

EXECUTIVE SUMMARY

Of

MULIEH UMLONG LIMESTONE MINE (AREA: 7.33 Ha)

**VILLAGE : UMLONG ; TALUKA : KHLIEHRIAT,
DISTRICT : EAST JANTIA HILLS, MEGHALAYA.**

For

**TOTAL EXCAVATION OF 0.5552 MTPA (Top Soil -
0.0552 MTPA +Limestone-0.5 MTPA)**

Of

**M/s. AMRIT CEMENT LIMITED
Umlong Village, East Jantia Hills District, Meghalaya**

1.0 EXECUTIVE SUMMARY

Amrit Cement Limited (ACL), founded by first-generation entrepreneurs over a decade ago, has become a prominent cement manufacturer in the North East India. ACL was incorporated on 24th January 2008 at Shillong. The company is manufacturing 1.5 Million Tonnes of cement per annum. at Umlaper Village, East Jaintia Hills District, Meghalaya and is supported by a mine lease nearby.

The Letter of Intent for the subject was obtained from Govt. of Meghalaya, Mining and Geology Department Vide Lr.No. MG 58/2022/46 dated Shillong the 11th January 2023

Amrit Cement Limited (ACL), proposes 0.5 MTPA of limestone production from this mining lease area known as Mulieh Umlong Limestone Mine - located at Umlong Village, East Jaintia Hills District, Meghalaya. This mine has superior quality limestone.

The subject mine is a new mine and the entire land of 7.33 Ha consists of Private non- agricultural land falling under the Jurisdiction of Mulieh Umlong Village under the Khasara Numbers 1,2,3,5,6,7,9,10 & 11 in Khliehriat Taluk, East Jaintia Hills, Meghalaya. The land has been purchased in transparent manner from land holders at agreeable rates and payment terms.

The subject mine lease is 17 km from the proposed Cement Plant site.

No litigation is pending against the project.

The mine will be operated by the conventional open cast mechanized method of mining, which includes drilling, blasting, loading and transportation.

The Project cost is estimated to be about Rs. 150 Lakhs which includes Environmental Management Plan cost of Rs 25 lakhs.

The mining lease area spreading over an area of 7.33 Ha is falling under the jurisdiction of Mulieh Umlong Village, Khliehriat Taluk, East Jaintia Hills District, Meghalaya State. The mining lease area is a part of the Survey of India Toposheet No G4608 bounded by the following co-ordinates with an altitude ranging between 602-680 m above msl.

Latitudes : 92°20'31.0577"N - 92°20'41.4659"N

Longitudes : 25°10'20.2303"E - 25°10'35.2778"E

Shillong is major town at a distance of 63.93 km in NW direction. The National Highway (NH-6) connecting Shillong - Aizawl is located at a distance of about 2.97 km in E Direction, the nearest Major Road connecting Umrasong – Umlong is at a distance of 0.28 km – W. The nearest Railway line connecting Karimganj Jnct – Silchar Railway Station is located at a distance of about 34.53 km in S Direction, the nearest Major Railway Station is Karimganj Junction which is 34.71 km in S direction. The International Boundary with Bangladesh is at 10.47 km.

Nearest wild life sanctuaries, national parks, elephant/tiger reserves within 10km radius of the study area. Narpuh Wildlife Sanctuary – 8.57 km – SE direction .Nearest Settlements from the Limestone Mine is Umlong – 0.6km – W. Nearest Reserve Forests from the Limestone Mine

- Narpuh RF Block - I – S (Around the Mine Site)
- Narpuh RF Block - II – SE (Around the Mine Site)

ACL proposes to produce 0.5 MTPA limestone from Mulieh Umlong Limestone Mine. The mineable resources are estimated as 2.987 Million tonnes @ 0.5 MTPA limestone production, the life of the mine will be 6 years.

The mine will be operated by means of opencast fully mechanized method of mining which includes deep hole drilling and blasting, loading the broken material by heavy machinery like hydraulic excavators and tippers for transporting the limestone to crusher by road.

