

# EXECUTIVE SUMMARY

FOR  
MINING OF MINOR MINERAL (SAND, BAJRI AND BOULDERS)  
FROM SONG-3 RIVER BED, VILLAGE MARKHAM GRANT,  
TEHSIL AND DISTRICT, UTTARAKHAND  
(M.L. AREA OF 93.50 HA, PRODUCTION CAPACITY -2776950.00 TPA)  
PRODUCTION (AS PER REPLENISHMENT STUDY REPORT 2018-19)- 306488.094 TPA  
SCHEDULE: 1 (a), CATEGORY: A  
(TOR ISSUED: F.NO. J-11015/89/2020-IA.II (M), DATED 04.03.2021)  
AS RAJAJI TIGER RESERVE SITUATED AT 0.20 KM FROM THE PROJECT SITE)

## PROJECT PROPONENT



UTTARAKHAND FOREST DEVELOPMENT CORPORATION, DEHRADUN,  
UTTARAKHAND



DOC. No: MCPL/EMD/MIN/2019-20/09/01B

February, 2022



**PREPARED BY**

**MANTEC CONSULTANTS PVT. LTD.**

*(QCI Accredited EIA Consultant at S.No. 166 as per List of Accredited Consultant Organizations/Rev. 18, January 05, 2022)*

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**1. INTRODUCTION**

*M/s Uttarakhand Forest Development Corporation (UKFDC)* is a statutory body constituted by the State Government of Uttarakhand. The Corporation was formed for the better preservation, supervision and development of forest, also for better exploitation of forest produce within the State and for matters connected therewith.

The Corporation has been progressing forward not only in its financial aspect but also has taken a big leap in the direction of diversification of its activities.

*M/s Uttarakhand Forest Development Corporation (UKFDC)* has proposed for mining of Sand, Bajri and Boulder minor mineral in 93.50 ha. of Song-3 Riverbed which falls in the Reserve Forest of Dehradun Forest Division near Village Markham Grant, Tehsil & District Dehradun, Uttarakhand for collection of 2776950.00 TPA. The capacity of mineral extraction is proposed according to the **Uttarakhand Upkhanij (Parihar) Sanshodhan Niyamwali, 2020**, but according to the replenishment study conducted by Central Soil and Water Conservation Institute, Dehradun, the volume of minable mineral is 306488.094 TPA & the production as per replenishment study report 2019-2020 is 306488.094 TPA.

**2. PROJECT PROPOSAL**

It has proposed for mining of Sand, Bajri and Boulders (minor minerals) in their mining lease area of 93.50 hectares in Village Markham, Tehsil & District Dehradun, Uttarakhand for collection of 2776950.00TPA of minor minerals. The applicant is seeking prior Environmental Clearance for the project as per EIA notification' 2006 and its subsequent amendments, so it has allotted the job for EIA/EMP Study of their proposed project to **Mantec Consultant Pvt. Ltd., Noida**. Since, the applied mine lease area is located at a distance of 0.20 kms from Rajaji Tiger Reserve, it falls under "Category A"& the Schedule Clause number 1(a) of EIA notification 2006 and its subsequent amendments. The present scheme of mining is approved by the Director Geology and Mining Uttarakhand with an area of 93.50 Ha No. 1994/ खनन/भूखनि०ई०/ मा० प्लान /2020-21 dated 12.11.2020 in favour of M/s Uttarakhand Forest Development Corporation, for mining of Sand, Bajri and Boulder and Forest Clearance has been granted by MoEF&CC of Government of India vide its Letter no File no-8-62/1999 FC(VOL) Dated 20.10.2021.

**Table No. 1 Salient Features of the Project**

S. No.	Particulars	Details		
A.	Nature and Size of the Project	Mining of Minor Mineral (Sand, Bajri and Boulders) from the river bed of River Song-3 by M/s Uttarakhand Forest Development Corporation, located in Dehradun Forest Division, District Dehradun, Uttarakhand over an area of 93.50 ha with Production Capacity of 2776950.00 TPA		
B.	Location			
Geographical Coordinates	Latitude and Longitude of	<b>Pillar No.</b>	<b>Latitudes</b>	<b>Longitudes</b>
		S. No	Lat	Long
		A	30°08'19.26" N	78°07'54.75" E

