EXECUTIVE SUMMARY

"B1" CATEGORY (Cluster) – MINOR MINERAL - PATTA LAND

IDAYARPALAYAM ROUGH STONE AND GRAVEL QUARRIES

Cluster Extent-16.08.34 Ha

(6 Proposed+1 Existing Quarries)

P1	P2
Thiru.S. Nandagopal S/o. Subramaniam, No. 6/215-A, Kadukuttai Road, Pattanam, Coimbatore District, Tamil Nadu State – 641 016	**Tmt. N. Chitradevi,** W/o. Nandhagopal, No. 6/215-A, Kadukuttai Road, Pattanam, Coimbatore District, Tamil Nadu State – 641 016
PROJECT LOCATION	**PROPOSED PRODUCTION**
P1 **Extent: 2.15.83 ha** S.F. Nos: 180/1 and 181/3 Idayarpalayam Village, Sulur Taluk, Coimbatore District **P2** **Extent: 1.60.0 ha** S.F.Nos. 179/2(Part), Idayarpalayam Village, Sulur Taluk, Coimbatore District.	**P1** Rough Stone = **2,31,510m^3** Peak Production =**35,850m^3** Gravel = **30,964m^3** Proposed Depth = **42m bgl** **P2** Rough Stone = **1,87,565m^3** Peak Production = **44,980m^3** Gravel = **7,502m^3** Proposed Depth = **57m bgl** Existing Depth = **20m bgl**
ToR obtained vide **File No. 11968 TOR Identification No. TO25B0108TN5897910N Dated:15.06.2025-P1** **File No. 11970 TOR Identification No. TO25B0108TN5935752N Dated:16.06.2025-P2**	
Environmental Consultant **GEO EXPLORATION AND MINING SOLUTIONS** **Old No. 260-B, New No. 17,** **Advaitha Ashram Road, Alagapuram,** **Salem – 636 004, Tamil Nadu, India** **Accredited for sector 1 Cat 'A', sector 31 & 38 Cat 'B'** **Certificate No : NABET/EIA/2225/RA 0276** Phone: 0427-2431989, Email: infogeoexploration@gmail.com **Web: www.gemssalem.com**	**Laboratory** **GLOBAL LAB AND CONSULTANCY SERVICES** **Approved by ISO:9001:2015, NABL, FSSAI, Experts in QHSE** S.F No:92/3A2, Geetha Nagar, Alagapuram Pudur, Salem-636016.
Baseline Monitoring Period **March to May 2025**	
AUGUST 2025	

1.0 INTRODUCTION

Project History- P1

The project proponent Thiru. S. Nandhagopal has applied for Rough Stone and Gravel Quarry over an extent of 2.15.83 Ha in S.F.Nos. 180/1 & 181/3, Idayarpalayam Village, Sulur Taluk & Coimbatore District.

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 13.06.2024
- Precise Area Communication Letter was issued by the District Collector, Coimbatore Rc. No 542/Mines/2024, Dated: 12.12.2024
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc. No. 542/Mines/2024, Dated: 04.02.2025.
- The proposed project falls under "B1" Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No.SIA/TN/MIN/529996/2025 Dated: 18.03.2025 and the ToR Was Granted vide Letter No File No.11968 TOR Identification No. TO25B0108TN5897910N Dated: 15.06.2025
- The proposal was placed in 565th SEAC meeting held on 15.05.2025 and the committee recommended for issue of ToR. The proposal was considered in 833rd SEIAA meeting held on 03.06.2025 and issued ToR vide Letter No File No.11968 TOR Identification No. TO25B0108TN5897910N Dated: 15.06.2025.

Project History- P2

The project proponent Tmt. N. Chitradevi has applied for Rough Stone and Gravel Quarry over an extent of 1.60.0 Ha in S.F.Nos. 179/2 (Part), Idayarpalayam Village, Sulur Taluk & Coimbatore District.

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 13.06.2024
- Precise Area Communication Letter was issued by the District Collector, Coimbatore Rc. No 541/Mines/2024, Dated: 12.12.2024
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc. No 541/Mines/2024, Dated: 04.02.2025
- The proposed project falls under "B1" Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No.SIA/TN/MIN/530101/2025 Dated: 20.03.2025 and the ToR Was Granted vide Letter No File No.11970 TOR Identification No. TO25B0108TN5935752N Dated: 16.06.2025
- The proposal was placed in 566th SEAC-II meeting held on 16.05.2025 and the committee recommended for issue of ToR. The proposal was considered in 834th SEIAA meeting held on 06.06.2025 and issued ToR vide Letter No File No.11970 TOR Identification No. TO25B0108TN5935752N Dated: 16.06.2025.
- It is a fresh application but the applied area has been considered quarrying operation earlier. The quarry lease was previously granted for quarrying Rough Stone and Gravel with lease granted details are given below.

S. No	Name of Ex Lessee	Ditrict collector's Proceeding Number and date	S.F. Nos	Validity	Lease Period
1	Tvl. ROBO Silicon Private Limited	Rc.No.1571/2009/MM2 Dated: 13.04.2010	179/2(P)	5 Years	13.04.2010 to 12.04.2015

- As per the EIA Notification, 2006 and subsequent amendments and OM The proposal falls in the B1 Category (Cluster quarries – 6 proposals, 1 Existing quarry and 2 Abandoned quarries forming Cluster

Category {Total Extent of the Cluster is 17.63.12 Ha}- Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016).

Based on the ToR Baseline Monitoring study has been carried out for one season (Summer Season) i.e., **March to May 2025** and this EIA/EMP report is prepared for considering cumulative impacts arising out of these projects, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) to minimize those adverse impacts.

"Draft EIA report prepared on the basis of ToR Issued for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu"

1.1 DETAILS OF PROJECT PROPONENT

Name of the Project Proponent	**Thiru. S. Nandhagopal**	**Tmt. N. Chitradevi**
Address	S/o. Subramaniam, No. 6/215-A, Kadukuttai Road, Pattanam, Coimbatore District – 641 016	W/o. Subramaniam, No. 6/215-A, Kadukuttai Road, Pattanam, Coimbatore District – 641 016
Mobile	+91 99441 65179	+91 99441 65179
Status	Individual	Individual

The project proponent is an individual.

1.2 QUARRY DETAILS WITHIN 500 M RADIUS

PROPOSED QUARRIES					
CODE	**Name of the Owner**	**Village**	**S.F. Nos**	**Extent in Ha**	**Status**
P1	**S. Nandhagopal**	Idayarpalayam	180/1 & 181/3	2.15.83	File No. 11968 TOR Identification No. TO25B0108TN5897910N Dated:15.06.2025
P2	**N. Chitradevi**		179/2 (Part)	1.60.00	File No. 10996 TOR Identification No. TO24B0108TN5260870T Dated:23.12.2024
P3	V. Saravanan		171/2 (Part) & 176/2	1.84.0	File No. 10794 TOR Identification No. TO24B0108TN5892891N Dated: 05.08.2024
P4	N. Vivek Prithviraj		180/3 (Part)	1.62.0	Precise area communicated
P5	M/s. Ultra Readymix concrete pvt Ltd		168/2A (P), 168/2B (P), 169/1C(P), 169/2A(P)	2.94.01	Precise area communicated
P6	K. Ranganathan		174/4, 176/1	2.28.00	Precise area communicated
	TOTAL EXTENT			**12.43.84**	
EXISTING QUARRIES					
CODE	**Name of the Owner**	**Village**	**S.F. Nos**	**Extent in Ha**	**Status**
E1	N. Chitradevi	Idayarpalayam	179/2(P)	3.64.5	14.07.2021 to 13.07.2026
	TOTAL EXTENT			**3.64.5**	
ABANDONED QUARRIES					
A-1	Thiru.M.Arumugam	Idayarpalayam	172/2	0.49.5	18.05.2008 to 17.05.2013
A-2	Tmt. Ponnammal		178/2	2.34.5	22.10.2004 to 21.10.2009
	TOTAL EXTENT			**2.84.00**	
	TOTAL CLUSTER EXTENT			**16.08.34**	

