

# EXECUTIVE SUMMARY

## PROJECT PROPONENTS

Sl. No.	Name	Extent of Mining Applied
1	Thiru. K. M. Chinnaswamy	2.42.0 ha
2	Thiru. R. Subramaniyan	1.99.5 ha
3	Thiru. M. Venkatesh	2.25.5 ha
4	Thiru. M. Venkatesh	3.32.78 ha

### KODANGIPALAYAM ROUGH STONE & GRAVEL QUARRY – CLUSTER – A

### “B1” CATEGORY – MINOR MINERAL – CLUSTER – NON-FOREST LAND

**CLUSTER EXTENT = 35.78.28 ha**

**At**

Kodangipalayam Village, Palladam Taluk, Tiruppur District

Complied as per ToR obtained for the Projects in Cluster Situation –  
Cluster area is calculated as per MoEF & CC Notification – S.O. 2269  
(E) Dated: 01.07.2016

- ✚ Letter No. Lr No. SEIAA-TN/F.No.8601/SEAC/TOR-1030/2021 Dated :26.08.2021 for P1;
- ✚ Letter No. Lr No. SEIAA-TN/F.No.8623/SEAC/TOR-1022/2021 Dated :26.08.2021 for P2;
- ✚ Letter No. Lr No. SEIAA-TN/F.No.8859/SEAC/TOR-1121/2021 Dated :23.03.2022 for P3 and
- ✚ Letter No. Lr No. SEIAA-TN/F.No.8623/SEAC/TOR-1102/2021 Dated :21.03.2022 for P4.

**Environmental Consultant**

**GEO EXPLORATION AND MINING SOLUTIONS**



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## 1. INTRODUCTION

Rough Stone & Gravel is the major requirements for construction industry. This EIA report is prepared by considering Cumulative load of all proposed & existing quarries of Kodangipalayam Rough Stone & Gravel Quarries Cluster “A” consisting of 4 Proposed and 16 Existing Quarries with total extent of Cluster of 35.78.28 ha in Kodangipalayam Village, Palladam Taluk, Tiruppur District and Tamil Nadu State, cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1<sup>st</sup> July 2016.

This EIA Report is prepared in compliance with ToR obtained vide –

- ✚ Letter No. Lr No. SEIAA-TN/F.No.8601/SEAC/TOR-1030/2021 Dated :26.08.2021 for P1;
- ✚ Letter No. Lr No. SEIAA-TN/F.No.8623/SEAC/TOR-1022/2021 Dated :26.08.2021 for P2;
- ✚ Letter No. Lr No. SEIAA-TN/F.No.8859/SEAC/TOR-1121/2021 Dated :23.03.2022 for P3 and
- ✚ Letter No. Lr No. SEIAA-TN/F.No.8623/SEAC/TOR-1102/2021 Dated :21.03.2022 for P4.

The Baseline Monitoring study has been carried out during the period of October – December 2021 (Baseline Data Used is as per MoEF & CC Office Memorandum No. J-11013/41/2006-IA-II (I) (Part) Dated 29<sup>th</sup> August 2017 & MoEF & CC Office Memorandum F. No. IA3-22/10/2022-IA.III [E 177258] Dated: 08.06.2022) and this EIA and 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) individually 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 –

<b>PROPOSAL – P1</b>	
Name of the Project	Thiru. K. M. Chinnaswamy Rough Stone and Gravel quarry
S.F. No.	89/4B (P), 92/2
Extent	2.42.0 ha
Land Type	Patta Land
Village Taluk and District	Kodangipalayam Village, Palladam Taluk, Tiruppur District
<b>PROPOSAL – P2</b>	
Name of the Project	Thiru. R. Subramaniyan Rough Stone and Gravel quarry
S.F. No.	114/1B,1C
Extent	1.99.5 ha
Land Type	Patta Land
Village Taluk and District	Kodangipalayam Village, Palladam Taluk, Tiruppur District
<b>PROPOSAL – P3</b>	
Name of the Project	Thiru. M. Venkatesh Rough Stone and Gravel quarry
S.F. No.	114/1A,115/1B & 115/2
Extent	2.25.5 ha
Land Type	Patta Land
Village Taluk and District	Kodangipalayam Village, Palladam Taluk, Tiruppur District
<b>PROPOSAL – P4</b>	
Name of the Project	Thiru. M. Venkatesh Rough Stone and Gravel quarry
S.F. No.	112 (P), 113/4B (P) & 115/1A
Extent	3.32.78 ha
Land Type	Patta Land
Village Taluk and District	Kodangipalayam Village, Palladam Taluk, Tiruppur District

**1.2 QUARRY DETAILS WITHIN 500 M RADIUS**

<b>PROPOSED QUARRIES</b>				
<b>CODE</b>	<b>Name of the Owner</b>	<b>S.F. Nos</b>	<b>Extent</b>	<b>Status</b>
<b>P1</b>	<b>Thiru. K. M. Chinnaswamy,</b> S/o. Mylsamy, No.5/174, Kadampadi, Sulur, Coimbatore – 641 401	89/4B (P), 92/2	2.42.0 ha	Received for TOR Vide Lr No. SEIAA- TN/F.No.8601/SEAC/TOR- 1030/2021 Dated :26.08.2021
<b>P2</b>	<b>Thiru. R. Subramaniyan,</b> S/o. Rangasamy, 1/404, Thachankadu, Devarayan Palayam, Palladam Taluk	114/1B,1C	1.99.5 ha	Received TOR Vide Lr No. SEIAA- TN/F.No.8623/SEAC/TOR- 1022/2021 Dated :26.08.2021
<b>P3</b>	<b>Thiru. M. Venkatesh</b> S/o. K.K. Mani, 3/532, Karanampettai, Palladam Taluk, Tiruppur District	114/1A,115/1B & 115/2	2.25.5 ha	Received TOR Vide Lr No. SEIAA- TN/F.No.8859/SEAC/TOR- 1121/2021 Dated :23.03.2022
<b>P4</b>	<b>Thiru. M. Venkatesh</b> S/o. K.K. Mani, 3/532, Karanampettai, Palladam Taluk, Tiruppur District	112 (P), 113/4B (P) & 115/1A	3.32.78 ha	Received TOR Vide Lr No. SEIAA- TN/F.No.8623/SEAC/TOR- 1102/2021 Dated :21.03.2022
<b>TOTAL</b>			<b>9.99.78 ha</b>	

<b>EXISTING QUARRIES</b>				
<b>CODE</b>	<b>Name of the Owner</b>	<b>S.F. No</b>	<b>Extent</b>	<b>Status</b>
E1	<b>Thiru. G. Balasubramaniyam</b> S/o. Gurusamy Gounder, 1/398, Anti Thottam North, Karanampettai, Palladam (Tk), Tiruppur (Dt)	103/2C	1.15.5 ha	18.01.2018-17.01.2023
E2	<b>Tmt. M. Subbathal,</b> W/o. Murugasamy, No. 4/32, Karanampettai, Palladam Taluk, Tiruppur District - 641 662	114/2C, 2D, 2E1, 2E2, 2F and 2G1	1.82.0 ha	EC Obtained Dated: 02.02.2022
E3	<b>Thiru. K. Boopathy,</b> S/o. Krishnasamy, No.1/219, Manal Kaadu, Karanampettai, Palladam Taluk, Tiruppur District - 641662	158/2I	1.59.0 ha	EC Obtained Dated: 02.02.2022
E4	<b>Thiru. V. Gangesan,</b> S/o. K. S. Velusamy, 5/10, Mariyappa Devar Street, Sulur, Coimbatore – 641 402	103/3A1A (Part), 3A2 & 3B1	1.81.0 ha	18.04.2018-17.04.2023
E5	<b>Thiru. R. Gunasekar,</b> S/o. Ramasamy, 3/176, Aruljothi Nagar, Karanampettai, Palladam Taluk, Tiruppur.	103/3B2	1.69.5 ha	16.04.2018-15.04.2023
E6	<b>Thiru. V. Prakash,</b> S/o. Venkatachalam, 1/699, Karanampettai, Palladam, Tiruppur – 641 664	113/6	0.86.0 ha	20.09.2019-19.09.2024
E7	<b>Thiru. K. S. Rajendran,</b> S/o. Subramanian, 1/403, North Andi Thottam,	158/2H	1.20.5 ha	08.09.2017-07.09.2022