		B	30°08'05.92" N	78°07'56.86" E
		C	30°07'49.88" N	78°07'56.20" E
		D	30°07'23.78" N	78°07'55.51" E
		E	30°06'56.79" N	78°07'51.31" E
		F	30°06'33.02" N	78°07'42.03" E
		G	30°06'33.80" N	78°07'34.77" E
		H	30°06'56.07" N	78°07'38.88" E
		I	30°07'18.72" N	78°07'39.68" E
		J	30°07'44.45" N	78°07'43.84" E
		K	30°08'03.57" N	78°07'43.52" E
		L	30°08'12.88" N	78°07'42.43" E
	Toposheet (OSM) No.	53 J/4		
C.	Lease Area Details			
	Lease Area	93.50 ha		
	Topography	Undulated (Riverbed)		
	Site Elevation Range	365 m - 401m amsl		
		<i>Source: Mining Plan</i>		
D.	Cost Details			
	Cost of the project	Rs. 6.17 Crore		
	Cost for EMP	Rs. 96.7 Lakh/Yr ( Capital Cost) Rs. 36.92 Lakh (Recurring Cost)		
	OH&S	Rs. 2.00 Lakh/Yr (Capital Cost) Rs 5.00 Lakhs/Yr (Recurring Cost)		
E.	Environmental Settings of the area			
	Ecological Sensitive Areas (National Park, Wild Life Sanctuary, Biosphere Reserve, Reserve/ Protected Forest etc.) within 10 Km radius	<ul style="list-style-type: none"> <li>• Rajaji National Park- 0.20km SW Direction</li> <li>• Kansrao Reserve Forest- 0km</li> <li>• Lacchiwala Range Forest- 5.9 Km North Direction</li> <li>• Barkot Range Forest- 4.8 Km East Direction</li> <li>• Hrishikesh Reserve Forest- 9.0 Km North Direction</li> </ul>		
	Inter-state boundary within 5 Km radius	None		
	Nearest Town/ Major City	Dehradun~19.40 Km, NW		
	Nearest Railway Station	Doiwala Railway Station, 5.2 Km N		
	Nearest State Highway/ National Highway	NH -7 Haridwar Dehradun Highway, 3.6km E		
	Nearest Airport	Jolly Grant Airport~8.30 km, N (aerial distance)		

	Nearest Post Office	Doiwala Post office ~4.0 km
	Nearest Police Station	Doiwala police station ~4 kms
	Medical Facilities	Shed Institute of Paramedical Science and Hospital- 5.32 Km N
	Education Facilities	Government Primary School- 1.9 Km NW Himalaya University- 1.3 Km N
	Seismic Zone	Zone-IV (As per 1893:2002)
	Water Body	Song River (0 km West Direction) Jakhan River (3.0 km East Direction)

### 3. PROJECT DESCRIPTION

The proposed project is for mining of Sand, Bajri and Boulder (Minor Mineral) by open manual method in riverbed over an area of 93.50 ha. with proposed production capacity of 2776950.00 TPA & The production as per replenishment study report 2018-2019 is 306488.094 TPA The total geological reserve is 3700683.36 tons and total mineable reserve is 3085500.00TPA. Ultimate depth of a bench will be 3.0 m. Riverbed block will be further replenished during rainy season. Minerals will be transported by trucks. It is widely used in construction, buildings, bridges, roads and other infrastructure. It is free from clay and non-sticky in nature. Total water requirement for the project is 48 KLD. Total man power requirement for the project is 565 numbers. The site facilities like canteen, rest-shelter, first aid facility, water and electricity supply etc. will be provided as per requirement. There is no litigation pending against this project.

### 4. DESCRIPTION OF THE ENVIRONMENT

Environmental data has been collected in relation to proposed mining for Air, Noise, Water, Soil, Ecology and Biodiversity. The generation of primary data as well as collection of secondary data and information from the site and surroundings was carried out during post monsoon season i.e. **October 2021 to December 2021.**

The EIA study is being done for the Mine Lease (core zone) and area within 10 Km distance from mine lease boundary (buffer zone), both of which together comprise the study area.

**Table 1-2: Baseline Status**

Attribute	Baseline Status
<b>1. Ambient Air Quality</b>	<p>Ambient Air quality Monitoring was carried out in total 8 locations and the maximum value for <b>PM<sub>10</sub></b> is observed as <b>62 µg/m<sup>3</sup></b> at Doiwala site and minimum value of <b>36 µg/m<sup>3</sup></b>.</p> <p>Ambient Air Quality Monitoring was carried out in total 8 locations and the maximum value for <b>PM<sub>2.5</sub></b> is observed as <b>38 µg/m<sup>3</sup></b> at Kansaro site and minimum value of <b>20 µg/m<sup>3</sup></b> observed.</p> <p>Ambient Air Quality Monitoring was carried out in total 8 locations and the maximum value for <b>SO<sub>2</sub></b> is observed as <b>15 µg/m<sup>3</sup></b> at Lal</p>