TABLE 1.3: SALIENT FEATURES OF THE PROPOSED PROJECTS IN CLUSTER

BRIEF DESCRIPTION OF THE PROJECT- P1

Name of the Project	Thiru. S. Nandhagopal Rough Stone & Gravel Quarry			
S.F. No.	180/1 and 181/3			
Extent	2.15.83 Ha			
Village, Taluk and District	Idayarpalayam Village, Sulur Taluk & Coimbatore District			
Land type	It is a Patta land (Barren land) which is not fit for vegetation/ Cultivation			
Land owner details	It is a Patta land, Registered in the name of the applicant Thiru. S. Nandhagopal vide Patta no.963. The S.F.No.181/3 is jointly registered in the name of the applicant and other 6 members vide patta no.958. The Applicant has purchased the S.F.No.181/3 and the same has been registered vide sale deed document no.7791/2020 dated:27.08.2020 in the sulur sub-registor office. But the name transfer in patta is pending till now.			
Toposheet No	58 - F/01			
Latitude between	**10°54'35.95.20"N to 10°54'43.4523"N**			
Longitude between	**77°06'35.9065"E to 77°06'41.7207"E**			
Highest Elevation	432m AMSL			
Mining Plan period	10 years			
Proposed Depth of Mining	42m below ground level.			
Geological Resources	Rough Stone in m^3	Gravel in m^3		
	8,90,600	44,530		
Mineable Reserves	Rough Stone in m^3	Gravel in m^3		
	2,31,510	30,964		
Yearwise Production	Rough Stone in m^3	Gravel in m^3		
	2,31,510	30,964		
Ultimate Pit Dimension	S.No	Length(m) (Max)	Width(m) (Max)	Depth(m) (Max)
	Pit- I	122	53	22m
	Pit – II	98	92	42m
Water Level in the surrounding areas	63 - 68m bgl			
Method of Mining	Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives			
Topography	The lease applied area is exhibits plain terrain. The area has gentle sloping towards Southwestern side. The altitude of the area is 432m (Max) above Mean sea level. The area is covered by the Gravel which is about 2m thickness. Massive Charnockite is found after 2m (Gravel) which is clearly inferred from the existing quarry pits.			
Machinery proposed	Jack Hammer	4 Nos		
	Compressor	1 Nos		
	Excavator with Bucket and Rock Breaker	1 No		
	Tippers	2 Nos		
	Water Sprinkling Tanker	1 No		
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.			
Proposed Manpower Deployment	23 Nos			
Project Cost	Rs. 1,42,24,000/-			
EMP Cost	Rs. 3,80,000/-			
Total Project cost	Rs. 1,60,59,000/-			
CER Cost	Rs. 3,00,000,/-			
Nearby Water Bodies	Odai	100m NW		
	Odai	1km SE		
	Canal	9km SE		
	Pallapalayam Lake	9.3km NW		
Greenbelt Development Plan	As per Mining plan it is Proposed to plant 1080 trees in the 7.5 m Safety Zone, approach road and panchayat roads.			

Proposed Water Requirement	2.0 KLD
Nearest Habitation	930m – NE
Nearest Reserve Forest	Boluvampatti I R.F. – 17.5 km –West
Nearest Wild Life Sanctuary	Indira Gandhi (Anamalai) Wildlife Sanctuary- 44.0km - South

BRIEF DESCRIPTION OF THE PROJECT- P2

Name of the Project	Tmt. N. Chitradevi	
S.F. No.	179/2 (Part)	
Extent	1.60.0 ha	
Village, Taluk and District	Idayarpalayam Village, Sulur Taluk & Coimbatore District	
Land Type	Patta land	
Existing Quarry Operation	It is an existing quarry. The quarry lease was previously operated by Tvl. ROBO Silicon Private Limited, in S.F.No. 179/2(P) vide Rc.No.1571/2009/MM2, Dated:13.04.2010 for the period of five years from 13.04.2010 to 12.004.201.	
Toposheet No	58 - F/01	
Latitude between	**10° 54' 28.7892"N to 10° 54' 33.4185"N**	
Longitude between	**77° 06' 41.7857"E to 77° 06' 46.7711"E**	
Elevation of the area	421m AMSL	
Lease period	5 Years	
Mining Plan period	5 years	
Existing Depth	20m	
Proposed Depth of Mining as per ToR	57m BGL (2m Gravel + 55m Rough Stone)	
	Rough Stone in m^3	Gravel m^3
Geological Resources	7,22,748	10,824
Mineable Reserves	1,87,565	7,502
Year wise Production as per ToR	1,87,565	7,502
Peak Production	44,980	7,502
Existing Pit Dimension	115m(L) x 90m(B) x 20m(D)(BGL)	
Ultimate Pit Dimension	259m(L) x 202m(B) x 50m(D)(BGL)	
Water Level in the region	65m -70m bgl	
Method of Mining	Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives	
Topography	The lease applied area is exhibiting plain terrain. The area has gentle sloping towards Southernwestern side and altitude of the area is 421m above from Mean Sea Level. The area is covered by 2m thickness of Gravel and followed by Massive Charnockite which is clearly inferred from the nearby open well.	
Machinery proposed	Jack Hammer	6Nos
	Compressor	2Nos
	Excavator with Bucket and Rock Breaker	1 Nos
	Trucks	3 Nos
	Water Sprinkling Tanker	1 No
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone.	
Proposed Manpower Deployment	29 Nos	
Operational Cost	Rs.1,63,24,000/-	
EMP Cost	Rs.3,80,000/-	
Total Project cost	Rs.1,78,75,000/-	
CER Cost	Rs. 3,00,000/-	

Nearby Water Bodies	Odai	370m NW
	Odai	800m SE
	Canal	8.8km SE
	Pallapalayam Lake	9.5km NW
Greenbelt Development Plan	Proposed to plant 800 Nos of trees considering 500 Nos of trees/ Ha criteria The plantation will be developed around the project site and nearby village roads	
Proposed Water Requirement	2.0 KLD	
Nearest Habitation	600m – North West	
Nearest Reserve Forest	Boluvampatti I R.F. – 17.5 km –West	
Nearest Wild Life Sanctuary	Indira Gandhi (Anamalai) Wildlife Sanctuary- 44.0km - South	

Source: Approved Mining Plan of the respective proposals

1.4 STATUTORY DETAILS

Project – P1 –

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 13.06.2024
- Precise Area Communication Letter was issued by the District Collector, Coimbatore Rc. No 542/Mines/2024 Dated: 12.12.2024
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc. No. 542/Mines/2024, Dated: 04.02.2025.
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- The proposal was placed in 565th SEAC meeting held on 15.05.2025 and the committee recommended for issue of ToR.
- The proposal was considered in 833rd SEIAA meeting held on 03.06.2025 and issued ToR vide File No.11968 TOR Identification No. TO25B0108TN5897910N Dated: 15.06.2025

Project – P2 –

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 13.06.2024
- Precise Area Communication Letter was issued by the District Collector, Coimbatore Rc. No 541/Mines/2024, Dated: 12.12.2024
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc. No 541/Mines/2024, Dated: 04.02.2025
- The proposed project falls under "B1" Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No.SIA/TN/MIN/530101/2025 Dated: 20.03.2025
- The proposal was placed in 566th SEAC-II meeting held on 16.05.2025 and the committee recommended for issue of ToR.
- The proposal was considered in 834th SEIAA meeting held on 06.06.2025 and issued ToR vide File No. 11970 TOR Identification No. TO25B0108TN5935752N Dated: 16.06.2025

2. PROJECT DESCRIPTION

The proposed project is site specific and there is no additional area required for this project. There is no effluent generation/discharge from the proposed quarries. Rough Stone and Gravel are proposed to be excavated by opencast mechanized method involving splitting of rock mass of

considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers and rock breakers to avoid secondary blasting.

2.1 SITE CONNECTIVITY TO THE PROJECT AREA

Nearest Roadway	NH544- Salem – Kochi -10.4.0km-NW SH163- Palladam– Othakalmandabam - 4.4km-NE
Nearest Village	Idayarpalayam – 1.15km- NE
Nearest Town	Sulur – 12.5km-North
Nearest Railway Station	Irugur – 12.5km-NW
Nearest Airport	Coimbatore – 15.2km – NW

Source: Survey of India Toposheet

2.2 LAND USE PATTERN OF THE PROPOSED PROJECT

P1			
Description	**Present area (Ha)**	**Area required during the first five years (Ha)**	**Area at the end of this quarrying period (Ha)**
Area under quarry	Nil	1.63.85	1.63.85
Infrastructure	Nil	0.01.00	0.01.00
Roads	Nil	0.01.00	0.02.00
Green Belt	Nil	0.27.87	0.46.66
Unutilized Area	2.15.83	0.22.11	0.02.32
Grand Total	**2.15.83**	**2.15.83**	**2.15.83**

