

CHAPTER-VI
ADDITIONAL STUDIES
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6.0 PUBLIC CONSULTATION

The public consultation for this project was held on 30th June, 2014. The Public hearing Notice is shown below which was published on 30-05-2014 in the regional news papers, Times of India.

The records of the proceedings are attached at **Annexure V (A)** and the action plan along with budget allocation is attached as **Annexure V (B)**.

आधारासा आमयन्ता
विद्युत वितरण सखण्ड, पीडी (ग०)

पत्रांक : 1091/विपविउअ(पी०)/उपकादि/2014-18
दिनांक : 23.05.2014

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उत्तराखण्ड पर्यावरण संरक्षण एवं प्रदूषण नियंत्रण बोर्ड
29/20, नेमी रोड, डालनवाला (उत्तराखण्ड)
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पर्यावरणीय स्वीकृति हेतु लोक सुनवाई के लिये सूचना

गढ़वाल मण्डल विकास निगम, देहरादून के द्वारा जनपद-हरिद्वार क्षेत्रान्तर्गत स्थित गंगा एवं इसकी सहायक नदियों के विभिन्न लाटों से उपखनिज के घुगान के लिए पूर्व पर्यावरण स्वीकृति हेतु लोक सुनवाई का प्रस्ताव उत्तराखण्ड पर्यावरण संरक्षण एवं प्रदूषण नियंत्रण बोर्ड, देहरादून के सम्मक्ष प्रस्तुत किया गया है। उपखनिज के घुगान की पूर्व पर्यावरणीय स्वीकृति हेतु लोक सुनवाई निम्नानुसार प्रस्तावित है। लोक सुनवाई हेतु 'पैनल' की संरचना पर्यावरणीय प्रभाव निर्धारण अधिसूचना-2006 के अनुरूप निम्नवत है :-

1. जिलाधिकारी, जनपद-हरिद्वार या उनके द्वारा नामित प्रतिनिधि जो अपर जिलाधिकारी स्तर से कम पद का न हो लोक सुनवाई के अध्यक्ष।
2. उत्तराखण्ड पर्यावरण संरक्षण एवं प्रदूषण नियंत्रण बोर्ड के प्रतिनिधि।

गंगा एवं सहायक नदियों के विभिन्न लाटों में उपखनिज के घुगान से सम्बन्धित जमा समस्त अभिलेख क्षेत्रीय कार्यालय, पर्यावरण एवं वन मंत्रालय-लखनऊ; मुख्यालय, उत्तराखण्ड पर्यावरण संरक्षण एवं प्रदूषण नियंत्रण बोर्ड, देहरादून; क्षेत्रीय कार्यालय, उत्तराखण्ड पर्यावरण संरक्षण एवं प्रदूषण नियंत्रण बोर्ड, सिंचाई परिकल्प भवन, रुड़की; कार्यालय जिलाधिकारी, हरिद्वार; कार्यालय जिला पंचायत, हरिद्वार; जिला उद्योग केन्द्र, रुड़की एवं कार्यालय नगर निगम, हरिद्वार में उपलब्ध है जिनका कोई भी इच्छुक संस्था/व्यक्ति अवलोकन कर सकता है। पर्यावरण प्रभाव मूल्यांकन रिपोर्ट के सारांश की प्रति www.ueppcb.uk.gov.in पर भी उपलब्ध है।

गढ़वाल मण्डल विकास निगम द्वारा गंगा एवं सहायक नदियों के विभिन्न लाटों से उपखनिज के घुगान की पूर्व पर्यावरणीय स्वीकृति हेतु प्रस्तावित लोक सुनवाई की तिथि, समय व स्थान अपर जिलाधिकारी (वि०/ए०), हरिद्वार के द्वारा निम्नानुसार निर्धारित की गयी है :-

