

EXECUTIVE SUMMARY

For

SIRURU SAND BLOCK

Lease Area of 5.26 Ha (13.00Acres)

At

Hirehalla River Bed

Adjacent to Sy.No. 1, 2, 10, 11, 12, 13, 14, 15, 16, 17,18, 200, 201, 202,

203, 204, 205

Siruru Village

Kukanur Taluk

Koppal District

Karnataka

By

Hutti Gold Mines Co. Ltd.,

Hutti-584115

Raichur District

Karnataka State

(Project termed under Schedule 1(a) Mining of Minerals 'B1' category as per EIA

Notification 2006 and its Amendments thereafter and O.M issued vide F.No. L-

1011/175/2018-IA-II (M), dated: 12.12.2018)

EIA Consultant

HUBERT ENVIRO CARE SYSTEMS PRIVATE LIMITED, CHENNAI

February 2022

1 SUMMARY & CONCLUSION

1.1 Introduction

M/s. Hutti Gold Mines Co. Ltd., has applied for Environmental Clearance for extraction of Ordinary Sand from Hirehalla River bed at Siruru Sand Block having lease area 5.26 Ha (13.00Acres) located in Adjacent to Sy.No. 1, 2, 10, 11, 12, 13, 14, 15, 16, 17,18, 200, 201, 202, 203, 204, 205 of Siruru Village,Kukanur Taluk, Koppal District Karnataka State. Total mineable reserves are estimated at proposed sand block is approximately 27,146 Metric Tonnes per annum out of which the saleable ordinary sand will be 24,431 MT which is 90% of the Mineable reserves.

The Scheme of Quarry got approval by the Office of the Deputy Director/Senior Geologist, Department of Mines and geology, Koppal letter vide MG004S210000091/5505 to 5506 dated 22.01.2021.

As this is a mine category with the mining lease area of $<50 \text{ ha} \geq 5 \text{ ha}$, it is categorized as 'B1'. Hence, EIA, EMP along with Public Hearing has to be conducted for obtaining Environmental Clearance (EC) from State Environmental Impact Assessment Authority. The application to grant of TOR for the process of obtaining prior Environmental Clearance for the proposed project was considered by the KSEAC in its 267th SEAC meeting held on 29.09.2021, for determination of the Terms of Reference (ToR) for preparation of the Environmental Impact Assessment (EIA) report. The Committee has suggested specific Terms of Reference (ToR) for preparation of the EIA report. The area is a freshly notified area for which mining plan was approved by by DMG.

1.1.1 Location of the Project

The project lease area of Siruru Sand Block Sand mining is about 5.26 Ha (13.00Acres) located Adjacent to Sy.No. 1, 2, 10, 11, 12, 13, 14, 15, 16, 17,18, 200, 201, 202, 203, 204, 205 of Siruru Village,Kukanur Taluk, Koppal District Karnataka State. The area is located in Survey of India Topo Sheet No. 57 A/3, bounded by Latitude N $15^{\circ}29' 40.5''$ - $15^{\circ}29' 52.2''$ and Longitude E $76^{\circ}05' 17.3''$ - $76^{\circ}05' 45.9''$ on WGS 1984 datum.

The nearest road from the project site is Tipparasanahalu-Sirur-Manglur which is about ~ 0.22km (S) from the project site. The Nearest Railway Station is Bhanapur Railway Station line which is about ~ 13.32km (SSW) from the Project site. The National Highway (NH-367) is located at about ~ 9.57km (WSW) from the project site. The State Highway SH-130 is about ~ 8.12km(N) from the lease area.

