DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR
NEHLANG LYNGDOH COAL BLOCK PROJECT
OF 0.10 MTPA (RATED/REAK RATED) CAPACITY
AT LUMIAKHI-WAHSARANG, KHLIEHRIAT C&RD BLOCK,
EAST JAINTIA HILLS DISTRICT, STATE: MEGHALAYA

EXECUTIVE SUMMARY

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NABET Category 'A' Certified Organisation [Sector 1 (a) (i)]
Vide Certificate No. NABET/EIA/2326/IA 0124

July 2024

Executive Summary

1. INTRODUCTION

Mining and Geology Department, Government of Meghalaya in its order vide no. **MG.65/2021/60** dated **22nd October 2021** granted Prospecting License (PL) for coal in favour of applicant Shri Leborlang Lyngdoh over an area of 100 Ha. of land located at Lumiakhi, Wahsarang, Khliehriat C&RD Block, East Jaintia Hills District, Meghalaya. Subsequently, the previous approval of the Central Govt. for grant of mining lease for Nehlang Lyngdoh Coal Block vide Letter No. **PS1-13016/2/2022-PS1 (FTS: 354288)** dated **25th April 2023** under Rule 42 (2) of the Mineral Concession Rules, 1960 has been obtained to facilitate coal mining over an area of 100 Ha in favour of the applicant. According to the Department of Forests and Environment, Government of Meghalaya vide letter No. **MFG.68/20/NFL/COAL/JH/5193** dated **20th August 2021** the proposed project falls under the category of "non-forest land". The Mining Plan and Mine Closure Plan was approved by the Ministry of Coal, Government of India vide an In-principle Approval Letter dated **29th January 2024**.

The State Expert Appraisal Committee (SEAC), Meghalaya in its meeting held on **12th March 2024** recommended the Terms of Reference (ToR) for the preparation of an EIA/EMP report and the SEIAA of Meghalaya, subsequently issued the ToR vide File no. **ML/SEAC/SEIAA/PP/EJH/21/2024** dated **19th June 2024** to Shri Leborlang Lyngdoh.

2. DESCRIPTION OF PROJECT

The proposed Nehlang Lyngdoh Coal Block opencast project is designed for extraction of 0.479 MT of total coal reserves during total life of the project of 12 years [7 (Life of Mine) + 5 (Post Closure Period and Reclamation)] by removing 19.0 Mm^3 of OB (0.189 Mm^3 is

top soil and 18.811 Mm^3 is hard OB, at an average stripping ratio of 39.666 m^3/T up to the maximum depth of 44.8m. This project is planned for a rated capacity of 0.10 MTPA which is also the peak rated capacity during the Life of Mine (LoM). The coal grade will vary widely between G1-G15.

2.1. Location of the Project

The proposed Nehlang Lyngdoh Coal Block falls in Jaintia Hills Meghalaya Coal Field. The location of the site is provided in **Figure 1.1**.