नदी का नाम	लोक सुनवाई की तिथि	समय	लोक सुनवाई हेतु प्रस्तावित स्थल
गंगा घोसीघाट	24.06.2014	प्रातः 11 बजे से	पर्यटक आवास गृह, राही, हरिद्वार
गंगा बिसनपुर	24.06.2014	अपराह्न 3 बजे से	पंचायत भवन, बिसनपुर
गंगा बालोवली	25.06.2014	प्रातः 11 बजे से	पंचायत भवन, बालावली (द्वभनपुरी)
दादुवास	26.06.2014	प्रातः 11 बजे से	पर्यटक आवास गृह, कलियर, रुड़की
केटा मुरादनगर	26.06.2014	अपराह्न 3 बजे से	पर्यटक आवास गृह, कलियर, रुड़की

अतः संकेतवारण ज्ञे सूचित किया जाता है कि जनपद-हरिद्वार में गंगा एवं सहायक नदियों के उपरोक्त लाटों के उपखनिज घुगान से सम्बन्धित प्रस्ताव के सम्बन्ध में अपने मौखिक, लिखित, सुझाव, टीका टिप्पणियों एवं आपत्तियां इस कार्यालय अथवा बोर्ड के क्षेत्रीय कार्यालय, यूईपीसीसीबी, सिंचाई परिकल्प भवन, रुड़की में इस सूचना से सम्बन्धित विज्ञापन प्रकाशन की तिथि से 30 दिनों के अन्दर प्रेषित कर सकते हैं-अथवा लोक सुनवाई के समय भी प्रस्तुत कर सकते हैं।

पत्रांक - यूईपीसीसीबी/एफओ/NOC-1322-337 दिनांक 23.05.2014 सदस्य सचिव

21/5/14 24

24/5/14



6.1 HAZARD IDENTIFICATION AND RISK ASSESSMENT METHODOLOGY

Risk is to expose someone or something to danger, harm or loss. The different steps of risk assessment procedure are as given below:

Step I: Hazard Identification

The purpose of hazard identification is to identify and develop a list of hazards for each job in the organization that are reasonably likely to expose people to injury, illness or disease if not effectively controlled. Workers can then be informed of these hazards and controls put in place to protect workers prior to them being exposed to the actual hazard.

Step II: Risk Assessment

Risk assessment is the process used to determine the likelihood that people exposed to injury, illness or disease in the workplace arising from any situation identified during the hazard identification process prior to consideration or implementation of control measures.

Risk occurs when a person is exposed to a hazard. Risk is the likelihood that exposure to a hazard will lead to injury or health issues. It is a measure of probability and potential severity of harm or loss.

Step III: Risk Control

Risk control is the process used to identify, develop, implement and continually review all practicable measures for eliminating or reducing the likelihood of an injury, illness or diseases in the workplace.

Step IV: Implementation of risk controls

All hazards that have been assessed should be dealt in order of priority in one or more of the following hierarchy of controls

The most effective methods of control are:

- i. Elimination of hazards
- ii. Substitute something safer
- iii. Use engineering/design controls
- iv. Use administrative controls such as safe work procedures
- v. Protect the workers i.e. by ensuring competence through supervision and training, etc.

Each measure must have a designated person assigned for the implementation of controls. This ensures that all required safety measures will be completed.

Step V: Monitor and Review

Hazard identification, risk assessment and control are an on-going process. Therefore regularly review the effectiveness of your hazard assessment and control measures. Make sure that you undertake a hazard and risk assessment when there is change to the workplace including when work systems, tools, machinery or equipment changes. Provide additional supervision when the new employees with reduced skill levels or knowledge are introduced to the workplace.

A) RISK ANALYSIS

The risk assessment portion of the process involves three levels of site evaluation:

- a) Initial Site Evaluation,
- b) Detailed Site Evaluation,
- c) Priority Site Investigations and Recommendations.

The risk assessment criteria used for all levels of site evaluation take into account two basic factors:

- The existing site conditions
- The level of the travelling public's exposure to those conditions.

