

EXECUTIVE SUMMARY

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR
CLUSTER OF QUARRIES
MINOR MINERAL – GREY GRANITE
(As per EIA Notification, 2006 dated 14.09.2006 and its amendments)**

Category: B1 (Cluster)

Project Proponent

S.No	Name and Address	Mining lease area - Extent
1	Tvl. EVERKING GRANITES The Managing Partner: S.S.Jameeluddin No:1/161, T.N.H.B Phase-II, Krishnagiri, Tamil Nadu-635002, E.mail: jameel.rkf@gmail.com. Mob: +919994433007, +919443632513	3.19.5 Ha
2	Thiru.E.JAGADEESAN S/o. Egananthan, No.5/50,Thiruvalluvar Nagar, Krishnagiri District, Tamil Nadu - 635001. E.mail: jameel.jk@gmail.com. Mob: +9994433007.	1.56.5 Ha

Project Details

JAGADEVIPALAYAM GREY GRANITE QUARRY

Cluster Area : 13.14.5Ha
Village : Jagadevipalayam
Taluk : Bargur
District : Krishnagiri

Terms of Reference issued by SEAC/SEIAA

- i) Lr.No.SEIAA-TN/F.No.9549/SEAC/TOR-1513/2023 dated 01.08.2023 for PP 1
- ii) Lr.No.SEIAA-TN/F.No.9550/TOR-1514/2022 dated 01.08.2023 for P 2

EIA CONSULTANT

AADHI BOOMI MINING & ENVIRO TECH (P) LTD (QCI/NABET Accredited EIA Organization)

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Salem – 636004, Website: www.abmenvirotec.com

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DRAFT EIA/EMP REPORT FOR CLUSTER OF TWO QUARRIES
Total Cluster Area: 13.14.5 Ha, Grey Granite Quarry, Krishnagiri District

Executive Summary

1. Introduction

Tvl. Everking Granites having administrative office at No:1/161,T.N.H.B Phase-II, Krishnagiri, Tamil Nadu-635002 represented by Managing partner, S.S. Jamaludeen (Lessee) and the Lessee Thiru.E.Jagadeesan, S/o. Egananthan, residing at No.5/50, Thiruvalluvar Nagar, Krishnagiri District, Tamil Nadu has obtained quarry lease from the State Government under **G.O.(3D).NO. 20 Industries (MME.2) Dept. dated 22.03.2018** and **G.O. (3D).No: 42 Industries (MME.2) Dept. dated 20.09.2018** respectively for quarrying grey granite over an extent of 3.19.5 hectares and 1.56.5 hectares in S.F. Nos 347/1, 347/2, 347/4, 347/5, 348/4, 348/5, 348/6B1, 348/6C and 348/6D1 and in S.F. Nos 353/2A1B, 2A7, 2B, 2C1 & 2E1A respectively located in Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu for the period of 20 years.

The mining plan for grey granite quarry of Tvl. Everking Granites (3.19.5 Ha) and Thiru.E.Jagadeesan (1.56.5 Ha) was approved by Commissioner of Geology and Mining, Chennai vide letter **No. 992/MM5/2017, dated 22.01.2018** and vide letter **No. 993/MM5/2017, dated 13.02.2018**.

An environment clearance for Tvl. Everking Granites and Thiru.E.Jagadeesan was obtained from District Environmental Impact Assessment Authority vide letter **No.36/DEIAA-KGI/EC NO.25/2018 Dated: 27.02.2018** and letter **No. 03/DEIAA-KGI/EC No. 104/2018, dated 27.08.2018** for operating grey granite quarry for the period of five years. For the lease area 3.19.5 Ha, the lease deed was executed on 28.05.2018 and will expire on 27.05.2038 and for the lease area 1.56.5 Ha, the lease deed was executed on 09.11.2018 and will expire on 08.11.2038.

Scheme of mining has to be prepared under Rule 18 (3) of GCDR, 1999 and Rule 41 of TNMMCR, 1959 for the existing mining lease once in five years for systematic and scientific development of quarry. Accordingly, the 1st scheme of mining has been prepared for both the lease areas 3.19.5 Ha and 1.56.5 Ha for the period from 2023-2024 to 2027-2028 and it has been approved by Commissioner, Department of Geology and Mining, Guindy, Chennai vide letter **Rc.No.5253/MM4/2022 dated 14.10.2022** and vide letter **No. 5254/MM4/2022 dated 14.10.2022**.

Recently MoEF&CC has issued OM vide F.No.IA3-22/11/2023-IA.III (E-208230) dated 28.04.2023. In this notification, it is stated that the EC issued by DEIAA between 15.01.2016 and 13.09.2018 shall be reappraised through SEAC/SEIAA and EC shall be issued by SEIAA within the period of 1 year.

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As per the cluster letter issued by Deputy Director, Department of Geology and Mining, Krishnagiri vide Rc.No.1200/2022/Mines dated 28.10.2022 for Tvl. Everking Granites (3.19.5 Ha) and vide Rc.No.1201/2022/Mines dated 28.10.2022 for Thiru.E.Jagadeesan (1.56.5 Ha), six existing granite quarries including grey granite quarry of Tvl. Everking Granites and Thiru.E.Jagadeesan comes within cluster of 500m radius. The total area of cluster is 13.14.5 Ha. The extents of lease area of all lessees as per cluster letter of Thiru.E.Jagadeesan (1.56.5 Ha), are given below.

Existing Quarries

1. Thiru.E.Jagadeesan	–	1.56.50 Ha
2. M/s.Everking Granites	–	3.19.50 Ha
3. Tvl.M.P.Granite	–	1.85.50 Ha
4. M.P. Mining and Leasing Company	–	1.84.00 Ha
5. S.S.Jameeluddin	–	1.25.00 Ha
6. Thiru.A.V.Elamurugu	–	1.01.50 Ha
7. Thiru.A.V.Elamurugu	–	2.42.50 Ha

Based on MoEF&CC OM vide F.No.IA3-22/11/2023-IA.III (E-208230) dated 28.04.2023 and cluster letter issued by Deputy Director, Department of Geology and Mining, Krishnagiri, the two lessee made TOR application individually through PARIVESH website to carry out EIA Studies for obtaining Environmental clearance. The details are given in below Table 1.1.