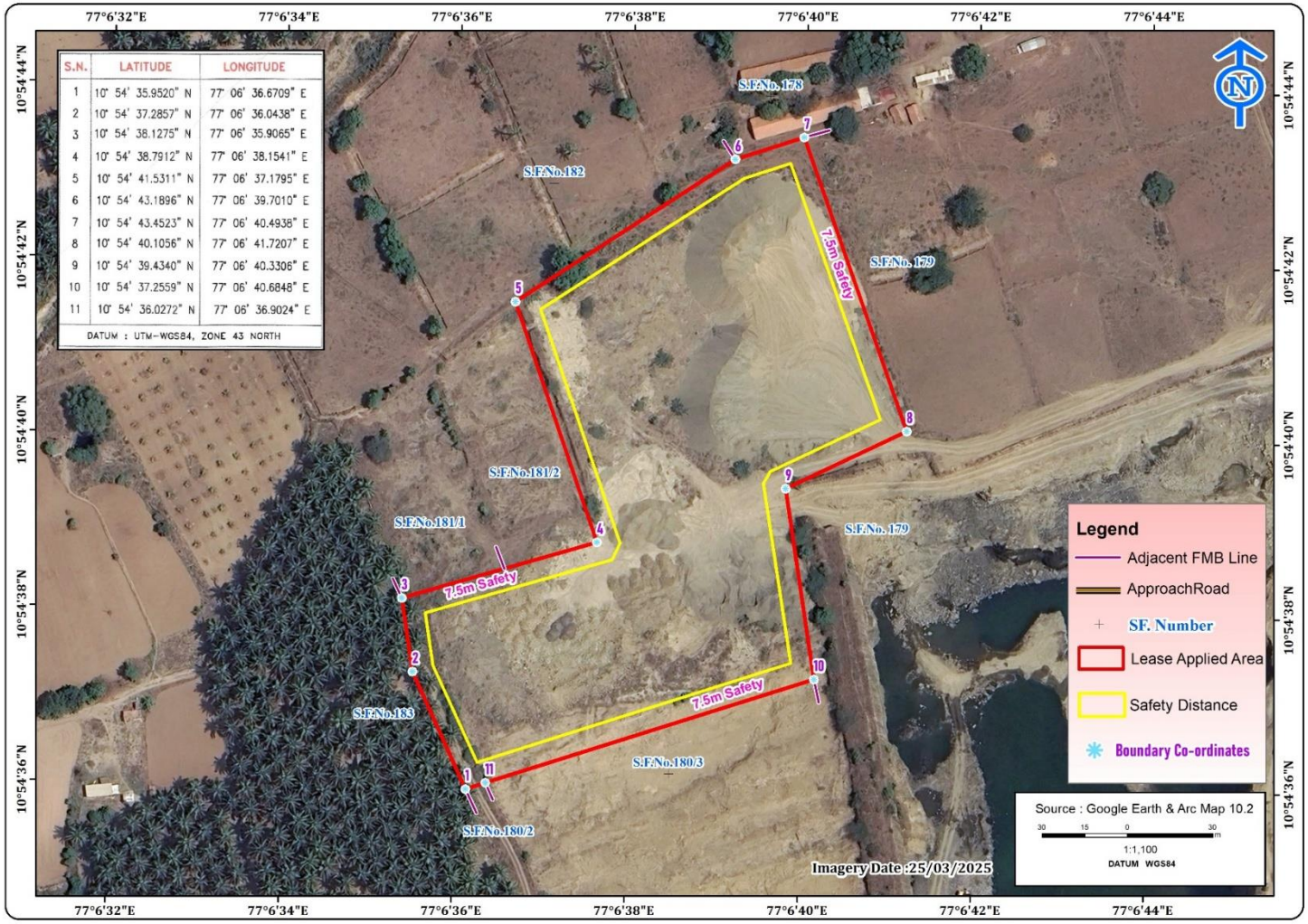
P2		
Description	**Present area (Ha)**	**Area at the end of this quarrying period (Ha)**
Area under quarry	0.92.70	1.35.65
Infrastructure	Nil	0.01.00
Roads	0.01.00	0.02.00
Green Belt	Nil	0.19.56
Unutilized Area	0.66.30	0.01.79
Grand Total	**1.60.00**	**1.60.00**

2.3 OPERATIONAL DETAILS OF LEASE APPLIED AREA

P1		
PARTICULARS	**DETAILS**	
	Rough Stone (10 Year Plan period)	**Gravel (3 Year Plan period)**
Geological Resources	8,90,600	44,530
Mineable Reserves	2,31,510	30,964
Production year wise plan period	2,31,510	30,964
Mining Plan Period / Lease Applied Period	10 Years	
Number of Working Days	300 Days	
Production per day in m^3	77	35
No of Lorry loads ($12m^3$ per load)	7	6
Total Depth of Mining	42m below the ground level	

P2		
PARTICULARS	**DETAILS**	
	Rough Stone (5Year Plan period)	**Gravel (1 Year Plan period)**
Geological Resources	7,22,748	10,824
Mineable Reserves	1,87,565	7,502
Production year wise plan period	1,87,565	7,502
Mining Plan Period / Lease Applied Period	5 Years	
Number of Working Days	300 Days	
Production per day in m^3	125	25
No of Lorry loads ($12m^3$ per load)	11	2
Total Depth of Mining	57m below the ground level	

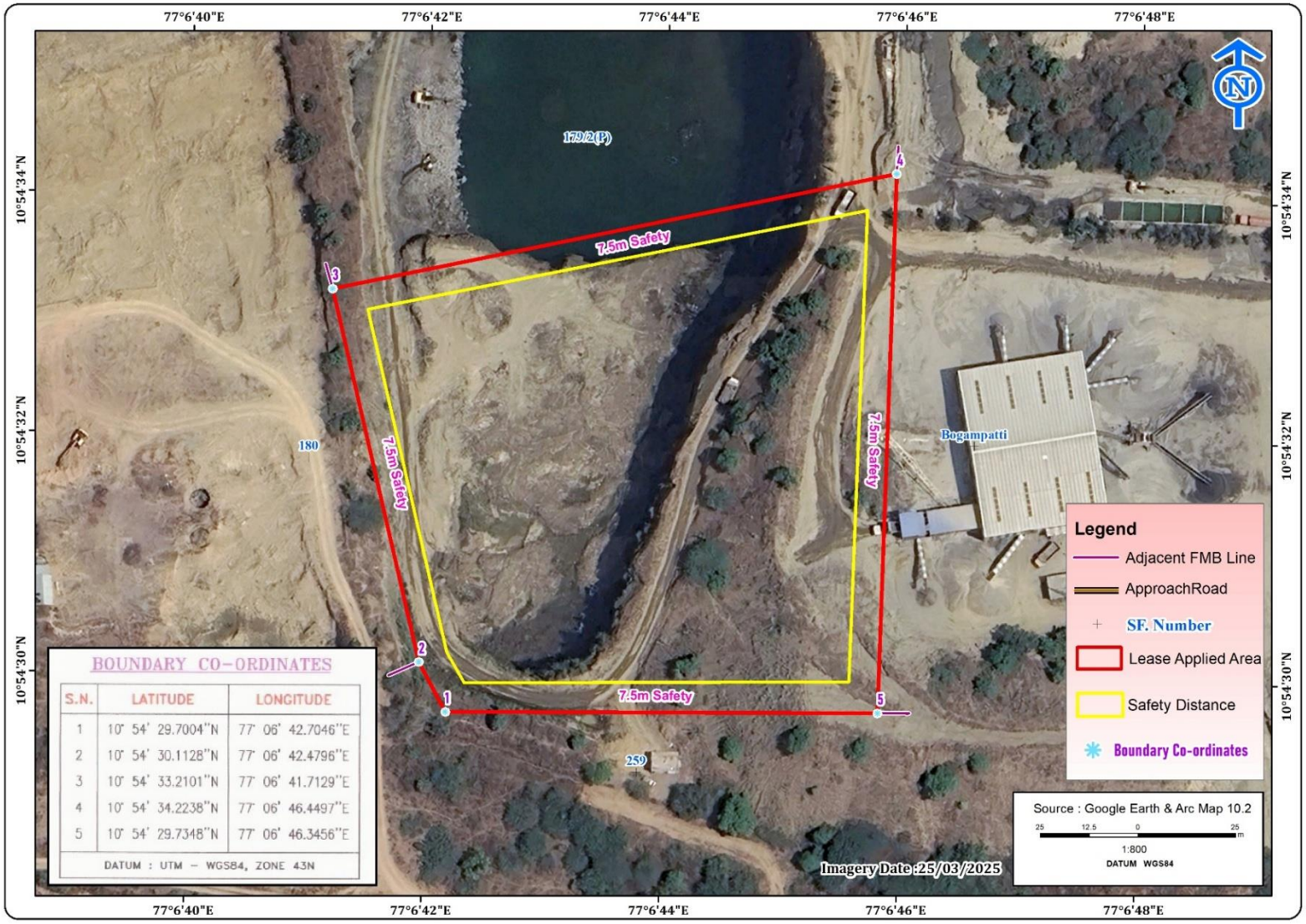
FIGURE – 1: GOOGLE IMAGE SHOWING PROJECT AREA