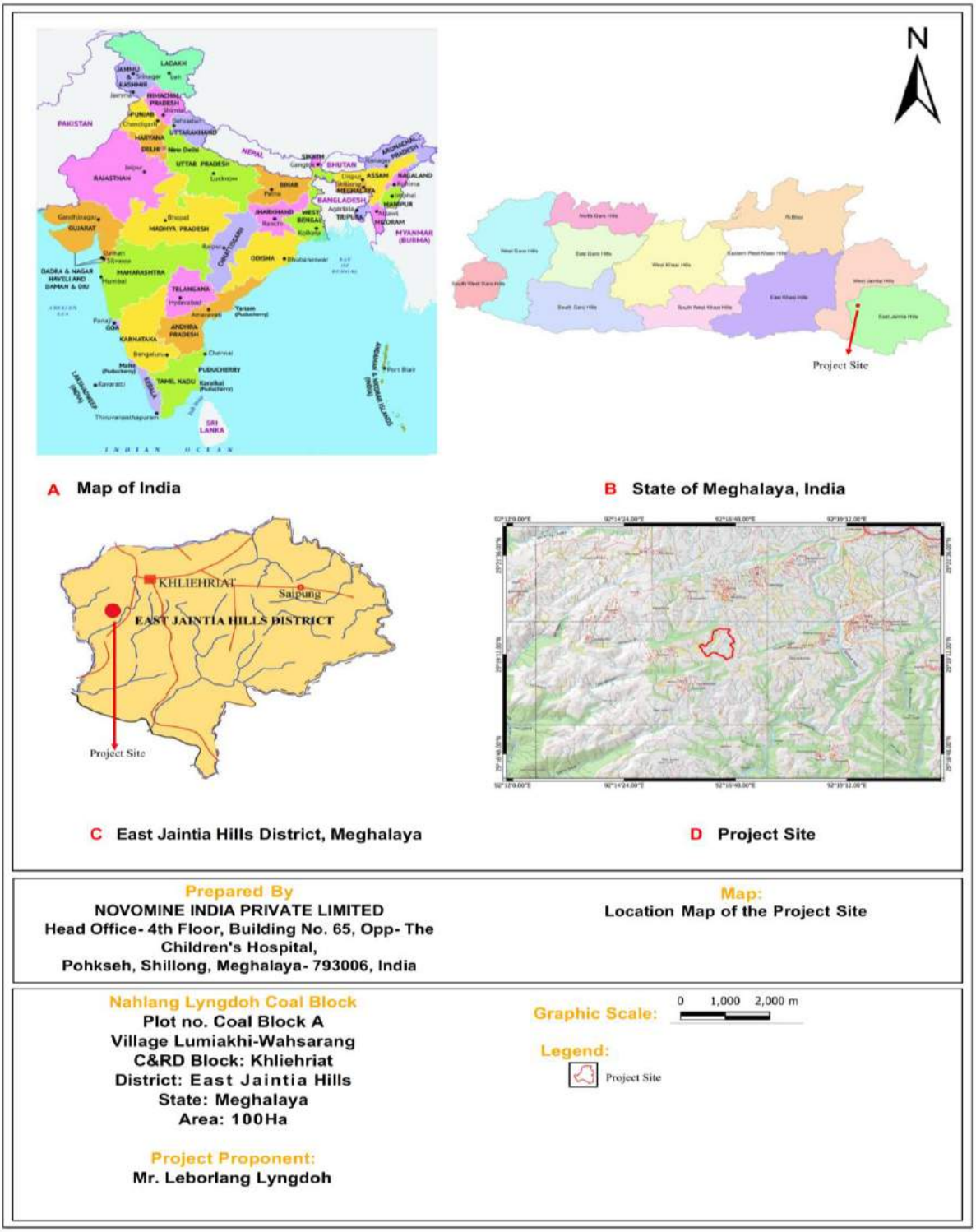

Fig 1.1: Location Plan of the proposed Nehlang Lyngdoh Coal Block

The location details of the proposed project are furnished hereunder:

Name of the Project	: Nehlang Lyngdoh Coal Block
Nearest Village	: Wahsarang
Block	: Khliehriat
District	: East Jaintia Hills
State	: Meghalaya
Latitudes	: 25°19'50.15"N to 25°19'04.79"N
Longitudes	: 92°16'01.63"E to 92°16'46.29"E
Survey of India Toposheet No.	: 83C/7
Nearest Airport	: Umroi Airport (110 km, NW Direction)
Nearest Railway Station	: Guwahati Railway Station (190 km, NW Direction)
Nearest Highway	: NH-6 (6.9 Km, NE Direction)

The proposed project falls in **"Category – B1"** as per the EIA Notification issued by MoEFCC, New Delhi, vide S.O. 1533, dated 14th September 2006 & subsequent amendments and hence, Environmental clearance for the project has to be obtained from State Environment Impact Assessment Authority (SEIAA) of Meghalaya.

2.2. Land Requirement of the Project

The total project area is 100.0 Ha with no forest land. Activity wise land requirement details across different phases of mining operations, namely, after the end of LoM and post-closure periods are given below, respectively:

Table 1.1: During Mining Land-Use of the project (End of LoM)

Land Use Pattern post extraction (7 years) as per the approved Mining Plan		
Sl. No	**Land Type**	**Area (Ha.)**
1.	Backfilled Area	52.96
2.	Excavated Void	10.25
3.	External Dump	8.69
4.	Haul Road between quarries	1.31
5.	Safety Zone	3.63
6.	Settling Pond	0.59
7.	Road and Infrastructure	2.93
8.	Garland Drains	0.29
9.	Greenbelt	6.25
10.	Undisturbed Area	13.10
Total		**100.00**

