EXECUTIVE SUMMARY

FOR

PROPOSED MINING OF LIME STONE

AT

Ka Ri U Syiar, Lynti Dkhar Area, Sohbar Sirdarship, East Khasi Hills, Meghalaya

AREA: 2.40 HA, PROPOSED CAPACITY: 89,959 MTPA (MAXIMUM)

PROJECT PROPONENT

Smt. Ailadmon Japang
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PREPARED BY

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

The present project is proposed for the excavation of lime stone over an area of 2.40 Ha at Ka Ri U Syiar, Lynti Dkhar Area, Sohbar Sirdarship, East Khasi Hills, Meghalaya. The lease has been intended to allot vide Letter of intent (LoI) no. KH/8/ML/Limestone/68/7650 dated 22/03/2019 to Lynti Dkhar lime Stone Mine. It is an opencast mining project where the entire activity will be done in a semi-mechanized way. Since the project falls in cluster having ML area more than 5 ha, therefore EIA report shall be prepared as per TOR issued vide letter number ML/SEIAA/MIN/EKH/P-59/2020/1508 dated 27 August, 2020. The draft Environmental Impact Assessment report has been prepared to comply with the Terms of Reference (ToR) issued from SEAC, under EIA notification of the MoEF&CC dated 14th September, 2006 and amended thereof, for seeking environmental clearance for mining of lime Stone in the applied mining lease area.

1.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

1.2.1 Identification of Project

The Proposed **Lynti Dkhar lime Stone Mine** is executed over an area of 2.40 Ha at Ka Ri U Syiar, Lynti Dkhar Area, Sohbar Sirdarship, East Khasi Hills, Meghalaya. The maximum production rate is of 89,959 TPA of lime Stone.

1.2.2 Project Proponent

M/s **Lynti Dkhar lime Stone Mine** is a private company. The proposed mine extends over an area of 2.40 Ha.

Address of the applicant

Proprietor: M/s Lynti Dkhar lime Stone Mine

R/o- New Majai, Bholaganj, East Khasi Hills District, Meghalaya

2.0 BRIEF DESCRIPTION OF PROJECT

2.1 Nature of the Project

The opencast method of mining with semi mechanization is proposed to excavate the mineral. The mine is executed over a lease area of about 2.40 ha, for the production of 89,959 TPA of lime Stone. As per the EIA Notification dated 15th January, 2016 and 1st July, 2016, the project comes under "**B1"** Category since the area falls in cluster of more than 5 ha.

2.2 Size of the Project

The proposed lime Stone mining project extends over an area of 2.40 ha with the target maximum production capacity of mine is about 89,959 TPA of lime Stone. As per the Mining Plan, the mineable reserves of the lime stone is 10, 78, 839 tonnes with an average production of 89,903 tonnes. The average annual production of Limestone may be different from the annual production

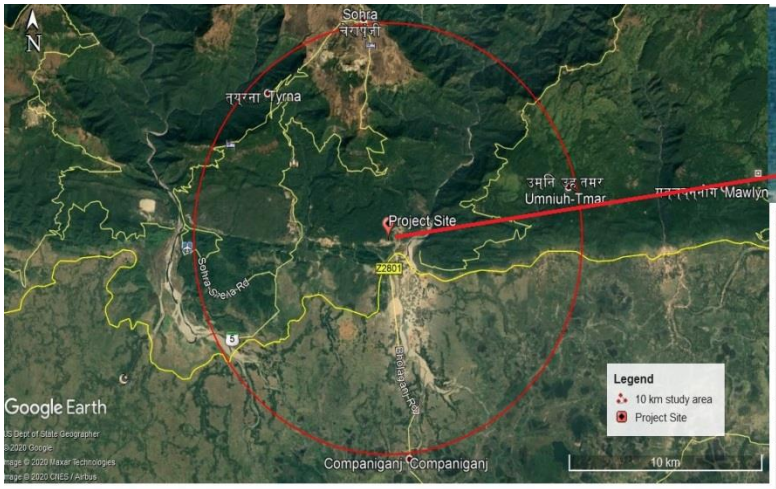
of plan period of 5 years. Thus, 4,48,085 tonnes of total mineable reserve will be worked out in first 5 years and. the balance mineable reserve i.e., 6,30,754 tonnes will be mined out in 7 years at the rate of 90, 107 per year. Therefore, the life of the mine will be 12 years (5 years in plan period+ seven years in conceptual period)

2.3 Anticipated Life of Project and Cost of the Project

The Anticipated Life of mine Project is 12 years period. The cost of the project is about Rs. 22.0 lakhs.