Table 1.1 Details on Terms of Reference

S. No	Name of Applicant	ToR Application No	SEAC and SEIAA Meeting No	TOR Letter No
1	Tvl. Everking Granites	SIA/TN/MIN/404966/2022 dated 04.11.2022	346 th SEAC Meeting, dated 12.01.2023 and 591 st SEIAA Meeting dated 10.02.2023 361 st SEAC meeting dated 10.03.2023 and 607 th SEIAA Meeting dated 03.04.2023	Lr.No.SEIAA-TN/F.No.9549/SEAC/ToR-1513/2023 dated 01.08.2023
2	Thiru.E.Jagadeesan	SIA/TN/MIN/404965/2022 dated 04.11.2022	393 rd SEAC Meeting, dated 20.07.2023 and 643 rd SEIAA Meeting dated 01.08.2023	Lr.No.SEIAA-TN/F.No.9550/ToR-1514/2022 dated 01.08.2023

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In TOR letters, it is mentioned that public hearing needs to be conducted for the existing grey granite quarries of two applicants for obtaining EC. In MOEF&CC SO 141 (E) dated 15.01.2016-Appendix XI, it is mentioned that there shall be one public consultation for entire cluster after which the final Environmental Impact Assessment Report or Environmental Management Plan report for the cluster shall be prepared. Based on the OM issued by MOEF & CC, the combined Draft EIA/EMP report has been prepared for the two existing quarries in the cluster of 13.14.5 Ha for conducting public hearing. The points raised in the public hearing and the commitments of the project proponent will be given detail in the Final EIA Report which will be submitted to SEAC/SEIAA, TN for obtaining environmental clearance.

1.1 Details of Project and Project Proponent

Table No 1.2 Details on Project and Project Proponent

A. Proposed Projects to Conduct Public Hearing	
1. M/s. Tvl. EVERKING GRANITES	
Particulars	Details
Address of the Project Proponent	M/s. Tvl. EVERKING GRANITES The Managing Partner: S.S.Jameeluddin No:1/161, T.N.H.B Phase-II, Krishnagiri, Tamil Nadu-635002, E.mail: jameel.rkf@gmail.com Mob: +919994433007, +919443632513
Lease Area	3.19.5 Hectares (Patta Land)
Site Location	S.F.No: 347/1, 347/2, 347/4, 347/5, 348/4, 348/5, 348/6B1, 348/6C and 348/6D1, Jagadevipalayam village, Bargur Taluk, Krishnagiri District, Tamil Nadu
Geographical Co-ordinates	Latitude: N12°28'39.72981"to N12°28'50.35514" Longitude: E78°21'06.95056" to E78°21'15.36719".
Toposheet No.	57L/7
Elevation	Elevation of the area is 451m above MSL
Government Order	G.O.(3D).NO. 20 Industries (MME.2) Dept. dated 22.03.2018
Precise Area Communication	letter No. 3809/MME.2/2017-1, dated 06.09.2017
Mining Plan Approval Details	letter No. 992/MM5/2017, dated 22.01.2018
EC letter from DEIAA	letter No. 36/DEIAA-KGI/EC NO.25/2018 Dated: 27.02.2018.
Period of Lease	20 years (28.05.2018 to 27.05.2038)
Approval of Scheme of mining	Rc.No.5253/MM4/2022 dated 14.10.2022
AD Cluster letter	Rc.No.1200/2022/Mines dated 28.10.2022.

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2. Thiru.E.Jagadeesan	
Particulars	Details
Address of the Project Proponent	Thiru.E.Jagadeesan No.5/50, Gnanagiri Road, Thiruvalluvar Nagar, Tamil Nadu. E.mail: jameel.jk@gmail.com Mob: +9994433007.
Lease Area	1.56.5 Hectares (Patta Land)
Site Location	S.F.Nos. 353/2A1B, 2A7, 2B, 2C1 & 2E1A, Jagadevipalayam Village, Bargur Taluk, Krishnagiri District and Tamil Nadu.
Geographical Co-ordinates	Latitude: 12°28'34.91765" N to 12°28'40.90210"N Longitude: 78°21'11.18021" E to 78°21'17.84397"E
Toposheet No.	57 L/7
Elevation	Elevation of the area is 453m above MSL
Government Order	G.O. (3D).No: 42 Industries (MME.2) Dept. dated 20.09.2018.
Period of Lease	20 years (09.11.2018 to 08.11.2038)
Precise Area communication	letter No. 5137/ MME.2 / 2017-1, dated 08.09.2017
Mining Plan Approval Details	letter No. 993/MM5/2017, dated 13.02.2018
EC letter from DEIAA	letter No. 03/DEIAA-KGI/EC No. 104/2018, dated 27.08.2018
Period of Lease	20 years (09.11.2018 to 08.11.2038)
Approval of Scheme of mining	Rc.No. 5254/MM4/2022 dated 14.10.2022
AD Cluster letter	Rc.No.1201/2022/Mines Dated 28.10.2022
B. Other Existing Quarries within 500m radius	
1.Tvl. M.P Granites	
Address of the Project Proponent	Tvl.M.P Granite, No.131/29, R.R. Complex, Kollapatti, Animoor Post, Tiruchengode.
Government Order	GO (3D) No.07 Ind.(MME-2) Dept. dated 18.01.2016
Village and Taluk	Jagadevipalayam Village, Bargur Taluk.
S.F.No	266/1, 266/1AC, 268/1AD
Extent in Ha	1.85.50 Ha
Lease period	03.02.2016 to 02.02.2023
2. M.P Mining and Leasing Company	

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Address of the Project Proponent	M.P Mining and Leasing Company, No.2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti, Virudhunagar.
Government Order	GO (3D) No.72 Ind.(MME-2) Dept. dated 01.12.2016
Village and Taluk	Jagadevipalayam Village, Bargur Taluk.
S.F.No	268/1Y, 268/1Z, 268/2K, 268/1AB
Extent in Ha	1.84.00 Ha
Lease period	10.02.2017 to 09.02.2037
3. S.S.Jameeluddin	
Address of the Project Proponent	S.S. Jameeluddin S/o. S.S. Salauddin, No. 449/1, New Housing Board, II Phase, Krishnagiri.
Government Order	GO (3D) No.17 Ind.(MME-2) Dept. dated 08.04.2008
Village and Taluk	Jagadevipalayam Village, Bargur Taluk.
S.F.No	372/3A
Extent in Ha	1.25.00 Ha
Lease period	22.12.2008 to 21.12.2028
4.Thiru.A.V.Elamurugu	
Address of the Project Proponent	Thiru.A.V.Elamurugu, No.8, Ramakrishnapuram, 30Ft road, Karur Town, Karur.
Government Order	GO (3D) No.03 Ind.(MME-2) Dept. dated 25.01.2011
Village and Taluk	Jagadevipalayam Village, Bargur Taluk.
S.F.No	372/3B5, 372/3B6
Extent in Ha	1.01.50 Ha
Lease period	28.02.2011 to 27.02.2031
5.Thiru.A.V.Elamurugu	
Address of the Project Proponent	Thiru.A.V.Elamurugu, No.8, Ramakrishnapuram, 30Ft road, Karur Town, Karur
Government Order	GO (3D) No.19 Ind.(MME-2) Dept. dated 12.02.2016
Village and Taluk	Jagadevipalayam Village, Bargur Taluk.
S.F.No	372/3B2(P), 372/3B4(P), 372/3B5(P), 377/1A(P)
Extent in Ha	2.42.50 Ha
Lease period	29.02.2018 to 8.02.2036