	<p>Kansaro and minimum value 5 <math>\mu\text{g}/\text{m}^3</math> is observed.</p> <p>Ambient Air Quality Monitoring was carried out in total 8 locations and the maximum value for <math>\text{NO}_2</math> is observed as 30 <math>\mu\text{g}/\text{m}^3</math> at Joly Grant and the minimum value of 15 <math>\mu\text{g}/\text{m}^3</math> is observed.</p>
<p><b>2. Noise Levels</b></p>	<p>Ambient noise levels were measured at 8 locations around the proposed project site. The noise levels recorded during the day time were from 40.6 Leq dB to 50.2 Leq dB respectively and level of noise during night time were from 36.5 Leq dB to 41.8 Leq dB respectively</p>
<p><b>3. Water Quality</b></p>	<p>Analyses of Ground water and Surface water were taken in the Post Monsoon Season October 2021 to December 2021.</p> <p><b>Ground Water</b>-Ground water monitoring was carried out in total 8 locations.</p> <ul style="list-style-type: none"> <li>• pH varies from to 7.19 to 7.61</li> <li>• Total Hardness varies from 172.00 to 460.00 mg/L.</li> <li>• Total Dissolved Solids varies from 286.00 to 572.00 mg/L.</li> <li>• Fluoride varies from 0.65 to 0.88 mg/L</li> <li>• Chloride varies from 52.00 to 162.00 mg/L</li> </ul> <p><b>Surface Water</b> - Surface Monitoring was carried out in 4 locations.</p> <ul style="list-style-type: none"> <li>• pH varies from to 7.27 to 7.52</li> <li>• Total Hardness varies from 128.00 to 146.00 mg/L.</li> <li>• Total Dissolved Solids varies from 235.00 to 270.00 mg/L.</li> <li>• Fluoride varies from 0.56 to 0.78 mg/L</li> <li>• Chloride varies from 46 to 68 mg/L</li> <li>• COD varies from 8 to 14 mg/L</li> <li>• BOD varies from &lt;4 mg/L</li> </ul>
<p><b>4. Soil Quality</b></p>	<p>Soil Monitoring was carried out in total 8 locations.</p> <ul style="list-style-type: none"> <li>• The data shows that value of pH ranges from 7.26-7.74.</li> <li>• Markham Grant shows maximum conductivity of 418 <math>\mu\text{mhos}/\text{cm}</math>, Jhabrawala village shows minimum conductivity of 353 <math>\mu\text{mhos}/\text{cm}</math>.</li> <li>• Values of CEC ranges from 12.84 meq/100g as lowest at Doiwala and 17.78 meq/100g as maximum at Chiddarwala.</li> <li>• Magnesium values ranges from 3.12 meq/100g as lowest at Joly Grant and 3.88 meq/100g as highest at Doiwala.</li> <li>• The average concentration of Nitrogen, Phosphorus and Potassium in the soil samples</li> <li>• varies from 13.38 to 17.39 mg/100gm, 0.57 to 0.89 mg/100gm and 8.25 to 10.70 mg/100gm.</li> </ul>

## b) Socio Economic Environment

Socio-Economic Impact Assessment (SEIA) refers to systematic analysis of various social and economic characteristics of human being living in a given geographical area (study area/impact area). The prime objective of SEIA is to identify and evaluate potential socio-economic and cultural impacts of a proposed development project on the lives & conditions of people, their families and communities.

### 1.1.1 Study Area

The study area defines the circle radius of 10 km around UKFDC Song-3 mining area at Markham Grant village in sub district Dehradun of Dehradun district, Uttarakhand. There are 44 identified habitations in the study area, 43 of which are villages and there is 1 town. In the study area there is 1 uninhabited village. The habitations of the study area are spread over the sub districts Hardwar, Rishikesh and Dehradun of district Dehradun, Uttarakhand. The nearest railway station to the mining area is Doiwala Railway station approximately 5.5 km in the East direction whereas the nearest airport is Jolly Grant Airport approximately 8.3 km in the North direction.

The habitations are shown in the map and the table below:

#### Habitations in the study area

Sl. No.	Village	Sl. No.	Village
1	Dhaulkhanda Range	24	Listrabad
2	Khandraiwala	25	Athhoorwala
3	Khairi Khurd	26	Chakbarkot
4	Khairi Kalan	27	Mauja Rani Pokhari
5	Sahab Nagar	28	Kanhar Wala
6	Bhattowala	29	Baksar Wala
7	Jogiwala Mafi	30	Sangatiya Walakhurd
8	Garhimay Chak	31	Bhogpur
9	Motichur Range	32	Lachhi Wala
10	Chak Jogi Wala	33	Badowala
11	Shiddar Wala	34	Baruwala Grant
12	Kasron Range	35	Missar Wala Kala
13	Mazri Grant	36	Missar Wala Khurd
14	Fatehpur Danda	37	Jauligrant
15	Jeevan Wala	38	Barkot Range
16	Rainapur Grant	39	Bhaglana
17	Hansuwala	40	Sangatiya Walakala
18	Doiwala	41	Kaluwala
19	Ghissar Pari	42	Thano Range
20	Markham Grant	43	Lachhiwala Range
21	Barkot Mafi		<b>Town</b>
22	Bhaniya Wala	44	Doiwala
23	Rani Pokhari Grant		