The main equipment listed below will be deployed for the production of 0.5 Million Tonnes Per Annum:

MINING MACHINERY LIST

| S. NO | TYPE | No.s | SIZE/ CAPACITY | MAKE | MOTIVE POWER |
|--------------|-------------------------------|-------------|---------------------------|-------------|-------------------------|
| 1 | Hydraulic excavator | 2 | 2.10 m ³ | Kobelco | Diesel |
| 2 | Drilling Machine DTH(IRB-300) | 1 | 16.00 t | INDUS | Diesel |
| 3 | Tipper | 12 | 15 m ³ | Eicher | Diesel |
| 4 | Dozer BD 80 | 1 | 230.00 HP | BEML | Diesel |
| 5 | Rock Breaker | 1 | 125.00 m ³ | New (HP) | Diesel |
| 6 | Water tanker | 1 | 8 m ³ | TATA | Diesel |
| 7 | Water Pump | 1 | 100.00 m ³ | New (50 HP) | Diesel |

The limestone from the mine will be transported. Limestone from the mine pit will be transported to the crusher by dumper / tippers and from crusher

the limestone will be transported to the plant by dumper /tippers in initial stage and later by closed conveyor. The mine will be operated by two shifts for 300 days in a year

At conceptual stage, a total of 6.46 Ha will be excavated, out of which 2.14 Ha of mined out benches will be covered with plantation. 0.87 Ha area will be covered under greenbelt on 7.5 m safety barrier along the lease boundary including 0.11 ha area of garland drains.

Lower benches upto 573 mRL will be backfilled and plantation will be undertaken over backfilled reclaimed area. Local native species will be planted and survival rate will be maintained more than 85%.

The benches will be developed systematically and scientifically to win the limestone.

The mined-out area will be converted into water reservoir to store the rain water.

The total waste generation for the five years will be 275791 tonnes which will be stacked in the temporary dumps. Topsoil generated will be used for plantation development along the barrier zones.

Life of the mine for the proved mineral reserve of 2.987 million tonnes would be 6 years.

The total quantity of top soil generated would be 275791 tonnes during the entire lease period/life of the mine which will be stacked in the temporary dumps. Topsoil generated will be used for plantation development along the barrier zones.

The limestone produced from this mine is meant for the captive consumption in the cement plant. For crushing the limestone fed from mine to 350 and 325 TPH crusher. The input size of the feed is 800mm and 50 m while the output size is 50 mm and 10mm respectively.

ACL is proposing Mining for the existing cement plant. The company will provide garage to undertake minor repairs and maintenance of all mining equipment. Periodical and weekly maintenance will be done by qualified persons.

The mine office with first aid rooms, rest shelters, toilets, tool/store room etc., will be situated commonly in close proximity mine of ACL.

Facilities of Vocational Training Center at Mines office for department Staff and Workers will be imparted basic and refresher training with audio-visual aids at the center in batches.

The total water requirement for the proposed project is 25KLD which will be sourced from nearby villages through water tankers. Out of 25KLD, 18KLD will be used for dust suppression, 5KLD for greenbelt development and 2KLD for drinking and domestic utilization.

Total Manpower of 70 persons for carrying out the mining 0.5 Million TPA of limestone.

2.0 DESCRIPTION OF ENVIRONMENT

As part of Environmental Impact Assessment study, baseline environmental monitoring was carried out for Post Monsoon Season, 2023 covering the months of October 23 to December'23.

METEOROLOGY

The predominant wind direction is from S-SSW-SW-WSW-W Sector accounting to 53.53 % with calm wind for 20.97 % and wind from other directions accounting to 25.51 %.

AIR ENVIRONMENT

Ambient air quality of the study area has been assessed through a network of Six ambient air quality locations.

The Ambient Air Quality monitored in the study area was found to be well within the limits of NAAQ standards prescribed for Industrial, Residential, Rural and Other Areas (24 Hr).