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1.2 SCOPE OF THEPROJECT

The proposal for Environmental Clearance of Existing Grey Granite quarry of **Tvl. Everking Granites (3.19.5 Ha) and Thiru.E.Jagadeesan (1.56.5 Ha)** require EIA/EMP Report as per respective Terms of Reference for conducting public hearing and obtaining environmental clearance from SEAC/SEIAA.

1.3 ENVIRONMENTAL SETTINGS & MINING DETAILS

Table No 1.3 Accessibility				
Nearest Village	Bagimanur <ul style="list-style-type: none"> • For Lease Area of 3.19.5 Ha – 0.42km – NE • For Lease Area of 1.56.5- 0.70km – NE 			
Nearest Settlement	S.no	Village Name	Total population as per 2011 census	Distance with Direction
	1	Jagadevipalayam	6747	4.7 km-W
	2	Gangavaram	3122	8.6 km-S
	3	Orappam	3512	7.4 km-SW
	4	Sigaralapalli	7765	6.9km-E
	5	Kandikuppam	5734	7.6 km-NW
	6	Gandhinagar	9114	4.0km-S
	7	Oppathavadi	9604	7.5km-NE
	8	Batlapalli	3724	6 km-SE
	9	Pasinayanapalli	20749	6.57 km-SE
	10	Kannandahalli	8562	9.53 km-S
Nearest Town	Krishnagiri– 15 km - NW			
Nearest Roadway	MDR-157– Kaveripattinam to Badanavadi – 7.5km - S NH -77 – Krishnagiri to Sinagarapettai – 1.7 km - southwest SH-131 – Bargur to Tirupattur – 5.4 km – NE Bagimanur Village road – 150km - E			
Nearest Railway station	Patchur Railway Station– 17.2 km –NE Tirupattur Railway Station – 22.7km - E			
Nearest Airport	Kampegowda International Airport, Bengaluru –104km – NW			

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Table No 1.4 Environmental Sensitiveness

Interstate Boundary	Tamil Nadu –Andhra Pradesh Interstate boundary –16.6km (NE)
Coastal Zone	Bay of Bengal – 172km – Southeast
Reserve Forest	<ol style="list-style-type: none"> 1. Thogarapalli R.F. -1.7km – S 2. Bargur R.F – 6.9km – NE 3. Varatanapalli – 8.0km – NW 4. Nandibanda R.F – 8.2km – NE 5. Neralakotta R.F – 10.4km - N <p>The proposed projects site does not attract Forest Conservation Act, 1980.</p>
Wildlife sanctuary	Nil within 10km radius. Cauvery Wildlife Sanctuary – 41.2km – W The Proposed projects site does not attract the Wildlife (Protection) Act, 1972.
Water bodies	<ol style="list-style-type: none"> 1. Mattur Stream – 780m – SW 2. A lake – 1.5m – SW 3. A lake near Gettur village – 4.8km – NW 4. A lake near Balinayanapalli village – 7.1km – NW 5. A lake near Simanur Village– 5.4km - NW 6. Bargur River – 4.0km - NE
Defense Installations	Nil within 10km radius
Critically Polluted area	Nil within 10km radius
Seismic zone	Zone-III, Moderate damage risk zone as per BMTPC, Vulnerability atlas Seismic zone of India IS: 1893-2002

Table No 1.5 Mining Details – Tvl. Everking Granites (3.19.5 Ha)

Method of Mining	Open cast Mechanized method of mining
Geological resources	3,94,694m ³
Mineable reserves	2,12,420m ³
Run of Mine(ROM)	1,00,413m ³ for plan period (2023-24 to 2027-28)
Production (30%)	30,124m ³ for five years or 6025 m ³ /annum(Avg)
Reject (70%)	70289 m ³
Top soil	1278m ³ for plan period (2023-24 to 2027-28)
Weathered Rock	9647m ³ for plan period (2023-24 to 2027-28)
Ore: Waste ratio	1: 2.69
Depth of Mining	30m bgl
Water Table	40 m bgl

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Road design	1: 10 inside the pit and ramp 1:16 for transport			
Overall Pit Slope	45°			
Period of Lease	20 years (28.05.2018 to 27.05.2038)			
Existing pit dimension	Pit	L(m)	W(m)	Max.D(m)
	I	125m	65m	12m (RL 452 – 440)
Existing dump dimension	S.No	L(m)	W(m)	Depth in (m)
	I	73m	64m	8m (RL 456-448)
Project Cost	Rs 84.0 Lakhs			
EMP Cost	Rs 7.25 lakhs			
CER Cost	Rs. 1.68 lakhs			
Table No 1.6 Mining Details – Thiru.E.Jagadeesan (1.56.5 Ha)				
Method of Mining	Open cast Mechanized method of mining			
Geological resources	203274m ³			
Mineable reserves	90994m ³			
Run of Mine(ROM)	51764m ³ for plan period (2023-24 to 2027-28)			
Production (30%)	15,529m ³ for five years or 3106 m ³ /annum(Avg)			
Reject (70%)	36235 m ³			
Top soil	1131m ³ for plan period (2023-24 to 2027-28)			
Weathered Rock	4484m ³ for plan period (2023-24 to 2027-28)			
Ore: Waste ratio	1: 2.7			
Depth of Mining	36m bgl.			
Water Table	40m bgl			
Road design	1: 10 inside the pit and ramp 1:16 for transport			
Overall Pit Slope	45°			
Period of Lease	20 years (09.11.2018 to 08.11.2038)			
Existing pit dimension	Pit	L(m)	W(m)	Depth in (m)
	I	95m	40m	11m
Project Cost	Rs 78.0 lakhs			
EMP Cost	Rs 9.5 lakhs			
CER Cost	Rs.1.56 lakhs			

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1.4 Description of the environment

1.4.1 Base line environmental study

Collection of base line data is an integral part of the preparation of environmental impact assessment reports. The baseline monitoring study has been carried out during March 1st 2023 – May 31st 2023 to assess the existing environmental scenario in the area. For the purpose of EIA studies, mine lease area was considered as the core zone and area outside the mine lease boundary up to 10km radius from the lease boundary was considered as buffer zone.