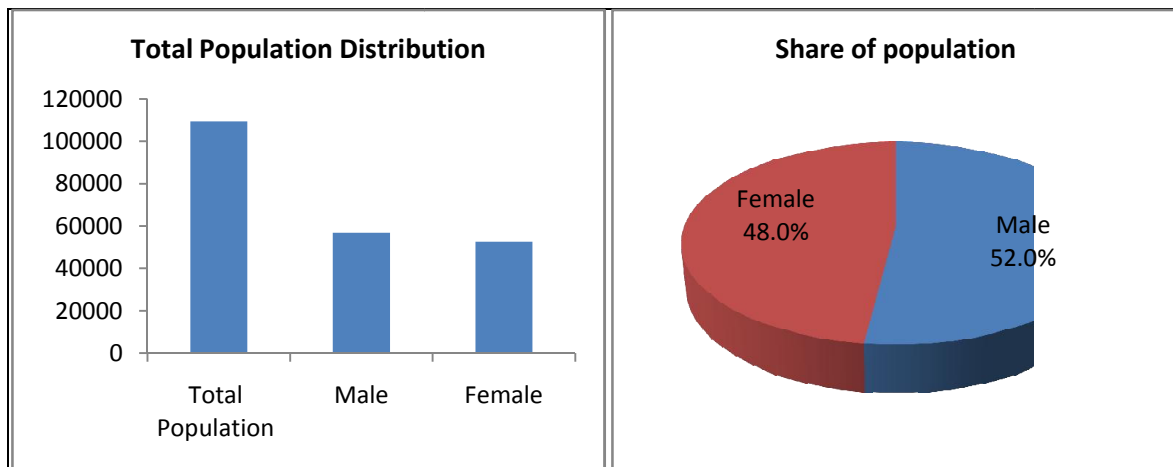
The demographic profile of the study area is given below:-

<b>S. No.</b>	<b>Description</b>	<b>Number</b>	<b>Percentage to Respective Total</b>
<b>1</b>	<b>Total Population</b>	<b>109346</b>	<b>100</b>
	Male	56762	52.0
	Female	52584	48.0
	Sex Ratio	926	
<b>2</b>	<b>Population (0-6 age group)</b>	<b>13485</b>	<b>100</b>
	Male	7240	53.7
	Female	6245	46.3
	Sex Ratio	863	
<b>3</b>	<b>Population- Scheduled Caste</b>	<b>11376</b>	<b>100</b>
	Male	6002	52.8
	Female	5374	47.2
	Sex Ratio	895	
<b>4</b>	<b>Population- Scheduled Tribe</b>	<b>1958</b>	<b>100</b>
	Male	1038	53.0
	Female	920	47.0
	Sex Ratio	886	
<b>5</b>	<b>Total Literates</b>	<b>79621</b>	<b>100</b>
	Male	44586	56.0
	Female	35035	44.0
	Gender Gap in Literates	12.0	
<b>6</b>	<b>Overall Literacy Rate</b>	<b>83.1</b>	
	Male	90.0	
	Female	75.6	
	Gender Gap in Literacy Rate	14.4	
<b>7</b>	<b>Total Workers</b>	<b>39619</b>	<b>100</b>
	Male	29073	73.4
	Female	10546	26.6
	Gender Gap in Work Participation	46.8	
<b>8</b>	<b>Main Workers</b>	<b>30350</b>	<b>100</b>
	Male	23857	78.6

	Female	6493	21.4
	Gender Gap in Work Participation	57.2	
<b>9</b>	<b>Marginal Workers</b>	<b>9269</b>	<b>100</b>
	Male	5216	56.3
	Female	4053	43.7
	Gender Gap in Work Participation	12.6	
<b>10</b>	<b>Household Industrial Workers</b>	<b>1556</b>	<b>100</b>
	Male	1013	65.1
	Female	543	34.9
<b>11</b>	<b>Total Agricultural Workers</b>	<b>7471</b>	<b>100</b>
	Male	5651	75.6
	Female	1820	24.4
<b>12</b>	<b>Cultivators</b>	<b>5188</b>	<b>100</b>
	Male	3791	73.0
	Female	1397	27.0
<b>13</b>	<b>Agricultural Labour</b>	<b>2283</b>	<b>100</b>
	Male	1860	81.5
	Female	423	18.5
<b>14</b>	<b>'Other Workers'</b>	<b>21323</b>	<b>100</b>
	Male	17193	80.6
	Female	4130	19.4