S.N.	LATITUDE	LONGITUDE
1	10° 54' 35.9520" N	77° 06' 36.6709" E
2	10° 54' 37.2857" N	77° 06' 36.0438" E
3	10° 54' 38.1275" N	77° 06' 35.9065" E
4	10° 54' 38.7912" N	77° 06' 38.1541" E
5	10° 54' 41.5311" N	77° 06' 37.1795" E
6	10° 54' 43.1896" N	77° 06' 39.7010" E
7	10° 54' 43.4523" N	77° 06' 40.4938" E
8	10° 54' 40.1056" N	77° 06' 41.7207" E
9	10° 54' 39.4340" N	77° 06' 40.3306" E
10	10° 54' 37.2559" N	77° 06' 40.6848" E
11	10° 54' 36.0272" N	77° 06' 36.9024" E

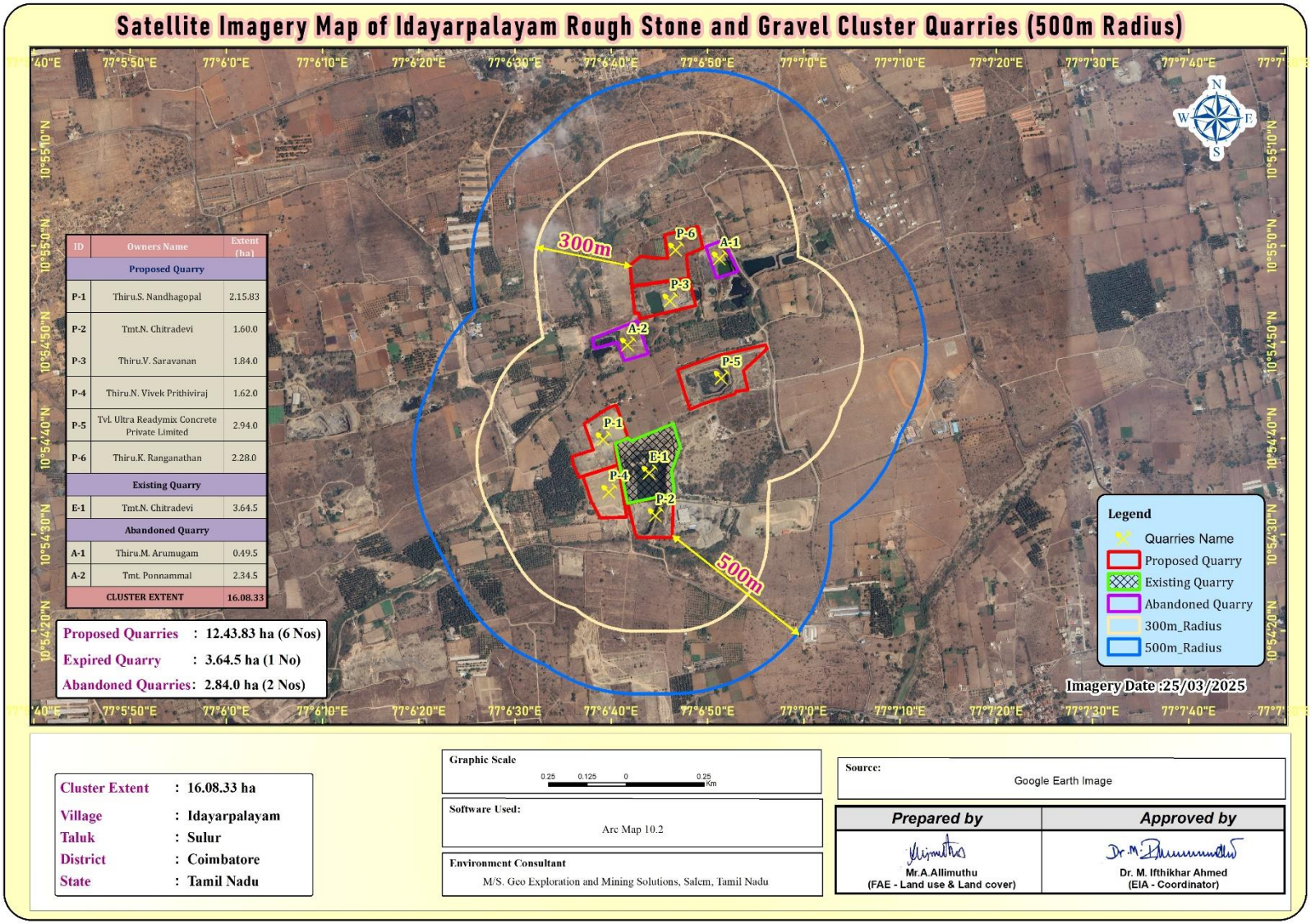
DATUM : UTM-WGS84, ZONE 43 NORTH

SATELLITE IMAGERY OF P1



SATELLITE IMAGERY OF P2

FIGURE – 2: GOOGLE IMAGE SHOWING CLUSTER (500 m QUARRIES)



ID	Owners Name	Extent (ha)
Proposed Quarry		
P-1	Thiru.S. Nandhagopal	2.15.83
P-2	Tmt.N. Chitradevi	1.60.0
P-3	Thiru.V. Saravanan	1.84.0
P-4	Thiru.N. Vivek Prithiviraj	1.62.0
P-5	Tvl. Ultra Readymix Concrete Private Limited	2.94.0
P-6	Thiru.K. Ranganathan	2.28.0
Existing Quarry		
E-1	Tmt.N. Chitradevi	3.64.5
Abandoned Quarry		
A-1	Thiru.M. Arumugam	0.49.5
A-2	Tmt. Ponnammal	2.34.5
CLUSTER EXTENT		16.08.33