Table No 1.7 Baseline Data

Particulars	Details	Standards
Meteorology (March 1st 2023 – May 31st 2023)		
Rainfall (Avg.)	173.3 mm	--
Temperature (Avg.)	20-38°C	--
Wind speed	2.2 m/s	--
Wind Direction	From west to east directions	
Ambient Air Quality (NAAQS)		
PM ₁₀	38-52 µg/m ³	100 µg/m ³
PM _{2.5}	17.0 – 30.0 µg/m ³	60 µg/m ³
SO ₂	3.0-13.0 µg/m ³	80 µg/m ³
NO _x	7.0-18.0 µg /m ³	80 µg/m ³
Noise Level (CPCB Standards)		
Day time (6:00 am - 10:00 pm)	Core zone – 36.2 - 41.3 dB (A) Buffer zone – 41.9- 47.4 dB (A))	Industrial Area Day Time - 75 dB (A) Residential Area Day Time – 55 dB (A)
Night time (10:00 pm - 06:00 am)	Core zone – 35.5 – 40.9 dB (A) Buffer zone – 34.5-40.2 dB(A)	Industrial Area Night Time – 70 dB(A) Residential Area Night Time – 45 dB (A)
Water Quality IS 10500:2012 (Desirable limits)		
pH	7.08 – 7.59	6.5 to 8.5
TDS	600-1020 mg/l	500 mg/l
Total Hardness as CaCO ₃	228-500 mg/l	200 mg/l
Soil Quality		
pH	6.78-8.91	Neutral to slightly alkaline
Bulk density	1.09-1.4 g/cc	Favorable physical condition for plant growth.
Hydro Geology		
Water Table	40-42 m bgl	

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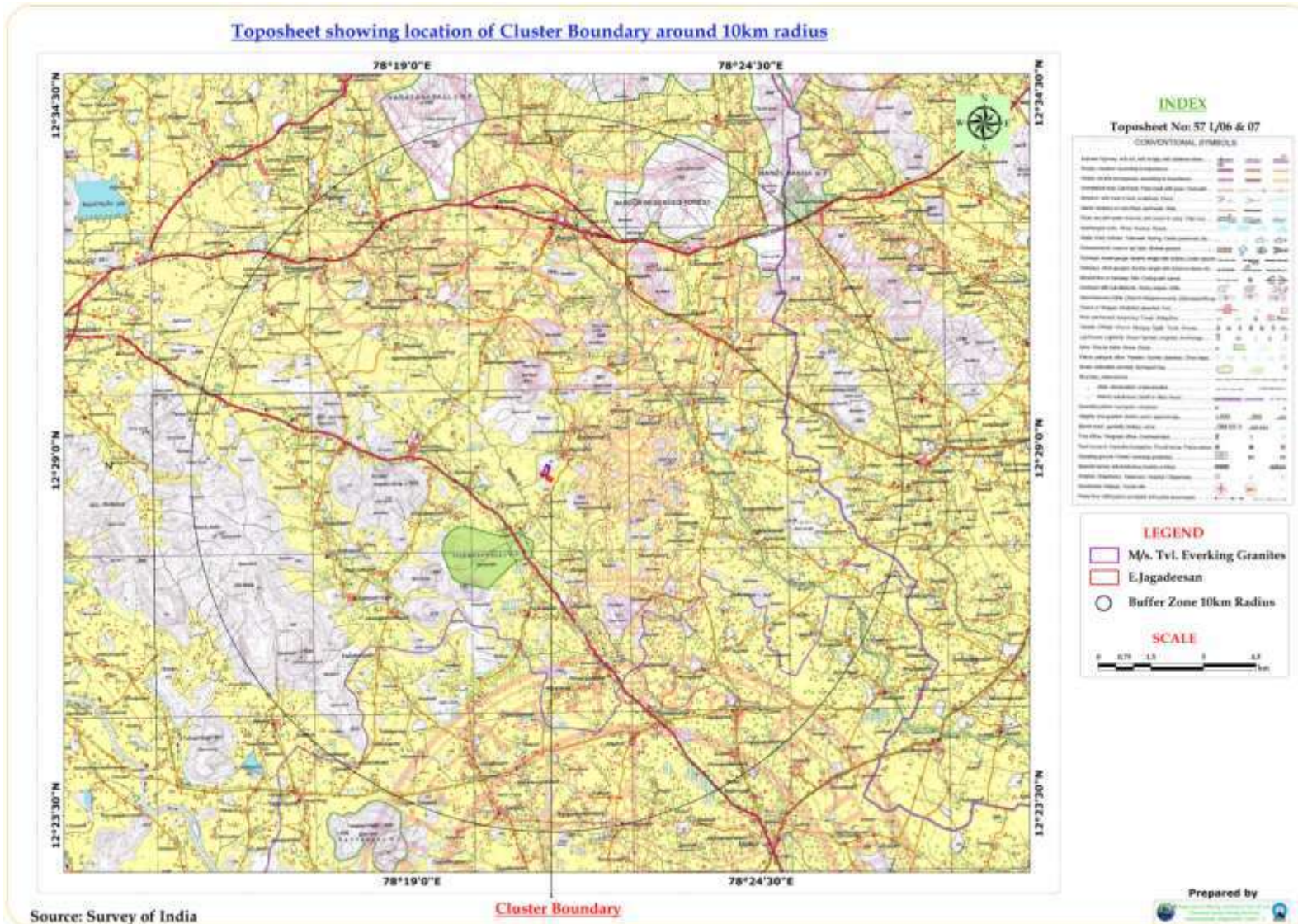


