

## **EXECUTIVE SUMMARY**

### **1.0 INTRODUCTION**

The firm “**M/s. Anil Das**” has proposed to set up an stone quarry mining project having lease area 7.0 Ha. is proposed to be located within Milmilia Reserve Forest, Near Village: Ekchelia, PO: Bamunigaon, PS: Chhayhgaon, District: Kamrup (Assam). To meet the demand of various government projects being executed in the region, the project proponent tends to open the proposed stone quarry mining project in the region.

As per Environmental Impact Assessment Notification dated 14<sup>th</sup> September, 2006 and subsequent amendment thereof, the stone quarry mining falls under **Sector 1 (a) Mining of Minerals**. The overall project activity is categorized as **Category “B1”** therefore require Environmental Clearance (EC) to be obtained from SEAC, Assam, Guwahati.

The application for prior Environmental Clearance (Form-1) for proposed metallurgical project was submitted to SEAC, MoEF & CC (Online Proposal No. SIA/AS/MIN/459307/2024 on 24.01.2024 whereas, ToR was granted by SEAC vide. no. **F. No. SEAC/SEIAA.3858/2024** on dtd. 27<sup>th</sup> August 2024.

M/s. Mantras Green Resources Ltd., a QCI-NABET accredited in ‘**Category A**’ environment consultant organization has been assigned to undertake an Environmental Impact Assessment (EIA) study and preparation of Environment Management Plan (EMP) for various environmental components, which may be affected due to the impacts arising out of the proposed stone quarry mining project.

This EIA report is prepared based on the Standard ToR conditions recommended by SEIAA, Assam for other similar projects and project related technical details provided by The Divisional Forest Officer, Kamrup West Forest Division.

### **1.1 IDENTIFICATION OF PROJECT**

The proposed quarry area of 7.0 Ha is located within the Milmilia RF under the jurisdiction of Bamunigaon Range of Kamrup (W) Forest Division, District Kamrup, Assam. The location of the proposed quarry site is about 1-1.5 Km away from the NH37 towards southern side and within the Milmilia RF.

The Divisional Forest Officer had engaged RQP Mr. Prabal Kumar Goswami to prepare the mining Plan by following the guidelines prescribed under Rule-52(1) of the Assam Minor Mineral Concession Rules 2013 and other allied statutes for preparation of quarry plan. The quarry plan was approved by Department of Geology and Mining, Government of Assam for five years vide letter number GM/MM/86-B (40)/ Pt VI/3010-12 dated 04.08.2023. The approved mining plan with progressive mine closure plan enclosed as **Annexure II**.

The proposed quarry site is located within the Milmilia Reserve Forest under the jurisdiction of Bamunigaon Range of Kamrup (W) Forest Division, District Kamrup, Assam. The proposed site is not within any protected area under Archeological, Religious, Cultural heritage or Defense establishments.

The estimation of the Mineable reserve has been made considering the deposit to be massive and continuous. The mineable reserve is estimated to be as 15,36,529 CUM for mining contract period of 7(seven) years. But this mining plan is having maximum validity of 5 (five) years only. Therefore, the maximum allowable quantity for extraction will be 10,97,520 CUM for five years which shall be extended to 7 years and 15,36,529 Cubic Meter after approval for another Mining Plan for 2 years. The method of mining adopted is open cast mining.

**Ekchelia Stone Mahal (area 7.0 Ha.) in Reserve Forest Area in Kamrup District of Assam State by  
Divisional Forest Officer**

The detail of proposed plant facilities is as follows.

**TABLE 1: PROPOSED PROJECT DETAILS WITH CAPACITY**

Particulars	Descriptions
Name of Project	Proposed Stone mining project located at Ekchelia Stone Mahal (area 7.0 Ha.) in Milmilia Reserve Forest under the jurisdiction of Bamunigaon Range of Kamrup (W) Forest Division, District Kamrup, Assam.
The Mineable Area	7.00 Ha
Quantity recommended for Extraction	Total 15,36,529 Cu.M.ofStones for 7 years 10,97,520 Cu.M.for 5 (five) years (Max.)
Period allowed for Mining	7 (Seven) years subject to additional Mining Plan approval.
Method of Mining	Open Cast Mining
Project cost	Rs. _1.5 Cr
Land use pattern	The proposed area consists of degraded forest area mainly covered with grasses, shrubs and exposed rock outcrop.
Name of the Applicant& Authorized signatory	The Divisional Forest Officer, Kamrup West Forest Division
Registered Address	Office of The Divisional Forest Officer, Kamrup (W) Forest Division, Bamunigaon, Dist: Kamrup - 781141
Designation of the Authorized Signatory	The Divisional Forest Officer
Name of the NABET Accredited Consultant	<b>M/s. Mantras Green Resources Ltd.</b>
NABET Accreditation Number	NABET/EIA/2326/RA 0286- <b>Validity:</b> 06/01/2026
Address of the consultant	Address: Hall No. 1, 1st Floor, NICE Sankul, Plot No. A -9, Opp. Nashik Merchant Co- op Bank Ltd., ITI Signal, MIDC Satpur, Nasik-422007
Contact number of the consultant	<b>09850864141</b>

