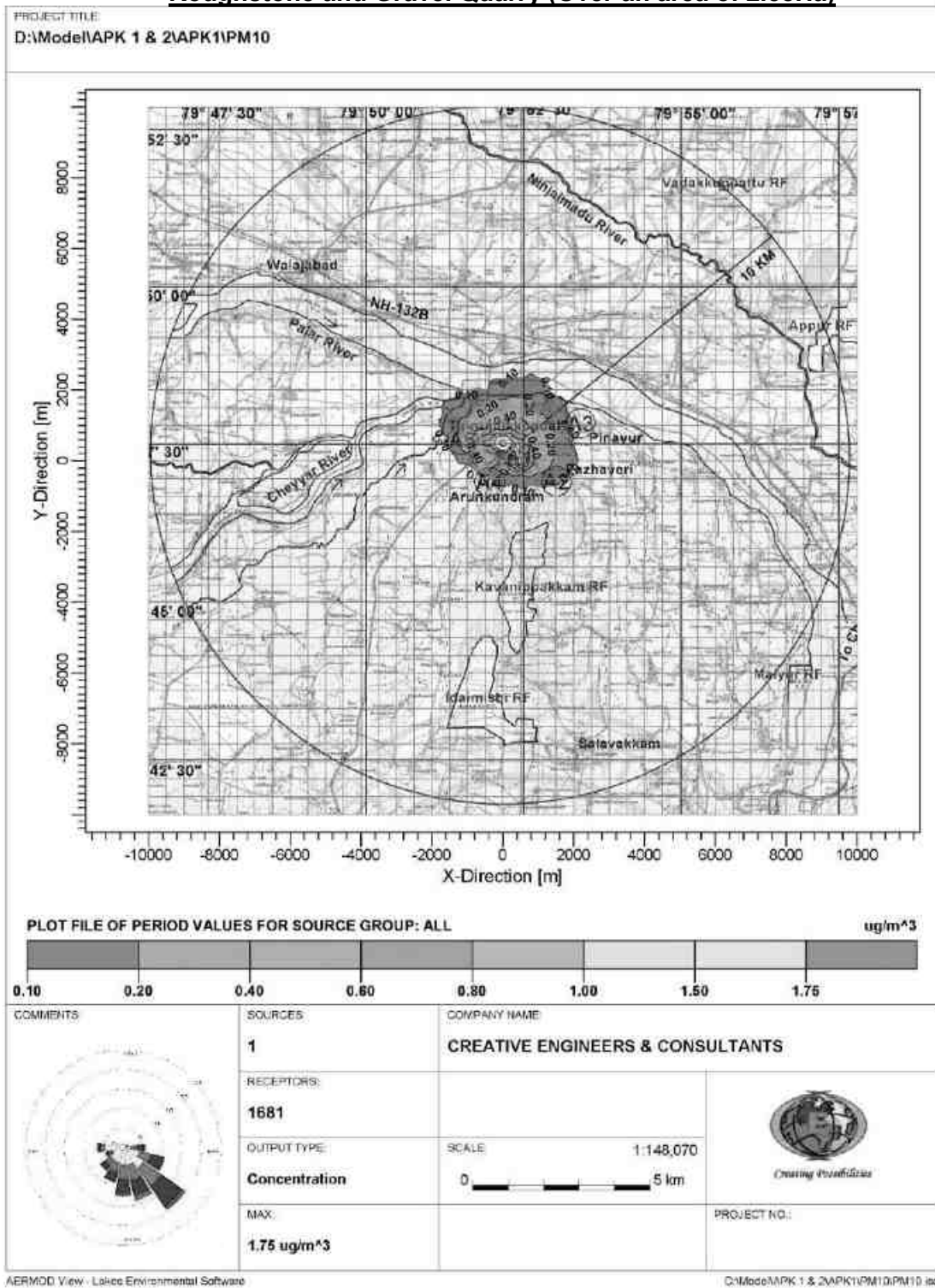
Table 4.5: Peak Incremental Concentration

S.No	Parameters	Peak incremental concentration $\mu\text{g}/\text{m}^3$	
		Roughstone and Gravel Quarry (Over an area of 2.58Ha)	Roughstone and Gravel Quarry (Over an area of 2.2312Ha)
1	PM ₁₀	1.75	2.03
2	PM _{2.5}	0.84	0.96

It is observed that the peak incremental concentration for PM₁₀, PM_{2.5} occurring very near the source. At away from the source the values are getting reduced due to dispersion effects. The Isopleths of PM₁₀, PM_{2.5} concentrations with control measures scenario have also been drawn and these are given in **Figure No.4.1 and 4.2**. The incremental and predicted concentrations at the locations of ambient air quality have been discussed in the following section.

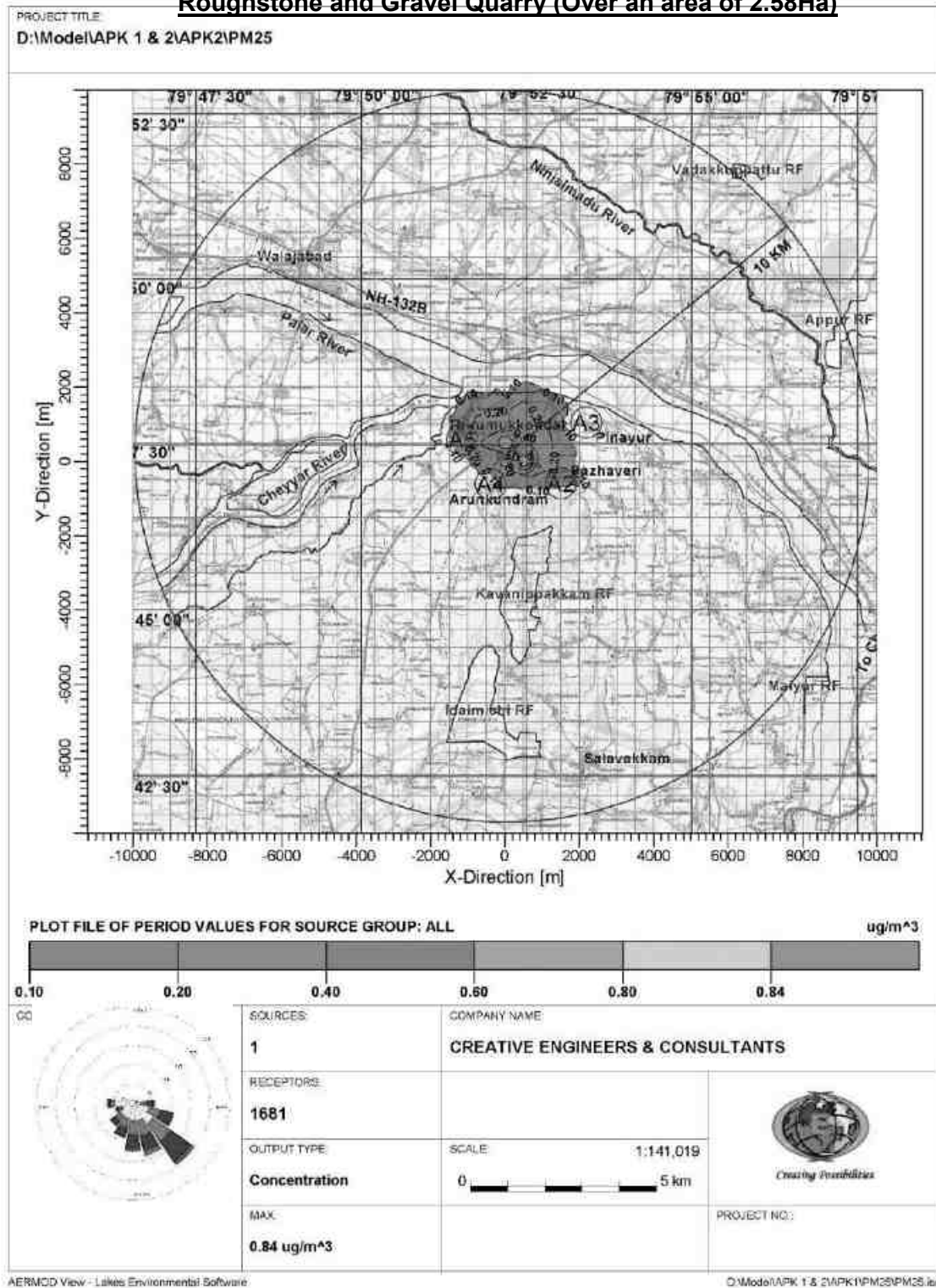
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**Figure 4.1: Isopleth of GLC prediction – PM₁₀ –
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**



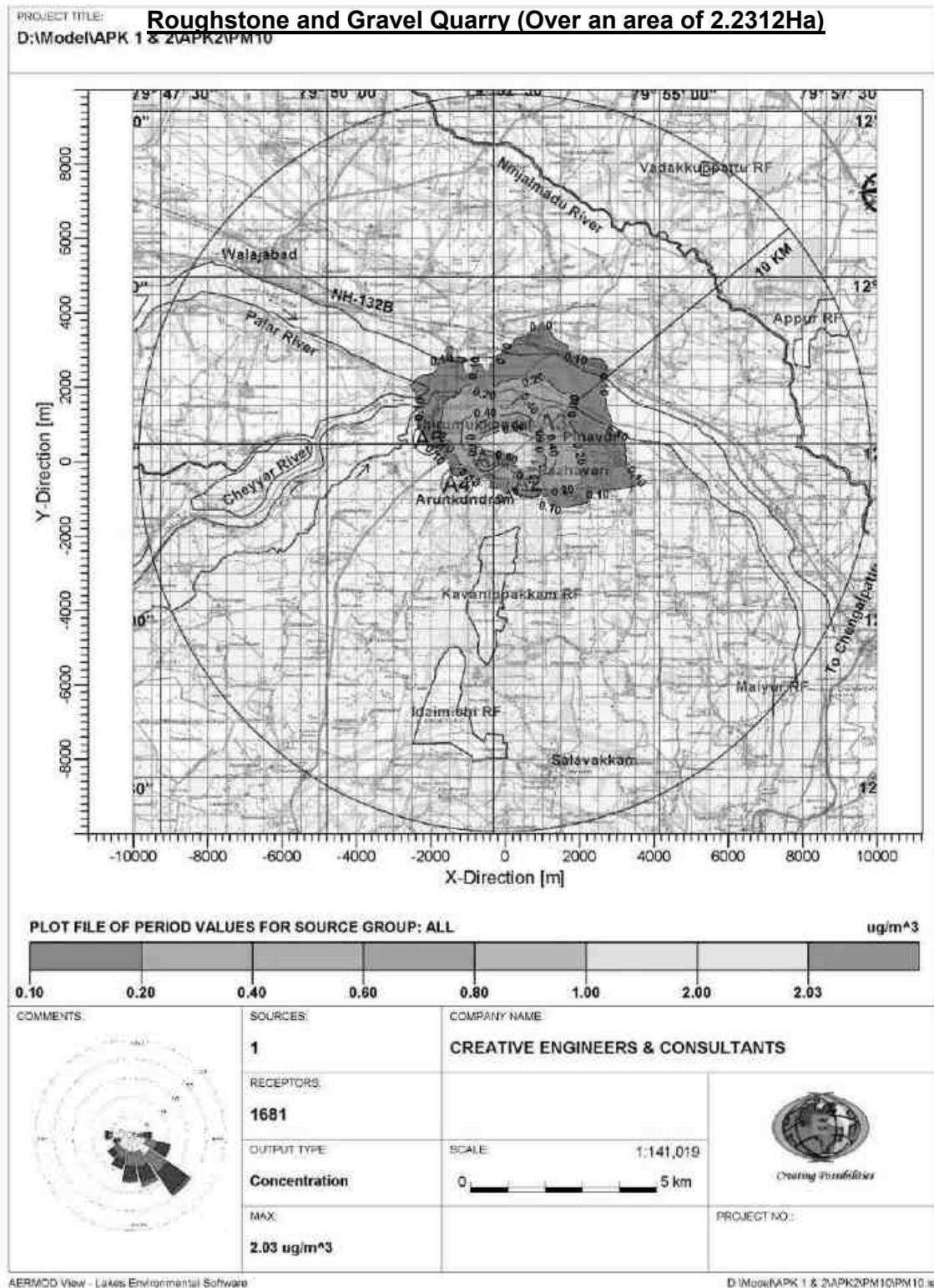
COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

**Figure 4.2: Isopleth of GLC prediction – PM_{2.5} –
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

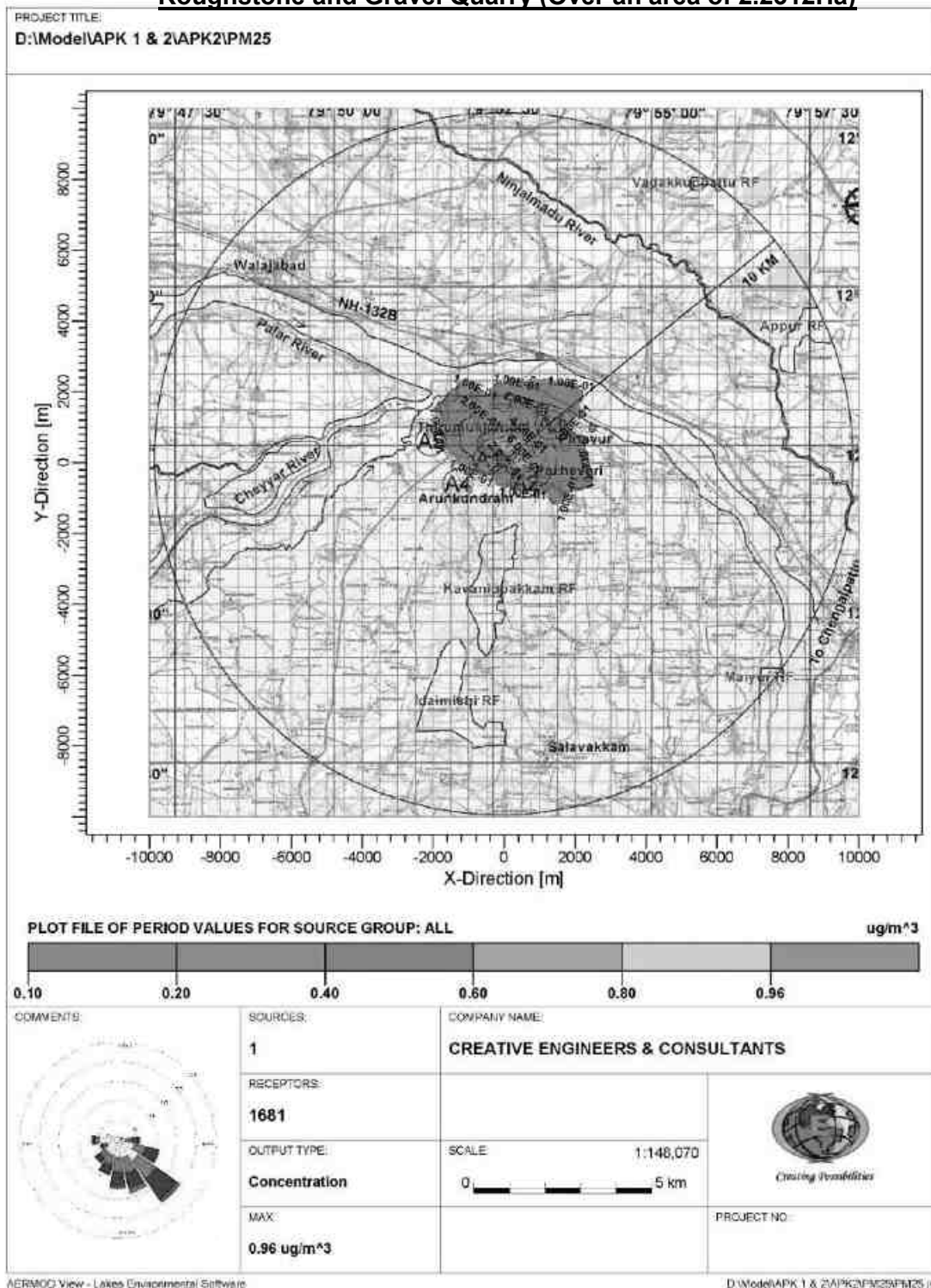
Figure 4.3: Isoleth of GLC prediction – PM₁₀–



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 4.4: Isoleth of GLC prediction – PM_{2.5}

Roughstone and Gravel Quarry (Over an area of 2.2312Ha)



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Predicted Ambient Air Quality:

Table 4.6: Concentrations Of PM₁₀ after Project Implementation

S. No	Location	Background Concentration	Values in $\mu\text{g}/\text{m}^3$				Statutory Limits
			Roughstone and Gravel Quarry (Over an area of 2.58Ha)		Roughstone and Gravel Quarry (Over an area of 2.2312Ha)		
			Incremental Conc	Post Project Conc	Incremental Conc	Post Project Conc	
1	A1-Near Lease Area	76.8	1.7	78.5	2.0	80.5	-
2	A2-Pazhaveri Village	51.9	<1.0	52.9	<1.0	52.9	100
3	A3-Pinayur Village	62.9	<1.0	63.9	<1.0	63.9	
4	A4-Arunkundram Village	59.5	<1.0	60.5	<1.0	60.5	
5	A5-Staff Building SE of Thirumukkodal Village	64.5	<1.0	65.5	<1.0	65.5	

Table 4.7: Concentrations Of PM_{2.5} after Project Implementation

S. No	Location	Background Concentration	Values in $\mu\text{g}/\text{m}^3$				Statutory Limits
			Roughstone and Gravel Quarry (Over an area of 2.58Ha)		Roughstone and Gravel Quarry (Over an area of 2.2312Ha)		
			Incremental Conc	Post Project Conc	Incremental Conc	Post Project Conc	
1	A1-Near Lease Area	37.3	<1.0	38.3	<1.0	38.3	-
2	A2-Pazhaveri Village	23.7	<1.0	24.7	<1.0	24.7	60
3	A3-Pinayur Village	29.6	<1.0	30.6	<1.0	30.6	
4	A4-Arunkundram Village	28.6	<1.0	29.6	<1.0	29.6	
5	A5-Staff Building SE of Thirumukkodal Village	30.6	<1.0	31.6	<1.0	31.6	

It can be seen that the resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM₁₀ are within the stipulated statutory limits for both the projects.

Additionally, cumulative impact on air quality is assessed, and the details regarding the same has been provided below:

Table 4.8: Emission Rate - Cumulative

Activities	PM ₁₀ (g/sec)	PM _{2.5} (g/sec)
Excavation	0.06	0.01
Drilling	0.26	0.10
Hauling	0.25	0.04
Total	0.57	0.15

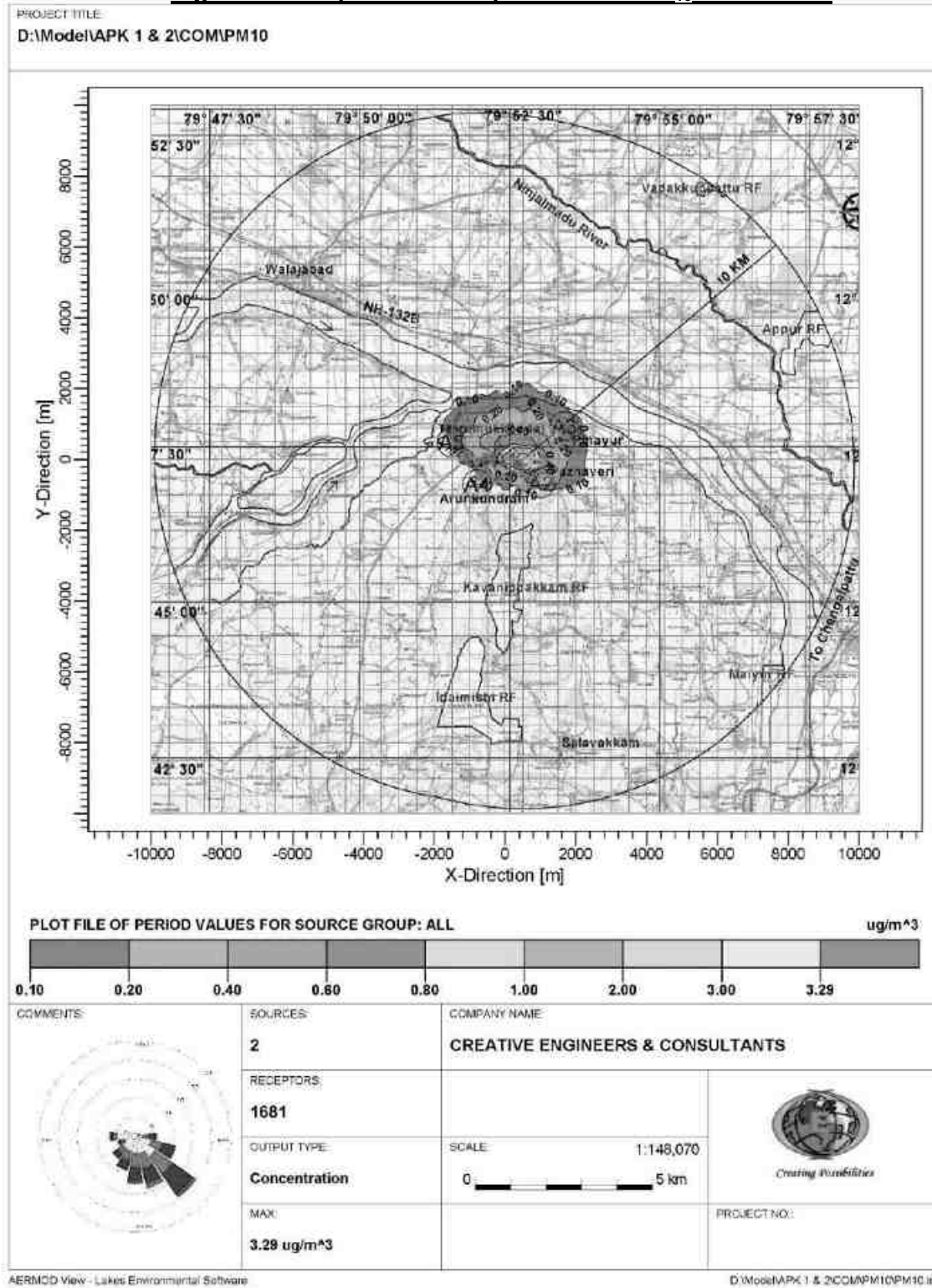
Table 4.9: Peak Incremental Concentration- Cumulative

Parameters	Peak incremental concentration $\mu\text{g}/\text{m}^3$
PM ₁₀	3.29
PM _{2.5}	1.95



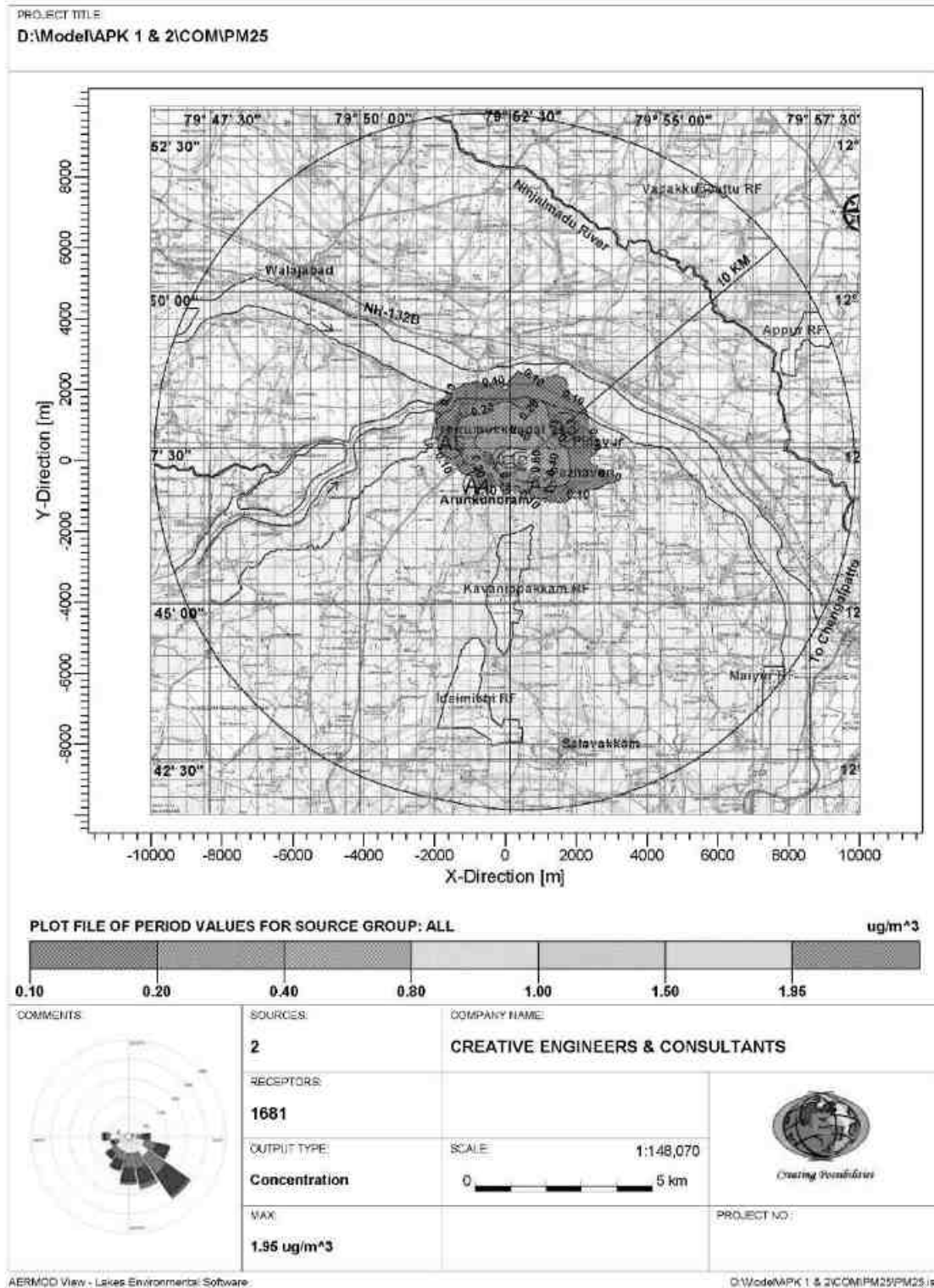
COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 4.5: Isopleth of GLC prediction – PM₁₀– Combined



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

Figure 4.6: Isopleth of GLC prediction – PM_{2.5}– Combined



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

The post project concentrations of PM10, PM2.5, (GLC) (base line + incremental) after adopting necessary control measures is provided below:

Table 4.10: Post Project Concentrations Of PM₁₀ -Cumulative

Values in $\mu\text{g}/\text{m}^3$

S. No	Location	Background Concentration	Incremental Conc	Post Project Conc	Statutory Limits
1	A1-Near Lease Area	76.8	3.3	80.1	-
2	A2-Pazhaveri Village	51.9	<1.0	52.9	100
3	A3-Pinayur Village	62.9	<1.0	63.9	
4	A4-Arunkundram Village	59.5	<1.0	60.5	
5	A5-Staff Building SE of Thirumukkodal Village	64.5	<1.0	65.5	

Table 4.11: Post Project Concentrations Of PM_{2.5} -Cumulative

Values in $\mu\text{g}/\text{m}^3$

S. No	Location	Background Concentration	Incremental Conc	Post Project Conc	Statutory Limits
1	A1-Near Lease Area	37.3	1.9	39.2	-
2	A2-Pazhaveri Village	23.7	<1.0	24.7	60
3	A3-Pinayur Village	29.6	<1.0	30.6	
4	A4-Arunkundram Village	28.6	<1.0	29.6	
5	A5-Staff Building SE of Thirumukkodal Village	30.6	<1.0	31.6	

The cumulative post project concentration with respect to PM10 is in the range of 52.9 $\mu\text{g}/\text{m}^3$ to 80.1 $\mu\text{g}/\text{m}^3$ and with respect to PM2.5 are in the range of 24.7 $\mu\text{g}/\text{m}^3$ to 39.2 $\mu\text{g}/\text{m}^3$ which are within the statutory limits in each case. For preservation of environment in this mine strict enforcement of management schemes and regular air quality monitoring 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.

4.3 WATER ENVIRONMENT:

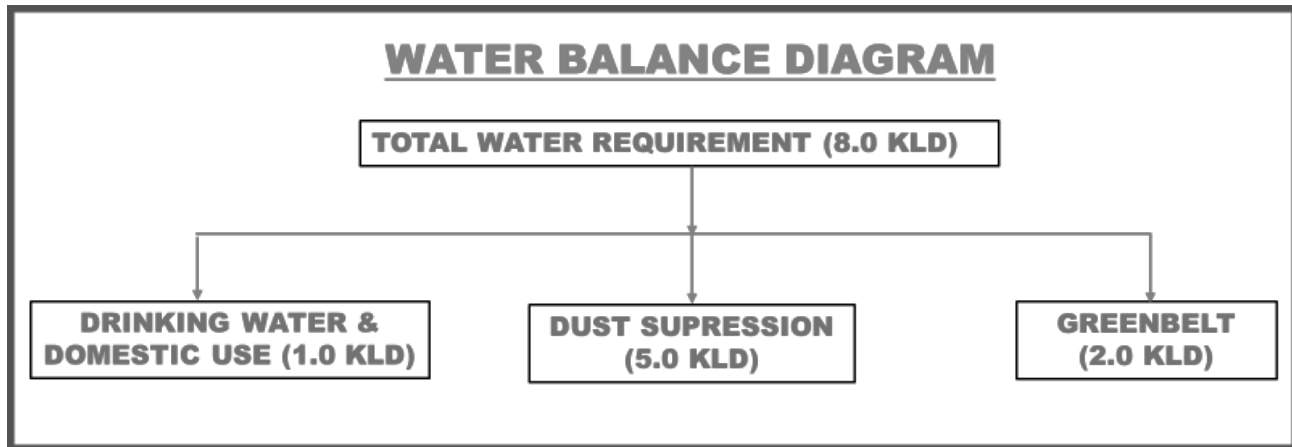
4.3.1 WATER REQUIREMENT:

The water requirement for each of these two projects are 8 KLD comprising 1.0 KLD for drinking water and domestic use, 5.0 KLD for dust suppression and 2.0 KLD for greenbelt. The water will



be sourced initially from outside agencies. Later the rainwater collected in the respective mine pit sump will be used for this purpose. The water balance diagram for the same is shown in Figure No 4.3.

Figure 4.7: Water Balance Diagram



4.3.2 SOURCES OF WATER POLLUTION:

The existing water environment showing water quality at different sampling stations in the area has been described in Chapter-III.

Direct impact on human beings due to poor water quality consequent to mining operation can lead to various water borne diseases like diarrhea, jaundice, dysentery, typhoid, etc. Besides, the polluted water may not be useful for animal or human consumption, vegetation and may affect aquatic life, if effluents are not properly treated to remove the harmful pollutants. The major sources of water pollution normally associated due to mining and allied operations are:

- a. Domestic effluent.
- b. Washouts from stockpile if any.
- c. Disturbance to drainage course in the project area
- d. Generation of mine pit water pumped out from deeper workings if any.

4.3.3 TREATMENT SCHEME:

A. Generation of domestic effluent:

The domestic sewage to be generated from the projects will be collected in respective septic tank with soak pits.

B. Washouts from overburden, ore stockpile, etc.

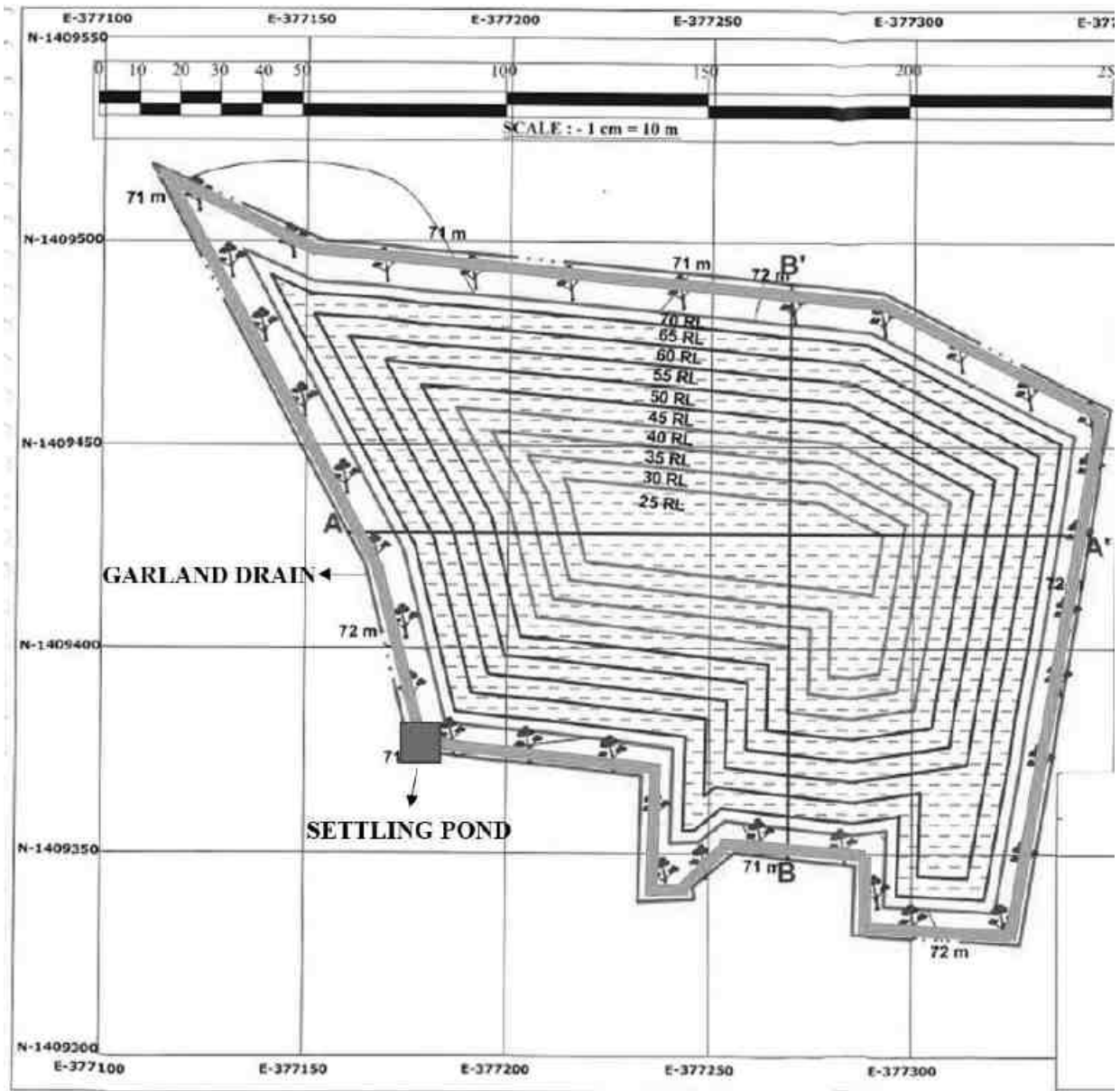
Since the entire material from the quarry faces will be directly dispatched to the consumers, there will not be any stockpiles. There are no waste dumps in both quarries. As such there will not be any wash out due to stock pile or waste dumps.