Fig No 1.1 Toposheet showing location of two grey granite Lease Boundary

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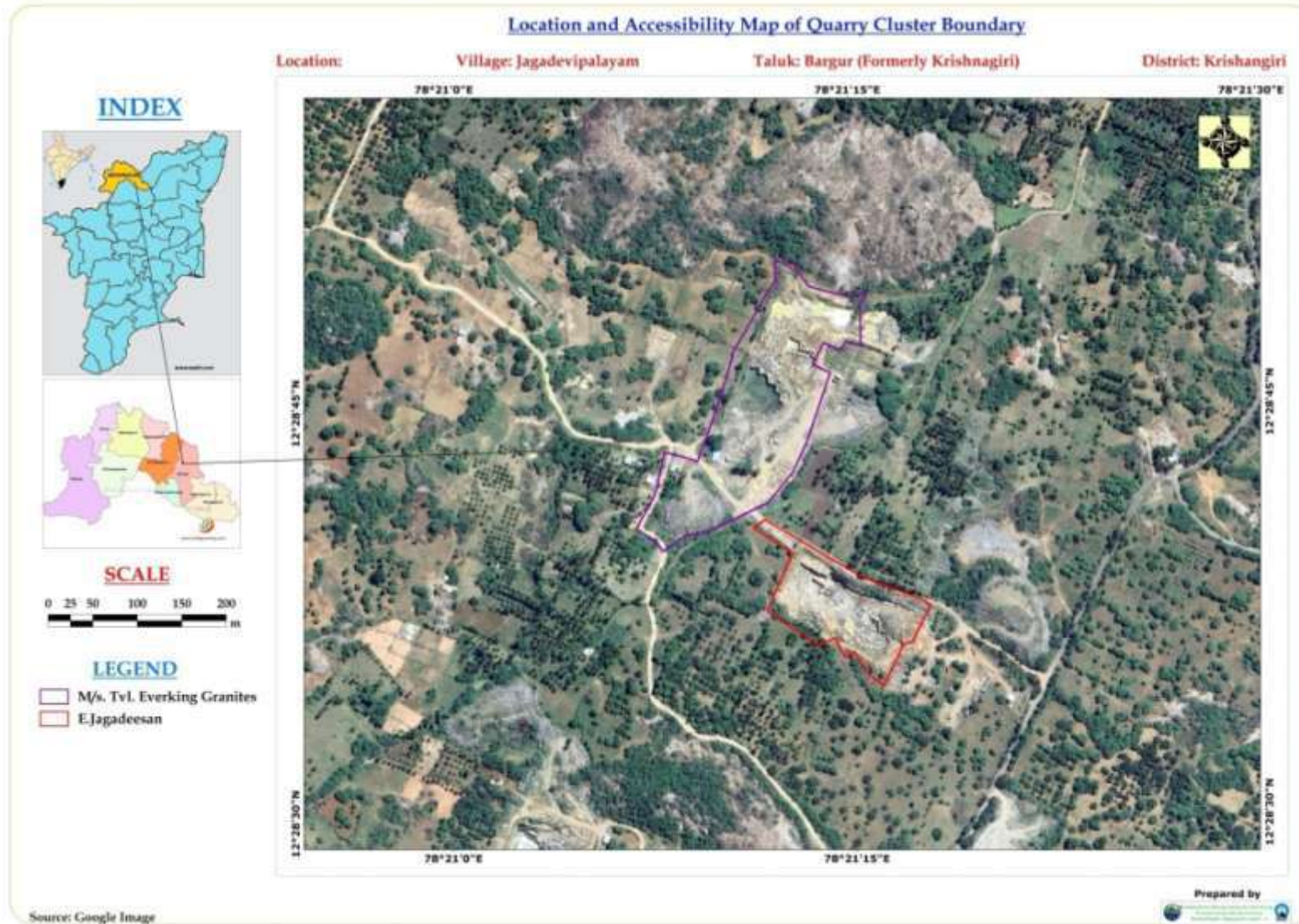


Fig No 1.2 Map Showing the Location and Accessibility of two grey granite Lease Boundary

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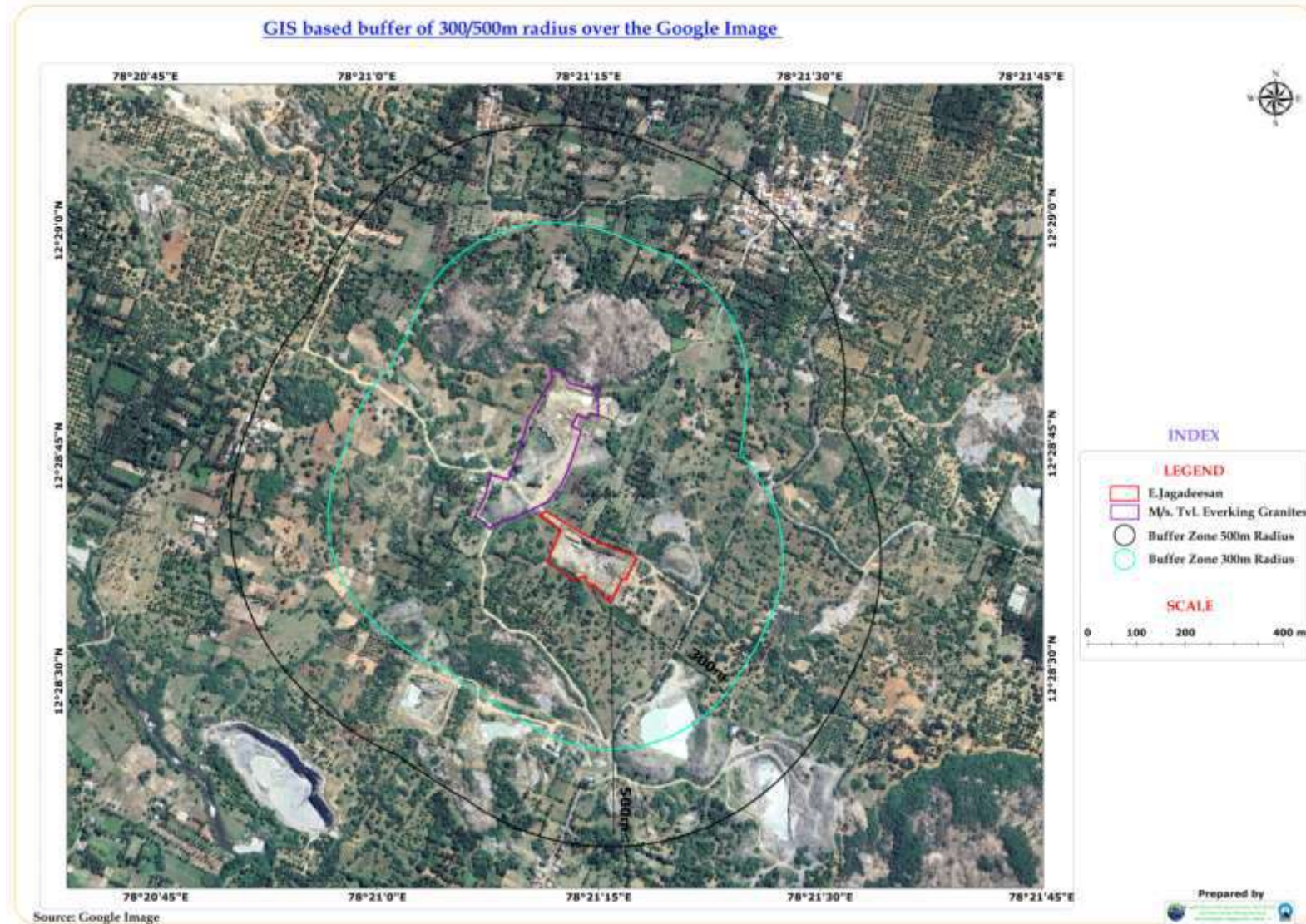