	Karanampettai Post, Palladam, Tiruppur – 641 401			
E8	<b>Thiru. K. S. Rajendran,</b> S/o. Subramaniam, No.1/403, Somanur Road, Karanampettai, Palladam Taluk Tiruppur District -641 666	154/2C & 158/2K	1.21.5 ha	EC Obtained Dated: 04.02.2022
E9	<b>Thiru. K. Sivakumar,</b> S/o. Krishnasamy Gounder, No.1/219, Manalkadu, Karanampettai, Palladam, Tiruppur– 641 662	154/2B & 158/2J	1.96.0 ha	29.09.2018-19.09.2023
E10	<b>Thiru. D.R. Karuppasamy,</b> S/o. Rangasamy, No.1/403, Thatchenkadu, Devarayanpalayam, Ichipatti, Palladam, Tiruppur – 641 668	102/1	1.32.5 ha	EC Obtained Dated: 28.12.2022
E11	<b>Thiru. R. Ganesan,</b> S/o. Ramasamy, No.C-7, Phase I Parsn, Nanjundapuram Road, Coimbatore District - 641 036	117/3(P), 4(P), 9A, 10A, 10B(P), 11A, 11B (P) & 12 (P)	2.19.0 ha	EC Obtained Dated: 28.12.2022
E12	<b>Tmt. P. Vasanthamani,</b> W/o. R. Palanisamy, No.1/7, Kangeyampalayam, Sulur Taluk, Coimbatore	91/1A(P)	1.72.0 ha	10.11.2017 – 09.11.2022
E13	<b>Thiru. M. Velusamy,</b> S/o. Murugasamy Gounder, 1/78, Perumagoundan palayam, Karanampettai, Palladam, Tiruppur District -641 662	139/1, 140/2B	0.73.0 ha	11.08.2017-10.08.2022
E14	<b>Thiru. M. Rajeshkumar,</b> S/o. K. K. Mani, No.1/1017, Somanur Road, Karanampettai, Palladam, Tiruppur District – 641 662.	122/1A	3.20.0 ha	EC Obtained Dated: 04.02.2022
E15	<b>Tmt. P. Vijayalakshmi,</b> W/o. Ponnusamy, 3/177, Arul Jothi Nagar, Karanampettai, Palladam, Tiruppur District – 641 662	116/3B (P), 116/3A2 (P) & 118/1	1.53.5 ha	03.10.2018-02.10.2023
E16	<b>Thiru. R. Gopalakrishnan,</b> S/o. K. M. Ramasamy, No.5/175, Erankattu Thottam, Kadampadi, Sulur Taluk, Coimbatore District – 641 401	124/1 & 124/2	1.77.5 ha	EC Obtained Dated: 02.02.2022
<b>TOTAL</b>			<b>25.78.50 ha</b>	
<b>TOTAL CLUSTER EXTENT</b>			<b>35.78.28 ha</b>	

### 1.3 SALIENT FEATURES OF THE PROPOSAL

<b>PROPOSAL – P1</b>		
Name of the Quarry	K. M. Chinnaswamy Rough Stone and Gravel Quarry	
Proposal Type	Existing Quarry – Fresh Lease	
Existing Pit Dimension	155 m (L)* 133 m (W)*23 m (D)	
Toposheet No	58-E/04	
Latitude between	11°01'17.01"N to 11°01'24.24"N	
Longitude between	77°12'07.40"E to 77°11'14.12"E	
Highest Elevation	376 m AMSL	
Proposed Depth of Mining	47 m bgl (2m Gravel + 45m Rough Stone)	
Geological Resources	Rough Stone in m <sup>3</sup>	Gravel m <sup>3</sup>
	7,93,805	5,272
Mineable Reserves	Rough Stone in m <sup>3</sup>	Gravel m <sup>3</sup>
	2,46,232	1,242
Proposed Ultimate Pit Dimension	176 m (L)* 134 m (W)*47 m (D)	
<b>*Restricted Depth of Mining</b>	<b>42 m bgl (2m Gravel + 40m Rough Stone)</b>	
Water Level in the surrounds area	73 – 78 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area exhibits plain terrain. The area has gentle sloping towards northern side. The altitude of the area is 376 m (max) above mean sea level. The area is covered by 2 m thickness of Gravel Formation. Massive Charnockite is found after 2 m (Gravel Formation) which is clearly inferred from the existing quarry pit.	
Machinery proposed	Jack Hammer	6 Nos
	Compressor	2 Nos
	Hydraulic Excavator	2 Nos
	Tippers	3 Nos
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	28 Nos	
Project Cost	Rs. 1,16,39,000/-	
CER Cost @ 2% of Project Cost	Rs. 2,33,000/-	
Nearby Water Bodies	Kuttai	840m South
	Odai	3.5km NE
	Samalapuram Lake	5.5km North
	Noyyal River	6.5km NW
	Sulur Lake	8.8km West
Greenbelt Development Plan	Proposed to plant 170 trees in 1540 Sq.m area in the 7.5 m Safety Zone	
Proposed Water Requirement	3.0 KLD	
Nearest Habitation	420 m South East	

Source: Approved Mining Plan

<b>PROPOSAL – P2</b>		
Name of the Quarry	R. Subramaniyan Rough Stone & Gravel Quarry	
Proposal Type	Existing Quarry – Fresh Lease	
Existing Pit Dimension	140 m (L)* 114 m (W)*40 m (D)	
Toposheet No	58-E/04	
Latitude between	11°01'25.60"N to 11°01'32.38"N	
Longitude between	77°11'50.15"E to 77°11'54.74"E	
Highest Elevation	373 m AMSL	
Proposed Depth of Mining	29 m bgl (29 m Rough Stone i.e., R.L. 340 m to R.L. 311 m)	
Geological Resources	Rough Stone in m <sup>3</sup>	Gravel m <sup>3</sup>
	5,05,480	10,032
Mineable Reserves	Rough Stone in m <sup>3</sup>	Gravel m <sup>3</sup>
	76,420	8,400

Ultimate Pit Dimension	140 m (L) * 114 m (W) * 62 m (D)	
Water Level in the surrounds area	73 – 78 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is exhibits plain terrain. The area has gentle sloping towards north eastern side. The altitude of the area is 373 m (max) above mean sea level. The area is covered by 2 m thickness of Gravel Formation. Massive Charnockite is found after 2 m (Gravel Formation) which is clearly inferred from the existing quarrying pit.	
Machinery proposed	Jack Hammer	3 Nos
	Compressor	1 Nos
	Hydraulic Excavator	1 Nos
	Tippers	1 Nos
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	16 Nos	
Project Cost	Rs. 1,12,96,000/-	
CER Cost @ 2% of Project Cost	Rs. 2,26,000/-	
Nearby Water Bodies	Kuttai	1km SE
	Odai	4km NE
	Samalapuram Lake	5.2km North
	Noyyal River	5.8km SW
	Sulur Lake	8.2km West
Greenbelt Development Plan	Proposed to plant 150 trees in 1300 Sq.m area in the 7.5 m Safety Zone	
Proposed Water Requirement	2.0 KLD	
Nearest Habitation	540 m North West	

Source: Approved Mining Plan

<b>PROPOSAL – P3</b>		
Name of the Quarry	M. Venkatesh Rough Stone & Gravel Quarry	
Proposal Type	Existing Quarry – Fresh Lease	
Existing Pit Dimension	112 m (L)* 85 m (W)*36 m (D)	
Toposheet No	58-E/04	
Latitude between	11° 01' 26.88"N to 11° 01' 31.04"N	
Longitude between	77° 11' 44.03"E to 77° 11' 51.66"E	
Highest Elevation	373 m AMSL	
Proposed Depth of Mining	52 m bgl (2 m Gravel + 50 m Rough Stone)	
Geological Resources	Rough Stone in m <sup>3</sup>	Gravel m <sup>3</sup>
	7,18,956	17,664
Mineable Reserves	Rough Stone in m <sup>3</sup>	Gravel m <sup>3</sup>
	1,17,664	8,174
Ultimate Pit Dimension	183 m (L) * 90 m (W) * 52 m (D)	
Water Level in the surrounds area	73 – 78 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is exhibits plain terrain. The area has gentle sloping towards northern side. The altitude of the area is 373 m (max) above mean sea level. The area is covered by 2 m thickness of Gravel Formation. Massive Charnockite is found after 2 m (Gravel Formation) which is clearly inferred from the existing quarrying pit.	
Machinery proposed	Jack Hammer	3 Nos
	Compressor	1 Nos
	Hydraulic Excavator	1 Nos
	Tippers	2 Nos
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	19 Nos	
Project Cost	Rs. 2,49,45,000 /-	
CER Cost @ 2% of Project Cost	Rs. 4,99,000/-	
Nearby Water Bodies	Kuttai	1km SE
	Odai	4km NE
	Samalapuram Lake	5.2km North
	Noyyal River	5.8km SW
	Sulur Lake	8.2km West
Greenbelt Development Plan	Proposed to plant 150 trees in 1200 Sq.m area in the 7.5 m Safety Zone	
Proposed Water Requirement	4.5 KLD	
Nearest Habitation	570 m North	