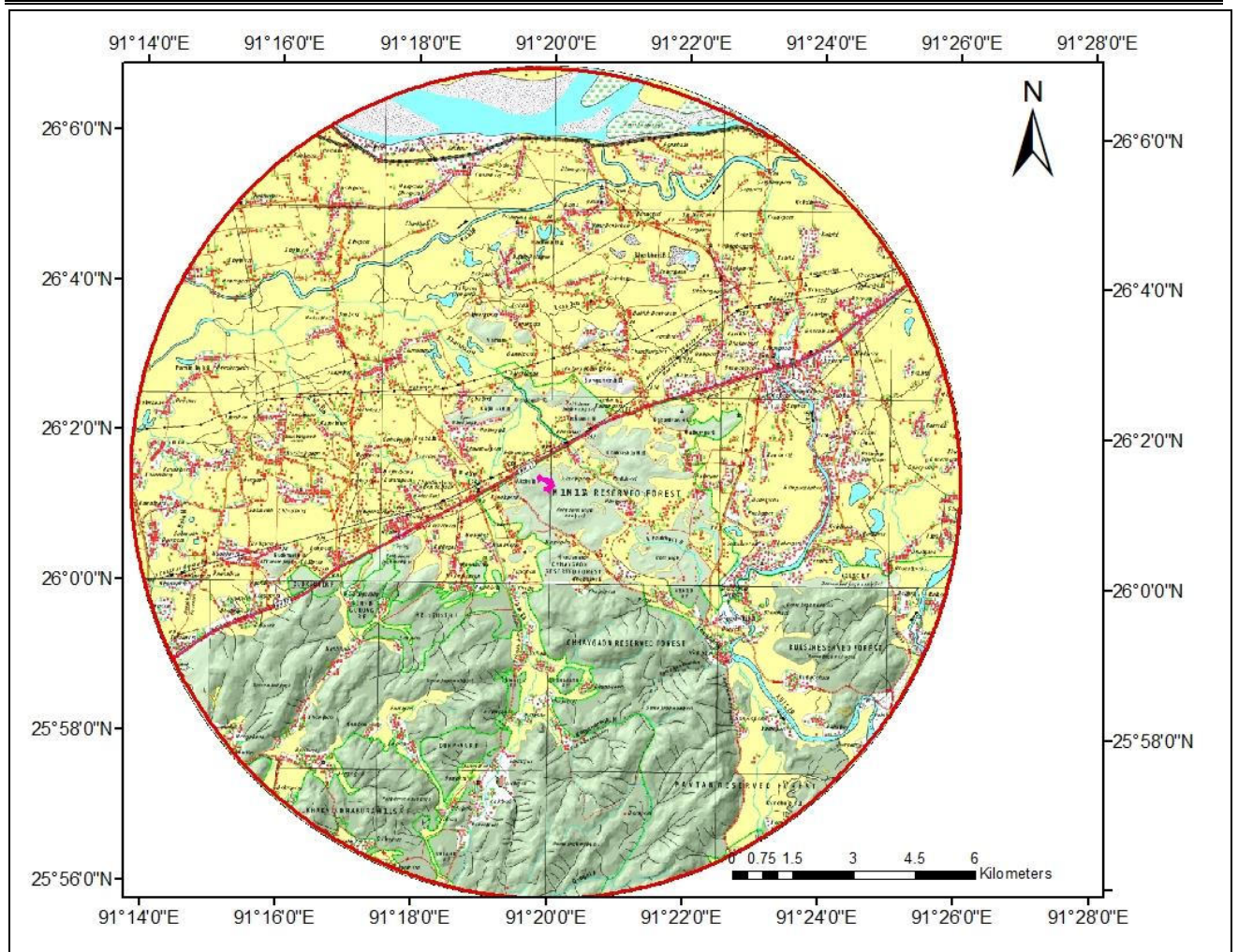
## **1.2 LOCATION OF THE PROJECT**

The location of the proposed quarry site is about 1-1.5 Km away from the NH37 towards southern side and within the Milmilia RF. The approach road is connected with National Highway 37 through a motorable road. The site is free from human habitation within a radius of about 0.5 Km. The topographical features of the study area depicted by the toposheet are shown in Table 1.2 and study area map showing core and buffer zone are given in Figure 1

## **1.3 EIA/EMP REPORT**

In line with the approved ToR obtained from SEAC Assam, baseline environmental monitoring was conducted during winter season (1<sup>st</sup> October 2023 – 31<sup>st</sup> December 2023) for determining the status of ambient air quality, ambient noise levels, surface and groundwater quality, soil quality, status of flora, fauna and eco-sensitive areas and socio-economic status of the villages within 10 km radius study area from the project site (**Figure 1**). The observations of the studies are incorporated in the EIA/EMP report. Impacts of the proposed project activities during construction and operation stages were identified and duly addressed in the report.

**Ekchelia Stone Mahal (area 7.0 Ha.) in Reserve Forest Area in Kamrup District of Assam State by  
Divisional Forest Officer**



**FIGURE 1: STUDY AREA (10 KM RADIAL DISTANCE)**

**TABLE 2: DETAILS OF ENVIRONMENTAL SETTINGS**

Sl.	Particulars	Details																																																						
1.	Project Location	Ekchelia Stone Mahal (Reserve Forest), Near Village: Ekchelia, PO: Bamunigaon, PS: Chhaygaon, District: Kamrup (Assam)																																																						
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3.	Location covered in Toposheet No	78N/8 of zone 46																																																						
4.	Nearest representative IMD Station	Regional Metrological Center, Guwahati -27.13 Km-/NE																																																						
5.	Site elevation above	91m to 128m																																																						

**Ekchelia Stone Mahal (area 7.0 Ha.) in Reserve Forest Area in Kamrup District of Assam State by  
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Sl.	Particulars	Details			
	Mean Sea Level				
6.	Nearest roadway	1.National Highway-37 - 310 meter /NNW			
7.	Nearest Railway Station	Chhaygaon Railway Station-5.13 km/NE Bamoni Gaon Railway Station- 3.72 km/WSW Boko Railway Station-11.54 Km/WSW			
8.	Nearest Air Port	1. Lokpriya Gopinath Bordoloi International Airport , Guwahati- 26.90 km/NE 2. Shillong Airport, Meghalaya – 73.58 km/SE 3. Markazul Uloom Waddawah,Hatipara Helipad Station – 9.30 km/NW			
9.	Nearest village	Ekchelia – adjacent to the Mining area Bamoni Gaon – 1.87 KM/W			
10.	Nearest Port	Not Applicable			
11.	Distance from Sea Coast	Bay of Bengal - 364.80 km/East			
12.	Nearest major city with 2,00,000 population	Guwahati- 38.90 km/ENE			
13.	Nearest State/National Boundaries	Meghalaya – 19.70 km/SSE			
14.	Hills/Valleys	Hills observed near Chhaygaon village under Chhaygaon RF – 2.4 KM (SSE)			
15.	Ecologically sensitive zone	None within study area. Stray Elephants movement reported in forest in the study area			
16.	National Parks, Wildlife Sanctuaries, etc.	Nongkhylllem Wildlife Sanctuary-50.17 Km/ESE			
17.	Nearest Reserved / Protected forests	1.Milmilia Reserved forest-Adjacent to the Lease area 2. Chhaygaon Reserved Forest-1.37km/South 3.Kulsi Reserved Forest-6.83/ESE 4.Melaghat Reserved Forest-3.20km /WSW 5.Gohain Gurung Reserved Forest-3.86km/WSW 6.Dumpara Reserved Forest-5.84 km /SW 7.Pantan Reserved Forest-7.74 km/SSE			
18.	Historical/Tourist places	<b>Sr. No.</b>	<b>Name</b>	<b>Distance (Km)</b>	<b>Direction</b>
		1	Brahamaputra Rlver	8.63	N
		2	Kulsi River	6.20	N
19.	Nearest Industries	<b>Sr. No.</b>	<b>Name</b>	<b>Distance (Km)</b>	<b>Direction</b>
		1	R N Industries	24.27	ENE
20.	Nearest Water Bodies	<b>Sr. No.</b>	<b>Name</b>	<b>Distance (Km)</b>	<b>Direction</b>
		1	Kulsi River	6.21	NNE
		2	Bagjharan Nala	0.72	E
		3	Brahamaputra	8.39	NE
21.	Archaeological Sites	None			
22.	Religious Places	<b>Sr. No.</b>	<b>Name</b>	<b>Distance (Km)</b>	<b>Direction</b>
		1	ShiV Mandir	0.59	NNE
		2	Kharkhari Shiv Mandir	0.98	NNE

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Sl.	Particulars	Details			
		3	Chatabari Shiv Mandir	5.34	WSW
		4	Chhaygaon Bazar Kali Mandir	6.27	NE
23.	Hospitals and Education Institutions (Sensitive Manmade Landuse)	<b>HOSPITALS</b>			
		<b>Sr.No.</b>	<b>Name</b>	<b>Distance (Km)</b>	<b>Direction</b>
		1	Mahatma Gandhi Model Hospital	3.34	WSW
		2	Community Health Centre	2.51	NE
		3	Jalukbari PHC - Hospital	10.19	SSE
		4	Gumi Hospital PHC	6.68	NNE
		5	Jiakur Reserve model Hospital	12.32	NE
		<b>EDUCATIONAL INSTITUTIONS</b>			
		<b>Sr. No.</b>	<b>Name</b>	<b>Distance (Km)</b>	<b>Direction</b>
		1	Bamunigaon High School	1.43	WSW
		2	Green Hills Public School	1.59	WSW
		3	Carmel School	1.87	WSW
		4	Khalbakhhal LP School	3.80	SSE
		5	Bhaladubi L.P. School	4.41	NW
		6	Pritipur M E school	3.68	NW
		7	Bamunigaon Ips - Elementary school	1.65	NNW
		8	Kharkhari LP School	1.30	NE
		9	P.S-99 Dakshin Bankakata LP School	3.36	NNE
		10	Choudhari khat L P school	3.62	NNE
		11	Gumi High School	6.88	NNE
		12	Don Bosco School (Boko Branch)	5.23	SSW
		13	Pantan High School	4.43	SE
		14	Ratanpur chakeli L.P school	3.54	ESE
24.	Community Places	Almost all Villages having common places for community activities within 10 km radius.			
25.	Seismic zone	Zone-II (Least Active)			

## 2.0 PROJECT DESCRIPTION

This chapter gives details about the type of the project, its location and layout, the resource requirement, the details of the waste/ emissions management measures and other salient features are outlined in this chapter.