The rain water falling in the quarries will be harvested in the sump at the lowest level of the respective quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc. Towards surface runoff management, a garland drain of length 740m for Roughstone and Gravel Quarry of Over an area of 2.58Ha and 720m for Roughstone and Gravel Quarry of Over an area of 2.2312Ha 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.

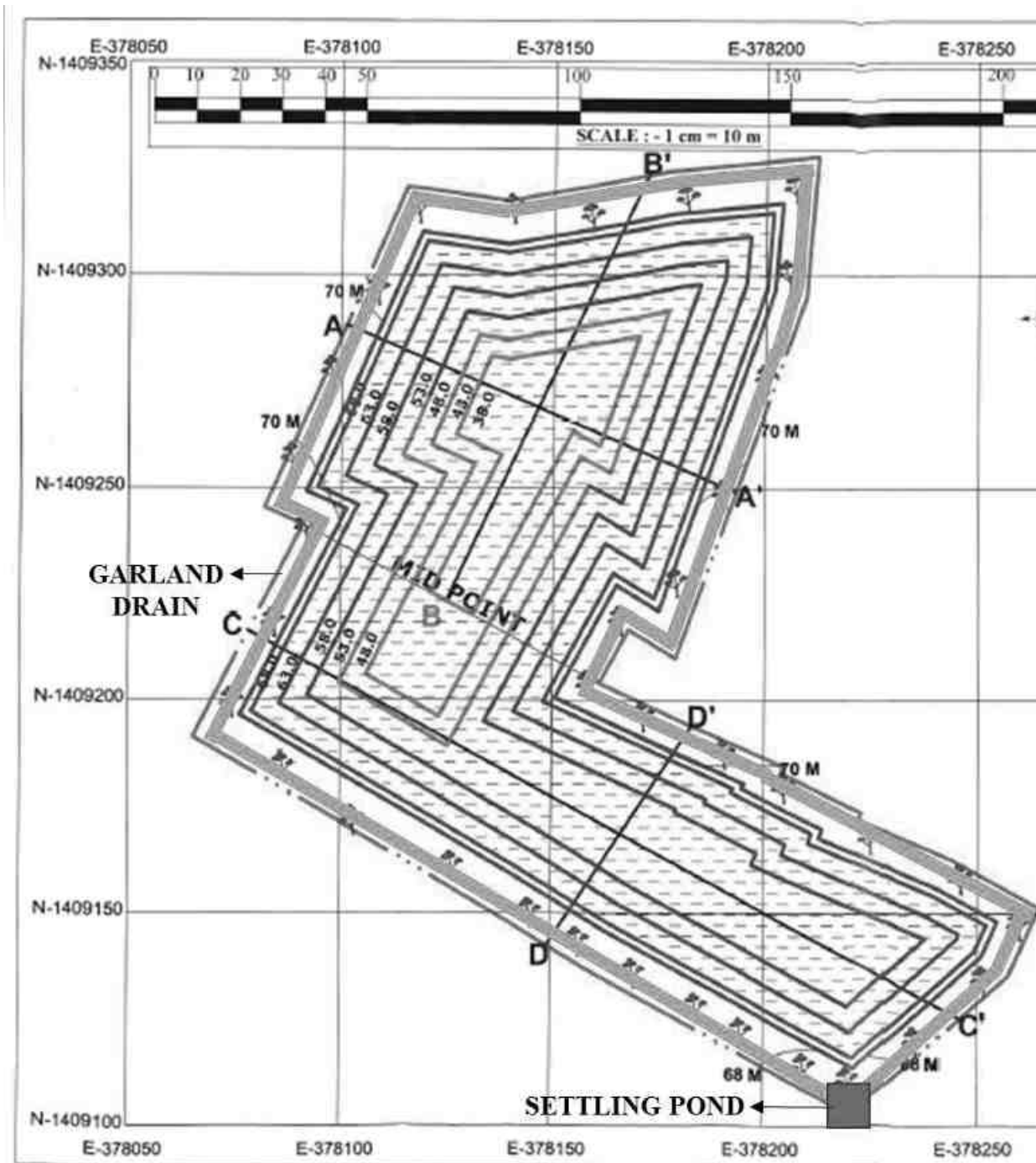
The surface runoff management structures diagram is given in **Figure No 4.4**.



**Figure 4.8: Surface Runoff Management Structures –
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**



**Figure 4.9: Surface Runoff Management Structures –
Roughstone and Gravel Quarry (Over an area of 2.2312Ha)**



C. Disturbance to drainage courses

There are no perennial water courses in both the lease areas. In the lease area of Roughstone and Gravel Quarry of APK Minerals (over an area of 2.58Ha), there is a rainwater drain located on the western side for which safety distance is left as per precise area conditions. As a protective measures, an Earthen bund of 3 ft height will be constructed on the entire western side safety zone and it will be developed with plantation. There is also a Thangal located at a distance of 150m on the northern side of the lease area.

In the lease area of Roughstone and Gravel Quarry of APK Minerals (over an area of 2.2312Ha) There is an Pond located at a distance of 190m on the southern side of the lease area. This pond remains dry for most of the year. This being a mining project there will be no effluent generation or discharge in to the water bodies. No major impact is envisaged on the nearby water bodies due to project operations.

D. Generation of mine pit water pumped out from deeper workings if any.

The occurrence and movement of groundwater in hard rock formations are restricted to the porous zones of weathered formations and the open systems of fractures, fissures and joints. Generally, in hard rock regions, occurrence of weathered thickness is discontinuous both in space and depth. Hence recharge of groundwater in hard rock formations is influenced by the intensity and depth of weathering. As already mentioned, the lease area is part of a huge dyke like 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 no major water seepage within the mines is expected from the periphery. The ultimate pit depth of mining is 42m for Rough stone and Gravel Quarry of APK Minerals (Over an area of 2.58Ha) and 32m for Rough stone and Gravel Quarry of APK Minerals (Over an area of 2.2312Ha) The ground water table in this area is below this level. Hence, ground water intersection is not envisaged and ground water will not be affected appreciably due to the quarrying operation. There are lot of mining activities happening in this region. Similar situation is observed in these working quarries also. As mentioned earlier, the rainfall will be collected in the mine floor sump and advantageously used. Excess water if any in the sump will be pumped to settling pond for downstream users.

4.3.4 REDUCING WATER CONSUMPTION OVER THE YEARS:

4.3.4.1 GENERAL METHODS:

Use of water will be monitored and used to the minimum required. Awareness will be spread to the employees about the importance of water conservation. Tap and showers will be turned off immediately after use and any leaks will be monitored and immediately controlled. Water requirement for greenbelt and dust suppression can be reduced by choosing the native plants/trees species with low water requirement and which can sustain in such conditions for greenbelt/ plantation and also optimum usage to the required minimum. While the dust suppression itself is an important method of pollution control for air pollution due to dust, the water consumption will be monitored strictly. The water tanker will be examined for any sources of leaks and if found will be immediately sealed so that water can be utilized for dust suppression effectively without loss.

4.3.4.2 RAINWATER HARVESTING PLAN

Since the lease proximate areas are hard rocky formations with less water potential and the rainwater is the major source for replenishment of ground water, effective rainwater harvesting and other water augmentation measures are proposed in this project.

- a) Development of garland drain around the quarry connected to settling tank.
- b) Cleaning of drain periodically to prevent siltation
- c) The supernatant clear water from the settling pond will drain into the nearby drainage on the western side of the lease.
- d) Utilizing the rainwater harvested in the mine pit to meet the water requirement of the project.
- e) Excess water, if any in consultation with local villagers and in line with government practices shall be provided to the downstream users.

4.4 NOISE AND VIBRATION:

4.4.1 NOISE ENVIRONMENT:

The ambient noise levels in the study area have been discussed in Chapter - III. The data shows that the existing noise levels are within statutory tolerable limits. The impact prediction



and control measure for noise environment due to mining and allied activities is described below:

4.4.1.1 IMPACT PREDICTION DUE TO NOISE:

Noise is one of the inevitable causes of pollution in mining operations, largely due to the extensive mechanization adopted. Besides, other operations such as drilling, blasting, movement of vehicles, etc., also produce noise of considerable magnitude in mining operations. The main sources of noise and expected levels are given below in **Table no – 4.9.**

Table 4.12: Main Sources of Noise

Sl. No.	Source	Inside Cabin	Noise level at dB(A) 10 m. from source
1	Shovel	84-91	59-68
2.	Dumpers/Tippers	87-96	75-85
3.	Drill	88- 95	75-83

Prolonged exposure to a high noise level is harmful to the human auditory system and can create mental fatigue, rebellious attitude, annoyance and carelessness, which may lead to neglect of work and also result in accidents. The impact of noise level as per World Health Organization’s 1986 notification is given below in **Table No - 4.10.**

Table 4.13: Impact of Noise Levels

NOISE LEVELS	ADVERSE EFFECTS
90-115 dB	Partial deafness and nervous irritability
> 115 dB	Permanent deafness
Impulsive noise (>90dB)	Frightens livestock grazing in the nearby areas

OSHA (Occupational Safety and Health Administration), USA and other similar organisations stipulate that noise level up to 90 dB(A) is acceptable for eight hours exposure Leq (Equivalent sound level) (8hrs) per day. The Directorate General of Mines Safety, in circular No. DG (Tech)/18 of 1975, has prescribed the noise level in mining occupations (TLV) for workers, in an 8 hour shift period with unprotected ear as 90 dB(A) or less.

The noise will be felt only near the active sources. There will be considerable reduction in the noise level due to the absorption factor, environmental surroundings and other attenuation factors. As far as absorption factor is concerned, If the ground cover is vegetated or has a soft texture, sound will decrease at the rate of 4.5 dB(A) every time the distance between the source and the observer is doubled. Besides, there will be shielding factor, which takes into account the



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environmental surroundings. With every 30m of dense land scape vegetation, 5 dB(A) of additional attenuation can be obtained up to a maximum of 10 dB(A). As such at away places the effect of noise will not be felt.

Anticipated noise levels resulting from operation of the various machineries like excavator, tippers, drill have been computed using point source model. Computation of cumulative noise levels at the nearby villages is made based on the assumption that there are no attenuation paths between the source and the boundary. Noise modeling is carried out using the following formula:

$Lp2 = Lp1 - 20 \log R2/R1$, Where, $Lp1$ and $Lp2$ are sound pressure levels at points located at distances $R1$ and $R2$ respectively from the source. The study results are as follows:

Table 4.14: Post Project Noise Levels

SI.No	Location	Baseline Day Eq.in dB(A)	Post project noise Eq in dB(A)	Limit dB(A) as per MoEF&CC
1.	Near Lease Area- NW	52.8	56.7	90
2.	Near Lease Area- NE	52.8	57.1	90
3	Near Lease Area- SE	52.8	57.2	90
4	Near Lease Area- SW	52.8	57.4	90
5	Pazhaveri Village	49.8	50.1	55
6	Pinayur Village	51.3	51.5	55
7	Arunkundram Village	52.2	52.4	55
8	Staff Building SE of Thirumukkodal Village	51.5	51.7	55

From the studies, it is found that the predicted Noise Levels due to mining operations at the periphery of the mine lease itself will be less even without considering any attenuation factor. However, practically there will be attenuation due to vegetation etc., and as such there will not be any adverse noise propagation outside the lease boundary. Since the habitations are also away the effect of noise due to mining operations will not be felt at all in the surrounding villages.

4.4.1.2 CONTROL MEASURES FOR NOISE ENVIRONMENT:

Hence, by following mitigative measures for noise control, the impact on noise levels will be insignificant:

- Planting rows of native trees along roads, around mine area and other noise generating centers to act as acoustic barriers.



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- Sound proof operator's cabin for equipments like shovel, tippers, etc.
- Proper and regular maintenance of equipments may lead to less noise generation.
- Providing in-built mechanism for reducing sound emissions.
- Providing earplugs to workers exposed to higher noise level.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.
- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.

Further green belt and afforestation will be planned and executed to abate noise and dust propagation in the area.

4.4.2 GROUND VIBRATION DUE TO BLASTING EFFECTS:

Vibrations due to blasting may cause damage to nearby structures, if appropriate control measures are not adopted. Flyrock is another possible damage causing outcome of blasting. There are many factors, which influence these, like long explosive column with little stemming column, improper burden, loose material or pebbles near holes and long water columns in the holes.

The following control measures will be planned in both the projects to reduce ground vibratory conditions to sustainable statutory limits:

- 1) Carrying out controlled blasting using Nonel delay detonator.
- 2) Optimum design for burden and spacing.
- 3) Reducing explosive charge per delay to minimum.
- 4) The peak particle velocity (PPV) of ground vibration will be kept very low through optimally controlled blasting techniques, after necessary field trials.
- 5) To contain fly rocks, stemming column to be less than burden of the hole. Blasting area will also be muffled, if necessary, to stop fly rocks propagation.



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- 6) Blasting will not be carried out when strong winds are. Blasting will be done during midday time.
- 7) Controlled blasting to avoid tension cracks which may endanger the stability of bench slopes in the mine.
- 8) Proper care and supervision during blasting by a competent and experienced person to be carried out.

By adoption of above measures, it will be ensured that the ground level vibration due to blasting are maintained within the limits prescribed by DGMS, Dhanbad at the mining areas vide Circular No. 7 dated 29 -08-1997 as given below:

Table 4.15: Permissible Peak Particle Velocity (PPV) In Mining Areas

Type of structure	Dominant excitation frequency Hz		
	<8 Hz	8-25 Hz	>25 Hz
In mm/sec			
A. Buildings/structures not belonging to owner			
Domestic houses /structures (Kuchha brick and cement)	5	10	15
Industrial buildings (RCC and framed structures)	10	20	25
Objects of historical importance and sensitive structures.	2	5	10
B. Building belonging to owner with limited span of life			
Domestic houses/structures (Kuchha brick and cement)	10	15	25
Industrial buildings (RCC and framed structures)	15	25	50

Besides, different blasting time for the projects in the vicinity is suggested and the timing is to be mentioned in the display board in the respective mines entrance.

4.5 LAND ENVIRONMENT:

Both the projects are patta lands in the name of the respective applicant companies. The present land use pattern, and the post mining land use pattern is shown below:

Table 4.16: Land Use - Roughstone and Gravel Quarry (Over an area of 2.58Ha)

S.No	Land Use	Present (Ha)	At the end of plan period (Ha)	Conceptual Period (Ha)
1	Quarrying Pit	--	1.96	1.96
2	Green Belt	--	0.62	0.62
3	Unutilized	2.58	--	--
	Total	2.58	2.58	2.58



Table 4.17: Land Use - Roughstone and Gravel Quarry (Over an area of 2.2312Ha)

S.No	Land Use	Present (Ha)	At the end of plan period (Ha)	Conceptual Period (Ha)
1	Quarrying Pit	--	1.6093	1.6093
2	Green Belt	--	0.6219	0.6219
3	Unutilized	2.2312	--	--
	Total	2.2312	2.2312	2.2312

4.5.1 LAND RECLAMATION:

There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. In the post mining stage, mined out area will be left as water body and the rest will be covered with vegetation.

Table 4.18: Land Use During Post Operational Period- Roughstone and Gravel Quarry (Over an area of 2.58Ha)

S.No	Description	Land use (Ha.)			
		Plantation	Water body	Others	Total
1	Quarrying Pit	-	1.96	-	1.96
3	Green Belt	0.62	-	-	0.62
5	Unutilized	--	-	-	--
	TOTAL	0.62	1.96	-	2.58

Table 4.19: Land Use During Post Operational Period- Roughstone and Gravel Quarry (Over an area of 2.2312Ha)

S.No	Description	Land use (Ha.)			
		Plantation	Water body	Others	Total
1	Quarrying Pit	-	1.6093	-	1.6093
3	Green Belt	0.6219	-	-	0.6219
5	Unutilized	--	-	-	--
	TOTAL	0.6219	1.6093	-	2.2312

Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. In the post mining stage the entire mined out area shall be used as a rainwater harvesting pond.

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Mine closure :

At the end of the life of the mine, the following points will be ensured:

- The mine benches will be properly dressed, loose material in the face if any and the mine site will also be cleared.
- Mine Closure activities will be carried out progressively by way of fencing, laying of garland drain around the lease periphery & plantation.
- The peripheral barbed wire fencing, will be strengthened to prevent inadvertent entry of public and animal. surface runoff management arrangements will be improved so as not to disturb the hydrological cycle of the area post mining.
- Besides, to prevent any access to the mined out void, entrance will be secured with tall gate and a blockage bund across the access road.
- No entry / safety board will be erected all around the lease area.
- Benches will be kept intact and haul road accessibility will be maintained.
- Regular checking to prevent inherent entry in to the lease area post mining will be done.
- PP will ensure effective post closure monitoring.

4.6 BIOLOGICAL ENVIRONMENT:

4.6.1 EXISTING FLORA AND FAUNA:

The core zone area is barren with grasses and bushes. Details of flora/fauna pattern in core and buffer zones have been described in chapter - III.

4.6.2 IMPACT OF MINING ON BIOLOGICAL ENVIRONMENT:

The significance of impact on biological environment due to mining and allied activities on various fronts is described below:

Table 4.20: Impact on Biological Environment

S.No	ISSUES	OBSERVATIONS
1	Clearance of vegetation due to mining and allied activities	No major clearance vegetation is involved in both the leases.
2	Retardation of tree growth, tip burning, etc, due to deposition of	Necessary mitigative measures like dust suppression, proper maintenance of equipment's, roads will be carried out to



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	dust and the Particulate matter generated from the mining operation.	prevent dust generation.
3	Proximity to national park/ wildlife sanctuary/reserve forest/mangroves/Coastline/estuary/ sea	The mining lease areas and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks, biospheres, sanctuaries, etc.
4	Release of effluents into water body that also supplies water to wildlife	There is no proposal to discharge any effluent into nearby water bodies.
5	Proposed project could increase siltation that would affect nearby biodiversity area	Surface runoff management structures like garland drain, settling pond etc. as explained above will be constructed and as such there will not be any appreciable impact on surface water quality which in turn can affect the bio diversity of the area.
6	Activities of the project affects the breeding/nesting sites of birds and animals	In the present ML area, there is no wetland. A migratory bird needs sufficient wetlands with sufficient food, shelter, roosting places and nesting places which is not possible here.
7	Located near an area populated by rare or endangered species	There are no Schedule 1 animals
8	Risk of fall/slip or cause death to wild animals due to project activities	In the post mining stage, barbed wire fencing is proposed all around the mined-out void to prevent falling of animals in the mine pits.
9	Project affects the forest-based livelihood/any specific forest product on which local livelihood depends	Not applicable
10	Project likely to affect migration routes	No migration routes are in the area.
11	Project likely to affect flora of an area, which have medicinal value	No such significantly important medicinal value species within the ML area and its nearby region.
12	The project likely to affect wetlands, fish breeding grounds, marine ecology	There are no any wetlands, fish breeding grounds, marine ecology nearby the ML area which will be affected due to this project.
13	Project affects the Agriculture, Forestry and Traditional Practices	Due to proximity of rocky hill with shrubs and bushes, in the lease area the soil quality near the lease area and its surrounding area is also of gravelly rocky type and not fit for agricultural activities. As such in the lease and its immediate surrounding area no major agricultural activities are observed. Patches of seasonal agricultural activities are practiced based on water availability more than 200m south of the lease area. Due to poor quality of the soil, inconsistent rainfall, water scarcity, high agricultural labor cost, manpower shortage and less yield are reason for very little agricultural activity in this region.
14	Impact on soil health and biodiversity	The lease area is rocky type with very little and poor soil cover. (Photograph of the site attached in Chapter-II). Besides, there is no waste generation, disposal or stacking involved in this project. As such no loss of soil health and Bio-



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		diversity is expected.
15	Climate change leading to droughts, floods, etc.	<ul style="list-style-type: none"> •No adverse impact on the surrounding environment is envisaged since optimum equipments will be used . •Besides, as is it a mining project, no adverse generation of heat is envisaged. •Certified vehicles with low carbon emissions will only be used. These equipments will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned. •Geologically the area in and around the lease area contains charnokite type rock formation containing mostly fallow land. As such there no major vegetation or agricultural activities are observed. •There are no Protected or Eco-Sensitive Zone or forest land nearby wherein it can have an impact. •It will be ensured that mining will be carried out adhering to all the statutory rules and regulations and maintaining the environmental quality within the prescribed standards by effective implementation of varioius mitigative measures. •These mitigative measures will be continued for the entire lease period ensuring no impact on the environment. •As such release of Greenhouse gases (GHG), rise in temperature, affecting livelihood of the local people ,loss of Agriculture, Forestry and Traditional Practices is not envisaged. Such a limited scope will not induce any climatic change leading to droughts, floods etc. •Extensive plantation @ 500 sapling per ha of the lease area will be developed in and around the lease area for carbon absorbtion.
16	Pollution leading to release of greenhouse gases (GHG) rise in temperature (Hydrothermal/Geothermal effect due to destruction in environment, Bio-geochemical processes and its foot prints including environmental stress) and livelihood of local people.	<ul style="list-style-type: none"> •This being a mining project no process effluent will be generated. •Water generation is expected to be due to <ul style="list-style-type: none"> ✓ Direct rainfall falling within the pit ✓ Rain water draining near the lease area. •Direct rain fall will be collected in the mine floor sump. Water from sump will be pumped to settling pond for downstream users. •Rainwater from the mine periphery will be collected through peripheral garland drain. Garland drain will be connected to a settling pond. Supernatant clear water from settling pond confirming to applicable limits will be let out to downstream users for agricultural or other purposes. •Due to above mentioned reasons and absence of perinnial water bodies nearby where in any marine ecosystem is
17	Possibilities of water contamination and impact on aquatic ecosystem health and impact on Sediment geochemistry in the surface streams	<ul style="list-style-type: none"> •This being a mining project no process effluent will be generated. •Water generation is expected to be due to <ul style="list-style-type: none"> ✓ Direct rainfall falling within the pit ✓ Rain water draining near the lease area. •Direct rain fall will be collected in the mine floor sump. Water from sump will be pumped to settling pond for downstream users. •Rainwater from the mine periphery will be collected through peripheral garland drain. Garland drain will be connected to a settling pond. Supernatant clear water from settling pond confirming to applicable limits will be let out to downstream users for agricultural or other purposes. •Due to above mentioned reasons and absence of perinnial water bodies nearby where in any marine ecosystem is



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observed, no effect on this front is expected.

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 elaborately planned green belt development activities.

4.6.3 CONTROL MEASURES FOR BIOLOGICAL ASPECTS:

To reduce the adverse effects on flora/fauna status of the area due to deposition of dust generated from mining operations, mobile water tanker systems will be ensured in all dust prone areas to arrest dust generation. Methodical and well-planned plantation scheme will be carried out depending upon the immediate need, priority and availability of land. The plantation will be done along the lease boundary in a phased manner.

4.6.4 GREEN BELT & PLANTATION:

Good greenbelt and plantation plan has been planned in both the mining leases both within and outside the lease area. The details regarding the same has been provided below:

Table 4.21: Proposed Plantation

Year	Roughstone and Gravel Quarry (Over an area of 2.58Ha)	Roughstone and Gravel Quarry (Over an area of 2.2312Ha)	Name of the species
I	260	240	Pungai, Vagai, Vembu, Manjal konrai, Naval, Puvarasu, etc.,
II	260	240	
III	260	240	
IV	260	240	
V	260	240	
Total	1300	1200	

In the post mining stage, in the Roughstone and Gravel Quarry 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 and in the Roughstone and Gravel Quarry over an area of 2.2312Ha, 1.6093Ha of mined out area will be left as water body and 0.6219 Ha will be greenbelt area.



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4.7 SOCIO ECONOMIC ENVIRONMENT:

Both the lease areas are in the respective proponent's possession. Hence, 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 mines will each employ about 12 persons directly and about 50 persons on indirect basis 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 as shown under.

- Project related logistical operations for transport of Rough Stone, etc,
- Various trading services for consumer goods, spare parts, sundry items, etc.
- Contractual services connected with the project.
- Green belt and horticultural works in the project.
- Casual labor needs for various activities.

Besides, there will be improvement in the following aspects due to project operation:

- ❖ Improvement in infrastructural facilities, providing education aids etc. in nearby schools
- ❖ Betterment of drinking water facilities.
- ❖ Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc from this project directly and also indirectly.

From above details, it is clear that the project operations will have highly beneficial positive impact in the area.

Table 4.22:Community Development Cost

Project Name	Roughstone and Gravel Quarry (Over an area of 2.58Ha)	Roughstone and Gravel Quarry (Over an area of 2.2312Ha)
Project Cost (Rs.)	Rs.211.10 Lakhs	Rs.230 Lakhs
2% of the Project Cost (Rs.)	Rs. 4.2 Lakhs	Rs.4.6 Lakhs
Revised cost allocated (Rs.)	Rs. 5.0 Lakhs	Rs. 5.0 Lakhs



However, towards the socio-economic development of the surrounding area, APK Minerals have allocated a total of Rs. 10 Lakhs for both projects combined. The activities identified will be implemented in a phased manner in provision of facilities in nearby Government School.

4.8 OCCUPATIONAL HEALTH AND SAFETY:

4.8.1 BASELINE STATUS:

Primary data collection through field survey conducted in the study area reveals that there is no reported incident of any occupational diseases in the area. Hazardous jobs like blasting, loading, etc. are planned to be executed safely and with all precautionary measures as prescribed in Metalliferrous Mines Regulations of 1961, so as to minimize hazards and incidences of health problems.

4.8.2 IMPACTS ON OCCUPATIONAL HEALTH DUE TO PROJECT OPERATIONS:

Anticipated occupational illness sequel to mining activities can be as follows:

- Dust related pneumonia
- Tuberculosis
- Rheumatic arthritis
- Segmental vibration
- Miner's Nystagamus

4.8.3 MITIGATIVE MEASURES FOR OCCUPATIONAL HEALTH:

To reduce pollution emanation from the project, following measures are being and will be taken:

- Water sprinkling on haul roads etc.
- Green belt creation to arrest dust and reduce noise propagation.
- Acceptance of good control measures for reducing air pollution, as mentioned earlier in the chapter.
- Control of noise levels through good preventive maintenance of machineries, green belt creation, provision of ear plug to workers, etc.
- In addition to above measures, the following remedial steps are being and will be enforced to ensure minimization of occupational health and safety problems.



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- Medical examination of workers by qualified doctors, as per DGMS circulars.
- Regular awareness campaigns amongst staff and workers
- Staff will be provided with PPE to guard against excess noise levels, Dust generation and inhalation, etc., as per standards prescribed by DGMS.

4.8.4 MITIGATIVE MEASURES FOR SAFETY ASPECTS:

The following safety gadgets will be provided to the staff and workers based on their area of operation and work & requirement:

SI No	Safety Equipments
1.	Helmets
2.	Shoes
3.	Goggles
4.	Dust Mask
5.	Hand Gloves
6.	Reflective Jackets
7.	Ear Muffs
8.	Signal Lights/Flags

4.9 LOGISTICAL SYSTEM:

From these proposed quarries the entire output will be transported to the crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. The expected peak transport will be as follows:

Table 4.23: Details of Transportation

SI.no	Particulars of activity	Roughstone and Gravel Quarry (Over an area of 2.58Ha)	Roughstone and Gravel Quarry (Over an area of 2.2312Ha)
A	Maximum Roughstone Transported (m3/year)	65625	68890
B	No of days in a year	300	300
C	Transport hours per day	8	8
D	Truck capacity in T	25	25
	Trips per hour	3 Trips/Hr	3 Trips/Hr

From the above table it is seen that there will be about 6 trips per hour cumulatively. The existing road can absorb this traffic due to this project. However, the following mitigative measures are suggested:



- ❖ Water sprinkling on material in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- ❖ Plantation on either side of the transport road in consultation with the concerned department.
- ❖ Proper maintenance of transport roads
- ❖ Proper maintenance of transport vehicles.
- ❖ Avoiding overloading of material
- ❖ Covering of loaded vehicles with tarpaulins sheet if warranted.
- ❖ 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

4.10 WASTE MANAGEMENT:

Solid Waste: Since the entire mined out material will be used there will not be any solid waste generation from these projects.

Liquid waste: There is no process effluent generation from these mines. Hence no liquid waste is generated.

Hazardous waste management: In these projects the following management practices will be followed:

- Ensuring availability of different colour bins for collection of different types of waste.
- Storing of Hazardous waste material in a separate storage area with impervious containers for waste oil, oil contaminated clothes, used lead acid batteries, scraps, tyre storage etc.
- Ensure that there are no leakages/spillages of hazardous wastes.

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- Ensuring that the fire extinguisher system is available at hazardous material storage area.

The hazardous waste if any will be disposed through authorized recyclers or re-processors periodically. The hazardous wastes will be transported in accordance with the provisions of rules. By effective implementation of above said mitigation measures no major impact due to Hazardous waste is expected.

Plastic waste: 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.

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CHAPTER - V

ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

CHAPTER 5

ANALYSIS OF ALTERNATIVES

5.1 ALTERNATE TECHNOLOGY:

These are proposed Rough Stone and Gravel Quarries in which Mechanized Open Cast mining will be carried out. It involves jack hammer drilling, blasting, excavation, loading and transportation of Roughstone to the crushing units. As this method is techno economically proven, consideration of an alternate technology is not warranted.

5.2 ALTERNATE SITE:

The mineral deposits are site specific in nature; hence question of seeking alternate site does not arise.

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CHAPTER - VI

ENVIRONMENTAL MONITORING PROGRAMME

CHAPTER 6

ENVIRONMENTAL MONITORING PROGRAMME

6.1 GENERAL

In these projects, appropriate environmental monitoring programme are framed. 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 monitoring schedules are planned to aim at regular and systematic study of various pollution levels with respect to air and water quality, noise levels etc., to ensure that they conform to the standards laid down by the Environment Protection Act, 1986 and various Central and State Pollution Control Board Limits.

The various methodologies and frequency of studies of all environmental quality parameters will be as per prescribed norms laid down by MOEF&CC and State Pollution Control Board. This being a small quarry operation, the Mines in-charge will take care of all the environmental related works also.

Environmental control measures include components like air, water and soil quality, noise levels, afforestation measures, etc. For monitoring of environment over the life of the mine, a set of stations for study of quality parameters are fixed as per the actual requirements and prevailing conditions of environmental factors, as dictated from time to time, depending on the prevailing pollution levels.

6.2 MONITORING SCHEDULES FOR VARIOUS PARAMETERS

The monitoring schedules are planned for systematic study of various pollution levels with respect to air and water qualities, noise levels, etc. to ensure that they conform to the standards laid down by Environmental Protection Act and various statutory Limits. The monitoring schedules to be adopted in both these quarries given below. However, based on the need and priority it may be suitably modified / improved in consultation with local authorities.



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Table 6.1: Environmental Monitoring Schedule

S.No	Environmental Parameters	Parameters to be monitored	Monitoring area coverage /locations	Frequency of monitoring
1	Air Quality	Sulphur dioxide (SO ₂), Oxides of Nitrogen (NO ₂), Respirable Particulate Matter (PM _{2.5} and PM ₁₀).	2 locations in the buffer zone and 1 work zone locations.	Once in a year in each location.
2	Water Quality	General, Physical, and chemical parameters	Ground Water samples (around the project area) and Mine Pit water samples	Once in a year
3	Water Table Fluctuations	Water Levels	Nearby wells and Borewells	On yearly basis pre and post monsoon level
4	Noise	Leq. Lmax Lmin, Leq Day & Leq Night dB(A)	Work zone locations and buffer zone villages	Once in a year
5	Vibration	Peak Particle Velocity	Mine periphery	Once to arrive at optimum blasting parameters
6	Socio Economic Environment	Socio Economic Survey, Review of implementation of CER activities proposed	Buffer Zone	Yearly basis
7	Occupational Health	Occupational health survey to detect early incidence of diseases, Audiometry Test for workers in noise prone area and review of safety matters.	Staff and Workers involved in the project	Once in a year
8	Greenbelt	Maintenance	Within the lease area	Regularly

6.3 LEGISLATIVE AND REGULATORY FRAME WORK:

The project will have environmental policy declaring its responsibility and commitment to protect the environment and to ensure public safety. The existing policy will be available with all concerned officials of the plant. The following environmental standards as per methodologies prescribed, by MOEF/CPCB/TNPCB will be enforced in this project:

Table 6.2: Environmental Standards

Standards	Issued By	Reference
National Ambient Air Quality Standards	Central Pollution Control Board	Table No. 6.3
Water quality standards per IS 10500:2012	Bureau of Indian Standards	Table No.6.4
Noise Standards	CPCB / MoEF&CC	Table No.6.5
Permissible Peak Particle Velocity	DGMS, Dhanbad	Table No.6.6



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Table 6.3: National Ambient Air Quality Standards

[NOT II]—(PART 4) 3

NATIONAL AMBIENT AIR QUALITY STANDARDS
CENTRAL POLLUTION CONTROL BOARD
NOTIFICATION
New Delhi, the 18th November, 2009

No. B-290162090/PCI-I.—In exercise of the powers conferred by Sub-section (2) (b) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No.14 of 1981), and in supersession of the Notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect, namely:-

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Areas (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO ₂), µg/m ³	Annual* 24 hours**	50 80	20 80	- Improved West and Gaeke - Ultraviolet fluorescence
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual* 24 hours**	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM ₁₀ µg/m ³	Annual* 24 hours**	60 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (size less than 2.5µm) or PM _{2.5} µg/m ³	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation
5	Ozone (O ₃) µg/m ³	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical Method
6	Lead (Pb) µg/m ³	Annual* 24 hours**	0.50 1.0	0.50 1.0	- AAS/ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
7	Carbon Monoxide (CO) mg/m ³	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Ammonia (NH ₃) µg/m ³	Annual* 24 hours**	100 400	100 400	- Chemiluminescence - Indophenol blue method



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(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C ₆ H ₆) µg/m ³	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m ³	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m ³	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m ³	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

SANT PRASAD GAUTAM, Chairman
[ADVT-III/4/184/09/Exy.]

Note: The notifications on National Ambient Air Quality Standards were published by the Central Pollution Control Board in the Gazette of India, Extraordinary vide notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998.