FIGURE – 3: TOPOSHEET MAP COVERING 10 KM RADIUS

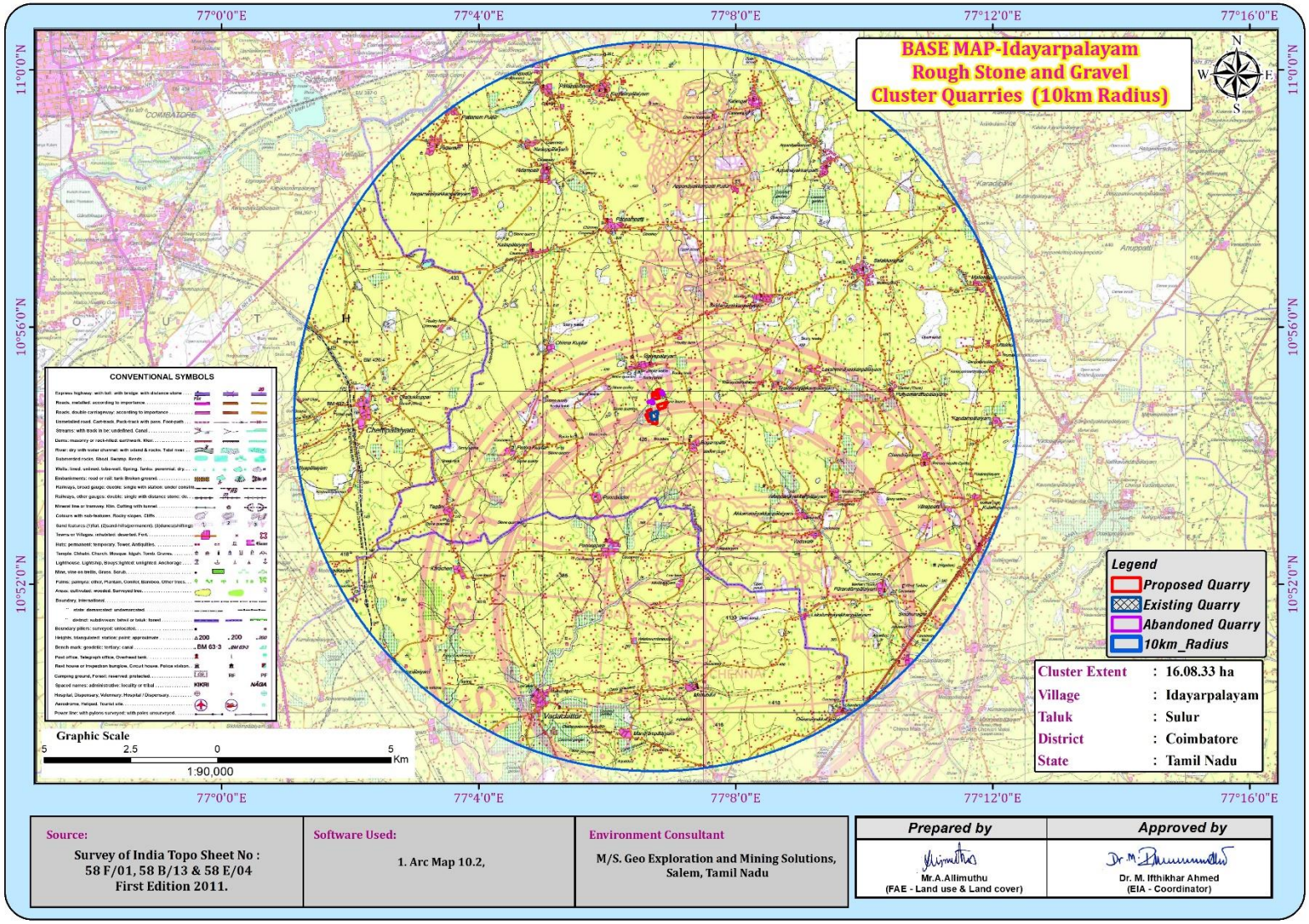
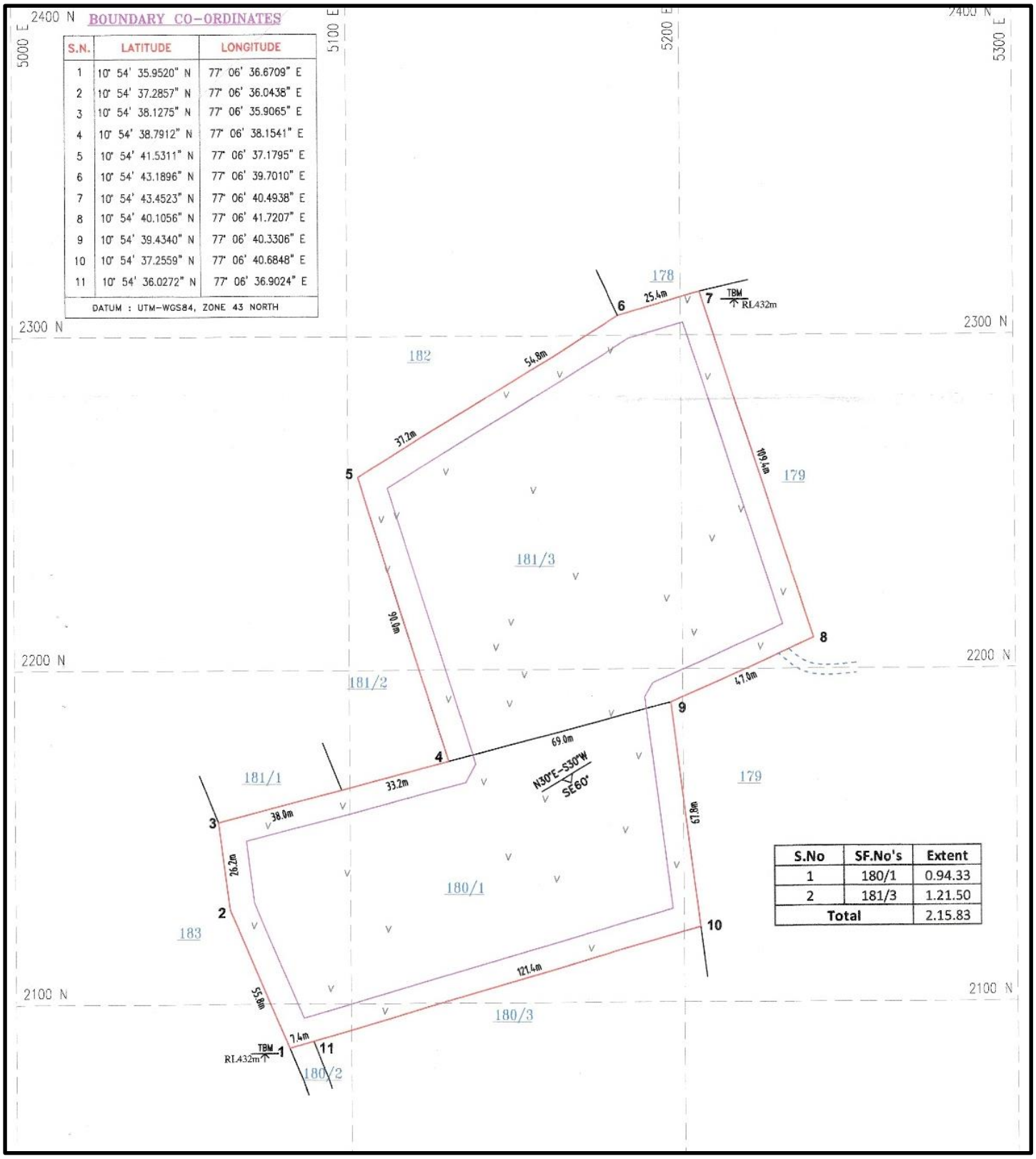
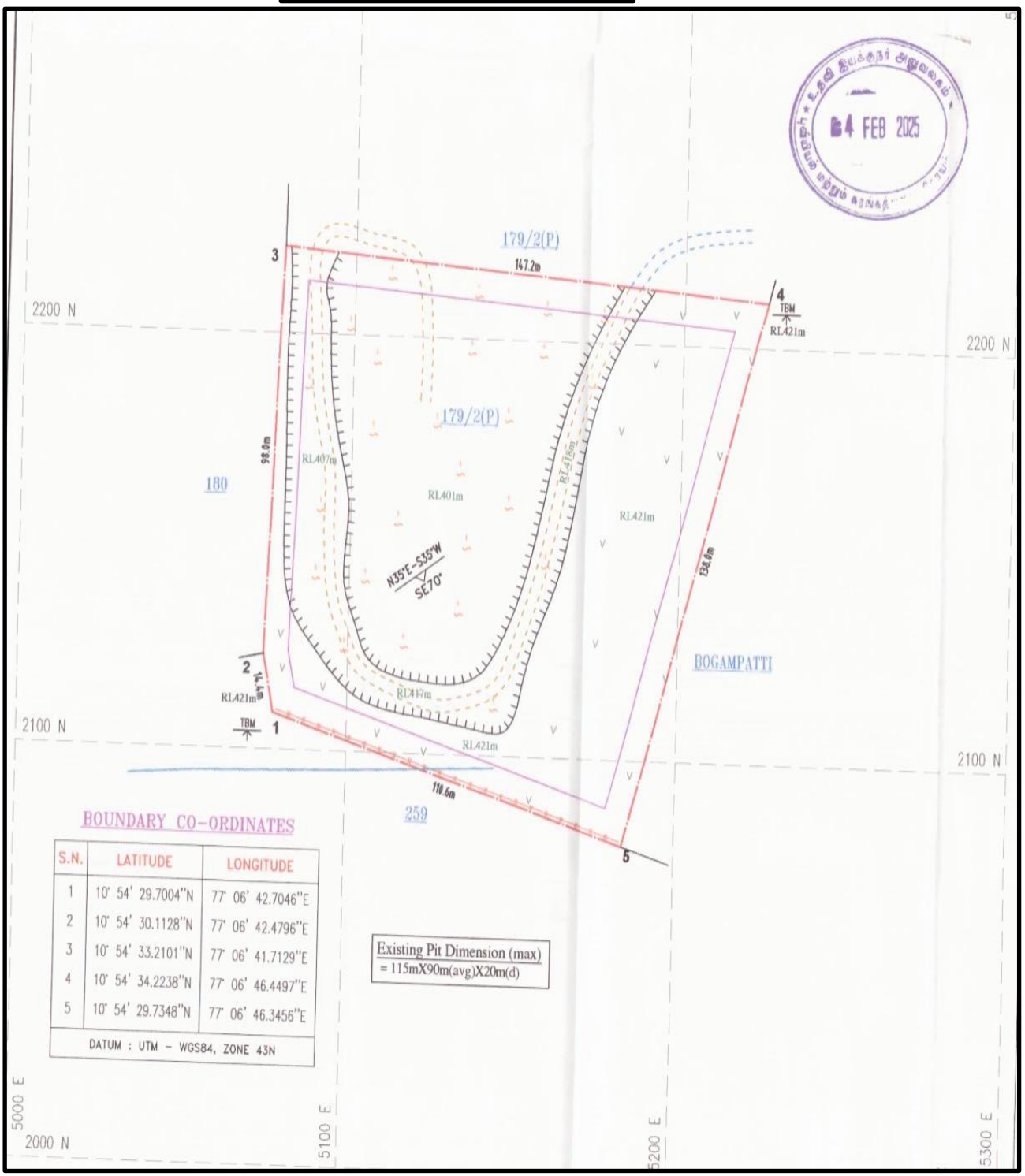


FIGURE – 4: QUARRY LEASE PLAN & SURFACE PLAN

P1– Thiru.S.Nandhagopal



P2–Tmt.N.Chithra Devi



2.4 METHOD OF MINING

Opencast Mechanized Mining Method is being proposed by formation of 5.0-meter height bench with a bench width not less than the bench height. However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act – 1952.

The top layer of Topsoil will be Excavate directly by Hydraulic Excavators and preserved all along the safety barrier to facilitate greenbelt development during Mine Closure Stage. The Rough Stone is a batholith formation and the splitting of rock mass of considerable volume from the parent rock mass will be carried out by deploying jackhammer drilling and Slurry Explosives will be used for blasting. Hydraulic Excavators attached with Rock Breakers unit will be deployed for breaking large boulders to required fragmented sizes to avoid secondary blasting and hydraulic excavators attached with bucket unit will be deployed for loading the Rough Stone into the tippers and then the stone is transported from pithead to the nearby crushers.