Table- 1 Salient Features of the Project Site

Survey No.	Adjacent to Sy.No. 1, 2, 10, 11, 12, 13, 14, 15, 16, 17,18, 200, 201, 202, 203, 204, 205
Village	Siruru Village
Taluk and District	Kukanur Taluk & Koppal District
State	Karnataka State
Toposheet No.	57 A/3
Latitude	15 ⁰ 29' 40.5" N to 15 ⁰ 29' 52.2" N
Longitude	76 ⁰ 05' 17.3" E to 76 ⁰ 05' 45.9"E
Current Quarry Status	It is a fresh lease in the fresh quarry
Extent Area	5.26 Ha (13.00Acres)
Proposed Capacity	27,146 TPA
Quarry Plan	Quarry plan approved by the Office of the Deputy Director/Senior Geologist, Department of Mines and Geology(DMG), Koppal letter vide MG004S210000091/5505 to 5506 dated 22.01.2021

1.2 Project Description

1.2.1 Method of Quarrying

An open cast quarrying by semi-mechanized method will be adopted to operate the quarry. Annual production will be 27,146 TPA. The Crawler Excavator, Back hoe loaders and Centrifugal system will be used for digging and loading activities.

1.2.2 Anticipated Life of the mine

Based on replenishment the life of mine will depend however the lease will be granted for 5 years only and depth restricted to 0.5m from the surface of the river bed only.

1.2.3 Conceptual Quarry Plan

Based on reserves of River Sand at Production capacity of 1,35,730 Tonnes will be excavated in the River Sand for the 5 years plan period, thus the life of the mine in this case is for 5 year, and the following points are considering.

1. Extent of mineralization
2. Techno-economical depth of ore persistence
3. From the point of view of depicting / sand replenishment
 - a) Total sand resource
 - b) Estimating sand reserves.

1.2.4 Waste Generation & Disposal

There will not be any mineral rejects or waste from the quarry except some pebbles of 10%.

1.2.5 Water Requirement & Source

Total water requirement for the project will be 4.00 KLD, Requirement is met by procurement of water from the Private Tankers

1.2.6 Manpower Requirement

The said quarry provides direct employment to 15 people and generates indirect employment for several hundred people. Most of the directly employed manpower falls under skilled category. Preference will be given to the local people as per their eligibility.

1.2.7 Site Infrastructure

The Quarry site is having provisions of canteen, first-aid center etc. Quarry office is well connected with wireless and telephone, internet & e-mail facilities for communication. The quarry is provided with a workshop to undertake repairs and regular maintenance of mining machinery/trucks deployed.

1.3 EXISTING ENVIRONMENTAL SCENARIO

1.3.1 Baseline Environmental Studies

Baseline environmental studies were carried out by HECS within 10 km radius of the River Sand mining area to assess the existing environmental scenario in the area. For the purpose of EIA studies, quarry lease area of River Sand quarry was considered as the core zone and area outside the quarry up to 10 km radius was considered as buffer zone. The baseline environmental monitoring for various components, viz. Air, Noise, Water, Land was carried out during Post Monsoon season i.e. **October 2021 to December 2021** in the study area covering 10 km radial Distance from the River Sand quarry.

1.3.2 Meteorology & Ambient Air Quality

Table- 2 Meteorological Data for the Study period

S. No	Parameter	Observation
1.	Temperature	Max Temperature : 33°C Min Temperature : 15 °C Avg Temperature : 25.13 °C
2.	Average Relative Humidity	69.55
3.	Average Wind Speed	2.51
4.	Predominant Wind Direction during study period	North East

