EXECUTIVE SUMMARY

1.0 Introduction

Sri Jirendra singh is lessee of the proposed mine who intends to produce Sand, bajri & boulder 198000 MTPA, sanctioned Lease area of this mine is 6.0 ha. subsequently the project falls under Category **'B1'**. Thus the project will be appraised by State Expert Appraisal Committee of Uttarakhand. Therefore, the lessee will have to take environmental clearance from State expert appraisal committee as per MoEF Notification of EIA, 2006.

The letter of intent (LoI) for sand, bajri & boulders mine has been issued on dated 12 september 2018 vide letter no. 1926/VII-1/18/02(74)/2018 in favour of Sri Jitendra singh in order to minimize the demand supply gap of river sand, bajri boulders in district and state. The proposed lease area lies in the river bed of river Kailash.

The Mining plan and Progressive Mine Closure Plan has been approved with the conditions stipulated by the Directorate of geology and mining Uttakhand.

Lessee got mining plan approved vide letter no. 2488 on dated 08/02/2019.

The proposal for environmental clearance was sent to SEIAA, Uttarakhand with the required Form-1 & Prefeasibility Report for issuance of ToR. The Terms of reference was issued on 26.02.2019. Based on the terms of reference issued, detailed EIA study report has been prepared.

Project Proponent:

Mr. Jitendra Singh
S/o Mr. Aan Singh
R/o Village - Khupital, Khurpankha,
District - Nainital, Uttarakhand

2.0 Project description

The present mining project is owned by Sri Jitendra singh. The lease area lies in the bed of River Kailash located near village-Ukroli, Tehsil Sitarganj & District-udhamsingh nagar, Uttarakhand. Total Lease area of the mine is 6.0 ha. (Category 'B') and proposed production is

1,98,000 MT/year. The letter of intent was issued vide letter No. 1926/VII-1/18/02(74)/2018, dated- 12th Sept 2018 in favour of **Mr. Jitendra Singh S/o Shri Aan Singh,** R/o – Village- Khupital, Khurpankha, District - Nainital, Uttarakhand granted for lease period of 5 years. The lease document is attached as **annexure II).**

<table>
<tr><th>SL No.</th><th>Particulars</th><th>Description</th></tr>
<tr><td>1</td><td>Lease area</td><td>6.0 ha. Ha.</td></tr>
<tr><td>2</td><td>Village</td><td>Ukrauli</td></tr>
<tr><td>3</td><td>Tehsil</td><td>Sitarganj</td></tr>
<tr><td>4</td><td>District & State</td><td>Udham singh nagar, Uttarakhand</td></tr>
<tr><td>5</td><td>Name of River</td><td>Kailash</td></tr>
<tr><td>6</td><td>Khasara Numbers</td><td>Plot no.04 khasra no. 55mi, 65mi, 68mi, 69mi & 70mi. (Khasra map is attached as plat1e no. 2)</td></tr>
<tr><td>7</td><td>Toposheet No</td><td>53O/12</td></tr>
<tr><td>8</td><td>Latitude</td><td rowspan="2"><table><tr><th>Pillar</th><th>Latitude (N)</th><th>Longitude (E)</th></tr><tr><td>A</td><td>29°02’20.31”</td><td>79°41’36.28”</td></tr><tr><td>B</td><td>29°02’21.93”</td><td>79°41’41.71”</td></tr><tr><td>C</td><td>29°02’13.91”</td><td>79°41’41.33”</td></tr><tr><td>D</td><td>29°02’07.97”</td><td>79°41’42.17”</td></tr><tr><td>E</td><td>29°02’05.09”</td><td>79°41’37.32”</td></tr></table></td></tr>
<tr><td>9</td><td>Longitude</td></tr>
<tr><td>10</td><td>Mineral</td><td>River Bed Sand Bajri Boulder (Minor Mineral)</td></tr>
<tr><td>11</td><td>Period of Mining Lease</td><td>5 years from date of execution of lease deed The letter of intent is attached as annexure 1)</td></tr>
<tr><td>12</td><td>Category of Land</td><td>Govt. Revenue Land (Non Forest Land)</td></tr>
</table>

Connectivity

The proposed mining site is approachable by NH-125, site is connected through link road toNH-15. Link rod to NH-125 is 0.6 Km away from proposed mine site. Nearest Railway Station Lalkuwan Railway Station:≈16.5 Km in West north west direction (crow fly distance). Nearest Airport (pantnagar) Airport ≈ 16.6 Km in west direction (crow fly distance). Nearest School/College Govt. High School, ≈ 6.5 Km in SW.

Duration of lease will be considered five years from date of execution of lease deed. Ultimate limit of depth will be 1.5 m below existing bed level in river bed as indicated in ultimate plan.

