EXECUTIVE SUMMARY

OF

Ri Laingut Limestone Mine

For Public Hearing

At

Ri Laingut, Lynti Dkhar, Sohbar Village
Sohbar Sirdarship
District-East Khasi Hills
State- Meghalaya
Lease Area: 0.66 ha.

Applicant: Shri Arbis Tangdhara

Address: 65, Sohbar Village, Sohbar Sirdarship

Distt: East Khasi Hills, State: Meghalaya

Environmental Consultant

INDIAN MINE PLANNERS & CONSULTANTS

GE-61, RAJDANGA MAIN ROAD

BEHIND VIVANTA HOTEL, EM- BYPASS

KOLKATA (WEST BENGAL)

PIN- 700107

(Accredited by NABET (Quality Council of India)
For EIA Studies as 'A' Category Consultant
(Sl. No. 91st, List of Accredited Consultant Organizations August, 2021)

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Introduction

The Project Proponent, Shri. Arbis Tangdhara has applied for mining lease for minor mineral (Limestone) in her privately owned land over an area of 0.66 Ha. located at Ri Laingut, Lynti Dkhar, Sohbar Village, Sohbar Sirdarship, District- East Khasi Hills, and State- Meghalaya. The Project has been planned for a production of 14450 TPA.

In the present case the State Expert Appraisal Committee, Meghalaya (SEAC) in its ToR meeting followed by SEIAA' meeting issued TOR letter vide no. ML/SEIAA/MIN/EKH/P-175/2021/587; dated Shillong the 22 September, 2021 for undertaking detailed EIA study for the purpose of obtaining environmental clearance in accordance with the provisions of the EIA Notification; 2006.

In order to assess to potential environmental impacts likely to arise due to proposed Limestone mine at Ri Laingut, Lynti Dkhar, Sohbar Village, Sohbar Sirdarship, District-East Khasi Hills, and State- Meghalaya, Shri. Arbis Tangdhara has retained **Indian Mine Planners & Consultants, Kolkata** to undertake Environmental Impact Assessment studies. The report envisages the assessment of the impact of various environmental components and its mitigation measures in order to minimize the adverse impacts.

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Description of the Project

The salient features of the proposed Limestone mine are as under:-

Project Name	**Ri Laingut Limestone Mine**
Location of mine	At- Ri Laingut, Lynti Dkhar, Sohbar Village Sohbar Sirdarship, District-East Khasi Hills State- Meghalaya
Latitude	25°11'09.63"N TO 25°11'13.99"N
Longitude	91°44'46.25"E TO 91°44'51.86"E
Topo sheet number	78O/12
Land use	0.66 Ha.
Minerals of mine	Limestone
Total Mineable reserves	159500 Tonnes
Life of mine	11 years
Proposed production of mine	14450 TPA / 48 TPD
Method of mining	Opencast, semi-mechanized
No of working days	300 days
Water demand	Total water requirement is about 2.00 KLD (0.2 KLD Domestic Uses) + 1.0 KLD (Dust Suppression) & 0.8 KLD (Green Belt) from nearby water sources.
Sources of water	Water for drinking purpose will be met from nearby villages. For sprinkling & plantation water will be taken from Private tanker.
Man power	9 (Approx.)
Nearest railway station	Guwahati Railway Station at the distance of approx. 187 km in North direction.
Nearest airport	Shillong Airport is at the distance of approx. 128 km in North Direction.
Seismic zone	Zone V

Vicinity map and study area map of the 10 km radius around the project site is presented in **Figure 1** and **2.**