Source: Approved Mining Plan

<b>PROPOSAL – P4</b>		
Name of the Quarry	M. Venkatesh Rough Stone & Gravel Quarry	
Proposal Type	Existing Quarry – Fresh Lease	
Existing Pit Dimension	Pit – 1	85 m (L)* 37 m (W)*35 m (D)
	Pit – 2	80 m (L)* 75 m (W)*68 m (D)
	Pit – 3	127 m (L)* 106 m (W)*28 m (D)
Toposheet No	58-E/04	
Latitude between	11°01'30.83"N to 11°01'37.43"N	
Longitude between	77°11'44.91"E to 77°11'53.05"E	
Highest Elevation	373 m AMSL	
Proposed Depth of Mining	68 m bgl (3 m Gravel + 65 m Rough Stone)	
Geological Resources	Rough Stone in m <sup>3</sup>	Gravel m <sup>3</sup>
	12,95,085	23,634
Mineable Reserves	Rough Stone in m <sup>3</sup>	Gravel m <sup>3</sup>
	2,78,315	15,906
Ultimate Pit Dimension	211 m (L) * 159 m (W) * 68 m (D)	
Water Level in the surrounds area	73 – 78 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area exhibits plain terrain. The area has gentle sloping towards north east side. The altitude of the area is 373 m (max) above mean sea level. The area is covered by 2 m thickness of Gravel Formation. Massive Charnockite is found after 2 m (Gravel Formation) which is clearly inferred from the existing quarrying pit.	
Machinery proposed	Jack Hammer	7 Nos
	Compressor	2 Nos
	Hydraulic Excavator	1 Nos
	Tippers	3 Nos
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	30 Nos	
Project Cost	Rs. 1,56,20,000/-	
CER Cost @ 2% of Project Cost	Rs. 3,13,000/-	
Nearby Water Bodies	Kuttai	1.2km SE
	Odai	4km NE
	Samalapuram Lake	5km North
	Noyyal River	5.8km SW
	Sulur Lake	8.2km West
Greenbelt Development Plan	Proposed to plant 250 trees in 2150 Sq.m area in the 7.5 m Safety Zone	
Proposed Water Requirement	2.5 KLD	
Nearest Habitation	420 m North	

Source: Approved Mining Plan



## 1.4 STATUTORY DETAILS

### PROPOSAL – P1

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 24.11.2020.
- Precise Area Communication Letter was issued by the District Collector, Tiruppur Rc.No.1501/Mines/2020, Dated: 25.02.2021.
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Tiruppur District, vide R.C. No. 1501/2020/Mines Dated :05.05.2021.
- 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 vides online Proposal No. SIA/TN/MIN/63785/2021 Date: 09.06.2021.

### PROPOSAL – P2

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 24.11.2020.
- Precise Area Communication Letter was issued by the District Collector, Tiruppur R.C.No.1500/Mines/2020 Dated :25.02.2021.
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Tiruppur District, vide R.C.No.1500/2020/Mines Dated :05.05.2021.
- 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 vides online Proposal No. SIA/TN/MIN/63765/2021 Date: 08.06.2021.

### PROPOSAL – P3

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 28.04.2021.
- Precise Area Communication Letter was issued by the District Collector, Tiruppur R.C.No:557/Mines/2021 Dated :15.06.2021.
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Tiruppur District, vide R.C.No:557/2021/Mines Dated :02.07.2021.
- 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 vides online Proposal No. SIA/TN/MIN/68202/2021 Date: 06.10.2021.

### PROPOSAL – P4

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 24.11.2020.
- Precise Area Communication Letter was issued by the District Collector, Tiruppur Rc.No.1499/Mines/2020, Dated: 25.02.2021.
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Tiruppur District, vide R.C. No. 1499/2020/Mines Dated :05.05.2021.
- 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 vides online Proposal No. SIA/TN/MIN/68055/2021 Date: 30.09.2021.

## 2. PROJECT DESCRIPTION

The proposed projects are site specific and there is no additional area required for this project. There is no effluent generation/discharge from the proposed quarries.

Method is mining is common for all the proposed quarries in the cluster. Rough Stone is 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

<b>Nearest Roadway</b>	The Nearest National Highway (NH- 67) Coimbatore – Karur – 1.0km - southern side The State Highway (SH-165) Annur – Kamaickenpalayam Road – 1.0km - Western side.
<b>Nearest Village</b>	Kodangipalayam – 1.5 km-East
<b>Nearest Town</b>	Sulur – 7.0 km – West
<b>Nearest Railway</b>	Somanur – 7.0 km – North West Side
<b>Nearest Airport</b>	Coimbatore –28.0 km – Western side
<b>Seaport</b>	Kochi- 160 km – South West

## 2.2 LAND USE PATTERN OF THE LEASE APPLIED AREA

<b>PROPOSAL – P1</b>		
<b>DESCRIPTION</b>	<b>PRESENT AREA IN (HA)</b>	<b>AREA AT THE END OF LIFE OF QUARRY (HA)</b>
Area under quarry	1.49.1	1.70.2
Infrastructure	0.01.0	Nil
Roads	0.01.0	0.02.0
Green Belt	Nil	0.15.4
Un – utilized area	0.90.9	0.54.4
<b>TOTAL</b>	<b>2.42.0</b>	<b>2.42.0</b>
<b>PROPOSAL – P2</b>		
<b>DESCRIPTION</b>	<b>PRESENT AREA IN (HA)</b>	<b>AREA AT THE END OF LIFE OF QUARRY (HA)</b>
Area under quarry	1.09.8	1.09.8
Dump	0.01.2	Nil
Infrastructure	Nil	0.01.0
Roads	0.02.0	0.02.0
Green Belt	Nil	0.13.0
Un – utilized area	0.86.5	0.73.7
<b>TOTAL</b>	<b>1.99.5</b>	<b>1.99.5</b>
<b>PROPOSAL – P3</b>		
<b>DESCRIPTION</b>	<b>PRESENT AREA IN (HA)</b>	<b>AREA AT THE END OF LIFE OF QUARRY (HA)</b>
Area under quarry	0.90.5	1.33.5
Infrastructure	Nil	0.01.0
Roads	0.02.0	0.02.0
Green Belt	Nil	0.12.0
Un – utilized area	1.33.0	0.77.0
<b>TOTAL</b>	<b>2.25.5</b>	<b>2.25.5</b>
<b>PROPOSAL – P4</b>		
<b>DESCRIPTION</b>	<b>PRESENT AREA IN (HA)</b>	<b>AREA AT THE END OF LIFE OF QUARRY (HA)</b>
Area under quarry	2.03.0	2.80.52
Infrastructure	0.01.0	Nil
Roads	0.01.0	0.02.0
Green Belt	Nil	0.21.5
Un – utilized area	1.27.78	0.28.76
<b>TOTAL</b>	<b>3.32.78</b>	<b>3.32.78</b>

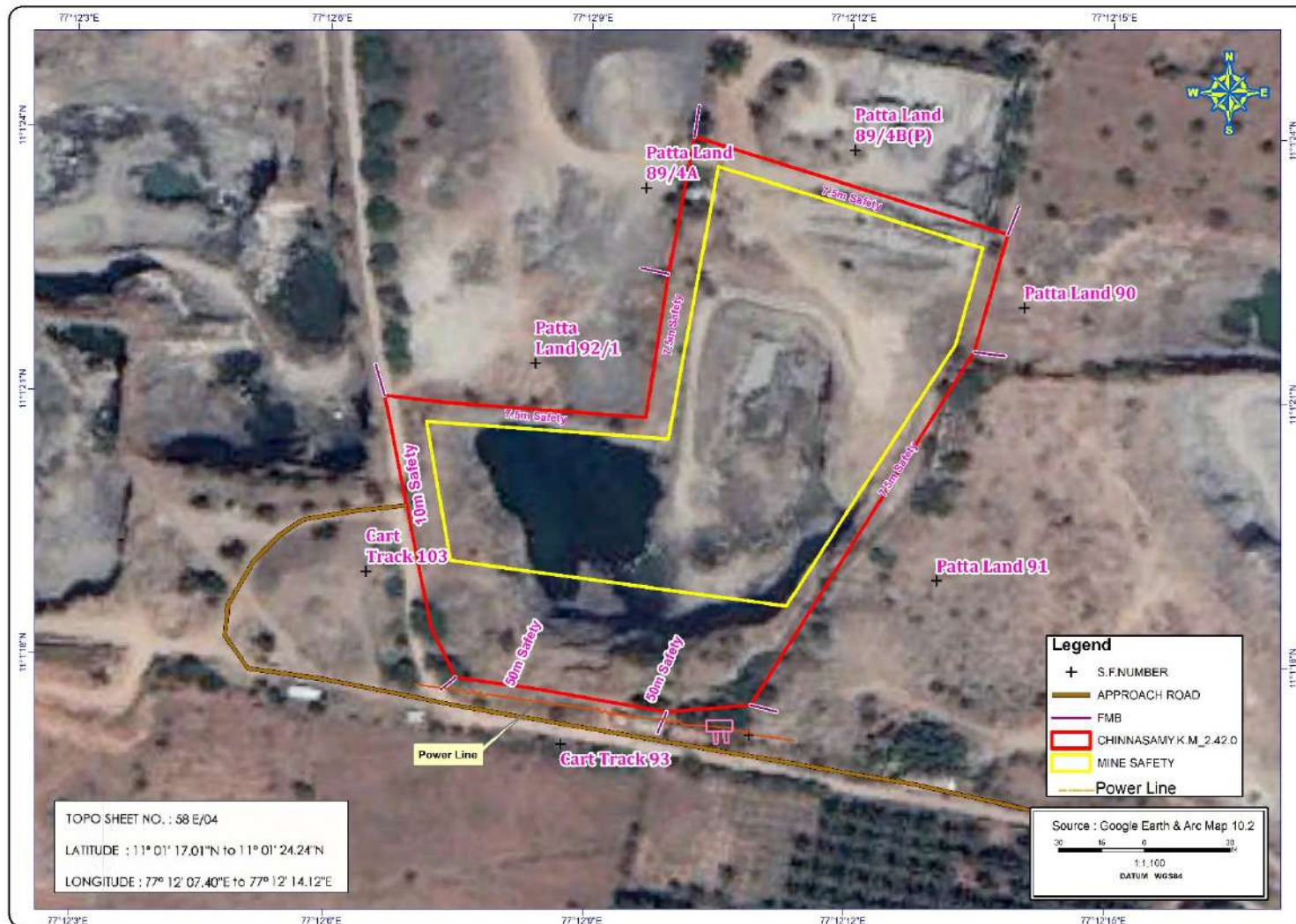
**2.3 OPERATIONAL DETAILS OF LEASE APPLIED AREA**