### 2.1 TYPE OF PROJECT

The Divisional Forest Officer, Kamrup West Forest Division tends to open the proposed stone quarry mining project at Milmilia Reserve Forest, Near Village: Ekchelia, PO: Bamunigaon, PS: Chhaygaon, District: Kamrup (Assam). The proposed stone quarry mining project having lease area 7.0 Ha. and is under the jurisdiction of Bamunigaon Range of Kamrup (W) Forest Division, District Kamrup, Assam.

The total mining area is more than 5.00 Ha. hence, EIA has to be prepared for the project. The project is categorized under Category "B1"; as per EIA Notification dated 14th September, 2006 and subsequent amendment. The maximum allowable quantity for extraction will be 10,97,520 Cu.M. for five years as per mining plan which shall be extended to 15,36,529 Cubic Meter in 7 years after approval of additional Mining Plan and the method adopted is open cast mining.

## **2.2 NEED FOR THE PROJECT**

Stones are often used as building material. Its strength and long life make it suitable for a number of purposes; it had become a major source for infrastructure development i.e. construction of roads, building and bridges etc. There is a demand of stone products like road metals, stone chips of different sizes in Kamrup and adjoining areas and this quarry will meet up the requirement of such stone products to some extent. The proposed Stone quarry mining project of Ekchelia Stone Mahal will fulfill the local demand of stones for Stone Crusher Units as well as for supply to various government, semi-government and private agencies for civil construction purposes. The people in the surrounding areas will be benefitted by generation of employment opportunities as well as growth of economic activities. Proposed project provides revenue to Govt. exchequer in GST, cess and excise duties till mine lease contract period of seven years.

**TABLE 3: SALIENT FEATURES OF THE PROPOSED STONE QUARRY PROJECT**

<b>Particulars</b>	<b>Description</b>																		
Location of the Project	Ekchelia Stone Mahal (Reserve Forest), Near Village: Ekchelia, PO: Bamunigaon, PS: Chhayngaon, District: Kamrup (Assam)																		
Name of the Mineral to be mined	Granitic rock body																		
Capacity of Proposed Production per annum	2,19,504 Cu.M. per year 10,97,520 Cu.M. for 5 (five) years 15,36,529 Cu M for 7 (Seven) Years																		
Land use pattern	The proposed area consists of degraded forest area mainly covered with grasses, shrubs and exposed rock outcrop.																		
Method of Mining	Open cast mining																		
Cost of the Project	1.5 Cr.																		
Total lease area	7.00 Ha.																		
Lease Period	7 Years Approved mine plan for 5 years.																		
Water Requirement	<b>9.595 KLD</b> <b>Source: Supply from local vendor</b>																		
Power Requirement	No electric connection is there. One 30 kVA DG set will be used for backup powers																		
Manpower Utilization	Total requirement: 63 Nos. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Sr. No.</th> <th style="text-align: center;">Designation</th> <th style="text-align: center;">Number</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td>Mine Manager</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">2.</td> <td>Mining Supervisor</td> <td style="text-align: center;">8</td> </tr> <tr> <td style="text-align: center;">3.</td> <td>Driller</td> <td style="text-align: center;">20</td> </tr> <tr> <td style="text-align: center;">4.</td> <td>Office Staff</td> <td style="text-align: center;">15</td> </tr> <tr> <td style="text-align: center;">5.</td> <td>Security Personal</td> <td style="text-align: center;">16</td> </tr> </tbody> </table>	Sr. No.	Designation	Number	1.	Mine Manager	4	2.	Mining Supervisor	8	3.	Driller	20	4.	Office Staff	15	5.	Security Personal	16
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2.	Mining Supervisor	8																	
3.	Driller	20																	
4.	Office Staff	15																	
5.	Security Personal	16																	
No. of Working Days	200 days (1 Shifts)																		
Solid Waste Generation	The top soil should be removed and stored separately. The waste rock dumps are first utilized to fill the void up to a planned level. The top soil stored separately should then be laid over it to sustain plan growth. Small amount of domestic waste by the workers at the site will be generated.																		
Budgetary Provision for EMP	5% of project cost is allocated for Environmental Management Plan																		
Corporate Social Responsibility (CSR) cost	2% of project cost is allocated for CSR cost																		
Health and Hygiene	2% of project cost is allocated for health and hygiene cost																		

### **3.0 LAND REQUIREMENT**

The project is proposed on the land of 7.0 Hectares, and the entire 100% land (i.e. 7.0 Ha) has been allotted to M/s. Anil Das from DFO West Kamrup Division, Kamrup, Assam. Out of the above **33.00% (2.31 Ha.)** area will be developed as Greenbelt area.

#### **3.1 MODE OF TRANSPORTATION**

The finish products of Ekchelia stone quarry are stone aggregate. The estimated quantity of stone aggregate of proposed project is as follows:

**TABLE 4: ESTIMATED QUANTITY**

Description	CUM for 5 Years	CUM per day	No. of trucks day
Mineable reserve as per approved mine plan	10,97,520	627.15	40
<b>No. of Trips = No. of Trucks x 2</b>			<b>80 trips per day</b>

Thus overall, **219504** cubic meter per annum stone aggregate will be transported through road (considering 350 working days) for the stone quarry mine. Thus, around **40 trucks per day i.e., 80 trips per day** will be required to transport the materials by road with the capacity of each truck 25 Tons is being considered (Truck capacity – 30 ton).

#### **3.2 SOLID AND HAZARDOUS WASTE GENERATION**

Solid waste generated from the campsite and other wastes like plastics, papers, cardboards etc. will be properly collected, segregated and reused/disposed-off properly. The waste comprises mainly overburden, which are top soil and left out rock fragments which are not usable. The top soil and waste rock fragments etc. shall have to be preserved for reclamation purposes in future.

**TABLE 5: HAZARDOUS WASTE GENERATION**

Type of Hazardous Waste	H.W Category /Rule	Quantity	Disposal
Waste Oil/Used Oil	5.1(as per HWM Schedule I)	0.5 KL/Annum	Will be given to authorized recycler having
Oil Soaked Cotton rags/jute	Sch. I (5.2)	0.2 TPA	Safely collected and stored and shall be disposed through authorized recycler.
Used Lead Acid batteries	Covered under The Batteries (Management and Handling) Rules, 2001	—	The lead acid battery or dry battery will be given to authorized recycler having authorization from competent Authority.
E-waste generation (Computers, laptops, televisions, printers, and other electronic appliances)	e-waste Management rule 2022	0.1 TPA	Shall be disposed through authorized recyclers as per e-waste Management rule 2022

#### **3.3 WATER REQUIREMENT & SOURCE**

The total water requirement shall be 9.595 KLD for domestic and sprinkling purpose, which will be sourced from Water Tanker of the village. The proposed site has high rainfall due to south-west monsoon and retreating monsoon seasons.

Dust suppression – 3.62KLD

Green Belt – 3.14 KLD

Domestic – 2.835 KLD

### **3.4 POWER REQUIREMENT & SUPPLY**

No electric connection is there. One 30 kVA DG set will be used for backup powers.

### **3.5 MANPOWER REQUIREMENT**

The proposed mining project will generate direct & indirect employment. About 63 per day people will get direct employment, and some persons will also be affected indirectly and employed with allied and related industries, such as transportation, maintenance, etc.

### **3.6 FIRE FIGHTING FACILITIES**

In order to combat any occurrence of fire in mining area premises, fire protection facilities are envisaged for the mining operation. All mining units, office buildings, parking areas of HEMM, etc. will be provided with adequate number of portable fire extinguishers to be used as first aid fire appliances.