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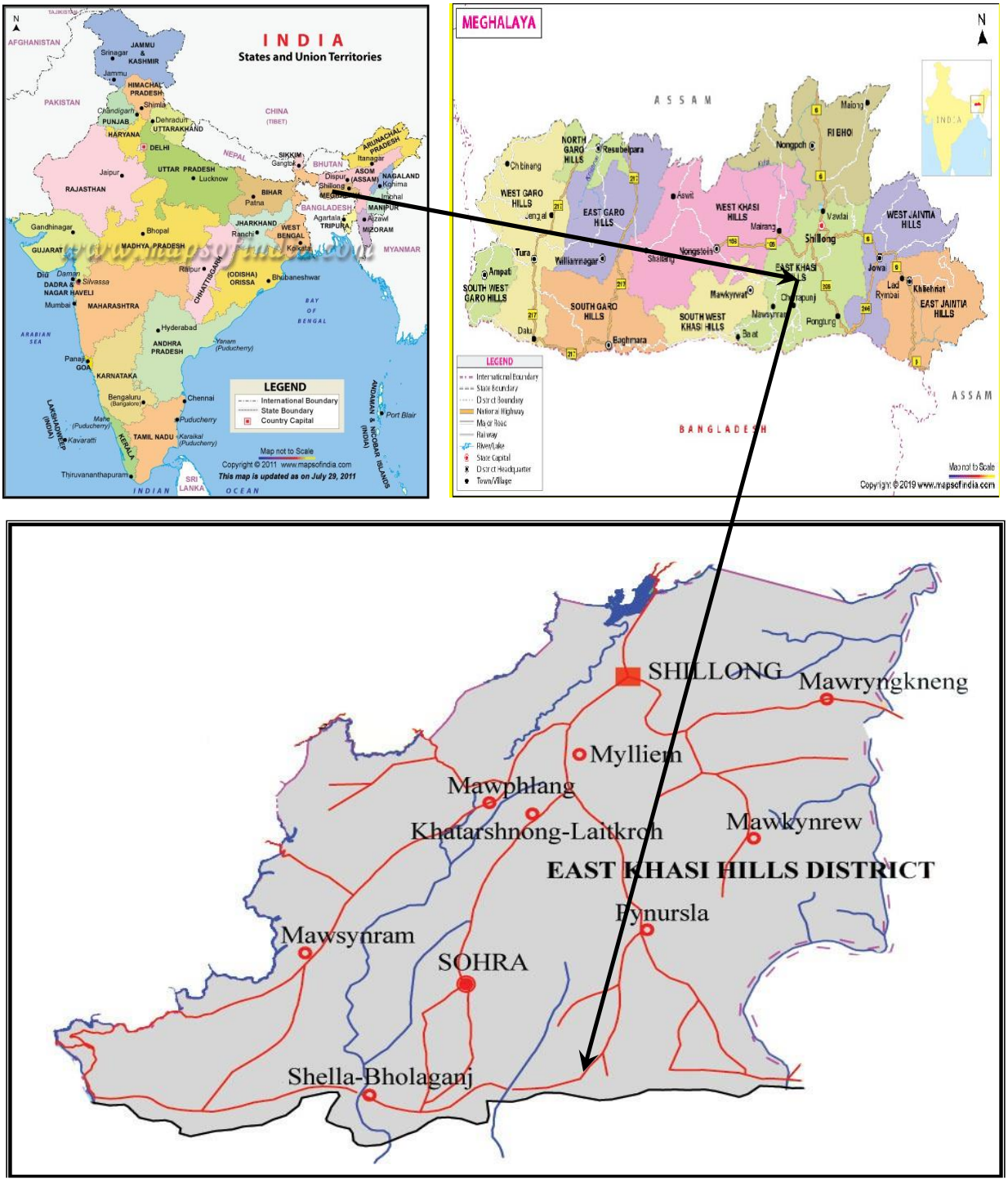