Table 1.2: Post-Mining Land-Use of the project (End of 12 years)

Sl. No	Category	Land Type	Area (Ha.)
1.	**Biologically Reclaimed Area**	Plantation	76.61
2.		Water Body	6.69
3.		To be retained for public use	3.60
4.		**Total**	**86.90**
5.	Undisturbed		13.10
Total			**100.00**

2.3. Description of Mining Operations

Coal extraction in the proposed Nehlang Lyngdoh Coal Block will be done by using shovel-dumper combination in an opencast mechanized method. Important requisites for coal extraction are explosives, machinery, diesel, lubricants, electricity, water and facilities for the persons connected to mining operations.

Opencast mining involves the following procedures:

1. The top soil will be stacked separately on the top soil dump and shall be progressively used throughout the mine life for biological reclamation.

2. Overburden will be fragmented by drilling and blasting and the fragmented rocks will be loaded into dumpers by shovel to carry to the external/internal dumps. Necessary equipment will be provided separately for removal of OB and extraction of coal.
3. Transportation of overburden waste material shall be carried out by dumpers and dumped into the external/internal dumps.
4. Due to multi seam deposits (Seam I, Seam II) with varying seam thicknesses (0.12 to 1.09 m) and moderate gradient along the seams, extraction by open cast method will give a maximum percentage of extraction, as thin seams up to 0.50 m can also be extracted. Extracted coal will be loaded directly onto trucks/tippers from the mine site.
5. As and when the waste dumps get stabilized, the stored topsoil will be spread over the biologically reclaimed areas to facilitate plantation. By the end of the 7th year, the entire amount of topsoil will be rehandled for the purpose of plantation & extraction of coal will be continued in & around the previous location of the topsoil dump.
6. Mine voids will be dewatered at regular intervals and after preliminary de-siltation and treatment in settling tanks/slow sand filters, mine water will be reused for domestic purposes and other utilities.

All the mining operations will be carried out as per the statutory provisions of Mines Act and Coal Mine Regulations for the safety, health and welfare of the employees working in the mine. The conditions stipulated by MoEFCC and Meghalaya State Pollution Control Board (MSPCB) while according Environmental Clearance will be implemented in the project.

3. DESCRIPTION OF THE ENVIRONMENT

Environmental baseline data was collected in the study area through a NABL accredited laboratory during the post-monsoon season (October 2023 – December 2023) to assess the environmental status in respect of air, water, noise and soil quality in core zone and

buffer zone (i.e. 10 Km radius study area) of the project. The environmental baseline data conforms to the requirement of EIA Notification, 2006 vide S.O. 1533, on 14th September, 2006, its subsequent amendments and the Terms of Reference (ToR) issued by SEIAA.

Physiography

Geo-morphologically, the district is an undulatory one, with maximum value of 1088 m and minimum value of 1020 m. The terrain of the block, in general, is gently undulatory, covered with brownish-red soil. The general elevation of the area varies between 1139.03m (BH-12) to 1201.69m (BH-01). Northern part of the block is having a higher elevation. The elevation has gradually decreased towards the south-eastern part of the block.

In the buffer area, the topography varies from gently rolling type to highly undulating type. The area depicts a dendritic drainage pattern which has a connotation with the monotonous lithology of Tura sandstone formation. This formation happens to be the prime repository of the tertiary coal deposits of Meghalaya.

Drainage

The surrounding areas of Nehlang Lyngdoh Coal Block is dissected by few 1st and 2nd order nalas and stream channels that have created dendritic, angular and trellis drainage patterns which indicate both topographic and structural control. A seasonal river, Wah Sarang is flowing around 0.5 km east of the project area. Another river, namely, Wah Umkyrdein is flowing about 3 km west of the project area.

Meteorology (Climate)

Like the other parts of the district, the study area has a very pleasant climate. The area experiences a humid subtropical monsoon type climate. The rainy season occurs from mid-May to September while the months of October and November are a bit cold. In the winter months the climate is dry and cold, almost similar to that of the state capital.