### **3.7 PROJECT COST**

The project cost of the project is estimated as **Rs. 150 Lakhs**

## **4.0 EXISTING ENVIRONMENTAL SCENARIO**

### **4.1 BASELINE ENVIRONMENTAL STUDIES**

Baseline environmental studies were conducted at project site along with 10 km radial distance from the project site. The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, and Land were monitored during **winter season (1<sup>st</sup> October 2023 – 31<sup>st</sup> December 2023)**

### **4.2 METEOROLOGY & AMBIENT AIR QUALITY**

#### **Summary of the Meteorological Data Generated at Site (1<sup>st</sup> Oct 2023 – 31<sup>st</sup> Dec 2023)**

<b>Predominant Wind Direction</b>	<b>Pre-monsoon Season</b>
First Predominant Wind Direction	SE (13.90%)
Second Predominant Wind Direction	E (9.60%)
Calm conditions (%)	2.22
Avg. Wind Speed (m/s)	2.07

The status of ambient air quality within the study area was monitored for pre-monsoon season at 8 locations. All these 8 sampling locations were selected based on the meteorological conditions considering upwind and downwind, cross wind directions and reference point. The levels of Respirable Particulate Matter (PM<sub>10</sub>), Fine Particulates (PM<sub>2.5</sub>), Sulphur Dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>) and carbon monoxide (CO), Ammonia, Ozone, Benzene and BAP were monitored. The details of Ambient Air Quality Monitoring Results are summarized and given in **Table 6**.

**TABLE 6: SUMMARY OF AMBIENT AIR QUALITY MONITORING RESULTS**

Sr. No.	Location		PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	CO
			µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>
1	Project Site (Nr. DFO Office)	Min	56.1	19.5	7.2	13.3	0.502
		Max	70.8	29.1	10.6	17.6	0.69
		Avg	64.3	24.4	8.7	15.2	0.602
		98 <sup>th</sup>	70.5	28.9	10.5	17.6	0.685
2	Kharkhari	Min	49.5	17.8	5.4	10.3	0.395
		Max	62.6	26.5	7.8	15.6	0.594
		Avg	56.8	21.7	6.5	13.4	0.483
		98 <sup>th</sup>	62.1	25.9	7.7	15.4	0.572



**Ekchelia Stone Mahal (area 7.0 Ha.) in Reserve Forest Area in Kamrup District of Assam State by  
Divisional Forest Officer**

Sr. No.	Location		PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	CO
			µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>
3	Alukhunda FV	Min	52.2	19.8	5.7	12.1	0.425
		Max	69.4	25.8	9.1	17.1	0.642
		Avg	59.9	22.9	7.3	14.3	0.529
		98 <sup>th</sup>	68.4	25.8	8.9	16.8	0.626
4	Lakadubi	Min	54.4	21.8	7.4	13.7	0.543
		Max	75.9	31.5	11.1	21.4	0.689
		Avg	65.2	26.3	8.8	17.3	0.627
		98 <sup>th</sup>	74.7	30.7	10.8	21	0.684
5	Bamunigaon	Min	57.1	19.6	7.8	12.6	0.607
		Max	75.6	33.8	10.3	18.5	0.784
		Avg	68.1	28.6	9.2	15.4	0.691
		98 <sup>th</sup>	75.5	33.3	10.3	18.1	0.772
6	Khatira	Min	55.3	18.4	6.8	14.2	0.571
		Max	71.2	31.6	9.3	20.2	0.773
		Avg	62.6	24	8.1	16.6	0.656
		98 <sup>th</sup>	69.5	30.3	9.3	19.8	0.764
7	Jalukbari F.V	Min	57.6	22.5	6.2	13.5	0.407
		Max	74.8	32.1	9.4	19.2	0.876
		Avg	66.3	27.5	7.8	16.7	0.589
		98 <sup>th</sup>	74.3	31.7	9.2	19.2	0.865
8	Halang Juli	Min	54.1	20.7	6.9	13.9	0.492
		Max	68.4	29.1	10.3	17.4	0.637
		Avg	61.9	25.3	8.4	15.8	0.555
		98 <sup>th</sup>	67.9	28.9	10	17.4	0.627
<b>CPCB Standards</b>			<b>100 (24hr)</b>	<b>60 (24hr)</b>	<b>80 (24hr)</b>	<b>80 (24hr)</b>	<b>2 (8hrs)</b>

**TABLE 6(A): CONCENTRATION OF HEAVY METALS &VOCS IN AMBIENT AIR**

Location	Pb(µg/m <sup>3</sup> )	As (ng/m <sup>3</sup> )	Ni (ng/m <sup>3</sup> )	Benzene (µg/m <sup>3</sup> )	BaP(ng/m <sup>3</sup> )	Free Silica (µg/m <sup>3</sup> )
Project Site (Nr. DFO Office)	0.21	BDL (DL-0.1)	BDL (DL-0.1)	BDL (DL-0.01)	BDL (DL-0.01)	0.05
Kharkhari	0.17	BDL (DL-0.1)	BDL (DL-0.1)	BDL (DL-0.01)	BDL (DL-0.01)	0.07
Alukhunda FV	0.09	BDL (DL-0.1)	BDL (DL-0.1)	BDL (DL-0.01)	BDL (DL-0.01)	0.02
Lakadubi	0.13	BDL (DL-0.1)	BDL (DL-0.1)	BDL (DL-0.01)	BDL (DL-0.01)	0.06
Bamunigaon	0.16	BDL (DL-0.1)	BDL (DL-0.1)	BDL (DL-0.01)	BDL (DL-0.01)	0.04
Khatira	0.14	BDL (DL-0.1)	BDL (DL-0.1)	BDL (DL-0.01)	BDL (DL-0.01)	0.06
Jalukbari F.V	0.11	BDL (DL-0.1)	BDL (DL-0.1)	BDL (DL-0.01)	BDL (DL-0.01)	0.02
Halang Juli	0.08	BDL (DL-0.1)	BDL (DL-0.1)	BDL (DL-0.01)	BDL (DL-0.01)	0.02
<b>CPCB Standard</b>	<b>1 (24 hrs)</b>	<b>6 (Annual)</b>	<b>20 (Annual)</b>	<b>5 (Annual)</b>	<b>1 (Annual)</b>	<b>-</b>

**BDL: Below Detectable Limit**

From the above results, it is observed that the ambient air quality at all the monitoring locations was within the permissible limits specified by CPCB.

### 4.3 AMBIENT NOISE LEVELS

Ambient noise level monitoring was carried out at the 8 monitoring locations. The monitoring results are summarized in **Table 7**.

**TABLE 7: SUMMARY OF AMBIENT NOISE LEVEL MONITORING RESULTS**

Sr. No.	Monitoring Locations	Equivalent Noise Level	
		Leq <sub>Day</sub>	Leq <sub>Night</sub>
<b>Residential Area</b>			
1	Alukhunda FV	51.3	42.7
2	Lakadubi	52.6	43.1
3	Jalukbari F.V	50.4	41.2
<b>CPCB Standards dB(A)</b>		<b>55.0</b>	<b>45.0</b>
<b>Commercial Area</b>			
4	Kharkhari	61.8	47.6
5	Bamunigaon	62.5	48.2
<b>CPCB Standards dB(A)</b>		<b>65.0</b>	<b>55.0</b>
<b>Silence Zone</b>			
6	Khatira	46.1	37.5
7	Halang Juli	45.8	36.4
<b>CPCB Standards dB(A)</b>		<b>50.0</b>	<b>40.0</b>
<b>Industrial Area</b>			
8	Project Site	46.7	38.8
<b>CPCB Standards dB(A)</b>		<b>75.0</b>	<b>70.0</b>

*Source: Field monitoring and analysis by Anacon Laboratories Pvt. Ltd., Nagpur*

### 4.4 SURFACE AND GROUND WATER RESOURCES & QUALITY

#### 4.4.1 Geology and Hydrogeology

##### Geological Field Survey Methodology

- i. Secondary data collection for the study with the help of satellite imageries, GSI reports and research paper if available, it is very helpful for planning of field survey in 10 km radius.
- ii. During field survey, ground truth verification of geological features is done. During field survey GPS, toposheet map and Google imagery plays very important role.
- iii. Geological sequence is observed along sites such as Nallah cutting, Exposures along Road/Highway construction sites and nearby opencast mining areas.
- iv. Geological maps are prepared with the help of District Resource Map of GSI and data collected through field survey.