AIR QUALITY IN THE STUDY AREA (All the values are in $\mu\text{g}/\text{m}^3$) Maximum Values

| Station Code | Locations | PM ₁₀ | PM _{2.5} | SO ₂ | NO ₂ |
|--|---------------|------------------|-------------------|-----------------|-----------------|
| A-1 | Mine Site | 70.61 | 34.82 | 11.3 | 17.40 |
| A-2 | Umlong | 55.3 | 24.2 | 8.44 | 12.64 |
| A-3 | Thangskai | 53.4 | 23.84 | 7.54 | 10.9 |
| A-4 | Umrasiang | 77.13 | 41.26 | 10.23 | 16.63 |
| A-5 | Musianglamare | 74.65 | 45.12 | 18.56 | 20.31 |
| A-6 | Lumshnog | 67.88 | 27.58 | 8.84 | 16.25 |
| NAAQ Standards for Industrial, Residential, Rural and Other Areas (24 Hrly) | | 100 | 60 | 80 | 80 |

*Note: CO values are observed less than 1 ppm during study period.
Free silica was found to be nil in Particulate Matter (PM₁₀)*

NOISE ENVIRONMENT

Eight monitoring locations were selected to assess the noise levels in the study area. Day equivalent and night equivalent noise levels recorded in villages were found to be in the range of 50.4 – 58.4dB (A) and 38.8 – 50.1 dB (A) during night time respectively. Maximum levels of noise recorded are due to local activities in the villages.

WATER ENVIRONMENT

Eight ground water and three surface water samples were collected from the study area.

All parameters of ground water samples are well within the acceptable limits of IS 10500-2012.

surface water quality values in the study area are within the acceptable limits. Therefore, the surface water available with the study area is fit for the aquatic life and no significant impacts in future are envisaged from the plant site. There will not be any adverse change in the quality due to proposed mine.

SOIL ENVIRONMENT

Eight soil samples were collected within 10 km radial distance of the study area and were analyzed to study the soil quality.

It is found that the soils are of good fertility and with minimum application of Fertilisers and Manure, the agricultural operations are normal and better yielding.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 AIR ENVIRONMENT

The air borne particulate matter is the main air pollutant contributed by opencast mining.

The air borne particulate matter is the main air pollutant contributed by opencast mining. Various emission sources are identified from the mining operations considering proposed limestone production of 0.50MTPA with Total Excavation of 0.5552 MTPA (Limestone: 0.50 MTPA + Top Soil: 0.0552MTPA)

The baseline emissions monitored in the study area during Post Monsoon, 2023 reflect the emissions from above industries operating

at their present capacity. In order to assess the cumulative impact, the subject mine along with proposed expansion capacity of the above industries are considered.

Resultant ground level concentrations for the prevailing meteorological conditions using EPA Approved AERMOD mathematical model were estimated.

The overall Scenario with predicted ground level concentrations over the baseline is shown below:

**PREDICTED CUMULATIVE GROUND LEVEL CONCENTRATIONS
AND OVERALL SCENARIO, $\mu\text{g}/\text{m}^3$**

| 24-Hourly Concentrations | Particulate Matter - 10 (PM₁₀) | Particulate Matter - 2.5 (PM_{2.5}) |
|--|--|--|
| Baseline concentration, max | 77.13 | 45.12 |
| Predicted Ground level Concentration (Max) | 1.34 | 0.64 |
| Overall Scenario | 78.47 | 45.76 |
| NAAQ Standards | 100 | 60 |

Note: Values in parenthesis are National Ambient Air Quality (NAAQ) standard limits specified for Industrial, Residential, Rural and other areas.

AIR POLLUTION CONTROL MEASURES

Dust is the major pollutant generated from the mining operations. Monitoring of air quality is conducted periodically to ensure that the contribution of dust and other components is kept within permissible limits.

The following dust prone spots are identified for adopting proper control measures in the mine area for peak production of Nayanapalli Limestone Mine

- a. Drilling
- b. Blasting
- c. Excavation
- d. Loading operation
- e. Transportation of limestone to Plant

The environmental control measures to control the fugitive dust released are given below:

- ☞ Wet drilling to suppress the dust emission from the drill machine at its source by inbuilt water injection system.

