FINAL ENVIRONMENTAL IMPACT ASSESSMENT

AND

ENVIRONMENTAL MANAGEMENT PLAN

OF

Minor Minerals (RBM) Mining Area (5.80 Ha) at Block – 8 Batapora Bridge Downstream Rambiara Nallah, District- Shopian, Jammu & Kashmir.

Proposal no	**SIA/JK/MIN/59615/2021(Block -8)**
Block no.	**Block -8**
Area	**5.80 ha.**
Production	**1,16,000 MTPA**
Location	**Block No. 08 (Area 5.80 ha.) Batapora Bridge Downstream Rambiara Nallah, District- Shopian, Jammu & Kashmir.**

APPLICANT

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PMS
PRESERVING TOMORROW

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1.0 PURPOSE OF THE REPORT

Environment Impact Assessment (EIA) is a process used to identify the environmental, social & economic impacts of a project prior to decision making. It aims to predict environmental impacts at an early stage of project planning & design, find ways & means to reduce adverse impacts. By using EIA, we can decide the suitable mitigation measures for implementation to maintain healthy working environment and contain pollution within permissible limits.

River plays an important role in the lives of the people. The river systems provide irrigation, potable water, transportation, electricity, and the livelihoods for a large number of people all over the country and to rural areas. Apart from this, river is also a good source of construction grade material as sand & gravel.

As transportation and construction infrastructure expanded since last few decades, the demand for construction grade sand also increased exponentially. The market demand of river sand is high throughout the nation. Sand is extracted directly from the river channel and it doesn't require processing other than size grading. But it is now well understood that continued and indiscriminate sand mining can cause serious environmental impacts, particularly if the river being mined is eroded.

Environmental Impact Assessment is one of the proven management tools for integrating environmental concerns in development process and for improved decision making as there is a need to harmonize the developmental activities with the environmental concerns into the larger interest of the society. The growing awareness, over the years, on environmental protection and sustainable development, has given further emphasis to the implementation of sound environmental management practices for mitigating adverse impacts from developmental activities. EIA study plays a vital role in sustainable development of a country. Recognizing its importance, the Ministry of Environment and Forest, Government of India had formulated policies and procedures governing the industrial and other developmental activities to prevent indiscriminate exploitation of natural resources and to promote integration of environmental concern in project development.

As per the EIA Notification 2006 and subsequent amendment thereof a single EIA/EMP Plan can be proposed for cluster of Mines of within 500 meter of periphery for homogenous minerals.

In this report a cluster of Minor Mineral (River Bed Material) in Block No. 08 Batapora Bridge Downstream Rambiara Nallah & Block No. 11 Ziarat of Gunj Bhakash Arhama Upstream Rambiara Nallah, District- Shopian, Jammu & Kashmir, is proposed for mining of sand in the applied mining lease area in cluster measuring 15.22 hectares in cluster falling under category "B1".

Environmental Impact Assessment report is prepared to comply with the Terms of Reference (TOR) received from SEIAA, Jammu & Kashmir under EIA notification of the MoEF&CC dated 14th September, 2006 and its subsequent amendment there-off and also the EIA Guidance Manual for Mining of Minerals of MoEF&CC, Govt. of India, for seeking environmental clearance for mining of Sand in the applied mining lease area.

1.1 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

The project is proposed to sand mining in an area of 15.22 hectares for cluster of mines. The Mining sites are situated at Block No. 08 (Area 5.80 ha.) Batapora Bridge Downstream Rambiara Nallah & Block No. 11 (Area 9.42ha.) Ziarat of Gunj Bhakash Arhama Upstream Rambiara Nallah, District- Shopian, Jammu & Kashmir.

S no	Block on Nallah Rambiara	Area (Ha)	Location	Production	Consent/LOI Letter
1	Block no. 8	5.80	Village Batapora Shopian, District Shopian, Jammu and Kashmir	1,16,000 TPA	Mr. Kapil Agarwal 866/MCC/DGM/B-8/Shp/20/2061-68 dated: 18/07/2020
2	Block no. 11	9.42	Village Arhama, District Shopian, Jammu and Kashmir	1,88,400 TPA	M/S Sai Mines 868/MCC/DGM/B-11/Shp/20/1981-88 dated:18/07/2020
Cluster Area		**15.22**		**3,04,400 TPA**	

The clusters of mines (Block -8 & Block-11) are proposed by the following proponent:

Identification of Project :-

Block -8

Name- Mr. Kapil Agarwal

Address-S/O Sh. Jugesh Agarwal

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R/O H. no. 179 Near Panjpir Mandir Anandpur Pathankot,

Gurdaspur, Punjab

Block-11

Name- M/S Sai Mines

Address- R/O Logate, Kathua

Jammu and Kashmir

The above Block have an area of 15.22, ToR was issued by JKEIAA vide letter no. given below:

Table- 1.1, TOR detail

S.no	Block no	Vide Letter No	TOR date
1	Block no. 8	JKEIAA/2021/400/235-39	12-02-2021
2	Block no. 11	JKEIAA/2021/393/210-14	12-02-2021

1.2 BRIEF DESCRIPTION OF PROJECT

The proposed project is open cast semi-mechanized mining of sand (mineral mineral) with a proposed production of 3,04,400 MTPA in clusters of mines (cluster of 2).

Plot Wise Area & Production Details are given below:

Table- 1.2, Area & Production Details

S.no	Lessee	Block No	Area (ha)	Proposed Capacity (TPA)
1	Name- Mr. Kapil Agarwal Address-S/O Sh. Jugesh Agarwal R/O H. no. 179 Near Panjpir Mandir Anandpur Pathankot, Gurdaspur, Punjab	8	5.80	1,16,000 TPA
2	Name- M/S Sai Mines Address- R/O Logate, Kathua Jammu and Kashmir	11	9.42	1,88,400 TPA
Total			**15.22**	**3,04,400 MTPA**

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As per the EIA notification of the MoEF&CC dated 14th September, 2006 and its amendment thereof, the proposed mining project is categorized as category 'B1' project. The EIA-EMP report is prepared as per the ToR granted under the EIA Notification 2006 & its amendments thereof. Further to assess the impact on environment due to proposed mine, it is necessary to ascertain present status of environment prevailing at the project site and proposed operation including identification and Assessment of impact on the environment.

Table: 1.3, Project cost in cluster

S.no	Block No	Total Cost	CER Cost
1	**Block No. 8**	(Bidding amount 34.4376 lakh, Environment Clearance Processing Cost 0.40 lakh, Public Hearing Fees 3.5 lakh, Consent Fees 0.40 Lakhs, Consultancy Fees 4.0 lakh Labor & machinery 162.5 Lakhs, Infrastructure 5 lakh)	Rs 4.20 Lakhs
2	**Block No. 11**	(Bidding amount 24.10130 lakh, Environment Clearance Processing Cost 0.40 lakh, Public Hearing Fees 3.5 lakh, Consent Fees 0.40 Lakhs, Consultancy Fees 4.0 lakh Labor & machinery 156.25 Lakhs, Infrastructure 5 lakh)	Rs 3.87 Lakhs
Total		**Rs. 403.88 Lakhs**	**Rs 8.07 Lakhs**

Table 1.4: CER Cost for cluster of mines

S.no	Block No	CER Cost
1	**Block No. 8**	Rs 4.20 Lakhs
2	**Block No. 11**	Rs 3.87 Lakhs
Total		**Rs 8.07 Lakhs**

Table 1.4(a): CER Cost for Block no. 08

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S. No	Activities	fund in lakhs/ year (Capital Cost in lakh)
1	Health check-up facility for Panchayat and villagers of nearby villages.	1,20,000
2	Drinking water facility in nearby villages	1,00,000
3	Distribution of Sanitizer, gloves and Mask to the nearby village and panchayat.	1,00,000
4	Construction of separate toilets (2) for men & women at public place in nearby villages.	1,00,000
TOTAL		**4,20,000**

Table 1.4(b): CER Cost for Block No.11

S. No	Activities	fund in lakhs/ year (Capital Cost in lakh)
1	Health awareness and camps for local community in nearby villages.	1,00,000
2	Distribution of Sanitizer, gloves and Mask to the locals of surrounding villages. *500/ Sanitizer, gloves and Mask.	87,000
3	Renovation of toilets of nearby school.	1,00,000
4	Distribution of books & educational kits to the poor children of nearby villages.	1,00,000
TOTAL		**3,87,000**

Table 1.5 (a), Budget of EMP for Block No.08 (As per recommended by JKEAC meeting)

S. No	Description	Capital Cost 1st year (in lacs)	Recurring Cost (in lacs) 2nd year	Recurring Cost (in lacs) 3rd year	Recurring Cost (in lacs) 4th Year	Recurring Cost (in lacs) 5th Year
1	Green belt development	6.00	5.00	5.00	5.00	5.00
2	Haulage route Maintenance	8.00	7.00	7.00	7.00	7.00
3	Environment	0.50	0.50	0.50	0.50	0.50

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	Awareness programme					
4	Pollution Monitoring	2.00	2.00	2.00	2.00	2.00
5	Dust Suppression	3.00	4.00	4.00	4.00	4.00
6	Occupational health and safety of mine workers	2.00	2.00	2.00	2.00	2.00
7	Laying of Hume pipes	00.00	00.00	00.00	00.00	00.00
Total		21.50	20.50	20.50	20.50	20.50

Table 1.5 (b), Budget of EMP Budget for Block No. 11

S no.	**Description**	**Capital Cost 1st year (Rs)**	**Recurring Cost (Rs) 2nd year**	**Recurring Cost (Rs) 3rd year**	**Recurring Cost (Rs) 4th Year**	**Recurring Cost (Rs) 5th Year**
1.	Pollution Control & Dust Suppression	-	2,97,000	2,97,000	2,97,000	2,97,000
2	Pollution Monitoring	-	2,00,000	2,00,000	2,00,000	2,00,000
3.	Plantation and salary for one gardener (part time basis).	1,00,000	1,20,000	1,20,000	1,20,000	1,20,000
4.	Haul road Maintenance Cost (960 m)	4,80,000	1,50,000	1,50,000	1,50,000	1,50,000
5	Occupational health and safety cost	-	2,00,000	2,00,000	2,00,000	2,00,000
TOTAL (Rs)		**5,80,000**	**9,67,000**	**9,67,000**	**9,67,000**	**9,67,000**