Figure 1
Vicinity Map

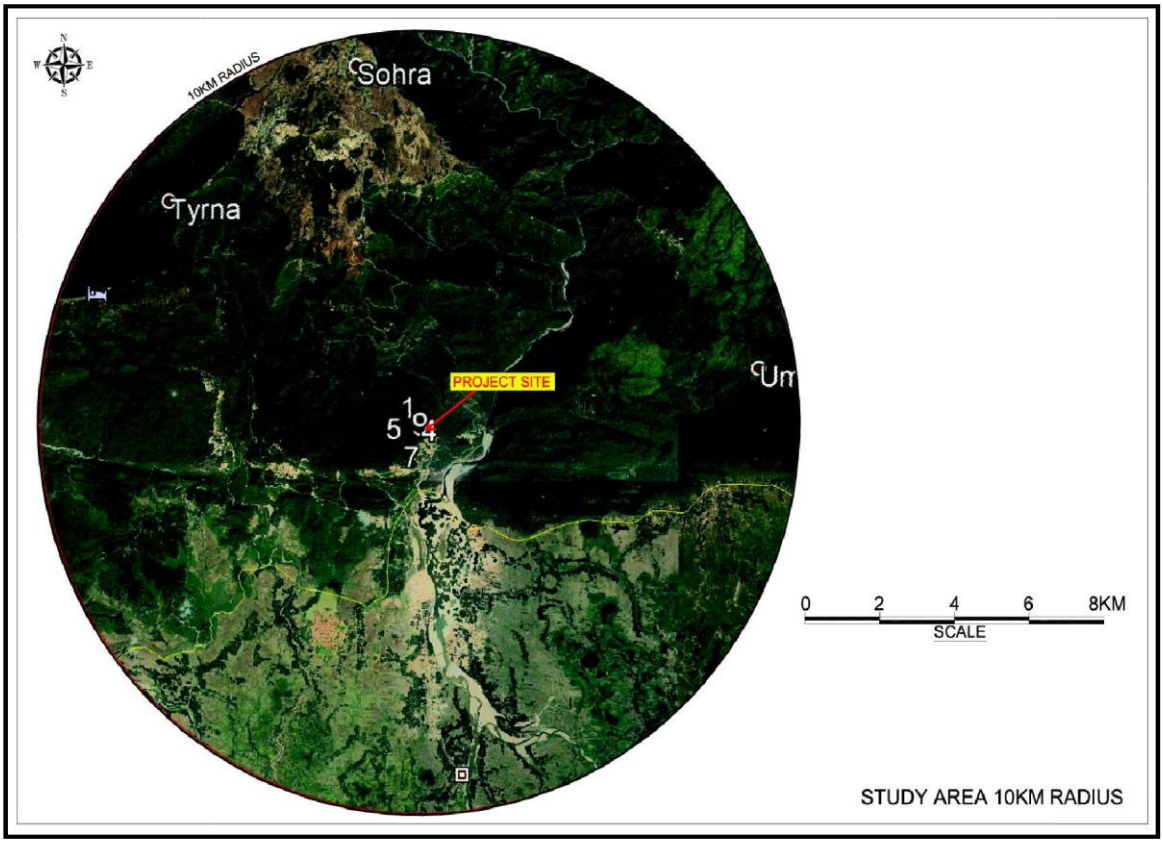

Figure 2
10 km Radius Map around the Project Site

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Basic Requirement for Proposed Project:

Details are presented below:

Sl. No	Requirement	Approx quantity
1.	HSD (Diesel)	100 liters/ day
2.	Power gel 901(Explosives)	

Mining Method:

Semi Mechanized open cast mining will be undertaken with drilling and blasting.

- The width of each bench shall always be maintained to be not less than the height which is 6 m.
- Since the deposit in this area is massive and compact in nature, it is proposed to carry out only opencast semi-mechanized mining during this plan period, i.e. five years.
- Drilling and Blasting The operations like drilling of shot holes, sorting of stone and breaking of large sized boulders will be excavated using hydraulic rock breakers and excavators with deploying of Jack hammer drilling. Both Deep Hole and short hole blasting is proposed.