- ☞ Regular water sprinkling on haulage road through fixed water sprinkler.
- ☞ Regular water sprinkling on blasted heaps with water tankers.
- ☞ 18 m³/day of water will be used for dust suppression
- ☞ Use of sharp drill bits for drilling holes and arrangements for bit regrinding. Charging the holes by using optimum charge and using time delay detonator.
- ☞ Avoiding blasting during high windy periods, night times and temperature inversion periods.
- ☞ No excavation operations during periods of very strong winds.
- ☞ Regular grading of haul roads and service roads to clear accumulation of loose material.
- ☞ Avoiding overfilling of Tippers and consequent spillage on the roads.
- ☞ The vehicles and machinery will be kept in well-maintained condition so that emissions are minimized.
- ☞ Afforestation for control of dust. Avenue plantation all along the haulage roads and peripheral plantation all around the mine for control of dust. To arrest the airborne dust, plantation will be carried out within the mining lease. Plantation of wide leaf trees, creepers, tall grass along approach roads, and on safety barrier zones will help suppress dust.
- ☞ To arrest the amount of airborne dust, plantation will be carried out within the mines.
- ☞ Operator cabins in all major HEMM equipment will be air conditioned to minimize dust exposure of the operators.
- ☞ All the mine workers are provided with dust masks.

Transportation of the limestone is only along the haulage roads and direct to the cement plant. The following measures are adopted for control of dust during transportation within the pit.

- a. Water sprinkling with Tippers
 - b. Maintenance of Tippers
 - c. Grading of the road
 - d. Speed of the tippers is limited to less than 25 kmph
 - e. AC cabins for Tippers
- ☞ The Tippers are well maintained so that exhaust smoke does not contribute abnormal values of noxious gases and unburnt hydrocarbons. Dust suppression on haul roads will be done by 10 KL capacity mobile water tanker.

3.2 NOISE ENVIRONMENT

Noise produced at the mine will be due to movement of machinery, drilling, blasting, excavation, and transportation. The noise generated by the mining activity will be dissipated within a small zone around the mines. There will be no major impact of the mining activity on the vicinity. However, pronounced effect of above noise levels will be felt only near the active working area.

Moreover the proposed greenbelt development of 7.5 m barrier zone would be carried out that acts as a barrier and attenuates the sound level. Thus there will be no adverse impact of noise. Hence the impact on the mine vicinity due to noise levels will be nil.

NOISE POLLUTION CONTROL MEASURES

ACL will develop greenbelt in an area of 0.87 Ha within the mine. The following noise abatement measurements are proposed for control of noise and the same will be continued for peak and normative production.

- Proper and regular maintenance of vehicles, machinery and other equipment.
- Carrying out blasting only during day time and not on cloudy days.
- Limiting time exposure of workers to excessive noise.
- The noise generated by the machinery will be reduced by proper lubrication of the machinery and equipment.
- The workers employed are provided with protection equipment, earmuffs and ear-plugs, as a protection from the high noise level generated at the mine site wherever required.
- Noise levels are controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
- Proper and timely maintenance of mining machinery
- Speed of tippers in the mines area will be limited to moderate speed of 25 kmph to prevent undue noise from empty tippers.
- Greenbelt will be developed in an area of 0.87 Ha which includes 7.5 barrier zone including 0.11 Ha area of garland drains

3.3 WATER ENVIRONMENT

The total water requirement for the proposed project is 25KLD which will be sourced from nearby villages through water tankers. No ground water will be used for the project.

No wastewater is generated from the mining operations. The waste water generation is only from domestic usage. This waste water of 1.6 m³/day is treated in Septic tank followed by soak pit.

The mining lease area is a near undulating terrain with a maximum altitude of 680 m above MSL and lowest level of 640 m above MSL. The drainage pattern is of trellis type. There is one first order stream at a distance of 2.35 km

3.4 LAND ENVIRONMENT

No waste is generated from the mine as the entire ROM Limestone after crushing will be used for clinkerisation.

Topsoil generated will be used for plantation development along the barrier zones

At Conceptual stage, a total of 6.46 Ha will be excavated, out of which 2.14 Ha of mined out benches will be covered under plantation. 0.87 Ha will be covered under greenbelt on 7.5m safety barrier along the lease boundary including 0.11 Ha area of garland drains. Ultimate pit slope would be maintained at 45°.