2.4 Location of the Project

The proposed lime Stone Mine lease comes under Ka Ri U Syiar, Lynti Dkhar Area, Sohbar Sirdarship, East Khasi Hills, Meghalaya. Map of the project site is presented below:



Boundary Pillar no.	Location (co-ordinates)	
	Latitude	Latitude
1	N25°10'45.60"	E91°44'35.10"
2	N25°10'48.00"	E91°44'35.60"
3	N25°10'49.30"	E91°44'34.50"
4	N25°10'48.40"	E91°44'32.60"
5	N25°10'49.60"	E91°44'32.40"
6	N25°10'50.80"	E91°44'34.20"
7	N25°10'52.10"	E91°44'37.90"
8	N25°10'51.60"	E91°44'39.40"
9	N25°10'46.20"	E91°44'39.00"
10	N25°10'45.60"	E91°44'37.10"

2.5 PROJECT DESCRIPTION

2.5.1 Salient Features of Mine Lease

The salient features of mine lease are given in **Table 1** below:

Table 1: Salient Features of mine lease area

Sr. No.	Parameter	Description		
1	Name of the Mine	Proposed lime Stone Mining Project at Ka Ri U Syiar, Lynti Dkhar Area, Sohbar Sirdarship, East Khasi Hills, Meghalaya		
2	Mining Capacity	89,959 (maximum) TPA of lime Stone		
3	Longitude Latitude	Boundary Pillar no.	Location (co-ordinates)	
			Latitude	Latitude
		1	N25°10'45.60''	E91°44'35.10''

		2	N25°10'48.00''	E91°44'35.60''
		3	N25°10'49.30''	E91°44'34.50''
		4	N25°10'48.40''	E91°44'32.60''
		5	N25°10'49.60''	E91°44'32.40''
		6	N25°10'50.80''	E91°44'34.20''
		7	N25°10'52.10''	E91°44'37.90''
		8	N25°10'51.60''	E91°44'39.40''
		9	N25°10'46.20''	E91°44'39.00''
		10	N25°10'45.60''	E91°44'37.10''
4	Method of mining	Opencast semi mechanized method		
5	Total ML area	2.40 Ha		
6	Extent of mechanization	It is a semi-mechanized mine, loading will be done by hydraulic excavators. Hydraulic breakers will be used for stone breaking. Blasting will be done by short holes with the permission of DGMS. Manual/pneumatic hammering for stone breaking will also be done.		
7	Bench height & width	6m		
8	Bench Slope	45^{o}		
9	Transportation of Material	The mineral will be supplied in the local market by trucks/tippers.		
10	Manpower	34 persons		
11	Water Requirement	Total water requirement is about 4.0 KLPD (Drinking & Dust Suppression + Greenbelt)		
12	Source of Water	Nearby water sources		
13	Greenbelt development / Plantation (End of 5 year)	0.27 ha		
14.	No of saplings proposed in 5 years	435		

2.5.2 Mine Development and Production

The opencast method of mining with semi mechanization is proposed to excavate the mineral and waste and for other mining activities. Bench height and width are proposed 6 meters each considering semi mechanization. Approach roads will be provided up to the benches time to time. Blasting will be done by short holes with the permission of DGMS. The pneumatic breaker and hydraulic breakers will be used for excavation of mineral. The fencing around the pit/ excavation will be provided to check the inadvertent entry of human and livestock in the working zone. The

soil if comes across during mining in small layer or cavity will be scraped and stacked separately to be used for plantation during each monsoon.

Year wise Production details are given in **Table 2** below.

Table 2: Year wise Production of lime Stone Mine

Years	Saleable lime Stone (Tonnes)
1st	89,705
2nd	89,959
3rd	89,581
4th	89,456
5th	89,384
Total	**4,48,085**

2.5.3 Method of Mining

The opencast method of mining with semi mechanization is proposed to excavate the mineral and waste and for other mining activities. Bench height and width are proposed 6 meters each considering semi mechanization. Approach roads will be provided up to the benches time to time. Blasting will be done by short or long holes with the permission of DGMS. The pneumatic breaker and hydraulic breakers will be used for excavation of mineral. The fencing around the pit/ excavation will be provided to check the inadvertent entry of human and livestock in the working zone.