##### Hydrogeological Survey Methodology

- i. Secondary data collection for the study area with the help of CGWB brochures and data available with state ground water departments like long term water levels data, groundwater usage, etc.
- ii. During field survey well inventory is critically done to assess water level scenario in particular season to verify the secondary data.
- iii. In case of mining projects pumping test are carried out to assess the aquifer parameters.

- iv. Groundwater level maps are prepared as per water level data of Govt. agencies and data collected through field survey.
- v. Groundwater recharge and harvesting techniques are suggested as per CGWA guidelines.

#### **4.4.2 Regional Geology**

The Assam plateau lies along the continuation of the Archeans of Bihar and comprises Garo, Khasi, Jaintia hills and to its north-east is the detached area of Mikir hills. Tertiary rocks are well developed in the northern-eastern and south-eastern part where they exhibit a more or less complete geological succession ranging from Paleocene to Lower -Pleistocene.

Pre-monsoon depth to water level varies from 2-4 mbgl.

Post-monsoon depth to water level varies from 0.5-2 mbgl.

#### **4.4.3 Groundwater Level**

The district's thick and broad alluvial deposit with a rich aquifer system is suited for groundwater development via open wells, shallow tube wells, and deep tube wells. Open wells and filter point wells are practicable virtually everywhere in the district, especially in regions inhabited by hills, to supply the drinking and other needs of a limited number of individual families. Ring wells with a diameter of 0.80 to 1.20 m and a depth of 5 to 10 m bgl are likely to contain enough water to satisfy the need. Filter point wells to a depth of about 20 to 25 m bgl are appropriate for extraction of groundwater for home use by supplying galvanized iron/PVC pipes with slotted pipes against the granular zones. As per figure 3.1 A and 3.1 B, in the project location during pre-monsoon, the groundwater level (ranges from 2 - 4m bgl) 4m bgl and during post-monsoon, the groundwater level (ranges from 0.5 to 2m bgl) 2m bgl.

#### **4.4.4 WATER QUALITY**

##### **A. Surface Water Quality**

The physico-chemical characteristics of the surface water are presented in **Table 3.4.3** and are compared with the IS-2296:1992 standards.

The analysis results indicate that the pH ranged between 7.18 – 7.61 which is well within the specified standard of 6.5 to 8.5. The pH of water indicates whether the water is acid or alkaline. The TDS was observed to be 312 – 410 mg/l which is within the permissible limit of 2000 mg/l. The total hardness recorded was in the range of 179.88 – 232.16 mg/l as CaCO<sub>3</sub> which is also within the permissible limit of 600 mg/l. The levels of chloride and sulphate were found to be in the range of 48.35 – 65.21 mg/l and 31.25 – 44.50 mg/l respectively.

Dissolved oxygen (DO) refers to the amount of oxygen (O<sub>2</sub>) dissolved in water. Because fish and other aquatic organisms cannot survive without oxygen, DO is one of the most important water quality parameters. The reported value of range of 5.1 – 5.8 mg/l. Phosphorus (as PO<sub>4</sub>) is an important nutrient for plants and algae. Because phosphorus is in short supply in most fresh waters, even a modest increase in phosphorus can cause excessive growth of plants and algae that deplete dissolved oxygen (DO) as they decompose. PO<sub>4</sub> concentration was found to be in the range of 0.18 – 0.35 mg/l. COD ranges from 18 – 32 mg/l and BOD ranges from BDL(DL-2) – 3.34 mg/l.

##### **Remarks**

Coliform group of organisms are indicators of fecal contamination in water. All surface water samples were found to be bacteriologically contaminated. Presence of total coliforms in surface water indicates that a contamination pathway exists between any source of bacteria (septic system, animal waste, etc.) and the surface water stream. A defective well can often be the

**Ekchelia Stone Mahal (area 7.0 Ha.) in Reserve Forest Area in Kamrup District of Assam State by  
Divisional Forest Officer**

cause when coliform bacteria are found in well water. For surface water, treatment followed by chlorination or disinfection treatment is needed before use for domestic purpose. Groundwater samples were not found to be bacteriologically contaminated.

**B. Groundwater Quality**

The physico-chemical characteristics of groundwater are presented in **Table 3.4.4** and compared with the IS-10500 standards. The analysis results indicate that the pH ranged 7.41 – 8.01. The TDS was ranging from 490 – 658 mg/l. Total hardness was found to be in the range of 277.56 – 366.85 mg/l. The fluoride concentration was found to be in the range of 0.38 – 0.71 mg/l. The nitrate and sulphate were found in the range of BDL(DL-2) mg/l and 37.14 – 61.35 mg/l respectively. The chloride concentration was found in the range of 58.92 to 95.85 mg/l. The Total suspended solid concentration was found below detection limit (DL -10mg/l) at all sampling location. Heavy metals like As, Pb, Ni was found below detection limit i.e. BDL (DL-0.01), BDL (DL-0.001), BDL (DL-0.1) respectively and Iron was found in the range of 0.26 to 0.48 mg/l.

**Location wise Water Quality Assessment**

S. N.	Locations	WQI	Quality	Remark
1.	Project Site	69.66	Good	<b>Water quality assessments based upon above physico-chemical parameters showed quality of ground water samples is good.</b>
2.	Kharkhari	65.12	Good	
3.	Alukhunda FV	70.52	Good	
4.	Lakadubi	75.65	Good	
5.	Bamunigaon	81.49	Good	
6.	Khatira	74.14	Good	
7.	Jalukbari F.V	66.19	Good	
8.	Halang Juli	66.31	Good	

**4.5 LAND USE LAND COVER CLASSIFICATION**

The land-use & land cover map of the 10 km radial study area from the periphery of project site has been prepared using Resource SAT-1 (IRS-P6), sensor-LISS-3 having 23.5m spatial resolution and date of pass 26<sup>th</sup> April 2023 satellite image with reference to Google Earth data. In order to strengthen the baseline information on existing land use pattern, the following data covering 10 km radius is approximate about 25°55'53.95"N to 26° 6'38.55"N latitude and 91°13'59.07"E to 91°25'58.19"E longitude and elevation 26-396 meters are used as per the project site confined within that area. The Land Cover classes and their coverage are summarized in **Table 8**.