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Table 6.4: IS – 10500 :2012 Standards

Table 1 Organoleptic and Physical Parameters
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to Part of IS 3025	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Colour, Hazen units, <i>Max</i>	5	15	Part 4	Extended to 15 only, if toxic substances are not suspected in absence of alternate sources
ii)	Odour	Agreeable	Agreeable	Part 5	a) Test cold and when heated b) Test at several dilutions
iii)	pH value	6.5-8.5	No relaxation	Part 11	—
iv)	Taste	Agreeable	Agreeable	Parts 7 and 8	Test to be conducted only after safety has been established
v)	Turbidity, NTU, <i>Max</i>	1	5	Part 10	—
vi)	Total dissolved solids, mg/l, <i>Max</i>	500	2 000	Part 16	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.



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Table 2 General Parameters Concerning Substances Undesirable in Excessive Amounts
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Aluminium (as Al), mg/l, Max	0.03	0.2	IS 3025 (Part 55)	—
ii)	Ammonia (as total ammonia-N), mg/l, Max	0.5	No relaxation	IS 3025 (Part 34)	—
iii)	Anionic detergents (as MBAS) mg/l, Max	0.2	1.0	Annex K of IS 13428	—
iv)	Barium (as Ba), mg/l, Max	0.7	No relaxation	Annex F of IS 13428* or IS 15302	—
v)	Boron (as B), mg/l, Max	0.5	1.0	IS 3025 (Part 57)	—
vi)	Calcium (as Ca), mg/l, Max	75	200	IS 3025 (Part 40)	—
vii)	Chloramines (as Cl ₂), mg/l, Max	4.0	No relaxation	IS 3025 (Part 26)* or ALPHA 4500-Cl G	—
viii)	Chloride (as Cl), mg/l, Max	250	1 000	IS 3025 (Part 32)	—
ix)	Copper (as Cu), mg/l, Max	0.05	1.5	IS 3025 (Part 42)	—
x)	Fluoride (as F) mg/l, Max	1.0	1.5	IS 3025 (Part 60)	—
xi)	Free residual chlorine, mg/l, Min	0.2	1	IS 3025 (Part 26)	To be applicable only when water is chlorinated. Tested at consumer end. When protection against viral infection is required, it should be minimum 0.5 mg/l
xii)	Iron (as Fe), mg/l, Max	0.3	No relaxation	IS 3025 (Part 53)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xiii)	Magnesium (as Mg), mg/l, Max	30	100	IS 3025 (Part 46)	—
xiv)	Manganese (as Mn), mg/l, Max	0.1	0.3	IS 3025 (Part 59)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xv)	Mineral oil, mg/l, Max	0.5	No relaxation	Clause 6 of IS 3025 (Part 39) Infrared partition method	—
xvi)	Nitrate (as NO ₃), mg/l, Max	45	No relaxation	IS 3025 (Part 34)	—
xvii)	Phenolic compounds (as C ₆ H ₅ OH), mg/l, Max	0.001	0.002	IS 3025 (Part 43)	—
xviii)	Selenium (as Se), mg/l, Max	0.01	No relaxation	IS 3025 (Part 56) or IS 15303*	—
xix)	Silver (as Ag), mg/l, Max	0.1	No relaxation	Annex J of IS 13428	—
xx)	Sulphate (as SO ₄) mg/l, Max	200	400	IS 3025 (Part 24)	May be extended to 400 provided that Magnesium does not exceed 30
xxi)	Sulphide (as H ₂ S), mg/l, Max	0.05	No relaxation	IS 3025 (Part 29)	—
xxii)	Total alkalinity as calcium carbonate, mg/l, Max	200	600	IS 3025 (Part 23)	—
xxiii)	Total hardness (as CaCO ₃), mg/l, Max	200	600	IS 3025 (Part 21)	—
xxiv)	Zinc (as Zn), mg/l, Max	5	15	IS 3025 (Part 49)	—

NOTES

1 In case of dispute, the method indicated by '*' shall be the referee method.

2 It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.



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Table 6.5: Noise Level Standards

Area Code	Category of Area	Limits in dB(A) Leq	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

Note :

1. Day time shall mean from 6 a.m. and 10.0 p.m.
2. Night time shall mean from 10.0 p.m. and 6 a.m.
3. Silence zone is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority.
4. Mixed categories of areas may be average as one of the four above mentioned categories by the competent authority.

* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A “decibel” is a unit in which noise is measured.

“A”, in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is energy mean of the noise level over a specified period.

Table 6.6: Permissible Noise For Industrial Workers As Laid Down By CPCB

Exposure time (in hr. per day)	Limit in dB(A)
8	90
4	93
2	96
1	99
$\frac{1}{2}$	102
$\frac{1}{4}$	105
1/8	108
1/16	111
1/32	114



Table 6.7: Permissible Peak Particle Velocity (PPV) In Mining Areas

In mm/sec.

Type of structure	Dominant excitation frequency Hz		
	<8 Hz	8-25 Hz	>25 Hz
A. Buildings/structures not belonging to owner			
Domestic houses /structures (Kuchha brick and cement)	5	10	15
Industrial buildings (RCC and framed structures)	10	20	25
Objects of historical importance and sensitive structures.	2	5	10
B. Building belonging to owner with limited span of life			
Domestic houses/structures (Kuchha brick and cement)	10	15	25
Industrial buildings (RCC and framed structures)	15	25	50

The above said monitoring location and the frequency of monitoring shall be suitably modified in consultation with the nodal agency as per the actual requirements and prevailing conditions of the mine and environmental factors, as dictated from time to time, depending on the prevailing pollution levels, if required.

6.4 ENVIRONMENTAL MONITORING COST:

Towards environmental monitoring it is proposed to allocate a budget of Rs. 50,000 per annum for each project. Further details of the capital and recurring cost of environmental management has been provided in in Table No. 10.2, Chapter-X.



CHAPTER - VII

ADDITIONAL STUDIES

CHAPTER 7 ADDITIONAL STUDIES

7.1 GENERAL:

The additional studies covered for this EIA / EMP report are:

1. Public consultation of the project as per MoEF&CC mandates.
2. Risk Assessment
3. Cumulative Impact Study
4. R&R Plan
5. Mine closure planning

7.2 PUBLIC CONSULTATION:

This draft EIA/EMP report will be submitted for Public Hearing as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.

7.3 RISK ASSESSMENT:

For the various risks, likely to arise, detailed analysis of causes and control measures is given in below:

S.No	Factors	Causes of risks	Control measures
1.	Removal of material	a) Bench may slide due to its unconsolidated nature. b) Vibration due to movement of vehicles in the benches.	Overall bench slope angle will be maintained optimally as per DGMS requirement. Working bench width will be more than bench height.
2.	Drilling	a) Due to high pressure of compressed air hoses may burst. b) Down the hole drill rod may break due to improper maintenance of rod.	<ul style="list-style-type: none">• Periodical preventative maintenance and replacement of worn out accessories in the compressor and drill equipment.• As per manufacturers recommendation rod to be replaced and bits will be changed.



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S.No	Factors	Causes of risks	Control measures
3.	Blasting	a) Fly rock, ground vibration, noise etc. b) Improper charging of explosives	<ul style="list-style-type: none"> Burden and spacing will be kept optimum on trial basis. Explosive charge per delay will be minimized. Controlled blasting with Nonel will be used.
4.	Excavation	a) Hauling and loading equipment are in such proximity while excavation b) Swinging of bucket over the body of tipper c) Driving of unauthorized person	<ul style="list-style-type: none"> Operator shall not operate the machine when person & vehicles are in such proximity. Shall not swing the bucket over the cab and operator leaves the machine after ensuring the bucket is on ground. Shall not allow any unauthorized person to operate the machine by effective supervision.
5.	Transportation	a) Operating the vehicle "nose to tail" b) Overloading of material c) While reversal & overtaking of vehicle d) Operator of truck leaving his cabin when it is loaded	<ul style="list-style-type: none"> It will be ensured that all these causes will be nullified by giving training to the operators. No over loading will be done. Audio visual reverse horn will be provided. Proper training will be given.
6.	Fire due to electricity and Oil	a) Due to the short circuit of cables & other electrical parts b) Due to the leakage of inflammable liquid like diesel, oil etc.	<ul style="list-style-type: none"> Electrical parts shall be cleaned frequently with the help of dry air blower All fastening parts and places will be tightening. Suitable fire suppression equipment shall be provided.
7.	Natural calamities	Unexpected happenings	The mine management is capable to deal with the situation.

These being small rough stone projects that too working in a safe area, no major disaster is expected.

7.3.1. DISASTER MANAGEMENT PLAN:

In General, following natural/industrial hazards may occur during normal operation.

- Inundation of mine pit due to flood/excessive rains :
- Slope failure of the pit and waste dumps
- Accident due to heavy mining equipment and
- Blasting and use of Explosives

Mining operation in these 2 leases will be carried out under the management control and direction of a qualified mine manager. The DGMS have been issuing a number of standing



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orders, model standing orders and circulars to be followed by the mine management in case of disaster. All these orders statutory rules and regulations will be followed. Seismically project site and study area falls in the Zone – II and is described as least active zone. There are no perennial water body near the lease area to cause any flooding. As such no disaster due to this project is envisaged.

In order to take care of above hazard / disasters the following control measures have been adopted.

- Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- Avoiding mining during heavy monsoon period and marching of all the HEMM to the top benches during rainy period.
- Provision of high-capacity standby pumps with generator sets with sufficient quantity of diesel for emergency pumping especially during monsoon.
- All safety precautions and provisions of regulations will be strictly followed during all mining operations
- Prohibiting entry of unauthorized persons.
- Provision of Firefighting and first-aid provisions in the mines.
- 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 for their use.
- Training and refresher courses for all the employees working in hazardous premises
- Observance of all safety precautions for blasting and storage of explosives as per MMR 1961.
- Working of mine, as per approved plans and regularly updating the mine plans
- Cleaning of mine faces regularly
- Proper storage, usage of explosives through competent persons.
- Regular maintenance and testing of all mining equipment as per manufacturers guidelines



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- Suppression of dust on the haulage roads with frequent water sprinkling, etc.
- Increasing the awareness of safety and disaster through competitions, posters and annual safety weeks and environmental weeks, encouraged through suitable rewards and other similar drives.

The management and the EMC will be able to deal with the situations efficiently keeping in view of the likely sources of dangers in the mine.

7.4 REHABILITATION AND RESETTLEMENT (R & R) PLAN:

The mining activities will be carried out within the mine lease areas only. Both mine lease areas are Patta lands. There is no population within the ML area. Hence, the question of R& R does not arise.

7.5 MINE CLOSURE PLAN:

In the mine closure stage all necessary measures will be taken as per Act & Rules, There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of life of mine will be properly fenced all around to prevent inherent entry of public and cattle and all the statutory requirements will be fulfilled. As already explained, in the post mining stage the rainwater harvested in the mined out void shall be utilized for irrigation and domestic needs locally. The mine closure plan is provided in **Figure 4.5**.

7.6 CUMULATIVE IMPACT STUDY:

The details of quarries within the 500m radius of Roughstone and Gravel Quarry of APK Minerals Private Limited over an area of 2.58Ha has been provided below:

**Table 7.1: Details of quarries within 500m radius-
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**

S.No.	Name	Village	S.F.No.	Extent (Ha)	GO.No./Proc & Date	Lease Period
1. Existing Quarry						
1	Tvl.MSM Mining Managing Partner Thiru M.Mohan No.15/1, Gandhi Street, Thiruneermalai Road, Chrompet, Chennai-600044	Pazhaveri	225/1A, 225/1B2, 252/2A, 252/2B, 252/4B2 etc.	3.55	Rc.No.569/Q3/2018 dated 27.02.2022	27.02.2020 – 26.02.2025



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2. Details of abandoned/old quarries						
---Nil---						
3. Details of other proposed/applied quarries						
1	Tvl.APK Minerals Pvt. Ltd.	Pazhaveri	263/1A, 1B, 1C, 1M1, 1M2, 1N1, 1N2, 1O, 1P1, 1P2, 1Q, etc.	2.58	Lr.No.347/Q3/2022 dated 17.04.2024	--

The details of quarries within the 500m radius of Roughstone and Gravel Quarry of APK Minerals Private Limited over an area of 2.2312Ha has been provided below:

**Table 7.2: Details of quarries within 500m radius-
Roughstone and Gravel Quarry (Over an area of 2.2312Ha)**

S.No.	Name	Village	S.F.No.	Extent (Ha)	GO.No./Proc & Date	Lease Period
1. Existing Quarry						
1	Tvl.MSM Mining Managing Partner Thiru M.Mohan No.15/1, Gandhi Street, Thiruneermalai Road, Chrompet, Chennai-600044	Pazhaveri	225/1A, 225/1B2, 252/2A, 252/2B, 252/4B2 etc.	3.55	Rc.No.569/Q3/2018 dated 27.02.2022	27.02.2020 – 26.02.2025
2	Tvl. Udhayam Civil Constructions Pvt. Ltd., Managing Director Thiru. D. Karthikeyan, No.66, Rajendra Prasad Road, Krishna Nagar, Chrompet, Chennai - 600044.	Pazhaveri	203/1A I A, 204/1A, 204/2, 205/1 A, 205/2, 205/3,etc	3.6686	Rc.No. 151/Q3/2018 dated:12.07.2019	12.07.2019 – 11.01.2024
3	S.Dharmaraj, S/ o. Shitrambala Reddiyar, No.2A, North street, Mundalaapuram, Ondipulinaickanur, Muthulapuram, Virudhunagar - 626 119.	Pinaiyur	394/1 A, 394/18, 394/1C, 394/1D, 394/1E, etc.	4.93.50	Rc.No. 619/Q3/2017 , dated.31.07.2020	31.07.2020 – 30.07.2025
4	S. Ravisundar, S/o. Sandhiyagu, No.1, 1178-A, 1st street, Bethel Nagar, Injampakkam, Chennai	Pinaiyur	417	1.88.00	Rc.No.168/Q3/2014 dated 01.02.2021	01.02.2021 – 01.01.2031
2. Details of abandoned/old quarries						
---Nil---						



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3. Details of other proposed/applied quarries						
1	Tvl.APK Minerals Pvt. Ltd.	Pazhaveri	207/4B, 207/5B, 207/6B, 207/7B, 207/8B,etc.	2.42.76	--	--

From that above it is seen that, the other existing and proposed quarries within the 500m radius along with the subject projects works out to >5 Ha and are in the homogeneous mineral area cluster situation applicable for both projects and this combined report is prepared. A map showing the existing and proposed quarries located near the lease area is provided Figure No.7.1 given below:

Figure 7.1: Vicinity Map



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The baseline monitoring carried out for this project reflects the cumulative impact of these existing quarries. The cumulative impacts of both the Roughstone and Gravel Quarries of APK Minerals are provided in detail in Chapter-IV of the EIA/EMP Report.

7.7 PIT SLOPE STABILITY PLAN

- Factors affecting slope stability of the mines are
 - Geological structure comprising dip, intervening shear zone formation, clay intrusion, joints / discontinuities, faults etc.,
 - Lithology of formation
 - slope geometry
 - Ground water availability which may cause increased thrust on the faces
- Site specific analysis
 - Since the formation is of homogeneous rock type probability of slope failure is low and can be avoided if proper measures are adopted.
 - There will be a 7.5m wide barrier zone which will form a ridge which can also take care of the top section and as such no risk is envisaged on this front.
 - During future workings the following measures will be ensured:
 - Regular inspection of the mine faces to be carried out by mines manager for ensuring absence of any structural features like faults, joints, dyke, intrusive material in the rock strata which may affect the slope stability and cleared.
 - No loose material or boulders is to be stacked on the mine top or pit benches.
 - Height of the benches should be 5m. Working bench width should be at least 2.5 times the bench height. Ultimate pit bench width will be 5m & slope is kept at 45° to ensure slope stability.
 - Haul road formation will be at 1 in 16 slope with adequate road width.
 - There will be no ground water table intersection.



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- No seepage is expected due to formation. Adequate drainage management system comprising peripheral garland drain, settling pond to regulate monsoon water will be created to prevent saturation of compact layers, apparent drainage over the bench slope to avert damages to quarry face and manage the water flow.

The above will ensure safe and stable mine prospects. Slope stability study is site specific and largely dependent on the geological formation of the local strata. As such , carrying out such special studies after commencement of mining operation with exposed rock of sufficient quantity , depth only is expected to deliver the desired results. Besides, during mining , such study will provide to arrive at the optimum bench slope parameters design. As such , scientific study through involving reputed institution will be carried out during the course of mining.

CONCLUSION:

No adverse impact on the surrounding environment is envisaged from these projects due to enforcing all the mitigative measures during mining.

Certified vehicles with low carbon emissions will only be used. These equipment's will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned.

Geologically the area in and around the lease area contains charnokite type rock formation containing mostly fallow land. As such there no major vegetation or agricultural activities are observed. There are no Protected or Eco-Sensitive Zone or forest land nearby wherein it can have an impact.

It will be ensured that mining will be carried out adhering to all the statutory rules and regulations, appointing statutory personnel's like qualified mines manager, blaster, informing DGMS before commencement of mining operations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures.

As such release of Greenhouse gases (GHG), rise in temperature, affecting livelihood of the local people, loss of Agriculture, Forestry and Traditional Practices is not envisaged. Such a limited scope will not induce any climatic change leading to droughts, floods etc.



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Mine closure plan is prepared for the lease period and already included in the approved mine plan.

Due to absence of perennial water bodies nearby where in any marine ecosystem is observed, no effect on this front is also expected. Hydrological investigation carried out and as given in Para 3.6 of Chapter III & para 4.3 Chapter – IV shows that the all-time ground water table in this area is much below the mining level. Hence, ground water intersection is not envisaged for the entire life of the mine and ground water will not be affected due to the quarrying operation. As such there will not be any adverse impact on the ground water regime. Besides, this being a mining project, there will not be any process effluent. As mentioned earlier, the rainfall will be collected in the mine floor sump and gainfully used as per CGWA requirement. Excess water if any in the sump will be pumped to settling pond and supernatant clear water let out for downstream users.

It will be ensured that mining will be carried out adhering to all the statutory rules and regulations, appointing statutory personnel like qualified mines manager, blaster, informing DGMS before commencement of mining operations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures for the entire lease period.

* * * * *



CHAPTER - VIII

PROJECT BENEFITS

CHAPTER 8 PROJECT BENEFITS

The proposed Roughstone and Gravel Quarries of APK Minerals Private Limited will improve physical and social infrastructures in the area like:

- Direct employment.
- Indirect employment to scores of people.
- Financial gains for the governments, through collection of various taxes like royalty, GST, etc.,
- Increase in General Awareness of the People.
- Continual improvements of the local amenities for the local society
- Improvement of the General Living Standard of the People in the Vicinity
- Overall Improvement in HDI (Human Development Index)
- Growth of Allied Industries in the Area.
- Improvement in Per Capita Income.
- Providing certain facilities for the local schools and panchyats

In short, the proposed Rough Stone Quarries will benefit this region in the fields of employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, medical systems, infrastructural build-up, etc in its own way.

By means of carrying out the socio-economic development activities, local community development is expected. Towards the same, the proponents have planned to allocate Rs10 Lakhs on a combined basis for both leases together for various activities towards socio economic development. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited.

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CHAPTER - IX

ENVIRONMENTAL COST BENEFIT ANALYSIS

CHAPTER 9

ENVIRONMENTAL COST BENEFIT ANALYSIS

Appendix-III of the MoEF notification S.O. 1533 dated 14.09.2006, which describes the generic structure of Environmental Impact Assessment document, states that the chapter ' Environmental cost benefit analysis' is applicable if it is recommended during scoping stage.

Terms of Reference for Roughstone and Gravel Quarry of APK Minerals Private Limited(Over an area of 2.58Ha) was granted by SEIAA vide TO24B0108TN5750113N dated 29.07.2024. Terms of Reference for Roughstone and Gravel Quarry of APK Minerals Private Limited(Over an area of 2.2312Ha) was granted by SEIAA vide TO24B0108TN5919768N dated 10.08.2024. Environmental cost benefit analysis is not prescribed in the terms of reference. Hence, it is not applicable.

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CHAPTER - X

ENVIRONMENTAL MANAGEMENT PLAN

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

10.1 INTRODUCTION:

This chapter describes the implementation strategies of the environmental management measures described through the course of this EIA/EMP report for the purpose of mitigating significant impacts due to the proposed mining operations.

10.2 COMPONENTS OF THE ENVIRONMENTAL MANAGEMENT PLAN:

The environmental management plan comprises identification of the major impacts due to project operations and their suitable mitigative measures. (Provided in an elaborate manner in Chapter-IV) Based on the environmental policy of the company, the environmental management cell will oversee the implementation of these mitigative measures. The details of the proponent's environmental policy, environmental management cell and also the budgetary allocation towards various environmental management measures has been elaborated in this chapter.

10.2.1 ENVIRONMENTAL POLICY:

The project proponent will frame a well-planned environmental policy. The salient features of this policy will be.

- ❖ Ensuring risk-free and safe mining operations by following all rules and conditions prescribed in the Indian mines Act, metalliferous mining regulation, mineral conservation and development rules, etc,
- ❖ Ensuring environmental preservation by adoption of remedial measures for control of air, water quality, noise status, biological improvements, green belt creation, etc.,
- ❖ Extending CER activities to cater to the needs of local community for various benefits like improvement of physical and social infrastructures for the welfare of local community.



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- ❖ Ensuring that all mining operations such as deployment of HEMM, conduct of drilling and blasting operations, etc are strictly conducted keeping with regulatory standards & maintaining safe working environment in the area.
- ❖ Providing periodical training on safety, Health, & Environment to all employers.
- ❖ Any infringement / violation of any rule or unsafe mining operations should be reported mines manager, should be reported by the foremen/ blaster mate etc, who will take immediate corrective measures for avoiding major disasters. The report will ultimately reach the owner through upwardly hierarchical communicative channels from the lowest level to superior levels in a quick time bound duration.
- ❖ The mines manager will exercise overall control over entire mining and connected operations and all infringements / violations on any count pertaining to unsafe operations, environmental degradation, etc, should be brought to the notice of the owner of the quarry. Remedial measures for such violations and deviations should be taken care by the mines manager to avoid any hazards or disasters in the mine and nearby areas. The persons responsible for such violations will be punished through appropriate disciplinary penal actions.
- ❖ The EC conditions and stipulations will be strictly observed by Mines manager of the mine in various issues like prescribed environmental monitoring schedules conducting vibratory studies due to blasting, creation of green belt, management of mined area, occupational health review, etc.
- ❖ Penalty actions will be taken by the proponent in cases of continuous negligence resulting in violations deviations in this respect.
- ❖ A time schedule of once in 90 days for review of all operational factors as mentioned above is to be enforced, for proper and quick corrective actions needed in the matter.

10.2.2 ENVIRONMENTAL MANAGEMENT CELL:

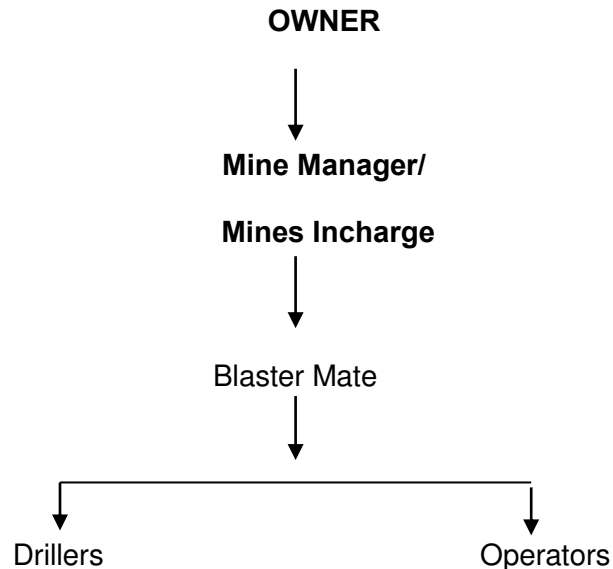
Considering that both the leases are to be operated by the same proponent, there will be a common environmental management cell. The Mines Manager/Mine Incharge of the respective mines will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes



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for air quality control, water quality status, noise level control, plantation programme, social development schemes, etc in the mine. The organizational chart for the same has been provided below:

Figure 10.1: Organization Chart



The Mines Manager/Mines Incharge in the mine project site will be directly responsible for various environmental activities in the mine. The owner will correlate and oversee the environmental activities and their effective implementation in consonance with the guidelines in the EMP. The Mines Manager/Mines Incharge will oversee the environmental administration at the mine and he will directly supervise all activities of environmental administration on environmental issues. Necessary assistance from sub ordinates, external consultants and laboratories shall be taken.

Environmental control measures will span various factors like land degradation, air, water and soil quality, noise levels, effective land reclamation for excavated areas, afforestation measures, etc. The administrative functions are given below.

- ❖ To observe the implementation of environmental control measures.
- ❖ To study the effects of project activities on the environment.



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- ❖ To ensure implementation of Plantation Programme. Regular monitoring of survival rate of plants is carried out to achieve the desired result.
- ❖ To keep records of monitoring etc., in a systematic way, so as to facilitate easy access, when needed by statutory agencies, etc. Also send prescribed returns to statutory authorities.
- ❖ To ensure that adequate fencing and plantation is carried out in the safety zones.
- ❖ Conducting environmental studies and reporting to SPCB.
- ❖ To interact and liaise with Government Departments.
- ❖ To evaluate the performance of existing pollution control equipment and systems periodically and take timely action to keep the equipment at its optimum performance condition.
- ❖ To take immediate preventive action in case of some unforeseen environmental pollution attributable to the project.
- ❖ Conducting safety audits and programmes to create safety awareness in workers/ staff.
- ❖ Conducting annual health audits to detect any health problems promptly in the workers/staff. This will reduce occupational health problems.
- ❖ Imparting training on safety and conduct safety drills to educate employees. Firefighting equipment and system has to be kept in 'ready-to-fight' condition.
- ❖ Carrying out socio economic study in the surrounding areas to find out the benefits derived by the society due to the project and also to fulfill the deficiency, if any, immediately.
- ❖ Ensuring proper mine closure arrangements

Considering the other mines in the cluster, the Environmental Management Cell of these projects will also act as a Cluster Management Committee and coordinate with the other mines in the cluster. The various activities undertaken to be undertaken by this committee are detailed below:



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- Effective implementation of the environmental management measures in a holistic manner
- Devising an operation plan for mining and transportation activities.
- Various natural calamities like rain, flooding, evacuation plans etc. will also be deliberated by this committee to form risk management and emergency management plan pertaining to the cluster.
- The environmental policy of the company will be implemented and proper sustainable mining in accordance with statutory regulations will be enforced for the quarries in the cluster.
- Furnishing action plan regarding restoration strategy
- Deliberate on the health of the workers involved in the mining and also the health of the public
- Carrying out detailed study on the impact of mining on:
 - Soil health & biodiversity
 - Climate change leading to droughts, floods, etc.
 - Pollution leading to release of greenhouse gases (GHG) rise in temperature and livelihood of local people
 - Possibilities of water contamination and impact on aquatic ecosystem health.
 - Agriculture, Forestry & Traditional practices.
 - Hydro geothermal /Geothermal effect due to destruction in the Environment.
 - Bio-geochemical process and its footprints including environmental stress.
 - Sediment geochemistry
- Furnishing action plan to achieve sustainable development goals with regards to water, sanitation and safety.
- Furnishing fire safety and evacuation plans in case of fire accidents.



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- Implementation of steps to effectively utilize energy.

10.2.3 ENVIRONMENTAL MANAGEMENT PLAN:

10.2.3.1 General:

Systematic monitoring systems and well-conceived and efficient Environment Management Plan will ensure that during both the project operations, the various environmental parameters, are well within the statutorily sustainable limits. The environmental control measures proposed to keep various environmental parameters of the project in terms of air, water, noise, land, biological environment, etc. has been described below.

10.2.3.2 Air Quality:

With regards to air quality, to mitigate the fugitive and gaseous emission resulting from mining and allied activities, the following control measures are proposed to be undertaken in both quarries:

- Regular water sprinkling in the transport roads using mobile tankers for dust suppression.
- Controlled blasting techniques with NONEL.
- Provision of dust filters / mask to workers working at highly dust prone and affected areas.
- Covering of drill holes with wet cloth, using sharp drill bits
- Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
- Proper maintenance of haul roads, HEMM and dumpers.
- Covering of loaded tippers with tarpaulins during transportation
- Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
- Besides, there will be good green belt cover will be developed around mine periphery and in safety zone.



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- Green netting will be carried out around the lease periphery on all sides.

10.2.3.3 Water Environment:

There will be no process effluent generated from either project. The domestic sewage to be generated will be collected in septic tank with soak pit arrangements. Besides, there will be no waste dumps or stockpiles within the lease areas as the entire material will be directly despatched to the consumers.

Surface runoff management structures such as garland drain connected to a settling pond will be constructed around the quarries to collect the rain water. The supernatant clear water from the settling pond will be provided to nearby downstream users. Towards rainwater harvesting, the rainwater harvested in the mine will be used to meet the water requirements during mining and excess water in consultation with villagers and in line with government practices will be out in to the nearby stream or shall be distributed to the nearby villages as per their need.

There are no perineal water courses in both the lease areas. In the lease area of Roughstone and Gravel Quarry of APK Minerals (over an area of 2.58Ha), There is a rainwater drain located on the western side for which safety distance of left as per precise area condition is left. Earthen bund will be formed on the western side of the lease area. There is also a Thangal located at a distance of 150m on the northern side of the lease area. There is no proposal to discharge any effluents into either of these water bodies. In the lease area of Roughstone and Gravel Quarry of APK Minerals (over an area of 2.2312Ha) There is an Eri located at a distance of 190m on the southern side of the lease area. The eri and the drainage channel remains dry for most of the year. This being a mining project, there will be no process effluent generation or discharge outside. Hence no major impact is envisaged on the nearby water bodies due to project operations.

10.2.3.4 Noise Environment:

During both the project operations, various control measures as listed below will be carried out to mitigate adverse impact due to the noise generated due to mining and allied activities:

- Good plantation will be carried out in the safety zone areas
- Noise protectors, insulation of operator cabins, installation of silencers in machineries, etc.



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- Proper and regular maintenance of equipments
- Providing earplugs to workers exposed to higher noise level.
- Providing in-built mechanism for reducing sound emissions.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.
- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.

10.2.3.5 Ground Vibration

During the project operations, various control measures as listed below will be carried out to mitigate adverse impact due to the ground vibration caused due to blasting activities:

- ❖ Controlled blasting techniques to maintain the peak particle velocity (PPV) below DGMS prescribed levels.
- ❖ Ideally formulating drilling and charging pattern and ensuring using less charge per delay.
- ❖ To contain fly rocks, stemming column will not be less than burden of the hole. Blasting area will also be muffled, if necessary, to stop fly rocks propagation.
- ❖ Blasting will not be carried out when strong winds are blowing towards the inhabited areas. Blasting will be done during midday time and never at night.
- ❖ Proper care and supervision during blasting by a competent and experienced person.
- ❖ Besides, different blasting time for the projects in the vicinity is suggested and the timing is to be mentioned in the display board in the respective mines entrance.

Further details regarding the same has been provided under section 4.4.2, Chapter-IV.

10.2.2.6 Biological Environment:

The mining lease area and 10km buffer zone are devoid of declared ecologically sensitive features such as national parks, sanctuaries etc. Besides, no Schedule-I animals are observed



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in the core and buffer zone. There will be no major clearance of vegetation involved in this project. However, good greenbelt and plantation programmes are planned within the lease area.

In both lease areas, safety barrier 7.5m is left around the periphery and 10m safety zone. In and around the Roughstone and Gravel Quarry (Over an area of 2.58Ha), 1300 plants will be planted. In and around the Roughstone and Gravel Quarry (Over an area of 2.2312Ha), 1200 plants will be planted.

10.2.2.7 Socio-Economic Environment:

The proposed project operations will provide positive impacts in the region on the employment area as well as on physical and social infrastructural status. Many other tangible benefits will be gained by the local people in the surrounding areas due to ancillary units, trading operations, contractual needs, casual labor, green belt development, etc. Towards the socio-economic development of the surrounding area, the proponent has earmarked an amount of Rs. 10 Lakhs for both projects combined. The activities identified will be implemented in a phased manner in provision of facilities in nearby Government School.

10.3 ENVIRONMENTAL POLLUTION CONTROL COST:

In these proposed quarries Implementation of environmental control measures as stated above involves capital as well as recurring expenses. The probable capital and recurring environmental control cost are calculated and given below

**Table 10.1: Environmental Control Cost –
Roughstone and Gravel Quarry (Over an area of 2.58Ha)**

S. No	Mitigation Measure	Capital cost	Recurring Cost /Annum
Air Environment			
1	Water sprinkling	8.00	0.50
2	Installing wheel wash system near gate of quarry	0.50	0.20
3	Muffle blasting – To control fly rocks during blasting	0.00	0.05
4	Wet Drilling with dust extraction	1.00	0.10
5	Environmental Monitoring	0.00	0.50
6	Transport Trucks -Monitoring exhaust fumes, covering with tarpaulin, monitoring manually with security guard to avoid overloading and installation of speed governors, Parking area with flaggers for traffic management	1.70	0.56
7	Road Maintenance - Haul road maintenancem Regular sweeping and maintenance of approach road	0.00	0.52



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Sub-Total (A)		11.20	2.42
Noise Environment			
8	Controlled Blasting using NONEL, provision of blaster shed	0.50	3.30
Sub-Total (B)		0.50	3.30
Water Environment			
9	Surface Runoff Management Structures	0.26	0.05
Sub-Total (C)		0.26	0.05
Implementation of EC, Mining Plan & DGMS Condition			
10	Waste Management - Collection and Disposal	0.30	0.22
11	Fencing and Green Net Provision	5.16	0.10
12	Health and Safety - Provision of PPEs, IME, PME, First aid facility	0.48	0.34
13	Sign Boards -safety precaution signages, EC Conditions display board	0.20	0.03
16	Installation of CCTV cameras	0.30	0.05
17	Remuneration of statutory persons	0.00	7.80
Sub-Total (D)		6.44	8.54
Green Belt Development			
34	Plantation Inside the lease area(300 Nos.)	0.60	0.09
35	Plantation Outside the lease area (1000 Nos.)	3.00	0.30
Sub-Total (E)		3.60	0.39
Grand Total		22.00	14.71

Table 10.2: Environmental Control Cost – Roughstone and Gravel Quarry
(Over an area of 2.2312Ha)

S. No	Mitigation Measure	Capital cost	Recurring Cost /Annum
Air Environment			
1	Water sprinkling	8.00	0.50
2	Installing wheel wash system near gate of quarry	0.50	0.20
3	Muffle blasting – To control fly rocks during blasting	0.00	0.05
4	Wet Drilling with dust extraction	1.50	0.15
5	Environmental Monitoring	0.00	0.50
6	Transport Trucks -Monitoring exhaust fumes, covering with tarpaulin, monitoring manually with security guard to avoid overloading and installation of speed governors, Parking area with flaggers for traffic management	1.54	0.52
7	Road Maintenance - Haul road maintenancem Regular sweeping and maintenance of approach road	0.00	0.45
Sub-Total (A)		11.54	2.37
Noise Environment			
8	Controlled Blasting using NONEL, provision of blaster shed	0.50	3.46
Sub-Total (B)		0.50	3.46
Water Environment			
9	Surface Runoff Management Structures	0.22	0.05
Sub-Total (C)		0.22	0.05
Implementation of EC, Mining Plan & DGMS Condition			
10	Waste Management - Collection and Disposal	0.30	0.22
11	Fencing and Green Net Provision	4.46	0.10



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12	Health and Safety - Provision of PPEs, IME, PME, First aid facility	0.48	0.33
13	Sign Boards -safety precaution signages, EC Conditions display board	0.20	0.03
16	Installation of CCTV cameras	0.30	0.05
17	Remuneration of statutory persons	0.00	7.80
Sub-Total (D)		5.74	8.53
Green Belt Development			
34	Plantation Inside the lease area(300 Nos.)	0.60	0.09
35	Plantation Outside the lease area (900 Nos.)	2.70	0.27
Sub-Total (E)		3.30	0.36
Grand Total		21.30	14.77

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.