Table- 1.6, Details of environmental settings

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S. No.	Particulars	Details
A.	Nature & Size of the Project	"Minor Mineral (River Bed Material)" at Block No. 08 (Area 5.80ha.) Batapora Bridge Downstream Rambiara Nallah & Block No. 11 (Area 9.42ha.) Ziarat of Gunj Bhakash Arhama Upstream Rambiara Nallah,
B.	Location	
Name of Village		Arhama & Batapora Shopian
Tehsil		Shopian
District		Shopian
State		Jammu & Kashmir
Coordinates		**Block 8**

Points	Latitude	Longitude
D1	33˚43'48.53"	74˚49'22.04"
B1	33˚43'46.65"	74˚49'28.22"
C	33˚43'52.29"	74˚49'35.60"
D	33˚43'55.85"	74˚49'22.89"
	Block 11	
Points	**Latitude**	**Longitude**
A	33˚44'11.25"	74˚49'45.00"
B	33˚44'04.63"	74˚49'39.20"
C	33˚44'09.52"	74˚49'24.25"
D	33˚44'17.12"	74˚49'30.43"

Toposheet No.		43K/14
Block No.		Block No. Block 8 & Block 11
C.	**Mine Lease Area Details**	
	Lease Area in cluster	15.22 ha
	Type of Land	River bed minor material
	Topography	The proposed lease area located in the upstream & Downstream Nallah Rambiara

	Site Elevation Range	<table><tr><th>S.N</th><th>Block No</th><th>Elevation</th></tr><tr><td>1</td><td>**Block 8**</td><td>2001 m to 2019 m RL</td></tr><tr><td>2</td><td>**Block 11**</td><td>1987 m to 1991m RL</td></tr></table>
D.	**Details of Environmental Setting**	
	Ecological Sensitive Areas (National Park, Wild Life Sanctuary, Biosphere Reserve, Reserve/ Protected Forest etc.) within 10 km distance	There is no National Park, Wild Life Sanctuary, and Biosphere Reserve within 10 km distance from the lease area.
	Water Bodies	River Rambiara, Core Zone
	Nearest Town	Shopian, approx. 1.60 Kms. towards SSE.
	Nearest Railway Station	Kakapora Railway Station, approx. 25.20 km in NNE direction.
	Nearest National Highway	NH-1A, approx. 28.40 Km in NNE direction.
	Nearest Airport	Sheikh Ul Alam Airport, Srinagar, approx. 29.80 km in NNW direction.
	Seismic Zone	As per the 2002 Bureau of Indian Standards (BIS) map, J&K falls in Zones V.

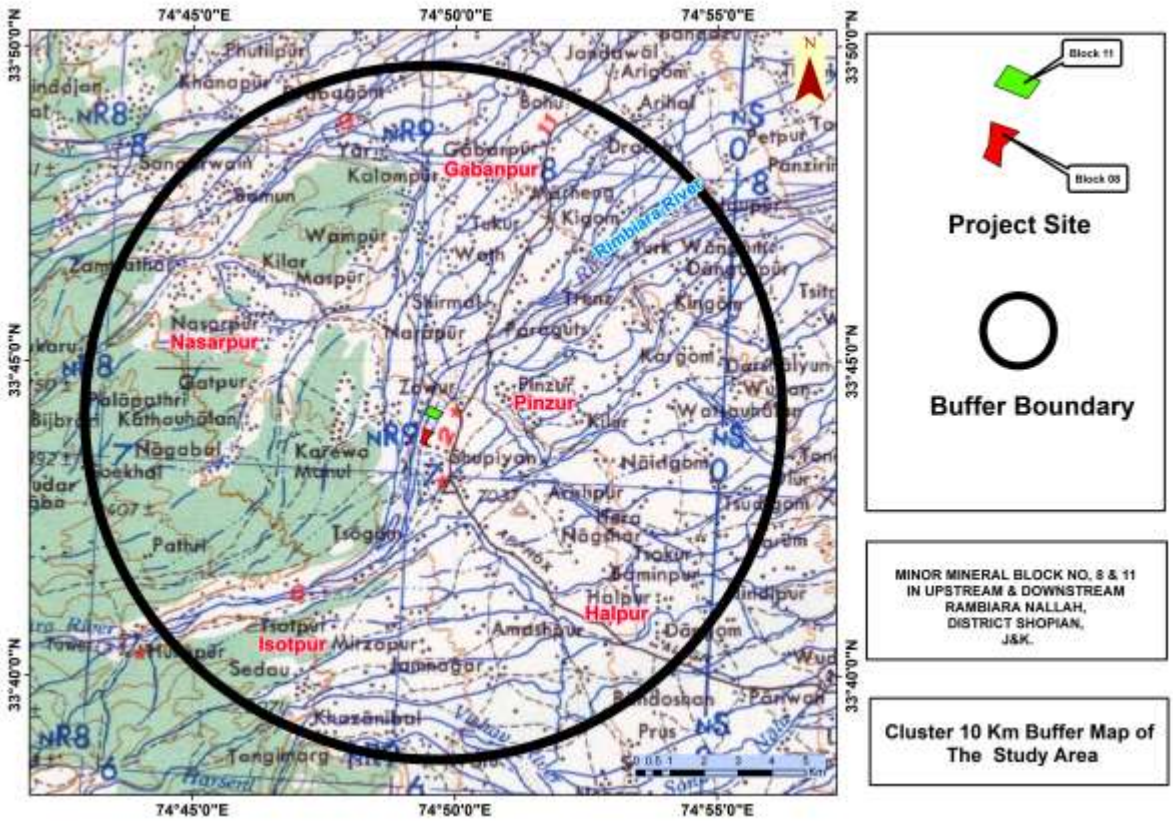

Figure 1.1, 10 km Buffer map

1.2.1 Project's importance to the country and the region

Sands are ubiquitous material; available everywhere and is being used from the time immemorial for wide applications in our daily life; infrastructures, building construction, highways, roads, townships, multiplexes, foundations of buildings and industrial units etc. and is an integral part of development. Life without sand is unthinkable. Over the millennia, the weathering effect, the flow of water at high velocities in rivers and the pressure of water from the high mountainous reservoirs converted and pushed the hard ground underneath into sands, etc. which travelled as sediments with the flow. This sand got deposited along the river course wherever conditions were favorable. In the deep past this settled sand was not extracted in a quantity in which it deposited; since due to less population the requirements was not enough. As a result of continuous deposit of sand , the rivers went on changing their course, widening by itself, eroding the fields and expanding, resulting in flooding, inundation and breaking their banks, causing devastation of property and loss of life. There has been a severe impact on every aspect of the environment. The rivers thus, needed channelization and therefore, extraction of these

minor minerals through mining was expedient. The haphazard mining of sands being practiced now for long, through unregulated, uncontrolled and illegal way added almost an irreversible damage to the environment, which became a cause of serious concern to everyone. Though sands are very important mineral source for development, its mining through scientific methods has also become equally imperative.

It is for this purpose that 'mining plan' is being drawn so that all its aspects are taken care of justifiably, according to law, protecting the environment, removing all adverse impacts and creating a direct and indirect employment opportunities, improving socio-economic conditions of the local inhabitants and all-around status of life, achieving thereby a sustainable development.

Besides the above, the process of mining of minor minerals (Sand) is a constant source of revenue generation to the State Government through Royalty.

1.3 SCOPE OF THE STUDY

The project proposal was submitted to State Level Environment Impact Assessment Authority-J & K for its appraisal. Based on which, presentation was held for Terms of Reference (TOR). Based on the data provided and presentation made, the SEIAA- J & K has issued the Terms of Reference.

Followings are the point wise compliance of the ToR provided by the SEIAA- J &K.

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Table: 1.7, Point wise compliance for TOR

(For Block no. 8 & Block No. 11)

S. No	TOR	Compliance	Reference in the Report
1	Year-wise production details should be given, clearly stating the highest production achieved in any one year.	This is fresh LOI, Mine is yet to be opened. It will open only after getting environmental clearance.	--
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	State Govt. has given consent for mining vide letter no. 866/MCC/DGM/B-8/Shp/20/2061-68 & 868/MCC/DGM/B-11/Shp/20/1981-88 dated:18/07/2020 on the name of Mr. Kapil Agarwal & M/S Sai Mines for block 8 & block 11 respectively.	**Annexure II, LOI**
3	All documents including approved mine plan, EIA and public hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management and mining technology and should be in the name of the lessee.	The documents including mine plan and EIA report submitted are compatible with one another w.r.t. to following information: Mining Lease Area- 15.22 Hectare. (In cluster) Lessee: Project proponent- Mr. Kapil Agarwal & M/S Sai Mines Proposed Production- 3,04,400 TPA (in cluster) Waste generation-No waste	**Annexure- III** Mine plan All details has been complied in chapter-2

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		will be generated. Mining Method-Opencast semi-mechanized method	
4	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	All Corner Coordinates of mining lease area superimposed on Toposheet Map has been incorporated in EIA/EMP Report	Refer Chapter 2 Fig: 2.1, 2.2 Corner Coordinates map
5	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.	The land use map showing salient features of the area is given in the report. The geological map of the mine lease area is also given in the report showing geomorphology	Land-use of the study area Figure 3.1.
6	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	The Lease area is dry part of River bed/nalla. This is a barren land. The mining process will be done by land use policy of the State & no land diversion has been proposed.	Chapter II & III

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7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating processes /procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions?. The hierarchical system or administrative order of the company to deal with the environmental issues and for insuring compliances with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	Yes, the proponent Company has a well laid down Environment Policy. The hierarchical system or administrative order of the company has been given in the EIA report.	Chapter VIII Section 8.1 Corporate Environment Policy
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case	This is an opencast sand mining project & face slope of the area is 40º. Mining will be done by opencast semi mechanized method without adoption of drilling	

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	should also be provided.	& blasting. Safety measures to be taken during mining has been detailed in the EIA report.	
9	The study area will comprise of l0 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of mine/lease period.	The 10 km zone from periphery of the lease has been considered as the study area. The Buffer map of the study area is attached with report. All the details in the EIA report are for the life of the mine period. The details of mining & production have been given in the report.	Chapter I Figure 1.1
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use pattern of 10 km from the periphery of the lease area has been prepared and incorporated with the report. The study area lies in Nallah Rambiara. There is no wildlife sanctuary or national park within the study area.	Land-use of the study area Figure 3.1 , Table 3.1 10 km buffer map enclosed in Chapter I of EIA Report.