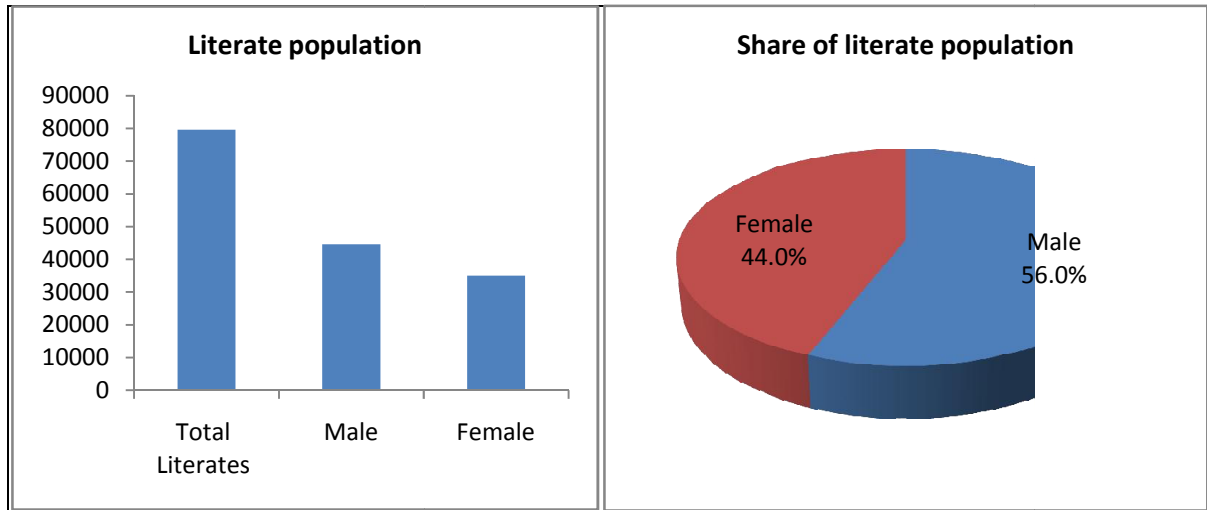
(Source: Primary Census Abstract, 2011)