**TABLE 8: LU/LC CLASSIFICATION SYSTEM WITHIN 10 KM STUDY AREA**

LU/LC Classification System				
Sr. No.	Level-I	Level-II	Area (Sq. Km <sup>2</sup> )	Percentage (%)
1	Built-up land	Settlement	45.4	14.39
		Industrial Settlement	6.23	1.97
		Road Infrastructure	2.41	0.76
		Railway Track	1.08	0.34
2	Agricultural Land/ Crop Land	Single Crop	102.4	32.46
		Double Crop	39.41	12.49
3	Forest Area	Reserve Forest	63.03	19.98
		Open Jungle	1.96	0.62

**Ekchelia Stone Mahal (area 7.0 Ha.) in Reserve Forest Area in Kamrup District of Assam State by  
Divisional Forest Officer**

LU/LC Classification System				
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1	Built-up land	Settlement	45.4	14.39
		Industrial Settlement	6.23	1.97
		Road Infrastructure	2.41	0.76
		Railway Track	1.08	0.34
2	Agricultural Land/ Crop Land	Single Crop	102.4	32.46
		Double Crop	39.41	12.49
		Hills	3.83	1.21
		Dense Mixed Jungle	22.54	7.15
		Fairly Dense Mixed Jungle	3.91	1.24
4	Scrubs/Wastelands	Open Scrub	3.89	1.23
		Wasteland	3.94	1.25
5	Waterbodies	River/Nala/Stream/Canal	12.66	4.01
		Lake/Pond	2.18	0.69
6	Others	Mud Ponds	0.58	0.18
		<b>Total</b>	<b>315.45</b>	<b>100</b>

#### 4.6 SOIL QUALITY

The bulk density of the soil in the study area ranged between 1.186 - 1.292 g/cc which indicates favourable physical condition for plant growth. pH is found to be 7.52 – 7.92 in reaction. Based on the pH values, soil nature in the study area is found to be from slightly acidic to neutral. As based on result of available concentration of major nutrients fertility status of soil with respect to NPK value is found to be in the range of 148.56 – 169.94 kg/ha (quality good to better), 64.15 – 86.66 kg/ha (quality average sufficient to more than sufficient) and 275.74 – 336.51 kg/ha (quality average to better) respectively. Organic carbon was found in the range of 0.52% – 0.70% (quality average sufficient).

#### 4.7 BIOLOGICAL ENVIRONMENT

##### A. Flora

Dominant tree species in Study area are *Acacia nilotica*, *Acacia catechu*, *Adinacordifolia*, *Albizia lebbeck*, *Diospyros variegata*, *Pongamia glabra* and *Terminalia belerica* Dominant families of plants recorded in the study area are Mimosaceae Moraceae, Euphorbiaceae, Rubiaceae, Combretaceae, Convolvulaceae, Solanaceae, Cucurbitaceae. The area showed overall 172 plant species from 118 genera.

##### B. Fauna

##### I. Vertebrates

##### a) Mammals

The domestic animals in the study area mostly comprise of dog, Cow and buffalo. The survey revealed that 19 species of mammals were recorded in and around the study areawhile no wild mammal was observed in this area.

##### b) Reptiles

Seven species of reptiles were recorded. Availability of fauna in the vicinity of the sites is presented in Table 3.6.2. None of these animals are endangered (Schedule I) as per Wildlife (Protection) Act 1972.

### **c) Avifauna**

Birds were studied by direct observation with the help of “Olympus 10 x 50 DPS I” binocular and were identified by adopting available literature (Grimmett et al. 1998). During the survey, 31 species of birds were noticed. The dominant birds were little Common Koel, Indian cuckoo, Indian roller etc. It has been observed that the majority of birds were insectivorous in habit preferring insects, worms and arachnids. None of these birds are endangered (Schedule I) as per Wildlife (Protection) Act 1972.

### **C. Park, Sanctuaries and Reserve Forest**

The proposed quarry site is located within the Milmillia RF Near Village: Ekchelia, PO: Bamunigaon, PS: Chhayhgaon, District: Kamrup (Assam). The proposed stone quarry mining project having lease area 7.0 Ha. and is under the jurisdiction of Bamunigaon Range of Kamrup (W) Forest Division, District Kamrup, Assam.

### **D. Aquatic Ecology**

#### **Fish Species**

In aquatic fauna the information gathered from local fishermen on fish diversity revealed presence of few native and introduced fish species from local water bodies

## **4.8 SOCIO-ECONOMIC ENVIRONMENT**

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data collection from census 2011 & District Census hand book 2011.

### **Demographic Aspects**

#### **Distribution of Population:**

As per 2011 census, the study area consists of total population 12214. Total male population was 64066 (51%) and female population was 61949(49%).0-6 child population was 16432(13%), SC population was 5680 (5%) and ST population was 37981(30%).

#### **Average Household Size**

According to the Census data of 2011, in the study area total household are 26214 an average family size of 5 persons per household. This represents normal family size and also in similarity with other parts of the district. Majority of the households have three generations living under one roof, representing traditional Indian joint or extended family system.

#### **Sex Ratio**

To reiterate; the male and female constitute 49.93% and 50.07% respectively and number of females per 1000 males is 967.

#### **Literacy Levels**

The analysis of the literacy levels in selected villages of study area, out of total population, 82996(66%) were literates and illiterates were 43019(34%). Male literates were 45885(36%) and female literates were 37111(29%).

## **5.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

### **5.1 AIR ENVIRONMENT**

#### **Impact on Air Environment**

The impact on air environment mainly depends on magnitude of operation and threshold limit of the project. The source of emission will be mainly in form of fugitive emission and point source.

ISCST3 - Model was used for prediction of impact of air pollutants during worst case meteorological conditions i) Loading/unloading and ii) transportation of stone by trucks on Haul roads by using area and line source model & iii) D.G. set operations to predict GLC's of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub> & CO during these conditions. Prediction was made due to loading /unloading and transportation of stones by trucks on haul road over the length of 1000m. Total projected 24 hourly maximum GLC's of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub> & CO are found to be 32.2 µg/m<sup>3</sup>, 77.1 µg/m<sup>3</sup>, 11.10095 µg/m<sup>3</sup>, 22.05 µg/m<sup>3</sup> and 689.54 µg/m<sup>3</sup>. These projected background concentrations due to proposed stone mining operations are found to be within the stipulated CPCB/MOEF&CC standards for ambient air quality. Therefore, ambient air quality of the surrounding area of the proposed stone mining project will not be affected

Hence it is inferred that considering contributed concentration levels, the pollution load exerted due to mining activity is already contributed in ambient air and concluded insignificant.

### **Adoption scientific mining methods to reduce dust emission from point and line source**

Scientific methods of mining and pollution control systems will be adopted in the mine to control dust emissions from point and line sources, as follows:

**Point Source:** *These includes drilling, loading, unloading, manual sizing and grading activities*

- Adoption of wet drilling/ drills with dust arrestors to control dust generation during drilling.
- Avoiding secondary blasting by use of rock breakers.
- Reducing dropping height of excavator bucket while loading material into dumpers/tippers.
- Reducing dropping height for trucks during unloading.
- Provision of fixed water sprinkling arrangement at crusher.

**Line Source:** *These includes Haul roads & approach roads*

- Development of plantation along approach road.
- Periodic maintenance of tippers/dumpers used for Mineral transport.
- Periodic maintenance of haul roads
- Blacktopping/ paving of approach road connecting the mine lease area to SH/NH
- Regular water sprinkling on haul roads.
- Transport of Graded ore to the buyer's location through trucks covered with tarpaulin.

## **5.2 NOISE IMPACTS**

### ➤ **Impact On Noise Environment**

The noise and vibration along with dust are generated due to the operation of mining equipment and movement of transporting vehicles. In any situations, noise levels near residential areas should not exceed the Central Pollution Control board (CPCB), limits i.e. 55 dB(A). It is recommended to put an acoustic barrier near the crusher plant to attenuate the noise propagation.

### **Gound Vibration**

Since very few explosives are used in mining, ground shaking will not be as severe or the potential for flying rocks to form.

### ➤ **Mitigation Measures for Noise Environment**

- No noise polluting work shall be carried out in the night hours
- Provision of PPE's for the workers
- Vehicles to be serviced regularly and maintained properly to avoid any unwanted generation of noise or vibration from them

- Green belt plantation and garden trees will help in reducing the noise, traffic related pollution and heat island effects.
- Proper lubrication, muffling and modernization of equipment shall be used to reduce the noise during operation phase.
- Vibration and noise due to blasting will be reduced by adopting controlled blasting technique.
- Blasting will be avoided under unfavourable conditions.
- Rock breakers is being/ will be used instead of secondary blasting.
- Regular monitoring of the noise levels as per the monitoring plan detailed in Chapter 6 of this EIA report, shall be adopted during the operation phase, to ensure that, the noise levels are within the limits prescribed by CPCB.