As per Working Group Rural Domestic Water & Sanitation Demand there will be provision of Drinking water @ 30LPCD (SOURCE-CPHEEO), Suppression of dust is 1.5 KLD, Thus for 164 workers there will be requirement of 5 KLD Water.

There will be employment opportunity for 164 people involved in the mining project.

The mining process will commence soon after getting Environmental Clearance from MoEF as per EIA notification 2006. The estimated project cost will be Rs 1.28 crores.

3.0 Description of Environment

The mine lease area 6.0ha which falls in Village - Ukroli, tehsil sitarganj district udham singh nagar, Uttarakhand. It is located in river bed of Kailash river. The proposed mining site is approachable by link road to NH-125. SH 37 is 17 km away from lease area. Uttra Pradesh and uttarakhand state boundary is 20km away from lease area. Pantnagar railway station is 17 km away from lease area (crow fly distance). Nearest Airport (pantnagar) Airport ≈ 22 Km in west direction (crow fly distance). Nearest School/College Govt. High School 6.8 Km SW. Geographical location of mine lease area is covered under Survey of India Toposheet No. 53 O/12(H44N/12). Study area map covering a radius of 10 Km around the lease periphery is enclosed as **Plate no.-3**

Land use

The land use distribution in the buffer zone of 10Km radius (from periphery) is given in the table given ahead.

Table: Land Use Distribution

S No.	Category	Area in Sq Km	Area In Ha	%age
1	Agriculture Land	26.5223	2652.23	8.09
2	Fallow Land	29.6321	2963.21	9.04
3	Built-up, Rural	6.98	698.16	2.13
4	forest Land	238.4804	23848.04	72.74
5	River Sand Area	15.6502	1565.02	4.77
6	Scrub Land	7.9209	792.09	2.42
7	Water Bodies, River/Canal	1.0	100.19	0.31
8	Waste land	1.64	164.36	0.5
	Total	**327.83**	**32783.33**	**100.00**

AMBIENT AIR QUALITY

To assess the ambient air quality level, 6 monitoring stations were set up. $PM_{2.5}$ recorded within the study area was in the range of 39.21 $\mu g/m^3$ to 60.04$\mu g/m^3$ with the average value ranging between 47.01$\mu g/m^3$ to 51.08$\mu g/m^3$ were compared with the National Ambient Air Quality Standards (NAAQS) and found that all sampling stations recorded in the study area are within the applicable limits i.e., 60$\mu g/m^3$ for $PM_{2.5}$ for industrial, residential, rural and other areas.

PM_{10} recorded within the study area was in the range of 65.06µg/m3 to 83.34µg/m3 with the average value ranging between 71.03$\mu g/m^3$ to 74.6$\mu g/m^3$.

The 24 hourly average values of PM10 were compared with the National Ambient Air Quality Standards (NAAQS) and found that all sampling stations recorded in the study area are within the applicable limits i.e., 100 $\mu g/m^3$ for PM_{10} for industrial, residential, rural and other areas.

SO_2 recorded within the study area was in the range of 10.25 to 25.54$\mu g/m^3$ with the average value ranging between 12.5$\mu g/m^3$ to 14.54$\mu g/m^3$.

The 24 hourly average values of SO_2 were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 μg/m^3 for industrial, residential, rural and other areas.

NO_2 recorded within the study area was in the range of 12.84μg/m3 to 39.54μg/m^3 with the average value ranging between 22.26μg/m^3 to 37.11μg/m^3

The 24 hourly average values of NO_2 were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 μg/m^3 for industrial, residential, rural and other areas.

Noise quality

The values of noise observed in some of the areas are primarily owing to vehicular traffic and other anthropogenic activities. Assessment of hourly night time Leq (Ln) varies from 34.3 to 40.0 dB (A) and the hourly daytime Leq (Ld) varies 54.6 to 58.5 dB (A

Water quality

Selected water quality parameters for water resource of the study area have been used for describing the water environment and assessing the impacts. 8 ground water samples were collected in the study area to assess the water quality. Water samples also drawn from the hand pumps and 8 surface water samples were drawn. For surface water quality, comparing the values of pH, DO, BOD and total coliforms with 'Use based classification of surface waters'published by Central Pollution Control Board; Overall all the samples collected from the study area were found to be fit for consumption, Most of ground water samples are well within the permissible limits. Most of the heavy metals in all samples are below detectable limits.

Biological environment

Core zone is devoid of any significant vegetation only grass species *cyanodon dactylon* (doob grass) were reported.

It's a river bed area no faunal species were reported in the region, only cattles were found roaming over for grazing purpose.