### Total Population Distribution

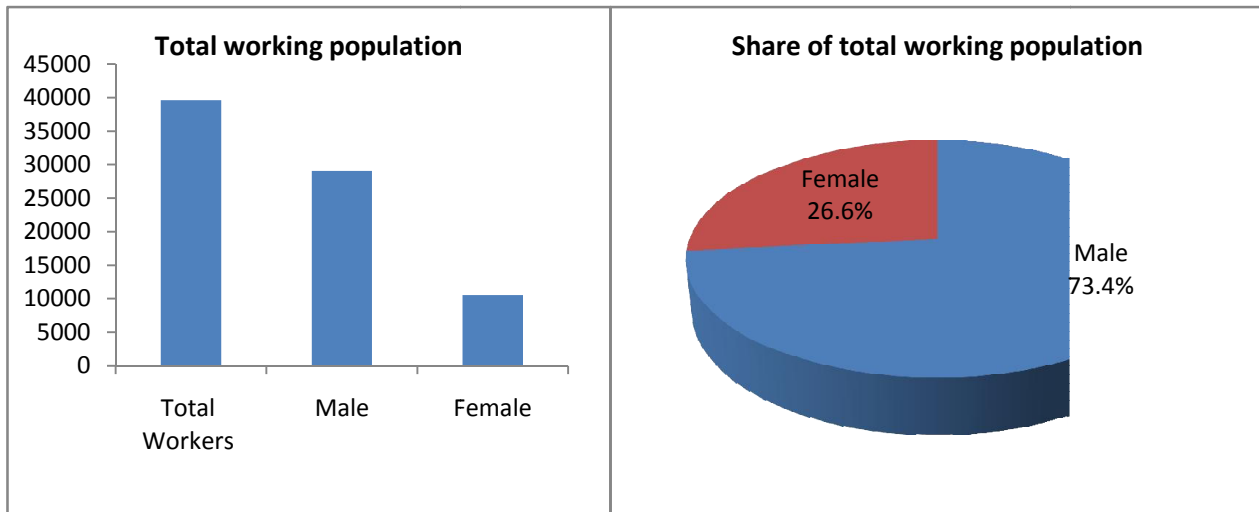




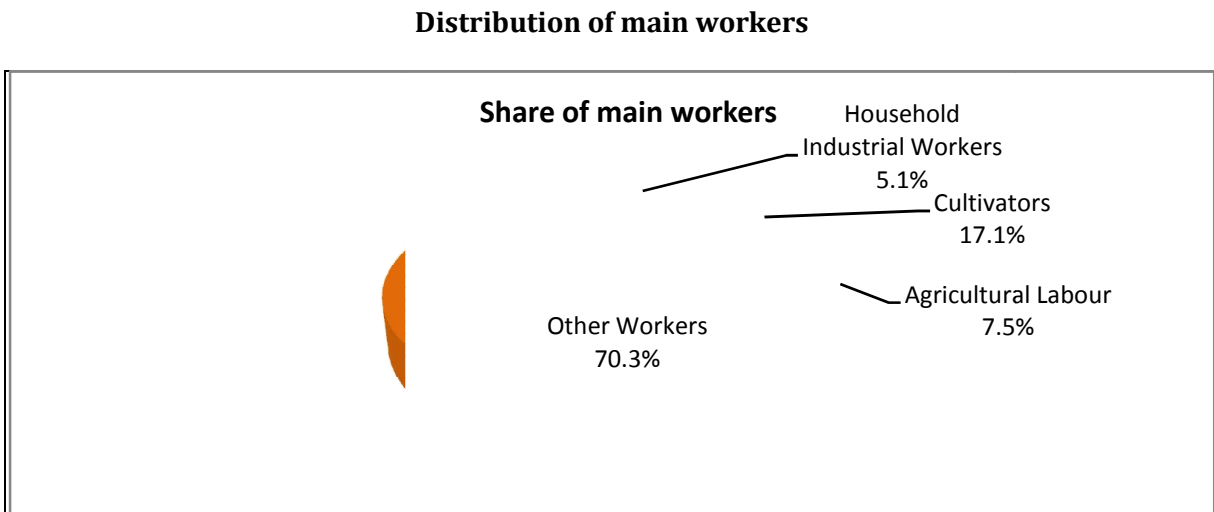
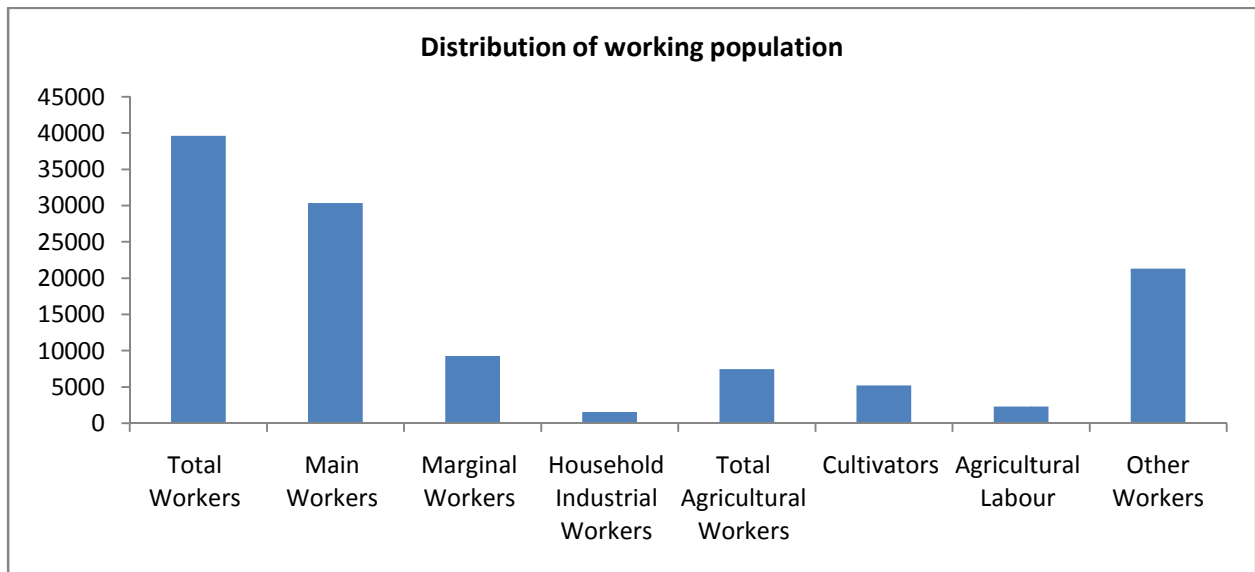
### Distribution of literate population



### Distribution of total worker



### Distribution of Working Population



**Scope of Employment Generation:-**

By running of this project, local people will be engaged in mining and transportation of minerals along with plantation work for coming 10 years. It is merely estimated that minimum possibility of direct employment generation through above mentioned works.

By following the environmental guidelines related to the project, this project would be beneficial for the people by generating employment opportunities. This project would lead to employment generation and improve the socio-economic status of the household in the study area habitations. The Corporate Environment Responsibility will prove beneficial for the study area habitants and will lead to improvement in their health and living conditions.

**(c) Biological Environment**

The mine site Song-3 falls in the both side of the forests area *i.e.*, Kansaro Reserve Forest, Ramgarh Reserve Forest, Lachhiwala Reserve Forest, Thano Reserve Forest, Barkot Reserve Forest. Along the

river side there are found sparse vegetation. The vegetation around project site is represented by scattered *Dalbergia sissoo* trees with stunted growth and *Ricinus communis*, *Murraya koengii*, and *Macranga pustulata* among others which are very sparsely distributed.