<b>PROPOSAL – P1</b>		
<b>PARTICULARS</b>	<b>DETAILS</b>	
	<b>Rough Stone (5Year Plan period)</b>	<b>Gravel (3 Years Plan period)</b>
Geological Resources in m <sup>3</sup>	7,93,805	5,272
Mineable Reserves in m <sup>3</sup>	2,46,232	1,242
Mining Plan Period	5 Years	
Number of Working Days	300 Days	
Production per day in m <sup>3</sup>	<b>164</b>	<b>1</b>
No of Lorry loads (6m <sup>3</sup> per load)	<b>27</b>	<b>1</b>
Total Depth of Mining	47 m bgl (2m Gravel + 45m Rough Stone)	
<b>*Restricted Depth of Mining</b>	<b>42 m bgl (2m Gravel + 40m Rough Stone)</b>	
<b>PROPOSAL – P2</b>		
<b>PARTICULARS</b>	<b>DETAILS</b>	
	<b>Rough Stone (5Year Plan period)</b>	<b>Gravel (3 Years Plan period)</b>
Geological Resources in m <sup>3</sup>	5,05,480	10,032
Mineable Reserves in m <sup>3</sup>	76,420	8,400
Mining Plan Period	5 Years	
Number of Working Days	300 Days	
Production per day in m <sup>3</sup>	<b>51</b>	<b>9</b>
No of Lorry loads (6 m <sup>3</sup> per load)	<b>9</b>	<b>2</b>
Total Depth of Mining	29 m bgl (29 m Rough Stone i.e., R.L. 340 m to R.L. 311 m)	
<b>PROPOSAL – P3</b>		
<b>PARTICULARS</b>	<b>DETAILS</b>	
	<b>Rough Stone (5Year Plan period)</b>	<b>Gravel (3 Years Plan period)</b>
Geological Resources in m <sup>3</sup>	7,18,956	17,664
Mineable Reserves in m <sup>3</sup>	1,17,664	8,174
Mining Plan Period	5 Years	
Number of Working Days	300 Days	
Production per day in m <sup>3</sup>	<b>78</b>	<b>9</b>
No of Lorry loads (6m <sup>3</sup> per load)	<b>13</b>	<b>2</b>
Total Depth of Mining	52 m bgl (2 m Gravel + 50 m Rough Stone)	
<b>PROPOSAL – P4</b>		
<b>PARTICULARS</b>	<b>DETAILS</b>	
	<b>Rough Stone (5Year Plan period)</b>	<b>Gravel (3 Years Plan period)</b>
Geological Resources in m <sup>3</sup>	12,95,085	23,634
Mineable Reserves in m <sup>3</sup>	2,78,315	15,906
Mining Plan Period	5 Years	
Number of Working Days	300 Days	
Production per day in m <sup>3</sup>	<b>186</b>	<b>18</b>
No of Lorry loads (6m <sup>3</sup> per load)	<b>31</b>	<b>3</b>
Total Depth of Mining	68 m bgl (3 m Gravel + 65 m Rough Stone)	

## 2.4 YEAR-WISE PRODUCTION PLAN

<b>PROPOSAL – P1</b>		
<b>YEAR</b>	<b>ROUGH STONE (m<sup>3</sup>)</b>	<b>GRAVEL (m<sup>3</sup>)</b>
I	44,172	432
II	54,925	432
III	51,700	378
IV	47,045	-
V	48,390	-
<b>TOTAL</b>	<b>2,46,232</b>	<b>1,242</b>
<b>PROPOSAL – P2</b>		
<b>YEAR</b>	<b>ROUGH STONE (m<sup>3</sup>)</b>	<b>GRAVEL (m<sup>3</sup>)</b>
I	16,480	3,150
II	14,090	3,150
III	16,800	2,100
IV	15,200	-
V	13,850	-
<b>TOTAL</b>	<b>76,420</b>	<b>8,400</b>
<b>PROPOSAL – P3</b>		
<b>YEAR</b>	<b>ROUGH STONE (m<sup>3</sup>)</b>	<b>GRAVEL (m<sup>3</sup>)</b>
I	24,125	4,270
II	24,336	1,586
III	29,803	2,813
IV	18,900	-
V	20,500	-
<b>TOTAL</b>	<b>1,17,664</b>	<b>8,174</b>
<b>PROPOSAL – P4</b>		
<b>YEAR</b>	<b>ROUGH STONE (m<sup>3</sup>)</b>	<b>GRAVEL (m<sup>3</sup>)</b>
I	53,915	7,911
II	56,855	4,290
III	56,375	3,705
IV	64,250	-
V	46,920	-
<b>TOTAL</b>	<b>2,78,315</b>	<b>15,906</b>