Fig No 1.3 Google Earth Image showing 300m and 500m radius around two grey granite Lease Boundary

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Fig No.1.4 Conceptual Plan of Tvl.Everking Granites (3.19.5 Ha)

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Fig No 1.5 Conceptual Plan of Thiru E. Jagadeesan (1.56.5 Ha)

1.5 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

1.5.1 Air Environment

The air borne particulate matter is the main air pollutant by opencast mining. The mining operation will be carried out by adopting semi-mechanized methods which involves Jack Hammer drilling and blasting, excavation, loading and transportation.

AERMOD was used for prediction of impact of PM₁₀ during conditions i) Loading/unloading and transportation of granite and weathered rock by trucks on Haul ii) During blasting of minerals. Total predicted 24-h maximum GLC of PM₁₀ at project site for scenario 1 i.e loading-unloading and transportation and scenario 2 i.e. Blasting was 71.83µg/m³ and 53.28 µg/m³ occurred at the project site after superposition of base-line value 44 µg/m³ over the incremental value of 27.83µg/m³ and 9.28µg/m³ due to combined impact of loading and unloading and transportation over the haul road and due to blasting.

When all the quarries in the cluster area are working together the incremental GLC will be high and it may cross the prescribed limits by NAAQS. To overcome such situation, cluster committee should be formed and adopt the environmental management plan effectively as per EIA report.

1.5.2 Noise Environment

Noise pollution poses a major health risk to the mine workers. The sources of noise in the proposed open cast Grey Granite quarry are such as Drilling, Blasting, and during movement of vehicles.

The noise generated by the mining activity is dissipated within the core zone. This is because of distance involved and other topographical features adding to the noise attenuation. From the results, it can be seen that the ambient noise levels (day time and night time) at all the locations will remain within permissible limits prescribed by CPCB and 90dB (A) norms of DGMS. At present there is no mining activity carried out. However, the expected noise levels are not likely to have any effect. Precaution will be made to keep down the noise exposure level of 85 dB (A) to the operating personnel for 8 hrs duration.

1.5.3 Ground Vibration

a) Tvl. Everking Granites 3.19.5 Ha – Existing Grey Granite Quarry

The charge per blast of 24kg is above the Peak Particle Velocity of 5mm/s for the habitation located at the distance of 137m. So the project proponent (Tvl. Everking Granites) is recommended to adopt delay detonators to keep PPV of ground vibration below 5mm/s. The nearest habitation is 137m –SW.

b) Thiru.E.Jagadeesan 1.56.5 Ha – Existing Grey Granite Quarry

The charge per blast of 12kg is well below the Peak Particle Velocity of 5mm/s for the habitation located at the distance of 202m.

1.5.4 Water Environment

Mining operations can affect groundwater quality in several ways. The most obvious occurs in the mining below the water table, either in underground workings or open pits. This provides a direct conduit to aquifers. Groundwater quality is also affected when waters (natural or process waters or wastewater) infiltrate through surface materials (including overlying waste or other material) into ground water. But this grey granite quarry mine is devoid of any such impacts.

The impact due to mining on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during mining process. The depths of mining of two existing grey granite quarries are above the ground water table and it will not intersect ground water table. The value of TH, TDS of water sample from all the locations are beyond the acceptable limits. Water sample from Sekilnatham village and Gandhi Nagar has high Chlorides. Based on the Water Quality Index calculated, water qualities from all core zone, Jagadevipalayam and Sekilnatham village are found good. In Gandhi nagar and MGR Nagar the water quality is found to be poor. For excellent quality, the water should be treated by reverse osmosis to reduce dissolved solids and total hardness to the required rate. Boiling of water will remove the microorganisms effectively from all waters in the above said villages and core zone making the water aseptically fit for drinking purposes.

Prolonged consumption of water containing high TH causes Cardio vascular problems, diabetes, skin diseases, rashes, reproductive failure and renal failure. For the excellent quality of drinking the water must be treated with reverse osmosis process to overcome above mentioned such impacts on human body. Boiling of water will remove the microorganisms effectively from all waters in the above said villages and core zone making the water aseptically fit for drinking purposes.

1.5.5 Soil Environment

a) Tvl. Everking Granites -3.19.5 Ha

For the plan period 2023-2028, the generation of top soil is estimated as 1278 m³. It will be dumped along mining lease boundary as earth bund and it will be utilized for green belt development within the lease area. No chemical or toxic elements will be used during mining activity. So the health of soil in and around the quarry will not be affected.

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b) Thiru.E.Jagadeesan -1.56.5Ha

For the plan period 2023-2028, the generation of top soil is estimated as 1131m³. It will be dumped along mining lease boundary as earth bund and it will be utilized for green belt development within the lease area. No chemical or toxic elements will be used during mining activity. So the health of soil in and around the quarry will not be affected.

1.5.6 Waste Dump

a) Tvl. Everking Granites -3.19.5 Ha

The proposed rate of production of Grey granite for five years is about 30124m³ at the rate of 30% recovery up to permissible depth. The 70% reject of 70,289 m³ shall be dumped over existing dump in South west side and on virgin barren land in east side as per approved scheme of mining. During monsoon seasons, the runoff from the dump will carry silts and small stones and it affect the land use around the project site which means it may affect the carrying capacity of stream, water holding capacity of lakes and affect nearest agricultural lands. □ The runoff from the slopes of dump will be collected by garland drainage around the dump and it will be taken up to settling tank to settle down the suspended solids. After that the water will be used for greenbelt development and dust suppression purposes.

b) Thiru.E.Jagadeesan -1.56.5Ha

The proposed rate of production of Grey granite for five years is about 15,529m³ at the rate of 30% recovery up to permissible depth. The 70% reject of 36,235m³ shall be dumped in virgin barren land in north, northeast and east side as per approved scheme of mining. All rejects and waste materials dumped will be backfilled at the end of mine life.