Most dominant species observed during site survey of the study area are *Dalbergia sisso* (Shisham), *Macaranga pustulata* (Blistering Macaranga), *Shorea robusta* (Sal), *Lannea coromandelica* (Indian Ash Tree), *Azadirachta indica* (Neem), *Murraya koenigii* (Kari Patta), *Mallotus philippensis* (Rohini), *Ricinus communis* (Castor bean), *Populus sp.* (Poplar), *Ficus spp.*, *Euclyptus sp.*, and *Schleichera oleosa* (Gum lac Tree) etc. The shrubby vegetation is represented by *Lantana camara*, *Hyptis suaveolens*, *Ipomoea sp.*, *Opuntia sp.* and *Senna occidentalis* (Kasunda) etc. The Common herbs which were observed at project site – *Alternanthera sessilis* (Garundi), *Ageratum conyzoides* (Jangli Pudina), *Parthenium hysterophorus* (Gajar Ghas), *Sida rhomboidea* (Sahadeva), *Oxalis corniculata* (Amrul), and *Cyperus sp.* In floodplain area *Ipomoea sp.* is dominating.

### **Wildlife Conservation Plan**

A primary ecological survey of the project site and study area in 10km radius was carried out during the months of **Oct to Dec 2021** assessment of Biodiversity. Based on field observations and discussion with forest officers, it has been found that six faunal species are falling in Schedule-I category in the study area, out of which five are mammals and one species is Avifauna. Name of these species are given below in **Table 1-3**.

**Table 1-3: Faunal species falling in Schedule-I category (As per Indian Wildlife Protection Act 1972) in the study area**

<b>S.No</b>	<b>Class</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>IUCN/IWPA Status</b>
1	Mammalia	<i>Elephas maximus</i>	Asian Elephant	EN/I
2	Mammalia	<i>Manis crassicaudata</i>	Indian Pangolin	EN/I
3	Mammalia	<i>Panthera tigris tigris</i>	Bengal Tiger	EN/I
4	Mammalia	<i>Prionailurus bengalensis</i>	Leopard Cat	LC/I
5	Mammalia	<i>Panthera pardus</i>	Leopard	VU/I
6	Aves	<i>Pavo cristatus</i>	Indian Peafowl	LC/I

Detailed conservation plan along with Budget is attached as Annexure XV.

## **5. ANTICIPATED ENVIRONMENT IMPACT AND MITIGATION MEASURES**

### **(a) AIR ENVIRONMENT**

The air quality in the mining area depends upon the nature and concentration of emissions and meteorological conditions.

#### **Anticipated Impact**

- Mining Operation carried out by opencast manual & semi mechanized method, will generate dust particles due to various activities like Loading & Unloading of sand, and Transportation.
- The impact on ambient air quality in the area surrounding the mining area depends upon the pollutant emission rate and prevailing meteorological conditions. As it is an open cast semi

mechanized mine, particulate Matter (Dust) of various sizes is the only pollutant of any significance.

### **Mitigation Measures**

- The speed of trucks on haul road will be controlled as increased speed increases dust emissions. Overloading of transport vehicles will be avoided.
- Transportation of minerals will be done by covered vehicles.
- Proper mitigation measures like water sprinkling will be adopted to control dust emissions.
- Masks will be provided to workers.
- To control the emissions regular preventive maintenance of equipment will be carried out on contractual basis.
- Green belt of adequate width will be developed along the approach road of project site.

### **(b) NOISE ENVIRONMENT**

The area generally represents calm surroundings. There is no heavy traffic, industry or noisy habitation in the area. As the project is proposed for open cast manual mining method, there will be no blasting or drilling activities.

### **Anticipated Impact**

- The source of Noise pollution will be the vehicular movements.
- Noise generated by manual extraction of river bed material, using shovels, crowbars etc., will be negligible.

### **Mitigation Measures**

- Proper maintenance of all transportation vehicles will be carried out which help in reducing noise during operations. No other equipment except the transportation vehicles will be allowed.
- Noise generated by hand equipment will be negligible and will not cause detectable adverse impact.
- Awareness will be imparted to the workers about the permissible noise levels and maximum exposure to those levels.

### **(c) WATER ENVIRONMENT**

The impact of mining project on groundwater hydrology and surface water regime are site specific and depends upon the characteristics of the mineral, hydrogeology and requirement of groundwater for other uses.

### **Anticipated Impacts**

- The Mining in the riverbed area may cause the groundwater contamination due to the intersection of the water table.
- Waste water disposed from the mining activity may contaminate the surface water.
- River recharges the ground water; excessive mining may reduce the thickness of natural filter materials (Sediments), through which the ground water is recharged.

### **Mitigation Measures**

- The maximum depth of mineral extraction will not exceed 3.0 metre depth.
- Mining will be done above the water table as well as river bed water level, therefore much impact on water regime is not accepted.
- Proper analysis/Monitoring will be done to check the ground water.
- Need of water for drinking and sprinkling purpose will be met by tanker supply.

- Ground Water extraction is not envisaged in entire process of mining.

#### **(d) LAND ENVIRONMENT**

Impact assessment study on land environment can be done by considering land use pattern/land cover, topography, drainage pattern and geological features of the mine site as well as the study area.

##### **Anticipated Impact**

- Mining activity will impact river bed topography by formation of excavation voids.
- River bed mining may bring some change in topography at the nearby area of the mine lease.
- Stacks of solid waste generated from mining activity may hinder the flow of water in monsoon season.