The Initial Site Evaluation and Detailed Site Evaluation both apply weighted criteria to the existing information and information obtained from one site visit. The Initial Site Evaluation subdivides the initial inventory listing of sites into 5 risk assessment site groups. The Detailed Site Evaluation risk assessment is then performed on each of the three highest risk site groups in order of the group priority level of risk. The result of the Detailed Site Evaluation process is a prioritized listing of the sites within each of the three highest risk site groups.

Risk analysis is done for:

- Forecasting any unwanted situation
- Estimating damage potential of such situation
- Decision making to control such situation
- Evaluating effectiveness of control measures

Risk Likelihood Table for Guidance (TABLE -1)

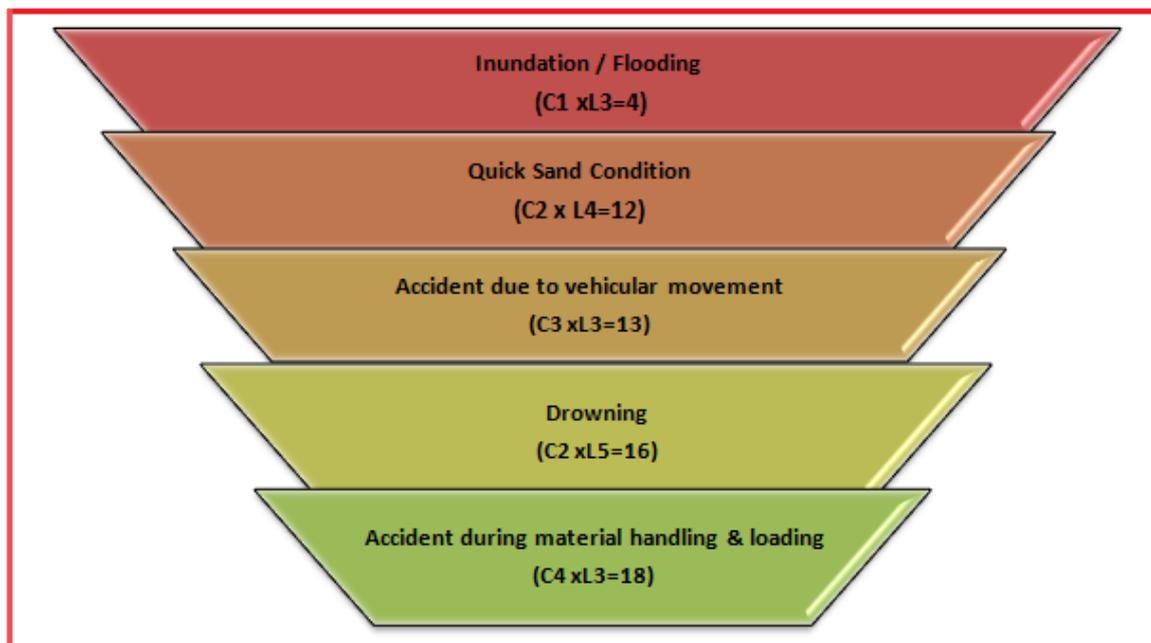
Step 1: Assess the Likelihood				Step 2: Assess the Consequences		
L1	Happens every time we operate	Almost Certain	Common or repeating occurrence	C1	Fatality	Catastrophic
L2	Happens regularly (often)	Likely	Known to have occurred "has happened"	C2	Permanent disability	Major
L3	Has happened (occasionally)	Possible	Could occur or "heard of it happening"	C3	Medical/hospital or lost time	Moderate
L4	Happens irregularly (almost never)	Unlikely	Not likely to occur	C4	First aid or no lost time	Minor
L5	Improbable (never)	Rare	Practically impossible	C5	No injury	Insignificant

A logical systematic process is usually followed during a qualitative risk assessment to identify the key risk events and to assess the consequences of the events occurring and the likelihood of their occurrence (TABLE-2).