**FIGURE – 1: GOOGLE IMAGE SHOWING APPLIED QUARRY LEASE AREA – P1**

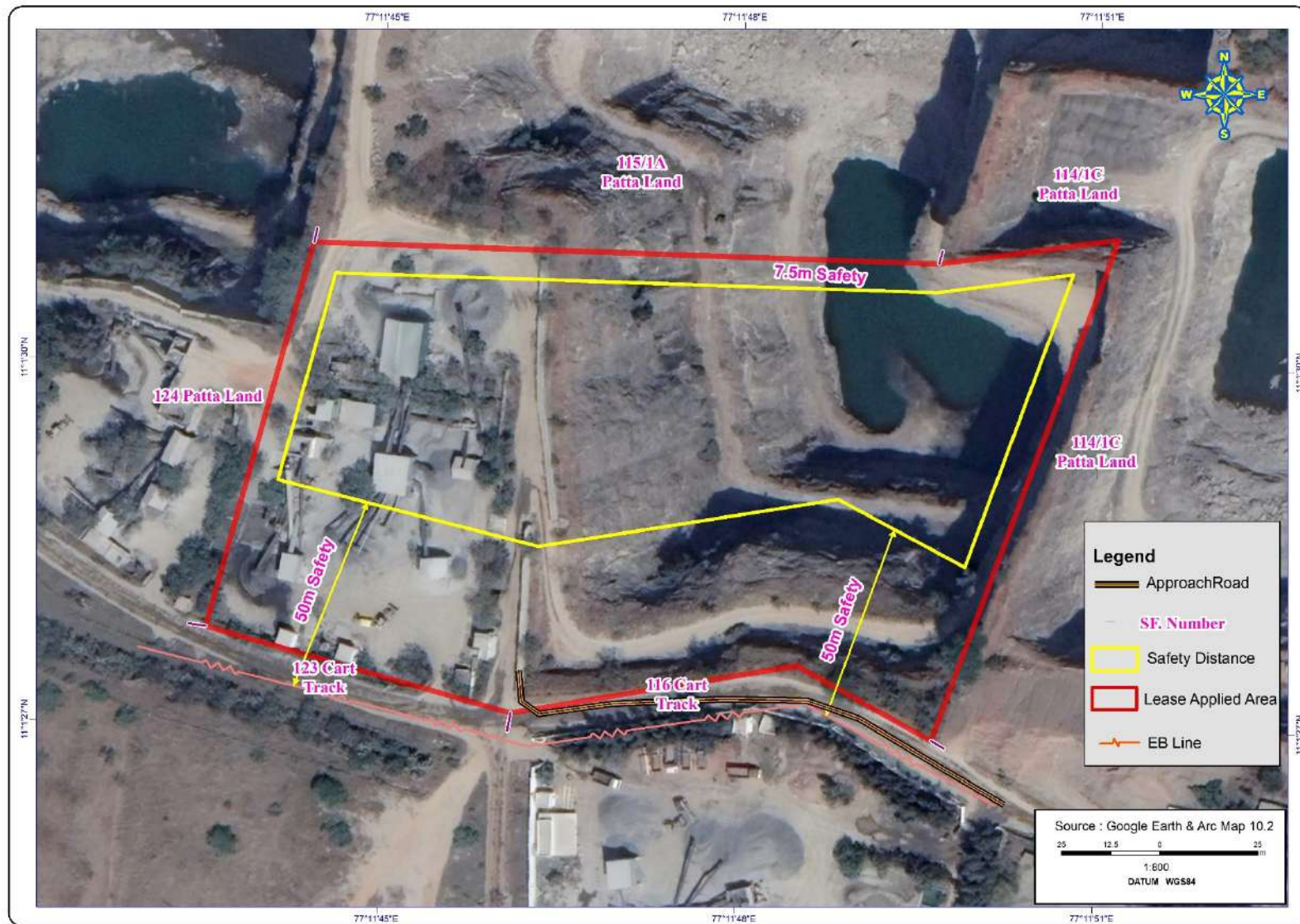




**FIGURE – 2: GOOGLE IMAGE SHOWING APPLIED QUARRY LEASE AREA – P2**



**FIGURE – 3: GOOGLE IMAGE SHOWING APPLIED QUARRY LEASE AREA – P3**



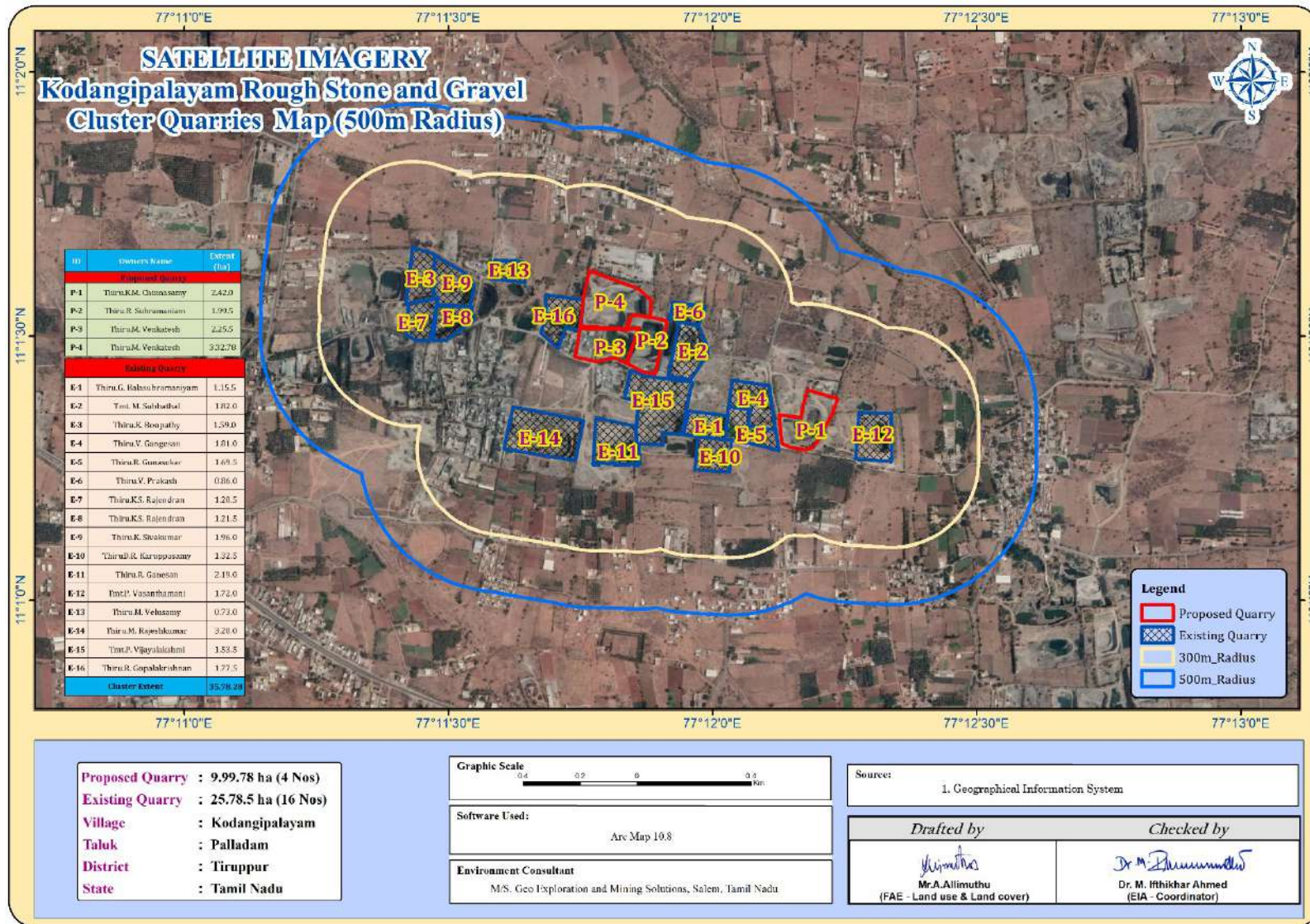


**FIGURE – 4: GOOGLE IMAGE SHOWING APPLIED QUARRY LEASE AREA – P4**



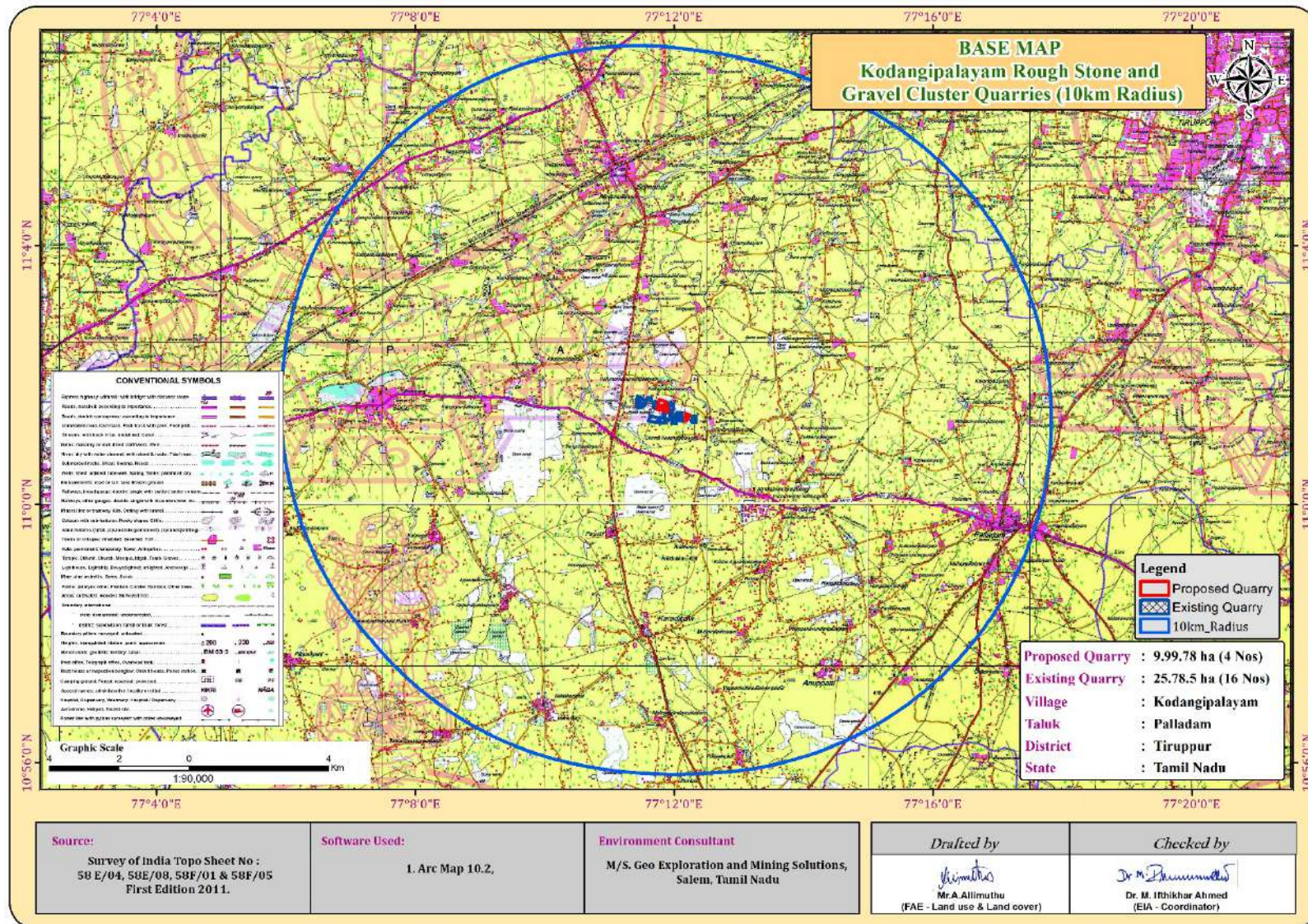


FIGURE – 5: GOOGLE IMAGE SHOWING CLUSTER (500 m QUARRIES)





**FIGURE – 6: TOPOSHEET MAP COVERING 10 KM RADIUS**



## 2.5 METHOD OF MINING

Proposed Method of Mining is common for all the Proposed Projects – The method of mining is 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.

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.