2.5 PROPOSED MACHINERY DEPLOYMENT

PROPOSAL – P1				
S.NO.	**TYPE**	**NOS**	**SIZE/CAPACITY**	**MOTIVE POWER**
1	Jack hammers	4	1.2m to 2.0m	Compressed air
2	Compressor	1	400psi	Diesel Drive
3	Excavator with Bucket and Rock Breaker	1	300 HP	Diesel Drive
4	Tippers	2	20 Tonnes	Diesel Drive
5	Water Sprinkling Tanker	1	6000 litres	Diesel Drive
PROPOSAL – P2				
S.NO.	**TYPE**	**NOS**	**SIZE/CAPACITY**	**MOTIVE POWER**
1	Jack hammers	6	1.2m to 2.0m	Compressed air
2	Compressor	2	400psi	Diesel Drive
3	Excavator with Bucket and Rock Breaker	1	300 HP	Diesel Drive
4	Tippers	3	20 Tonnes	Diesel Drive
5	Water Sprinkling Tanker	1	6000 litres	Diesel Drive

2.6 WATER REQUIREMENTS

PROPOSAL – P1		
***Purpose**	**Quantity**	**Source**
Dust Suppression	0.6 KLD	From Existing bore wells from nearby area
Green Belt	1.0 KLD	From Existing bore wells from nearby area
Domestic & Drinking purpose	0.4 KLD	From existing, bore wells and drinking water will be sourced from Approved water vendors
Total	**2.0 KLD**	
PROPOSAL – P2		
***Purpose**	**Quantity**	**Source**
Dust Suppression	0.6 KLD	From Existing bore wells from nearby area
Green Belt	1.0 KLD	From Existing bore wells from nearby area
Domestic & Drinking purpose	0.4 KLD	From existing, bore wells and drinking water will be sourced from Approved water vendors
Total	**2.0 KLD**	

2.7 CONCEPTUAL MINING PLAN/ FINAL MINE CLOSURE PLAN

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

2.8 ULTIMATE PIT DIMENSION P1 to P2

P1			
S.no	**Length (Max) (m)**	**Width (Max) (m)**	**Depth (Max)**
Pit – I	122	53	22m bgl
Pit II	98	92	42m bgl

P2			
S.no	**Length (Max) (m)**	**Width (Max) (m)**	**Depth (Max)**
Pit - I	110	118	57m bgl

3.0 DESCRIPTION OF THE ENVIRONMENT

The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions. The baseline environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering March 2025 to May 2025.as per CPCB & MoEF & CC guidelines.

3.1 ENVIRONMENT MONITORING ATTRIBUTES

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land-use Land cover	Land-use Pattern within 10 km radius of the study area	Data's from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
*Soil	Physio-Chemical Characteristics	Once during the study period	6 (1 core & 5 buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
*Water Quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	6 (1 surface water & 5 ground water)	IS 10500& CPCB Standards
Meteorology	Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall	1 Hourly Continuous Mechanical/Automatic Weather Station	1	Site specific primary data& Secondary Data from IMD Station
*Ambient Air Quality	PM10 PM2.5 SO2 NOX Fugitive Dust	24 hourly twice a week (oct to Dec 2024)	7 (2 core & 5 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	7 (2 core & 6 buffer zone)	IS 9989 As per CPCB Guidelines

Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrate & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio–Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

3.2 LAND ENVIRONMENT

To study the land use pattern of the core as well as a buffer zone, land use/land cover details have been identified/ maps have been prepared in accordance with the Standard ToR point**.** A visual interpretation technique has been adopted for land use supervised classification based on training site by Level III classification with 1:50,000 scale for the preparation of land use mapping. Land use pattern of the area was studied through **LISSIII** imagery of **NRSC-Bhuvan** The 10 km radius map of study area was taken for analysis of **Land use/Landcover.**

TABLE 3.1: LAND USE / LAND COVER TABLE 10 KM RADIUS

S.No	CLASSIFICATION	AREA_HA	AREA_%
	BUILTUP		
1	RURAL	1019.49	3.07
2	URBAN	0	0
3	MINING	346.79	1.04
	AGRICULTURAL LAND		
4	CROP LAND	19571.44	58.90
5	FALLOW LAND	7483.80	22.52
6	PLANTATION	3637.33	10.95
	BARREN/WASTE LANDS		
7	SCRUB LAND	1015.90	3.06
	WETLANDS/ WATER BODIES		
8	WATER BODIES/LAKE	151.94	0.46
TOTAL		33226.69	100.00

LU/LC Interpretation:

From the above table, pie diagram and land use map it is inferred that the majority of the land in the study area is Agriculture and fallow land (includes crop land) 92.37% followed by Built-up Lands – 4.11%, Scrub land – 3.06%, and Water bodies 0.46%.

The total mining area within the study area is 346.79 ha i.e., 1.04%. The cluster area of 16.08.34 ha contributes about 0.04% of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

The project site falls under the Roughstone and gravel region. Therefore, the area is appropriate for developing Road development and building etc., it shows that the region has good prospects in the future. Due to proposed Roughstone and gravel quarry in this region, economic condition of locals is

expected to be improved directly & indirectly. Hence project will prove to be the best economic proposal for the coming times.

3.3 SOIL ENVIRONMENT

The samples were analysed as per the standard methods prescribed in "Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India". The important properties analysed for soil are bulk density, porosity, infiltration rate, pH and Organic matter, kjeldahi Nitrogen, Phosphorous and Potassium

Interpretation & Conclusion

Physical Characteristics –

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay (26.9 % to 31.9 %) to Sandy Loam Soil and Bulk Density of Soils in the study area varied between 1.1 – 1.27 g/cc. The Water Holding Capacity of the soil samples is found to be medium i.e. ranging from 40.3 – 47.5 %.

Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline with pH range 6.91 to 7.28
- The available Nitrogen content range between 298.5 to 346.5 mg/kg
- The available Phosphorus content range between 3.12 to 6.21 mg/kg
- The available Potassium range between 26.7 mg/kg to 37.0031 mg/kg

3.4 WATER ENVIRONMENT

The study area is studded with few tanks that serve as the source of drinking water and also their surplus feeds adjoining tanks. The rainfall over the area is moderate, the rainwater storage in open wells and trenches are in practice over the area and the stored water acts as source of freshwater for couple of months after rainy season.

Surface Water

Ph:

The pH -8.12 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH).

Total Dissolved Solids:

Total Dissolved Solids 1025mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

Other parameters:

Chloride content is 298.6mg/l. Nitrates varied from 16.8 mg/l, while sulphates-75.9 mg/l.

Ground Water

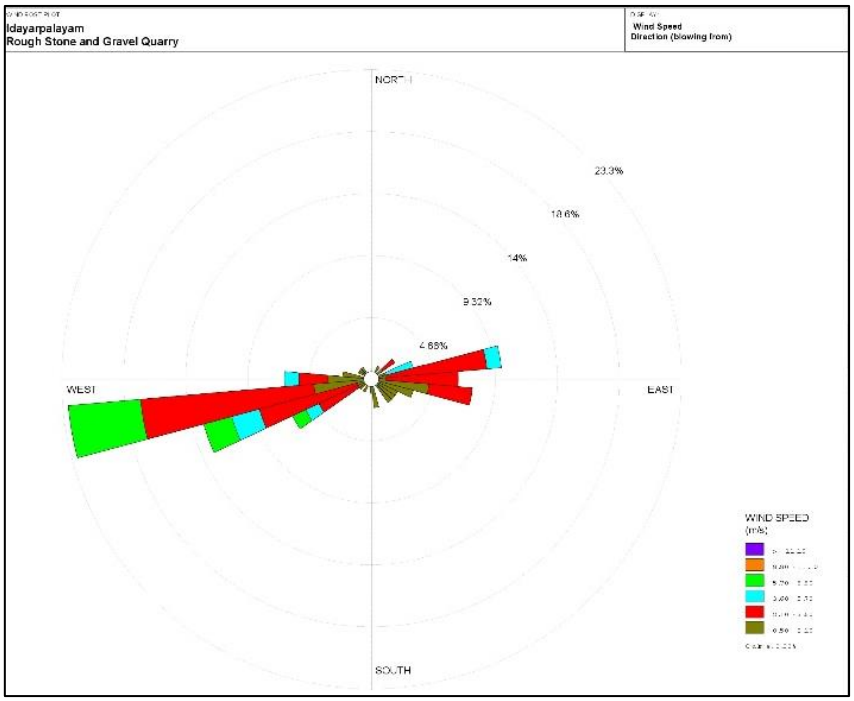
The pH of the water samples collected ranged from 7.23 to 7.80 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. Total Dissolved Solids were found in the range of 688 to 816mg/l in all samples. Total hardness varied between 181.8– 238.3mg/l for all samples.