For Roughstone and Gravel Quarry of APK Minerals Private Limited over an area of 2.2312Ha, Rs.21.30 Lakhs is allocated under capital cost and Rs.14.77 Lakhs per annum will be spent under recurring cost. All the recurring cost of maintenance of pollution control measures, environmental monitoring etc., will be met from revenue and will be spent for the entire lease period.

10.4 CONCLUSION:

A meticulously well planned Environmental Management Plan, with various programme schedules and timely execution objectives, as above, will ensure that the future environmental quality in the area will be maintained within statutory limits. The environmental management strategy as explained above will prove that industrial growth, if properly planned with all environmental concerns and appropriate remedial measures can go a long way to improve life pattern and living conditions of the local community around the project.

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CHAPTER-XI

SUMMARY AND CONCLUSION

CHAPTER 11

SUMMARY & CONCLUSION

11.1 INTRODUCTION:

APK Minerals Private Limited propose to operate **two Rough Stone and Gravel Quarries** in the same Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu and has initiated action towards obtaining environmental clearance. Its details are as follows:

Table 11.1 Basic Details of the Project

Project Name	Survey No.	Area
Roughstone and Gravel Quarry of APK Minerals Private Limited (Over an area of 2.58Ha)	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, 10, 11A, 11B, 12A, 12B, 12C, 13, 14, 15, 16A, 16B, 17, 18A, 18B, 19, 20A, 20B, 21, 22, 265/1, 2, 3, 4 & 5	2.58 Ha
Roughstone and Gravel Quarry of APK Minerals Private Limited (Over an area of 2.2312 Ha)	207/4B, 5B, 6B, 7B, 8B, 9, 208/1A, 2A, 2B1, 2B2, 5A, 5C, 5D, 5E, 5F, 5G, 212/1L, 1M, 1N	2.2312 Ha

Although the individual lease area of each project is less than 5 Ha, the other existing and 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 MoEFCC Notifications and this necessitates preparation of EIA/EMP report and public hearing.

Considering that both the leases belong to the same proponent, in homogeneous mineral area 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.



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Table 11.2: Salient details of the project

Details	APK Minerals Private Limited (2.58 Ha)	APK Minerals Private Limited (2.2312 Ha)
A. Statutory Clearances		
Precise Area Communication	Issued by Department of Geology & Mining vide Lr.No.347/Q3/2022 dated 17.04.2024 (Annexure-1A)	Issued by Department of Geology & Mining vide Lr.No.346/Q3/2022 dated 03.02.2024 (Annexure-1B)
Mining Plan Approval	Approved by Deputy Director, Geology & Mining vide Lr.No.347/Q3/2022 dated 24.04.2024 (Annexure-2A)	Approved by Deputy Director, Geology & Mining vide Lr.No.346/Q3/2022 dated 04.03.2024 (Annexure-2B)
Details of Quarries within 500m radius	Obtained from Deputy Director, Geology & Mining vide Lr.No.347/Q3/2022 dated 24.04.2024 (. (Annexure-3A)	Obtained from Deputy Director, Geology & Mining vide Lr.No.346/Q3/2022 dated 04.03.2024. (Annexure-3B)
B. Application for Environmental Clearance		
Terms of Reference	TO24B0108TN5750113N dated 29.07.2024	TO24B0108TN5919768N dated 10.08.2024
Baseline Data Collection	Carried out by Creative Engineers & Consultants , Chennai for Winter Season (March – May 2024)	Carried out by Creative Engineers & Consultants , Chennai for Winter Season (March – May 2024)
C. Site Details		
Location	Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District	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	12°44'46.1684"N to 12°44' 38.8482"N 79°52' 42.9836"E to 79°52' 36.3755"E
Nearest Village	Sirumailur – 790m (S)	Pazhaveri – 358m (SE)
Nearest Town	Walajabad – 6.0Km (NW)	Walajabad – 6.8Km (NW)
Nearest Highway	NH-132B – 2.5Km (N)	NH-132B – 3.0Km (N)
Nearest Railway Station	Pazhayaseevaram – 3.3Km (N)	Pazhayaseevaram – 3.4Km (N)
Nearest Airport	Chennai Airport – 41Km (NW)	Chennai Airport – 41Km (NW)
Accessibility	The lease area can be approached from Arumbuliur – Pazhaveri road which connects to NH-132B at a distance of 2.5Km on the northern side of the lease area.	The lease area can be approached from Arumbuliur – Pazhaveri road which connects to NH-132B at a distance of 3.0Km 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.	The area applied for quarry lease exhibits almost plain topography covered by Gravel formation and has an altitude of 68 m MSL.
D. Environmental Setting of the Study Area		
Nearest Water Bodies	Palar River-1.9Km-NE, Cheyyar River - 2.6Km-SW & Ninjalnadu River - 7.0Km-NE	Palar River- 1.6Km-NE Cheyyar River – 1.7Km-W & Ninjalnadu River - 7.4Km-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	Kavanippakkam RF- 2.2Km-S, Idaimichi RF- 5.2Km- S, Appur RF- 9.2KM-NE, Maiyur RF- 10.0km-SE, Vadakkuppattu RF-9.8km-NE
Notified Archaeologically important places, Monuments	Nil within 10km radius	Nil within 10km radius



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Local Places of Historical and Tourism Interest	Nil within 10km radius	Nil within 10km radius				
Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972*	Nil within 10km radius	Nil within 10km radius				
Other industries	Other than crushers, Roughstone quarries, no other major industries are located in the study area.	Other than crushers, Roughstone quarries, no other major industries are located in the study area.				
E. Technical Description						
Geological Reserves	Roughstone - 11,61,135m3 Gravel - 51,606m3	Roughstone - 10,27,890m3 Gravel - 45,684m3				
Mineable Reserves	Roughstone - 3,90,600m3 Gravel - 41,250m3	Roughstone - 1,83,780m3 Gravel - 31,776m3				
Mining Method	Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out.	Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out.				
Production	Year	Roughstone (m3)	Gravel (m3)	Year	Roughstone (m3)	Gravel (m3)
	1	47600	20000	1	20670	10080
	2	47005	21250	2	22980	6384
	3	65270	0	3	19800	15312
	4	65625	0	4	68890	0
	5	62920	0	5	26120	0
	6	21300	--	6	5040	--
	7	24005	--	7	5130	--
	8	23305	--	8	5100	--
	9	20445	--	9	5100	--
	10	13125	--	10	4950	--
Total	390600	41250	Total	183780	31776	
Waste Generation and Management	There is no waste generation anticipated in these quarries since the entire excavated material will be utilized.	There is no waste generation anticipated in these quarries since the entire excavated material will be utilized.				
Ultimate Depth	42m	32m				
F. Project Requirements						
Manpower	12 persons directly and 50 people indirectly.	12 persons directly and 50 people indirectly.				
Water Requirement and Source	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.	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.				



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Power Requirement	No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.	No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.
Site Services	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.
Project Cost	Rs.211.10 Lakhs	Rs.230 Lakhs

11.2 EXISTING ENVIRONMENTAL SCENARIO:

11.3.1 GENERAL:

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.

11.3.2 SOCIO-ECONOMIC STATUS:

The proposed quarries are located in in Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District. 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 11.3: 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



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Details	Population	Percentage
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

11.3.2.1 SAMPLE SURVEY:

Nearby villages were visited for conducting sample Village survey on all socio-economic aspects and requirements of the people. The existing socio-economic scenario is studied and CER activities are also suggested to the proponent. The study details are given in **Para 3.2.4, Chapter – III.**

11.3.3 EXISTING ENVIRONMENTAL QUALITY:

Table 11.4: Baseline Data

A. Meteorological Data			
Parameters	Minimum	Maximum	
Temperature In °c	24.0	40.3	
Humidity in %	31.0	94.0	
Wind speed in km/hr	<1.8	27.7	
Predominant wind direction from	SE		
B. Ambient Air Quality Data – 5 Locations			
Parameters	Core Zone	Buffer Zone	Limits
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, SO ₂ and NO ₂ , are within the NAAQ standards prescribed CPCB limits. The CO values in all the locations were found to be below detectable limit. Silica values in the study area are found to be below detectable limit. (Detection limit – 0.05 mg/m ³)			
C. Water Quality – 5 Locations			
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 CaCO ₃), mg/L	105 – 450	600	
Total Alkalinity (as CaCO ₃), mg/L	94.50 – 266	600	
Sulphates as SO ₄ ²⁻ , mg/L	18.90 – 53.20	400	
Iron as Fe, mg/L	0.02 – 0.07	0.3	



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Nitrate as NO ₃ , 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.

D. Noise Levels – 5 Locations

Parameter	Core Zone	Buffer Zone	Limit
Day Equivalent	52.8	49.8 – 52.2	55
Night Equivalent	44.5	40.8 – 43.9	45

Comparing with the MOEF&CC Norm of 55 dB(A) for day time and 45 dB(A) for night time, the monitored ambient noise levels were within the limit values for Residential areas.

E. Soil Quality – 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.

F. Land Environment:

For the present study on land use pattern in the study area, remote sensing satellite data have been used. The area estimated of land use categories around the 10km buffer zone is provided below:

Table 11.5: Land Use in 10Km Buffer Zone

S.No	Landuse Feature	Area (Sq.Km)	Percentage
1	Agriculture/ Plantation	87.03	25.57
2	Fallow Land	146.04	42.92
3	Land Without Scrub	14.07	4.13
4	Land With Scrub	44.22	13.00
5	Water bodies	14.61	4.29
6	River	20.18	5.93
7	Scrub Forest	4.62	1.36
8	Settlement / Infracture	5.45	1.60
9	Mining / infrastructure	4.07	1.19
	Total	340.29	100.00

From the above table it is seen 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.



G. Biological Environment:

Flora:

Both the 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 adjutant to irrigated areas. Idaimichi R F is mostly rocky with patches of barren land. Kavanippakkam R F consist of shrubs and bushes. The Dominated species in the study area are Acacia auriculiformis Pongamia pinnata, Prosopis juliflora, Morinda tinctoria, Delonix elata, Azadirachta indica etc.. The list of flora in the core and buffer zone is provided in Table No.3.24 and 25, Chapter-III.

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. No threatened or endemic or endangered species are observed. The area does not form the migratory path of the birds also. List of fauna within the study area is given in Table No – 3.26, Chapter-III.

H) HYDROLOGICAL STUDY:

There are no perineal water courses in both the lease areas. 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.

There is a pond located at a distance of 190m on the southern side of APK Blue metals 2.2312 ha lease area. It is dry, covered with silt, bushes and not interconnected from the upstreamside.

These water bodies are mainly rainwater drainage arrangements and it remains dry for most of the period.

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. The rock type noticed in the lease area is hard Charnockite type



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Study of the depth to water table in the nearby areas show that the wells are as deep as 10ft to 40ft. Water level after good monsoon reaches almost near the surface level whereas it lowers down substantially during summer season. Bore wells are 250-350 ft deep, give better yield post monsoon whereas the yield becomes very less later.

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The groundwater has revealed that potential fractures are encountered at deeper levels

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 .

11.3 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES:

11.4.1 GENERAL:

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

11.4.2 AIR ENVIRONMENT:

The principal sources of air pollution in the area due to mining and allied activities are dust generation in the mine due to various activities such as excavation of material, movement of HEMM, loading, unloading and transportation operations.. Besides, Gas emission also occur as a result of emission of SO₂, NO_x, CO etc., from diesel driven mining equipment, compressors, generator sets, etc. The following measures will be adopted to control impact on the air quality due to mining operations in the lease area:

Table 11.6: Mitigation Measures – Air Environment

S.No	Activity	Mitigation Measures
1	Drilling	Usage of Drill bits in good condition
		Covering of drill holes with wet cloth
		Usage of sharp drill bits for drilling of holes.



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		Provision of dust filters / mask to workers working at highly dust prone and affected areas.
2	Blasting	Well-designed blasting parameter, effective stemming to achieve optimum breakage occurs without generating fines.
		Use of appropriate explosives for blasting and avoiding overcharging of blast holes.
		Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
		Use of controlled blasting techniques with Nonel to keep the dust generation, noise as well as vibration level within the prescribed limits.
3	Excavation and Loading	Proper maintenance of HEMM
		Enclosures for operator cabin.
		Imparting sufficient training to operators on safety and environmental parameters.
		Proper maintenance of hauling equipments.
		Avoiding overloading of dumpers.
4	Transportation	Regular wetting of transport road using mobile water tanker.
		Proper maintenance of haul road and other roads
		Setting up of tyre wash facility in the transport road.
		Avoiding overloading of tippers
		Covering of loaded tippers with tarpaulins during transportation
		Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
5	Others	Development of greenbelt / barriers around mine in the safety zone and carrying out plantation within the lease area.
		Green netting will be carried out around the lease periphery on all sides.

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

The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model developed by Lakes Environmental Software which is based on steady state Gaussian plume dispersion. Ground Level Concentration (GLC).



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The cumulative post project concentration with respect to PM10 is 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.

11.4.3 WATER ENVIRONMENT:

The water requirement for each of these two projects are 8 KLD comprising 1.0 KLD for drinking water and domestic use, 5.0 KLD for dust suppression and 2.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the respective mine pit sump will be used for this purpose.

The activity / source of pollution, its impact / consequence, proposed control measures are explained below:

Table 11.7: Mitigation Measures – Water Pollution

S.No	Source	Consequence	Mitigation Measures
A	Domestic use	Generation of waste water	The domestic sewage to be generated from the project will be collected in septic tank with soak pits.
B	Rainfall	Runoff from waste dump and stack	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), and 720m for Roughstone and Gravel Quarry of APK Minerals (over an area of 2.2312Ha)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.
		Rainwater Harvesting	The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarries. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc.
C	Drainage Course	Disturbance to drainage course	<ul style="list-style-type: none"> There are no perineal water courses in both the lease areas. In the lease area of Roughstone and Gravel Quarry of APK Minerals (over an area of 2.58Ha), there is a rainwater drain located on the western side for which safety distance is left as per precise area conditions.



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			<ul style="list-style-type: none"> • As a protective measures, an Earthen bund of 3 ft height will be constructed on the entire western side safety zone and it will be developed with plantation. There is also a Thangal located at a distance of 150m on the northern side of the lease area. • In the lease area of Roughstone and Gravel Quarry of APK Minerals (over an area of 2.2312Ha) There is an Pond located at a distance of 190m on the southern side of the lease area. This pond remains dry for most of the year. This being a mining project there will be no effluent generation or discharge in to the water bodies. No major impact is envisaged on the nearby water bodies due to project operations.
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- **Stage of Groundwater Development:** The groundwater resource data of Kancheepuram district was obtained from the data provided in the technical report of the National Water Mission – Notes on Kancheepuram District it is seen that this area can be categorized as ‘Safe’ from ground water development point of view.
- **Generation of mine pit water:** As already mentioned, the lease area is part of a huge 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 no major water seepage within the mines is expected from the periphery. The ultimate pit depth of mining is 42m for Rough stone and Gravel Quarry of APK Minerals (Over an area of 2.58Ha) and 32m for Rough stone and Gravel Quarry of APK Minerals (Over an area of 2.2312Ha) The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation. The nearby working mines also reflect the same scenario.

11.4.4 NOISE ENVIRONMENT:

Anticipated noise levels resulting from operation of the various machineries like excavator, tippers, drill have been computed using point source model. Computation of cumulative noise levels at the nearby villages is made based on the assumption that there are no attenuation paths between the source and the boundary. From the studies, it is found that the predicted Noise Levels due to mining operations at the periphery of the mine lease itself will be less even without considering any attenuation factor. However, practically there will be attenuation due to vegetation etc., and as such there will not be any adverse noise propagation outside the lease boundary.



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Since the habitations are also away the effect of noise due to mining operations will not be felt at all in the surrounding village. Hence, by implementing the following mitigative measures for noise control, the impact on noise levels will continue to be insignificant:

- Planting rows of native trees along roads, around mine area and other noise generating centres to act as acoustic barriers.
- Sound proof operator's cabin for equipments like shovel, tippers, etc.
- Proper and regular maintenance of equipments may lead to less noise generation.
- Providing in-built mechanism for reducing sound emissions.
- Providing earplugs to workers exposed to higher noise level.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.
- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.
- Provision of green net in lease periphery

Further green belt and afforestation will be planned and executed to abate noise and dust propagation in the area.

11.4.5. VIBRATION:

To reduce ground vibratory conditions, various control measures will be implemented such as keeping PPV below 10mm/s for 8-25hz frequency range, formulating drilling and charging pattern with less explosive charge, initiating sequence and using NONEL, carrying out blasting with minimum charge per delay, avoiding blasting during strong winds etc. By adoption of above measures, it will be ensured that the ground level vibration due to blasting are maintained within the limits prescribed by DGMS, Dhanbad at the mining areas vide Circular No. 7 dated 29 -08-1997. Besides, different blasting time for the projects in the vicinity is suggested and the timing is to be mentioned in the display board in the respective mines entrance. Elaborate details regarding the same are provided under section 4.4.2, Chapter-IV.



11.4.6 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. In the quarry of APK Minerals (over an area of 2.2312Ha), at the end of the lease period, 1.6093Ha of mined out area will be left as water body and 0.6219 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.

11.4.7 BIOLOGICAL ENVIRONMENT:

Necessary mitigative measures like dust suppression, proper maintenance of equipment's, greenbelt and plantation etc., will be carried out to prevent dust generation & any further impact on the vegetation. In the lease area, safety barrier 7.5m around the periphery is left. 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. In the Roughstone and Gravel Quarry of APK Minerals (over an area of 2.2312Ha) about 1200 trees will be planted in and around the lease area.

11.4.8 SOCIO ECONOMIC ENVIRONMENT:

The entire lease area is a private patta land. Hence, 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 mines will each employ about 12 persons directly and about 50 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.

Towards the socio-economic development of the surrounding area, APK Minerals (over an area of 2.58Ha) have allocated Rs.5.0 Lakhs and APK Minerals (over an area of 2.23Ha) have allocated Rs.5 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.



11.4.9 OCCUPATIONAL HEALTH AND SAFETY ASPECTS:

In order to ensure minimisation of occupational health and safety problems in the project operation, the following preventive remedial measures will be effectively exercised in the project operations, so as to comply with applicable standards.

- Medical examination of workers at pre-entry level stage of workers, etc., by qualified doctors, with periodical examination of all workers/staff at least once a year, as per DGMS circulars.
- Regular awareness campaigns amongst staff and workers
- Staff will be provided with PPE to guard against excess noise levels, Dust generation and inhalation, etc., as per standards prescribed by DGMS.

11.4.10 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:

The lease area can be approached through a separate public unused localized road without regular use and absence of habitations which is connected to Arumbuliyur – Pazhaveri road which connects to NH-132B at a distance of 3.0Km on the northern side of the lease area.. There will be about 6 trips per hour cumulatively. The existing road can 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 on either side of the transport road in consultation with the concerned department.
- ❖ Proper maintenance of transport roads and vehicles
- ❖ Avoiding overloading of material
- ❖ Covering of loaded vehicles with tarpaulins sheet if warranted.
- ❖ Installation of barriers at vulnerable locations
- ❖ Provision of tyre washing facility at the mine outlet



11.4.11 WASTE MANAGEMENT:

Since the entire mined out material will be used there will not be any solid waste generation from this project. There is no process effluent generation from both mines. Hence no liquid waste is generated.

The hazardous waste generated will be stored in a separate storage area with impervious containers for waste oil, oil contaminated clothes, used lead acid batteries, scraps, tyre storage etc. It will be disposed through authorized recyclers or re-processors periodically. The hazardous wastes will be transported in accordance with the provisions of rules. By effective implementation of above said mitigation measures no major impact due to Hazardous waste is expected.

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.

11.4 ENVIRONMENTAL MONITORING PROGRAMME:

The monitoring schedules are planned for systematic study of various pollution levels with respect to air and water qualities, noise levels, etc. to ensure that they conform to the standards laid down by Environmental Protection Act and various statutory Limits.

Monitoring location and the frequency of monitoring shall be suitably modified in consultation with the nodal agency as per the actual requirements and prevailing conditions of the mine and environmental factors, as dictated from time to time, depending on the prevailing pollution levels, if required.

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.

For Roughstone and Gravel Quarry of APK Minerals Private Limited over an area of 2.2312Ha, Rs.21.30 Lakhs is allocated under capital cost and Rs.14.77 Lakhs per annum will be spent under recurring cost. All the recurring cost of maintenance of pollution control measures, environmental monitoring etc., will be met from revenue and will be spent for the entire lease period. Further details of the capital and recurring cost of environmental management have been provided in in Table No. 10.2, Chapter-X.



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11.5 ADDITIONAL STUDIES:

This draft EIA/EMP report will be submitted for public hearing as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu. Elaborate description in respect of Risk Assessment and Mine closure plan are given in **Chapter - VII**.

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.

11.6 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 per capita 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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CHAPTER - XII

DISCLOSURE OF CONSULTANTS ENGAGED

CHAPTER 12

DISCLOSURE OF CONSULTANTS ENGAGED

Creative Engineers & Consultants, Chennai is an **NABL** accredited testing laboratory and **NABET** accredited EIA consultancy. Established over 25 years ago, this company has steadily made good strides in the environmental impact assessment fields, and is also one of the first companies to get accredited by NABET as an Accredited Consultant Organization as early as 2011. Creative Engineers & Consultants has to its credit, successful completion of numerous EIA/EMP reports, grant of environmental clearances and periodic environmental monitoring works. Presently, the company has been accredited by NABET as a ‘Category-A’ organization for the sectors of Mining of Minerals (opencast only), Thermal Power Plants, Mineral Beneficiation and Cement Plants with the accreditation valid upto 23.12.2026. The team of experienced professionals that are a part of this organization has been detailed below.

Figure 12.1: Disclosure of consultants engaged

EXPERT NAME	QUALIFICATION	POSITION	EXPERIENCE
Mr. P. Giri	AMIE (Mining)	EIA Coordinator & Functional area Expert (AP,NV,HW),	Over 30 years of experience in EIA/EMP report, mine plan preparation, including modeling
Mr. K. Shankar	M.Sc (Geology). PGMEMG	Functional area Expert (GEO, HG, SHW, RH) & IBM approved RQP.	Over 25 years of experience in EIA/EMP report, Mine plan, hydrological report preparation
Mr.S.S.Rajendran	M.Sc. (Pharmaceutical Chemistry)	Lab head	More than 9 years of experience in Environmental laboratory.
Mr. R. Babu raj	M.A (Sociology), B.Com(Y.L&Cost), ITI, Advance Diploma in Computer application	Functional Area Expert (Socio Economy)	Over 13 years of experience in dispersion modeling, computer applications. Specialized in CAD and computer software, applications. 5years experience in the field of socio economy



COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF APK MINERALS PVT. LTD. OVER AN AREA OF 2.58Ha AND 2.2312Ha IN PAZHAVERI VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT, TAMIL NADU

EXPERT NAME	QUALIFICATION	POSITION	EXPERIENCE
			and its allied report preparation.
Mr. B. Govindaraman	B.Sc.	Field technician	Over 20 years of field monitoring & data collection experience
Dr.B.Swamynathan	M.Sc (Ecology & Environmental Sciences), M.Phill (Botany), Ph.D (Ecology & Environmental Sciences)	EIA Coordinator & Functional Area Expert (EB,SC,LU&AP)	More than 12 years of experience in Environment and allied fields.
Ms. G. Sandhya	B. Tech Chemical Engineering M.Tech Environmental Engineering	EIA Coordinator & Functional Area Expert (AQ&WP)	Over 6 years experience in preparation of EIA/EMP reports

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ANNEXURES



நக.எண்.347/க்யூ.3/2022 நாள் 17.04.2024.

புவியியல் மற்றும் சுரங்கத்துறை,
மாவட்ட ஆட்சியர் வளாகம்,
காஞ்சிபுரம்.

குறிப்பாணை

பொருள்:- கனிமங்களும் சுரங்கங்களும் - சிறுகனிமம் - சாதாரண கற்கள் - காஞ்சிபுரம் மாவட்டம் - உத்திரமேரூர் வட்டம் - பழவேரி கிராமம் - பட்டா புல எண்கள். 263/1A (0.00.50), 263/1B (0.01.00), 263/1C (0.03.00), 263/1M1 (0.05.00), 263/1M2 (0.06.00), 263/1N1 (0.01.50), 263/1N2 (0.01.50), 263/1O (0.03.00), 263/1P1 (0.02.00), 263/1P2 (0.03.00), 263/1Q (0.02.50), 263 /1R (0.02.50), 263/1S (0.03.00), 263/1T (0.09.50), 264/1 (0.03.50), 264/10 (0.04.00), 264/11A (0.04.00), 264/11B (0.03.50), 264/12A (0.03.50), 264/12B (0.14.00), 264/12C (0.10.50), 264/13 (0.10.50), 264/14 (0.19.50), 264/15 (0.07.50), 264/16A (0.03.00), 264/16B (0.03.50), 264/17 (0.20.00), 264/18A (0.04.50), 264/18B (0.04.00), 264/19 (0.07.50), 264/2 (0.03.50), 264/20A (0.04.00), 264/20B (0.03.50) 264/21 (0.03.00), 264/22 (0.03.00), 264/3 (0.03.50) 264/4 (0.07.50), 264/5 (0.11.50), 264/6 (0.11.50), 264/7 (0.06.50), 264/8A (0.07.00), 264/8B (0.07.00), 264/9 (0.04.00), 265/1, (0.08.50), 265/2 (0.04.00), 265/3 (0.01.50), 265/4 (0.01.00) மற்றும் 265/5 (0.01.00) மொத்த பரப்பு 2.58.00 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் / கிராவல் குவாரி செய்ய தி/ள்.APK Minerals Pvt.Ltd என்ற நிறுவனத்தினர் 10 ஆண்டுகளுக்கு அனுமதிக்கோரி விண்ணப்பம் செய்தது - அறிக்கைகள் வரப்பெற்றது - புலத்தணிக்கை செய்யப்பட்டது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மை சான்று பெற்று சமர்ப்பிக்க கோருதல் தொடர்பாக.

பார்வை:-

1. TvlAPK Minerals Pvt.Ltd. Manager திரு.K.வினோத்குமார் No.1A, மணிகண்டன் நகர், அஸ்திபுரம், சென்னை-600064 என்ற நிறுவனத்தினர் விண்ணப்பம் நாள் இல்லை இவ்வலுவலகத்தில் பெறப்பட்ட நாள் 16.11.2022.

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2. இவ்வலுவலக நக.எண்.347/க்யூ3/2022 நாள் 18.11.2022 . .
3. வட்டாட்சியர், உத்திரமேரூர் கடிதம் நக.503/2023/ அ2 நாள் 21.03.2023 .
4. வருவாய் கோட்டாட்சியர், காஞ்சிபுரம் கடிதம் எண்.3896/2022/அ1 நாள் 06.11.2023 இவ்வலுவலகத்தில் கிடைக்கப்பெற்ற நாள் 02.12.2023.
5. உதவி புலியியலாளர் (கனிமம்) காஞ்சிபுரம் புலத்தணிக்கை அறிக்கை நாள் 07.12.2023.
6. இவ்வலுவலக நக.எண்.347/க்யூ3/2022 நாள் 10.01.2024.
7. செயற்பொறியாளர். நீர்வள ஆதாரத்துறை, கீழ்ப்பாலாறு வடிநிலக் கோட்டம், காஞ்சிபுரம் அவர்களின் கடிதம் எண்.இவஅ.2/கோ.22 (கனிமம்-பழுவேரி) /2024 நாள் 17.04.2024.
8. மற்றும் உரிய ஆவணங்கள்.

பார்வையில் காணும் கடிதங்களின்பால் கனிவான் கவணம் வேண்டப்படுகிறது.

2. காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், பழுவேரி கிராமம், பட்டா புல எண்கள். 263/1A (0.00.50), 263/1B (0.01.00), 263/1C (0.03.00), 263/1M1 (0.05.00), 263/1M2 (0.06.00), 263/1M1 (0.01.50), 263/1N2 (0.01.50), 263/1O (0.03.00), 263/1P1 (0.02.00), 263/1P2 (0.03.00), 263/1Q (0.02.50), 263 /1R (0.02.50), 263/1S (0.03.00), 263/1T (0.09.50), 264/1 (0.03.50), 264/10 (0.04.00), 264/11A (0.04.00), 264/11B (0.03.50), 264/12A (0.03.50), 264/12B (0.14.00), 264/12C (0.10.50), 264/13 (0.10.50), 264/14 (0.19.50), 264/15 (0.07.50), 264/16A (0.03.00), 264/16B (0.03.50), 264/17 (0.20.00), 264/18A (0.04.50), 264/18B (0.04.00), 264/19 (0.07.50), 264/2 (0.03.50), 264/20A (0.04.00), 264/20B (0.03.50) 264/21 (0.03.00), 264/22 (0.03.00), 264/3 (0.03.50) 264/4 (0.07.50), 264/5 (0.11.50), 264/6 (0.11.50), 264/7 (0.06.50), 264/8A (0.07.00),

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264/8B (0.07.00), 264/9 (0.04.00), 265/1. (0.08.50), 265/2 (0.04.00), 265/3 (0.01.50), 265/4 (0.01.00) மற்றும் 265/5 (0.01.00) மொத்த பரப்பு 2.58.00 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் / கிராவல் மண் குவாரி செய்ய பத்து ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்கக்கோரி தி/ள்.APK Minerals Pvt.Ltd என்ற நிறுவனத்தினர் பார்வை 1-ல் கண்டுள்ளவாறு உரிய ஆவணங்களுடன் விண்ணப்பம் செய்துள்ளார்.

3. மேற்கண்ட விண்ணப்பம் தொடர்பாக வட்டாட்சியர், உத்திரமேரூர், வருவாய் கோட்டாட்சியர், காஞ்சிபுரம், உதவி புவியியலாளர் (கனிமம்) காஞ்சிபுரம் மற்றும் செயற்பொறியாளர், நீர்வள ஆதாரத்துறை, கீழ்ப்பாலாறு வடிநிலக் கோட்டம், காஞ்சிபுரம் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், பழுவேறி கிராமம், பட்டா புல எண்கள். 263/1A (0.00.50), 263/1B (0.01.00), 263/1C (0.03.00), 263/1M1 (0.05.00), 263/1M2 (0.06.00), 263/1N1 (0.01.50), 263/1N2 (0.01.50), 263/1O (0.03.00), 263/1P1 (0.02.00), 263/1P2 (0.03.00), 263/1Q (0.02.50), 263 /1R (0.02.50), 263/1S (0.03.00), 263/1T (0.09.50), 264/1 (0.03.50), 264/10 (0.04.00), 264/11A (0.04.00), 264/11B (0.03.50), 264/12A (0.03.50), 264/12B (0.14.00), 264/12C (0.10.50), 264/13 (0.10.50), 264/14 (0.19.50), 264/15 (0.07.50), 264/16A (0.03.00), 264/16B (0.03.50), 264/17 (0.20.00), 264/18A (0.04.50), 264/18B (0.04.00), 264/19 (0.07.50), 264/2 (0.03.50), 264/20A (0.04.00), 264/20B (0.03.50) 264/21 (0.03.00), 264/22 (0.03.00), 264/3 (0.03.50) 264/4 (0.07.50), 264/5 (0.11.50), 264/6 (0.11.50), 264/7 (0.06.50), 264/8A (0.07.00), 264/8B (0.07.00), 264/9 (0.04.00), 265/1. (0.08.50), 265/2 (0.04.00), 265/3 (0.01.50), 265/4 (0.01.00) மற்றும் 265/5 (0.01.00) மொத்த பரப்பு 2.58.00 ஹெக்டேர் பரப்பில் மட்டுமே தி/ள்.APK Minerals Pvt.Ltd என்ற நிறுவனத்திற்கு கிராவல் மண் மற்றும் சாதாரண கற்குவாரி உரிமம் வழங்க ஏற்கணவே குவாரி பணி செய்யாத புலம் என்பதால் 10 ஆண்டு காலத்திற்கு கீழ்க்கண்ட

K. Vinod Kumar



நிபந்தனைகளுக்கு உட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளார்கள்.