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11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R & R issues, if any, should be given.	The proposed project lies on Nallah Rambiara and as such there is no over burden. No top-soil will be produced as waste material. There is no requirement of R& R Plan as it is a river bed sand mining project.	
12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	There is no forest land within the lease area.	---
13	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net	No forest land is involved in the lease area, therefore, deposition of net present value (NPV) and	

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	present value (NPV) and Compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	compensated Afforestation is not indicated.	
14	Implementation status of reorganization of forest rights under the schedule tribes and other traditional forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated"	There is no forest land involved in the leased out area. Hence, this act is not applicable for this project.	
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given	No RF/PF is present within the 10 km radius of the lease area. However, the vegetation details of the study area are incorporated with the report.	Chapter III Section 3.1.6 Biological Environment
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	The details Impacts & there mitigation measures are given in chapter IV of EIA/EMP Report.	Chapter IV
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger / Elephant Reserves /	No National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger	Chapter III Biological Environment

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	(existing as well as proposed), if any, within l0 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.	/ Elephant Reserves / (existing as well as proposed) are found within 10 km of the study area. MAP showing eco sensitive zone is attached in Chapter III (Fig 3.4)	
18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and	Detailed biological study of core zone and buffer zone within 10 km radius of the periphery of the mine lease has been carried out for the project. The same has been incorporated in the report.	Chapter III Biological Environment

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	details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.		
19	Proximity to Areas declared as 'Critically Polluted' or the Project areas attracting court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.	Proposed project does not come under critically polluted area.	
20	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral	There is no R & R involved in this project.	

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	programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.		
21	One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report" Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500	Base line study was carried out for pre monsoon season March to May, 2021 Details are provided in EIA/EMP Report. The locations of the monitoring stations were decided on the basis of prevailing meteorological conditions (Wind direction & wind speed) of the study area. The wind rose has been given in chapter III of EIA/EMP Report. One location has been selected in downwind direction within 500 m from the lease boundary. The location of the monitoring sites has been shown in map.	Chapter III

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	m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.		
22	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	Air quality modeling has been given in Chapter 4.	Chapter 4
23	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	The water requirement for the both project is 14 KLD for drinking, dust suppression and green belt development. A detailed water balance is being provided in the report.	Chapter –II Section 2.7.4 table 2.10 Water Requirement
24	Necessary clearance from the Competent Authority for drawl of	Water requirement will be fulfilled by private water	Detail has been given in

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	requisite quantity of water for the Project should be provided.	tanker. So, no clearance is required.	Chapter II
25	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the project, if any, should be provided.	The project do not consume any process water except for drinking, dust suppression & plantation. Plantation is proposed, which will increase the water holding capacity & help in recharging of ground water. No artificial rainwater harvesting is proposed for the present project in lease area, however if any such project proposed by State Government PP will help out for the above.	Chapter –II Section 2.7.4 table 2.8 Water Requirement
26	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided"	Mining activity will be done on Dry Bed of River so there is no impact on surface water. Mining will be up to 1 m below ground level or above the ground water table whichever comes first. This will not intersect the ground water table.	Detail has been given in Chapter II
27	Based on actual monitoring data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may	Mining will be up to 1 m below ground level or above the ground water table whichever comes first. This will not intersect the ground	Detail has been given in chapter III.

	be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	water table. Therefore, Hydro geological Report will not be required for this project.	
28	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	The Mining sites are situated at Block No. 08 (Area 5.80 ha.) Batapora Bridge Downstream Rambiara Nallah & Block No. 11 (Area 9.42ha.) Ziarat of Gunj Bhakash Arhama Upstream Rambiara Nallah, District- Shopian, Jammu & Kashmir. No diversion is proposed.	A drainage map has been given in chapter II of the report.
29	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	The highest elevation of Block no. 8 is 2019 m mRL and lowest elevation is 2001 m. The highest elevation of Block No.11 is 1991 mRL and lowest elevation is 1987m RL. Mining will be	Detail has been given in Chapter II

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		up to 1m below ground level or above the ground water table whichever comes first.	
30	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and Quantities coverage, plant species and time frame) and Submitted keeping in mind the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	Plantation/afforestation will be done as per program i.e along the road sides and near civic amenities, as per mine plan. Post plantation, the area will be regularly monitored in every season for evaluation of success rate. List of Plant species selected for green belt is detailed in the EIA report. The plant species selected for green belt have a greater ecological value and are of good utility value to the local population. The plant species are selected by giving emphasis on local and native species and the species which are tolerant to pollution	Detail has been given in Chapter VIII, Section 8.2.
31	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside	There will be about 72 trucks carrying the minerals per day. The projection has been done based on the mineral transportation. The details of traffic analysis	Detail has been given in Chapter IV Section 4.6 Traffic Analysis

	the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.	are discussed in the report.	Fig 4.2, Table 4.2(i), 4.2(ii)
32	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report	A temporary rest shelter will be provided for the workers near to the site with provisions of water, first aid facility, protective equipments, etc. Details are given in the EIA/EMP Report.	Detail has been given in Chapter II Section 2.12.2
33	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate numbers of sections) should be given in the EIA report.	Occupational health impact mainly is expected due air pollution due to fugitive dust emission because of movement of vehicles. However appropriate mitigation measures for air pollution control have been given in the report, discussed in Chapter-4. Each labour will undergo	

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		pre-placement medical examination. Thereafter periodical heath check up will be arranged as stated in the report. About 2.0 lakh has been earmarked for Occupational health.	
34	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impact mainly is expected due air pollution due to fugitive dust emission because of movement of vehicles. However appropriate mitigation measures for air pollution control have been given in the report, discussed in Chapter-4. Each labour will undergo pre-placement medical examination. Thereafter periodical heath check up will be arranged as stated in the report. About 2.0 lakh has been earmarked for occupational health.	Detail has been given in Chapter VII Section 7.2 Detail has been given in Chapter VIII, Section 8.3
35	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary	The proposed project being a small scale semi-mechanized mining project, there will be hardly any process related health implication on the population of the nearby villages except fugitive dust	Detail has been given in Chapter VII, Section 7.2

	allocations.	emissions due to transportation. Budgetary allocation is given in Chapter-VIII.	
36	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time to time for implementation.	Socio-economic significance provided to the local community i.e. to the nearby villagers is given in the EIA/EMP Report.	Detail has been given in Chapter VI, Section 6.4 Detail has been given in Chapter VII, Section 7.2
37	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	The detailed environmental management plan to mitigate the environmental impacts has been mentioned in of the EIA/EMP Report.	Detail has been given in Chapter VIII.
38	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	Public hearing has been conducted as per EIA Notification for the proposed River bed mining of Minor Minerals Block- 8 and 11 area 15.22 Ha. for a production 3,04,400 MTPA of Sand on dated 26-08-2021 at Village Degam Nagbal,	--

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39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending against the project.	
40	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	The capital cost of 5.15 lakh & 10.50 lakh as recurring cost for Block 8 & capital cost of 5.80 lakh & 9.67 lakh as recurring cost for Block has been earmarked for block 11 for EMP.	Detail has been given in Chapter IX.
41	A Disaster management Plan shall be prepared and included in the EIA/EMP Report".	A Disaster management Plan has been given in EIA report.	Detail has been given in Chapter VI.
42	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	2% of the total cost of the project has been earmarked towards the Enterprise Social Commitment which will be used for the development of village.	Detail has been given in Chapter IX.
43	**Besides the above, the below mentioned general points are also to be followed:-**		
a	Executive Summary of the EIA/EMP Report.	Attached.	
b	All documents to be properly referenced with index and continuous page numberings.	Compiled With EIA report.	
c	Where data are presented in the	Compiled With EIA report.	

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	Report especially in Tables, the period in which the data were collected and the sources should be indicated.		
d	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.	Compiled With EIA report.	
e	Where the documents provided are in a language other than English, an English translation should be provided.	Compiled With EIA report.	
f	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Compiled With EIA report.	
g	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.	Compiled With EIA report.	

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h	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.	Agreed	
i	As per the circular no. J-11011/618/2010-IA. II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.	This is new case for Mining. No certified compliance is required.	
j	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii)	Compiled With EIA report.	

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	sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.		

SPECIFIC TOR COMPLIANCE

S No.	Conditions	Reply
1.	Impact of mining activity on adjacent agricultural land with particular reference to run off, soil erosion and top soil loss due to change in topography.	The mine site is located on river bed. During mining, the sand may be deposited on the adjacent agricultural land which may affect the fertility. To prevent this Water sprinkling will be done on the haul roads twice in a day & Periodic soil quality monitoring will be done to assess the quality and for timely corrective actions.
2.	Details of Gradient of river bed and 3-D view draped on the satellite image.	3-D Maps has been attached as A**nnexure IX.**
3.	Details of excavation schedule & sequential mining plan with a maximum mine depth of 1 mtr.	Mining will be done by opencast semi mechanized semi mechanized/ manual method. Mining will be done by forming block from the upstream to downstream side. This will not obstruct the movement of water, if any, during monsoon period in the river course. Approved mining plan has been attached as A**nnexure III.**
4.	Details of transportation of mined out materials with respect to axle load	Traffic study has been done as per the Indian Road congress & given in

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	specified for the road as per the Indian Road congress for the ways (loaded as well as unloaded trucks) load and its impact on the environment.	**Chapter 4.** Transportation route map has been shown as fig no- 4.1 in **Chapter 4.**
5.	Impact on mining activity on the existing land use in the study area.	The proposed project is for extraction of stream bed materials. There will be no major changes in existing land use as excavated pits will get replenished annually in monsoon itself & will be restored to original. Detail has been given in **Chapter 4.**
6.	Impact on mining on aquatic life.	There is no existence of breeding ground of species like fishes; turtles etc. so there will be not much impact on aquatic life in the area. However, following impact may occur- • In-stream mining lowers the stream bottom, which may lead to bank erosion. Degraded stream habitats result in loss of fisheries productivity, biodiversity, and recreational potential. • Mining on the streambed may hinder the movement/migration of fishes. As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated, however, the following mitigation

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		measures will be taken to further minimize
7.	NOC from HoD/competent authority of Forest Department, Irrigation and Flood Control Dept. and Fisheries Dept. should be obtained and submitted while applying for EC.	Nocs has been attached as **Annexure IV.**
8.	The quantification of river bed, material be based on excavation only upto a maximum depth of 1 m in the riverbed or 1 m above water table whichever comes first to safeguard ecological conditions in view of non-availability of replenishment data in DSR.	Agreed
9.	A digitalized surface plan showing coordinates, physical measurement, river gradient and inter-cross section at different intervals should be a mandatory part of mining plan.	Has been given in mining plan. **Annexure III.**
10.	Specific measures to be undertaken to mitigate the impact of mining activity on the habitat and migration of fish in the river/stream and concurrence thereof from the Fisheries Department.	As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated. 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. Detail has been given in **Chapter 4.**
11.	The Photography and videography of the mining block shall be part of the	Has been given in EIA report.