## 2.6 PROPOSED MACHINERY DEPLOYMENT

PROPOSAL – P1				
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 / Rock Breaker Unit	2	300 HP	Diesel Drive
4	Tippers / Dumpers	3	20 Tonnes	Diesel Drive
PROPOSAL – P2				
S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	3	1.2m to 2.0m	Compressed air
2	Compressor	1	400psi	Diesel Drive
3	Excavator with Bucket / Rock Breaker Unit	1	300 HP	Diesel Drive
4	Tippers / Dumpers	1	20 Tonnes	Diesel Drive
PROPOSAL – P3				
S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	3	1.2m to 2.0m	Compressed air
2	Compressor	1	400psi	Diesel Drive
3	Excavator with Bucket / Rock Breaker Unit	1	300 HP	Diesel Drive
4	Tippers / Dumpers	2	20 Tonnes	Diesel Drive
PROPOSAL – P4				
S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	7	1.2m to 2.0m	Compressed air
2	Compressor	2	400psi	Diesel Drive
3	Excavator with Bucket / Rock Breaker Unit	1	300 HP	Diesel Drive
4	Tippers / Dumpers	3	20 Tonnes	Diesel Drive

## 2.7 CONCEPTUAL MINING PLAN/ FINAL MINE CLOSURE PLAN

- ✚ At the end of life of mine, the excavated mine pit / void will act as artificial reservoir for collecting rain water and helps to meet out the demand or crises during drought season.
- ✚ After mine closure the greenbelt developed along the safety barrier and top benches and temporary water reservoir will enhance the ecosystem
- ✚ Mine Closure is a process of returning a disturbed site to its natural state or which prepares it for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.
- ✚ The principle closure objectives are for rehabilitated mines to be physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/ non-contaminating, and capable of sustaining an agreed post-mining land use.



## 2.8 ULTIMATE PIT DIMENSION

PROPOSAL – P1			
Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	176	134	42 m bgl
PROPOSAL – P2			
Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	140	114	62 m bgl
PROPOSAL – P3			
Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	183	90	52 m bgl
PROPOSAL – P4			
Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	211	159	68 m bgl

## 3. DESCRIPTION OF THE ENVIRONMENT

Field monitoring studies to evaluate the base line status of the project site were carried out during October to December 2021 as per CPCB guidelines. Environmental Monitoring data has been collected with reference to proposed mine by KGS Enviro Laboratory Pvt Ltd., ISO/IEC 17025 : 2017 NABL Certified & Notified Laboratory

### 3.1 ENVIRONMENT MONITORING ATTRIBUTES

Sl.No.	Attributes	Parameters	Source and Frequency
1	Ambient Air Quality	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>2</sub>	Continuous 24-hourly samples twice a week for three months at 8 locations (3 Core & 5 Buffer)
2	Meteorology	Wind speed and direction, temperature, relative humidity and rainfall	Near project site continuous for three months with hourly recording and from secondary sources of IMD station
3	Water quality	Physical, Chemical and Bacteriological parameters	Grab samples were collected at 6 locations – 3 ground water and 3 surface water samples; once during study period.
4	Ecology	Existing terrestrial and aquatic flora and fauna within 10 km radius circle.	Limited primary survey and secondary data was collected from the Forest department.
5	Noise levels	Noise levels in dB(A)	7 locations – data monitored once for 24 hours during EIA study
6	Soil Characteristics	Physical and Chemical Parameters	Once at 5 locations during study period
7	Land use	Existing land use for different categories	Based on Survey of India topographical sheet and satellite imagery and primary survey.
8	Socio-Economic Aspects	Socio-economic and demographic characteristics, worker characteristics	Based on primary survey and secondary sources data like census of India 2011.
9	Hydrology	Drainage pattern of the area, nature of streams, aquifer characteristics, recharge and discharge areas	Based on data collected from secondary sources as well as hydro-geology study report prepared.
10	Risk assessment and Disaster Management Plan	Identify areas where disaster can occur by fires and explosions and release of toxic substances	Based on the findings of Risk analysis done for the risk associated with mining.

### 3.2 LAND ENVIRONMENT

S.No	CLASSIFICATION	AREA Ha	Area %
1	BUILT-UP URBAN	2681.36	7.51
2	BUILT-UP RURAL	3027.04	8.48
3	MINING	526.59	1.48
4	CROP LAND	17197.47	48.17
5	SCRUB LAND	1125.19	3.15
6	BARREN ROCKY	23.76	0.07
7	FALLOW LAND	8239.78	23.08
8	AGRICULTURE PLANTATION	2420.30	6.78
9	WATER BODIES	315.02	0.88
10	RIVER	143.47	0.40
	<b>TOTAL</b>	<b>35700.00</b>	<b>100.00</b>

The total mining area within the study area is 526.59 ha i.e., 1.48 %. The cluster area of 35.78.28 ha contributes about 6.80% of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

### 3.3 SOIL ENVIRONMENT

#### 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 Loam Soil and Bulk Density of Soils in the study area varied between 1.02 – 1.32 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 38.2 – 42.5 %.

#### Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline with pH range 7.15 to 8.32
- The available Nitrogen content range between 135 to 158 kg/ha
- The available Phosphorus content range between 1.13 to 1.32 kg/ha
- The available Potassium range between 39.8 to 59.4 mg/kg

### 3.4 WATER ENVIRONMENT

#### Surface Water

##### Ph:

The pH varied from 7.62 to 8.56 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 varied from 549 to 597 mg/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 138 - 178 mg/l. Nitrates varied from 15.3 to 18.4 mg/l, while sulphates varied from 38.2 to 53.8 mg/l.

#### Ground Water

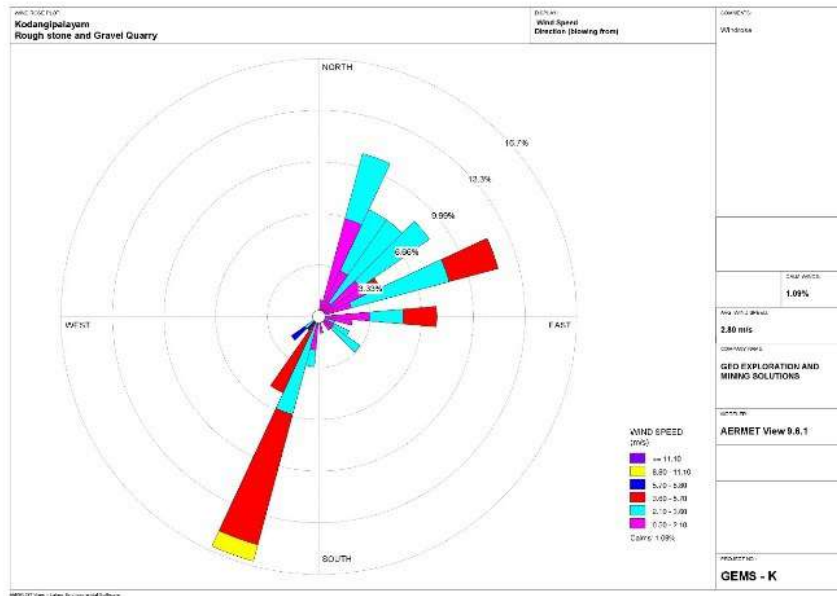
The pH of the water samples collected ranged from 7.42 to 8.52 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. The Total Dissolved Solids were found in the range of 485 - 552 mg/l in all samples. The Total hardness varied between 118.3 – 198.2 mg/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.

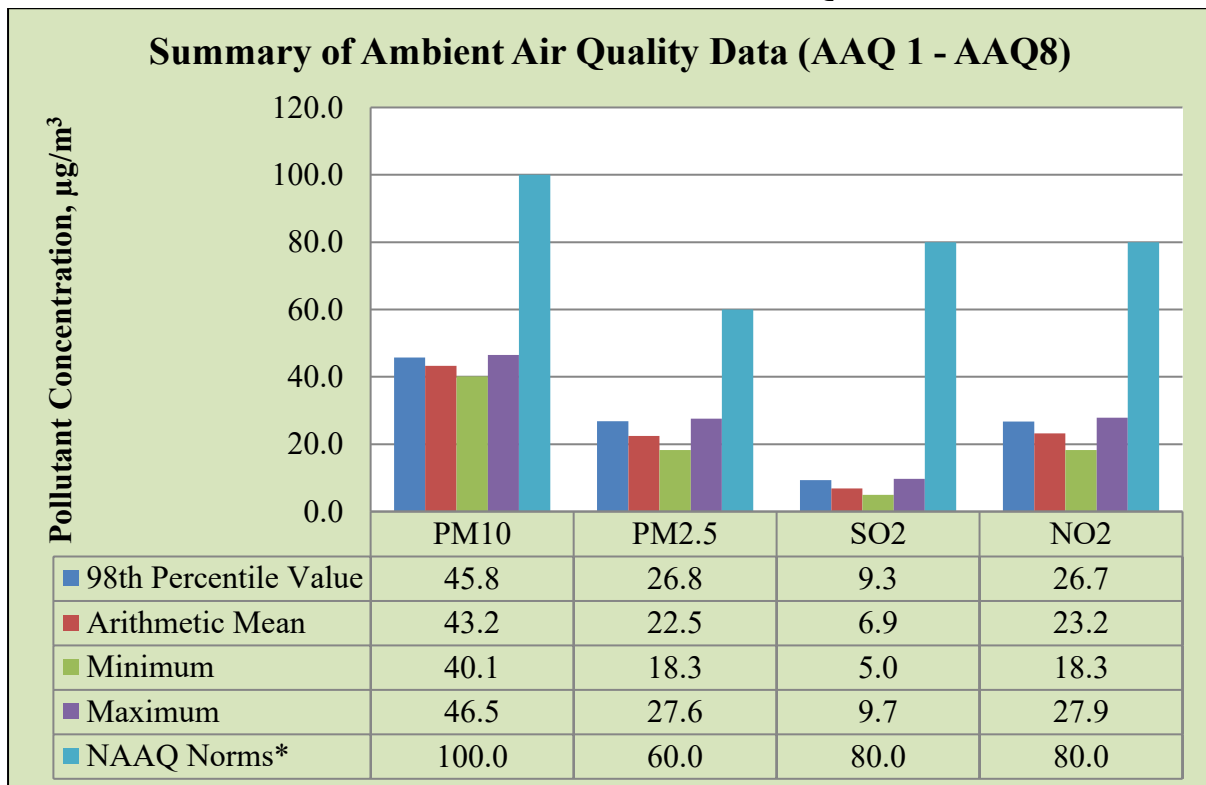
### 3.5 AIR ENVIRONMENT

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 – 7: WIND ROSE DIAGRAM**



**FIGURE – 8: SUMMARY OF AMBIENT AIR QUALITY DATA**



The results of ambient air quality monitoring for the period (October to December 2021) are presented in the report. Data has been compiled for three months.