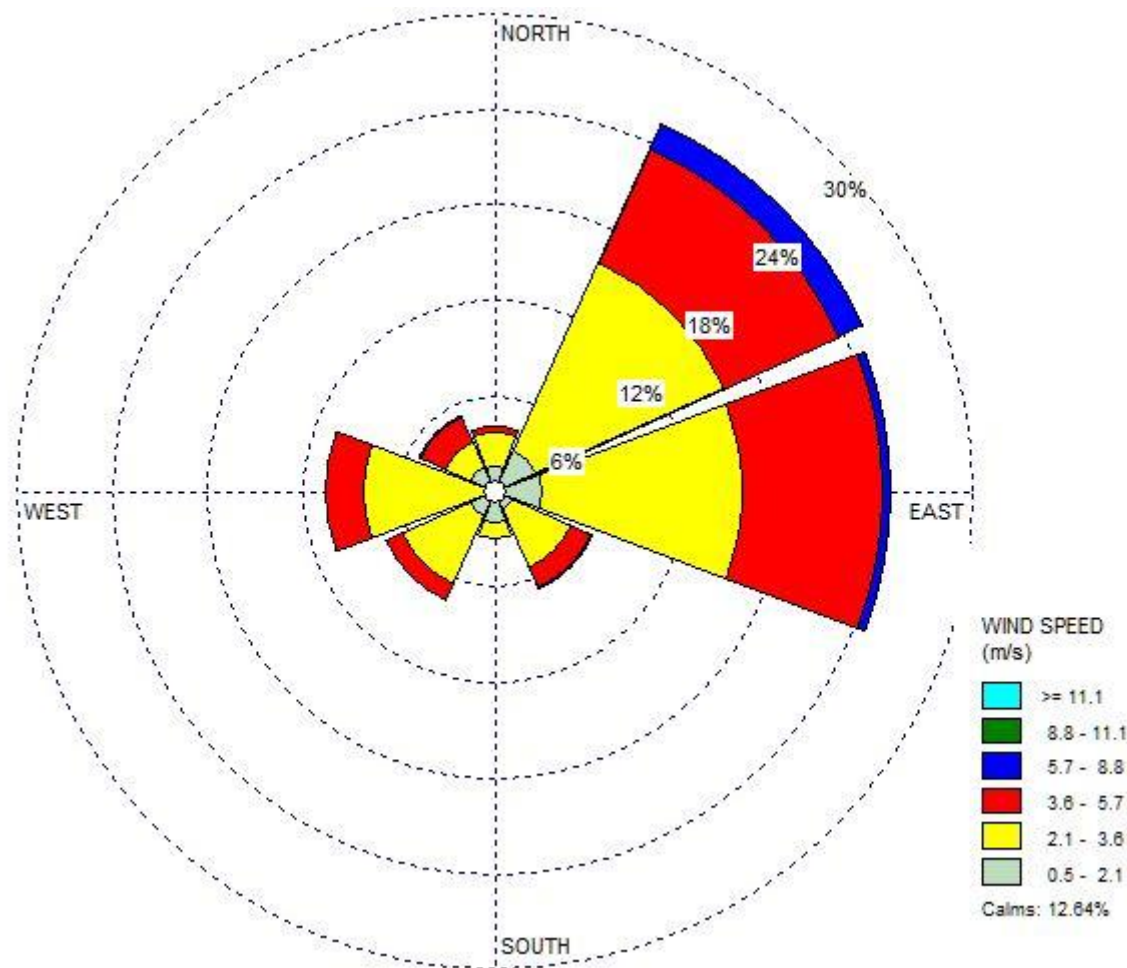


Figure- 1 Wind rose diagram for the Study Period (October 2021-December 2021)

1.3.3 Ambient Air Quality Status

The status of ambient air quality within the study area was monitored for Post monsoon season during Oct 2021 to Dec 2021 at 8 locations including the River Sand Quarry area and in nearby villages. The locations were selected based on the meteorological conditions considering upwind and downwind directions. The levels of Respirable Particulate Matter (PM₁₀), Fine Particulates (PM_{2.5}), Sulphur Dioxide (SO₂), and Oxides of Nitrogen (NO_x) were monitored.

The ambient air quality has been monitored at 8 locations for 12 parameters as per NAAQS, 2009 within the study area. The baseline levels of PM₁₀ is 47.14 to 53.69 $\mu\text{g}/\text{m}^3$, PM_{2.5} is 27.08 to 34.66 $\mu\text{g}/\text{m}^3$, SO₂ is 7.19 to 12.4 $\mu\text{g}/\text{m}^3$, NO₂ is 15.65 to 25.39 $\mu\text{g}/\text{m}^3$, all the parameters are well within the National Ambient Air Quality Standards for Industrial, Commercial and Residential areas at all monitoring locations during the study period from October 2021 to December 2021. From the above results, it is observed that the ambient air quality with respect to PM₁₀, PM_{2.5}, SO₂, and NO_x at all the monitoring locations is within the permissible limits specified by CPCB.