### **5.3 IMPACT ON WATER ENVIRONMENT**

#### ➤ **Impact On Surface Water Resources**

No surface water source such as rivers, streams & dam exists in the mining area. Proper maintenance of transport vehicle & prevention of washing transport vehicle in ponds etc be helpful to control water pollution. Garland drains of appropriate size will be constructed along with settling tank at mine boundary to manage the drainage and runoff. As the mining activity is manual and there is no chemical or physical contamination of the water body, the impact on the surface water quality will be insignificant.

#### • **Impact due to Water use in Mines**

In stone mining operation water will be mainly used for domestic purpose, dust suppression, plantation and washing of heavy earth moving machineries. Only 9.595 KLD of water will be used for this purpose. The water required for dust suppression and plantation purpose will be met through the rain water which will be stored in the exhausted mining pits. Only about 2.835 KLD of drinking water will be required for domestic use which is being sourced through tanker.

#### • **Impact on Ground Water**

Mining for each successive year is proposed to its optimum depth of mineral bed and the mining will not go to touch the ground water table so there is no chance to disturbance in ground water table. The dug-out pit will help in recharging of ground water by decreasing the runoff. Natural pits will be used for rainwater conservation and harvesting.

After complete extraction of mineral from land and the balance un-reclaimed pit is proposed to be developed as per approved final quarry closure plan.

#### ➤ **Mitigation Measures for Water Environment**

- Provision of temporary toilets for laborers
- Domestic waste water will be treated into septic tank followed by soak pit outside of the proposed cluster project with a safe distance and no wastewater will be allowed to be get discharged into the water body
- All stacking and loading areas should be provided with proper garland drains
- Check dams should be provided to prevent solids from wash off.
- Construction of garland drains around freshly excavated and dumped areas so that flow of water with loose material is prevented.



- The mine water should be passed through specially constructed catch pits to arrest any loose material being carried away with water.
- Any areas with loose debris within the leasehold should be planted.
- Garland drains should be constructed surrounding the waste dumps and should be connected to the surface water reservoir to avoid the run-off mixing directly to natural water channels before settling.
- Ground water table will not be intersected during the mining activity

#### **5.4 IMPACT ON BIOLOGICAL ENVIRONMENT**

- There will not be any clearance of vegetation due to the proposed mining project since there is no vegetation within the mining lease area
- The fauna in the vicinity of the mine is restricted to few common small species. There will be no impact on fauna due to this mining project

##### **Impact on Flora**

- As it is a mining project of stone quarry activities will be confined to core zone only. The project area is surrounded by agricultural land. There is no forest land involved in mine lease area. Thus, no direct impact is foreseen on the flora of the forest area because of mining operation. The activities related to mining as transportation of material and passage of workers to and from mining area may have an adverse impact on the road side flora, if adequate control measures will not be taken into consideration.
- Significant reduction in total chlorophyll content at road side plant species may affects the plant species by affecting the plant metabolism. The reduction in chlorophyll concentration corresponds directly to the reduction in plant growth.

##### **Impact on Fauna**

- The mining, specifically, will have no adverse impact on fauna whereas the operational activities such as human activity, transportation and noise generation may have an adverse impact on fauna.
- No wild life sanctuary is present within 10 km radius of study area. No major wildlife observed within mine lease area during the survey period. Considering size of mine and management practice by scientific method of mining with proper Environmental Management Plan including pollution control measures especially for air and noise, which will not cause any adverse impact on the surrounding animals.
- Fencing around the entire mine lease area is recommended in order to restrict the entry of strayanimals into the mining area.
- Green belt development will be carried out which will help in arresting dust and minimizingsound level arising from the mining operation.
- Some fauna will move from the area of the road side as a result of habitat loss and physicaldisturbance.

##### **➤ Impact Mitigation Measures for Biological Environment**

- Green Belt will be developed around the lease boundary, haul roads and plantation will be done on undisturbed area, reclaimed area, dump site, workshop & mine office.
- Total area of green belt proposed would be nearly 1250 of trees that will be planted throughout the boundary of the mining lease and surrounding area.

- Indigenous Plan species will be planted in consultation with local Forest Department.

#### **Impact Mitigation Measures for Flora**

- Plantation will be carried out on approach roads and nearby vicinity at river banks areas.
- Native plant species which are resistant and pollution tolerant and comparatively well acclimatized should be grown along roadsides. Selection of plant species, shall be preferred to consider certain factors as agro climatic suitability, height and canopy architecture, growth rate and habit and aesthetic looks (foliage, conspicuous and attractive flower color).
- Annual bio-monitoring of roadside plants exposed to vehicular pollution will be done to assess the impact of dust load.

#### **Mitigation Measures for Fauna**

- All equipment should have sound-control devices not less effective than those provided on the original equipment. Motorized equipment used should be adequately muffled and maintained.
- Use exhaust silencers and optimized acoustical pipe lagging (acoustical wrapping) to minimize the noise levels.
- Mining will be carried out on the dry part of the lease area to avoid disturbance to the aquatic habitat.
- Thus, there will be no loss for wildlife.
- Operation and storage of heavy equipment within riparian habitat will be restricted.
- Access roads will not encroach into the riparian zones.

### **5.5 IMPACT ON SOCIO-ECONOMIC ENVIRONMENT**

- For the mining work, an average of 63 workers will be required in the project sites, which will be met from skilled and unskilled labours from the local population as far as possible. Thus, the project can provide employment to local workers during the operation of mines.
- The area is considered as industrially backward. The population in general does not have opportunities of earning from employment. The only employment to depend on is agriculture, which is seasonal
- There is no human settlement in or around the mining block areas, hence no clearance of human settlement is required for the mining operation.
- The proposed mining project activity does not involve any resettlement and rehabilitation process as the project is freshly designed at representative site where none of the settlement is present.
- The mining activity could lead to increased nuisance level from air emissions and noise due to transportation of material and equipment as well as laborers.

#### **➤ Mitigation Measures for Socio-Economic Environment**

In order to mitigate the adverse impacts likely to arise in the surrounding area due to proposed project activity, it is necessary to formulate an effective mitigation plan. The suggestions are as follows:

##### **Before Commencing and During Initial Phase:**

- Communication with the local community should be institutionalized and done on a regular basis. The forum could provide opportunities to discuss local critical issues and prepare programmers of mutual benefits.

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- Information regarding the proposed development plan, community programmes etc. should be communicated to the local community.

**Mining and Dragging Phase:**

- Project proponent should take appropriate steps to keep environment clean and healthy during construction phase.
- Provision of adequate drinking water, rest room, first aid instrument and toilet facilities should be made available on project site also in labour camp site.
- Water shall be sprinkle/spread over the truck and road to suppress dust during transportation of mining material to control air pollution and thereby avoid adverse health impact.
- A barrier located in the direction of the wind, with a height of approximately three times the height of the storage pile, would reduce PM10 emissions between 60% and 80%.
- While transportation of dragging material, truck, tractors should be covered.
- Proper Training and awareness programme should be carried out so that the workers understand the importance of wearing the personal protective and safety equipment's.

**COVID-19 Pandemic:**

- Regular cleaning i.e. microbial disinfection of labour assembly point, machine operator cabin, Common Instrument, office, canteen, labour colony etc.
- Sanitization/ Hand wash stations.
- Temperature checkup and maintenance of log of the same at labour camp and project site.
- Regular medical check-up of all the workers and staff, First aid and essential medical services should be provided at site.