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	Term of Reference.	
12.	The map shall be submitted on a scale 1:3000 and 1:500 within 10 kms. Radius.	Has been given in EIA report.
13.	The shortest extraction route leading to the main road but with minimum interference with human settlements should be identified and described in detail. This along with the map & its kml file be part of an exclusive chapter in the EMP.	Transportation route is away from human settlement. Route map has been shown in **Chapter 4.**
14.	Dust suppression measures should be prescribed in the EIA/EMP.	Water sprinkling will be done on regular basis to Dust particles. Beside this plantation will also be done along haul road.
15.	Post project monitoring plan should be included in the study.	Has been included in **Chapter 6.**
16.	Occupational health impacts should be assessed and plan for implementation of COVID- 19 SOPs in the mining activity should be detailed.	Budget for mask, gloves & sanitizer distribution has been allocated in CER budget for COVID in Chapter IX.
17.	The Consultant while presenting field data in the EIA report should ensure that the site specific date-wise datasheets duly attested by the local panchayat head with his name, signatures and stamp and attested by District Mineral Officer with seal and signature are included in the EIA	Will be submitted.

	report.	
18.	The impact of mining activity on the neighbouring villages need to be studied and extraction road need to be such that it has least crossing through village settlements.	Noted.
19.	The data displayed on air quality monitoring stations should be captured with digital camera displaying the date on the photograph so captured and same should be submitted in support of the date-wise data sheets. These digital photographs should be submitted in soft as well as appended with the EIA report.	Has been done.
20.	Mining shall be proposed manually minimally supported by semi-mechanized methods.	Agreed
21.	The mining plan approved by the competent authority, after it is technically reviewed by the Irrigation and Flood Control department and after maintaining a safe distance of 500mtrs from existing bridge.	Agreed.
22.	The prescribed TORs would be valid for period of four years of submission of the EIA/EMP reports,, as per the S.O. No. 751 (E) dated 17th Feb, 2020.	Agreed.

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2.0 TYPE OF PROJECT

The project is proposed for the excavation of RBM situated at Block No. 08 (Area 5.80 ha.) Batapora Bridge Downstream Rambiara Nallah & Block No. 11 (Area 9.42ha.) Ziarat of Gunj Bhakash Arhama Upstream Rambiara Nallah, District- Shopian, Jammu & Kashmir. The proposed project is open-cast semi mechanized mining project.

2.1 NEED FOR THE PROJECT

The Project is a mining lease for River bed mine that should be used for infrastructure development. The material is used for building construction and road construction. The sediment in the form of river bed material (RBM) deposited in the last many years had changed the shape of the Nallah Rambiara from a valley to a raised land. Hence, it is necessary to remove the materials so that the stream gets channelized. Due to rapid infrastructure development in India, the demand of construction material has increased. To supply this demand, mining of river bed material is done. The impact due to mining on the socio-economic front will be beneficial. About 26 people will directly benefited by mining through employment. With continuation of mining, other infrastructural developments will increase the socio-economic status of the local inhabitants.

2.2 LOCATION DETAILS

The project site situated at Block No. 08 (Area 5.80ha.) Batapora Bridge Downstream Rambiara Nallah & Block No. 11 (Area 9.42ha.) Ziarat of Gunj Bhakash Arhama Upstream Rambiara Nallah,, District- Shopian, Jammu & Kashmir. The lease co-ordinates and other Details are listed below:

Table 2.1, Mine lease co-ordinates/Details

Block 8		
Points	**Latitude**	**Longitude**
D1	33˚43’48.53”	74˚49’22.04”
B1	33˚43’46.65”	74˚49’28.22”
C	33˚43’52.29”	74˚49’35.60”
D	33˚43’55.85”	74˚49’22.89”
Block 11		
Points	**Latitude**	**Longitude**

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A	33˚44'11.25"	74˚49'45.00"
B	33˚44'04.63"	74˚49'39.20"
C	33˚44'09.52"	74˚49'24.25"
D	33˚44'17.12"	74˚49'30.43"

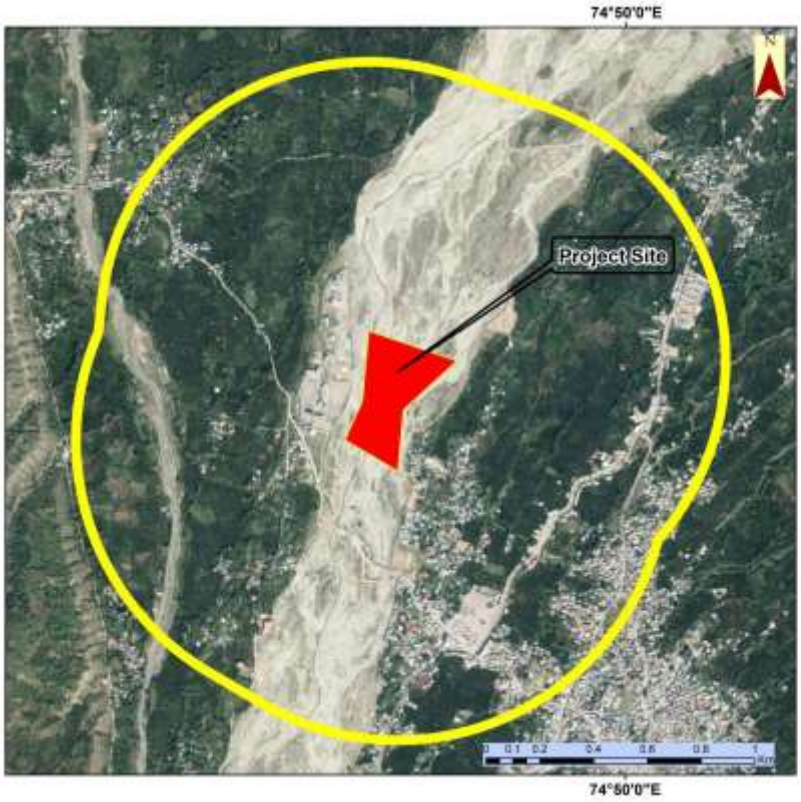

Figure 2.1:-1Km Buffer Map (Block 8)

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Figure 2.2:- 1Km Buffer Map (Block 11)

2.2.1 Lease Hold Area

The above block has a cluster area of 15.22, and lies at the Bed of Nallah Rambiara.

S.no	Lessee	Block No	Area (ha)	Proposed Capacity (TPA)
1	Name- Mr. Kapil Agarwal Address-S/O Sh. Jugesh Agarwal R/O H. no. 179 Near Panjpir Mandir Anandpur Pathankot, Gurdaspur, Punjab	8	5.80	1,16,000 TPA
2	Name- M/S Sai Mines Address- R/O Logate, Kathua Jammu and Kashmir	11	9.42	1,88,400 TPA
Total			**15.22**	**3,04,400 MTPA**

Block -08

Name- Mr. Kapil Agarwal

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Address- S/O Sh. Jugesh Agarwal