1.3.4 Ambient Noise Levels

Ambient noise level monitoring was carried out at the 8 monitoring locations; The observations of day equivalent and night equivalent noise levels at all locations are:

- In residential areas day time noise levels varied from 47.3 dB(A) to 50.3 dB(A) and night time noise levels varied from 40.1 dB(A) to 42.5 dB(A) across the sampling stations. The field observations during the study period indicate that the ambient noise levels is within the prescribed limit by CPCB (55 dB(A) Day time & 45 dB(A) Night time).

1.3.5 Surface and Ground Water Resources & Quality

1.3.5.1 Water Resources

Drainage pattern is observed in the lease area. Due to quarrying there is no impact on river flows, during dry season and dry time only planning to excavate sand from the surface of the river bed, with the exclusion of monsoon season.

Table- 3 Distance & Direction of Pond/Lake and Canal within the 10km Radius

River	Distance (Km)	Direction
Hirehalla River	Site is on the surface of the River bed	-

1.3.5.2 Water Quality

The existing status of groundwater and surface water quality was assessed by identifying 8 ground water (Bore wells/dug wells) samples in different villages and 8 surface water samples.

1.3.5.3 Ground Water Quality

The physico-chemical characteristics of groundwater with the IS-10500 standards.

- The ground water results of the study area indicate that the pH range varies between 6.8 and 8.1. It is observed that the pH range is within the permissible limit of IS 10500:2012.
- The Total Dissolved Solids range of the collected ground water sample is varied between 657 mg/l – 1133 mg/l. All the samples are within the permissible limit of IS 10500: 2012.
- The acceptable limit of the chloride content is 250mg/l and permissible limit is 1000 mg/l. The chloride content in the collected ground water samples in the study area ranges between 154.3 mg/l – 349.5 mg/l. It is observed that all the samples are within the permissible limit of IS 10500:2012.
- The acceptable limit of the sulphate content is 200mg/l and permissible limit is 400mg/l. the sulphate content in the collected ground water samples in the study area is varied between 39.4 mg/l – 95.1 mg/l. It is observed that all the samples are meeting the acceptable limit of the IS 10500: 2012.

- The Total hardness ranges is between 256 mg/l – 450 mg/l for ground water samples. It is observed that all the samples are within the permissible limit of the IS 10500: 2012.
- It is observed that all ground water sample collected within the study area are meeting the drinking water standards IS 10500:2012.

1.3.5.4 Surface Water Quality

- pH in the collected surface water samples varies between 6.28 to 8.26 where all the samples are within the limit of IS 2296:1992. .
- The Total Dissolved Solids (TDS) value of collected surface water sample ranges from 446 mg/l to 1093 mg/l.
- The Total hardness value of the collected surface water sample ranges between 135.9 mg/l to 419.1 mg/l .
- BOD value of the collected surface water sample ranges from 3.8 mg/l to 14.2 mg/l .
- COD value of collected surface water varies from 25.1 to 96.2 mg/l .

The concentration of heavy metals like As, Cd, Cr, Pb, Mn, Hg, Ni and Se are within the limits of IS 2296:1992.

1.3.6 Land use Land Cover classification

The Land Cover classes were extracted following a Visual interpretation method or on-screen digitization of the Resource Sentinel-2A and Sentinel-2B sensor- Sentinel-2 image has 10 m spatial resolution. These were later verified by using SOI top sheet and Google Earth imagery. Polygon layers for each class were digitized and the respective areas were calculated

1.3.7 Soil Quality

Summary of analytical results

- The pH of the soil samples ranged from 6.94 to 8.13 .
- Conductivity of the soil samples ranged from 138 to 249 $\mu\text{mhos/cm}$.
- Nitrogen content in the collected soil samples ranged from 149.6 mg/kg to 316 mg/kg.
- Phosphorous content ranged from 7.6 mg/kg to 32.8 mg/kg.
- Potassium content ranges from 99.5 mg/kg to 284.2 mg/kg.