Risk Rank	L1	L2	L3	L4	L5
LikelihoodxConsequence	Almost certain	Likely	Possible	Unlikely	Rare
C1 Catastrophic	1	2	4	7	11
C2 Major	3	5	8	12	16
C3 Moderate	6	9	13	17	20
C4 Minor	10	14	18	21	23
C5 Insignificant	15	19	22	24	25

RISK RATING:

HIGH RISK 1-6	MEDIUM RISK 7-15	LOW RISK 16-25
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6.2 RISK ASSESSMENT

There are various factors, which can create unsafe working conditions/hazards in mining of minor minerals from river bed.

The key risk (hazard x probability) event **rating** associated with sand bed mining and to assess its consequences of such events occurring and the likelihood based on above Table-2 are as:-

The Risk rating of such hazards is as follows:

6.2.1 INUNDATION/FLOODING

The risk rating assigned to this activity is assigned as '4' i.e., it is possible and will have catastrophic with major consequences, if work started without assessment of the river bed condition especially during monsoon season.

Inundation or flooding is expected and beneficial for these mines as during this time only the mineral reserve gets replenished.

Measures to prevent consequences of Inundation/Flooding

Inundation of flooding is expected and beneficial for these mines as during this time only the mineral reserve gets replenished.

1. During monsoon months and heavy rains the mining operations are ceased.
2. There should be mechanism/warning system of heavy rains and discharges from the upstream dams.

6.2.2 Quick Sand Condition

The risk rating assigned to this activity is assigned as '12' i.e., it is an unlikely event with major consequences as frequency of this risk is less likely to occur.

Two things may create the conditions to form quicksand. Underground water may seep-up and saturate the sand, thereby reducing the friction between the sand grains and giving the sand a liquid nature. Or, sand or another soil may be sifted by the force of an earthquake so that friction is lessened and the earth becomes unsteady.

This creates danger condition to the trucks plying near the river bed and banks for transportation of minerals.

Measures to Prevent Quick Sand Condition

1. The only way to avoid quick sand condition is by avoiding mineral lifting below water table.
2. Mining will be done in layers rather than going for maximum depth at one time.

6.2.3 ACCIDENT DUE TO VEHICULAR MOVEMENT

The risk rating assigned to this activity is assigned as '13' i.e., it is possible event with moderate consequences as frequency of this operation is more but the predicted/assumed intensity is less like minor cuts, bodily injury. The possibilities of road accidents are due to reckless or untrained driver or overloading of trucks or in case pathway is not compacted suitably, etc.

Measures to Prevent Accidents during Transportation

1. All transportation within the main working should be carried out directly under the supervision and control of the management.
2. The Vehicles will be maintained/repared and checked thoroughly by the competent person.
3. A statutory provision of constant education, training etc. will go a long way in reducing the incidents of such accidents.
4. Overloading will not be permitted and will be covered with tarpaulin.
5. The maximum permissible speed limit will be ensured.
6. The truck drivers will have valid driving license.

6.2.4 DROWNING

The risk rating assigned to this activity is assigned as '16' i.e., it is a rare accident but will have major consequences, if occurred. This may occur due to flash floods etc due to which the workers at the site may get seriously injured or drowned.

Measure to Prevent Drowning

1. The mining will be done under strict supervision and only in the dry part of the river.
2. Mining will be completely stopped in monsoon season to avoid such accidents.
3. Deep water areas will be identified and 'No Go Zones' will be clearly marked and made aware to the mine workers.

6.2.5 ACCIDENT DURING MATERIAL HANDLING & LOADING

The risk rating assigned to this activity is assigned as '18' i.e. it is possible event with minor consequences", as frequency of this operation is more but the predicted/assumed intensity is less like minor cuts, abrasion, etc. may be due to river bank collapse, over thrown boulders/pebbles, injuries due to carelessness use of hand tools, etc.