As per wild life protection act 1972 and subsequent amendment most of the species reported in the study area are schedule III & IV. Only one species Peacock (*pavo cristatus*) has been found to be in schedule I.

Socio economic environment

The study area comprise of 10km radius buffer zone. it is found that 75 villages has been found in the study area. 45 villages lie in district udham singh nagar and 30 villages lie in district Nainital.

Housing facility in the villages in buffer zone was found as approximate 40% houses were reported to be pucca house with good condition. And semi-pucca houses were reported about 30% and rest 30% were kachcha houses. It shows a comparatively good picture of the area.

4.0 Anticipated environment impacts

Impact on Water Environment

Excavation of sand, bajri & boulder within stream bed has a direct impact on the stream's physical characteristics such as geometry, gradient, substrate composition and stability, depth, velocity and sediment transport.

- Alteration of flow pattern/modification of river bed
- Mine seepage and impact on Ground water regime
- Impact on surface water bodies

Mitigation Measures:

- Proper disposal of waste water to prevent it to pour with the stream water.
- No proposal for pumping of water either from river or tapping the groundwater is envisaged.
- Mobile toilets will be provided for the workers at site.
- Mining of river sand is confined up to 1.5m depth from surface of channel or above the ground water table whichever is less. Thus no ground water pollution is expected as the mining operation will not intersect the ground water table.
- No liquid waste will be generated due to mining or any other way so there is no possibility of pollution of water resources due to liquid waste. No contamination of ground water is envisaged.

Impact on Air Environment

- Loading/unloading of mineral, and Trucks & trolleys all these shall be the major source of air pollution.
- The model suggests that due to increase in traffic load there will be possibility of increase in gaseous emissions from internal combustion engines giving rise to a reduction in air quality.
  - SO_2 level and NO_x level were below limit value at each location.
  - PM_{10} values could increase due to project activity because there shall be increase in dust due to mining.
  - These villages are prime areas where minor pollution occurs this is why values of Air quality parameters were found more but under prescribed permissible limits.

Mitigation Measures

Following mitigation measures are follows:

- Water sprinkling will be done regularly on the haul roads. This will reduce dust emission.
- To check/reduce the impact of dust, plantation will be done on haul road.
- Speed limits will be enforced to reduce airborne fugitive dust from vehicular traffic.
- Spillage from the trucks will be prevented by covering tarpaulin over the trucks.
- Deploying PUC certified vehicles to reduce their emissions.
- Monitoring to ensure compliance with emission limits would be carried out during operation.

- Plantation of trees along the road & on riparian zone (in the restricted area), a long haul road to help to reduce the impact of dust in the nearby villages.

- Dust mask provided to the workers engaged at dust generation points like excavations and loading points.

- To check emission problem regular maintenance of vehicles will be done and PUC certificate will be obtained for all vehicles and mining machinery.

- Overloading will be prevented. The trucks/tractor trolleys will be covered by tarpaulin sheet while transportation.

Impacts on Noise Environment

- Transportation (Dumpers, Trucks, Tippers & other vehicles.).
- The ambient noise level during the baseline study at the proposed project site was within permissible limit of the standard.

  Mitigation measures-

  Project proponent will adopt the following noise abatement measures.
- The vehicles will be maintained in good running condition so that noise level could be reduced to minimum possible level.
- Plantation of trees will be done to dampen the noise and also arrests dust.
- Imposition of speed limit on vehicles near residential areas.
- Truck drivers will be instructed to make minimum use of horns while passing nearby the residential area.
- Noise generated by these equipment's shall be intermittent and does not cause much adverse impact.

Impacts on Biological Environment

- The core zone does not comprise of forest area. Though there are forests in the buffer zone. The forests are dominated by herbs and shrubs, and are not ecologically diverse.
- Mining may drive away the wild life from their habitat, and significantly affect wildlife.
- Noise generation due to vehicles may affect avifauna.

Mitigation Measures:

- Measures for green belt development will enhance the vegetation and afforestation in core zone in agricultural land. Emphasis will be given on native plant species & plants of economic importance.
- No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species.

- No discard of food, polythene waste etc will be allowed in the core zone. No night time mining will be done which may catch the attention of wild life.
- Minimized noise pollution will have less adverse effect on avifauna and they will thrive in the area. However, no bird's habitats like nesting, breeding and foraging patterns are noticed in the core zone. Local birds are noticed crossing over the banks in search of food.

Impact on socio economic environment:

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

Mitigation Measures:

- Over loading of trucks will not be allowed.
- The music will not be allowed to play during the transportation of material.
- Regular water spraying on roads and storage dumps
- The ID proof of the each employee will also be kept as a record.
- **Skill based training** to locals employed people is being imparted which will be further expanded as the employment grows after the expansion of the plant .The training record of the workers should be maintained with certificate.