R/O H. no. 179 Near Panjpir Mandir Anandpur Pathankot,

Gurdaspur, Punjab

Block-11

Name- M/S Sai Mines

Address- R/O Logate, Kathua

Jammu and Kashmir

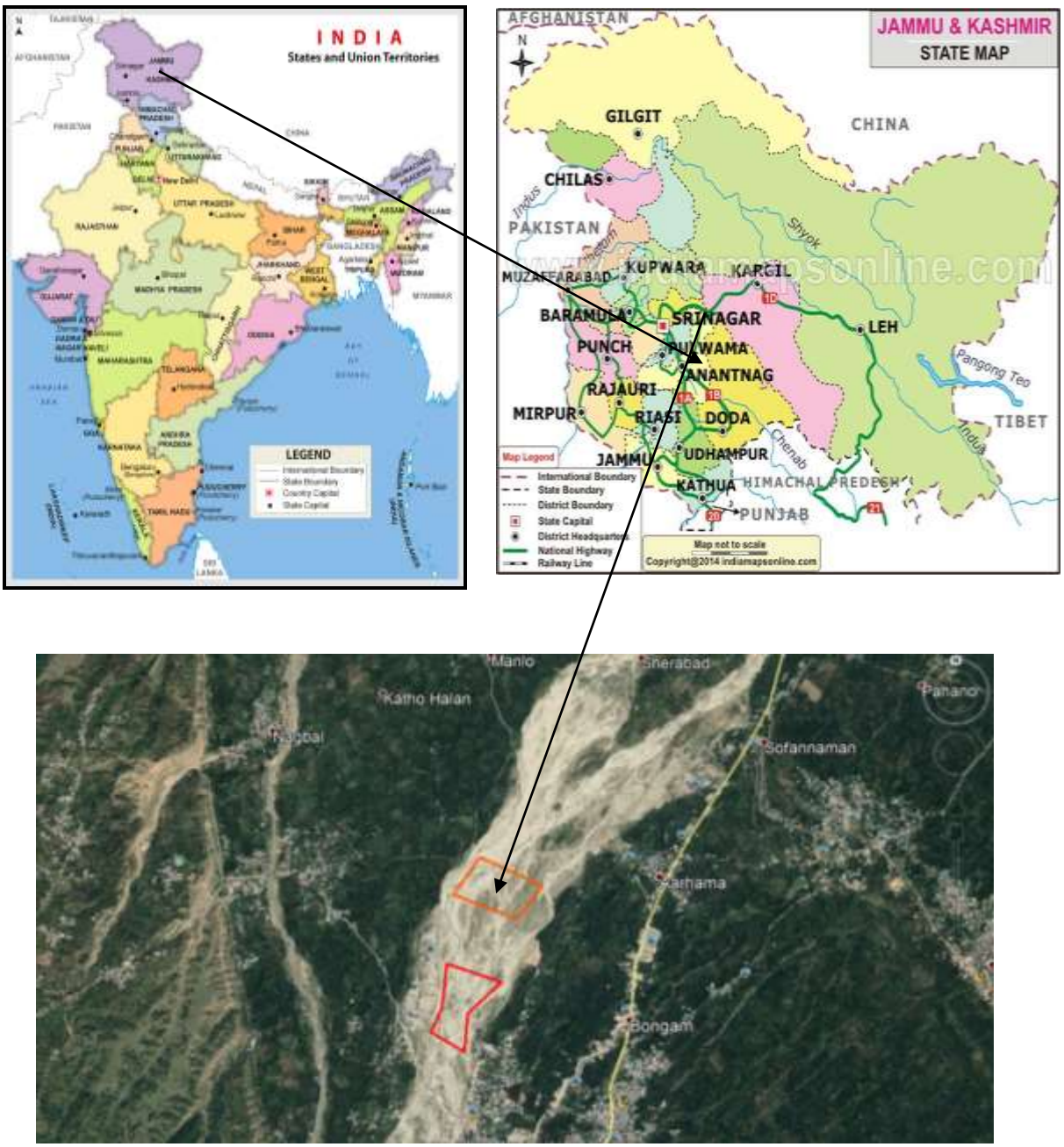

Figure 2.3: Location map

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2.3 TOPOGRAPHY & GEOLOGY

2.3.1 Topography

The Physiography of the area is a part of flat undulated river borne material bearing terrain with local species of plants and trees on either side of the banks. On Southeastern side the height is more and on Northeastern side the height is less comparatively. The physiography of the area is almost uniform.

The Elevation of the applied areas is given below:

S.N	Block No	Elevation
1	**Block 8**	2001 m to 2019 m RL
2	**Block 11**	1987 m to 1991m RL

2.3.2 REGIONAL GEOLOGY

District Shopian forms the southern part of Kashmir Basin wherein Proterozoic to Quaternary rocks of diverse origin are exposed. The main Geological Formations constituting the bed rock and the surrounding mountains include Salkhala, Panjal Volcanics and the Triassic Limestone covered by Quaternary Karewas and Alluvium deposits. A generalized regional Stratigraphic sequence of the District is given below:

Table-2.2:- Geological Succession

Group	Formation	Lithology	Age
	Alluvium and river terrace	Unconsolidated clay, silt, sand and pebble	Recent
Karewas	Naugam	Sand, clay, marl, conglomerate and loess sediments	Pleistocene to recent
	Hirpur	Clay intercalated with silt, sand, conglomerate and lignite	
	Triassic upper middle lower	Limestone, shale, siliceous limestone, sandstone, quartzite	Triassic
Panjal	Zewans	Limestone and shale's	Permo-

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			carboniferous
	Panjal traps	Basaltic lava flows	Upper - carboniferous
	Cambrian silurian	Predominantly shale's, slates, quartzite limestone	Cambrian to Silurian
	Salkhala	Garnetiferous Seri cite Phyllite quartz chlorite schist, calc-schist, graphitic limestone, marble with gypsum and graphite	proterozoic

Source: Approved Mining Plan

EXPLORATION

Mining of river bed is being done since long time therefore no specific method of exploration is required as the sand, deposited all along the bed and its pale channels, which is very well exposed on the surface. The minerals excavated from the river bed will be replenished gradually during the monsoon season every year. And the area pertaining to pale channels of the river will be leveled & restored back.

Source: Approved Mining Plan

2.3.3 CLIMATE

The weather and climate of Kashmir Division are intrinsically linked with the weather mechanism of the subcontinent in general. The location of the Kashmir Valley at a high altitude (about 1600m amsl) in the north–western corner of the subcontinent, surrounded by high mountains on all sides, gives it a unique geographical character with distinctive climatic characteristics. It experiences Temperate-cum- Mediterranean type of climate. The average annual precipitation is 660 mm. In winters, rainfall occurs from the western disturbances (temperate cyclones). These disturbances have their origin in the Mediterranean Sea. The rainfall generated by these cyclones is fairly widespread locally known as Alamgir. About 65% of the precipitation occurs in the form of snow during winter season, i.e. December to February. March and April are the months of rainfall. May to September are relatively dry months. The mercury drops between -8ºC and 12ºC during winter and attains a moderate temperature of around 35ºC during summer.

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Source: *http://cgwb.gov.in/Regions/GW-year-Books/GWYB-%202016-17/J%26K.pdf*

2.4 GEOLOGICAL & MINEABLE RESERVES

The reserves have been each stretches & for individual blocks. Geological reserves and mineable reserves have been completed through cross sectional area method. The area of each section line is multiplied by strike influence to get the volume.

Table-2.3:- Summary of Reserves Block No. 8

S. No	Category	Reserves
1	Total Geological Reserve	6,07,320 MT
2	Mineable Reserve	5,42,493 MT
3	Proposed Production	1,16,000MT/Annum
4	Ultimate depth of Mining	1 m

Table-2.4:- Summary of Reserves Block No. 11

S. No	Category	Reserves
1	Total Geological Reserve	5,93,437 MT
2	Mineable Reserve	5,35,437 MT
3	Proposed Production	1,88,400 MT/Annum
4	Ultimate depth of Mining	1 m

2.4.1 Type of Mining

Mining will be carried out by open cast bench method. following consideration taken for the proposed mine layout to be carried out systematically & scientifically:

1. The river bed material (RBM) excavation will be removed by light weight excavators and loaded in tippers from the place of excavation to the mineral processing units or construction sites Light weight excavators will be used for digging & loading of minerals in Tippers.
2. No OB/ waster material will be produced.
3. No drilling/blasting are required as the material is loose in nature.
4. Proper benching o will be maintained in the river bed parallel to the banks of the nalla.
5. Roads will be properly made and sprayed by water for suppression of dust.
6. Roads in the lease area for the movement of loaded trippers/trucks.

7. Extraction activities will start in the block from the upstream end to downstream side. This will not obstruct the movement of water, if any, during monsoon period in the river course.

2.4.2 Year Wise Production Schedule:

Mining will be performed by open cast method. Production will commence from first year. Annual rate of production for first five year is as under:

Table-2.5:- Summary of Production of Mines

Block No	Proposed Production(TPA)
Block No. 8	1,16,000 MTPA
Block No.11	1,88,400 MTPA
Total	**3,04,400 MTPA**

Source: Approved Mining Plan

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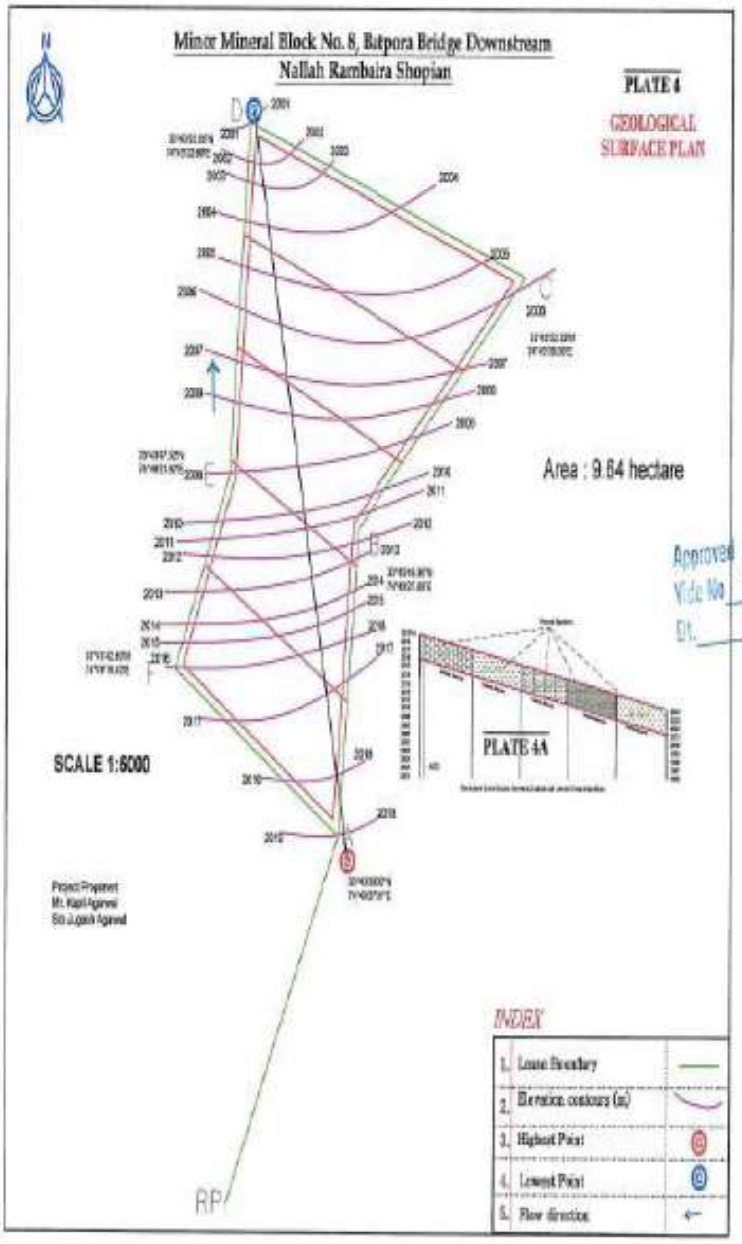