The nearest Automatic Weather Station (AWS) is in Jowai of West Jaintia Hills district of

Meghalaya, approximately 15.15 km from the project boundary and the nearest Automatic Rain Gauge Station (ARG) is in Khliehriat of East Jaintia Hills district of Meghalaya, approximately 8.9 km from the project boundary.

During the period of baseline data generation, the maximum temperature recorded was found to be 31.1°C, while the minimum temperature was 10.4°C and the average temperature is 19.75°C. The average relative humidity was found to be 76.38% and the total rainfall observed was 218.4mm. The 1st predominant wind direction is from the NNE direction with 29.767% of the total wind blowing in the area. The maximum wind speed recorded was 11.3 m/s.

3.1. Air Environment

Different air pollution parameters like particulate matter of less than 10µm size (PM_{10}), particulate matter of less than 2.5µm ($PM_{2.5}$), Sulphur Dioxide (SO_2) and Nitrogen Oxides (NOx) have been identified as critical parameters relating to project activities for representing baseline status of ambient air quality within the study area in accordance with the Terms of Reference (ToR) issued by SEIAA of Meghalaya. To assess the baseline ambient air quality, six ambient air quality monitoring locations were identified in core zone and buffer zone (10 Km. radius study area) of the project.

Air Quality Status in Core Zone: Ambient air quality data monitored in the core zone shows that PM_{10} concentration varied from 74.90 µg/m^3 to 53.80 µg/m^3 at the proposed project site with an average of 66.47 µg/m^3. $PM_{2.5}$ concentration varied from 26.70 µg/m^3 to 17.30 µg/m^3 at the proposed project site with an average of 22.52 µg/m^3. SO_2 and NOx concentration varied from 7.7 µg/m^3 to 5.9 µg/m^3 and 13.5 µg/m^3 to 9.7 µg/m^3 respectively. All the parameters are found to be within prescribed limits as per National Ambient Air Quality Standards and the Coal Mines Standards prescribed by MoEF&CC.

Air Quality status in Buffer Zone: The concentration (98 percentile) of PM_{10} varied from 91.10 µg/m^3 (BA – 2: Rymbai) to 74.46 µg/m^3 (BA – 1: Wah Sarang). $PM_{2.5}$ concentration

varied from 38.82 µg/m^3 (BA – 2: Rymbai) to 28.81 µg/m^3 (BA – 1: Wah Sarang). The SO_2 and NOx concentration varies from 11.5 µg/m^3 to 7.90 µg/m^3 and 19.62 µg/m^3 to 14.20 µg/m^3 respectively. All the parameters are found to be within prescribed limits as per National Ambient Air Quality Standards and the Coal Mines Standards prescribed by MoEF&CC.

3.2. Water Environment

The impact of the proposed project on the water environment is assessed by studying the ground and surface water quality within the study area. A total of 9 water samples i.e., 3 samples from surface water, and 6 samples from groundwater were analyzed for various physico-chemical and bacteriological parameters. The water quality results were compared with prescribed standards.

Surface Water: pH values were found to be in the range between 5.14 to 5.43. Nitrates, TDS, Chlorides concentrations were well within the tolerance limits.

Total coli forms were present in all the surface water samples collected in the study area within in a range of 67 to 42 MPN. The presence of coli forms indicates that the contamination might be due to the runoff water with bacteria in soil or sewage or might be due to animal droppings or human faecal contamination.

In accordance with CPCB water quality criteria, parameters studied were pH, DO, BOD, and total coli forms. It may be observed that all the surface water samples fall under the CPCB water quality criteria below Class – E.

From the analytical results, it can be observed that the surface water collected from all the locations require suitable treatment to make it suitable for drinking.

Ground Water: pH values were found to be in the range between 5.58 to 5.90. The ground water quality indicated that the parameters are meeting the requirements CPCB ground water quality criteria except pH. However, it is possible to increase the pH of water and make it portable by using neutralizing filters, Soda ash/sodium hydroxide

injection.

3.3. Noise Environment

A noise level survey was carried in and around the mine site to study the hourly equivalent noise levels. Equivalent noise levels were measured on hourly basis during 24 hours by using a High Precision Sound Level Meter at seven locations within the study area of the project. It was observed that the noise levels measured during day time and night time in the core as well as in the buffer zone of the proposed project are within the stipulated standards.