Measures to Prevent Accidents during material handling & loading

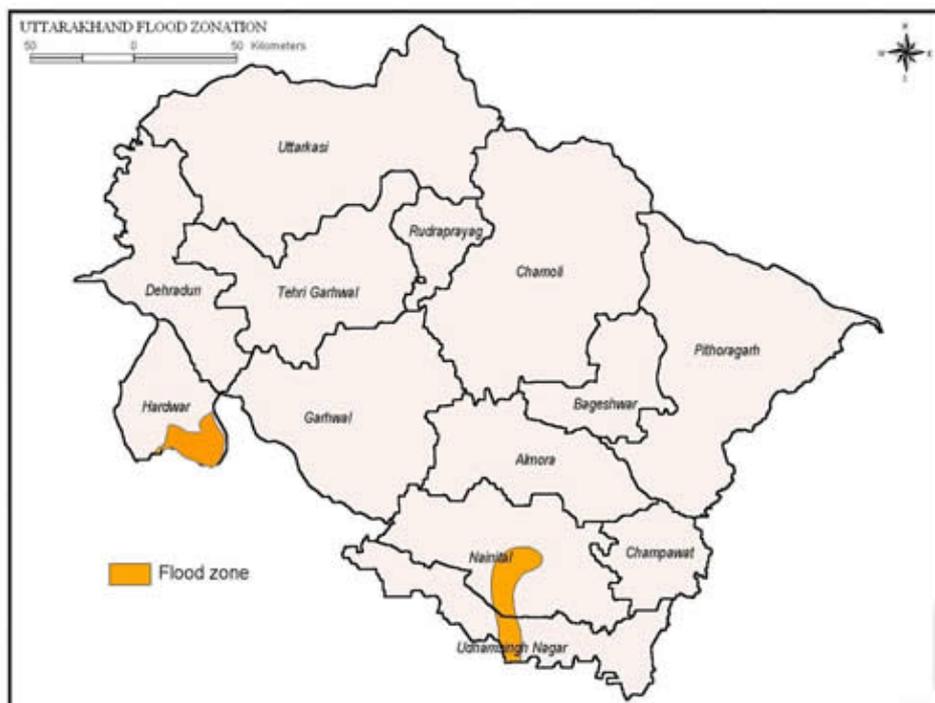
1. The truck should be brought to a lower level so that the loading operation suits to the ergonomic condition of the workers.

- The loading should be done from one side of the truck only to avoid over throw of materials.
- The workers should be provided with gloves and safety shoes during loading. All the activities will be done under strict supervision/control to avoid anticipated accidents so that the risk is reduced to a level considered **As Low As Reasonably Practicable (ALARP)** conditions which are adequately safe and healthy.