2.5.4 Impact on Land Use, Reclamation of Mined Out Areas and Afforestation Programme

Impact on land use & reclamation of mined out areas

Mining is essentially an excavation of mineral. The land environment is greatly affected by it. Specially, in case of mining which is being carried out by opencast method / semi- mechanized, it is expected to affect the land environment essentially. Plantation will be developed in consultation with district administration/ local authority, wherever feasible.

The Existing land is non forest land. The impact on land form or physiography will be land use on the hilly terrain will undergo radical changes due to the open cast mining. During the next five years mining, 1.20 ha land will be excavated due to mining & allied activities.

Proposal for reclamation of land affected by mining activities:

The mining will commence from the higher levels and will advance towards lower levels.

Plantation will be raised along the boundaries of the mining lease area by planting the native species around ML area, backfilled and reclaimed area, around water body, roads etc. in consultation with the local DFO/Agriculture department. 435 nos. of trees will be planted on 0.27 ha and plantation will be done on the periphery of the reclaimed area.

2.5.5 Land Use Pattern

Presently (pre-mining), the land covered under the mine lease area is non-forest land.

3.0 BASELINE ENVIRONMENTAL STATUS

3.1 Soil Quality

Five soil samples were collected in and around the mine lease area to assess the present soil quality of the region. Soil pH plays an important role in the availability of nutrients. Soil microbial activity as well as solubility of metal ions is also dependent on pH. In the study area, variations in the pH of the soil were found to be slightly acidic (6.10 to 6.87). Electrical conductivity (EC) is a measure of the soluble salts and ionic activity in the soil. In the collected soil samples the conductivity ranged from 326 – 412 µmhos/cm.

3.2 Meteorology

Meteorological data at the site was monitored during 1st December 2019 to 29th February 2020 representing winter season.

3.3 Ambient Air Quality

Ambient Air Quality Monitoring (AAQM) has been carried out at five locations during winter season from December, 2019 to February, 2020. The minimum and maximum level of PM10 recorded within the study area was in the range of 50.7 µg/m3 to 81.6 µg/m3. The minimum concentration was recorded at Sohbar (AAQ5) and the maximum concentration was recorded at Mawmluh (AAQ3). The minimum and maximum level of PM2.5 recorded within the study area was in the range of 17.5 µg/m3 to 37.8 µg/m3. The minimum concentration was recorded at Sohbar (AAQ5) and the maximum concentration was recorded at Mawmluh (AAQ3). The minimum and maximum concentration of SO2 recorded within the study area was 5.4 to 12.0 µg/m3. The minimum concentration was recorded at Sohbar (AAQ5) and the maximum concentration was recorded at Mawmluh (AAQ3). The minimum and maximum level of NO2 recorded within the study area was in the range of was 9.6 µg/m3 to 19.5 µg/m3. The minimum concentration was recorded at Sohbar (AAQ5) and the maximum concentration was recorded at Mawmluh (AAQ3). The minimum and maximum level of CO recorded within the study area was in the range of was 0.340 mg/m3 to 0.780 mg/m3. The minimum concentration was recorded at Sohbar (AAQ5) and the maximum concentration was recorded at Mawmluh (AAQ3).

The results thus obtained indicate that the concentrations of PM10, PM2.5, SO2 and NO2 in the Ambient Air are well within the National Ambient Air Quality (NAAQ) standards for Industrial, Residential, Rural and other areas.

3.4 Water Quality

To assess the physical and chemical properties of water in the region, water samples from 5 locations were collected from various water sources around the mine lease area. During the study period, in ground water the pH was varying from 7.52 to 8.27, the total dissolved solids varying from 161.06 mg/l to 184.35 mg/l, chloride level ranging from 19.7 mg/l to a maximum of 36.3 mg/l, the hardness is varying from 110.09 mg/l to 134.99 mg/l.

The results indicate groundwater is generally in conformity with the drinking water standards (IS: 10500) and surface water is in conformity with IS-2296 standards.

3.5 Noise Levels

Ambient noise levels were measured at Five locations around the proposed mine site. The noise level in day time lies between 50.2 dB(A) to 60.7 dB(A) and in night time between 37.2 dB(A) to 41.6 dB(A). The status of noise quality within the 10 km zone of the study area is within the MoEF&CC standards.