3.4. Land Environment

The land use pattern in the study area (10 km) of the block has been studied using satellite imageries and the present land use in the project area is Vegetation area- 17701.24 Ha (49.56%), Barren/Rocky/Fallow land- 11617.52 Ha (32.53%), Agriculture area- 3231.34 Ha (9.05%), Built-up area- 2626.74 Ha (7.36%), River/Stream/Canal- 514.32 Ha (1.44%) and Pond/Lake/Reservoir- 22.55 Ha (0.06%).

3.5. Soil Quality

The physico-chemical properties of soil, which are important for plant growth and agricultural productivity, pH, EC, Organic Carbon, Nutrients and other trace metals are analyzed for six soil samples in the study area.

The texture of the soil for all six sites is sandy loam. Soil samples of all the villages of the study area are neutral to slightly acidic in nature having pH in the range of 5.42 to 5.85.

The macro nutrients Nitrogen (N), Phosphorus (P), Potassium (K) were analyzed in the study area. The Nitrogen value ranged from 63.74 to 74.59 $kgha^{-1}$ reflecting that the values are observed to be in less category. Phosphorus value ranged from 1.99 to 2.32 $kgha^{-1}$ and falls under 'very less category'. The Potassium value ranged from 162.5 to 210.0 $kgha^{-1}$ indicating that values are observed to lower than the normal.

3.6. Biological Environment

The ecological study was aimed at enumeration of the available floral resources including endangered species and obtaining a broad representation of the existing floristic variations in the proposed mine lease area and surrounding mine lease areas. There is no forest area within the prospecting block. There are no National parks, Sanctuaries, Biosphere Reserve, Tiger Reserve and Elephant Reserves, Reserve Forest or Protected Forest in the study area of project. Naturally, the project is not falling in the Eco-Sensitive zone. Project also come under scanty vegetation with sub-tropical broad leaved moist deciduous forest and scrub forest type.

From the ecological survey, it can be seen that the core zone of the Nehlang Lyngdoh Coal Block project does not have any endemic and endangered species of flora or fauna.

3.7. Socio-Economic Environment

The project site is surrounded by 52 villages within 10 km radius of study area. The socio-economic aspects, demographic structure, economic and livelihood pattern of the 52 villages were analyzed based on the 2011 Census. These villages have 8289 households accumulating 49846 populations.

Out of total number of workers (17633), the number of primary workers is 13617 (77.2%) and they are mainly cultivators and agricultural labourers. The infrastructural facilities in the study area, quality of life, other social factors are found to be poor to moderate.

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The section summarizes the pollution potential of the proposed project, possible impacts on the surrounding environment during pre-operational and operational phases and the environment management plan proposed for prevention and control of pollution.

4.1. Impacts due to Air Pollution and its Management

Air pollution is likely to be caused at various stages of mining operations such as excavation, drilling, blasting, loading and transportation of material. Suspended Particulate Matter (PM_{10} and $PM_{2.5}$) is the main pollutant that will emanate during mining operations. Nehlang Lyngdoh Coal Block will take the following measures to mitigate the fugitive dust emissions from different operations:

- To avoid dust generation from the drilling operations, wet-drilling shall be adopted
- Coal seam exposed for cutting shall be made wet before cutting to avoid dust generation
- During excavation, use of explosives from DGMS approved sellers for blasting and avoiding overcharging of blast holes in OB shall be followed. All DGMS guidelines regarding safety during blasting operations shall be followed.
- The volume of dust that may arise from coal stacks and OB dumps by the action of strong winds, shall be significantly controlled by planting fibrous species of grasses and other native shrubs on the dump slopes as early as the dump stabilizes.
- Wind screens using green nets and wire fences shall be created to restrict the movement of dust.
- Stage-wise plantation around the quarry and OB dumps in three rows, will serve as a natural barrier/wind break to prevent the dispersion of dust.
- Provision of full PPE including dust filters/masks to all mine workers working at

dust-generating areas

- Haul roads will be the major source of dust in the opencast mines. To overcome the problems of dust generation from the mine haul roads, the following steps will be taken:
  - Black topping of permanent roads in internal as well as external areas of the mine through which, the coal and OB filled transportation trucks/dumpers and tippers will ply.
  - Regular water spraying will be undertaken based on day-to-day dust conditions on the haul roads at required intervals.
  - During the transportation of coal and overburden, there shall be a minimum time interval of around 5-6 minutes between each dumper to maximize the settling of heavier dust particles.
  - All transportation trucks will be covered with tarpaulin sheets while moving the material (coal and/or overburden) and it shall be ensured that no truck is overloaded so that there is no spillage of material during the movement.
  - Avenue plantation of native tree species with high APTI (Air Pollution Tolerance Index) along the mine roads.
- The exhaust (emissions) from HEMMs containing NOx, CO, unburnt HCs, etc. shall be controlled by strictly adhering to the vehicle maintenance schedules that shall also include periodical tuning of engines.