Description of the Environment:

The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, Land and Socio-economic were generated during December 2020 to February 2021 in the study area covering 10 km around the proposed Limestone. Other environmental data on flora and fauna, land-use pattern, forest etc were also generated through field surveys and also collected from different State Govt. Departments.

Air Environment:

Ambient air quality was monitored at 10 locations. Results indicate that concentrations of PM2.5, PM10, SO_2, NOx are well within the prescribed standards.

PM_{10}- 55-86 µg/m^3

$PM_{2.5}$- 22-38 µg/m^3

SO_2- 4.6-9.8 µg/m^3

NO_x- 6.8-11.6 µg/m^3

An automatic weather monitoring station was installed at the project site to record micro-meteorological data. Pre-dominant wind directions were observed in the winter season is from E, NE & SW

Noise Environment:

The noise levels in the study area are within the prescribed standards. Noise levels ranges from 53.2 dB (A) to 55.7 dB (A) during day time and 40.4 dB (A) to 42.2 dB (A) in the night time.

Water Environment:

It has been observed that all the physico-chemical parameters and heavy metals of water samples from surface and ground water are below the stipulated drinking water standards. The pH, TDS, and Hardness of the surface water were found in range of 6.39-6.68, 159- 170 mg/l and 111.6-117.1 mg/lit respectively, whereas the ground water showed pH 6.39-6.73, TDS 118-127 mg/lit and Hardness 96.17-102.70 mg/lit.

Land Environment:

The break-up of the land use for the project is given below:

Breakup of Land Use

Category	As on date (Hectares)	After first five years plan period (Hectares)	After Life of the Mine (Hectares)
Mined out Land including road	0.00	0.38	0.45
Storage of top soil	0.00	0.01	0.00
Road	0.00	0.02	0.00
Green belt in Safety Barrier	0.00	0.10	0.15
Overburden dump	0.00	0.03	0.03
Infrastructure	0.00	0.01	0.01
Balance unused area	0.66	0.11	0.02
Total	**0.66**	**0.66**	**0.66**

Soil:

The soil quality assessment was carried out at six locations. The bulk density of the soil in the study area ranges between 1.43 to 1.52 gm/cm^3, which indicate favorable physical condition for plant growth. Variation in the pH of the soil in the study area was observed and it is found to be slightly acidic (6.12 to 6.39), thus conducive for growth of plant. Total Organic Carbon and nitrogen are found in the range of 1.49 – 1.71 % and 23.9– 26.1 mg/100g. This shows that soil is moderately good in organic and nutrient contents. Primary nutrient profile shows that soil is low in fertility due to the availability of low amount of nitrogen and potassium.

Flora & Fauna:

The density of the plant in core zone in general is very low due to rocky terrain and low soil content. The floral found in the whole of the study area are representative of the Tropical Lower Montane Forest, Tropical Semi-Evergreen, Moist-Broadleaf Forest, Tropical Deciduous/Semi-Deciduous, Broadleaf Forest and Tropical Sparse trees. There are is no schedule I Species of Fauna found in both core as well as buffer zone. The main crops grown in nearby areas are Wheat, rice, potatoes and pulses.

Socio-economic Status:

The study has been conducted by primary survey and secondary data source from Census of India 2011.

The primary socio economic study has been conducted in villages. The results are discussed below:

- **Core Zone**: There is no habitation in the core zone
- **Buffer Zone**: The total number of Households of the study area in rural village area are 8756 as per. The details are given below.

Population:

The total population of the study area is 44513 constituting 22381 Male and 22132 Female.

- **Social Structure**

The proportion of Scheduled Caste (SC) population within the study area is 2.06 % and the percentage of schedule Tribe (ST) is 83.78%.

- **Literacy**

The total proportion of literate within the study area is 63.40% of total population. In percentage the male literacy 32.06% and the female literacy is 31.35% respectively within study area.