On Microbiological parameters, the water samples from all the locations meet the requirement. The parameters thus analysed were compared with IS 10500:2012 and are well within the prescribed limits.

3.5 AIR ENVIRONMENT

The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 10 km radius around the proposed quarry forms the baseline information.

FIGURE – 6: WIND ROSE DIAGRAM



3.6 SUMMARY OF AMBIENT AIR QUALITY

As per monitoring data, PM_{10} ranges from 32.0 µg/m^3 to 48.2 µg/m^3, $PM_{2.5}$ data ranges from 14.8 µg/m^3 to 23.9 µg/m^3, SO_2 ranges from 5.0 µg/m^3 to 8.5 µg/m^3 and NO_2 data ranges from 14.8µg/m^3 to 25.8 µg/m^3. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

3.7 NOISE ENVIRONMENT

Ambient noise levels were measured at 7 (Seven) locations around the proposed project area. Noise levels recorded in core zone during day time were from 49.0-49.2 dB (A) Leq and during night time were from 42.5-42.7 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 50.0 to 51.9 dB (A) Leq and during night time were from 40.3 to 45.4 dB (A) Leq.

3.8 ECOLOGICAL ENVIRONMENT

The study involved in the collection of primary data by conducting a survey in the field, examination of floral and faunal records in previously published reports and records. Analysis of the information is the view of the possible alteration in the environment of the project site. For the survey of fauna, both direct and indirect observation methods were used.

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

3.9 SOCIO ECONOMIC ENVIRONMENT

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

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

The proposed project will aim to provide preferential 54 persons to the local people there by improving the indirect employment opportunity for 100 persons and in turn the social standards will improve.

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

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

4.1 LAND ENVIRONMENT:

ANTICIPATED IMPACT

- Permanent or temporary change on land use and land cover.
- Change in Topography: Topography of the ML area will change at the end of the life of the mine.
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
- Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
- Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.
- If no due care is taken wash off from the exposed working area may choke the water course & can also causes the siltation of water course.

MITIGATION MEASURES

- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development of greenbelt etc.,
- Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
- Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt.
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir.
- In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 7.5 m safety barrier and other safety provided) so as to help minimise dust emissions.

- Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle.

4.2 SOIL ENVIRONMENT

IMPACT ON SOIL ENVIRONMENT

Erosion and Sedimentation (Removal of protective vegetation cover; Exposure of underlying soil horizons that may be less pervious, or more erodible than the surface layers; Reduced capacity of soils to absorb rainfall; Increased energy in storm-water runoff due to concentration and velocity; and Exposure of subsurface materials which are unsuitable for vegetation establishment).

MITIGATION MEASURES FOR SOIL CONSERVATION

- Run-off diversion – Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry works areas. And will be discharged into vegetated natural drainage lines, or as distributed flow across an area stabilised against erosion.
- Sedimentation ponds - Run-off from working areas will be routed towards sedimentation ponds. These trap sediment and reduce suspended sediment loads before runoff is discharged from the quarry site. Sedimentation ponds should be designed based on runoff, retention times, and soil characteristics. There may be a need to provide a series of sedimentation ponds to achieve the desired outcome.
- Retain vegetation – Retain existing or re-plant the vegetation at the site wherever possible.
- Monitoring and maintenance – Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season

4.3 WATER ENVIRONMENT

ANTICIPATED IMPACT

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

MITIGATION MEASURES

- Garland drain, settling tank will be constructed along the project area. The Garland drain will be connected to settling tank and sediments will be trapped in the settling traps and only clear water will be discharged out to the natural drainage
- Providing benches with inner slopes and through a system of drains and channels, allowing rain water to descent into surrounding drains, so as to minimize the effects of erosion & water logging arising out of uncontrolled descent of water

- Reuse the water collected during storm for dust suppression and greenbelt development within the mines
- Installing interceptor traps/oil separators to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will pass through interceptor traps/oil separators prior to its reuse;
- Using flocculating or coagulating agents to assist in the settling of suspended solids during monsoon seasons;

4.4 AIR ENVIRONMENT

ANTICIPATED IMPACT

- Garland drain, settling tank will be constructed along the proposed mining lease area. The Garland drain will be connected to settling tank and sediments will be trapped in the settling traps and only clear water will be discharged out to the natural drainage
- Rainwater will be collected in sump in the mining pits 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 and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judicially utilize the rainwater as part of rainwater harvesting system.
- Providing benches with inner slopes and through a system of drains and channels, allowing rain water to descent into surrounding drains, so as to minimize the effects of erosion & water logging arising out of uncontrolled descent of water.
- Reuse the water collected during storm for dust suppression and greenbelt development within the mines
- Installing interceptor traps/oil separators to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will pass through interceptor traps/oil separators prior to its reuse;
- Using flocculating or coagulating agents to assist in the settling of suspended solids during monsoon seasons;
- Periodic (every 6 month once) analysis of quarry pit water and ground water quality in nearby villages.
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits.
- Waste water discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.
- De-silting will be carried out before and immediately after the monsoon season.
- Regular monitoring (every 6 month once) and analysing the quality of water in open well, bore wells and surface water.

MITIGATION MEASURES

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

Advantages of Wet Drilling:-

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.

- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

Blasting –

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face.
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas.
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day. i.e., at the time lunch hours, controlled charge per hole as well as charge per round of hole.
- Before loading of material water will be sprayed on blasted material.
- Dust mask will be provided to the workers and their use will be strictly monitored.

Haul Road & Transportation –

- Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- Transportation of material will be carried out during day time and material will be covered with taurpaulin
- The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- Water sprinkling on haul roads & loading points will be carried out twice a day
- Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process & makes reduction in the pollution.
- The un-metalled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.
- It will be ensured that all transportation vehicles carry a valid PUC certificate
- Grading of haul roads and service roads to clear accumulation of loose materials

Green Belt –

- Planting of trees all along main mine haul roads and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project areas

Occupational Health –

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical check-ups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- AAQ monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed

4.5 NOISE ENVIRONMENT

ANTICIPATED IMPACT

Noise pollution poses a major health risk to the mine workers. Following are the sources of noise in the existing open cast mine project are being observed such as Drilling, & Blasting, Loading and during movement of vehicles.

MITIGATION MEASURES

- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;
- The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;
- Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;
- Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- Silencers / mufflers will be installed in all machineries;
- Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;
- Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured though training and awareness.
- Regular medical check–up and proper training to personnel to create awareness about adverse noise level effects.

4.6 BIOLOGICAL ENVIRONMENT

ANTICIPATED IMPACT

There is no Forest land, National Parks, Eco sensitive areas, Wild life sanctuaries within the radius of 10km.

There are no migratory corridors, migratory avian-fauna, and rare endemic and endangered species. There are no wild animals in the area. No breeding and nesting site were identified in project site. No National Park and Wildlife Sanctuary found within 10km radius. The dumps / bunds around the mine itself act as a good barrier for entry of stray animals. In the post mining stage, barbed wire fencing is proposed all around the mined-out void to prevent fall of animals in the mine pits.

MITIGATION MEASURES

Keeping all this in mind the mitigations have been suggested under environmental management plan. With the understanding of the role of plant species as bio-filter to control air pollution, appropriate plant species (mainly tree species) have been suggested conceding the area/site requirements and needed performance of specific species. The details of year wise proposed plantation program are given in Table 4.13.

The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas

In order to compensate the loss of vegetation cover, it is suggested to carry out afforestation program mainly in proposed areas falls in the cluster earmarked for plantation program as per Approved Mining Plan in different phases. This habitat improvement program would ensure the faunal species to re-colonize and improve the abundance status in the core zone.

The objectives of the green belt cover will cover the following:

- Noise abatement
- Ecological restoration

- Aesthetic, biological and visual improvement of area due to improved vegetative and plantations cover.

4.7 SOCIO ECONOMIC ENVIRONMENT

ANTICIPATED IMPACT

- Dust generation from mining activity can have negative impact on the health of the workers and people in the nearby area.
- Approach roads can be damaged by the movement of tippers.
- Increase in Employment opportunities both direct and indirect thereby increasing economic status of people of the region.