Figure 2.4: Surface Plan, Block 8

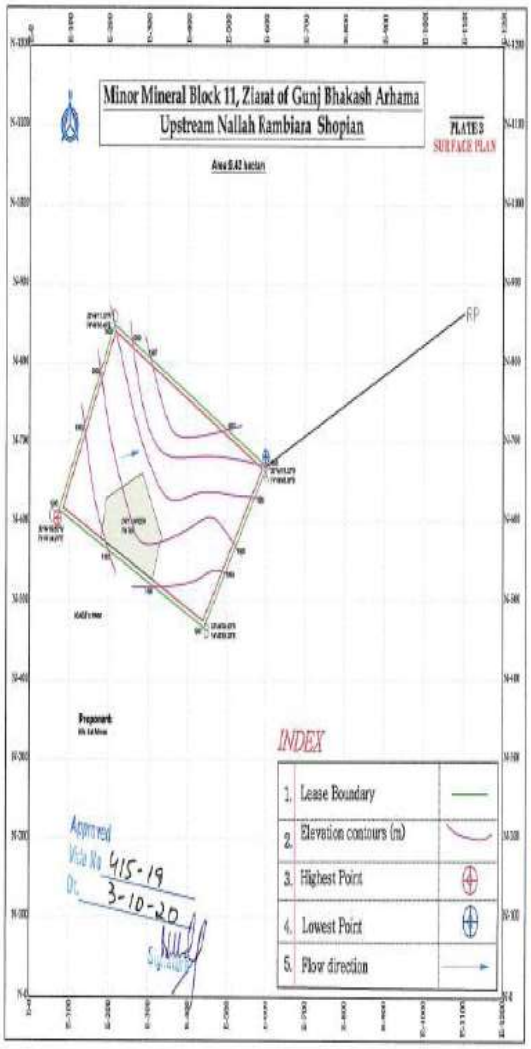

Figure 2.5: Surface Plan, Block 11

2.5 CONCEPTUAL MINING PLAN

The digging depth will be restricted to 1 m only. This will be further get replenished during the rainy season. The deposit in the river bed will never exhaust. The material will be regularly replenished during floods by the action of river water. The following steps will be taken care in mining:

- **Pit limit at the end of lease period**
- **Sites of disposal of waste rock and top soil at the end of lease period**
- **No top soil or waste will be generated in the mining as such no disposal of waste is needed.**

The river bed material will be replenished at the end of mining activity.

2.6 ANTICIPATED LIFE OF MINE

There is as such no specific life of the mine as the area under reference is inactive part of river bed of the river and its pale channels and whatever quantity of minor minerals are extracted from the Applied Area during five year; almost equal to extracted quantity of the same are replenished every year and the river bed area will be leveled & restored back.. However, as lease has been granted for 5 years, mining will be done for the allotted time.

2.6.1 Waste –disposal arrangement

No top soil is present in the mining area as it is riverbed. Small amount of domestic waste will be generated by the workers at the site, which will be disposed off through proper municipal way. No other waste generation is expected. No waste will be thrown into the streams or left on the banks. Separate bins will be kept within the lease area for domestic wastes.

2.7 GENERAL FEATURES

2.7.1 Land-use pattern

The mine lease area is hilly terrain region with river bed and river banks/nalla. There is no forest land or agriculture land in the mine lease area. The entire mining lease lies within River.

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2.7.2 Surface drainage pattern

The mine sites lies on the Nallah of Rambiara River so there will be no impact on surface water.

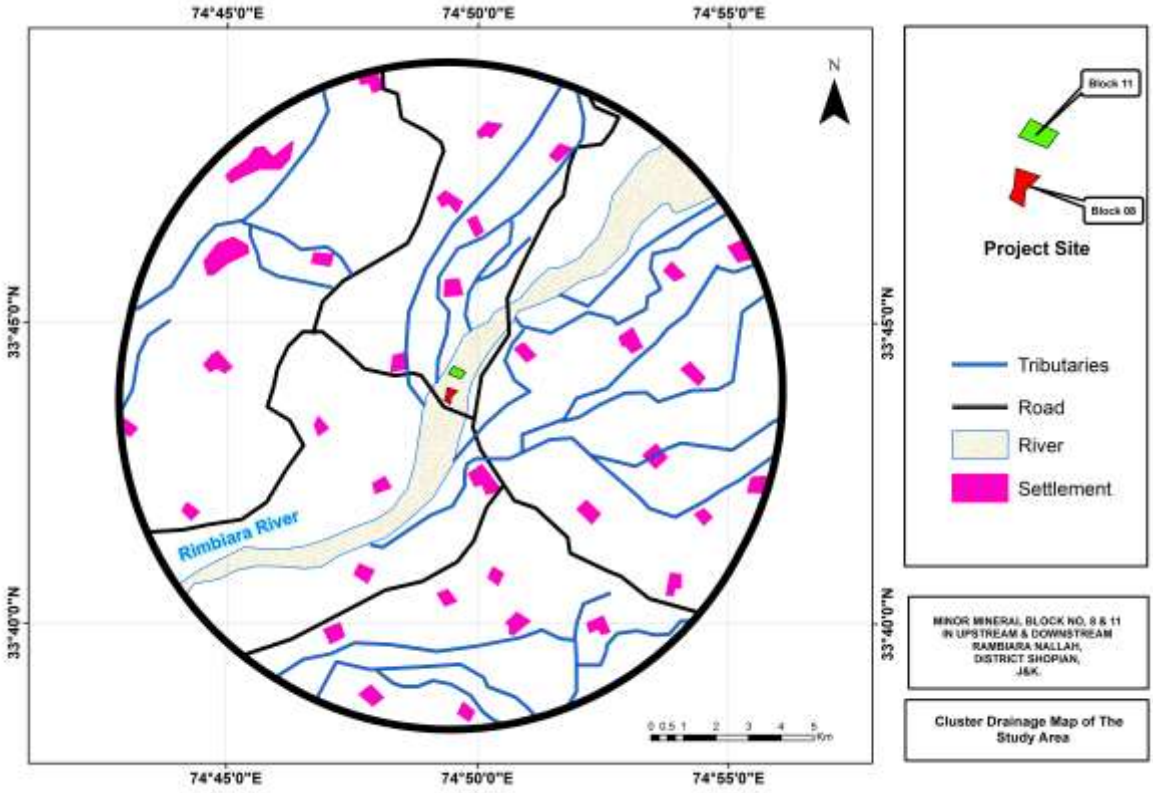

Figure 0.6: Drainage pattern (Block no. 8 & Block 11)

2.7.3 Man power requirement

The manpower requirement for the proposed project will be given below who will be utilized for excavation & loading of minerals into trucks or tractor-trolleys. Break-up of Man-power requirement is given in below:

Table 2.6: Manpower Requirement

Table 2.6 (a): Manpower Requirement Block No 8

S. No.	Category	Numbers
1.	Mine Manager (Part time)	1
2.	Supervisor	1
3.	Manager (accounts)	1
4.	Operator	2

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5.	Driver	9
6.	Helper	12
TOTAL		**26**

Table 2.6 (b): Manpower Requirement Block No Block 11

S No	Employment	No of Person
1	Manager preferably a Geologist	1
2	Mine foreman/ mine mate	1
3	Supervisor	1
4	Proclain Operator	2
5	Tipper Drivers	9
6	Skilled labour	6
7	Un skilled labour	5
Total		**25**

Table 2.7: Manpower Requirement Cluster situation (Block no. 8 & Block 11)

S.NO	Block No	Manpower
1	Block no. 8	26
2	Block No. 11	25
Total		**51**

2.7.4 Water supply

Water requirement for the proposed project will be provided for the workers for drinking & domestic purpose. Water will also be provided for dust suppression. Fresh water will be only used for drinking purpose. The break up for water requirement is given below:

Table 2.8 Water Requirement

Table 2.8(a), Water Requirement for Block no. 8

S no	Classification	Round off Figure in kld
1	Domestic Purpose	1.17
2	Dust suppression	4.98
3	Green belt development	0.4
Total		**6.55 or 6.6 KLD**

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Table 2.8(b), Water Requirement for Block No. 11

S no	Classification	Round off Figure in KLD
1	**Domestic Purpose**	1.125
2	**Dust suppression**	5.76
3	**Green belt development**	0.40
	Total	**7.28 or 7.3 KLD**

Table 2.9, Water Requirement for Cluster situation (Block 8 & 11)

S.No	Block No	Total Water Demand (KLD)
1	Block no. 8	**6.6**
2	Block No.11	**7.3**
Total		**13.9 or 14.0 KLD**

Drinking: @ 45 lpcd per labor
Dust Suppression: Total haulage road to be water sprinkled * road width *0.5 lt water*2times a day/1000
Plantation: Plants in one year*@ 4 L/per plant/1000

The water will be supplied from available sources from nearby village.

2.7.5 Site services

The following facilities/amenities will be extended by the mine management under site services:

- A temporary rest shelter will be provided for the workers near to the site for rest.
- Provisions will also be made for following in the rest shelter:
- First aid box will be made available at the site. In emergency worker.
- Sanitation facility i.e. septic tank or community toilet facility will be provided for the workers.
- Mask and gloves distribution to the workers.

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2.7.6 Extent of mechanization

The operation will be open cast semi- mechanized with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.

2.7.7 Statutory requirements

It is accepted that effective resource management cannot be done in isolation. The proponent therefore vigorously pursues approaches towards coordination and integration where possible, so as to lead to coordinated regulatory systems.

Various acts dealing with matters relating to the conservation and protection of the environment and which a holder of a mining authorization must also take cognizance of include inter alia, the following:

- Jammu & Kashmir Minor Mineral Concession Rule, 1962 and amendments till date.
- The Mines Act, 1952.
- The Mines and Mineral (Development and Regulation) Act, 1957.
- Mines Rules, 1955.
- Mineral Concession Rules, 1960.
- Mineral Conservation and Development Rules, 1988.
- The Water (Prevention and Control of Pollution) Act, 1974.
- The Air (Prevention and Control of Pollution) Act, 1981.
- The Environment (Protection) Act, 1986.
- The Forest (Conservation) Act, 1980.
- The Wildlife (Protection) Act, 1972.

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3.0 General

The main objective of describing the environment which may be potentially affected, are a) to assess present environmental quality and the environmental impacts and ii) to identify environmentally significant factors that could preclude mine development. Mining activities affect the existing status of environment at site. In order to maintain the existing environmental status at mining site it is essential study existing environmental status and assess the impact of upcoming project on various environmental components. This chapter gives idea of description of environment status of the study area and this will be helpful for assessment of impact on the environment due to proposed mining activities. Baseline environmental status in and around proposed mining lease area describe the existing conditions of air, noise, water, soil, biological and socio-economic environment. The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring. The data was collected for various environmental attributes so as to compute the impacts that are likely to arise due to proposed development activity.