1.3.8 Biological Environment

Flora: Floral study survey was made to assess the existing plant species in all accessible areas within the 10 km radius by the crisscross method of field exploration. The local flora was identified by their morphological observation, such as its size and shape of the leaf, flowers, fruits and their bark features of stem and also documented their habitat viz. Trees, Shrubs, Herbs, Grasses and Climbers etc. The plants which were not identified in the field were collected, brought to the laboratory and identified using standard herbarium references.

There is no national park, wildlife sanctuary, biosphere reserve within 10 km radius of the study area. No critically endangered, endangered, threatened or rare species of wildlife in the buffer zone.

Fauna

No major fauna observed in core zone. Only some egrets, herons are observed in the plant area. There are no endangered fauna observed in the proposed plant area. An extensive field studies were conducted in pre monsoon season to know the present status of fauna of the study area. Apart from that, secondary data was collected by mode of interaction of local elderly people and research article.

1.3.9 Socio-economic Environment

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data from census 2011 & village directory 2001. Summary of the socio-economic status of the study area is given in **Table - 4**.

The Socioeconomic profile of the study area shows that more than half of people in the study area work in other sector. They have good educational infrastructures and the people in the study area are well connected to the educational infrastructures. The average literacy rate of the study area is 60.57 %. The people in the study area are well connected to Government primary health centers and Primary health sub-centers.

Table- 4 Summary of Socioeconomic indicators within the study area

S.No	Particulars	Study Area	Unit
0-5Km			
1.	Number of villages and Town in the Study Area	7	Nos.
2.	Total Households	2027	Persons
3.	Total Population	10568	Persons
4.	Children Population (0-6 Years Old)	1510	Persons
5.	SC Population	2778	Persons
6.	ST Population	974	Persons
7.	Total Working Population	5760	Persons
8.	Main Workers	2905	Persons
9.	Marginal Workers	2855	Persons
10.	Cultivators	1323	Persons
11.	Agricultural Labourers	3307	Persons
12.	Household Industries	100	Persons
13.	Other Workers	1030	Persons
14.	Literates population	6061	Persons
15.	Illiterates population	4507	Persons
5-10Km			
16.	Number of villages and Town in the Study Area	16	Nos.
17.	Total Households	6170	Persons
18.	Total Population	31701	Persons

19.	Children Population (0-6 Years Old)	4162	Persons
20.	SC Population	5391	Persons
21.	ST Population	3184	Persons
22.	Total Working Population	15885	Persons
23.	Main Workers	11873	Persons
24.	Marginal Workers	4012	Persons
25.	Cultivators	2971	Persons
26.	Agricultural Labourers	8222	Persons
27.	Household Industries	653	Persons
28.	Other Workers	4039	Persons
29.	Literates population	19542	Persons
30.	Illiterates population	12159	Persons

1.4 Anticipated Environmental Impacts and Mitigation Measures

1.4.1 Impact on Topography, Drainage & Landuse

The changed topography will alter the drainage within the Quarrying lease area. However, there will not be any changes in the topography or drainage pattern outside the Quarrying lease area. At the end of Quarrying activities after reserves are exhausted, the area will be restored to an acceptable level of self-sustaining eco-system.

No surface water will be utilized for Quarrying operation. Moreover, there would not be any discharge from quarry into the surface water body as no process waste water generation in the quarry and allied activities. Hence, there would not be any impact on surface water.

Only domestic effluent will be generated from the quarry area and rest shelter. The domestic effluent is discharged in Mobile STP. Besides, there will be no toxic element in the quarried out material, which may contaminate ground/ surface water. It is, therefore, apparent that there will be negligible impact of Quarrying on the surface water regime.

With only 27,146 MT of proposed production per annum, at the end of lease period, the lease area utilization for the mentioned Quarrying and allied activities shall be 13 Acre.

The potential adverse impact of opencast River Sand Quarrying will be in the form of change in land use pattern at the place excavation of sand and the pit will be fulfilled replenishment sand during course of time.