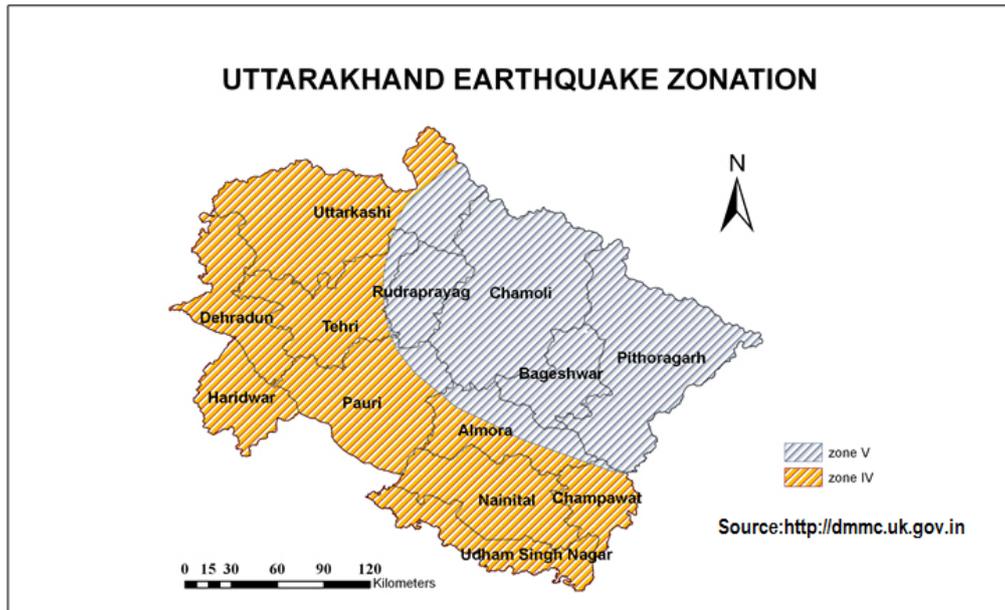
6.3 DISASTERS & ITS MANAGEMENT

6.3.1 Anticipated Disasters

- Floods:** The area is prone to floods. However, as per the Disaster Mitigation and Management Centre, Govt. of Uttarakhand, part of the Haridwar district lies in the flood zone as shown in the Uttarakhand Flood Zonation map below. Precautionary measures will be taken and in disaster management, it will be considered to avoid the impending effects on the workers at the site if the disaster occurs.

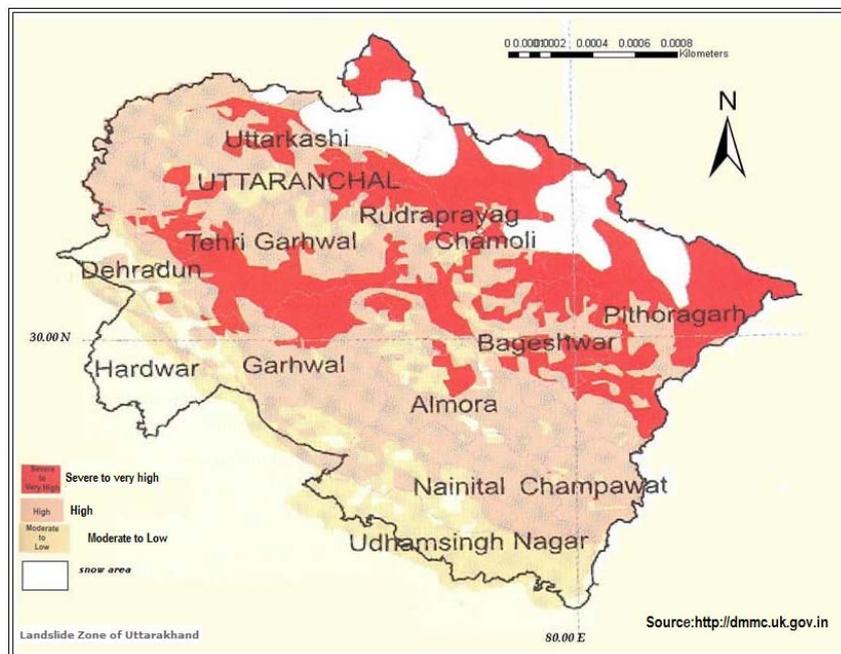


- Earth Quake:** The lease area falls in seismic zone IV which is prone to earthquakes.



3. Land slide:

The area lies in moderate to low landslide zone as per the map shown below.



Source: <http://dmmc.uk.gov.in>

6.3.2 Disaster Management Plan

At present Disaster Mitigation & Management Centre is working as autonomous institute under aegis of Department of Disaster Management Government of Uttarakhand and Disaster Mitigation and Management Centre (DMMC) is the apex center in the field of Disaster Mitigation & Management in Uttarakhand, to

protection of the community and the environment from the over whelming obliteration caused by disasters. (**Source:** dmmc.uk.giv.in)

- ✓District Level Cell and State Level Cell will be set up to take timely precautionary measures to avoid effects of impending disasters.
- ✓The State Level Cell will be in continuous touch with State Govt. to pass on message like heavy rainfall etc. as received from IMD and take precautionary action to prevent any consequential disaster.
- ✓A Nodal Officer at State Level Cell will be made in charge for the timely dissemination of the information & monitoring to the District Level Cells.
- ✓“Disaster Warning System” as developed will be strictly implemented.
- ✓Identification of nearby hospitals with route & contact number for emergency assistance.
- ✓Evacuation plan for the workers at site including contract labours will be developed in nearby shelters.
- ✓“Emergency Helpline Number” will be displayed at all levels.
- ✓ Disaster Management Plan prepared by The State Disaster Management Authority Uttarakhand will be followed and the contact numbers of the person responsible who will execute the work during disaster is attached as **Annexure XII**.