4.2. Impacts due to Water pollution and its Management

The main source of water pollution is mine discharge and surface run-off containing suspended solids. The mine discharge water will be passed through settling ponds for removal of suspended solids.

About 150 KLD water is required for various requirements of the mine like dust suppression (60 KLD), HEMM washing at workshop (10 KLD), plantation (70 KLD) and

domestic consumption (10 KLD).

The following control measures will be adopted for controlling water pollution:

- Garland drains of appropriate sizes and lengths shall be made and maintained till the end of LoM along the overburden dump and quarry area to keep any surface run-off away from the nearby village area of Wahsarang, and surface water bodies/vegetated areas, etc.
- A Rainwater harvesting tank of appropriate size shall be constructed to store excess rainwater during the rainy seasons, which shall ensure ground water sustainability in and around the mine lease area
- In order to control soil erosion and siltation into natural water bodies, various measures such as settling tanks, gabion walls, check dams, and sufficient size and length of garland drains are suggested.
- The overburden dump shall be designed in such a manner so as to avoid surface run-off water along its slopes. This shall be achieved by developing overburden bench terraces that slope inward and have deck drains to check the run-off at pre-determined slope intervals,
- Grass cover shall be developed along the backward slopes to minimise any surface run-off and consequent soil loss (*Widomski & Marcin, 2011*),
- Water accumulated in the dip-side of the active quarry area due to rain as well as seepage shall be regularly pumped out and directed to the Effluent Treatment Plant (ETP),
- The water collected from washing HEMMs shall first be collected and then treated in the ETP. The treated water shall then be re-used for cleaning and washing of HEMMs, dust control, and plantation – maintaining the principal of Zero Liquid Discharge (ZLD),
- The sewage generated in the mine shall be in small quantities and treated in septic

tanks followed by soak pits.

- Surface and ground water qualities shall be monitored regularly.

In view of the above, it can be inferred that there will not be any significant impact on ground water regime in this area. In the event of any adverse impact due to mining on the surrounding area, Nehlang Lyngdoh Coal Block will take necessary measures to address the issue.

4.3. Impacts due to Noise Pollution and its Management

The main sources of noise in the mines will be mechanization of the mine, Operation of diesel-powered machines such as DG sets, water withdrawal pumps, drilling machines, dumpers, road graders, excavators, etc., blasting, truck movement. All workers operating HEMM in environments with noise levels exceeding 90 dB(A) shall be equipped with protective gear such as earplugs, and earmuffs. Additionally, soundproof and dustproof cabins shall be installed in machinery such as dozers, shovels, dumpers, feeder breakers, etc.

The following control measures will be implemented for noise reduction which includes:

- Controlled blasting methods employing millisecond delay detonators and relay systems to reduce both noise levels and blast vibrations.
- Any adverse effects that may arise due to secondary blasting can be mitigated through careful consideration of blast design, spacing, and burden management.
- Careful planning of blast timings keeping factors such as favourable atmospheric conditions, and mine working timings in mind.
- Greenbelt development in three rows in and around the mine lease area.
- Avenue plantation along the mine transport roads.
- Engines of HEMM and other mine machinery and transport vehicles shall be properly maintained to reduce noise generation. Provision of incorporating silencers into the dumpers and other vehicles shall be suggested to control noise

propagation.

- Shift timings shall be stringently supervised by the Site Manager/Engineer to prevent overexposure of the workers to high noise levels. A separate budget shall be kept for quarterly health check-ups of all the workers which shall also include audiometric tests.

With the noise abatement measures as indicated above, it is expected that the noise levels will be maintained in compliance to the prescribed limits.