1.5.7 Biological Environment

There are no notified endangered species in the area, which may be affected due to the quarry activities; therefore the biological environment will not have significant impact due to quarrying activity. The impact on the biological environment due to amount of dust generation is minimized by well-developed green belt in and around the quarry lease area.

1.5.8 Land Environment

Grey granite Quarry project will result in disturbance of the land use pattern of the mine lease area. The impact on the topography in the form of changed landscape is unavoidable during mining activities like excavation, overburden dumping, soil extraction etc. Land requirement for the project has been assessed considering functional needs. So reclamation of mined out land will be given due importance as a

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step for sound land resource management. There is no release of toxic elements into the ground. No adverse impact is anticipated on land use of buffer zone associated due to the mining activity, as all the activities will be confined within the project site. The mining operations will impact the land usage and land aesthetics of quarry lease area. The land use analyses show that the mango plantation was done around the mining lease area of Tvl.Everking Granites and Thiru.E.Jagadeesan. The rate of plantation increases over a period of time due to quarry activity. At the end of the project, the quarried pit will be act as water storage pond. The stored water will be used for developing mango plantation around the mining lease area. It will improve the livelihood of village people. The evaporation rate of the water in the pit is given detail in the report.

1.5.9 Socio Economic Environment

The quarrying activity will definitely increase the employment opportunity (directly as well as indirectly) in the project area. Some of these impacts would be beneficial. The expectation of the people of area is concerned towards employment, education, road and health facilities. The literacy rate may be increased with the economic benefits which may arise from the quarrying activities.

a) Tvl. Everking Granites (3.19.5 Ha) – Grey Granite Quarry

Direct Employment - 24persons

Indirect Employment - 20 persons

b) Thiru.E.Jagadeesan (1.56.5 Ha) – Grey Granite Quarry

Direct Employment - 21persons

Indirect Employment - 20 persons

Indirect employment is that people will keep shops such as tea shops, hotels, spare parts store, mechanic shed, etc. around the quarry depending on the proposed projects. Population rate is increased day by day in India. It is necessary to create employment to all people for their livelihood and country's economic development.

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Table 1.8 Environmental Management Plan

S.No	Parameters	Mining Activity	Mitigation measures
1	Air Environment	Drilling	<ul style="list-style-type: none"> ○ Dust extractor or wet drilling to be followed to control dust at source of emission ○ Use of Sharp drill bits for drilling holes and charging the holes by using optimum charge and using time delay detonator
		Blasting	<ul style="list-style-type: none"> ○ Regular water sprinkling on blasted heaps at regular intervals will help in reducing considerable dust pollution
		Loading	<ul style="list-style-type: none"> ○ Water sprinkling be done before loading by making it moist
		Transportation	<ul style="list-style-type: none"> ○ Water sprinklers along the sides of haul road shall be fixed to control fly of dust while transporting minerals and waste ○ Overloading will be prevented ○ Trucks/Dumpers covered by tarpaulin covers
		DG Sets	<ul style="list-style-type: none"> ○ DG sets will be used only during power failure ○ Adequate stack height for DG sets will be provided as per CPCB norms
		General measures	<ul style="list-style-type: none"> ○ Avenue trees along roads around ML boundary shall be planted as per the norms of MoEF to control fly of dust. ○ Labours engaged in such dust prone areas should be provided with safety devices like ear muff, mask, goggles as per the MMR, 1961 amendments and circulars of DGMS. ○ Regular health check-up of workers and nearby villagers in the impacted area should be carried out and also regular occupational health assessment of employees should be carried out as per the Factories Act ○ Ambient Air Quality Monitoring will be conducted on regular basis to assess the quality of ambient air.

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2	Water Environment	Surface water	<ul style="list-style-type: none"> Wastewater discharge from mine if any will be treated in settling tanks before using for dust suppression and tree plantation purposes.
		Ground water	<ul style="list-style-type: none"> The mining activity will not intersect the ground water table. De silting will be carried out before and immediately after the monsoon season.
		Storm water	<ul style="list-style-type: none"> Pit will be used for Storage of rainwater Rain water will be collected in sump in the mining pit and will be allowed to store and pumped out to surface setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression onwards and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judiciously utilize the rainwater as part of rain water harvesting
		General measures	<ul style="list-style-type: none"> Regular monitoring and analyzing the quality of water
3	Noise Environment	Drilling	<ul style="list-style-type: none"> Limiting time exposure of workers to excessive noise
		Blasting	<ul style="list-style-type: none"> Carrying out blasting only during day time and not on cloudy days Noise levels will be controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes. Providing proper noise proof enclosure for the workers separated from the noise source and noise prone equipment
		Transportation	<ul style="list-style-type: none"> Proper and regular maintenance of vehicles, machinery and other equipments. The noise generated by the machinery will be reduced by proper lubrication of the

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			<p>machinery and other equipments.</p> <ul style="list-style-type: none"> ○ Speed of trucks entering or leaving the mine will be limited to moderate speed to prevent undue noise from empty vehicles. ○ Adequate silencers will be provided in all the diesel engines of vehicles. ○ Minimum use of horns and speed limit of 10 km/hr in the village area. ○ It will be ensured that all transportation vehicles carry a valid PUC Certificates
		General measures	<ul style="list-style-type: none"> ○ Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas ○ Provision of Quiet areas, where employees can get relief from workplace noise. ○ The development of green belts around the periphery of the mine to attenuate noise. ○ Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.
4	Vibration	Blasting	<ul style="list-style-type: none"> ○ No deep hole blasting envisaged. ○ Small dia shot holes are used for breaking boulders. ○ Specific charge pattern has to be designed by proper trial vibration studies with varying charge ratios. ○ If the vibration still exceeds the limit a long Trench to a depth of 6m may cut in the direction of wave's movement to break longitudinal waves which travel close to surface, preferably near mine buffer zone ○ In spite of all measures periodical testing of vibration and noise using approved seismograph by DGMS has to be followed as a part of Environmental monitoring
5	Soil Environment	Topsoil	<ul style="list-style-type: none"> ○ Humus top soil shall be preserved for reuse in afforestation and agriculture