நிபந்தனைகள்

- a. 1959-ம் வருடத்திய தமிழ்நாடு சிறு கனிம சலுகை விதிகள் , அட்டவணை II-ல் கண்டுள்ளபடி குவாரி செய்யப்படும் கனிமங்களுக்கு சீனியரேஜ் தொகை அவ்வப்போது செலுத்தி கனிமம் கொண்டு செல்லப்பட வேண்டும்.
- b. அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி மேற்கொள்ளப்பட வேண்டும்.
- c. விண்ணப்ப புலத்தின் மேற்கு திசையில் அரசு புல எண்.162/1 (சாலை) க்கு 10 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி மேற்கொள்ள வேண்டும்.
- d. விண்ணப்ப புலத்தின் வடக்கு பகுதியில் உள்ள புல எண்.268/1B (காவல் சுடுபயிற்சி நிலையம்) அரசு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும். மேலும் சுடுபயிற்சி நடைபெறும் காலங்களில் உரிய முன்னறிவிப்பு செய்து பயிற்சிகளுக்கு இடையூறு இன்றி குவாரி பணிகள் மேற்கொள்ள வேண்டும்.
- e. விண்ணப்ப புலங்களில் மேற்கே புல எண்.162/1 நிலத்தில் மழைநீர் வடிந்து செல்லும் கால்வாய் அமைக்கப்பட்டுள்ளதால் பொதுப் பணித்துறையினர் தெரிவித்துள்ளவாறு குறைந்த பட்சம் 10.00 மீட்டர் பாதுகாப்பு இடைவெளி (Set Back) விடப்படவேண்டும்.
- f. குத்தகை உரிமம் கோரியுள்ள எல்லையில் இருந்து தென்மேற்கே 36 மீட்டர் தொலைவில் புல எண்.263/1F -ன் வழியே செல்லும் உயர்மின்னழுத்த கம்பிகளுக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி மேற்கொள்ள வேண்டும்.
- g. அனுபவம் வாய்ந்த வெடிபொருள் பயன்படுத்துவோர் மூலம் குறைந்த அளவு சக்தி கொண்ட வெடிபொருட்களை பயன்படுத்தி அருகிலுள்ள பட்டா தாரர்களுக்கு எவ்வித இடையூறுமின்றி / அருகிலுள்ள பட்டா மற்றும் அரசு புலங்களில் எவ்வித ஆக்கிரமிப்பும் இன்றி குவாரிப் பணி மேற்கொள்ள வேண்டும்.
- h. விதிகளின்படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தினை உரிய காலத்திற்குள் சமர்ப்பிக்க வேண்டும்.
- i) குவாரி உரிமம் வழங்க உள்ள பகுதிக்கு சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும்.

K. inath Kumar



4. இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, சென்னை அவர்களின் 10.08.2020 நாளிட்ட கடிதத்துடன் இணைத்து வரப்பெற்ற அரசாணை எண்.169 தொழில் துறை (எம்.எம்.சி-1) நாள் 04.08.2020-ன்படி பட்டா புலங்களில் கிராவல், சாதாரண வகை கற்கள் ஆகிய சிறுகனிம உரிமம் வழங்கும் நேர்வுகளில் நடவடிக்கை எடுக்க விதி 19, மற்றும் 33-ல் மாவட்ட ஆட்சியருக்கு வழங்கப்பட்ட அதிகாரம் தற்போது சம்மந்தப்பட்ட உதவி/துணை இயக்குநர் அவர்களுக்கு மாற்றி வழங்க உத்திரவிடப்பட்டுள்ளது.

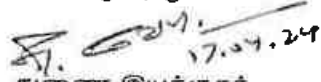
5. எனவே, வட்டாட்சியர், உத்திரமேரூர், வருவாய் கோட்டாட்சியர், காஞ்சிபுரம், உதவி புவியியலாளர் (கனிமம்) காஞ்சிபுரம் மற்றும் செயற்பொறியாளர், நீர்வள ஆதாரத்துறை, கீழ்ப்பாலாறு வடிநிலக் கோட்டம், காஞ்சிபுரம் ஆகியோரின் பரிந்துரை மற்றும் நிபந்தனைகளின் அடிப்படையில் காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், பழுவேரி கிராமம், பட்டா புல எண்கள். 263/1A (0.00.50), 263/1B (0.01.00), 263/1C (0.03.00), 263/1M1 (0.05.00), 263/1M2 (0.06.00), 263/1M1 (0.01.50), 263/1N2 (0.01.50), 263/1O (0.03.00), 263/1P1 (0.02.00), 263/1P2 (0.03.00), 263/1Q (0.02.50), 263 /1R (0.02.50), 263/1S (0.03.00), 263/1T (0.09.50), 264/1 (0.03.50), 264/1O (0.04.00), 264/11A (0.04.00), 264/11B (0.03.50), 264/12A (0.03.50), 264/12B (0.14.00), 264/12C (0.10.50), 264/13 (0.10.50), 264/14 (0.19.50), 264/15 (0.07.50), 264/16A (0.03.00), 264/16B (0.03.50), 264/17 (0.20.00), 264/18A (0.04.50), 264/18B (0.04.00), 264/19 (0.07.50), 264/2 (0.03.50), 264/20A (0.04.00), 264/20B (0.03.50) 264/21 (0.03.00), 264/22 (0.03.00), 264/3 (0.03.50) 264/4 (0.07.50), 264/5 (0.11.50), 264/6 (0.11.50), 264/7 (0.06.50), 264/8A (0.07.00), 264/8B (0.07.00), 264/9 (0.04.00), 265/1, (0.08.50), 265/2 (0.04.00), 265/3 (0.01.50), 265/4 (0.01.00) மற்றும் 265/5 (0.01.00) மொத்த பரப்பு 2.58.00 ஹெக்டேர் பரப்பில் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன்படி மேற்கண்ட

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நிறுவனங்களுக்குட்பட்டு 10 (பத்து) வருட காலத்திற்கு தி/ள்.APK Minerals Pvt.Ltd என்ற நிறுவனத்திற்கு கிராவல் / சாதாரண கற்கள் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

6. மேலும், தமிழ்நாடு சிறுகனிம சலுகை விதிகள் -1959 விதி எண்.41-ன்படி குவாரிப் பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறு மனுதாரரைக் கேட்டுக் கொள்ளப்படுகிறது. மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959-ம் வருடத்திய தமிழ்நாடு சிறு கனிம சலுகை விதிகள், விதி எண்.42-ன்படி சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.


17.07.24
துணை இயக்குநர்.

புவியியல் மற்றும் சுரங்கத்துறை,
காஞ்சிபுரம்.


17.07.24

பெறுநர்
Tvl.A.P.K Minerals Pvt.Ltd,
No.1A, மணிகண்டன் நகர்,
அஸ்திபுரம்,
சென்னை-600064.

நகல்.

1. தலைவர், மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை
2. ஆணையர், புவியியல் மற்றும் சுரங்கத்துறை, சென்னை-32.

Handwritten signature: S. S. Srinivasan



நக.எண்.346/க்யூ.3/2022 நாள் 03.02.2024. புவியியல் மற்றும் சுரங்கத்துறை
மாவட்ட ஆட்சியர் வளாகம்,
காஞ்சிபுரம்.

குறிப்பாணை

பொருள்:- கனிமங்களும் சுரங்கங்களும் - சிறுகனிமம் - சாதாரண கற்கள் - காஞ்சிபுரம் மாவட்டம் - உத்திரமேரூர் வட்டம் - பழுவேரி கிராமம் - பட்டா புல எண்கள்.207/4B (0.06.27), 207/5B (0.05.86), 207/6B (0.05.00), 207/7B (0.04.60), 207/8B (0.03.39), 207/9 (0.01.00), 208/1A (0.16.00), 208/2A (0.08.50), 208/2B1 (0.08.50), 208/2B2 (0.18.00), 208/5A (0.10.00), 208/5C (0.09.50), 208/5D (0.10.00), 208/5E(0.10.50), 208/5F (0.03.00), 208/5G (0.02.00), 212/1L (0.21.5), 212/1M (0.21.00) மற்றும் 212/1N (0.58.50)- மொத்த பரப்பு 2.23.12 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் / கிராவல் குவாரி செய்ய தி/ள்.APK Minerals Pvt.Ltd என்ற நிறுவனத்தினர் 10 ஆண்டுகளுக்கு அனுமதி கோரி விண்ணப்பம் செய்தது - அறிக்கைகள் வரப்பெற்றது - புலத்தணிக்கை செய்யப்பட்டது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைபு தடையின்மை சான்று பெற்று சமர்ப்பிக்க கோருதல் தொடர்பாக.

- பார்வை:-
1. TvlAPK Minerals Pvt.Ltd, Manager திரு.K.வினோத்குமார் No.1A, மணிகண்டன் நகர், அஸ்திபுரம், சென்னை-600064 என்ற நிறுவனத்தினர் விண்ணப்பம் நாள் இல்லை இவ்வலுவலகத்தில் பெறப்பட்ட நாள் 18.11.2022.
 2. இவ்வலுவலக நக.எண்.346/க்யூ.3/2022 நாள் 18.11.2022.
 3. வட்டாட்சியர், உத்திரமேரூர் கடிதம் நக.502/2023/ அ2 நாள் 21.03.2023 (ம) 20.10.2023.
 4. வருவாய் கோட்டாட்சியர், காஞ்சிபுரம் கடிதம் எண்.3897/2023/அ1 நாள் 06.11.2023 இவ்வலுவலகத்தில் கிடைக்கப்பெற்ற நாள் 02.12.2023.

K. Vinod Kumar



5. உதவி புவியியலாளர் (கனிமம்) மற்றும் வருவாய் ஆய்வாளர் (கனிமம்) காஞ்சிபுரம் புலத்தணிக்கை அறிக்கை நாள் 07.12.2023.
6. மற்றும் உரிய ஆவணங்கள்.

பார்வையில் காணும் கடிதங்களின்பால் கனிவான கவனம் வேண்டப்படுகிறது.

2) காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், பழுவேறி கிராமம், பட்டா புல எண்கள்.207/4B (0.06.27), 207/5B (0.05.86), 207/6B (0.05.00), 207/7B (0.04.60), 207/8B (0.03.39), 207/9 (0.01.00), 208/1A (0.16.00), 208/2A (0.08.50), 208/2B1 (0.08.50), 208/2B2 (0.18.00), 208/5A (0.10.00), 208/5C (0.09.50), 208/5D (0.10.00), 208/5E(0.10.50), 208/5F (0.03.00), 208/5G (0.02.00), 212/1L (0.21.5), 212/1M (0.21.00) மற்றும் 212/1N (0.58.50) மொத்த பரப்பு 2.23.12 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் / கிராவல் மண் குவாரி செய்ய பத்து ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்கக்கோரி தி/ள்.APK Minerals Pvt.Ltd என்ற நிறுவனத்தினர் 18.11.2022 நாளிட்ட விண்ணப்பத்தினை உரிய ஆவணங்களுடன் சமர்ப்பித்துள்ளனர்.

3. மேற்கண்ட விண்ணப்பம் தொடர்பாக வட்டாட்சியர், உத்திரமேரூர், வருவாய் கோட்டாட்சியர், காஞ்சிபுரம், மற்றும் உதவி புவியியலாளர் (கனிமம்) காஞ்சிபுரம் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், பழுவேறி கிராமம், பட்டா புல எண்கள்.207/4B, 207/5B, 207/6B, 207/7B, 207/8B, 207/9, 208/1A, 208/2A, 208/2B1, 208/2B2, 208/5A, 208/5C, 208/5D, 208/5E, 208/5F, 208/5G, 212/1L, 212/1M மற்றும் 212/1N மொத்த பரப்பு 2.23.12 ஹெக்டேர் பரப்பில் மட்டும் தி/ள்.APK Minerals Pvt.Ltd என்ற நிறுவனத்திற்கு கிராவல் மண் மற்றும் சாதாரண கற்குவாரி உரிமம் வழங்க ஏற்கனவே குவாரி பணி செய்யாத புலம் என்பதால் 10 ஆண்டு காலத்திற்கு கீழ்க்கண்ட நிபந்தனைகட்கு உட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

நிபந்தனைகள்

- a. 1959-ம் வருடத்திய தமிழ்நாடு சிறு கனிம சலுகை விதிகள் , அட்டவணை II-ல் கண்டுள்ளபடி குவாரி செய்யப்படும் கனிமங்களுக்கு சீனியரேஜ் தொகை அவ்வப்போது செலுத்தி கனிமம் கொண்டு செல்லப்பட வேண்டும்.

/c. Vinith Kumar



- b) அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி மேற்கொள்ளப்பட வேண்டும்.
- c) விண்ணப்ப புலத்திற்கு தெற்கே 7.0 மீட்டர் தொலைவில் அமைந்துள்ள புல எண்.208/4 (வழிபாதை) தென் மேற்கே புல எண்.211/2 (வழி) தென் கிழக்கே அமைந்துள்ள புல எண்.209/1 (பாதை) ஆகிய புலங்களுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி மேற்கொள்ள வேண்டும்.
- d) விண்ணப்ப புலத்திற்கு வடக்கு பகுதியில் பினாயூர் கிராமம் புல எண்.413 மேய்க்கால் புறம்போக்கு நிலத்திற்கு 10.0 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி மேற்கொள்ள வேண்டும்.
- e) விண்ணப்ப புலத்திற்கு கிழக்கு பகுதியில் புல எண்.203, 204 செயல்பாட்டில் உள்ள கல்குவாரிக்கு 7.5 மீ பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி மேற்கொள்ள வேண்டும்.
- f) அனுபவம் வாய்ந்த வெடிபொருள் பயன்படுத்துவோர் மூலம் குறைந்த அளவு சக்தி கொண்ட வெடிபொருட்களை பயன்படுத்தி அருகிலுள்ள பட்டாதாரர்களுக்கு எவ்வித இடையூறுமின்றி / அருகிலுள்ள பட்டா மற்றும் அரசு புலங்களில் எவ்வித ஆக்கிரமிப்பும் இன்றி குவாரிப் பணி மேற்கொள்ள வேண்டும்.
- g) விதிகளின்படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தினை உரிய காலத்திற்குள் சமர்ப்பிக்க வேண்டும்.
- h) குவாரி உரிமம் வழங்க உள்ள பகுதிக்கு சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும்.

4. இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, சென்னை அவர்களின் 10.08.2020 நாளிட்ட கடிதத்துடன் இணைத்து வரப்பெற்ற அரசாணை எண்.169 தொழில் துறை (எம்.எம்.சி-1) நாள் 04.08.2020 -ன்படி பட்டா புலங்களில் கிராவல், சாதாரண வகை கற்கள் ஆகிய சிறுகணிம உரிமம் வழங்கும் நேர்வுகளில் நடவடிக்கை எடுக்க விதி 19, 19 மற்றும் 33-ல் மாவட்ட ஆட்சியருக்கு வழங்கப்பட்ட அதிகாரம் தற்போது சம்மந்தப்பட்ட உதவி/துணை இயக்குநர் அவர்களுக்கு மாற்றி வழங்க உத்திரவிடப்பட்டுள்ளது.

5. எனவே, வட்டாட்சியர், உத்திரமேரூர், வருவாய் கோட்டாட்சியர், காஞ்சிபுரம், மற்றும் உதவி புவியியலாளர் (கனிமம்) ஆகியோரின் பரிந்துரை மற்றும் நிபந்தனைகளின் அடிப்படையில்

0 176

C. Vinu Kumar



காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், பழவேரி கிராமம். பட்டா புல எண்கள்.207/4B (0.06.27), 207/5B (0.05.86), 207/6B (0.05.00), 207/7B (0.04.60), 207/8B (0.03.39), 207/9 (0.01.00), 208/1A (0.16.00), 208/2A (0.08.50), 208/2B1 (0.08.50), 208/2B2 (0.18.00), 208/5A (0.10.00), 208/5C (0.09.50), 208/5D (0.10.00), 208/5E(0.10.50), 208/5F (0.03.00). 208/5G (0.02.00), 212/1L (0.21.5), 212/1M (0.21.00) மற்றும் 212/1N (0.58.50) மொத்த பரப்பு 2.23.12 ஹெக்டேர் பரப்பில் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன்படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 (பத்து) வருட காலத்திற்கு தி/ள்.APK Minerals Pvt.Ltd என்ற நிறுவனத்திற்கு கிராவல் / சாதாரண கற்கள் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

6.மேலும், தமிழ்நாடு சிறுகனிம சலுகை விதிகள் -1959 விதி 41-ன்படி குவாரிப் பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறு மனுதாரரைக் கேட்டுக் கொள்ளப்படுகிறது. மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959-ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-ன்படி சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.

[Handwritten Signature]
03.02.24
துணை இயக்குநர்.

புவியியல் மற்றும் சுரங்கத்துறை,
காஞ்சிபுரம்.

பெறுநர்
Tvl.A.P.K Minerals Pvt.Ltd,
Manager திரு.K.வினோத்குமார்,
No.1A, மணிகண்டன் நகர்,
அஸ்திபுரம்,
சென்னை-600064.

[Handwritten Signature]
3.2.2024

நகல்.

1. தலைவர், மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை
2. ஆணையர் , புவியியல் மற்றும் சுரங்கத்துறை, சென்னை-32.

[Handwritten Signature]
K. Vinod Kumar

From

Dr.S.Vediappan,M.Sc.,Ph.D.,
Deputy Director,
Dept of Geology and Mining,
Kancheepuram.

To

Tvl.APK Minerals Pvt.Ltd.,
No.1A, Manikandan Nagar,
Hasthinapuram,
Chennai-600 064.

Rc.No. 347/Q3/2022, Dated:- 24.04.2024.

Sir,

Sub: Mines and Minerals – Minor Mineral - Rough Stone and Gravel – Kancheepuram District – Uthiramerur Taluk – Pazhaveri Village- Patta land in S.F.Nos. 263/1A, 263/1B, 263/1C, 263/1M1, 263/1M2, 263/1N1, 263/1N2, 263/1O, 263/1P1, 263/1P2, 263/1Q, 263 /1R, 263/1S, 263/1T, 264/1, 264/2, 264/3, 264/4, 264/5, 264/6, 264/7, 264/8A, 264/8B, 264/9, 264/10, 264/11A, 264/11B, 264/12A, 264/12B, 264/12C, 264/13, 264/14, 264/15, 264/16A, 264/16B, 264/17, 264/18A, 264/18B, 264/19, 264/20A, 264/20B, 264/21, 264/22, 265/1, 265/2, 265/3, 265/4 & 265/5 Over an extent of 2.58.00 Hects - Application preferred by Tvl.APK.Minerals Pvt.Ltd, - Precise area communicated - Draft Mining Plan submitted - Approved - reg.

- Ref:**
- 1 Application prepared by Tvl. APK Minerals Pvt.Ltd, No.1A, Manikandan Nagar, Hasthinapuram, Chennai-600 064 application dated 16.11.2022.
 - 2 This Office Memorandum Letter No.347/ Q3/ 2022 dated 17.04.2024.
 - 3 Draft Mining plan submitted by Tvl.APK Minerals Pvt.Ltd dated: 23.04.2024.

Kind attention is invited to the references cited above.

2. Tvl.APK Minerals Pvt.Ltd has preferred an application for quarrying Rough stone and Gravel over an extent of 2.58.00 Hects of patta land in S.F.Nos.263/1A (0.00.50), 263/1B (0.01.00), 263/1C (0.03.00), 263/1M1 (0.05.00), 263/1M2 (0.06.00), 263/1N1 (0.01.50) 263/1N2 (0.01.50), 263/1O (0.03.00), 263/1P1 (0.02.00), 263/1P2 (0.03.00), 263/1Q (0.02.50), 263 /1R (0.02.00) 263/1S (0.03.00), 263/1T (0.09.50), 264/1 (0.03.50), 264/2 (0.03.50), 264/3 (0.03.50), 264/4 (0.07.50), 264/5 (0.11.50), 264/6 (0.11.50), 264/7 (0.06.50), 264/8A (0.07.00), 264/8B (0.07.00), 264/9 (0.04.00), 264/10 (0.04.00), 264/11A (0.04.00), 264/11B (0.03.50), 264/12A

(0.03.50), 264/12B, (0.14.00), 64/12C (0.10.50), 264/13 (0.10.50), 264/14 (0.19.50), 264/15 (0.07.50), 264/16A (0.03.00) 264/16B (0.03.50), 264/17 (0.20.00), 264/18A (0.04.50), 264/18B (0.04.00), 264/19 (0.07.50), 264/20A, (0.04.00), 264/20B (0.03.50), 264/21 (0.03.00), 264/22 (0.03.00), 265/1 (0.08.50), 265/2 (0.04.00), 265/3 (0.01.50), 265/4 (0.01.00) & 265/5 (0.01.00) in Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District for a period of 10 year under the provisions of Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959. In this regard, the precise area communication has been issued vide letter dated: 17.04.2024 with a direction to submit approved mining plan and Environment Clearance.

3. Accordingly, Tvl.APK Minerals Pvt.Ltd had submitted three copies of draft Mining Plan vide letter dated: 23.04.2024 and the same has been examined in details and it is found correct.

4. The RQP has furnished year wise production for the first five year and also for the second five year period of lease.

5. Hence, as per the power delegated under Rule 41 of TNMMCR, 1959 and as per the guidelines/instructions issued by the Commissioner of Geology and Mining, vide letter Rc.No.3868/LC/2012 dated 19.11.2012, the said mining plan submitted by the lessee is hereby approved subject to the following conditions.

i) That the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

ii) This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of Mines and Minerals Development and Regulation) Act 1957, or any other connected laws including Forest (Conservation) Act 1957, or any other connected Laws industry Forest (Conservation) Act 1980, Forest Conservation Rules 1981 Environment protection Act 1980, Indian Explosive Act 1884 (Central Act IV of 1884) and the rules made there under, Minor Mineral Conservation and Development Rules, and The Tamil Nadu Minor Mineral Concession rules, 1959.


iii) That the mining plan is approved without prejudice to any other order or directions from any court of competent jurisdiction.

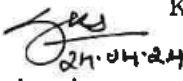
iv) All the conditions mentioned in the precise area letter should be followed during quarry operation as per rules.

v) The applicant should get prior Environmental clearance from the appropriate authority and same has to be submit to the District Collector, Kancheepuram.

vi) Every Mining Plan duly approved under rule 41(9) of TNMMCR, 1959 shall be valid for a period of five years. Further, the applicant shall submit modification in the mining plan if any, review the mining plan and submit scheme of mining plan for the next five years of the lease if any as per TNMMCR 1959.

vii) The mineable reserves of Rough stone & Gravel after leaving safety distance is arrived in the Mining Plan as **3,97,845 M³** of Rough stone and **41,250 M³** of Gravel for **Ten years** upto a depth of 47 meter below the ground level.


Deputy Director,
Dept of Geology and Mining,
Kancheepuram.


Copy submitted to The Commissionner,
Dept of Geology and Mining,
Guindy, Chennai -32.

From

Dr.S.Vediappan,M.Sc.,Ph.D.,
Deputy Director,
Dept of Geology and Mining,
Kancheepuram.

To

Tvl.APK Minerals Pvt.Ltd,
No.1A, Manikandan Nagar,
Hasthinapuram,
Chennai-600 064.

Sir,

Sub: Mines and Minerals – Minor Mineral - Rough Stone and Gravel – Kancheepuram District – Uthiramerur Taluk – Pazhaveri Village- Patta land in S.F.Nos. 207/4B, 207/5B, 207/6B, 207/7B, 207/8B, 207/9, 208/1A, 208/2A, 208/2B1, 208/2B2, 208/5A, 208/5C, 208/5D, 208/5E, 208/5F, 208/5G, 212/1L, 212/1M, & 212/1N Over an extent of 2.23.12 Hects - Application preferred by Tvl.APK.Minerals Pvt.Ltd, - Precise area communicated - Draft Mining Plan submitted - Approved - reg.

- Ref:**
- 1 Application prepared by Tvl. APK Minerals Pvt.Ltd, No.1A, Manikandan Nagar, Hasthinapuram, Chennai-600 064 application dated 18.11.2022.
 - 2 This Office Memorandum Letter No.346/ Q3/ 2023 dated 03.02.2024.
 - 3 Draft Mining plan submitted by Tvl.APK Minerals Pvt.Ltd dated: 27.02.2024.

Kind attention is invited to the references cited above.

2. Tvl.APK Minerals Pvt.Ltd has preferred an application for quarrying Rough stone and Gravel over an extent of 2.32.12 Hects of patta land in S.F.Nos.207/4B (0.06.27), 207/5B (0.05.86), 207/6B (0.05.00), 207/7B (0.04.60), 207/8B (0.03.39), 207/9 (0.01.00), 208/1A (0.16.00), 208/2A (0.08.50), 208/2B1 (0.08.50), 208/2B2 (0.18.00), 208/5A (0.10.00), 208/5C (0.09.50), 208/5D (0.10.00), 208/5E (0.10.50), 208/5F (0.03.00), 208/5G (0.02.00), 212/1L (0.21.5), 212/1M (0.21.00) and 212/1N (0.58.50) in Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District for a period of 10 year under the provisions of Rule 19 (1) of Tamil Nadu Minor

Mineral Concession Rules, 1959. In this regard, the precise area communication has been issued vide letter dated: 03.02.2024 with a direction to submit approved mining plan and Environment Clearance.

3. Accordingly, Tvl.APK Minerals Pvt.Ltd had submitted three copies of draft Mining Plan vide letter dated: 27.02.2024 and the same has been examined in details and it is found correct.

4. The RQP has furnished year wise production for the first five year and also for the second five year period of lease.

5. Hence, as per the power delegated under Rule 41 of TNMMCR, 1959 and as per the guidelines/instructions issued by the Commissioner of Geology and Mining, vide letter Rc.No.3868/LC/2012 dated 19.11.2012, the said mining plan submitted by the lessee is hereby approved subject to the following conditions.

i) That the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

ii) This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of Mines and Minerals Development and Regulation) Act 1957, or any other connected laws including Forest (Conservation) Act 1957, or any other connected Laws industry Forest (Conservation) Act 1980, Forest Conservation Rules 1981 Environment protection Act 1980, Indian Explosive Act 1884 (Central Act IV of 1884) and the rules made there under, Minor Mineral Conservation and Development Rules, and The Tamil Nadu Minor Mineral Concession rules, 1959.

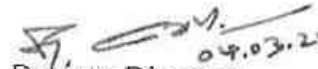
iii) That the mining plan is approved without prejudice to any other order or directions from any court of competent jurisdiction.


iv) All the conditions mentioned in the precise area letter should be followed during quarry operation as per rules.

v) The applicant should get prior Environmental clearance from the appropriate authority and same has to be submit to the District Collector, Kancheepuram.

vi) Every Mining Plan duly approved under rule 41(9) of TNMMCR, 1959 shall be valid for a period of five years. Further, the applicant shall submit modification in the mining plan if any, review the mining plan and submit scheme of mining plan for the next five years of the lease if any as per TNMMCR 1959.

vii) Quarry operation in the safety zone area with a quantity of 3,75,075 cbm of Rough stone and 36128 cbm of Gravel for a period of Ten years in the common boundary will be carried out by obtaining prior permission from Director General of Mines Safety under see 111 (1) of Metalliferous Mines Regulation, 1961.


04.03.24
Deputy Director,
Dept of Geology and Mining,
Kancheepuram.


Copy submitted to The Commissioner,
Dept of Geology and Mining,
Guindy, Chennai -32.

MINES LAND PHOTO



காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், பழவேரி கிராமம், புல எண்கள்.
 263/1A, 0.00.50 ஹெக்டேர், 263/1B, 0.01.00 ஹெக்டேர், 263/1C, 0.03.00
 ஹெக்டேர், 263/1M1, 0.05.00 ஹெக்டேர், 263/1M2, 0.06.00 ஹெக்டேர்,
 263/1N1, 0.01.50 ஹெக்டேர், 263/1N2, 0.01.50 ஹெக்டேர், 262/10, 0.03.00
 ஹெக்டேர், 263/1P1, 0.02.00 ஹெக்டேர், 263/1P2, 0.03.00 ஹெக்டேர், 263/1Q,
 0.02.50 ஹெக்டேர், 263/1R, 0.02.00 ஹெக்டேர், 263/1S, 0.03.00 ஹெக்டேர்,
 263/1T, 0.09.50 ஹெக்டேர், 264/ 1, 0.03.50 ஹெக்டேர், 264/2, 0.03.50
 ஹெக்டேர், 264/3, 0.03.50 ஹெக்டேர், 264/3, 0.03.50 ஹெக்டேர், 264/4, 0.07.50
 ஹெக்டேர், 264/5, 0.11.50 ஹெக்டேர், 264/6, 0.11.50 ஹெக்டேர், 264/7, 0.06.50
 ஹெக்டேர், 264/8A, 0.07.00 ஹெக்டேர், 264/8B, 0.07.00 ஹெக்டேர், 264/9,
 0.04.00 ஹெக்டேர், 264/ 10, 0.04.00 ஹெக்டேர், 264/11A, 0.04.00 ஹெக்டேர்,
 264/11B, 0.03.50 ஹெக்டேர், 264/12A, 0.03.50 ஹெக்டேர், 264/12B, 0.14.00
 ஹெக்டேர், 264/12C, 0.10.50 ஹெக்டேர், 264/13, 0.10.50 ஹெக்டேர், 264/14,
 0.19.50 ஹெக்டேர், 265/15, 0.07.50 ஹெக்டேர், 264/16A, 0.03.00 ஹெக்டேர்,
 264/16B, 0.03.17 ஹெக்டேர், 264/17, 0.02.00 ஹெக்டேர், 264/18A, 0.04.50
 ஹெக்டேர், 264/18B, 0.04.00 ஹெக்டேர், 264/19, 0.07.50 ஹெக்டேர், 264/20A,
 0.04.00 ஹெக்டேர், 264/20B, 0.03.50 ஹெக்டேர், 264/21, 0.03.00
 ஹெக்டேர், 264/22, 0.03.00 ஹெக்டேர், 265/1, 0.08.50 ஹெக்டேர், 265/2, 0.04.00
 ஹெக்டேர், 265/3, 0.01.00 ஹெக்டேர், 264/4, 0.01.00 ஹெக்டேர், 265/5 0.01.00

ஹெக்டேர், மொத்தம் 2.58.00 ஹெக்டேர் பரப்பளவில் பத்து வருடங்களுக்கு செங்கல்பட்டு மாவட்ட ஆட்சித்தலைவர்/ துணை இயக்குனர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் செயல்முறை ஆணை எண். RC.No: 347/Q3/2022 Dated: 10.01.2024-ன்படி APK MINERALS PVT LTD -ன் நிறுவனத்தின் மேலாளர் திரு. K. வினோத்குமார் அவர்கள் கல்குவாரி உரிமம் கோரி மனு செய்துள்ளார். மேற்படி உடைகல் இடம் மற்றும் கிராவல் வெட்டி எடுப்பதற்கு அங்கீகரிக்கப்பட்ட இடம் என்பதை இதன் மூலம் சான்றளிக்கின்றேன். மேற்படி இடத்திற்கு செல்வதற்கு அணுகுபாதை வசதி உள்ளது என்றும் சான்று அளிக்கிறேன்.

இடம்:

நாள்:


கிராம நிர்வாக அலுவலர்
கிராம நிர்வாக அலுவலர் கையெழுப்பம்,
உத்திரமேரூர் வட்டம்.

கிராம நிர்வாக அலுவலரின் சான்று

புல எண்கள். 263/1A, 0.00.50 ஹெக்டேர், 263/1B, 0.01.00 ஹெக்டேர், 263/1C, 0.03.00 ஹெக்டேர், 263/1M1, 0.05.00 ஹெக்டேர், 263/1M2, 0.06.00 ஹெக்டேர், 263/1N1, 0.01.50 ஹெக்டேர், 263/1N2, 0.01.50 ஹெக்டேர், 262/10, 0.03.00 ஹெக்டேர், 263/1P1, 0.02.00 ஹெக்டேர், 263/1P2, 0.03.00 ஹெக்டேர், 263/1Q, 0.02.50 ஹெக்டேர், 263/1R, 0.02.00 ஹெக்டேர், 263/1S, 0.03.00 ஹெக்டேர், 263/1T, 0.09.50 ஹெக்டேர், 264/ 1, 0.03.50 ஹெக்டேர், 264/2, 0.03.50 ஹெக்டேர், 264/3, 0.03.50 ஹெக்டேர், 264/3, 0.03.50 ஹெக்டேர், 264/4, 0.07.50 ஹெக்டேர், 264/5, 0.11.50 ஹெக்டேர், 264/6, 0.11.50 ஹெக்டேர், 264/7, 0.06.50 ஹெக்டேர், 264/8A, 0.07.00 ஹெக்டேர், 264/8B, 0.07.00 ஹெக்டேர், 264/9, 0.04.00 ஹெக்டேர், 264/ 10, 0.04.00 ஹெக்டேர், 264/11A, 0.04.00 ஹெக்டேர், 264/11B, 0.03.50 ஹெக்டேர், 264/12A, 0.03.50 ஹெக்டேர், 264/12B, 0.14.00 ஹெக்டேர், 264/12C, 0.10.50 ஹெக்டேர், 264/13, 0.10.50 ஹெக்டேர், 264/14, 0.19.50 ஹெக்டேர், 265/15, 0.07.50 ஹெக்டேர், 264/16A, 0.03.00 ஹெக்டேர், 264/16B, 0.03.17 ஹெக்டேர், 264/17, 0.02.00 ஹெக்டேர், 264/18A, 0.04.50 ஹெக்டேர், 264/18B, 0.04.00 ஹெக்டேர், 264/19, 0.07.50 ஹெக்டேர், 264/20A, 0.04.00 ஹெக்டேர், 264/20B, 0.03.50 ஹெக்டேர், 264/21, 0.03.00 ஹெக்டேர், 264/22, 0.03.00 ஹெக்டேர், 265/1, 0.08.50 ஹெக்டேர், 265/2, 0.04.00 ஹெக்டேர், 265/3, 0.01.00 ஹெக்டேர், 264/4, 0.01.00 ஹெக்டேர், 265/5 0.01.00 ஹெக்டேர், மொத்தம் 2.58.00 ஹெக்டேர் பரப்பளவில் பத்து வருடங்களுக்கு செங்கல்பட்டு மாவட்ட ஆட்சித்தலைவர்/ துணை இயக்குனர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் செயல்முறை ஆணை எண். RC.No: 347/Q3/2022 Dated: 10.01.2024-ன்படி APK MINERALS PVT LTD -ன் நிறுவனத்தின் மேலாளர் திரு. K. வினோத்குமார் அவர்கள் கல்குவாரி உரிமம் கோரி மனு செய்துள்ளார். மேற்படி இடம் உடைகல் மற்றும் கிராவல் வெட்டி எடுப்பதற்கு அங்கீகரிக்கப்பட்ட இடம் என்பதை இதன் மூலம் சான்றளிக்கிறேன். மேற்படி இடத்திற்கு செல்வதற்கு அணுகுப்பாதை வசதி உள்ளது என்றும், மேலும் குவாரி அமைய உள்ள புலத்தின் எல்லையில் இருந்து 300 மீட்டர் சுற்றளவில் குடியிருப்புகள், கோயில்கள், பள்ளிக்கூடம் புராதான சின்னங்கள் ஏதும் இல்லை. மேற்படி புல எண்கள் கிராம கணக்கு தடையானை புத்தகத்தில் இடம் பெறவில்லை. மேலும் 10 கிலோமீட்டர் சுற்றளவில் பிற மாநில எல்லையோ இடம்பெறவில்லை. மேற்படி சான்று கனிம வளத்துறை அளிக்கும் வகைக்காக வழங்கப்படுகிறது.