Anticipated Environmental Impact & Mitigation Measures:

1. **Land Environment:** The proposed project of Limestone mining will definitely change the land use. However the area will be reclaimed by the following measures:

- To minimize the effect of mining plantation will be in done along the 7.5m boundary of the mine area and after the exhaustion of the pit whole area will be reclaimed into green cover. After the conceptual mining there will be a mine void which will be extensively planted.
- Mining operations will be confined strictly within the demarcated area.
- During plan period, gritty soil will be dumped at north-Eastern side of the applied area with suitable precautions. Few quantity of the generated gritty soil would also be used for road maintenance and plantation program. After exhaustion of mineable reserve quarry will be reclaimed to the extent possible.
- The dust generation due to the mining will be minimized by sprinkling of water through water sprinkler.
- No effect on public buildings or monuments is envisaged as there are no public buildings/ monuments in the close vicinity of the mining lease area.

2. Water Environment: Total water requirement in the proposed mining project is 2KLD. Drinking water will be sourced by from nearby villages by water tanker. Mining will be restricted up to a depth of 118 mRL. There is no possibility of mining encountering any surface/subsurface water body. To avoid contamination of ground water from the open defecation by workers,

toilets will be provided for the workers at site with septic tank followed by soak pit.

3. Air Environment: The air borne particulate matter is the main air pollutant contributed by opencast mining with drilling and blasting. Various emission sources are identified from the proposed mining operations. However the area will be reclaimed by the following measures:

- Drilling machines will be equipped with dust collector arrangement and wherever required wet drilling arrangement will be used to prevent generation and spreading of dust.
- Personnel working on the drills and other mining activities will be provided with dust mask and other necessary Personal Protective Equipments (PPE). Health checkups will be done biannually to monitor the health of the workers.
- Regular maintenance of vehicles and machinery will be done.
- Water tankers with suitable sprinkling system will be deployed along haul roads and other unworked areas to control fugitive emission.

4. Noise Environment: The proposed mining operations will be carried by using latest equipments by open cast semi mechanized mining method. Hydraulic excavator will be used in excavation. Hence workers will be given protective gears such as goggles, dust masks, gloves, helmets and earmuffs. Plantation will be done to create cover from high noise. Task rotation of workers will be done exposed to noise.

5. Biological Environment: There is no Forest area diversion is required in the proposed mining. The fauna in the vicinity of the mine is restricted to few common species. There will hardly be any negative impacts on terrestrial eco-system comprising birds and animals as the ML area is only 0.66 Ha. On the contrary, with progressive growth of greenery, terrestrial eco-system will improve in course of time. There will be no Schedule-I species found in study area.

6. Socio- Economic environment: The project will enhance direct and indirect employment in the area. Therefore overall economic development is much likely after the commencement of the project. The project will provide

skill based training to the locals and will generate chance of indirect employment in the area.

7. Mine Waste: During plan period, gritty soil will be dumped at north-Eastern side of the applied area with suitable precautions. Few quantity of the generated gritty soil would also be used for road maintenance and plantation program. After exhaustion of mineable reserve quarry will be reclaimed to the extent possible. To prevent dump failure/soil erosion, toe-wall with weep-holes and garland drains will be provided towards lower side of the dumps to check the wash off during the rainy season. Hazardous waste such as used oil shall be stored properly and sold to registered-processor. Domestic waste water due to daily human activities which shall be properly disposed off into septic tanks followed by soak pits. Other domestic solid waste such as Wrappers, foils, left- over food material etc shall be collected in separate bins. Biodegradable waste will be composted and used as manure.

8. Impacts due to transportation: The entire mineral will be transported through trucks. Transportation shall be done by 1 no. of 10 tonner trucks. As per study done there will not be any congestion due to proposed project on the road.