4.4. Impacts due to Ground Vibrations and its Management

Blasting in mining areas may give rise to ground vibrations which may cause damage to nearby structures. Fly rock is another problem that deserves attention. The following precautions will be taken up at the proposed project site for controlling noise and blast vibrations in adjoining project areas.

- Controlled muffled blasting technique will be adopted in this project for reducing blast vibrations substantially.
- Dozing of loose boulders
- The region within a 500-meter radius of the blasting zone will be designated as a hazardous area/danger zone, demarcated by red flags or other suitable signage. Unauthorized access to this zone will be strictly prohibited during blasting activities.
- To safeguard the mine workers involved, blasting shelters will be made available near the blasting sites to offer protection during the process.
- A warning sound will be sounded fifteen minutes prior to the actual blast, allowing individuals to evacuate the danger zone.

4.5. Impacts on Land and its Management

The Land Use pattern in the lease area may change as a result of different phases of mining operations. Land reclamation shall be done along with ongoing mining operations

in order to minimise the negative consequences. After the end of mining operations, approx. 76.61 Ha. of land shall be revegetated by plantation activities by the project proponent, 6.69 Ha. of land shall be converted to a water body – which may act as a potential source of surface water and recharge for ground water in the future for the neighbouring communities (Sengupta, 2015), and 3.6 Ha. of the land shall be retained for public use. 13.10 Ha of land shall be left undisturbed.

The following measures are proposed to be undertaken in the project.

- Plantation of approximately 76.61 Ha. of the project area with native, high APTI species that are resistant and self-sustaining,
- Topsoil excavated from the site shall not be mixed with the overburden and shall be dumped separately at predetermined locations apropos to the greenbelt development/plantation activities, and
- Simultaneous back-filling of the mine voids during the ongoing mining operations.

4.6. Impacts on Ecology and Biodiversity

Although the mine lease area does not have any forests, portions of the study area may have sub-tropical broadleaved, semi-evergreen, and moist deciduous vegetation (Bhuyan et al., 2022). Hence, the following safeguards shall be undertaken to protect any such vegetation:

- Avenue plantation is proposed to be taken up in the non-forest areas falling within a 5 km radius from the mine lease area with native plant species.
- Plantation of angiosperms (flower and fruit bearing plants) shall be taken up to attract different types of fauna such as arthropods, reptiles, aves, and mammals.
- Muffled blasting techniques along with other noise and ground vibration mitigation measures shall be used to ensure negligible impact on the surrounding ecology and biodiversity,
- Regular water spraying on dust generating areas such as transport points, approach

and haul roads, overburden and topsoil dumps, coal stackyards, etc. to avoid the accumulation of fugitive dust and other pollutants on trees in the nearby areas,

- In order to preserve the hydrological equilibrium in this area, mine water shall be effectively utilized for a variety of purposes, such as dust suppression, plantation, washing of HEMMs, etc. The excess water shall be reused for groundwater recharge after channelling through settling ponds.
- A site and project-specific Greenbelt Development Plan has been prepared.

4.7. Impacts on Socio Economic Environment

This project is anticipated to generate only positive socio-economic impacts on the people of the neighbouring communities. It shall harbour economic development to the project area including infrastructural and community developments.

The project proponent shall ensure that continuous efforts are made towards the enhancement and upliftment of living conditions of the mine workers, their families, and community people from the surrounding village areas. Similarly, the proposed mining operations will bring in additional indirect employment opportunities and will also bring in the medical and communication facilities within their reach.

5. ENVIRONMENTAL MONITORING PROGRAMME

Environmental monitoring programme has been prepared for the proposed project for assessing the efficacy of implementation of Environment Management Plan and to take corrective measures in case of any degradation in the surrounding environment. An environment management committee will be formulated at the project level to monitor the implementation of environmental protection measures in the project.

Air quality, water quality, noise levels, ground water levels will be periodically monitored and necessary mitigation measures will be taken as and when necessary. The Environmental Monitoring Cell (EMC) will serve as the central hub for all monitoring

programmes and data. This data will be compiled and submitted regularly to the relevant Meghalaya state regulatory agencies. Reports will be formatted for clarity and submitted on a biannual (six-monthly) basis.