As per monitoring data, PM<sub>10</sub> ranges from 40.1 µg/m<sup>3</sup> to 46.5 µg/m<sup>3</sup>, PM<sub>2.5</sub> data ranges from 18.3 µg/m<sup>3</sup> to 27.6 µg/m<sup>3</sup>, SO<sub>2</sub> ranges from 5.0 µg/m<sup>3</sup> to 9.7 µg/m<sup>3</sup> and NO<sub>2</sub> data ranges from 18.3 µg/m<sup>3</sup> to 27.9 µg/m<sup>3</sup>. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

### **3.6 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 47.3 to 48.3 dB (A) Leq and during night time were from 38.0 to 39.1 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 46.6 to 49.8 dB (A) Leq and during night time were from 37.2 to 39.7 dB (A) Leq.

### **3.7 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.

### **3.8 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 projects will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.



#### 4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES – IN COMMON FOR ALL PROPOSED QUARRIES (P1 – P4)

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 soil 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 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 drains, settling tank will be constructed along the individual mining leases. The Garland drains of the individual leases will be connected to settling tank and after settling the 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 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 rainwater harvesting
- 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 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 and analysing the quality of water in open well, bore wells and surface water

### 4.3 AIR ENVIRONMENT

#### ANTICIPATED IMPACT

- During mining, at various stages activities such as excavation, drilling, blasting, and transportation of materials, particular matter (PM), gases such as Sulphur dioxide, oxides of Nitrogen from vehicular exhaust are the main air pollutants.
- Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air.
- The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust.
- Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area.

#### 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 include 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 tarpaulin
- 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
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed

**4.4 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 through training and awareness.
- Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.

## 4.5 BIOLOGICAL ENVIRONMENT

### ANTICIPATED IMPACT

There are no National Park and Archaeological monuments within project area. There are no migratory corridors, migratory avian-fauna, 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

To reduce the adverse effects on natural flora/fauna status of the area due to deposition of dust generated from mining operations, water sprinkling and water spraying systems will be ensured in all dust prone areas to arrest dust generation. Methodical and well-planned plantation scheme will be carried out.

#### 4.5.1 GREENBELT DEVELOPMENT PLAN

PROPOSAL – P1					
Year	No. of trees proposed to be planted	Survival %	Area to be covered sq.m	Name of the species	No. of trees expected to be grown
I	34	80%	308	Neem, Pongamia Pinnata, Casuarina etc.,	27
II	34	80%	308		27
III	34	80%	308		27
IV	34	80%	308		27
V	34	80%	308		27
PROPOSAL – P2					
Year	No. of trees proposed to be planted	Survival %	Area to be covered sq.m	Name of the species	No. of trees expected to be grown
I	30	80%	260	Neem, Pongamia Pinnata, Casuarina etc.,	24
II	30	80%	260		24
III	30	80%	260		24
IV	30	80%	260		24
V	30	80%	260		24
PROPOSAL – P3					
Year	No. of trees proposed to be planted	Survival %	Area to be covered sq.m	Name of the species	No. of trees expected to be grown
I	30	80%	240	Neem, Pongamia Pinnata, Casuarina etc.,	24
II	30	80%	240		24
III	30	80%	240		24
IV	30	80%	240		24
V	30	80%	240		24

<b>PROPOSAL – P4</b>					
Year	No. of trees proposed to be planted	Survival %	Area to be covered sq.m	Name of the species	No. of trees expected to be grown
I	50	80%	430	Neem, Pongamia Pinnata, Casuarina etc.,	40
II	50	80%	430		40
III	50	80%	430		40
IV	50	80%	430		40
V	50	80%	430		40

## 4.6 SOCIO ECONOMIC ENVIRONMENT

### ANTICIPATED IMPACT

Employment generation due to the project will provide direct employment for about 205 persons.

### MITIGATION MEASURES

- Good maintenance practices will be adopted for plant 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.
- Appropriate 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, DMF, NMET etc, from this project directly and indirectly.

## 5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

The site has been selected based on geological investigation and exploration as below:

- Occurrence of minerals at the specific site.
- Transportation facility for materials & manpower.
- Overall impact on environment and mitigation feasibility
- Socio – economic background.

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

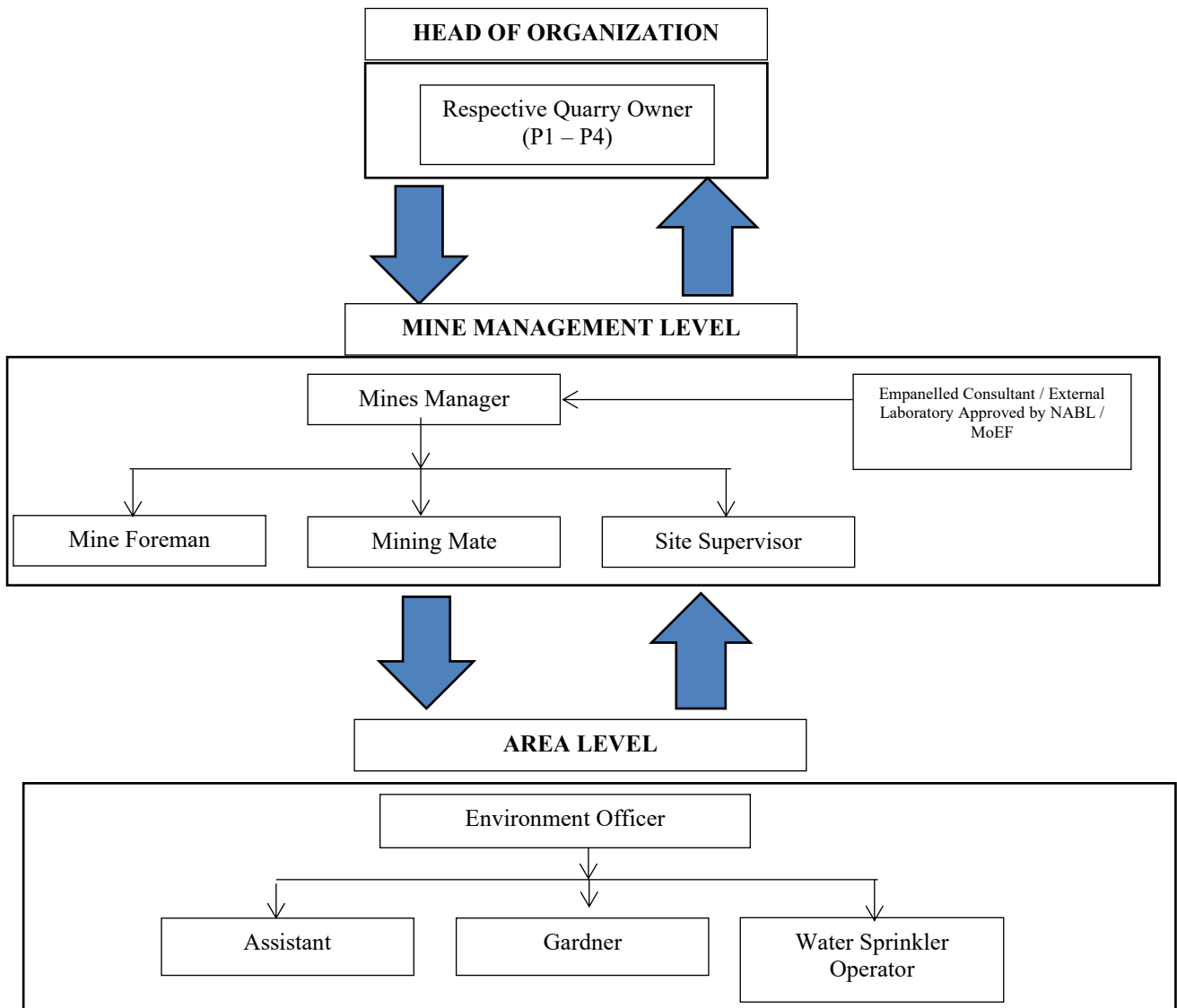
## 6. ENVIRONMENT MONITORING PROGRAM

Usually an impact assessment study is carried over short period of time and the data cannot bring out all variations induced by natural or human activities. Hence regular monitoring program of Environmental parameters is essential to take into account the changes in the Environment.