3.0.1 Study area & study period

The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring. The baseline environment quality was carried out over a radial distance of 10 km around the mining lease area during Pre-Monsoon Season covering the months of March to May, 2021.

3.0.2 Methodology

Base line attributes like ambient air, water, meteorology, noise, Soil, Ecology and Biodiversity & Socio Economy condition were collected as per approved term of reference. Secondary data was also collected from various government department as well as local people. Methodology adopted in this study is as follows.

- ✓ By setting up meteorological station near project site
- ✓ Collection of site specific meteorological data at the mine site.
- ✓ Installation of respiratory dust samplers (for PM_{10}, $PM_{2.5}$) at different location in the study area for the collection of primary air pollutant and analyze the existing air conditions.
- ✓ Carrying out a detailed biological study for the Core and Buffer Zone

- ✓ Soil sample were collected from various location in the study area to analyze physical and chemical characteristics for assessment of impact on soil.
- ✓ Ground water samples were also collected from the various locations in the study area for analysing the existing water quality in the study area.
- ✓ Noise measurement has been done in core zone as well as buffer zone to analyze the existing situation in the study area.
- ✓ Literature review that includes identification of relevant data and articles from various publications, various government agencies and other sources for socio-economy, demography has been done with primary data collection in 10 km of the study area.
- ✓ Existing pollution load has been also identified in the buffer zone due to similar activities.
- ✓ Accordingly, field studies were carried out during the study period (March to May, 2021) to establish the existing baseline conditions.

3.1 Land Environment of the Study area

Land use

Land use involves he management and modification of natural environment or wilderness in to built environment such as settlements and semi-natural habitats such as arable fields, pastures, and managed woods. It also has been defined as "the total of arrangements, activities and inputs that people undertake in a certain land cover type.

Land cover

Land cover is the physical material at the surface of the earth. Land covers include grass, asphalt, trees, bare ground, water, etc. Earth cover is the expression used by ecologist Frederick Edward Clements that has its closest modern equivalent being vegetation. The expression continues to be used by the Bureau of Land Management.

To assess the land use pattern surrounding the 10 km radius of the site, a detailed study was carried out. The land use pattern study reveals that the 10 km environs is predominantly agricultural land.

There will be no diversion or modification of any land use due to the mining activity.

Table 0-1: Land Use detail

Land Use Type	Area (Ha.)	Percent (%)
Forest	7640.19	23.26
River	1911.96	5.82
Settlement	934.26	2.85
Agriculture	22362.30	68.07
Total	**32848.71**	**100**

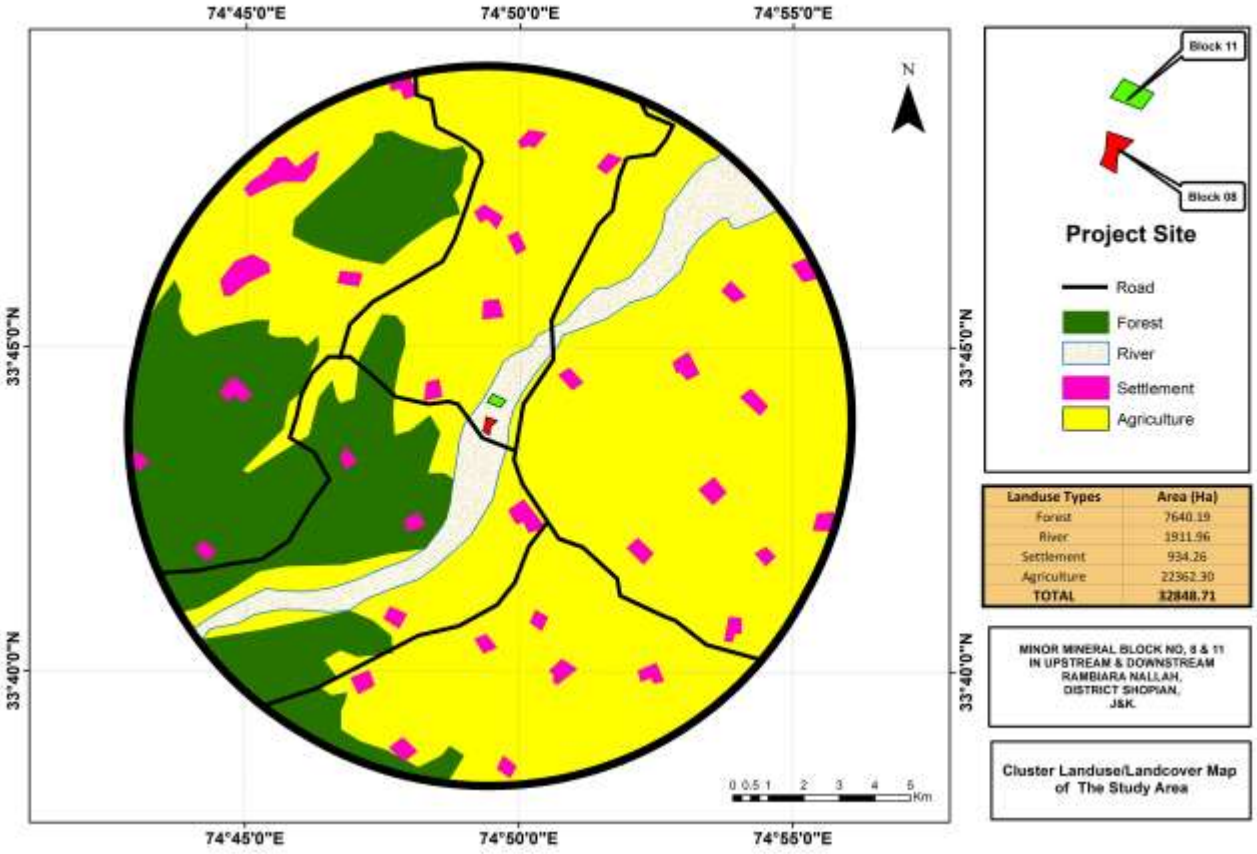

Figure 0-1: Land use detail

3.2 WATER ENVIRONMENT

Water quality assessment is one of the essential components of EIA study. Such assessment helps in evaluating the existing health of water body and suggesting appropriate mitigation measures to minimize the potential impact from development projects. Water quality of ground water has been studied in order to assess proposed water-uses in construction, drinking, cooling and horticulture purpose.

The water quality at the site and other locations within the 10 km impact zone was monitored during March 2021. The water sampling locations marked within the study are presented in **Table 3.2** and the result of the monitoring and analysis are presented in the **Table 3.3** showing Water Quality Monitoring Locations marked within the Study Area.

. **Table 3.2 Location of Water Sampling Sites**

	Ground water		
	Monitoring Site	Distance	Direction
GW1	Zerakan	3.2	NW
GW2	Shopian	2.0	ESE
GW3	Danger Pora	6.0	SE
GW4	Pohan	3.6	NE
GW5	Day Gam	3.5	SW

Table 3.3 Location of Surface Water Sampling Sites

Location code	**Monitoring site**	**Distance /direction**
SW1	Near BaganderMohallah (Upstream)	2.0 Km/S
SW2	Project Site	
SW3	Near Sherabad (downstream)	1.5 Km/NNE

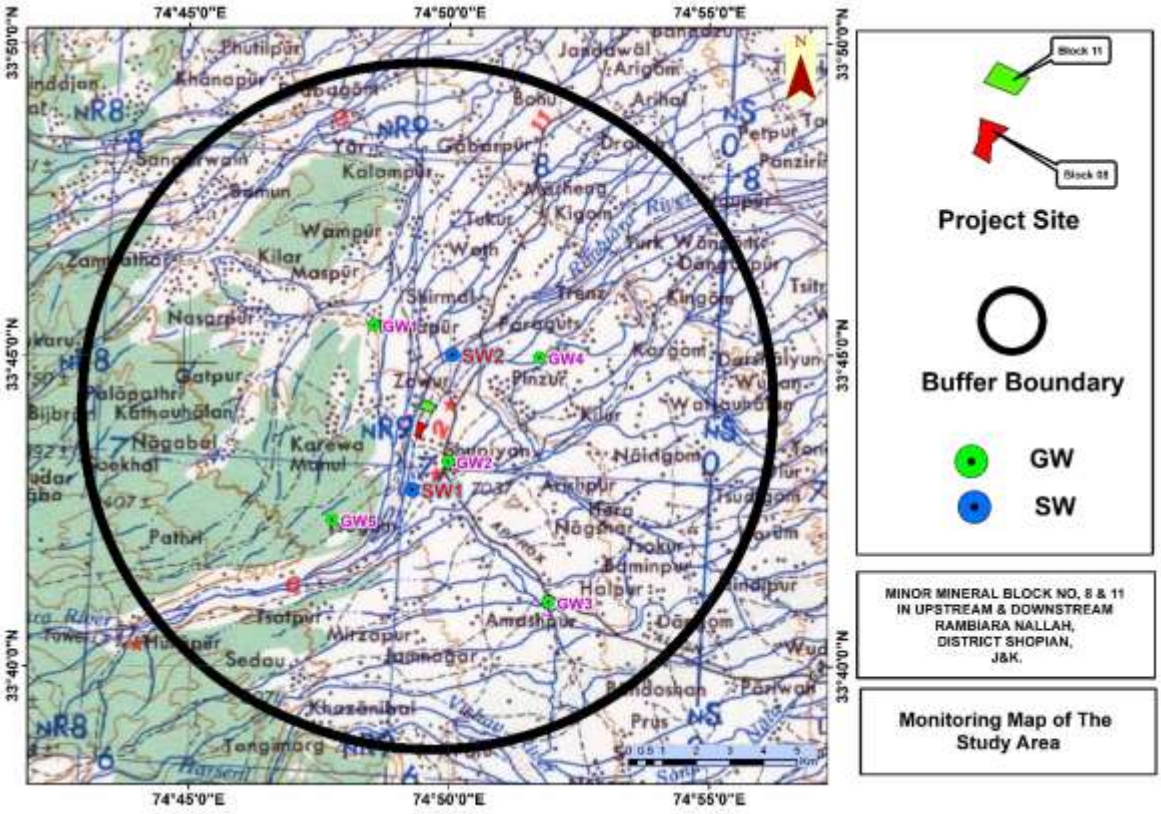

Figure 3.2, Location of Water Sampling Sites

Table 3.4 Ground water Sample Analysis Results

S. No.	Parameter	GW1 Zerakan	GW2 Shopian	GW3 Danger Pora	GW4 Pohan	GW5 Day Gam	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
Physical Parameter								
1.	**pH (at 25 ^{0}C)**	7.35	7.28	8.02	7.70	7.66	6.5-8.5	-
2.	**Colour (Hazen Unit)**	<5	<5	<5	<5	<5	5	15
3.	**Turbidity (NTU)**	<1	<1	<1	<1	<1	1	5
4.	**Odour**	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	**Taste**	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	-
Chemical Parameter								
6.	**Total Hardness as $CaCO_3$ (mg/L)**	134.62	127.54	130.46	131.50	135.66	200	600