6.4 SOCIAL IMPACT ASSESSMENT, REHABILITATION & RESETTLEMENT (R&R) ACTION PLAN

INTRODUCTION

Socio-Economic Impact Assessment (SEIA) refers to systematic analysis of various social and economic characteristics of human being living in a given geographical area during a given period. The geographical area is often called Study Area or Impact Area. SEIA is carried out separately but concurrently with Environment Impact (EI). The study area consists of core area where the project is located and a buffer area encircling the project area with a radius of 10 kilometers from the periphery of the core area. For every new project or existing project under expansion or tied for modernization or change in product mix, Socio-economic Impact Assessment is mandatory. The Socio-economic impact assessment focuses the effect of the project on social and economic well-being of

the community. The impact may be direct or indirect. Further, the impact may be positive or negative.

OBJECTIVES OF SEIA

The prime objective of the current study is to assess the impact of the proposed Sand mining Project on socio-economic characteristics of people living in the neighborhoods. Further, it is to be established whether the impending impact would be direct or indirect. Furthermore, it is to be examined whether the said impact would be positive or negative. Lastly, it is to be comprehended if the impact is positive how long it would sustain or if it is negative how soon the same could be eased.

SCOPE

The Scope of the study is as follows:

- a) To collect baseline data of the study area
- b) To comprehend socio-economic status of the people living in the study area.
- c) To assess probable impact of the project on social and economic aspects in the study area.
- d) To measure the impact of the project on Quality of life of the people living in the study area.
- e) To ensure sustainability of positive impact.
- f) To suggest mitigation measures and agency responsible for taking action in case of adverse impact.

SOCIO-ECONOMIC IMPACT OF THE PROJECT

Impact on Demographic Composition

The proposed project will hardly make any difference in the demographic composition of the study area as the additional employment it envisages to create will be met locally to the maximum extent. Hence, the chances of in-migration of people from outside the study area are remote. Accordingly, there will be no variation in the total population of the study area including that of sex ratio, when the mine starts operating.

Employment Opportunities

The proposed project will provide employment to local people. The number of workers to be deployed in the mining project will depend upon the quantity of minerals to be extracted from the mine by the lease holder. Both the miners and the unskilled workers will be recruited locally. It has estimated that 174 people will get direct employment in this mining project for a period of nine months in a year. Besides the above the project is expected to generate indirect employment to the extent of 40 persons in the informal sector. It is a positive impact of the project since it is providing employment opportunities to the local people. The project will not affect the vulnerable groups of people.

Increased Supply of minerals in the market

Sand has many uses. Mixed with cement and lime it is used in masonry construction. It is a critical component of concrete mixture. Both Government departments and private developers have taken up construction of roads, bridges and buildings in a big way. Hence, the demand for sand is ever increasing with the growth of the infrastructure development in our country. The requirement for the building materials is always high and there is already an acute shortage of sand in the market and the construction industry is the main sufferer. With the commencement of the proposed mining project the supply of minerals will increase and the gap between demand and supply will decrease to some extent, if not fully.

Impact on Agriculture

The entire mining area is part of river bed and the entire land is Government Revenue Land. It is non-forest land and the proposed activity is to take place in the bed of the River Ganga. There will be no negative impact on agriculture as no cultivation is taking place on the proposed mining area. Since, scientific mining will be adopted in the proposed mining project the area will not face flood due to mining, which destroy standing crops and land & property. Removal of obstruction to river flow by mining will also channelize the river away from banks and flood intensity will be reduced. This is a positive impact of the proposed mining project.

Impact on Industrial Activities

Owing to sand mining activities, the study area may witness industrial uprising in the area. It is expected that a few crushing unit will also come up in the area to convert the boulders into smaller particles viz. Bajri and sand.