POST MINING LANDUSE PATTERN OF THE MINE AREA (Ha)

| Item | At Present) | At the end of Review of Mining Plan Period | At the end of life of the mine (ha), |
|-------------------|-------------|--|--------------------------------------|
| Area Under Mining | - | 3.27 | 6.46 |
| Top Soil Stacking | - | 0.10 | - |
| OB/Waste Dumping | - | 1.77 | - |
| Roads | - | 0.23 | - |
| Utilities | - | 0.12 | 0.11 |
| Undisturbed Area | 7.33 | 1.84 | 0.76 |
| Total | 7.33 | 7.33 | 7.33 |

Source: Mining Plan

OTHER IMPACTS AND MEASURES

Air quality modeling carried out showed maximum dust emission of 1.5 ug/m³ of PM₁₀ concentration and <1.0 ug/m³ of PM_{2.5} concentrations

Noise impact is negligible

The following measures will be implemented

- Development of Paved Road for limestone transport
- Employing PUC vehicles
- Restricted/controlled movement of vehicles
- Covered trucks

To avoid the traffic congestion due to cross over of the mines traffic with general traffic, overhead or underpass will be considered

- Road maintenance for control of wear and tear and smooth movement of vehicles
- Vehicles maintenance

4.0 AFFORESTATION

Total area under greenbelt for the lease period will be 0.87 ha will be covered under greenbelt on 7.5m safety barrier along the lease boundary including 0.11 Ha area of garland drains).

5.0 SOCIO ECONOMIC ENVIRONMENT

The proposed mining lease area is 7.33 Ha, which is private land and was purchased for the owners by Mr. Bhalang Singh Phanbuh by paying suitable compensation based on mutual agreement with them

The mining area is devoid of habitation. No rehabilitation or resettlement is proposed.

In addition to the compensation, ACL will consider employment for the potential candidates and provide contracts like plantation and other unskilled jobs for the Uneducated.

OCCUPATIONAL HEALTH AND SAFETY

There are no endemic health problems in the area due to waste water / air / soil borne diseases however stray cases of water borne diseases such as gastroenteritis and fever have been observed. ACL will engage an outside agency from Shillong for carrying out periodical health check ups. The medicines will be provided free of cost to the patients.

Occupational health checkup at the time of recruitment will be carried for all the employees as per Mines Rules, with the following tests:

- Lung function test
- ECG
- Chest X-ray
- Detailed Blood analysis test
- Urine analysis test
- Audiometry
- Checking Eye refraction and colour blindness

Any person failed in the health checkup will not be recruited. Like so, a baseline data on the health status of workmen in the Pre-recruitment stage will be established. The same will be repeated periodically to update and to take action accordingly.

The first aid box will be made available for immediate treatment. First aid training will be imparted to the selected employees regularly. The list of first aid members will be displayed at strategic places.

6.0 ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

ACL will adopt the conventional open-cast mechanized method of mining involving drilling, blasting, loading and hauling with Heavy Earth Moving Equipment.

No alternate sites are selected, as the mineral occurrence is site specific. This mine is the captive source for supply of limestone to Cement Plant.

7.0 ENVIRONMENTAL MONITORING PROGRAMME

ACL will monitor the environmental parameters as per the guidelines of CPCB, State Pollution Control Board, MoEFCC, IBM and DGMS

8.0 BUDGETS FOR IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLAN

ACL has budgeted an amount of Rs. 20 Lakhs for implementation of Environmental Management Plan and recurring cost is about Rs. 8.5 Lakhs per annum

9.0 PROJECT BENEFITS

9.1 EMPLOYMENT POTENTIAL

Total Manpower of 70 persons will be deployed for the production of 0.5 million TPA of limestone.

About 50 persons get benefited by indirect employments, business opportunities, service facilities etc. This will enhance the economic status.

Apart from the jobs, the company provided medical and educational facilities to the employees which can also be availed by the people around the mine. Adequate recreational facilities for the staff of the company and the local people are being created.

10.0 SOCIAL WELFARE MEASURES

ACL has taken up various rural developmental activities in the area in the vicinity of the cement plant and its captive mines. It is proposed to extend social benefits like drinking water, health care measures, educational support, promotion of cultural, religious & sports activities, and training for self-employment with an initial investment to set up these schemes to the neighbouring villages.

CONCLUSION

ACL strongly believes in the concept of ecofriendly industrialization. Various socio-economic development activities proposed will bring about overall socio-economic development in the area.