1.4.2 Ambient Air Quality

1.4.2.1 Impacts on Air Quality

To assess the impact of the Sand mining, screening and transportation operations from the River Sand Quarry, air quality modeling was carried out for the mining operations, mineral screening and the transportation activities. The modeling was carried out using MoEFCC/CPCB approved

Lakes AERMOD model. The predicted maximum ground level concentrations for PM10, PM2.5, SO2 and NOx at baseline air quality monitoring locations in controlled state are as follows:

The total increase in concentrations above baseline status to estimate the percentage increase is summarized in **Table - 5**.

Table- 5 Total Maximum GLCs from the Mining Emissions

Pollutant	Max. Base Line Conc. ($\mu\text{g}/\text{m}^3$)	Estimated Incremental Conc. ($\mu\text{g}/\text{m}^3$)	Total Conc. ($\mu\text{g}/\text{m}^3$)	NAAQ standard	% contribution of concentration above Base line
PM ₁₀	64	26	90	100	40.63
PM _{2.5}	41	16	57	60	39.02
NO _x	30	18	48	80	60.00

1.4.2.2 Air Pollution Control Measures

- Water sprinkling on haul roads at regular intervals.
- Regular maintenance of haul road.
- Haul road will be kept wide and compact.
- All hauling units (tippers) would be covered by multi cap mechanism to avoid spillage.
- Water sprinkling during loading operations to control dust emissions.
- Regular maintenance of vehicles and machinery.
- Provision of Dust masks to workmen.
- Plantation of thick green belt around lease boundary i.e. along 7.5m safety zone.
- Good housekeeping would be practiced to control air pollution.

1.4.3 Noise Impact due to Working Environment

High noise levels pose a major health risk to the quarry workers. If the magnitude of noise exceeds the tolerance limits, it is manifested in the form of discomfort leading to annoyance and in extreme cases to loss of hearing. Detrimental effects of noise pollution are not only related to sound pressure level and frequency, but also on the total duration of exposure and the age of the person. The adverse effects of high noise levels on exposed workers may result in:

- Annoyance;
- Fatigue;
- Temporary shift of threshold limit of hearing;
- Permanent loss of hearing; and
- Hypertension and high blood cholesterol, etc.

The following are the sources of noise:

- Operation of JCB, Trucks/tippers.
- Loading and unloading
- Vehicular Movement.

The noise level is predicted with the help of CUSTIC 3.2 English which provides noise level contours at various receptors obtained after running the model during operational phase and the results are indicating that predicted noise levels are within the stipulated guidelines.

1.4.3.1 Proposed Noise Control Measures

- Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- Provision of sound insulated chambers for the workers deployed on machines producing higher levels of noise.
- Green Belt/Plantation will be developed around the mining activity area and along haul roads will act as acoustic barrier.
- Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators and workers.
- Periodical monitoring of noise will be done.

1.4.4 Water Resources & Quality

1.4.4.1 Impact on Water Resources & Quality

The proponent will quarry River Sand only in the area, and it does not contain any toxic material. Also, there is no use of chemicals or hazardous substances in the mining process. Thus, ground water pollution is not envisaged due to the mining operations. Pre monsoon water level observed in study area is 4.5 to 16.50 mbgl. Pre monsoon water level varies in the study area ranges from 1.15 to 16.24 mbgl.

1.4.4.2 Proposed Water Conservation & Water Pollution Control Measures

The daily water requirement in the quarry is about 4 KLD. The source of Water required for dust suppression and plantation will be utilized from water tankers from nearby villages and water for domestic use will be supplied by tankers. Thus, ground water will be used only for drinking and domestic use. There is no water requirement for mineral processing in the quarry. Also, there is no process effluent generation in the quarry.

The following measures will be taken up to reduce this load:

- No waste water will be generated during Quarrying operation.
- For the disposal of domestic waste water generated from quarry office, mobile STP will be

provided.

- Fresh water requirement will be minimized.

1.4.5 Solid Waste Generation & Management

There is no such reduction of waste / mineral reject processing possibilities are proposed during plan period. There is no proposal of dumping during the proposed ensuing quarrying period, & concurrent backfilling is proposed.