##### **Mitigation Measures**

Adopting suitable, site specific mitigation measures can reduce the degree of impact of mining on land. Some of the land-related mitigation measures are as follows:-

- Excavated pits will get replenished annually in monsoon itself & will be restored to original
- Mining work will be executed only by manual open cast method and the depth of pits will be restricted up to 3.00 meter or the river water level whichever is less.
- There will be no generation of solid waste in mining activities, hence dumping of solid waste is not anticipated. Little bit volume of **mineral remaining** may be generated, which will be used in back filling of voids created in mining work.
- Mineral will be mined after leaving the 25% width as a safety zone on both sides of the riverbed.

#### **(e) SOCIO ECONOMIC**

##### **Anticipated Impact**

- Impact on the Demographic Composition
- Impact on Employment Opportunities

#### **(f) SOLID WASTE**

##### **Anticipated Impact**

- As there is practically no soil cover observed in the river bed, this RBM project does not involve any waste generation. Thus, no waste dump sites are needed for the project. However, there will be 565 workers on site.
- No municipal waste other than domestic sewage shall be generated.

##### **Mitigation Measures**

- Only clayey soil generated during mining process which will be used for the plantation.
- Domestic sewage will be disposed off into septic tanks followed by soak pits

#### **(g) TRAFFIC ENVIRONMENT**

##### **Anticipated Impact**

- The increase in traffic density will lead to the air pollution and it cause the effect on human health like damage to lung tissue, cancer, asthma etc.
- The movement of vehicles cause the noise pollution

## **Mitigation Measures**

- Vehicles with PUC certificate will be hired. Regular maintenance of vehicles will be compelled to ensure smooth running of vehicles.
- Regular health checkups camps will be organised for the safety purpose of the workers.
- Unnecessary blowing of horn will be avoided.
- Transportation of minerals will be done by covered vehicles.
- Adequate water sprinkling will be carried out during mining and transportation of minerals to suppress the dust.
- Plantation of fast growing and broad leaved species will be done along the approach road, which will absorb the dust particles.

## **Analysis of alternatives**

No alternative site had been considered since proposed Capacity Enhancement is in existing sand, bajri and boulder mine and hence it is site specific.

## **6. ENVIRONMENT MONITORING PROGRAMME**

UKFDC has formulated well laid-out Environmental Policy, wherein preservation of environment has been accorded a most strategic and prime position. The various protocol procedures in connection with communication channels upwards and downwards, for dealing with violations or departures in environmental standards involvement of Board of Directors as well as shareholders about such incidences, etc, have been described in detail in chapter VI.

Regular monitoring of environmental parameters of immense importance to assess the status of environment during project operation. With the knowledge of baseline conditions, the monitoring programme will serve as an indicator for any deterioration in environmental conditions due to operations of the project, which will enable to take suitable mitigation steps in time to safeguard the environment

## **7. ADDITIONAL STUDIES**

The possible risks in the case of river bed mining project are bank erosions, floods, accidents due to uncontrolled mining work. At present the mining is proposed in a mild sloping forest land in river beds. Pits will be created of limited depth 3.0 m. Hence, the chance of failure of pit slope not seems to be appeared.

## **8. PROJECT BENEFIT**

The proposed project brings overall improvement in the locality, neighbourhood and the state by bringing employment generation at local level and revenue to state government. Hence it will be helpful for the economic growth and support to enhance quality of life through employment

## **9. ENVIRONMENTAL COST BENEFIT ANALYSIS**

It is considered desirable that the mining project may be implemented. Project cost for the proposed Mining project having area of 93.50 ha falling in Village-Markham Grant, Tehsil & District-Dehradun, Uttarakhand is Rs. 6.17 Crore.

## **10. ENVIRONMENTAL MANAGEMENT PLAN**

As per Above discussion there is no major impact on the environment due to mining except fugitive emission in the form of dust generated during handling of mineral. The adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Plantation development will be carried out along the approach roads, around Govt. buildings etc. It will prove an effective pollution mitigate technique, and help avoid soil erosion during monsoon season. Employment opportunities will be provided to the locals only as providing extraction of minerals from the mine site is the only prevailing occupation for them for their livelihood. A budget of Rs. 95.7 Lakhs (Capital Cost) & Rs. 36.92 Lakh (Recurring Cost) under EMP head are incurred by Project Proponent.

## **11. CONCLUSION**

The proposed project will provide the employment to local people in different activities such as mining, transportation and plantation activities. The project activity will not have any major impact on the environment. At post mining stage of proposed project, the existing land use will remain same i.e. riverbed, and it will get replenished yearly during monsoon season. Also the extracted sand, Bajri and Boulder will be used in construction activities like building, infrastructure facilities. The Corporate Environment Responsibility initiatives will have a positive impact on socio economic environment of the region.