இடம்:

நாள்:


கிராம நிர்வாக அலுவலர்
கிராம நிர்வாக அலுவலர்
89, பழைய கிராமம்
உத்திரமேரூர் வட்டம்.

MINES LAND PHOTO



காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், பழுவேரி கிராமம், புல எண்கள். 207/4B, 0-06.27 ஹெக்டேர் 207/5B, 0-05.86 ஹெக்டேர் 207/6B, 0-05.00 ஹெக்டேர் 207/7B, 0-04.60 ஹெக்டேர் 207/8B, 0-03.39 ஹெக்டேர் 207/9, 0-01.00 ஹெக்டேர் 208/1A, 0-16.00 ஹெக்டேர் 208/2A, 0-08.50 ஹெக்டேர் 208/ 2B1, 0-08.50 ஹெக்டேர் 208/2B2, 0-18.00 ஹெக்டேர் 208/5A, 0-10.00 ஹெக்டேர் 208/5C, 0-09.50 ஹெக்டேர் 208/5D, 0-10.00 ஹெக்டேர் 208/5E, 0-10.50 ஹெக்டேர் 208/5F, 0-03.00 ஹெக்டேர் 208/5G, 0-02.00 ஹெக்டேர் 212/1L, 0-21.05 ஹெக்டேர் 212/1M, 0-21.00 ஹெக்டேர் 212/1N, 0-58.50 ஹெக்டேர் மொத்தம் 2-23.12 ஹெக்டேர் பரப்பளவில் பத்து வருடங்களுக்கு செங்கல்பட்டு மாவட்ட ஆட்சித்தலைவர்/ துணை இயக்குனர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் செயல்முறை ஆணை எண். RC.No: 364/Q3/2022 Dated: 04.03.2024-ன்படி APK MINERALS PVT LTD -ன் நிறுவனத்தின் மேலாளர் திரு. K. வினோத்குமார் அவர்கள் கல்குவாரி உரிமம் கோரி மனு செய்துள்ளார். மேற்படி உடைகல் இடம் மற்றும் கிராவல் வெட்டி எடுப்பதற்கு அங்கீகரிக்கப்பட்ட இடம் என்பதை இதன் மூலம் சான்றளிக்கின்றேன். மேற்படி இடத்திற்கு செல்வதற்கு அணுகுபாதை வசதி உள்ளது என்றும் சான்று அளிக்கின்றேன்.

இடம்:

நாள்:


கிராம நிர்வாக அலுவலர்
89, பழுவேரி கிராமம்,
கிராம நிர்வாக அலுவலர் கையொப்பம்
உத்திரமேரூர் வட்டம்

கிராம நிர்வாக அலுவலரின் சான்று

காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், பழவேரி கிராமம், புல எண்கள். 207/4B, 0-06.27 ஹெக்டேர் 207/5B, 0-05.86 ஹெக்டேர் 207/6B, 0-05.00 ஹெக்டேர் 207/7B, 0-04.60 ஹெக்டேர் 207/8B, 0-03.39 ஹெக்டேர் 207/9, 0-01.00 ஹெக்டேர் 208/1A, 0-16.00 ஹெக்டேர் 208/2A, 0-08.50 ஹெக்டேர் 208/ 2B1, 0-08.50 ஹெக்டேர் 208/2B2, 0-18.00 ஹெக்டேர் 208/5A, 0-10.00 ஹெக்டேர் 208/5C, 0-09.50 ஹெக்டேர் 208/5D, 0-10.00 ஹெக்டேர் 208/5E, 0-10.50 ஹெக்டேர் 208/5F, 0-03.00 ஹெக்டேர் 208/5G, 0-02.00 ஹெக்டேர் 212/1L, 0-21.05 ஹெக்டேர் 212/1M, 0-21.00 ஹெக்டேர் 212/1N, 0-58.50 ஹெக்டேர் மொத்தம் 2-23.12 ஹெக்டேர் பரப்பளவில் பத்து வருடங்களுக்கு செங்கல்பட்டு மாவட்ட ஆட்சித்தலைவர்/ துணை இயக்குனர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் செயல்முறை ஆணை எண். RC.No: 364/Q3/2022 Dated: 04.03.2024-ன்படி APK MINERALS PVT LTD -ன் நிறுவனத்தின் மேலாளர் திரு. K. வினோத்குமார் அவர்கள் கல்குவாரி உரிமம் மனு செய்துள்ளார். மேற்படி இடம் உடைகல் மற்றும் கிராவல் வெட்டி எடுப்பதற்கு அங்கீகரிக்கப்பட்ட இடம் என்பதை இதன் மூலம் சான்றளிக்கிறேன். மேற்படி இடத்திற்கு செல்வதற்கு அணுகுப்பாதை வசதி உள்ளது என்றும், மேலும் குவாரி அமைய உள்ள புலத்தின் எல்லையில் இருந்து 300 மீட்டர் சுற்றளவில் குடியிருப்புகள், கோயில்கள், பள்ளிக்கூடம் புராதான சின்னங்கள் ஏதும் இல்லை. மேற்படி புல எண்கள் கிராம கணக்கு தடையானை புத்தகத்தில் இடம் பெறவில்லை. மேலும் 10 கிலோமீட்டர் சுற்றளவில் பிற மாநில எல்லையோ இடம்பெறவில்லை. மேற்படி சான்று கனிம வளத்துறை அளிக்கும் வகைக்காக வழங்கப்படுகிறது.

இடம்:

நாள்:


கிராம நிர்வாக அலுவலர்
89, பழவேரி கிராமம்,
உத்திரமேரூர் வட்டம்.
கிராம நிர்வாக அலுவலர் கையொப்பம்

From
Dr. S.Vediappan, M.Sc.,Ph.d.,
Deputy Director,
Dept of Geology and Mining,
Kancheepuram.

To
Tvl.APK Minerals Pvt.Ltd,
No.1A, Manikandan Nagar,
Hasthinapuram,
Chennai-600 064.

Roc.No.347/Q3/2022 Dated: 24.04.2024

Sir,

Sub: Mines and Minerals – Minor Mineral - Rough Stone and Gravel – Kancheepuram District – Uthiramerur Taluk – Pazhaveri Village- Patta land in S.F.Nos. 263/1A, 263/1B, 263/1C, 263/1M1, 263/1M2, 263/1N1, 263/1N2, 263/1O, 263/1P1, 263/1P2, 263/1Q, 263 /1R, 263/1S, 263/1T, 264/1, 264/2, 264/3, 264/4, 264/5, 264/6, 264/7, 264/8A, 264/8B, 264/9, 264/10, 264/11A, 264/11B, 264/12A, 264/12B, 264/12C, 264/13, 264/14, 264/15, 264/16A, 264/16B, 264/17, 264/18A, 264/18B, 264/19, 264/20A, 264/20B, 264/21, 264/22, 265/1, 265/2, 265/3, 265/4 & 265/5 Over an extent of 2.58.00 Hects - Application preferred by Tvl.APK.Minerals Pvt.Ltd- Other quarries situated in 500 mtrs radial distance - Details furnished - reg.

- Ref:**
- 1 Application prepared by Tvl. APK Minerals Pvt.Ltd, No.1A, Manikandan Nagar, Hasthinapuram, Chennai-600 064 application dated 16.11.2022.
 - 2 This Office Memorandum Letter No.347/ Q3/ 2022 dated 17.04.2024.
 - 3 Draft Mining plan submitted by Tvl.APK Minerals Pvt.Ltd dated: 23.04.2024.
 - 4 Mining plan approved by the Deputy Director of Geology and Mining, Kancheepuram vide Letter.No.347/Q3/2022 dated.24.04.2024.

Kind attention is invited to the references cited above.

2. Tvl.APK Minerals Pvt.Ltd has preferred an application for quarrying Rough stone and Gravel over an extent of 2.58.00 Hects of patta land in S.F.Nos.263/1A (0.00.50), 263/1B (0.01.00), 263/1C (0.03.00), 263/1M1 (0.05.00), 263/1M2 (0.06.00), 263/1N1 (0.01.50), 263/1N2 (0.01.50), 263/1O (0.03.00), 263/1P1 (0.02.00), 263/1P2

(0.03.00), 263/1Q (0.02.50), 263 /1R (0.02.00) 263/1S (0.03.00), 263/1T (0.09.50), 264/1 (0.03.50), 264/2 (0.03.50), 264/3 (0.03.50), 264/4 (0.07.50), 264/5 (0.11.50), 264/6 (0.11.50), 264/7 (0.06.50), 264/8A (0.07.00), 264/8B (0.07.00), 264/9 (0.04.00), 264/10 (0.04.00), 264/11A (0.04.00), 264/11B (0.03.50), 264/12A (0.03.50), 264/12B, (0.14.00), 64/12C (0.10.50), 264/13 (0.10.50), 264/14 (0.19.50), 264/15 (0.07.50), 264/16A (0.03.00) 264/16B (0.03.50), 264/17 (0.20.00), 264/18A (0.04.50), 264/18B (0.04.00), 264/19 (0.07.50), 264/20A, (0.04.00), 264/20B (0.03.50), 264/21 (0.03.00), 264/22 (0.03.00), 265/1 (0.08.50), 265/2 (0.04.00), 265/3 (0.01.50), 265/4 (0.01.00) & 265/5 (0.01.00) in Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District for a period of 10 year under the provisions of Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959. In this regard, the precise area communication has been issued vide letter dated 17.04.2024 with a direction to submit approved mining plan and Environment Clearance.

3. Accordingly, Tvl.APK Minerals Pvt.Ltd has submitted three copies of draft Mining Plan vide letter dated: 23.04.2024 and the same has been examined in detail and approved by Deputy Director of Geology and Mining, Kancheepuram vide Letter.No.347/Q3/2022 dated. 24.04.2024

4) In this connection, Tvl.APK Minerals Pvt.Ltd has requested vide letter dated:23.04.2024 to issue the details of other quarries situated within 500 mts radial distance from the subject quarries are furnished as follows.

I. Details of Existing quarries.

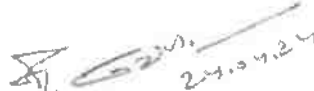
Sl. No	Name of the Lessee	Village	SF.No	Extent in Hect	GO.No./Proceeding No. & Date	Lease Period
1	Tvl. MSM Mining, Managing Partner Thiru. M.Mohan, No.15/1, Gandhi Street, Thiruneermalai Road, Chrompet, Chennai - 600 044.	Pazhaveri	225/1A, 225/1B2, 252/2A, 252/2B, 252/4B2, 252/5A1A, 252/5A1B, 252/5A1C, 252/5A1D, 252/5A1E, 252/5C, 252/6, 252/7B,	3.55.00	Rc.No. 569/Q3/2018 dated.27.02.2020	27.02.2020 To 26.02.2025

II. Details of abandoned/Old quarries.

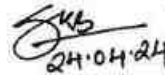
Sl. No.	Name of the lessee	ROC.NO. dated	Village & Taluk	S.F No.	Extent in Het	Lease period.
1	----- Nil -----					

III. Details of other Proposed/applied quarries

Sl. No.	Name of the lessee	Name of the Mineral	Village & Taluk	S.F No.	Extent in Het	Lease period.
1	Tvl.APK Minerals Pvt.Ltd.	Rough stone and Gravel	Pazhaveri, Uthiramerur	263/1A,1B,1C,1M1,1M2,1N1, 1N2, 10, 1P1,1P2, 1Q,1R,1S,1T, 264/1, 2,3,4,5,6,7, 8A,8B,9,10, 11A,11B,12A, 12B,12C,13, 14,15,16A, 16B, 17,18A, 18B,19,20A, 20B, 21,22, 265/1,2,3,4 & 5	2.58.0	Under Process


Deputy Director,
Dept of Geology and Mining,
Kancheepuram..

Copy to :-


24.04.24

The Chairman, Tamil Nadu State Environment
Impact Assessment Authority,
3rd Floor, Panakal Maligai,
No. 1 Jeenes Road, Saidapet, Chennai -15.

From
Dr. S.Vediappan, M.Sc.,Ph.d.,
Deputy Director,
Dept of Geology and Mining,
Kancheepuram.

To
Tvl.APK Minerals Pvt.Ltd,
No.1A, Manikandan Nagar,
Hasthinapuram,
Chennai-600 064.

Roc.No.346/Q3/2022 Dated: 04.03.2024

Sir,

Sub: Mines and Minerals – Minor Mineral - Rough Stone and Gravel – Kancheepuram District – Uthiramerur Taluk – Pazhaveri Village- Patta land in S.F.Nos. 207/4B, 207/5B, 207/6B, 207/7B, 207/8B, 207/9, 208/1A, 208/2A, 208/2B1, 208/2B2, 208/5A, 208/5C, 208/5D, 208/5E, 208/5F, 208/5G, 212/1L, 212/1M, & 212/1N Over an extent of 2.23.12 Hects - Application preferred by Tvl.APK.Minerals Pvt.Ltd- Other quarries situated in 500 mtrs radial distance - Details furnished - reg.

- Ref:**
- 1 Application prepared by Tvl. APK Minerals Pvt.Ltd, No.1A, Manikandan Nagar, Hasthinapuram, Chennai-600 064 application dated 18.11.2022.
 - 2 This Office Memorandum Letter No.346/ Q3/ 2023 dated 03.02.2024.
 - 3 Draft Mining plan submitted by Tvl.APK Minerals Pvt.Ltd dated: 27.02.2024.
 - 4 Mining plan approved by the Deputy Director of Geology and Mining, Kancheepuram vide Letter.No.346/Q3/2022 dated.04.03.2024.

Kind attention is invited to the references cited above.

2. Tvl.APK Minerals Pvt.Ltd has preferred an application for quarrying Rough stone and Gravel over an extent of 2.32.12 Hects of patta land in S.F.Nos.207/4B (0.06.27), 207/5B (0.05.86), 207/6B (0.05.00), 207/7B (0.04.60), 207/8B (0.03.39), 207/9 (0.01.00), 208/1A (0.16.00), 208/2A (0.08.50), 208/2B1 (0.08.50), 208/2B2 (0.18.00), 208/5A (0.10.00), 208/5C (0.09.50), 208/5D (0.10.00), 208/5E (0.10.50),

208/5F (0.03.00), 208/5G (0.02.00), 212/1L (0.21.5), 212/1M (0.21.00) and 212/1N (0.58.50) in Pazhaveri Village, Uthiramerur Taluk, Kancheepuram District for a period of 10 year under the provisions of Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959. In this regard, the precise area communication has been issued vide letter dated: -03.02.2024 with a direction to submit approved mining plan and Environment Clearance.

3. Accordingly, Tvl.APK Minerals Pvt.Ltd has submitted three copies of draft Mining Plan vide letter dated: 27.02.2024 and the same has been examined in detail and approved by Deputy Director of Geology and Mining, Kancheepuram vide Letter.No.346/Q3/2022 dated. 04.03.2024

4) In this connection, Tvl.APK Minerals Pvt.Ltd has requested vide letter dated:27.02.2024 to issue the details of other quarries situated within 500 mts radial distance from the subject quarries are furnished as follows.

I. Details of Existing quarries.

Sl. No	Name of the Lessee	Village	SF.No	Extent in Hect	GO.No./Proceeding No. & Date	Lease Period
1	Tvl. MSM Mining, Managing Partner Thiru. M.Mohan, No.15/1, Gandhi Street, Thirunermalai Road, Chrompet, Chennai - 600 044.	Pazhaveri	225/1A, 225/1B2, 252/2A, 252/2B, 252/4B2, 252/5A1A, 252/5A1B, 252/5A1C, 252/5A1D, 252/5A1E, 252/5C, 252/6, 252/7B, 252/8A, 252/8B	3.55.00	Rc.No. 569/Q3/2018 dated.27.02.20 20	27.02.2020 To 26.02.2025

2.	Tvl. Udhayam Civil Constructions Pvt. Ltd., Managing Director Thiru. D. Karthikeyan, No.66, Rajendra Prasad Road, Krishna Nagar, Chrompet, Chennai - 600044.	Pazhaveri	203/1A1A, 204/1A, 204/2, 205/1A, 205/2, 205/3, 206/1A, 206/2A, 207/1, 207/2A, 207/2B, 207/2C, 207/2D, 207/3, 207/4A, 207/5A, 207/6A, 207/7A, 207/8A	3.66.86	Rc.No. 151/Q3/2018 dated:12.07.2019	12.07.2019 To 11.07.2024
3	S.Dharmaraj, S/o. Shitrambala Reddiyar, No.2A, North street, Mundalaapuram, Ondipulinaickanur, Muthulapuram, Virudhunagar - 626 119.	Pinaiyur	394/1A, 394/1B, 394/1C, 394/1D, 394/1E, 412/1, 412/2A, 412/2B, 414/2	4.93.50	Rc.No. 619/Q3/2017 , dated.31.07.2020	31.07.2020 To 30.07.2025
4	S. Ravisundar, S/o. Sandhiyagu, No.1, 1178-A, 1st street, Bethel Nagar, Injampakkam, Chennai - 115	Pinaiyur	417	1.88.00	R.C.No.168/Q3/2014, dated.01.02.2021	01.02.2021 To 01.01.2031

II. Details of abandoned/Old quarries.

Sl. No.	Name of the lessee	ROC.NO. dated	Village Taluk	&	S.F No.	Extent in Het	Lease period.
1	----- Nil -----						

III. Details of other Proposed/applied quarries

Sl. No.	Name of the lessee	Name of the Mineral	Village & Taluk	S.F No.	Extent in Het	Lease period.
1	Tvl.APK Minerals Pvt.Ltd.	Rough stone and Gravel	Pazhaveri, Uthiramerur	207/4B, 207/5B, 207/6B, 207/7B, 207/8B, 207/9, 208/1A, 208/2A, 208/2B1, 208/2B2, 208/5A, 208/5C, 208/5D, 208/5E, 208/5F, 208/5G, 212/1L, 212/1M, & 212/1N	2.42.76	Under Process

HP
04/03/24

F. C. 201.
04.03.24
Deputy Director,
Dept of Geology and Mining,
Kancheepuram..

Copy to :-

The Chairman, Tamil Nadu State Environment
Impact Assessment Authority,
3rd Floor, Panakal Maligai,
No. 1 Jeenes Road, Saidapet, Chennai -15.

POPULATION BREAKUP & LITERACY LEVEL IN THE BUFFER ZONE

Sl.No	No. of Villages	Name of village	Rural / urban	HOUSE HOLDS	POPULATION			POPULATION BELOW 6 AGE GROUP			SCHEDULE CASTE			SCHEDULE TRIBE			LITRERATES			ILLITRERATES		
					TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F. MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE
0-2 km,Uthiramerur Sub-District, Kancheepuram District																						
1	1	Thirumukkudal	Rural	406	1673	850	823	171	91	80	888	453	435	44	22	22	1216	672	544	457	178	279
2	2	Pazhaveri	Rural	191	727	362	365	76	36	40	368	190	178	5	3	2	477	271	206	250	91	159
3	3	Pinayur	Rural	255	1068	520	548	104	46	58	377	178	199	6	3	3	759	423	336	309	97	212
4	4	Arumbuliyur	Rural	402	1618	777	841	188	92	96	470	223	247	56	27	29	1025	546	479	593	231	362
		total (A)		1254	5086	2509	2577	539	265	274	2103	1044	1059	111	55	56	3477	1912	1565	1609	597	1012
2-5 km,Uthiramerur Sub-District, Kancheepuram District																						
5	1	Vayalakkavoor	Rural	341	1429	752	677	146	90	56	809	440	369	0	0	0	890	526	364	539	226	313
6	2	Pullampakkam	Rural	209	872	424	448	122	64	58	671	328	343	44	24	20	494	269	225	378	155	223
7	3	Seethanjeri	Rural	110	494	247	247	54	23	31	285	143	142	21	11	10	374	204	170	120	43	77
8	4	Kurumanjeri	Rural	164	666	330	336	83	40	43	41	20	21	16	8	8	451	248	203	215	82	133
9	5	Sirudamur	Rural	755	3097	1555	1542	365	186	179	1090	550	540	49	27	22	1920	1101	819	1177	454	723
10	6	Chitalapakkam	Rural	153	592	288	304	69	32	37	9	5	4	0	0	0	344	204	140	248	84	164
11	7	Sirumailur	Rural	247	1029	510	519	101	44	57	699	351	348	4	2	2	638	364	274	391	146	245
12	8	Neerkundram	Rural	77	314	153	161	21	7	14	88	41	47	0	0	0	225	123	102	89	30	59
13	9	Kavanipakkam	Rural	190	780	382	398	78	39	39	509	249	260	0	0	0	508	272	236	272	110	162
14	10	Karumbakkam	Rural	211	850	438	412	81	44	37	538	273	265	0	0	0	518	289	229	332	149	183
15	11	Sathananjeri	Rural	544	2166	1095	1071	261	131	130	1037	523	514	15	5	10	1387	796	591	779	299	480
16	12	Mulaginimeni	Rural	90	381	201	180	43	25	18	0	0	0	0	0	0	241	137	104	140	64	76
17	13	Mambakkam	Rural	156	627	311	316	68	37	31	519	255	264	0	0	0	385	209	176	242	102	140
18	14	Peranakkavur	Rural	235	926	478	448	118	54	64	634	325	309	9	5	4	586	332	254	340	146	194
19	15	Porpandal	Rural	253	941	491	450	95	59	36	429	223	206	43	27	16	640	361	279	301	130	171
Chengalpattu Sub-District, Kancheepuram District																						
20	1	Melmanapakkam	Rural	282	1212	622	590	166	89	77	697	366	331	0	0	0	859	470	389	353	152	201
Kancheepuram Sub-District, Kancheepuram District																						
21	1	Palayaseevaram	Rural	1411	5634	2792	2842	681	325	356	2442	1208	1234	33	18	15	3563	2013	1550	2071	779	1292
22	2	Puliyambakkam	Rural	502	2158	1253	905	194	109	85	813	420	393	123	63	60	1550	999	551	608	254	354
23	3	Angambakkam	Rural	450	1907	963	944	219	116	103	1408	712	696	21	12	9	1167	674	493	740	289	451
		total (B)		6380	26075	13285	12790	2965	1514	1451	12718	6432	6286	378	202	176	16740	9591	7149	9335	3694	5641
5-10km,Kancheepuram Sub-District, Kancheepuram District																						
24	1	Uthukadu	Rural	1118	4528	2288	2240	495	241	254	1853	925	928	36	16	20	3070	1723	1347	1458	565	893
25	2	Kattavakkam	Rural	269	1063	523	540	103	52	51	824	412	412	38	15	23	657	361	296	406	162	244
26	3	Vilagam	Rural	36	156	81	75	16	9	7	145	75	70	0	0	0	99	53	46	57	28	29
27	4	Thalayampattu	Rural	72	275	122	153	25	11	14	271	120	151	0	0	0	212	104	108	63	18	45
28	5	Alavur	Rural	137	557	267	290	52	20	32	467	223	244	24	12	12	378	204	174	179	63	116
29	6	Varanavasi	Rural	193	797	408	389	94	58	36	491	249	242	22	12	10	481	264	217	316	144	172
30	7	Vembakkam	Rural	254	974	481	493	127	53	74	609	299	310	33	17	16	536	310	226	438	171	267
31	8	Chinnamadurapakkam	Rural	80	318	172	146	24	15	9	304	166	138	0	0	0	213	122	91	105	50	55
32	9	Ambakkam	Rural	269	1017	522	495	139	79	60	732	382	350	31	18	13	568	313	255	449	209	240
33	10	Thollazhi	Rural	272	980	501	479	108	60	48	443	233	210	0	0	0	587	347	240	393	154	239
34	11	Kosapattu	Rural	68	236	102	134	34	10	24	218	94	124	0	0	0	127	64	63	109	38	71

SI.No	No. of Villages	Name of village	Rural / urban	HOUSE HOLDS	POPULATION			POPULATION BELOW 6 AGE GROUP			SCHEDULE CASTE			SCHEDULE TRIBE			LITRERATES			ILLITRERATES		
					TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F. MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE
35	12	Devariyambakkam	Rural	232	875	426	449	102	48	54	138	63	75	0	0	0	571	329	242	304	97	207
36	13	Thonankulam	Rural	123	435	216	219	52	28	24	287	145	142	24	12	12	270	149	121	165	67	98
37	14	Ullavur	Rural	444	1749	908	841	201	101	100	928	483	445	38	17	21	1096	662	434	653	246	407
38	15	Nathanallur	Rural	520	2158	1047	1111	258	113	145	651	319	332	72	35	37	1288	690	598	870	357	513
39	16	Vengudi	Rural	270	1111	542	569	106	56	50	614	297	317	24	9	15	877	451	426	234	91	143
40	17	Seeyamangalam	Rural	144	564	281	283	52	29	23	309	165	144	0	0	0	350	190	160	214	91	123
41	18	Vitchanthangal	Rural	254	1016	517	499	120	64	56	343	175	168	13	4	9	634	369	265	382	148	234
42	19	Asoor	Rural	323	1234	609	625	132	67	65	741	363	378	17	7	10	822	457	365	412	152	260
43	20	Avalur	Rural	992	3960	1948	2012	445	240	205	240	119	121	73	34	39	2377	1322	1055	1583	626	957
44	21	Thammanur	Rural	526	2116	1088	1028	248	134	114	667	330	337	151	83	68	1231	712	519	885	376	509
45	22	Kavanthandalam	Rural	461	1619	796	823	134	66	68	392	192	200	67	36	31	970	548	422	649	248	401
46	23	Nelveli	Rural	165	667	322	345	88	38	50	577	280	297	0	0	0	403	220	183	264	102	162
47	24	Kilputhur	Rural	53	170	80	90	12	7	5	1	1	0	0	0	0	99	56	43	71	24	47
48	25	Kambarajapuram	Rural	380	1527	766	761	172	93	79	273	139	134	56	26	30	944	553	391	583	213	370
49	26	Elayanarvelur	Rural	299	1079	544	535	124	67	57	554	273	281	0	0	0	643	352	291	436	192	244
50	27	Chithaathur	Rural	88	322	159	163	18	9	9	0	0	0	6	3	3	161	96	65	161	63	98
Uthiramerur Sub-District, Kancheepuram District																						
51	1	Sembulam	Rural	39	148	66	82	11	4	7	54	23	31	0	0	0	104	52	52	44	14	30
52	2	Kavampair	Rural	179	682	339	343	88	37	51	343	172	171	39	16	23	427	244	183	255	95	160
53	3	Neyyativakkam	Rural	323	1360	666	694	140	62	78	682	316	366	48	24	24	896	513	383	464	153	311
54	4	Malayankulam	Rural	630	2390	1218	1172	250	140	110	937	480	457	58	35	23	1438	828	610	952	390	562
55	5	Nariambakkam	Rural	12	35	14	21	1	1	0	0	0	0	0	0	0	24	10	14	11	4	7
56	6	Nariyambudur	Rural	7	20	11	9	3	2	1	0	0	0	11	6	5	8	6	2	12	5	7
57	7	Vendivakkam	Rural	52	202	107	95	21	10	11	44	22	22	0	0	0	110	67	43	92	40	52
58	8	Kattankulam	Rural	258	1028	514	514	100	59	41	289	142	147	0	0	0	606	343	263	422	171	251
59	9	Padoor	Rural	184	713	365	348	91	38	53	227	110	117	14	6	8	463	262	201	250	103	147
60	10	Anambakkam	Rural	408	1665	833	832	158	73	85	534	266	268	10	6	4	1150	649	501	515	184	331
61	11	Kaliyapettai	Rural	416	1640	829	811	195	102	93	471	244	227	8	4	4	1012	586	426	628	243	385
62	12	Orakkattupettai	Rural	201	744	368	376	86	42	44	88	48	40	18	6	12	567	307	260	177	61	116
63	13	Kavithandalam	Rural	461	1814	904	910	198	89	109	1359	678	681	19	9	10	1203	674	529	611	230	381
64	14	Thiruvanaikoil	Rural	140	598	288	310	77	37	40	430	211	219	81	41	40	386	201	185	212	87	125
65	15	Edamichi	Rural	349	1414	701	713	132	63	69	514	258	256	0	0	0	1021	539	482	393	162	231
66	16	Nerkundram	Rural	162	624	302	322	80	45	35	137	69	68	5	3	2	341	187	154	283	115	168
67	17	Chinnalambadi	Rural	110	434	227	207	38	20	18	91	50	41	0	0	0	274	164	110	160	63	97
68	18	Kunnavakkam	Rural	247	955	470	485	85	45	40	448	219	229	2	1	1	554	295	259	401	175	226
69	19	Pandavakkam	Rural	53	220	114	106	18	9	9	4	1	3	0	0	0	127	76	51	93	38	55
70	20	Paleswaram	Rural	205	802	400	402	106	52	54	356	184	172	14	6	8	450	262	188	352	138	214
71	21	Mambudur	Rural	78	296	164	132	19	14	5	0	0	0	13	8	5	204	119	85	92	45	47
72	22	Kurambarai	Rural	354	1424	701	723	147	73	74	666	329	337	100	51	49	980	526	454	444	175	269
73	23	Seethapuram	Rural	10	40	20	20	10	5	5	0	0	0	0	0	0	26	15	11	14	5	9
74	24	Gindangarai	Rural	104	391	192	199	43	23	20	0	0	0	85	39	46	259	139	120	132	53	79
75	25	Sithanakavoor	Rural	182	789	391	398	102	55	47	675	337	338	0	0	0	472	263	209	317	128	189
76	26	Thandarai	Rural	159	660	332	328	82	45	37	606	304	302	8	4	4	460	254	206	200	78	122

Sl.No	No. of Villages	Name of village	Rural / urban	HOUSE HOLDS	POPULATION			POPULATION BELOW 6 AGE GROUP			SCHEDULE CASTE			SCHEDULE TRIBE			LITRERATES			ILLITRERATES		
					TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F. MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE
77	27	Vichoor	Rural	229	883	439	444	90	47	43	731	367	364	0	0	0	559	302	257	324	137	187
78	28	Annadhur	Rural	319	1239	617	622	159	79	80	263	134	129	6	2	4	713	397	316	526	220	306
79	29	Alapakkam	Rural	113	462	256	206	52	30	22	0	0	0	22	10	12	257	161	96	205	95	110
80	30	Salavakkam	Rural	787	3311	1635	1676	369	195	174	1144	575	569	39	16	23	2332	1257	1075	979	378	601
81	31	Edayambudur	Rural	313	1304	678	626	184	117	67	480	246	234	19	8	11	806	445	361	498	233	265
Maduranthakam Sub-District, Kancheepuram District																						
82	1	Pilappur	Rural	331	1256	650	606	104	47	57	53	28	25	20	10	10	772	470	302	484	180	304
83	2	Sithandi	Rural	230	939	481	458	138	70	68	792	406	386	0	0	0	627	357	270	312	124	188
84	3	Athiyur	Rural	164	681	350	331	72	42	30	255	121	134	8	3	5	451	252	199	230	98	132
85	4	Sampathinallur	Rural	77	257	137	120	37	22	15	255	135	120	0	0	0	169	101	68	88	36	52
86	5	Maiyur	Rural	774	2931	1452	1479	314	156	158	1324	658	666	140	71	69	2054	1105	949	877	347	530
Chengalpattu Sub-District, Kancheepuram District																						
87	1	Guruvanmedu	Rural	199	841	429	412	86	55	31	359	187	172	46	21	25	582	344	238	259	85	174
88	2	Palur	Rural	1660	6964	3466	3498	833	431	402	4504	2189	2315	285	137	148	4637	2496	2141	2327	970	1357
89	3	Villiambakkam	Rural	347	1344	673	671	122	70	52	4	2	2	34	17	17	879	511	368	465	162	303
90	4	Sasthirambakkam	Rural	117	468	234	234	67	37	30	75	36	39	0	0	0	343	181	162	125	53	72
91	5	Vembakkam	Rural	253	1099	560	539	117	53	64	529	275	254	45	22	23	703	411	292	396	149	247
92	6	Ideeyankodumanthangal	Rural	1	5	3	2	0	0	0	5	3	2	0	0	0	5	3	2	0	0	0
93	7	Athur	Rural	2960	11981	5972	6009	1229	634	595	4737	2446	2291	245	109	136	8672	4668	4004	3309	1304	2005
Sriperumbudur Sub-District, Kancheepuram District																						
94	1	Panaiyyur	Rural	156	650	328	322	80	35	45	436	211	225	0	0	0	440	246	194	210	82	128
95	2	Ezhichur	Rural	343	1373	658	715	152	74	78	937	447	490	0	0	0	886	457	429	487	201	286
96	3	Poondi	Rural	17	64	37	27	6	4	2	0	0	0	0	0	0	43	27	16	21	10	11
97	4	Vadakkupattu	Rural	657	2715	1356	1359	335	166	169	1392	698	694	116	64	52	1706	963	743	1009	393	616
Kancheepuram Sub-District, Kancheepuram District																						
98	1	Walajabad (TP)	Urban	3590	14684	7189	7495	1689	827	862	4769	2305	2464	9	4	5	11279	5891	5388	3405	1298	2107
		total (C)		27002	108042	53852	54190	11997	6104	5893	45071	22454	22617	2292	1115	1177	72141	39647	32494	35901	14205	21696
		Grand Total (A+B+C)		34636	139203	69646	69557	15501	7883	7618	59892	29930	29962	2781	1372	1409	92358	51150	41208	46845	18496	28349