1.4.6 Biological Environment

During the course of Quarrying, the management will practice scientific method of Quarrying with proper Environmental Management Plan including pollution control measures especially for air and noise, to avoid any adverse impact on the surrounding wildlife. Already 7.5 m safety belt – green belt maintained all along the periphery of the lease boundary.

1.4.6.1 Proposed Biological Environment Conservation Measures

- Periodic maintenance of mineral transport road.
- Covered Transport of stone quarry to consuming industry.
- Monitoring of dust fall at agriculture land located nearby the Quarrying area.
- During the course of Quarrying, the management will practice scientific method of Quarrying with proper Environmental Management Plan including pollution control measures especially for air and noise, to avoid any adverse impact on the surrounding wildlife.

1.4.7 Socio-economic Environment

- There is no habitation or private land in the River Sand quarry. There is no rehabilitation and resettlement involved in the project.
- The said quarry provides direct employment to 15 people and generates indirect employment. Preference will be given to the local people as per their eligibility.
- The existing infrastructure facilities are sufficient to cater the needs of the River Sand quarry.
- However, the quarry management will take efforts as a part of CER for improvement in civic amenities like sanitation, drinking water facilities, transport road, etc in the nearby villages.

1.4.8 Environmental Monitoring Program

An Environmental Management Cell (EMC) will be established in the quarry under the control of Mines Manager. The EMC will be headed by an Environmental Officer having adequate qualification and experience in the field of environmental management. Regular and periodic

Environmental monitoring of Ambient Air Quality, Water table depth, Water quality, Ambient Noise Levels, Soil Quality, CSR activities etc will be carried out through MOEFCC accredited agencies and reports will be submitted to KSPCB/ Regional office of MoEF&CC.

1.4.9 Risk Assessment & Disaster Management Plan

The assessment of risk in the River Sand quarry project has been estimated for Slope failure, Movement of JCB/Equipment's, Dust hazards, and flooding of lower benches and corresponding mitigation measures are suggested in the EIA/EMP report.

A detailed Disaster Management Plan for facing disasters due to natural effects and human reasons is prepared and incorporated in the EIA/EMP report for ensuring safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. For effective implementation of Disaster Management Plan, it will be widely circulated and personnel shall be imparted training through rehearsals. Site facilities, procedures, duties and responsibilities, Communications, etc. is considered in detail in the Disaster Management Plan.

1.5 Project Benefits

The River Sand quarry project would generate additional employment opportunities which would finally result in improvement in the quality of life of people of the nearby villages. In line with this CER policy, Hutti Gold Mines Co.Ltd will carry out community welfare activities in the following areas:

- Community development
- Education
- Health care
- Drainage and sanitation
- Roads

1.6 Environmental Management Plan

An Environmental Management Plan comprised of following set of mitigation, management, monitoring and institutional measures to be taken during implementation and operation of the project, to eliminate adverse environmental impacts or reduce them to acceptable levels.

- Overall conservation of environment.
- Judicious use of natural resources and water.
- Safety, welfare and good health of the work force and populace.
- Ensure effective implementation of all the control measures.
- Vigilance against probable disasters and accidents.

- Monitoring of cumulative and long time impacts.
- Control of waste generation and pollution.

Judicious use of the environmental management plan addresses the components of environment, which are likely to be affected by the different operations in the project.

1.7 Conclusion

The River Sand Quarry project of Hutti Gold Mines Co.Ltd will be beneficial for the development of the nearby villages. Some environmental aspects like dust emission, noise, siltation due to surface run-off, etc. will have to be controlled within the permissible limit to avoid impacts on the surrounding environment. Necessary pollution control equipment like water sprinkling, plantation, personal protective equipments, etc., will form regular practice in the project. Additional pollution control measures and environmental conservation measures will be adopted to control/minimize impacts on the environment and socio-economic environment of the area. Measures like development of green belt and plantation along with transport road, and river banks will be implemented.

The CSR measures proposed to be adopted by the quarry management will improve the social, economic status of the nearby villages.

The overall impacts of the River Sand quarry will be positive and will result in overall socio-economic growth of nearby villages.