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			<ul style="list-style-type: none"> ○ Top soil should not be mixed with other waste or reject materials. It should be conserved by judicious utilization in the mine premises ○ Garland drains will be provided around the mine and dumps to arrest any soil from the mine area being carried away by the rain water. This will also avoid the soil erosion and siltation in the mining pits and maintaining the stability of the benches
6	Waste Dump	Stabilization of Dumps	<ul style="list-style-type: none"> ○ The rejects\ waste dump shall be properly terraced in to 1.5m benches with proper repose angle and then the top soil shall be spread over the dumps and slope to make them humus for some time, after the soil suitable for water retention trees will be planted at the top, slope and toe of the stabilized dumps to form vegetation. ○ Garland drainage around dump shall prevent under wash of dump by hydrostatic pressure to be developed by surface water and control wash outs and collapse ○ Dump should be terraced for every 5m height and stabilized
7	Plantation	Mine lease boundary and waste dump	<ul style="list-style-type: none"> ○ Provision of green belt all along the periphery of the lease area for control of dust and to attenuate noise ○ Stabilization of Dump with plantation ○ It is strongly recommended that the loss of plant in each year will be counted and again planted in subsequent plantation. ○ The plant should be planted taken from nursery, where the survival rate is high.
8	Land Environment		<ul style="list-style-type: none"> ○ The restoration of the degraded land would cover backfilling and terracing with the overburden / wastes and surfacing the same with top soil. ○ Provision of Garland drainage around the dumps ○ Fast growing trees and other native shrubs

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			<p>would be planted to stabilize the reclaimed land</p> <ul style="list-style-type: none"> ○ Appropriate measures will be taken for Green belt development. ○ The rain water will be stored in the pit which will recharge the ground water as a part of rain water harvesting scheme for irrigating the nearby agricultural lands.
9	Socio Economic		<ul style="list-style-type: none"> ○ Good maintenance practices will be adopted for machinery and equipment, which will help to avert potential noise problems. ○ Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines. ○ Drilling, blasting etc at specified location will be followed with proper schedule. ○ Appropriate air pollution control measure will be taken so as to minimize the environmental impact within the core zone. ○ An emergency preparedness plan will be prepared in advance, to deal with fire fighting, evacuation and local communication. ○ For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices has been provided which meet 'BIS' (Bureau of Indian Standards). ○ As a part of CSR activities, community welfare activities will be undertaken by the proponent which leads to socio economic development
10	Occupational Health		<ul style="list-style-type: none"> ○ First-aid facilities as per provisions under Rule (44) of Mines Rules 1955 ○ Initial and Periodical medical examination shall be conducted for the employees under

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			<p>Rule 29B & 45 (A).</p> <ul style="list-style-type: none">○ Insurance will be taken in the name of the labourers working in the mines○ Workers involved in mining work shall be provided protective equipments such as Thick Gloves, Goggles, ear plugs, safety boot wears, etc...
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1.6 Analysis of Alternatives

The quarrying site is dependent on the geology and mineral deposition of the area. Hence, this project is, mineral and site specific and no alternative site considered for this project.

1.7 Environmental Monitoring Program

Success of any environmental management programme depends upon the efficiency of the organizational set up responsible for the implementation of the programme. Regular monitoring of the various environmental parameters is also necessary to evaluate the effectiveness of the management programme. Environmental Monitoring Programme will be conducted for various environmental components as per conditions stipulated in the Environmental Clearance Letter issued by SEIAA & Consent to Operate issued by TNPCB.

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Table No: 1.9 Post Project Environmental Monitoring Program

S. No.	Environment Attributes	Location	Monitoring		Remarks
			Duration	Frequency	
1	Meteorology and Air Quality	Continuous monitoring weather station in core zone/ nearest IMD station	24 hours	Monthly Once	Wind speed, direction, Temperature, Relative humidity and Rainfall.
2	Air Pollution Monitoring – PM _{2.5} , PM ₁₀ , SO ₂ and NO _x	6 locations (One station in the core zone and at least one in nearby residential, area, one in the upwind, two station on the downwind direction and one in cross wind Direction).	8 hours	Six Month Once	Fine Dust Sampler and Respirable Dust Sampler
3	Water Pollution Monitoring	Mine effluents, Set of grab samples during pre and post monsoon for ground and surface water in the vicinity.	–	Six Month Once	Physico–chemical, microbiological characteristics
4	Hydrogeology	Water level in open wells in buffer zone around 1kmat specific wells	-	Once in 6months	Water level monitoring devices may be used
5	Noise	Mine Boundary, High noise generating areas within the lease and at the nearest residential area	24 hours	Monthly Once	Sound level meter

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6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting operation	Digital Seismograph
7	Soil	Core Zone and Buffer zone (Grab samples)	–	Six Month Once	Physical and Chemical characteristics

1.8 Project Benefits

The proponents, **Tvl. Everking Granites and Thiru.E.Jagadeesan** are very much conscious of his obligations to society at large. Under plantation programme, it is suggested to develop green belt further all along the boundary of the quarry lease area. Apart from the green belts and aesthetic plantation for eliminating fugitive emissions and noise control, all other massive plantation efforts will be executed with the assistance of experts and cooperation of the local community. The quarrying activity will create rural employment. In addition there will be indirect employment to many more people in the form of contractual jobs like construction of infrastructural facilities, transportation of Grey Granite to destinations, sanitation, supply of goods and services to the quarry and other community services etc. The local population will have preference to get an employment. The proponent will help in socio economic development of the village by providing educational facilities to children, and welfare amenities like drinking water to school; road and medical facilities to villages and employment opportunities to nearby villagers. CSR budget is allocated as 2.5% of the profit.

1.9 Environmental Management Plan

The Environmental Management Plan (EMP) must be integrated into the process of quarry planning so that the ecological balance of the area is well maintained and adverse effects are minimized. EMP includes all preventive as well as mitigation measures to minimize the impacts on the environment. The Quarry Plan is for the production of Granite without deep hole drilling and heavy blasting. Only controlled blasting is undertaken. Such limited quarrying activity is not likely to cause any impact adversely on the environment as far as pollution of air, water, land and noise is concerned.

2.0 Conclusion

As discussed, it is safe to mention that the project is not likely to cause significant impacts on the ecology and environment of the area, as adequate preventive measures will be adopted to contain the pollutants within permissible limits. The total operations shall be carried out with ease & minimum risk to the workers. The proposed Environmental Management Plan will keep the area in a safe environment with negligible impact on the environment. Plantation will substantiate the impact due to the quarrying activity. Quarrying activity will help in improving the socio-economic benefits in areas like employment, communication and infrastructure development.