Impact on Road Development

Movement of trucks and other vehicles to and fro the mining site is expected to increase substantially, when mining will start. The existing roads connecting the quarry with the national and state highways are mostly narrow mud roads. There will be mud slide and traffic bottle neck if these roads are not widened and their conditions are not improved. Hence, there is need for road development in the mining area. Further, there are risks of accidents during loading of extracted minerals into trucks and transportation to markets for sells. However, accidents can be avoided by taking due care and precautions.

Income to Government

The proposed mining activity will benefit the State in the form of royalty, dead rent, fees and earnings from taxes.

Impact on Law & Order

As most of the workers to be employed in the proposed mining project are local residents no law & order problem is envisaged. It is expected that the workers will attend to their duties from their residence and return to their homes after the day's work. There would have been law & order problem if the workers were migrants and lived in shanties closed to the mining area. However, to meet any untoward incident one police post shall be set up close to the mining site.

Impact on Health

There are no chances of occurring diseases, due to manual mining of sand. Sand is non-toxic. However, sand mining activities require precautions since it create respiratory problems among mine workers. Excessive inhalation of sand is a serious health concern. To avoid respiratory problem from sand necessary protection shall be taken.

Few safety measures are outlined below:

- a) **Safe Working Environment:** The project proponent shall ensure health and safety of all the employees at work. Efforts will be made to provide and maintain a safe work environment and ensure that the machinery and equipment in use is safe for employees. Further, it will be ensured that working arrangements are not hazardous to employees.
- b) **Provision of First Aid:** The first aid treatment reflects the hazards associated with the mining of Sand. The first-aiders will be well trained in handling patients working in the above Mining Project.
- c) **Regular Health Examination:** For all mine workers regular health examination will be made compulsory. It will cover treatment of serious back injury; existing asthma or respiratory diseases, existing skin diseases, lung function test (pre and post ventolin), Audiograms, Chest X- ray etc.
- d) **No work for Temporal Disabilities:** The workers having temporary disability will be asked to stop doing the job till he/she recovers from disabilities.
- e) **Health Education:** Adequate health education and information related to the job will be provided to the workers. Baseline health information will be recorded for future references.
- f) **Tie-up with the Nearest Hospital for Medical Assistance:** To meet the medical needs of the mine workers tie-up with nearest hospitals will be made. Efforts will be made to reserve few beds in the above hospitals for the workers of the mining project. This will ensure timely medical aid to the affected persons.
- g) **Supply of Mask and Gloves:** The workers in the *Sand* mining project are subject to respiratory diseases. For protection from dust it will be made compulsory for all workers to wear masks and gloves, while working in the mine.
- h) **Administration of Anti-venom Injections:** Provision of Anti-venom therapy will be made available for administration to the workers in case of snake, spider and insect bites, while working in the mine.
- i) **Special Telephone Number:** A special telephone number will be made available to the workers in case of emergency so that they can dial the same for-medical assistances. Further, efforts will be made to provide vehicles to the patients in short duration for shifting to a hospital.

- j) **Special Group Insurance Scheme:** All the mine workers will be covered under a Group Insurance Scheme of LIC or any other Insurance company.

CONCLUSION

The commissioning of Sand Mining Project will provide employment to local people who are in search of the same. The granting of environment clearance to M/S Garhwal Mandal Vikas Nigam Ltd will make mining of Sand environmentally safe, legally valid and it will generate revenue for the state. It is expected that prospective entrepreneurs will venture to set up industrial units in the vicinity in the near future making the area a mixed society, dependent on industry, trade and business. With the implementation of the Sand Mining Project the occupational pattern of the people in the area will change making more people engaged in mining, industrial and business activities only. Also there will be a gradual shifting of surplus population from agriculture to mining and industry. The financial condition of farmers will also improve to invest more in agriculture. It is expected that mineral resource, employment and other community facilities will improve to a great extent with the opening of the Sand Mining Project and associated industrial and business activities.