## **6. ANALYSIS OF ALTERNATIVES (SITE AND TECHNOLOGY)**

### **SITE SELECTION**

A project's choice of appropriate location is just as important as its choice of suppliers and technology. The proposed quarry area of 7.0 Ha is located within the Milmilia RF under the jurisdiction of Bamunigaon Range of Kamrup (W) Forest Division, District Kamrup, Assam. The location of the proposed quarry site is about 1-1.5 Km away from the NH37 towards southern side and within the Milmilia RF. The proposed site is not within any protected area under Archeological, Religious, Cultural heritage or Defense establishments. The location of the proposed quarry site has been recommended by the Department of Environment and Forest, Government of Assam. Therefore, alternate sites have not been assessed.

### **SELECTION OF ALTERNATIVE TECHNOLOGY**

Maximum allowable quantity for extraction will be 10,97,520 Cu.M. for five years and 15,36,529 Cu. M for 7 years. Solid waste generated from the site and other wastes like plastics, papers, cardboards etc. will be properly collected, segregated and reused/disposed-off properly. The waste comprises mainly overburden, which are top soil and left out rock fragments which are not usable. The top soil and waste rock fragments etc. shall have to be preserved for reclamation purposes in future. The method of mining adopted is open cast mining in single shift manual mining without any change in technology.

## **7. ENVIRONMENTAL MONITORING PROGRAM**

An Environmental Management Cell (EMC) will be established for the proposed project under the control of by General Manager (Plant Head) with a direct reporting to Board of Directors.

The firm has proposed to Capital Cost of Rs. 6 Lakhs and Recurring Cost of Rs. 4 Lakhs towards Environment Monitoring Program. NABL/MoEFCC accredited lab (Third party) will engage to monitor all the environmental components as per ASPCB/CPCB norms.

## **8. ADDITIONAL STUDIES**

### **8.1 PUBLIC CONSULTATION**

The Draft EIA-EMP report for greenfield project is prepared as per the TOR issued by SEIAA/SEAC, Assam, Guwahati and the report is submitted for public consultation process as per the provisions of EIA Notification 2006 and amendments thereof.

After completing the public consultation process, the points raised and commitment of project proponent during the public hearing will be incorporated in the final EIA-EMP report for final submission to Environmental Clearance.

### **8.2 RISK ASSESSMENT & DISASTER MANAGEMENT PLAN**

The assessment of risk in the proposed project has been estimated for fire, explosion and toxicity and corresponding mitigation measures are suggested in the EIA/EMP report.

There will be an appointment of a trained and experienced safety officer. The duties of a safety officer include identifying dangerous situations and unsafe worker behavior and offering advice on corrective measures. They also organize training programmes, conduct safety audits, and offer expert professional advice on a range of topics pertaining to occupational health and safety. He is also in charge of making sure that the statutes and safety regulations are followed. In compliance with the terms of the contract, each contractor shall appoint a single safety officer in addition to the ones employed by the industry to guarantee worker safety.

After construction is completed, safety officers will be posted in line with the Mines Act, and their roles and responsibilities will be as specified by the Act.

#### **Safety Plan**

During the construction and operation phases, there is concern for the safety of both personnel and materials. In the mine, a safety plan is created and put into action. Emergency plans are used to describe what level of preparedness an industry is for potential disasters. It is possible for the disaster to occur as a result of building collapse, fire, explosion, etc.

The project proponent will formulate a safety policy with the following regulations, keeping in mind the need for safety during the phases of operation and maintenance:

- To take action to guarantee that all known safety issues are taken into account in the design, operation, and maintenance of machinery and equipment;
- To allot appropriate resources to maintain the safe and healthy state of work;
- To ensure that adequate safety instructions are given to all employees;
- To provide wherever necessary protective equipment, safety appliances and clothing and to ensure their proper use;

## **9. PROJECT BENEFITS**

The proponent of the proposed mining project is conscious of its social responsibilities, and in order to uphold these obligations, the unit will, to the greatest extent feasible, use unskilled and semi-skilled labour from the surrounding villages for the proposed project. The unit aims to create as much indirect employment as possible in the surrounding villages by hiring local contractors for both the construction and operation phases. The proponents of the project will conduct a number of activities in neighbouring villages and will make a reasonable contribution to social development as part of EMP.

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The total estimated cost of project is 1.5 Cr. in addition to the activities along with budgetary provision i.e. Rs. 0.015 Cr. @1.0 % of project cost provided under CER. As per MoEF&CC, New Delhi Vide its OM dtd. 30<sup>th</sup> September 2020 a budgetary provision of Rs. 15 Lakhs will be provided towards EMP for Socio economic Development and based on public hearing outcome. Although the heads can be changed on the basis of local demand analysis at the time of Public Hearing and recommendation of SEAC.

**TABLE 9: NEED BASED ACTIVITIES BY THE PROPOSED MINING PROJECT**

Proposed Programme	Amount (Rs. In Lacs)					
	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year	Total
Free Health Camps & donation of Medicine to villagers	0.50	0.50	0.40	0.35	0.35	2.10
Provision of Dust bin in nearby villages	0.15	0.10	0.10	0.10	0.10	0.55
Toilet facility to nearby people	0.20	0.20	0.15	0.15	0.15	0.85
<b>Total</b>	<b>0.85</b>	<b>0.80</b>	<b>0.65</b>	<b>0.60</b>	<b>0.60</b>	<b>3.50</b>

## 10. ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan comprising following set of mitigation, management, monitoring and institutional measures to be taken during implementation and operation of the project, to eliminate adverse environmental impacts or reduce them to acceptable levels.

- Overall conservation of environment.
- Minimization of natural resources and water.
- Ensure effective operation of all control measures.
- Monitoring of cumulative and longtime impacts.
- Ensure effective operation of all control measures.
- Control of waste generation and pollution.

The firm will invest about Rs. 15 Lakhs Capital cost on environment management plan and spent about Rs. 11.30 lakhs per year for operation and maintenance.

## 11. CONCLUSION

The proposed project of M/s. Anil Das will be beneficial for the overall development of the nearby villages. Some environmental aspects like dust emission, noise, wastewater, traffic density, etc. will have to be controlled better than the permissible norms to avoid impacts on the surrounding environment. Necessary pollution control equipment like aquostic encloser, water sprinklers, etc. are integral part of the mining infrastructure. Additional pollution control measures and environmental conservation measures will be adopted to control/minimize impacts on the environment and socio-economic environment of the area. Measures like development of green belt and plantation in nearby village and along transport road in the plant and in nearby villages will be carried out. The proposed CSR/CER activities to be initiated by the mining industry will be helpful to improve the social, economic and infrastructure availability status of the nearby villages.

Thus, it can be concluded that with the judicious and proper implementation of the pollution control and mitigation measures, the proposed project will not add adverse pollution levels to the environment, moreover, it will be beneficial to the society and will help to reduce the demand-supply gap of infrastructure industries to some extent and will contribute to the economic development of the region and thereby the country.

## **12. DISCLOSURE OF CONSULTANTS**

The Environmental studies for proposed project of M/s Anil Das are carried out by M/s. Mantras Green Resources Pvt. Ltd., Nashik (M/s. MGRPL). Mantras established in 2005 as an analytical testing laboratory and now a leading Environmental Consultancy firm backed by testing lab for environment and food in Central India region. M/s MGRPL is a group of experienced former Scientists from the Government Institutions and excellent young scientist of brilliant career with subject expertise. It is recognized by Ministry of Environment & Forests, New Delhi for carrying out environmental Studies & accredited by Quality Council of India (QCI) for conducting Environmental studies having Accreditation Certificate No.: NABET/EIA/2326/RA 0286 valid till 06.01.2026 as category 'A' consultant organization in 1 Sectors.