Environmental Monitoring Program

Post project monitoring will be done and the recorded data from monitoring of air, water, soil and noise will be submitted half yearly by project proponent to Ministry of Environment and Forests (Regional office) and State Pollution Control Board (SPCB).

Table 10.3: Environmental Monitoring Schedule

Sr. No.	Description	Frequency of Monitoring
1	Ambient Air Quality	Quarterly/Half yearly
2	Noise Level Monitoring	Half yearly
3	Water Level & Quality	Quarterly/Half yearly

4	Soil quality	Quarterly/Half yearly

5.0 Additional Studies

The community development programme proposed by the proponent for the surrounding population will be carried out along with budget provision proposed for improving the conditions of persons in and around the project area as under:

Table 10.4: Corporate environment Responsibility

Sr. No.	Description	Amount (In Lacs)
1	Health check up camps	0.5
2	Assistance to local school, scholarship to students	0.565
3	Sanitations and drinking water facilities	1.0
4	Vocational training to persons for income generation	0.5
Total		**2.565**

6.0 Project Benefits

The project will prove beneficial to the people as the company has already agreed to provide infrastructural facilities to the villagers like Educational facilities, Medical facilities, Transportation facilities, water supply etc. which will improve the socio-economic environment of the area

7.0 Environment Management Plan

Air Management

Following measures will be taken to control air pollution during mining operations:

• Adequate water spraying on the haul roads.

• Construction of proper haul roads in the lease area.

• Development of Green belt/plantation along mining lease, haul roads, mine office to arrest dust.

• Masks will be provided to drillers and persons employed in dusty area.

Water Management & Water Pollution Control

Surface Water

The major source of surface water pollution due to sand mining is insignificant, However, the following measures will be undertaken to prevent water pollution.

- Utmost care will be taken to minimize spillage of sand.
- Mining schedule will be synchronized with the river flow direction and the gradient of the land.
- The washing of trucks and vehicles in the river will be avoided.
- Mining will be avoided during the monsoon season. This will help in replenishment of sand in the river bed.
- Mining will not interest the river bed water level or ground water table of the area.
- Mining will be carried out above the water table.

Ground Water

- There will not be any adverse effect on the ground water quality. The minor mineral does not contain any harmful chemical, which could percolate into the ground and pollute the ground water. Hence, no control measures are required. Septic tank and soak pits have been provided for the disposal of domestic effluent generated from domestic activity. However, regular monitoring of quality in the existing hand pumps/tube wells in the vicinity will be carried out both with reference to area and times intervals to study the hydrodynamics of the strata.

Noise Environment

- Minimum use of horns and speed limit of 20 km in the village area.
- Timely maintenance of vehicles and their silencers to minimize sound.
- Phasing out of old and worn out trucks.
- Provision of green belts in consultation with forest officer along the road networks.

Land Environment

- Safe clearance will be mainly determined by the width of the river bed.
- Creation of ponds and pits on the river bed will not be allowed.

- Mining will be carried out during daylight only.
- No foreign material will be allowed to remain/spill in river bed and catchment area, or no pits/pockets will be allowed to be filled with such material.
- As the lease area in quite large and long in length systematic extraction will be carried out to prevent seasonal scouring and enhanced erosion.
- Measures will be taken to prevent the working form crossing safety zones.
- As the lease area in quite large and long in length systematic extraction will be carried out to prevent seasonal scouring and enhanced erosion.
- Mining on the concave side of the river channel should be avoided to prevent bank erosion. Similarly meandering segment of river will be selected to prevent natural eroding banks and to promote mining on natural building (aggrading) meanders component.

Green Belt/Plantation

Greenbelt development programme will be designed within the natural constraints of the river sand area and in particular species selection reflects flora known to be resistant to the local conditions.

Environment Management Plan

The environmental management plan has been developed with a view to bring down the levels of impacts as discussed in the last chapter within limits. In each of the areas of impact, measures have to be taken to reduce potentially significant adverse impacts and where these are beneficial in nature, such impacts are to be enhanced/augmented so that the overall adverse impacts are reduced to as low level as possible.

Table 10.5: Budgetary Provision for Environmental Management Programme

S.No.	Particular	Capital Amount (In Lakhs)	Recurring Amount (in Lakhs)
1	Pollution monitoring- Air, Water, Noise.	1.5	1.60

2	Water Sprinkling	1.0	1.0
3	Wire fencing at plantation sites	0.5	0.5
4	Plantation including maintenance	1.0	0.5
5	Haul road and other roads repair and maintenance	1.0	0.5
6	Expenses on Public Health	0.5	0.5
Total		**5.50**	**4.6**