MITIGATION MEASURES

- Good maintenance practices will be adopted for all 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.
- Air pollution control measure will be taken to minimize the environmental impact within the core zone.
- For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per mines act and rules.
- Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc.., from this project directly and indirectly.
- From above details, the quarry operations will have highly beneficial positive impact in the area

5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

No alternatives are suggested as all the mine sites are mineral specific

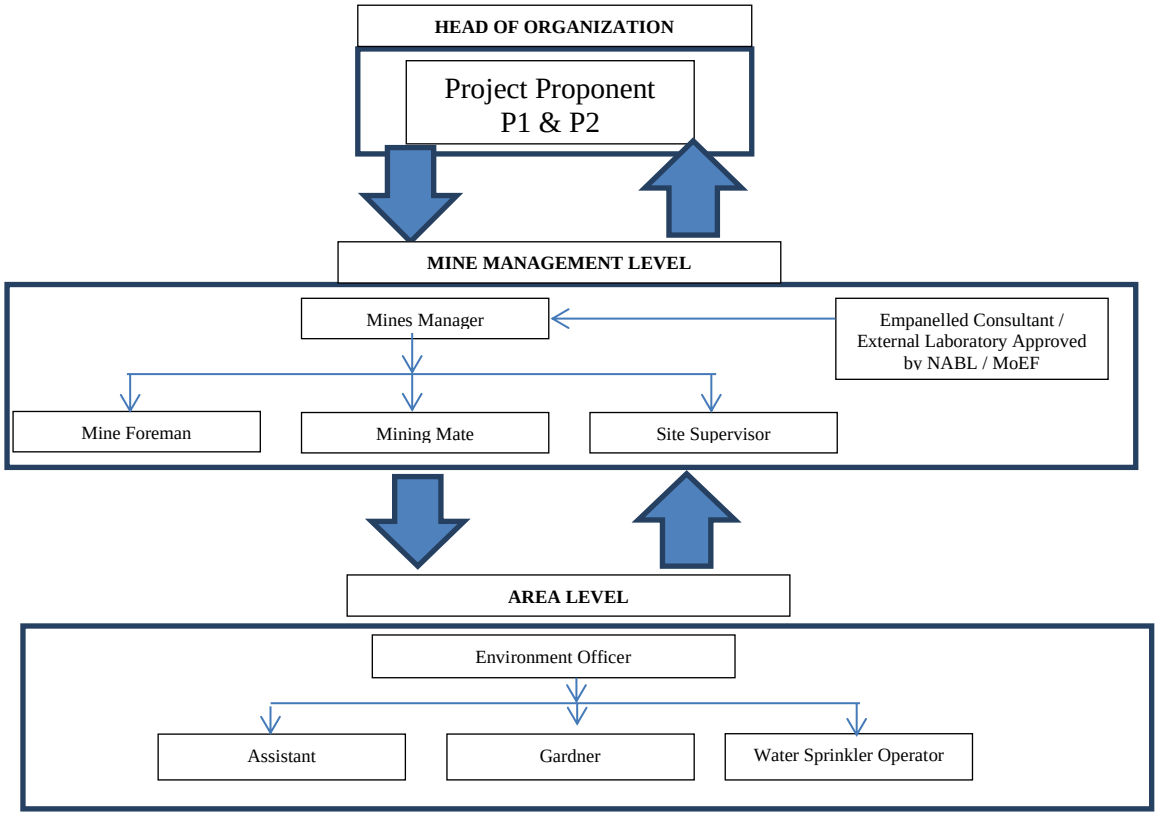
6. ENVIRONMENT MONITORING PROGRAM

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

The responsibilities of this cell will be:

- Implementation of pollution control measures
- Monitoring programme implementation
- Post-plantation care
- To check the efficiency of pollution control measures taken
- Any other activity as may be related to environment
- Seeking expert’s advice when needed.

6.1 ENVIRONMENTAL MONITORING CELL



6.2 POST ENVIRONMENTAL CLEARANCE MONITORING SCHEDULE

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, $PM_{2.5}$, PM_{10}, SO_2 and NO_x.
2	Meteorology	At mine site before start of Air Quality Monitoring & IMD Secondary Data	Hourly / Daily	Continuous online monitoring	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall
3	Water Quality Monitoring	2 Locations (1SW & 1 GW)	-	Once in 6 months	Parameters specified under IS:10500, 1993 & CPCB Norms
4	Hydrology	Water level in open wells in buffer zone around 1 km at specific wells	-	Once in 6 months	Depth in bgl
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting Operation	Peak Particle Velocity

7	Soil	2 Locations (1 Core & 1 Buffer)	–	Once in six months	Physical and Chemical Characteristics
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance

7. ADDITIONAL STUDIES

7.1 RISK ASSESSMENT

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

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

7.2 DISASTER MANAGEMENT PLAN

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

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

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

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

7.3 CUMULATIVE IMPACT STUDY

CUMULATIVE PRODUCTION LOAD OF ROUGH STONE IN CLUSTER

Quarry	Production for five-year plan period	Per Year Production in m^3	Per Day Production in m^3	Number of Lorry Load Per Day
P1	2,31,510	23,151	77	7
P2	1,87,565	37,513	125	11
Total	4,19,075	60,664	202	18
E1	2,63,226	52,645	175	15
Total	**2,63,226**	**52,645**	**175**	**15**
Grand Total	**6,82,301**	**1,13,309**	**377**	**33**

CUMULATIVE PRODUCTION LOAD OF GRAVEL IN CLUSTER

Quarry	Production for three-year plan period	Per Year Production in m^3	Per Day Production in m^3	Number of Lorry Load Per Day
P1	30,964	10,321	35	6
P2	7,502	7,502	25	2
Total	**38,466**	**17,823**	**60**	**8**
E1	27,000	9,000	30	3
Total	27,000	9,000	30	3
Grand Total	**65,466**	**26,823**	**90**	**11**

EMISSION ESTIMATION FROM CLUSTER MINES

EMISSION ESTIMATION FOR QUARRY "P1"				
	Activity	**Source type**	**Value**	**Unit**
Estimated Emission Rate for PM_{10}	Drilling	Point Source	0.066617007	g/s
	Blasting	Point Source	0.000317351	g/s
	Mineral Loading	Point Source	0.039783643	g/s
	Haul Road	Line Source	0.002487354	g/s/m
	Overall Mine	Area Source	0.052759238	g/s
Estimated Emission Rate for SO_2	Overall Mine	Area Source	0.000346542	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.000016687	g/s
EMISSION ESTIMATION FOR QUARRY "P2"				
	Activity	**Source type**	**Value**	**Unit**
Estimated Emission Rate for PM_{10}	Drilling	Point Source	0.076996100	g/s
	Blasting	Point Source	0.000654573	g/s
	Mineral Loading	Point Source	0.040980015	g/s
	Haul Road	Line Source	0.002489145	g/s/m
	Overall Mine	Area Source	0.047153379	g/s
Estimated Emission Rate for SO_2	Overall Mine	Area Source	0.000463726	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.000017138	g/s
EMISSION ESTIMATION FOR QUARRY "E1"				
	Activity	**Source type**	**Value**	**Unit**
Estimated Emission Rate for PM_{10}	Drilling	Point Source	0.085235660	g/s
	Blasting	Point Source	0.001088231	g/s
	Mineral Loading	Point Source	0.042288879	g/s
	Haul Road	Line Source	0.002491726	g/s/m
	Overall Mine	Area Source	0.066196924	g/s
Estimated Emission Rate for SO_2	Overall Mine	Area Source	0.000688027	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.000053696	g/s

SOCIO ECONOMIC BENEFITS

Location ID	Project Cost	CER
P1	Rs.1,60,59,000/-	Rs.3,00,000
P2	Rs.1,78,75,000/-	Rs.3,00,000
Total	**Rs.3,39,34,000/-**	**Rs.6,00,000**
E1	Rs. 1,46,40,700/-	Rs.5,00,000
Total	**Rs.1,46,40,700/-**	**Rs.5,00,000**
Grand Total	**Rs.4,85,74,700/-**	**Rs.11,00,000**

EMPLOYMENT BENEFITS FROM 3 MINES

Description	Employment
P1	23

P2	29
Total	**52**
E1	31
Total	**31**
Grand Total	**83**

8. PROJECT BENEFITS

The Proposed Project for Quarrying Rough Stone at Idayarpalayam Village aims to produce 4,19,075m^3 Rough Stone over a period of 5 Years and 38,466m^3 of Gravel over a period of 2 Years This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

- Increase in Employment Potential
- Improvement in Socio-Economic Welfare
- Improvement in Physical Infrastructure
- Improvement in Social infrastructure

9. ENVIRONMENT MANAGEMENT PLAN

The Environment Monitoring cell discussed formed by the mine management will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level.

The said team will be responsible for:

- Monitoring of the water/ waste water quality, air quality and solid waste generated.
- Analysis of the water and air samples collected through external laboratory.
- Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- Co-ordination of the environment related activities within the project as well as with outside agencies.
- Collection of health statistics of the workers and population of the surrounding villages.
- Green belt development.
- Monitoring the progress of implementation of the environmental monitoring programme.
- Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

10. CONCLUSION

Various aspects of mining activities were considered and related impacts were evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and fund has been allocated for the same. The EMP is dynamic, flexible and subjected to periodic review. For project where the major environmental impacts are associated, EMP will be under regular review. Senior Management responsible for the project will conduct a review of EMP and its implementation to ensure that the EMP remains effective and appropriate. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.