*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011

OCCUPATIONAL STRUCTURE IN THE BUFFER ZONE

Sl.No	No. of Villages	Name of village	Rural / urban	MAIN WORKERS		CULTIVATORS		AGRI LABOURS		HOUSE HOLD		OTHERS		MARGINAL WORKERS		NON WORKERS	
				MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE
0-2 km,Uthiramerur Sub-District, Kancheepuram District																	
1	1	Thirumukkudal	Rural	437	90	23	2	271	69	1	0	142	19	10	3	403	730
2	2	Pazhaveri	Rural	217	43	66	4	41	9	1	0	109	30	0	4	145	318
3	3	Pinayur	Rural	266	61	24	3	105	16	2	0	135	42	76	165	178	322
4	4	Arumbuliyur	Rural	428	155	82	13	82	66	1	2	263	74	47	27	302	659
		total (A)		1348	349	195	22	499	160	5	2	649	165	133	199	1028	2029
2-5 km,Uthiramerur Sub-District, Kancheepuram District																	
5	1	Vayalakkavoor	Rural	395	230	88	52	163	130	11	3	133	45	26	12	331	435
6	2	Pullampakkam	Rural	238	174	32	11	126	124	1	0	79	39	8	5	178	269
7	3	Seethananjeri	Rural	93	14	12	1	0	0	1	0	80	13	52	41	102	192
8	4	Kurumanjeri	Rural	183	147	33	30	77	79	5	8	68	30	18	21	129	168
9	5	Sirudamur	Rural	842	474	241	161	351	230	10	4	240	79	94	110	619	958
10	6	Chitalapakkam	Rural	123	21	77	2	12	1	3	1	31	17	67	167	98	116
11	7	Sirumailur	Rural	287	78	42	3	191	59	5	5	49	11	48	190	175	251
12	8	Neerkundram	Rural	50	12	4	1	0	0	8	2	38	9	46	31	57	118
13	9	Kavanipakkam	Rural	213	73	25	0	84	38	1	0	103	35	26	52	143	273
14	10	Karumbakkam	Rural	249	178	29	3	141	128	0	1	79	46	4	10	185	224
15	11	Sathananjeri	Rural	727	485	23	4	536	442	9	1	159	38	1	7	367	579
16	12	Mulaginimeni	Rural	42	5	13	0	2	1	0	0	27	4	74	64	85	111
17	13	Mambakkam	Rural	147	90	4	0	88	65	0	0	55	25	26	31	138	195
18	14	Peranakkavur	Rural	289	244	172	3	44	217	2	2	71	22	1	2	188	202
19	15	Porpandal	Rural	220	103	101	36	21	40	9	3	89	24	74	86	197	261
Chengalpattu Sub-District, Kancheepuram District																	
20	1	Melmanapakkam	Rural	394	163	31	13	106	97	5	1	252	52	1	0	227	427
Kancheepuram Sub-District, Kancheepuram District																	
21	1	Palayaseevaram	Rural	1360	393	113	28	158	115	13	8	1076	242	227	178	1205	2271
22	2	Puliyambakkam	Rural	346	111	35	3	63	42	3	2	245	64	156	136	751	658
23	3	Angambakkam	Rural	473	358	134	49	153	256	4	2	182	51	76	97	414	489
		total (B)		6671	3353	1209	400	2316	2064	90	43	3056	846	1025	1240	5589	8197
5-10km,Kancheepuram Sub-District, Kancheepuram District																	
24	1	Uthukadu	Rural	1142	603	167	57	258	310	31	33	686	203	203	139	943	1498
25	2	Kattavakkam	Rural	297	169	14	2	133	119	1	1	149	47	3	3	223	368
26	3	Vilagam	Rural	35	5	1	0	19	2	0	0	15	3	2	0	44	70
27	4	Thalayampattu	Rural	71	20	1	2	29	5	1	0	40	13	6	6	45	127
28	5	Alavur	Rural	66	35	1	0	1	2	1	2	63	31	69	15	132	240
29	6	Varanavasi	Rural	226	108	34	7	60	53	1	1	131	47	24	38	158	243
30	7	Vembakkam	Rural	204	104	14	5	31	16	1	1	158	82	97	96	180	293
31	8	Chinnamadurapakkam	Rural	104	83	1	2	41	62	2	0	60	19	0	0	68	63
32	9	Ambakkam	Rural	150	32	2	1	1	1	4	0	143	30	133	104	239	359
33	10	Thollazhi	Rural	287	89	23	1	80	63	4	3	180	22	9	87	205	303
34	11	Kosapattu	Rural	68	32	6	1	30	19	0	0	32	12	1	16	33	86
35	12	Devariambakkam	Rural	262	166	54	28	87	115	5	4	116	19	1	6	163	277

Sl.No	No. of Villages	Name of village	Rural / urban	MAIN WORKERS		CULTIVATORS		AGRI LABOURS		HOUSE HOLD		OTHERS		MARGINAL WORKERS		NON WORKERS	
				MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE
36	13	Thonankulam	Rural	125	116	4	0	66	100	2	0	53	16	0	0	91	103
37	14	Ullavur	Rural	263	106	68	7	91	62	4	5	100	32	174	114	471	621
38	15	Nathanallur	Rural	565	212	111	16	174	102	15	9	265	85	65	296	417	603
39	16	Vengudi	Rural	241	100	21	7	47	29	11	4	162	60	59	32	242	437
40	17	Seeyamangalam	Rural	130	45	1	0	6	4	11	7	112	34	37	44	114	194
41	18	Vitchanthalgal	Rural	173	66	26	20	15	19	4	2	128	25	121	93	223	340
42	19	Asoor	Rural	297	201	38	12	156	147	4	2	99	40	20	26	292	398
43	20	Avalur	Rural	1022	719	219	56	377	513	3	2	423	148	77	208	849	1085
44	21	Thammanur	Rural	538	345	255	147	96	44	1	0	186	154	85	114	465	569
45	22	Kavanthandalam	Rural	458	273	153	42	208	205	9	2	88	24	66	59	272	491
46	23	Nelveli	Rural	38	14	7	1	2	1	1	0	28	12	158	140	126	191
47	24	Kilputhur	Rural	48	41	6	0	20	31	0	0	22	10	0	1	32	48
48	25	Kambarajapuram	Rural	430	301	43	14	171	236	4	4	212	47	30	57	306	403
49	26	Elayanarvelur	Rural	336	139	38	13	115	87	9	3	174	36	13	63	195	333
50	27	Chithaathur	Rural	105	76	0	0	66	64	0	2	39	10	2	3	52	84
Uthiramerur Sub-District, Kancheepuram District																	
51	1	Sembulam	Rural	22	4	7	0	1	0	1	0	13	4	31	33	13	45
52	2	Kavampair	Rural	198	120	29	18	91	85	0	0	78	17	29	36	112	187
53	3	Neyyativakkam	Rural	416	176	124	59	113	60	2	1	177	56	16	44	234	474
54	4	Malayankulam	Rural	692	396	237	44	320	317	0	0	135	35	27	37	499	739
55	5	Nariambakkam	Rural	10	10	5	1	4	9	0	0	1	0	0	0	4	11
56	6	Nariyambudur	Rural	5	4	1	0	3	4	0	0	1	0	0	0	6	5
57	7	Vendivakkam	Rural	35	4	0	0	20	1	0	0	15	3	39	54	33	37
58	8	Kattankulam	Rural	292	153	81	10	170	131	5	0	36	12	25	21	197	340
59	9	Padoor	Rural	204	157	51	8	69	128	1	0	83	21	8	15	153	176
60	10	Anambakkam	Rural	502	328	102	70	119	172	9	6	272	80	17	65	314	439
61	11	Kaliyapettai	Rural	268	167	36	33	68	81	1	1	163	52	255	199	306	445
62	12	Orakkattupettai	Rural	199	61	10	2	11	4	2	0	176	55	24	6	145	309
63	13	Kavithandalam	Rural	516	339	27	8	216	205	7	7	266	119	17	55	371	516
64	14	Thiruvanaikoil	Rural	172	138	6	3	95	96	1	0	70	39	0	1	116	171
65	15	Edamichi	Rural	393	97	302	48	14	29	4	3	73	17	20	127	288	489
66	16	Nerkundram	Rural	106	107	100	102	5	4	0	0	1	1	55	69	141	146
67	17	Chinnalambadi	Rural	94	14	28	1	6	1	9	1	51	11	16	5	117	188
68	18	Kunnavakkam	Rural	58	37	15	4	0	1	5	5	38	27	192	102	220	346
69	19	Pandavakkam	Rural	33	9	8	3	1	0	0	0	24	6	42	41	39	56
70	20	Paleswaram	Rural	211	150	52	37	80	91	2	2	77	20	16	24	173	228
71	21	Mambudur	Rural	41	13	19	4	2	0	4	3	16	6	51	28	72	91
72	22	Kurumbarai	Rural	417	80	42	1	144	33	8	1	223	45	13	132	271	511
73	23	Seethapuram	Rural	9	4	1	0	0	0	0	0	8	4	1	0	10	16
74	24	Gindangarai	Rural	27	12	16	10	0	0	0	0	11	2	92	100	73	87
75	25	Sithanakavoor	Rural	198	141	16	0	112	117	0	0	70	24	5	1	188	256
76	26	Thandarai	Rural	171	135	18	2	55	83	0	0	98	50	24	18	137	175
77	27	Vichoor	Rural	253	173	14	2	100	74	53	53	86	44	18	27	168	244
78	28	Annadhur	Rural	346	267	73	43	189	196	0	0	84	28	59	66	212	289

Sl.No	No. of Villages	Name of village	Rural / urban	MAIN WORKERS		CULTIVATORS		AGRI LABOURS		HOUSE HOLD		OTHERS		MARGINAL WORKERS		NON WORKERS	
				MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE
79	29	Alapakkam	Rural	177	154	0	0	121	142	0	0	56	12	2	1	77	51
80	30	Salavakkam	Rural	743	341	38	14	205	187	11	9	489	131	226	119	666	1216
81	31	Edayambudur	Rural	367	167	60	0	200	141	0	1	107	25	8	126	303	333
Maduranthakam Sub-District, Kancheepuram District																	
82	1	Pilappur	Rural	377	173	125	26	60	52	12	9	180	86	35	68	238	365
83	2	Sithandi	Rural	292	242	31	24	54	88	4	2	203	128	15	24	174	192
84	3	Athiyur	Rural	209	179	33	22	1	0	40	32	135	125	6	2	135	150
85	4	Sampathinallur	Rural	91	73	24	14	32	49	3	4	32	6	13	13	33	34
86	5	Maiyur	Rural	854	532	50	11	230	276	17	10	557	235	74	151	524	796
Chengalpattu Sub-District, Kancheepuram District																	
87	1	Guruvanmedu	Rural	235	64	16	10	170	38	17	2	32	14	7	15	187	333
88	2	Palur	Rural	1598	699	82	14	408	329	21	14	1087	342	520	570	1348	2229
89	3	Villiambakkam	Rural	267	138	42	15	61	79	2	0	162	44	141	151	265	382
90	4	Sasthirambakkam	Rural	145	29	0	0	87	10	0	1	58	18	3	14	86	191
91	5	Vembakkam	Rural	293	149	33	14	27	24	16	9	217	102	74	68	193	322
92	6	Ideeyankodumanthangal	Rural	2	0	0	0	0	0	0	0	2	0	0	0	1	2
93	7	Athur	Rural	2542	1319	694	370	370	371	53	54	1425	524	869	846	2561	3844
Sriperumbudur Sub-District, Kancheepuram District																	
94	1	Panaiyyur	Rural	180	100	21	13	12	14	0	0	147	73	4	9	144	213
95	2	Ezhichur	Rural	339	198	27	6	108	96	2	3	202	93	42	28	277	489
96	3	Poondi	Rural	16	1	6	0	1	0	0	0	9	1	5	0	16	26
97	4	Vadakkupattu	Rural	604	302	194	106	183	88	19	11	208	97	203	186	549	871
Kancheepuram Sub-District, Kancheepuram District																	
98	1	Walajabad (TP)	Urban	3807	1076	51	8	38	17	170	70	3548	981	346	466	3036	5953
		total (C)		26707	13432	4255	1621	6756	6334	630	401	15066	5076	5140	5923	22005	34835
		Grand Total (A+B+C)		34726	17134	5659	2043	9571	8558	725	446	18771	6087	6298	7362	28622	45061

*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011

EDUCATIONAL FACILITIES IN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Educational Facilities (A(1)/ NA(2))	Govt Pre - Primary School (Nursery/LKG/ UKG) (Numbers)	Govt Primary School (Numbers)	Govt Middle School (Numbers)	Govt Secondary School (Numbers)	Govt Senior Secondary School (Numbers)	Govt Arts and Science Degree College (Numbers)	Govt Engineering College (Numbers)	Govt Medicine College (Numbers)	Govt Management Institute (Numbers)	Govt Polytechnic (Numbers)	Govt Vocational Training School/ITI (Numbers)	Government Non Formal Training Centre (Numbers)	Government School For Disabled (Numbers)
0-2 km,Uthiramerur Sub-District, Kancheepuram District																
1	1	Thirumukkudal	1	1	1	1	1	0	0	0	0	0	0	0	1	0
2	2	Pazhaveri	1	1	1	0	0	0	0	0	0	0	0	0	1	0
3	3	Pinayur	1	1	1	1	0	0	0	0	0	0	0	0	1	0
4	4	Arumbuliyur	1	3	1	0	0	0	0	0	0	0	0	0	1	0
		total (A)		6	4	2	1	0	0	0	0	0	0	0	4	0
2-5 km,Uthiramerur Sub-District, Kancheepuram District																
5	1	Vayalakkavoor	1	2	1	1	0	0	0	0	0	0	0	0	1	0
6	2	Pullampakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
7	3	Seethananjeri	1	0	1	1	1	0	0	0	0	0	0	0	1	0
8	4	Kurumanjeri	1	2	0	0	0	0	0	0	0	0	0	0	0	0
9	5	Sirudamur	1	3	3	0	0	0	0	0	0	0	0	0	1	0
10	6	Chitalapakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
11	7	Sirumailur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
12	8	Neerkundram	1	2	1	0	0	0	0	0	0	0	0	0	1	0
13	9	Kavanipakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
14	10	Karumbakkam	1	1	0	0	0	0	0	0	0	0	0	0	0	0
15	11	Sathananjeri	1	1	1	1	0	0	0	0	0	0	0	0	1	0
16	12	Mulaginimeni	2	0	0	0	0	0	0	0	0	0	0	0	0	0
17	13	Mambakkam	1	1	1	1	1	0	0	0	0	0	0	0	1	0
18	14	Peranakkavur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
19	15	Porpandal	1	2	1	0	0	0	0	0	0	0	0	0	1	0
Chengalpattu Sub-District, Kancheepuram District																
20	1	Melmanapakkam	1	1	1	1	0	0	0	0	0	0	0	0	1	0
Kancheepuram Sub-District, Kancheepuram District																
21	1	Palayaseevaram	1	7	4	2	0	0	0	0	0	0	0	0	1	0
22	2	Puliyambakkam	1	2	1	1	0	0	0	0	0	0	0	0	1	0
23	3	Angambakkam	1	2	1	1	0	0	0	0	0	0	0	0	1	0
		total (B)		31	21	9	2	0	0	0	0	0	0	0	16	0
5-10km,Kancheepuram Sub-District, Kancheepuram District																
24	1	Uthukadu	1	5	2	1	1	0	0	0	0	0	0	0	1	0
25	2	Kattavakkam	1	2	1	0	0	0	0	0	0	0	0	0	1	0
26	3	Vilagam	1	1	0	0	0	0	0	0	0	0	0	0	0	0
27	4	Thalayampattu	1	0	1	1	0	0	0	0	0	0	0	0	1	0
28	5	Alavur	1	1	0	0	0	0	0	0	0	0	0	0	0	0
29	6	Varanavasi	1	1	1	0	0	0	0	0	0	0	0	0	1	0
30	7	Vembakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
31	8	Chinnamadurapakkam	2	0	0	0	0	0	0	0	0	0	0	0	0	0
32	9	Ambakkam	1	1	0	0	0	0	0	0	0	0	0	0	0	0

Sl.No	No. of Villages	Name of village	Educational Facilities (A(1)/ NA(2))	Govt Pre - Primary School (Nursery/LKG/ UKG) (Numbers)	Govt Primary School (Numbers)	Govt Middle School (Numbers)	Govt Secondary School (Numbers)	Govt Senior Secondary School (Numbers)	Govt Arts and Science Degree College (Numbers)	Govt Engineering College (Numbers)	Govt Medicine College (Numbers)	Govt Management Institute (Numbers)	Govt Polytechnic (Numbers)	Govt Vocational Training School/ITI (Numbers)	Government Non Formal Training Centre (Numbers)	Government School For Disabled (Numbers)
33	10	Thollazhi	1	1	1	0	0	0	0	0	0	0	0	0	1	0
34	11	Kosapattu	1	1	0	0	0	0	0	0	0	0	0	0	0	0
35	12	Devariambakkam	1	1	1	1	1	0	0	0	0	0	0	0	1	0
36	13	Thonankulam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
37	14	Ullavur	1	3	1	1	1	0	0	0	0	0	0	0	1	0
38	15	Nathanallur	1	4	1	1	0	0	0	0	0	0	0	0	1	0
39	16	Vengudi	1	1	1	0	0	0	0	0	0	0	0	0	1	0
40	17	Seeyamangalam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
41	18	Vitchanthangal	1	2	0	0	0	0	0	0	0	0	0	0	0	0
42	19	Asoor	1	2	1	0	0	0	0	0	0	0	0	0	1	0
43	20	Avalur	1	5	2	1	1	1	0	0	0	0	0	0	1	0
44	21	Thammanur	1	2	1	1	0	0	0	0	0	0	0	0	1	0
45	22	Kavanthandalam	1	3	1	1	0	0	0	0	0	0	0	0	1	0
46	23	Nelveli	1	1	1	0	0	0	0	0	0	0	0	0	1	0
47	24	Kilputhur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
48	25	Kambarajapuram	1	1	1	1	0	0	0	0	0	0	0	0	1	0
49	26	Elayanarvelur	1	2	1	0	0	0	0	0	0	0	0	0	1	0
50	27	Chithaathur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
Uthiramerur Sub-District, Kancheepuram District																
51	1	Sembulam	2	0	0	0	0	0	0	0	0	0	0	0	0	0
52	2	Kavampair	1	1	1	0	0	0	0	0	0	0	0	0	1	0
53	3	Neyyativakkam	1	2	2	1	1	0	0	0	0	0	0	0	1	0
54	4	Malayankulam	1	4	1	1	0	0	0	0	0	0	0	0	1	0
55	5	Nariambakkam	1	0	0	0	0	0	0	0	0	0	0	0	0	0
56	6	Nariyambudur	2	0	0	0	0	0	0	0	0	0	0	0	0	0
57	7	Vendivakkam	1	1	0	0	0	0	0	0	0	0	0	0	0	0
58	8	Kattankulam	1	1	0	0	0	0	0	0	0	0	0	0	0	0
59	9	Padoor	1	1	1	0	0	0	0	0	0	0	0	0	1	0
60	10	Anambakkam	1	2	1	1	1	0	0	0	0	0	0	0	1	0
61	11	Kaliyapettai	1	1	1	0	0	0	0	0	0	0	0	0	1	0
62	12	Orakkattupettai	1	1	1	1	1	1	0	0	0	0	0	0	1	0
63	13	Kavithandalam	1	2	1	0	0	0	0	0	0	0	0	0	1	0
64	14	Thiruvanaikoil	1	1	1	0	0	0	0	0	0	0	0	0	1	0
65	15	Edamichi	1	2	1	1	0	0	0	0	0	0	0	0	1	0
66	16	Nerkundram	1	2	0	0	0	0	0	0	0	0	0	0	0	0
67	17	Chinnalambadi	1	1	1	0	0	0	0	0	0	0	0	0	1	0
68	18	Kunnavakkam	1	1	1	1	0	0	0	0	0	0	0	0	1	0
69	19	Pandavakkam	1	1	0	0	0	0	0	0	0	0	0	0	0	0
70	20	Paleswaram	1	1	1	0	0	0	0	0	0	0	0	0	1	0
71	21	Mambudur	2	0	0	0	0	0	0	0	0	0	0	0	0	0
72	22	Kurumbarai	1	2	0	0	0	0	0	0	0	0	0	0	0	0
73	23	Seethapuram	2	0	0	0	0	0	0	0	0	0	0	0	0	0

Sl.No	No. of Villages	Name of village	Educational Facilities (A(1)/ NA(2))	Govt Pre - Primary School (Nursery/LKG/ UKG) (Numbers)	Govt Primary School (Numbers)	Govt Middle School (Numbers)	Govt Secondary School (Numbers)	Govt Senior Secondary School (Numbers)	Govt Arts and Science Degree College (Numbers)	Govt Engineering College (Numbers)	Govt Medicine College (Numbers)	Govt Management Institute (Numbers)	Govt Polytechnic (Numbers)	Govt Vocational Training School/ITI (Numbers)	Government Non Formal Training Centre (Numbers)	Government School For Disabled (Numbers)
74	24	Gindangarai	1	1	1	0	0	0	0	0	0	0	0	0	1	0
75	25	Sithanakavoor	1	1	1	0	0	0	0	0	0	0	0	0	1	0
76	26	Thandarai	1	1	1	0	0	0	0	0	0	0	0	0	1	0
77	27	Vichoor	1	1	0	0	0	0	0	0	0	0	0	0	0	0
78	28	Annadhur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
79	29	Alapakkam	1	1	0	0	0	0	0	0	0	0	0	0	0	0
80	30	Salavakkam	1	3	2	1	1	1	0	0	0	0	0	0	1	0
81	31	Edayambudur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
Maduranthakam Sub-District, Kancheepuram District																
82	1	Pilappur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
83	2	Sithandi	1	1	1	1	1	0	0	0	0	0	0	0	1	0
84	3	Athiyur	1	1	0	0	0	0	0	0	0	0	0	0	0	0
85	4	Sampathinallur	2	0	0	0	0	0	0	0	0	0	0	0	0	0
86	5	Maiyur	1	2	2	0	0	0	0	0	0	0	0	0	1	0
Chengalpattu Sub-District, Kancheepuram District																
87	1	Guruvanmedu	1	1	1	1	0	0	0	0	0	0	0	0	1	0
88	2	Palur	1	4	6	3	1	1	0	0	0	0	0	0	1	0
89	3	Villiambakkam	1	2	1	1	0	0	0	0	0	0	0	0	1	0
90	4	Sasthirambakkam	1	1	0	0	0	0	0	0	0	0	0	0	0	0
91	5	Vembakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
92	6	Ideeyankodumanthangal	2	0	0	0	0	0	0	0	0	0	0	0	0	0
93	7	Athur	1	4	3	1	1	0	0	0	0	0	0	0	1	0
Sriperumbudur Sub-District, Kancheepuram District																
94	1	Panaiyyur	1	1	0	0	0	0	0	0	0	0	0	0	0	0
95	2	Ezhichur	1	1	1	1	0	0	0	0	0	0	0	0	1	0
96	3	Poondi	2	0	0	0	0	0	0	0	0	0	0	0	0	0
97	4	Vadakkupattu	1	2	1	1	1	0	0	0	0	0	0	0	1	0
		total (C)		104	62	25	12	4	0	0	0	0	0	0	50	0
		Grand Total (A+B+C)		141	87	36	15	4	0	0	0	0	0	0	70	0

*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011

MEDICAL FACILITIES WITHIN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Medical Facilities (A(1)/NA(2))	Community Health Centre (Numbers)	Primary Health Centre (Numbers)	Primary Health Sub Centre (Numbers)	Maternity And Child Welfare Centre (Numbers)	TB Clinic (Numbers)	Hospital Allopathic (Numbers)	Hospital Alternative Medicine (Numbers)	Dispensary (Numbers)	Veterinary Hospital (Numbers)	Mobile Health Clinic (Numbers)	Family Welfare Centre (Numbers)
0-2 km,Uthiramerur Sub-District, Kancheepuram District														
1	1	Thirumukkudal	1	0	0	1	1	0	0	0	0	0	0	0
2	2	Pazhaveri	2	0	0	0	0	0	0	0	0	0	0	0
3	3	Pinayur	1	0	0	1	0	0	0	0	0	0	0	0
4	4	Arumbuliyur	1	0	0	1	0	0	0	0	0	1	0	0
		total (A)		0	0	3	1	0	0	0	0	1	0	0
2-5 km,Uthiramerur Sub-District, Kancheepuram District														
5	1	Vayalakkavoor	2	0	0	0	0	0	0	0	0	0	0	0
6	2	Pullampakkam	2	0	0	0	0	0	0	0	0	0	0	0
7	3	Seethananjeri	2	0	0	0	0	0	0	0	0	0	0	0
8	4	Kurumanjeri	2	0	0	0	0	0	0	0	0	0	0	0
9	5	Sirudamur	1	0	0	1	0	0	0	0	0	0	0	0
10	6	Chitalapakkam	2	0	0	0	0	0	0	0	0	0	0	0
11	7	Sirumailur	1	0	0	0	0	0	0	0	0	1	0	0
12	8	Neerkundram	2	0	0	0	0	0	0	0	0	0	0	0
13	9	Kavanipakkam	2	0	0	0	0	0	0	0	0	0	0	0
14	10	Karumbakkam	2	0	0	0	0	0	0	0	0	0	0	0
15	11	Sathananjeri	1	0	0	1	0	0	0	0	0	0	0	0
16	12	Mulaginimeni	2	0	0	0	0	0	0	0	0	0	0	0
17	13	Mambakkam	2	0	0	0	0	0	0	0	0	0	0	0
18	14	Peranakkavur	2	0	0	0	0	0	0	0	0	0	0	0
19	15	Porpandal	1	0	0	1	0	0	0	0	0	0	0	0
Chengalpattu Sub-District, Kancheepuram District														
20	1	Melmanapakkam	2	0	0	0	0	0	0	0	0	0	0	0
Kancheepuram Sub-District, Kancheepuram District														
21	1	Palayaseevaram	1	0	0	1	0	0	0	0	0	1	0	0
22	2	Puliyambakkam	2	0	0	0	0	0	0	0	0	0	0	0
23	3	Angambakkam	2	0	0	0	0	0	0	0	0	0	0	0
		total (B)		0	0	4	0	0	0	0	0	2	0	0
5-10km,Kancheepuram Sub-District, Kancheepuram District														
24	1	Uthukadu	1	0	0	1	0	0	0	0	0	0	0	0
25	2	Kattavakkam	2	0	0	0	0	0	0	0	0	0	0	0
26	3	Vilagam	2	0	0	0	0	0	0	0	0	0	0	0
27	4	Thalayampattu	2	0	0	0	0	0	0	0	0	0	0	0
28	5	Alavur	2	0	0	0	0	0	0	0	0	0	0	0
29	6	Varanavasi	1	0	0	1	1	0	0	0	0	0	0	0
30	7	Vembakkam	2	0	0	0	0	0	0	0	0	0	0	0
31	8	Chinnamadurapakkam	1	0	0	0	0	0	0	0	0	1	0	0
32	9	Ambakkam	2	0	0	0	0	0	0	0	0	0	0	0

Sl.No	No. of Villages	Name of village	Medical Facilities (A(1)/NA(2))	Community Health Centre (Numbers)	Primary Health Centre (Numbers)	Primary Health Sub Centre (Numbers)	Maternity And Child Welfare Centre (Numbers)	TB Clinic (Numbers)	Hospital Allopathic (Numbers)	Hospital Alternative Medicine (Numbers)	Dispensary (Numbers)	Veterinary Hospital (Numbers)	Mobile Health Clinic (Numbers)	Family Welfare Centre (Numbers)
33	10	Thollazhi	2	0	0	0	0	0	0	0	0	0	0	0
34	11	Kosapattu	2	0	0	0	0	0	0	0	0	0	0	0
35	12	Devariambakkam	1	0	0	0	0	0	0	0	0	1	0	0
36	13	Thonankulam	2	0	0	0	0	0	0	0	0	0	0	0
37	14	Ullavur	2	0	0	0	0	0	0	0	0	0	0	0
38	15	Nathanallur	1	0	0	1	0	0	0	0	0	0	0	0
39	16	Vengudi	2	0	0	0	0	0	0	0	0	0	0	0
40	17	Seeyamangalam	2	0	0	0	0	0	0	0	0	0	0	0
41	18	Vitchanthangal	2	0	0	0	0	0	0	0	0	0	0	0
42	19	Asoor	1	0	0	1	0	0	0	0	0	0	0	0
43	20	Avalur	1	0	1	1	1	1	0	0	1	0	0	1
44	21	Thammanur	1	0	0	0	0	0	0	0	0	1	0	0
45	22	Kavanthandalam	2	0	0	0	0	0	0	0	0	0	0	0
46	23	Nelveli	2	0	0	0	0	0	0	0	0	0	0	0
47	24	Kilputhur	2	0	0	0	0	0	0	0	0	0	0	0
48	25	Kambarajapuram	2	0	0	0	0	0	0	0	0	0	0	0
49	26	Elayanarvelur	1	0	0	1	0	0	0	0	0	0	0	0
50	27	Chithaathur	2	0	0	0	0	0	0	0	0	0	0	0
Uthiramerur Sub-District, Kancheepuram District														
51	1	Sembulam	2	0	0	0	0	0	0	0	0	0	0	0
52	2	Kavampair	2	0	0	0	0	0	0	0	0	0	0	0
53	3	Neyyativakkam	1	0	0	1	1	0	0	0	0	0	0	0
54	4	Malayankulam	1	0	0	1	0	0	0	0	0	0	0	0
55	5	Nariambakkam	2	0	0	0	0	0	0	0	0	0	0	0
56	6	Nariyambudur	2	0	0	0	0	0	0	0	0	0	0	0
57	7	Vendivakkam	1	0	0	0	0	0	0	0	0	1	0	0
58	8	Kattankulam	2	0	0	0	0	0	0	0	0	0	0	0
59	9	Padoor	1	0	1	1	1	1	0	0	1	1	0	1
60	10	Anambakkam	1	0	0	1	0	0	0	0	0	0	0	0
61	11	Kaliyapettai	2	0	0	0	0	0	0	0	0	0	0	0
62	12	Orakkattupettai	2	0	0	0	0	0	0	0	0	0	0	0
63	13	Kavithandalam	1	0	0	1	0	0	0	0	0	0	0	0
64	14	Thiruvanaikoil	2	0	0	0	0	0	0	0	0	0	0	0
65	15	Edamichi	2	0	0	0	0	0	0	0	0	0	0	0
66	16	Nerkundram	2	0	0	0	0	0	0	0	0	0	0	0
67	17	Chinnalambadi	2	0	0	0	0	0	0	0	0	0	0	0
68	18	Kunnavakkam	1	0	0	1	0	0	0	0	0	1	0	0
69	19	Pandavakkam	2	0	0	0	0	0	0	0	0	0	0	0
70	20	Paleswaram	2	0	0	0	0	0	0	0	0	0	0	0
71	21	Mambudur	2	0	0	0	0	0	0	0	0	0	0	0

Sl.No	No. of Villages	Name of village	Medical Facilities (A(1)/NA(2))	Community Health Centre (Numbers)	Primary Health Centre (Numbers)	Primary Health Sub Centre (Numbers)	Maternity And Child Welfare Centre (Numbers)	TB Clinic (Numbers)	Hospital Allopathic (Numbers)	Hospital Alternative Medicine (Numbers)	Dispensary (Numbers)	Veterinary Hospital (Numbers)	Mobile Health Clinic (Numbers)	Family Welfare Centre (Numbers)
72	22	Kurumbarai	2	0	0	0	0	0	0	0	0	0	0	0
73	23	Seethapuram	2	0	0	0	0	0	0	0	0	0	0	0
74	24	Gindangarai	2	0	0	0	0	0	0	0	0	0	0	0
75	25	Sithanakavoor	2	0	0	0	0	0	0	0	0	0	0	0
76	26	Thandarai	2	0	0	0	0	0	0	0	0	0	0	0
77	27	Vichoor	2	0	0	0	0	0	0	0	0	0	0	0
78	28	Annadhur	1	0	0	1	0	0	0	0	0	0	0	0
79	29	Alapakkam	2	0	0	0	0	0	0	0	0	0	0	0
80	30	Salavakkam	1	0	1	1	1	1	0	0	1	1	0	1
81	31	Edayambudur	2	0	0	0	0	0	0	0	0	0	0	0
Maduranthakam Sub-District, Kancheepuram District														
82	1	Pilappur	2	0	0	0	0	0	0	0	0	0	0	0
83	2	Sithandi	2	0	0	0	0	0	0	0	0	0	0	0
84	3	Athiyur	2	0	0	0	0	0	0	0	0	0	0	0
85	4	Sampathinallur	2	0	0	0	0	0	0	0	0	0	0	0
86	5	Maiyur	1	0	0	1	0	0	0	0	0	0	0	0
Chengalpattu Sub-District, Kancheepuram District														
87	1	Guruvanmedu	2	0	0	0	0	0	0	0	0	0	0	0
88	2	Palur	1	0	1	1	1	1	0	0	1	1	0	1
89	3	Villimbakkam	1	0	0	1	0	0	0	0	0	0	0	0
90	4	Sasthirambakkam	1	0	0	1	0	0	0	0	0	0	0	0
91	5	Vembakkam	2	0	0	0	0	0	0	0	0	0	0	0
92	6	Ideeyankodumanthangal	2	0	0	0	0	0	0	0	0	0	0	0
93	7	Athur	1	0	2	1	2	2	0	0	2	0	0	2
Sriperumbudur Sub-District, Kancheepuram District														
94	1	Panaiyyur	2	0	0	0	0	0	0	0	0	0	0	0
95	2	Ezhichur	1	0	1	1	1	1	0	0	1	0	0	1
96	3	Poondi	2	0	0	0	0	0	0	0	0	0	0	0
97	4	Vadakkupattu	2	0	0	1	0	0	0	0	0	0	0	0
		total (C)		0	7	21	9	7	0	0	7	8	0	7
		Grand Total (A+B+C)		0	7	28	10	7	0	0	7	11	0	7

*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011

Note : 1: Available, 2- Not Available

INFRASTRUCTURAL FACILITIES IN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Tap Water-Treated (Status A(1)/NA(2))	Covered Well (Status A(1)/NA(2))	Hand Pump (Status A(1)/NA(2))	Tube Wells/Borehole (Status A(1)/NA(2))	Spring (Status A(1)/NA(2))	River/Canal (Status A(1)/NA(2))	Tank/Pond /Lake (Status A(1)/NA(2))	Post Office (Status A(1)/NA(2))	Sub Post Office (Status A(1)/NA(2))	Post And Telegraph Office (Status A(1)/NA(2))	Telephone (landlines) (Status A(1)/NA(2))	Mobile Phone Coverage (Status A(1)/NA(2))	Public Bus Service (Status A(1)/NA(2))	Railway Station (Status A(1)/NA(2))	Commercial Bank (Status A(1)/NA(2))	Cooperative Bank (Status A(1)/NA(2))	Agricultural Credit Societies (Status A(1)/NA(2))
0-2 km,Uthiramerur Sub-District, Kancheepuram District																			
1	1	Thirumukkudal	1	2	1	2	2	2	2	2	1	2	1	1	1	2	2	2	2
2	2	Pazhaveri	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
3	3	Pinayur	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
4	4	Arumbuliyur	1	2	2	2	2	2	2	2	1	2	1	1	1	2	1	2	1
2-5 km,Uthiramerur Sub-District, Kancheepuram District																			
5	1	Vayalakkavoor	1	2	2	1	2	2	2	2	1	2	1	1	1	2	2	2	1
6	2	Pullampakkam	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
7	3	Seethanjeri	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	1	2
8	4	Kurumanjeri	2	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
9	5	Sirudamur	1	2	2	1	2	2	2	2	1	2	1	1	1	2	2	2	2
10	6	Chitalapakkam	1	2	2	1	2	2	2	2	2	2	2	1	1	2	2	2	2
11	7	Sirumailur	1	1	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
12	8	Neerkundram	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
13	9	Kavanipakkam	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
14	10	Karumbakkam	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
15	11	Sathananjeri	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	1
16	12	Mulaginimeni	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
17	13	Mambakkam	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
18	14	Peranakkavur	1	1	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
19	15	Porpandal	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
Chengalpattu Sub-District, Kancheepuram District																			
20	1	Melmanapakkam	1	2	1	2	2	2	2	2	2	2	1	1	2	2	2	2	2
Kancheepuram Sub-District, Kancheepuram District																			
21	1	Palayaseevaram	1	2	1	1	1	2	2	1	2	1	1	1	1	1	1	2	2
22	2	Puliyambakkam	1	1	1	2	2	2	2	2	1	2	1	1	2	2	2	2	2
23	3	Angambakkam	1	1	2	1	2	2	2	2	2	2	1	1	2	2	2	2	2
5-10km,Kancheepuram Sub-District, Kancheepuram District																			
24	1	Uthukadu	1	2	1	1	1	2	2	2	1	2	1	1	1	2	2	2	2
25	2	Kattavakkam	2	1	1	1	2	2	2	2	2	2	1	1	1	2	2	2	2
26	3	Vilagam	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
27	4	Thalayampattu	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
28	5	Alavur	1	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
29	6	Varanavasi	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
30	7	Vembakkam	1	1	1	1	2	2	2	2	2	2	1	1	2	2	2	2	2
31	8	Chinnamadurapakkam	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
32	9	Ambakkam	2	2	2	1	1	2	2	2	1	2	1	1	1	2	2	2	2
33	10	Thollazhi	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
34	11	Kosapattu	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2