The Objective of Monitoring -

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

### 6.1 ENVIRONMENTAL MONITORING CELL



## 6.2 POST ENVIRONMENTAL CLEARANCE MONITORING SCHEDULE

IN COMMON FOR P1 – P4					
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 <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> and NO <sub>x</sub> .
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 FOR P1 – P4

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 31<sup>st</sup> 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. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.



## 7.2 DISASTER MANAGEMENT PLAN FOR P1 – P4

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

Quarry	PROPOSED PRODUCTION DETAILS			
	5 Years in m <sup>3</sup>	Per Year in m <sup>3</sup>	Per Day in m <sup>3</sup>	Number of Lorry Load Per Day
P1	246232	49246	164	27
P2	76420	15284	51	8
P3	117664	23533	78	13
P4	278315	55663	186	31
<b>Total</b>	<b>718631</b>	<b>143726</b>	<b>479</b>	<b>80</b>
E1	63020	12604	42	7
E2	34063	6813	23	4
E3	91690	18338	61	10
E4	118965	23793	79	13
E5	130004	26001	87	14
E6	50487	10097	34	6
E7	46576	9315	31	5
E8	87170	17434	58	10
E9	155750	31150	104	17
E10	133300	26660	89	15
E11	152799	30560	102	17
E12	87320	17464	58	10
E13	14780	2956	10	2
E14	243810	48762	163	27
E15	83406	16681	56	9
E16	140800	28160	94	16
<b>Total</b>	<b>1633940</b>	<b>326788</b>	<b>1089</b>	<b>182</b>
<b>Grand Total</b>	<b>2352571</b>	<b>470514</b>	<b>1568</b>	<b>261</b>

**CUMULATIVE PRODUCTION LOAD OF GRAVEL**

Quarry	PROPOSED PRODUCTION DETAILS			
	3 Years in m <sup>3</sup>	Per Year in m <sup>3</sup>	Per Day in m <sup>3</sup>	Number of Lorry Load Per Day
P1	1242	414	1	1
P2	8400	2800	9	2
P3	8174	2725	9	2
P4	15906	5302	18	3
<b>Total</b>	<b>33722</b>	<b>11241</b>	<b>37</b>	<b>7</b>
E1	15120	5040	17	3
E2	1470	490	2	1
E3	2400	800	3	1
E4	0	0	0	0
E5	13886	4629	15	3
E6	264	88	0	0
E7	0	0	0	0
E8	0	0	0	0
E9	0	0	0	0
E10	7200	2400	8	1
E11	5461	1820	6	1
E12	1050	350	1	1
E13	112	37	1	1
E14	6798	2266	8	1
E15	7698	2566	9	1
E16	5040	1680	6	1
<b>Total</b>	<b>66499</b>	<b>22166</b>	<b>75</b>	<b>15</b>
<b>Grand Total</b>	<b>100221</b>	<b>33407</b>	<b>112</b>	<b>22</b>

**PREDICTED NOISE INCREMENTAL VALUES IN 500 M RADIUS QUARRIES**

Location ID	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	46.2	47.2	49.8	55
Habitation Near P2	47.5	46.7	50.1	
Habitation Near P3	50.3	48.7	52.6	
Habitation Near P4	46.5	41.0	47.6	
Habitation Near E1	42.7	48.1	49.2	
Habitation Near E2	43.1	44.5	46.9	
Habitation Near E3	43.8	42.4	46.2	
Habitation Near E4	42.7	48.5	49.5	
Habitation Near E5	43.7	46.1	48.1	
Habitation Near E6	44.9	49.2	50.6	
Habitation Near E7	43.7	45.8	47.9	
Habitation Near E8	43.7	42.0	46.0	
Habitation Near E9	39.2	47.0	47.7	
Habitation Near E10	44.1	42.5	46.4	
Habitation Near E11	41.7	45.5	47.0	
Habitation Near E12	42.5	49.5	50.3	
Habitation Near E13	42.7	50.0	50.7	
Habitation Near E14	43.2	46.1	47.9	
Habitation Near E15	44.1	50.0	51.0	
Habitation Near E16	43.8	45.5	47.7	

**ANTICIPATED GROUND VIBRATIONS IN CLUSTER**

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	51	420	0.738
P2	16	540	0.195
P3	25	570	0.256
P4	58	420	0.818
E1	13	510	0.181

E2	7	550	0.098
E3	19	450	0.300
E4	25	560	0.263
E5	27	500	0.336
E6	11	480	0.175
E7	10	400	0.217
E8	18	450	0.287
E9	32	540	0.340
E10	28	400	0.494
E11	32	500	0.384
E12	18	400	0.347
E13	3	420	0.076
E14	51	470	0.616
E15	17	610	0.169
E16	29	480	0.379

### SOCIO ECONOMIC BENEFITS FROM CLUSTER

	Project Cost	CER @ 2%
P1	₹ 1,16,39,000.00	₹ 2,33,000.00
P2	₹ 1,12,96,000.00	₹ 2,26,000.00
P3	₹ 2,49,45,000.00	₹ 4,99,000.00
P4	₹ 1,56,20,000.00	₹ 3,13,000.00
<b>Total</b>	<b>₹ 6,35,00,000.00</b>	<b>₹ 12,71,000.00</b>
E1	₹ 25,15,000.00	₹ 1,64,051.00
E2	₹ 95,67,000.00	₹ 1,91,340.00
E3	₹ 91,59,000.00	₹ 1,83,180.00
E4	₹ 51,12,000.00	₹ 1,02,240.00
E5	₹ 46,89,000.00	₹ 93,780.00
E6	₹ 45,22,000.00	₹ 90,440.00
E7	₹ 48,61,500.00	₹ 97,230.00
E8	₹ 72,43,700.00	₹ 1,44,874.00
E9	₹ 1,85,41,240.00	₹ 3,70,825.00
E10	₹ 55,36,000.00	₹ 1,10,720.00
E11	₹ 1,30,44,500.00	₹ 2,60,890.00
E12	₹ 50,94,000.00	₹ 1,01,880.00
E13	₹ 24,96,000.00	₹ 49,920.00
E14	₹ 1,25,03,600.00	₹ 2,50,072.00
E15	₹ 46,57,000.00	₹ 93,140.00
E16	₹ 58,26,900.00	₹ 1,16,528.00
<b>Total</b>	<b>₹ 11,53,68,440.00</b>	<b>₹ 24,21,110.00</b>
<b>Grand Total</b>	<b>₹ 17,88,68,440.00</b>	<b>₹ 36,92,110.00</b>

### EMPLOYMENT BENEFITS

	Employment
P1	28
P2	16
P3	19
P4	30
<b>Total</b>	<b>93</b>
E1	7
E2	11
E3	15
E4	11
E5	11
E6	13
E7	11
E8	15
E9	18

E10	11
E11	25
E12	11
E13	11
E14	30
E15	11
E16	21
<b>Total</b>	<b>232</b>
<b>Grand Total</b>	<b>325</b>

### GREENBELT DEVELOPMENT BENEFITS FROM CLUSTER

CODE	No of Trees proposed to be planted	Survival %	Area Covered Sq.m	Name of the Species	No. of Trees expected to be grown
P1	170	80%	1540	Neem, Casuarina	136
P2	150	80%	1300	Neem, Casuarina	120
P3	150	80%	1200	Neem, Casuarina	120
P4	250	80%	2150	Neem, Casuarina	200
<b>Total</b>	<b>720</b>		<b>6190</b>		<b>576</b>
E1	50	80%	500	Neem, Casuarina	40
E2	400	80%	3900	Neem, Casuarina	320
E3	100	80%	1000	Neem, Casuarina	80
E4	150	80%	1400	Neem, Casuarina	120
E5	150	80%	1400	Neem, Casuarina	120
E6	150	80%	1400	Neem, Casuarina	120
E7	100	80%	700	Neem, Casuarina	80
E8	115	80%	1000	Neem, Casuarina	90
E9	650	80%	3370	Neem, Casuarina	520
E10	200	80%	2000	Neem, Casuarina	160
E11	225	80%	2010	Neem, Casuarina	180
E12	150	80%	1800	Neem, Casuarina	120
E13	150	80%	1500	Neem, Casuarina	120
E14	250	80%	2300	Neem, Casuarina	200
E15	150	80%	2000	Neem, Casuarina	120
E16	300	80%	2700	Neem, Casuarina	240
<b>Total</b>	<b>3290</b>		<b>28980</b>		<b>2630</b>

## 8. PROJECT BENEFITS

Four Proposed Projects for Quarrying Rough Stone at Kondangipalayam Village aims to produce cumulatively 7,18,631 m<sup>3</sup> Rough Stone & 33,722 m<sup>3</sup> of Gravel over a period of 5 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 FOR P1 – P4

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

It can be concluded from overall assessment of the impacts, in terms of positive and negative effects on various environmental components, that the mining activities will not have any adverse effect on the surrounding environment.

To mitigate any impacts due to the mining activities, a well-planned EMP and a detailed post project monitoring system is provided for regular monitoring and immediate rectification at site. Due to the cluster quarrying activities, socio economic conditions in and around the project site will be improved substantially. Hence, the Prior Environmental Clearance shall be granted at the earliest.