3.6 Ecological Environment

Based on the field studies and review of published literature, the major trees species present in the study area are Amari, Ajhow, Jarul, Sida, Bonsum, Borpat, Bhelu, the major herbs area Water Willow, Prickly Chaff Flower, Sessile Joyweed, Prickly Amaranth, Java Pennywort.

The major avi fauna species present in the study area are Little cormorant, Eastern Grey Heron Little egret, Cattle Egret, major mammalian fauna are Rhesus monkey, House shrew, Indian fulvus fruit bat.

3.7 Social Environment

According to the 2011 census of India, East Khasi Hills district has a population of 8,25,922. The total SC population in East Khasi Hills district is 5,642 which is 0.68% of the total population, while ST population is 6,61,158 which is 80.05% of the total population. The literate population in East Khasi Hills district is 5,78,030, out of which male & female are 2,87,270 and 2,90,760 respectively. The male literates represent 84.51 % while female represent 83.81% of the total population.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS

4.1 Impact on Air Quality

Lime Stone mine where PM_{10} and $PM_{2.5}$ will be the main pollutants generated in mining activities. The emissions of Sulphur dioxide (SO_2), Nitrogen Oxide (NO_2) contributed by diesel operated equipment and vehicles movement were considered marginal as branded make and vehicles with PUC certificate will be operated only. Fugitive dust and particulates are major pollutants occurred in the mining activities. Fugitive emissions will be settled by 70- 80% by use of multiple water sprinklers. Prediction of impacts on air environment will be made with proposed production and net increase in PM_{10} and $PM_{2.5}$ emissions at the proposed site and at the 10 km radius of study area due to mining activities.

Air pollution sources in the operating mine was classified into two categories:

i. Loading and unloading of mineral and OB

ii. Transportation on the haul road

4.2 Impact on Water Resources

Surface Water Resources

The topography of the area will not be largely changed in view of the proposed concurrent reclamation. During the mining activity period, there is a possibility of mixing of freshly disturbed material with the rain water. To take care of such happenings, retaining walls have been provided along the backfilled pits and along the soil dumps.

Groundwater Resources

The water table in hills is usually very deep and does not have any relevance with mining activities. However, concurrent restoration to original topography will not be disturbing the percolating water.

4.3 Impact on Water Quality

The impact on water quality will be confined to increased suspended solids during rain. The dumps will be secured with toe walls and rainy water will not carry significant suspended material.

4.4 Impact on Noise Levels and Ground Vibrations

With the mining operations, due to the deployment of machinery, operation for mine development, excavation and transportation of lime Stone and men, it is imperative that noise levels would increase. The noise level in day time lies between 50.2 dB(A) to 60.7 dB(A) and in night time between 37.2 dB(A) to 41.6 dB(A). It is also observed that these incremental noise levels will not significantly affect the existing ambient noise levels.

4.5 Impact on Soil

The environmental impacts of the mining activities on topsoil are based on the quantity of removal of topsoil and its dumping. In the present project as it is proposed to temporarily store the topsoil and use it for plantation schemes, no impact of dozing of topsoil is envisaged.

The soil erosion from overburden dumps is not envisaged in the present project, as sufficient measures as detailed in the EMP would be undertaken.

4.6 Impact on Flora and Fauna

There is no forest area in the core zone area of the lease. As the mining activity is restricted to core zone, no significant impact on the flora of the buffer zone due to the proposed mining is anticipated.

The incremental dust generations due to the mining operations, at the boundary of the mine lease are insignificant and it is also expected that with the adoption of mitigatory measures as suggested in EMP, the impact due to operation of the mine will be minimal on the terrestrial ecosystem and also on the adjacent forest area.

The impact on the fauna of the buffer zone due to the mining activity will be marginal. The proposed progressive plantation over a period of time will reduce the impact, if any, on the fauna.

4.7 Impact on Land Use Pattern

The land will be affected by excavation of mineral and dumping of waste. Land use planning is suggested for minimizing the adverse impact of mining activities on environment and also helps in economy of the project as well as effective restoration and enhancement of land surface with the help of plantation through proper and planned green belt development around the area and upper benches.

4.8 Impact on Socio - Economic Aspects

The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement. No public buildings, places, monuments etc. exist within the lease area or in the vicinity. The mining operation will not disturb/ relocate any village or need resettlement. Thus no adverse impact is anticipated.

The impact of mining activity in the area is positive on the socio-economic environment of the region. The proposed mine will be providing employment to local population and it will give preference to the local people whenever there is requirement of man power.