Sl.No	No. of Villages	Name of village	Tap Water-Treated (Status A(1)/NA(2))	Covered Well (Status A(1)/NA(2))	Hand Pump (Status A(1)/NA(2))	Tube Wells/Borehole (Status A(1)/NA(2))	Spring (Status A(1)/NA(2))	River/Canal (Status A(1)/NA(2))	Tank/Pond /Lake (Status A(1)/NA(2))	Post Office (Status A(1)/NA(2))	Sub Post Office (Status A(1)/NA(2))	Post And Telegraph Office (Status A(1)/NA(2))	Telephone (landlines) (Status A(1)/NA(2))	Mobile Phone Coverage (Status A(1)/NA(2))	Public Bus Service (Status A(1)/NA(2))	Railway Station (Status A(1)/NA(2))	Commercial Bank (Status A(1)/NA(2))	Cooperative Bank (Status A(1)/NA(2))	Agricultural Credit Societies (Status A(1)/NA(2))
35	12	Devariambakkam	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	1	1
36	13	Thonankulam	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
37	14	Ullavur	1	2	1	2	2	2	2	2	1	2	1	1	1	2	2	2	2
38	15	Nathanallur	1	2	2	1	2	2	2	2	1	2	1	1	1	2	2	2	2
39	16	Vengudi	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
40	17	Seeyamangalam	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
41	18	Vitchanthangal	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
42	19	Asoor	1	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	2
43	20	Avalur	1	1	2	1	1	2	2	2	1	2	1	1	1	2	2	2	2
44	21	Thammanur	1	2	2	2	1	2	2	2	1	2	1	1	1	2	2	2	2
45	22	Kavanthandalam	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	1	1
46	23	Nelveli	1	2	1	2	2	2	2	2	2	2	2	1	1	2	2	2	2
47	24	Kilputhur	2	2	1	2	2	2	2	2	2	2	2	1	1	2	2	2	2
48	25	Kambarajapuram	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
49	26	Elayanarvelur	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
50	27	Chithaathur	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
Uthiramerur Sub-District, Kancheepuram District																			
51	1	Sembulam	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
52	2	Kavampair	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
53	3	Neyyadivakkam	1	2	2	1	2	2	2	2	1	2	1	1	1	2	2	2	1
54	4	Malayankulam	1	1	1	1	2	2	2	2	1	2	1	1	1	2	2	2	2
55	5	Nariambakkam	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
56	6	Nariyambudur	1	2	1	1	2	2	2	2	2	2	2	1	2	2	2	2	2
57	7	Vendivakkam	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
58	8	Kattankulam	1	2	1	1	2	2	2	2	2	2	1	1	1	2	2	2	2
59	9	Padoor	1	1	2	2	2	2	2	2	1	2	1	1	1	2	2	1	1
60	10	Anambakkam	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
61	11	Kaliyapettai	1	1	2	2	2	2	2	2	2	2	1	1	2	2	2	2	1
62	12	Orakkattupettai	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
63	13	Kavithandalam	1	1	1	1	2	2	2	2	2	2	1	1	1	2	2	2	2
64	14	Thiruvanaikoil	1	1	2	1	2	2	2	2	1	2	1	1	2	2	2	2	2
65	15	Edamichi	1	1	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
66	16	Nerkundram	1	2	1	1	2	2	1	2	2	2	1	1	1	2	2	2	2
67	17	Chinnalambadi	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
68	18	Kunnavakkam	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
69	19	Pandavakkam	1	2	2	2	2	2	2	2	2	2	1	1	2	2	1	1	1
70	20	Paleswaram	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
71	21	Mambudur	2	2	2	1	2	2	1	2	2	2	1	1	2	2	2	2	2
72	22	Kurumbarai	1	1	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
73	23	Seethapuram	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
74	24	Gindangarai	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
75	25	Sithanakavoor	1	2	2	1	2	2	2	2	1	2	1	1	1	2	2	2	2

Sl.No	No. of Villages	Name of village	Tap Water-Treated (Status A(1)/NA(2))	Covered Well (Status A(1)/NA(2))	Hand Pump (Status A(1)/NA(2))	Tube Wells/Borehole (Status A(1)/NA(2))	Spring (Status A(1)/NA(2))	River/Canal (Status A(1)/NA(2))	Tank/Pond/Lake (Status A(1)/NA(2))	Post Office (Status A(1)/NA(2))	Sub Post Office (Status A(1)/NA(2))	Post And Telegraph Office (Status A(1)/NA(2))	Telephone (landlines) (Status A(1)/NA(2))	Mobile Phone Coverage (Status A(1)/NA(2))	Public Bus Service (Status A(1)/NA(2))	Railway Station (Status A(1)/NA(2))	Commercial Bank (Status A(1)/NA(2))	Cooperative Bank (Status A(1)/NA(2))	Agricultural Credit Societies (Status A(1)/NA(2))
76	26	Thandarai	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
77	27	Vichoor	1	2	1	1	2	2	2	2	1	2	1	1	1	2	2	2	2
78	28	Annadhur	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
79	29	Alapakkam	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
80	30	Salavakkam	1	2	1	1	2	2	2	1	1	1	1	1	2	1	1	2	1
81	31	Edayambudur	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	1
Maduranthakam Sub-District, Kancheepuram District																			
82	1	Pilappur	1	1	2	1	1	2	2	2	2	2	1	1	1	2	2	2	2
83	2	Sithandi	1	2	1	1	2	2	2	2	2	2	1	1	1	2	2	2	2
84	3	Athiyur	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
85	4	Sampathinallur	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
86	5	Maiyur	1	1	2	2	2	2	2	2	1	2	1	1	1	2	2	1	1
Chengalpattu Sub-District, Kancheepuram District																			
87	1	Guruvanmedu	1	2	1	1	2	2	2	2	2	2	1	1	1	2	2	2	2
88	2	Palur	1	1	1	1	2	2	2	2	1	2	1	1	1	1	2	2	1
89	3	Villiambakkam	1	2	2	2	2	2	2	2	1	2	1	1	1	1	2	1	1
90	4	Sasthirambakkam	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
91	5	Vembakkam	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
92	6	Ideeyankodumanthangal	2	2	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2
93	7	Athur	1	1	1	1	1	2	2	2	1	2	1	1	1	1	1	2	1
Sriperumbudur Sub-District, Kancheepuram District																			
94	1	Panaiyyur	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
95	2	Ezhichur	1	2	2	1	2	2	2	2	1	2	1	1	1	2	2	2	2
96	3	Poondi	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
97	4	Vadakkupattu	1	2	1	2	2	2	2	2	1	2	1	1	1	2	2	2	2

*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011

Note : A: Available, NA- Not Available

Status: A(1)/NA(2)



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DEPARTMENT OF INDUSTRIES AND COMMERCE REGISTERED COMPANY)

AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarries of APK Minerals Pvt. Ltd. over an area of 2.58Ha & 2.2312Ha
Name of the Location	:	Near Lease Area
Station Code	:	A1

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	05-03-24	60.3	29.3	7.2	10.1
2	06-03-24	66.6	32.4	8.8	11.6
3	16-03-24	75.2	36.5	10.5	14.2
4	17-03-24	71.5	34.7	10.1	12.8
5	19-03-24	62.4	30.3	7.6	10.4
6	20-03-24	68.7	33.4	9.4	12.1
7	30-03-24	59.6	29.0	7.1	9.8
8	31-03-24	65.9	32.0	8.6	11.4
9	02-04-24	73.6	35.8	10.3	13.6
10	03-04-24	69.4	33.7	9.6	12.2
11	13-04-24	58.2	28.3	6.6	9.4
12	14-04-24	64.5	31.3	8.2	11.1
13	16-04-24	72.9	35.4	10.2	13.4
14	17-04-24	63.8	31.0	8.1	10.8
15	27-04-24	58.9	28.6	6.8	9.6
16	28-04-24	65.2	31.7	8.4	11.2
17	30-04-24	76.8	37.3	10.6	14.9
18	01-05-24	72.2	35.1	10.1	13.2
19	11-05-24	63.1	30.7	7.8	10.6
20	12-05-24	70.8	34.4	9.9	12.5
21	14-05-24	61.7	30.0	7.4	10.2
22	15-05-24	67.3	32.7	9.2	11.8
23	25-05-24	74.3	36.1	10.4	13.8
24	26-05-24	70.1	34.1	9.8	12.4
	MIN	58.2	28.3	6.6	9.4
	AVE	67.2	32.7	8.9	11.8
	MAX	76.8	37.3	10.6	14.9

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

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AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarries of APK Minerals Pvt. Ltd. over an area of 2.58Ha & 2.2312Ha
Name of the Location	:	Pazhaveri Village
Station Code	:	A2

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	05-03-24	52.6	24.0	7.4	9.9
2	06-03-24	53.4	24.4	7.8	10.4
3	16-03-24	50.6	23.1	6.3	8.8
4	17-03-24	52.2	23.9	7.2	9.7
5	19-03-24	47.4	21.6	5.8	8.4
6	20-03-24	53.4	23.3	6.4	8.9
7	30-03-24	53.6	24.5	7.9	10.5
8	31-03-24	53.1	24.3	7.6	10.2
9	02-04-24	56.6	23.8	7.1	9.6
10	03-04-24	54.2	24.8	9.1	11.5
11	13-04-24	52.4	22.9	5.9	8.5
12	14-04-24	51.4	23.5	6.7	9.3
13	16-04-24	54.4	24.9	9.6	11.7
14	17-04-24	53.2	24.3	7.7	10.3
15	27-04-24	59.6	28.6	8.9	10.7
16	28-04-24	51.6	23.6	6.8	9.4
17	30-04-24	52.4	23.3	6.5	9.1
18	01-05-24	53.8	24.6	8.3	10.6
19	11-05-24	51.8	23.7	6.9	9.5
20	12-05-24	55.9	25.1	6.1	8.6
21	14-05-24	52.4	24.0	7.3	9.8
22	15-05-24	50.4	23.0	6.2	8.7
23	25-05-24	52.8	24.1	7.5	10.1
24	26-05-24	56.6	26.3	6.6	9.2
	MIN	47.4	21.6	5.8	8.4
	AVE	53.2	24.1	7.2	9.7
	MAX	59.6	28.6	9.6	11.7

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

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AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarries of APK Minerals Pvt. Ltd. over an area of 2.58Ha & 2.2312Ha
Name of the Location	:	Pinayur Village
Station Code	:	A3

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	07-03-24	55.1	25.9	7.0	9.4
2	08-03-24	59.3	27.9	7.8	10.6
3	14-03-24	50.9	23.9	6.3	8.7
4	15-03-24	55.7	26.2	7.1	9.5
5	21-03-24	61.1	28.7	8.4	11.2
6	22-03-24	56.9	26.7	7.3	9.7
7	28-03-24	50.3	23.6	6.2	8.6
8	29-03-24	53.9	25.3	6.8	9.2
9	04-04-24	51.5	24.2	6.4	8.8
10	05-04-24	58.1	27.3	7.5	10.2
11	11-04-24	62.3	29.3	8.7	11.6
12	12-04-24	56.3	26.5	7.2	9.6
13	18-04-24	49.8	23.4	6.1	8.5
14	19-04-24	54.5	25.6	6.9	9.3
15	25-04-24	58.6	27.5	7.6	10.4
16	26-04-24	53.3	25.1	6.7	9.1
17	02-05-24	60.5	28.4	8.2	11.0
18	03-05-24	62.9	29.6	9.9	12.2
19	09-05-24	52.1	24.5	6.5	8.9
20	10-05-24	57.5	27.0	7.4	9.8
21	16-05-24	52.7	24.8	6.6	9.1
22	17-05-24	61.7	29.0	8.6	11.4
23	23-05-24	59.9	28.2	8.0	10.8
24	24-05-24	62.5	29.4	9.3	11.8
	MIN	49.8	23.4	6.1	8.5
	AVE	56.6	26.6	7.4	10.0
	MAX	62.9	29.6	9.9	12.2

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

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AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarries of APK Minerals Pvt. Ltd. over an area of 2.58Ha & 2.2312Ha
Name of the Location	:	Arunkundram Village
Station Code	:	A4

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	07-03-24	57.1	27.4	8.1	11.8
2	08-03-24	58.5	28.1	8.8	13.6
3	14-03-24	56.5	27.3	7.7	11.2
4	15-03-24	57.7	27.7	8.4	12.6
5	21-03-24	59.5	28.6	10.1	15.1
6	22-03-24	56.1	26.9	7.5	10.6
7	28-03-24	58.9	28.3	9.2	14.2
8	29-03-24	59.1	28.4	9.5	14.4
9	04-04-24	54.9	26.6	6.8	9.2
10	05-04-24	56.3	27.0	7.6	10.8
11	11-04-24	59.3	28.5	9.8	14.6
12	12-04-24	57.7	27.9	8.5	12.8
13	18-04-24	55.9	26.7	7.4	10.4
14	19-04-24	68.4	32.3	8.7	13.4
15	25-04-24	62.8	30.1	6.9	9.5
16	26-04-24	57.3	27.5	8.2	12.2
17	02-05-24	55.7	26.7	7.3	10.2
18	03-05-24	58.1	27.9	8.6	13.2
19	09-05-24	65.5	31.4	7.2	9.8
20	10-05-24	59.7	28.7	7.8	11.4
21	16-05-24	55.3	26.5	7.1	9.6
22	17-05-24	56.9	27.3	7.9	11.6
23	23-05-24	58.7	28.2	8.9	13.8
24	24-05-24	57.5	27.6	8.3	12.4
	MIN	54.9	26.5	6.8	9.2
	AVE	58.5	28.1	8.2	12.0
	MAX	68.4	32.3	10.1	15.1

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

Prepared by



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(NABET ACCREDITED, NABL ACCREDITED TESTING LABORATORY,
DEPARTMENT OF INDUSTRIES AND COMMERCE REGISTERED COMPANY)

AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarries of APK Minerals Pvt. Ltd. over an area of 2.58Ha & 2.2312Ha
Name of the Location	:	staff building SE of Thirumukkodal Village
Station Code	:	A5

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	09-03-24	60.6	28.7	8.9	11.3
2	10-03-24	58.8	27.9	8.3	10.7
3	12-03-24	52.8	25.0	6.6	8.8
4	13-03-24	57.6	27.3	7.9	10.3
5	23-03-24	55.2	26.2	7.1	9.5
6	24-03-24	51.6	24.5	6.4	8.6
7	26-03-24	55.8	26.4	7.3	9.7
8	27-03-24	64.2	30.4	10.3	12.9
9	06-04-24	58.2	27.6	8.1	10.5
10	07-04-24	54.6	25.9	6.9	9.3
11	09-04-24	63.6	30.1	10.1	12.7
12	10-04-24	54.1	25.6	6.8	9.1
13	20-04-24	56.4	26.7	7.5	9.9
14	21-04-24	59.4	28.2	8.5	10.9
15	23-04-24	52.2	24.7	6.5	8.7
16	24-04-24	57.3	27.2	7.7	10.1
17	04-05-24	64.5	30.6	10.5	13.7
18	05-05-24	62.4	29.6	9.5	11.9
19	07-05-24	60.3	28.6	8.7	11.1
20	08-05-24	63.1	29.9	9.7	12.3
21	18-05-24	53.4	25.3	6.7	8.9
22	19-05-24	63.5	30.1	9.9	12.5
23	21-05-24	61.8	29.3	9.3	11.7
24	22-05-24	61.2	29.0	9.1	11.5
	MIN	51.6	24.5	6.4	8.6
	AVE	58.4	27.7	8.3	10.7
	MAX	64.5	30.6	10.5	13.7

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

Prepared by



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WATER QUALITY DATA

Project Name :	Rough Stone and Gravel Quarries of APK Minerals Pvt. Ltd. over an area of 2.58Ha & 2.2312Ha		
Location Name :	Location Code	Location Name	
	W1	Near Lease Area	
	W2	Pazhaveri Village	
	W3	Pinayur Village	
	W4	Arunkundram Village	
	W5	Staff Building SE of Thirumukkodal Village	

S. No.	Parameter	Unit	W1	W 2	W 3	W 4	*Permissible Limits
1	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	AGREEABLE
2	Turbidity	NTU	<1	<1	<1	<1	-
3	pH at 25 °C	-	7.17	7.37	6.95	7.25	6.5-8.5
4	Electrical Conductivity	µmhos/cm	551.10	717.70	359.30	830.90	5.0
5	Total Dissolved Solids	mg/L	332	430	212	502	
6	Total hardness as CaCO ₃	mg/L	151	234	105	432	2000
7	Calcium as Ca	mg/L	26.24	58.00	16.92	84.80	600
8	Magnesium as Mg	mg/L	20.75	21.63	15.24	53.46	200
9	Calcium as CaCO ₃	mg/L	65.6	145.0	42.3	212	100
10	Magnesium as CaCO ₃	mg/L	85.4	89.0	62.7	220.0	-
11	Total alkalinity as CaCO ₃	mg/L	167	266	94.5	112	-



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S. No.	Parameter	Unit	W1	W 2	W 3	W 4	*Permissible Limits
12	Chloride as Cl ⁻	mg/L	140	125	82.3	189	600
13	Free Residual chlorine as Cl ⁻	mg/L	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	1.0
14	Sulphates as SO ₄ ²⁻	mg/L	28.9	30.5	18.9	40.6	400
15	Iron as Fe	mg/L	0.06	0.05	0.02	0.06	0.3
16	Nitrate as NO ₃	mg/L	1.89	2.34	1.36	2.68	45
17	Fluoride as F	mg/L	0.42	0.38	0.21	0.33	1.5
18	Manganese as Mn	mg/L	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	0.3

Note: * The water quality of the collected ground water samples were found to be within the prescribed permissible limits of IS: 10500:2012 Norms for Drinking in the absence of an alternative source.


Prepared by



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LAND USE PATTERN OF THE STUDY AREA WITHIN 10 KM RADIUS AROUND THE PROPOSED PROJECT AREA

Sl.No	No. of Villages	Name of village	Total Geographical Area (in Hectares)	Forest Area (in Hectares)	Area under Non-Agricultural Uses (in Hectares)	Barren & Uncultivable Land Area (in Hectares)	Permanent Pastures and Other Grazing Land Area (in Hectares)	Land Under Miscellaneous Tree Crops etc. Area (in Hectares)	Culturable Waste Land Area (in Hectares)	Fallows Land other than Current Fallows Area (in Hectares)	Current Fallows Area (in Hectares)	Total Unirrigated Land Area (in Hectares)	Area Irrigated by Source (in Hectares)
0-2 km,Uthiramerur Sub-District, Kancheepuram District													
1	1	Thirumukkudal	471.35	30	217.21	5.38	21.81	1.24	0	6.18	75.88	19.13	94.52
2	2	Pazhaveri	540.19	31	271.6	0	10.17	0	0	51.68	59.26	14.93	101.55
3	3	Pinayur	544.54	7	152.46	0	40.24	40.59	0	56.86	13.57	0	233.82
4	4	Arumbuliyur	282.32	0	23.78	0	0	15	0.21	52.16	6.23	0	184.94
		total (A)	1838.4	68	665.05	5.38	72.22	56.83	0.21	166.88	154.94	34.06	614.83
2-5 km,Uthiramerur Sub-District, Kancheepuram District													
5	1	Vayalakkavoor	386.17	3	131.44	2.51	0	0	0	48.9	0	0	200.32
6	2	Pullampakkam	411.73	2	201.61	28.39	7.82	0	0	0	33.6	25.16	113.15
7	3	Seethananjeri	104.66	1	23.49	0	4.66	0	0	0	12.4	3.1	60.01
8	4	Kurumanjeri	74.99	0	17.68	0	0	10.47	0	2.04	21.59	2.2	21.01
9	5	Sirudamur	963.87	49.03	173.86	171.19	0.88	0	12.18	229.58	59.7	6.05	261.4
10	6	Chitalapakkam	199.98	1	35.58	0.18	9.48	0	0	47.2	75.92	0	30.62
11	7	Sirumailur	375.22	75.03	82.34	0	11.95	1.37	0	5.29	174.48	0.68	24.08
12	8	Neerkundram	112.86	0.48	26.31	36.91	0	0	0	0	15.13	0	34.03
13	9	Kavanipakkam	306.11	0	7.74	55.79	12.46	1.11	3.46	0	97.91	1.93	125.71
14	10	Karumbakkam	148.22	1	25.45	0	0.03	20	4.05	0	0	0	97.69
15	11	Sathananjeri	586.03	2	134.54	0	1.86	0	0	67.4	81.48	9.78	288.97
16	12	Mulaginimeni	139.54	0	30.15	0	0	0	0	20	20.72	0	68.67
17	13	Mambakkam	74.19	0	21.24	0	0	5	0.29	8.86	8.72	2.89	27.19
18	14	Peranakkavur	334.55	2	86.84	0	10.03	0	2.29	112.72	18.73	2.16	99.78
19	15	Porpandal	220.39	5	53.37	14	0	0	0	18.92	10.29	3.26	115.55
Chengalpattu Sub-District, Kancheepuram District													
20	1	Melmanapakkam	168.64	0	44.96	9.2	1.7	0	0	57.17	1.43	0	54.18
Kancheepuram Sub-District, Kancheepuram District													
21	1	Palayaseevaram	1576.48	0	32.2	35.4	4.21	95.26	190.44	0	1104.26	29.43	85.28
22	2	Puliyambakkam	367.17	0	19.4	0	9.42	1.77	4.14	267.15	22.48	15.2	27.61
23	3	Angambakkam	606.91	0	19.06	197.52	17.36	0	0.63	26.18	190.74	73.12	82.3
		total (B)	7157.71	141.54	1167.26	551.09	91.86	134.98	217.48	911.41	1949.58	174.96	1817.55
5-10km,Kancheepuram Sub-District, Kancheepuram District													
24	1	Uthukadu	1727.43	0	321.79	50.6	55.4	8.42	80	627.74	62.05	8.87	512.56
25	2	Kattavakkam	557.17	0	243.77	0	7.04	102.4	3.48	4.82	10.44	19.38	165.84
26	3	Athipattu	27.12	0	1.3	0	0.71	0	0	1.1	0	0	24.01
27	4	Vilagam	62.7	0	7.97	0	0	0	0	0	54.73	0	0
28	5	Thalayampattu	40.99	0	6.91	0	0	0	1.1	27.02	0	5.96	0
29	6	Alavur	93.92	0	23.14	0	12.84	0	8.28	11.55	12.7	0	25.41
30	7	Varanavasi	159.29	0	24.61	0	6.25	0	50	11.17	14.88	0	52.38
31	8	Vembakkam	265.65	0	47.64	0	56.55	0	20	30.5	0	11.9	99.06

Sl.No	No. of Villages	Name of village	Total Geographical Area (in Hectares)	Forest Area (in Hectares)	Area under Non-Agricultural Uses (in Hectares)	Barren & Uncultivable Land Area (in Hectares)	Permanent Pastures and Other Grazing Land Area (in Hectares)	Land Under Miscellaneous Tree Crops etc. Area (in Hectares)	Culturable Waste Land Area (in Hectares)	Fallows Land other than Current Fallows Area (in Hectares)	Current Fallows Area (in Hectares)	Total Unirrigated Land Area (in Hectares)	Area Irrigated by Source (in Hectares)
32	9	Chinnamadurapakkam	85.02	0	10	0.26	0	0	2.22	10.24	25.74	0	36.56
33	10	Ambakkam	130.31	0	23.24	0	6.12	0	0	51.38	10.8	0	38.77
34	11	Thollazhi	228.3	0	7.43	6.04	11.68	0	55.24	18.15	16.47	27.45	85.84
35	12	Kosapattu	75.62	0	2.72	0	3.65	3.77	5.36	2.77	16.29	0	41.06
36	13	Devariyambakkam	240.09	0	30.42	0	12.14	0	3.26	37.38	64.47	0	92.42
37	14	Thonankulam	191.25	0	0	0	8.03	0	39.48	14.3	48.15	0	81.29
38	15	Ullavur	533.84	0	218.53	0.51	5.85	0.91	0.05	154.59	0	0	153.4
39	16	Nathanallur	620.2	0	115.89	0.01	57.23	8.32	18.4	146.81	82.8	7.58	183.16
40	17	Vengudi	194.44	0	83.12	0	0.39	0	37.62	54.19	6.07	2.5	10.55
41	18	Seeyamangalam	175.31	0	85.26	0	0	0	0	69.82	0	4.5	15.73
42	19	Vitchanhangal	293.07	0	120.39	0	2.42	16.76	0	27.98	0	9.39	116.13
43	20	Asoor	343.14	0	208.06	0	1.83	0	0	49.27	6.03	17.41	60.54
44	21	Avalur	660.3	0	23.99	191.21	0	0	0.04	0	132.27	22.64	290.15
45	22	Thammanur	602.46	0	119.99	0	36.19	0	3.85	0	281.81	0	160.62
46	23	Kavanthandalam	662.21	0	124.28	0	4.23	0	184.49	0	137.52	66.39	145.3
47	24	Nelveli	161.86	0	62.08	0.96	14.25	10.46	0	2.48	0	2.48	69.15
48	25	Kilputhur	260.53	0	15.87	1.17	0	42.3	0	137.52	0	21.01	42.66
49	26	Kambarajapuram	642.51	0	265.71	0	0.38	0.61	3.38	67.45	0	33.4	271.58
50	27	Elayanarvelur	310.72	0	116.04	0	0	0	0.99	28.68	0	16.45	148.56
51	28	Chithaathur	76.62	0	20.26	1.37	0	0	0	0.32	0.06	0	54.61
Uthiramerur Sub-District, Kancheepuram District													
52	1	Sembulam	74.97	0	0	17.14	2.29	0	0	0	25.61	14.84	15.09
53	2	Kavampair	133.74	1	21.35	0	2.73	12	0	6.82	38.74	2.12	48.98
54	3	Neyyadivakkam	256.95	0	101.92	0	0	0	0.59	0	19.19	0	135.25
55	4	Malayankulam	606.85	0	175.27	7.79	40.93	0	4.09	6.6	125.9	31.62	214.65
56	5	Nariambakkam	136.35	0	9.51	0	0	61	4.27	0	24.72	0.1	36.75
57	6	Nariyambudur	250.54	104.47	2.17	0	27.55	3.74	14.78	0	86.41	0	11.42
58	7	Vendivakkam	195.29	0	5.2	0	36.67	0	0	5.46	112.11	27.34	8.51
59	8	Kattankulam	485.37	0	102.28	3.36	20.98	32	10.49	119.59	35.58	0	161.09
60	9	Padoor	342.04	5	103.64	24.24	10.67	3	4.08	25	66.67	0	99.74
61	10	Anambakkam	200.16	2	87.08	0	0	49.79	0	0	16.93	0	44.36
62	11	Kaliyapettai	264.28	2	64.43	0	0	15.83	0	0	65.14	10.68	106.2
63	12	Orakkattupettai	79.67	2	25.39	0	0	0	2.5	0	20.8	0.28	28.7
64	13	Kavithandalam	468.21	0	145.51	0	13.48	7	0	77.44	40.63	23.71	160.44
65	14	Thiruvanaikoil	131.64	0	30.37	0	3.56	0	0.11	20	16.23	0	61.37
66	15	Edamichi	598.38	180.42	104.83	0	8.42	65	9.38	46.13	22.59	3.2	158.41
67	16	Nerkundram	298.47	36.61	45.17	0.11	16.17	0	128.74	0	0	33.47	38.2
68	17	Chinnalambadi	217.76	21	73	0	15.58	23.14	5.98	3.57	23.18	0	52.31
69	18	Kunnavakkam	271.87	1	68.57	17.31	4.12	10	6.42	95.28	12.75	7.31	49.11
70	19	Pandavakkam	131.44	0	3.09	0	40.18	0	0	2.24	52.64	21.76	11.53

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71	20	Paleswaram	381.66	1	240.47	0	0	13.15	0	35.44	20.05	0.61	70.94
72	21	Mambudur	350.18	0	132.2	0	26.35	40	0	5.88	54.92	4.19	86.64
73	22	Kurumbarai	453.92	0	162.56	0	24.64	10	0	0	67.87	44	144.85
74	23	Seethapuram	13.87	0	6.05	2	0	0	0	0	0	0	5.82
75	24	Gindangarai	150.37	0	18.34	40.18	10.75	36.3	3.48	0	0.04	0	41.28
76	25	Sithanakavoor	226.5	0	90.86	3.09	0	0	0	27.86	0.32	0	104.37
77	26	Thandarai	169.02	0	58.95	0	1	0	0	0.11	40.21	0.74	68.01
78	27	Vichoor	238.18	0	59.19	25.49	6.94	0	3.17	19.81	34.78	16.03	72.77
79	28	Annadhur	390.11	1	130.82	0	33.29	15	0	66.03	0.57	3.12	140.28
80	29	Alapakkam	205.01	15	28.14	0	18.4	5	4.18	0	36.68	0	97.61
81	30	Salavakkam	437.06	2	44.5	2.14	4.37	0	24.32	100.55	0	0	259.18
82	31	Edayambudur	287.06	20	16.31	0.14	50.37	35	2.48	37.81	18.77	2.9	103.28
Maduranthakam Sub-District, Kancheepuram District													
83	1	Pilappur	505.36	134.99	51.61	0	5.01	2.91	3.18	0	182.71	0	124.95
84	2	Sithandi	167.36	0	37.34	25.62	14.48	4.44	3.99	0	36.88	2.33	42.28
85	3	Athiyur	173.26	0	81.07	12.81	6.28	0	0.33	0	50.13	0	22.64
86	4	Sampathinallur	62.02	0	2.8	0	3.6	0	0	0	28.52	0	27.1
87	5	Maiyur	820.89	136.55	327.5	12.81	3.9	53.39	3.49	0	139.33	3.67	140.25
Chengalpattu Sub-District, Kancheepuram District													
88	1	Guruvanmedu	172.6	0	46.99	0	2.16	0.12	0.2	39.68	0	0	83.45
89	2	Palur	2316.11	0	899.19	0	35.23	5.61	7.21	6.01	1133.15	145.91	83.8
90	3	Villimbakkam	272.78	0	78.11	3.05	12.5	2.91	5.06	53.04	28.28	17.58	72.25
91	4	Sasthirambakkam	165.7	0	44.64	1	12.93	0.63	3.28	69.11	2.72	12.04	19.35
92	5	Vembakkam	346.04	33.68	156.54	0	22.14	0	1.03	0	50.09	2.06	80.5
93	6	Kongadu	94.03	0	53.93	0.63	0	0	0	28.47	0	8.51	2.49
94	7	Ideeyankodumanthangal	121.73	57.16	31.62	0	0	0	0	20.26	4.18	5.85	2.66
95	8	Athur	1765.09	0	98.17	110	25.68	0	0	185.54	1012.09	124.08	209.53
Sriperumbudur Sub-District, Kancheepuram District													
96	1	Panaiyyur	182.01	0	39.21	0	3.62	0	30.5	33.88	5.34	3.78	65.68
97	2	Ezhichur	651.73	0	148.25	0	65.5	31.5	0	269.69	0	7.89	128.9
98	3	Poondi	219.01	0	64.03	0	18.48	0	25.5	80.39	0	2.43	28.18
99	4	Vadakkupattu	548.78	0	288.02	0	0	5.22	74.46	0	13.22	7.49	160.37
		total (C)	26453.49	756.88	6936.6	561.04	954.13	737.63	904.53	3074.92	4749.95	868.95	6908.86
		Grand Total (A+B+C)	35449.6	966.42	8768.91	1117.51	1118.21	929.44	1122.22	4153.21	6854.47	1077.97	9341.24

*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011



National Accreditation Board for
Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

CREATIVE ENGINEERS & CONSULTANTS

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

**"General Requirements for the Competence of Testing &
Calibration Laboratories"**

for its facilities at

9B/4 BHARATHWAJAR STREET, EAST TAMBARAM, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

in the field of

TESTING

Certificate Number: TC-6741

Issue Date: 20/12/2022

Valid Until: 19/12/2024

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Identity: CREATIVE ENGINEERS AND CONSULTANTS

Signed for and on behalf of NABL



N. Venkateswaran
Chief Executive Officer



National Accreditation Board for Education and Training

Certificate of Accreditation

Creative Engineers and Consultants, Chennai

9B/4, Bharathwajar street, East Tambaram, Chennai, Tamil Nadu

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA/EMP reports in the following Sectors-

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals- opencast mining only	1	1 (a) (i)	A
2.	Thermal power plants	4	1 (d)	A
3.	Mineral beneficiation	7	2 (b)	A
4.	Cement plants	9	3 (b)	A

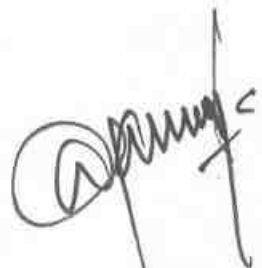
Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated May 03, 2024, posted on QCI-NABET website.

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/24/3250 dated May 24, 2024. The accreditation needs to be renewed before the expiry date by Creative Engineers and Consultants, Chennai following due process of assessment.

Issue Date
May 24, 2024

Valid up to
December 23, 2026




Mr. Ajay Kumar Jha
(Sr. Director, NABET)

Certificate No.
NABET/EIA/23-26/RA 0331


Prof (Dr) Varinder S Kanwar
(CEO-NABET)

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.