6. ADDITIONAL STUDIES

6.1. Rehabilitation and Resettlement Study

There are no settlements/villages in the project area and hence, there is no need of rehabilitation & resettlement policy of the Govt. of Meghalaya or its implementation.

6.2. Risk assessment and Disaster Management Plan

Mining and allied activities are associated with several potential hazards to both the employees and the public at large. A worker in a mine should be able to work under conditions which are adequately safe and healthy.

Risk Assessment is to be performed on a regular basis. The Risk Assessment Process shall involve measurement of risks to determine, prioritise and enable identification of the appropriate level of risk treatment. The goal for each risk assessment is to identify hazards, determine risk rating and controls and to review the implementation of risk controls from previous risk assessment sessions.

Nehlang Lyngdoh Coal Block project is a newly proposed mine and mining will be done by using shovel dumper combination in an opencast mechanized method. Special precautions shall be taken while deploying workers in the mine Before employing any labour to the mine, proper vocational training shall be imparted and statutory provisions as per Regulation 106 of CMR 2017. Some of the major aspects which shall be taken care of by the management are as follows: -

- Safety aspects for outsourcing/ hiring of HEMM/equipment with the following

criteria.

- Stability of Benches, Quarry High walls and Spoil Dumps
- Slope failure in Mine Pit and in the OB Dump
- Precautions against Danger of Inundation from Surface Water
- Prevention of Flooding of Equipment Deployed at Bottom Horizons
- Prevention of Electric Shocks
- Measures to be taken for Fire Fighting and Fire Prevention
- Dust Suppression & Dilution of Exhaust Fumes
- Measures to be taken while Drilling & Blasting
- Handling of explosives
- Road Accidents
- Medical Preparedness

6.3. Public Consultation

Public Consultation will be done after submission of the Draft EIA Report to the concerned authorities.

7. PROJECT BENEFITS

The proposed Nehlang Lyngdoh Coal Block project is essential for maintaining coal supplies from the area and fulfil the demand to various users. The proposed project will also result in following benefits:

- Indirect employment opportunities to local people and improvement in communication, education, community development and medical facilities.
- The project will help in socio-economic development of the area and also the state
- The project will help in development of infrastructure facilities in and around project area.

8. ENVIRONMENT MANAGEMENT PLAN (EMP)

An EMP is a site-specific plan developed to ensure that the project is implemented in an environmentally sustainable manner. An effective EMP should ensure the application of best practice environment management to a project. The following objectives have been incorporated into the design of the EMP in order to mitigate the adverse environmental effects which will be caused due to mining:

- Biological reclamation and rejuvenation of the mined-out areas and active points of the mine lease area to the maximum possible extent possible, in line with the economy of mining operations, the drainage pattern, geological stability, vegetation, etc.;
- Minimal disturbance to the water environment and existing ecological status of the area and conservation of the same;
- Efforts towards improvement of the air quality, water quality and the land during and post mining activities; and
- Establishment of an environment which is conducive to improve the socioeconomic situation in the area.

9. ESTIMATED COST OF THE PROJECT

Nehlang Lyngdoh Coal Block over an area of 100.0 ha will be privately owned by the applicant Shri Leborlang Lyngdoh. The estimated project cost is around ₹2500 Lakhs. The project proponent will set aside ₹160 Lakhs to mitigate environmental impacts due to this mining project as its Corporate Environment Responsibility (CER) Programme.

10. CONCLUSION

The industrial and economic growth of India depends to a large extent on coal, which is the prime source of energy. Coal mining in Meghalaya is a type of small-scale industry with the land owners, also being the owners of the minerals below their land. The coal that will be produced will be fed to major domestic sectors such as the power sector. Cement industries, fertilizers, brick industries, etc. will also benefit from the coal produced from the mine.

The present proposal is made for of extraction coal reserves from Nehlang Lyngdoh Coal Block by using shovel-dumper combination in an opencast mechanized method. It is designed for extraction of 0.479 MT of total coal reserves during total life of the mine in 7 years.

From the detailed analysis of the environmental impacts and the mitigation measures proposed in the EMP, it is anticipated that no significant deterioration in the eco-system is likely to occur due to the proposed opencast mine. On the other hand, the project is likely to have several benefits like improvement in indirect employment generation and economic growth of the area, by way of improvements in the infrastructure facilities and better socio-economic conditions.