5.0 ENVIRONMENTAL MANAGEMENT PLAN

The summary of environmental mitigation measures are given in **Table 3**.

Table 3: Proposed Environmental Mitigation Measures

Impact Predicted	Suggestive measure
Disturbance of free movement / living of wild fauna	• Awareness camps will be conducted for labours to make them aware about sensitivity/importance of forest life. • No tract or new road for movement of labours or vehicles be laid in reserve forest area, this will prevent forest fragmentation, encroachment and human – animal encounter. • Care will be taken that noise produced during vehicles movement for carrying ore materials are within the permissible noise level. Higher noise level in the forest area will lead to restless and failure in detection of calls of mates and young ones. • Care will be taken that no hunting of animals carried out by labours. • If wild animals are noticed crossing the core zone, it will not be disturbed at all. • Labours will not be allowed to discards food, plastic etc., which can attract animals near the core site.

	• Only low polluting vehicle will be allowed for carrying ore materials. All vehicles allowed in the project site area will have to provide pollution under control certificate at the end of three months. • No honk will be allowed in the forest area, noise level will be within permissible limit (silent zone-50dB during day time) as per noise pollution (regulation and control), rules, 2000, CPCB norms.
Harvesting of forest flora	• No tree cutting, chopping, lumbering, uprooting of shrubs and herbs should be allowed. • No pilling of ore material should in the reserve forest area. • Collections of economically important plants will be fully restricted.

6.0 ANALYSIS OF ALTERNATIVES

The lime Stone has been identified based on the result of geological investigations and exploration carried out by projective mining. The mining projects are site specific as such alternate sites were not considered.

The mine is operated by opencast semi-mechanized method of mining. No other alternative technologies can be used because of the hard nature of the ore. Proposed mine is using eco-friendly measures to minimize the impact of mining on the surrounding environment.

7.0 COST ESTIMATES

The proposed yearly budget for EMP implementation and the budget for Corporate Environmental Responsibility (CER) have been given in **Table 4** and **Table 5** respectively**.**

Table 4: Budget for Environmental Management Plan

S. No.	Measures	Annual recurring cost (In Lakh)
1.	Reclamation and Rehabilitation of excavated pits	0.30
2.	Soil dump Management	0.40
3.	Plantation & green belt development	0.28
4.	Air, Water and Noise Quality monitoring	0.60
5.	Water sprinkling	0.20
6.	CSR activity in nearby villages	1.10
Total		**2.88**

Table 5: Budget for Corporate Environmental Responsibility (CER) (per year)

S. No.	Activities	Allocation of Fund (Rs.)
1	Health Camps	12,000
2	Drinking Water Facilities	7,000

3	Maintenance of foot track	15,000
4	Donation for Temple Construction	5,000
5	Donation for cultural activities in the surrounding areas	5,000
Total		**44,000**

8.0 ADDITIONAL STUDIES

8.1 Risk Assessment and Disaster Management Plan

The complete mining operation will be carried out under the management control and direction of a qualified mine manager holding Mines Manager's Certificate of Competency. Moreover, mining staff will be sent to refresher courses from time to time to keep them updated.

8.2 Disaster Management Plan

Emergency preparedness is an important aspect in the planning of Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel shall be trained in the operations.

9.0 PUBLIC CONSULTATION

9.1 Public Hearing

In consonance with the EIA notification dated 14th September 2006, vide section 1 (a) related to Public Hearing, the draft EIA/EMP report shall be submitted to the Meghalaya State Pollution Control Board (MSPCB) for public hearing.

10.0 PROJECT BENEFITS

The impact on the civic amenities will be substantial after the commencement of mining activities. Medical facilities will be provided in the form of first-aid facility at the mine. These medical facilities will also be available to local people in the surrounding in case of emergencies.

- Generation of employment and improved standard of living;
- Increased revenue to the State by way of royalty, taxes and duties; and
- Superior communication and transport facilities etc.
  The employment of local people in primary and secondary sectors of project will upgrade the prosperity of the region.

11.0 CONCLUSIONS

- The mining operations will meet the compliance requirements of MoEF&CC;

- Community impacts will be beneficial, as the project will generate significant economic benefits for the region;
- Adoption of Best Available Technology and Best Management Practices with more environmental friendly process; and
- With the effective implementation of the Environment Management Plan (EMP) during the mining activities, the proposed project can proceed without any significant negative impact on environment.