Environmental Monitoring Programme:

The environmental monitoring is important to assess performance of pollution control equipment installed at the project site. The sampling and analysis of environmental attributes including monitoring locations will be as per guidelines of the Central Pollution Control Board/State Pollution Control Board

- Environmental monitoring will be conducted on regular basis by Shri. Arbis Tangdhara to assess the pollution level in and around the project area
- Adequate budgetary provision shall be made towards implementation of Environmental Management Plan

Risk Assessment & Disaster Management Plan: Mining will be carried out by semi mechanized opencast mining, with mining equipments as

hydraulic excavator, dumpers etc involving drilling and blasting. Mining will

be done under strict supervision hence the rate of operational risks is minimal.

Rehabilitation and Resettlement: There will be no rehabilitation and resettlement on account of mining. There is no human habitation at the project site and the land is deemed forest land.

Project benefits: The proposed mining project has a significant positive

impact on the socio-economic environment and it will help sustain the overall development of the area.

The proposed project significantly contributes the economic development by providing direct employment to 9 people and indirect employment to many more people in the area.

PP will organize Camps for vocational training to generate employment.

Environmental Management Plan: Preparation of Environmental Management Plan (EMP) is required for formulation, implementation and monitoring of environmental protection measures during and after commissioning of the proposed mining project. The project cost is Rs.21.00 Lakh and the EMP capital cost Rs. 3,42,000 Lakh (Annual recurring cost).

Budgetary Provision for Environmental Measures:

Sl. No.	Particulars	Annual Recurring Cost
1.	Air Pollution (dust suppression along road, water sprinklers)	90,000
2.	Plantation & Maintenance	40,000
3.	Environmental Monitoring & Reclamation	60,000
4.	Maintenance of Settling Tank, Garland Drains etc.	70,000
5.	Personal Protective Equipments	30,000
6.	CER activity	52,000
Total		**3,42,000**

Corporate Environmental Responsibility:

Corporate Environmental Responsibility (CER) refers to responsibility of a company to ensure positive impact on environment, consumers, employees, communities, stakeholders and all other members of public sphere. The CER activities are

increasingly being taken up by the project proponents not only as fulfilling of mandatory provisions but also for the formation and or enhancement of brand image. Besides the above, CER is seen more as a responsibility towards society rather than a business promotion activity. In order to improve the quality of life of nearby villagers of the proposed project area, amount of Rs. 52000 which is 2.5% of the total cost (Rs.21,00,000) of project shall be spent under the guidance of District/Local authorities (MoEF&CC Notification for CER activity dated 01.05.2018)

Budgetary Provision for CER Activity

CER Budget				
S. No.	**Activity**	**Per Unit Cost**	**No.**	**Total Cost INR**
1	Provisions for Imparting vocational training at near village for technical skills, self employment training for women and youngsters.	-----	-------	10,000.00
2	Energy Conservation i.e. Distribution of LED Bulbs	100	50	5,000.00
3	Provisions for Water purifier & its maintenance (1 no.) at CHC center of Near village.	15000	1	15,000,00
4	Provision of Toilets in the nearby villages	15000	1	15,000.00
5	Organization of Health Camps Provisions for Health Check-up camp at Gram Panchayat of Near village			5,000.00
6	Distribution of Sanitary Napkins, Contraceptives etc.			2,000.00
Total				**52,000.00**

Occupational Health and Safety:

Effective implementation of measures suggested for pollution control will ensure safety and health of the workers.

Green belt development: It has been initiated by the proponent 0.10 ha will be planted during plan period. However as per conceptual plan 0.15 Ha. lease area will be planted. Locally thriving species will be planted in consultation with forest department.

Among other environmental protection following measures are listed below:

- Sprinkling of water for dust suppression on mine haul roads.
- Regular Compaction & grading of haul roads and service roads to clear

accumulation of loose material.

- Avoid overloading of dumpers and consequent spillage on the roads.
- Good maintenance of vehicles & machinery.
- Water sprinklers of fixed type will be provided at the mine approach roads from mine face / benches to crush hopper to prevent the generation of dust.