7.	**Calcium as Ca (mg/L)**	30.29	32.18	31.61	29.83	33.45	75	200
8.	**Alkalinity as $CaCO_3$(mg/L)**	122.75	126.64	130.47	128.55	131.68	200	600
9.	**Chloride as Cl (mg/L)**	38.61	40.17	39.82	37.90	41.21	250	1000
10.	**Cyanide as CN (mg/L)**	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	No Relaxation
11.	**Magnesium as Mg (mg/L)**	9.98	10.24	10.67	10.32	9.86	30	100
12.	**Total Dissolved Solids (mg/L)**	180.63	216.47	210.56	197.13	207.73	500	2000
13.	**Sulphate as SO_4 (mg/L)**	11.90	12.20	10.88	11.77	10.55	200	400
14.	**Fluoride as F (mg/L)**	0.06	0.07	0.10	0.09	0.05	1.0	1.5
15.	**Nitrate as NO_3 (mg/L)**	6.10	5.76	5.93	6.06	5.66	45	No Relaxation
16.	**Iron as Fe (mg/L)**	0.17	0.15	0.20	0.19	0.16	0.3	No Relaxation
17.	**Aluminium as Al (mg/L)**	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.2
18.	**Boron (mg/L)**	0.27	0.25	0.28	0.23	0.24	0.5	1.0
19.	**Chromium as Cr (mg/L)**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.05	No Relaxation
20.	**Conductivity (mS/cm)**	0.480	0.393	0.473	0.459	0.442	1.500	-
21.	**Phenolic Compounds (mg/L)**	< 0.001	<0.001	< 0.001	< 0.001	<0.001	0.001	0.002
22.	**Mineral Oil (mg/L)**	< 0.01	<0.01	< 0.01	< 0.01	<0.01	0.5	No Relaxation
23.	**Anionic Detergents as MBA (mg/L)**	<0.02	<0.02	< 0.02	< 0.02	<0.02	0.2	1.0
24.	**Zinc as Zn (mg/L)**	0.47	0.51	0.54	0.44	0.59	-	15
25.	**Copper as Cu (mg/L)**	0.13	0.17	0.14	0.19	0.15	0.05	1.5
26.	**Manganese as Mn (mg/L)**	< 0.10	<0.10	< 0.10	< 0.10	<0.10	0.1	0.3

27.	**Cadmium as Cd (mg/L)**	< 0.001	<0.001	< 0.001	< 0.001	<0.001	0.003	No Relaxation
28.	**Lead as Pb (mg/L)**	< 0.01	<0.001	< 0.01	< 0.01	<0.001	0.01	No Relaxation
29.	**Selenium as Se (mg/L)**	< 0.01	<0.01	< 0.01	< 0.01	<0.01	0.01	No Relaxation
30.	**Arsenic as As (mg/L)**	< 0.01	<0.01	< 0.01	< 0.01	<0.01	0.01	0.05
31.	**Mercury as Hg (mg/L)**	<0.001	<0.001	< 0.001	<0.001	<0.001	0.001	No Relaxation
32.	**Total Coliform (MPN/100 mL)**	<2/100ml	<2/100ml	<2/100ml	<2/100ml	<2/100ml	Absent/250ml	
Microbiological Parameter								
33.	***E. coli* (CFU/100mL)**	Absent	Absent	Absent	Absent	Absent	Absent/250ml	

Table 3.5 Surface water Sample Analysis Results

S. No.	Parameter	SW 1 (Near BaganderMohallah (Upstream))	SW2 (Project Site)	SW 3 (Near Sherabad (downstream))
Physical Parameter				
1.	**pH (at 25 ^{0}C)**	7.27	7.56	7.74
2.	**Colour (Hazen)**	<5	<5	<5
3.	**Turbidity (NTU)**	<1	<1	<1
4.	**Odour**	Agreeable	Agreeable	Agreeable
5.	**Total Hardness as $CaCO_3$ (mg/L)**	107.63	118.41	123.33
Chemical Parameter				
6.	**Calcium as Ca (mg/L)**	31.24	33.49	34.17
7.	**Alkalinity as $CaCO_3$ (mg/L)**	92.52	95.63	96.42
8.	**Chloride as Cl (mg/L)**	22.36	23.48	24.19
9.	**Residual free Chlorine (mg/L)**	<0.20	<0.20	<0.20
10.	**Cyanide as CN (mg/L)**	<0.02	<0.02	<0.02
11.	**Magnesium as Mg (mg/L)**	3.91	4.32	4.45
12.	**Total Dissolved Solids (mg/L)**	280.23	284.76	287.83
13.	**Total Suspended Solids (mg/L)**	14.00	15.00	13.00
14.	**Dissolved Oxygen (mg/L)**	7.1	6.9	6.7
15.	**Sulphate as SO_4 (mg/L)**	9.97	10.18	9.87

16.	**Fluoride as F (mg/L)**	0.06	0.08	0.07
17.	**BOD (3 Days at 27 ^{0}C) (mg/L)**	3.9	4.1	4.0
18.	**COD (mg/L)**	12.65	14.00	15.00
19.	**Conductivity (mS/cm)**	0.465	0.478	0.484
20.	**Nitrate as NO_3 (mg/L)**	3.97	4.15	4.38
21.	**Iron as Fe (mg/L)**	0.08	0.10	0.11
22.	**Aluminium as Al (mg/L)**	<0.03	<0.03	<0.03
23.	**Boron (mg/L)**	0.15	0.16	0.14
24.	**Hexa Chromium as Cr^{+6} (mg/L)**	<0.01	<0.01	<0.01
25.	**Phenolic Compounds (mg/L)**	<0.001	<0.001	<0.001
26.	**Mineral Oil (mg/L)**	<0.01	<0.01	<0.01
27.	**Anionic Detergents as MBAS (mg/L)**	<0.02	<0.02	<0.02
28.	**Zinc as Zn (mg/L)**	0.19	0.21	0.23
29.	**Copper as Cu (mg/L)**	0.03	0.04	0.05
30.	**Manganese as Mn (mg/L)**	<0.10	<0.10	<0.10
31.	**Cadmium as Cd (mg/L)**	< 0.001	< 0.001	< 0.001

3.2.1 Sampling frequency

Parameters for analysis of water quality were selected based on the utility of the particular source of water as per CPCB guidance. Water quality was monitored for parameters as per Methods of Monitoring & Analysis published by CPCB and it was rated according to the CPCB Water Quality Criteria against A, B, C, D & E class of water. Water samples were collected as Grab water sample from sampling location for complete physico-chemical and bacteriological tests respectively.

The surface water quality is compared with CPCB water quality criteria mentioned in **Table 3.6** below:

Table 3.6, Water quality criteria as per Central Pollution Control Board

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6mg/l or more Biochemical Oxygen

		Demand 5 days 20°C 2mg/l or less
Outdoor bathing (Organized)	B	Total Coliforms Organism MPN/100ml shall be 500 or less; pH between 6.5 and 8.5; Dissolved Oxygen 5mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	Total Coliforms Organism MPN/100ml shall be 5000 or less; pH between 6 to 9; Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Propagation of Wild life and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH between 6.0 to 8.5 Electrical Conductivity at 25°C micro mhos/cm Max.2250 Sodium absorption Ratio Max. 26 Boron Max. 2mg/l
	Below-E	Not Meeting A, B, C, D & E Criteria

As per the standard practice, one sample from each station was taken in March. Sampling was done by standard sampling technique as per the Standard Methods. Necessary precautions were taken for preservation of samples.

3.2.2 Result & Conclusion: •

- The pH limit fixed for drinking water samples as per IS-10500 Standards is 6.5 to 8.5 beyond this range the water will affect the mucus membrane or water supply system. During the study period, the pH was varying for ground waters from 7.28to 8.02 and for surface waters from 7.27 to 7.74. The pH values for all the samples collected in the study area during study period were found to be within the limits.
- The desirable limit for total dissolved solids as per IS-10500 Standards is 500 mg/l whereas the permissible limit in absence of alternate source is 2000mg/l. In ground water samples

collected from the study area, the total dissolved solids are varying from 180.63mg/l to 216.47mg/l. In surface water samples collected from the study area, the total dissolved solids are varying from 280.23mg/l to 287.83mg/l. The TDS of the samples were within the desirable limit & the permissible limit of 500mg/l & 2000 mg/l respectively.

- The Dissolved oxygen and BOD of the samples were also within the desirable limit & the permissible limit.

3.3 AIR ENVIRONMENT

Meteorology is the key to understand the air quality. The essential relationship between meteorology and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A meteorological station was set up at the proposed mine premises. Meteorological data was generated during the pre-monsoon monitoring period and shown in **Table-3.5**

The following parameters were recorded at hourly intervals continuously during monitoring period, except rainfall which was recorded on daily basis.

- Wind speed
- Wind Direction
- Air Temperature

Table 3.7, Metrological Data

Month	Temperature °C			Wind speed		Relative Humidity (%)	Rainfall (mm)	
	Min	Avg	Max	Max	Avg		Avg	Days
March 2021	4	12	15	7	4	60	261.2	22
April 2021	7	14	17	8	4.5	65	316.3	25
May 2021	14	20	24	9.1	4.4	62	140.5	30

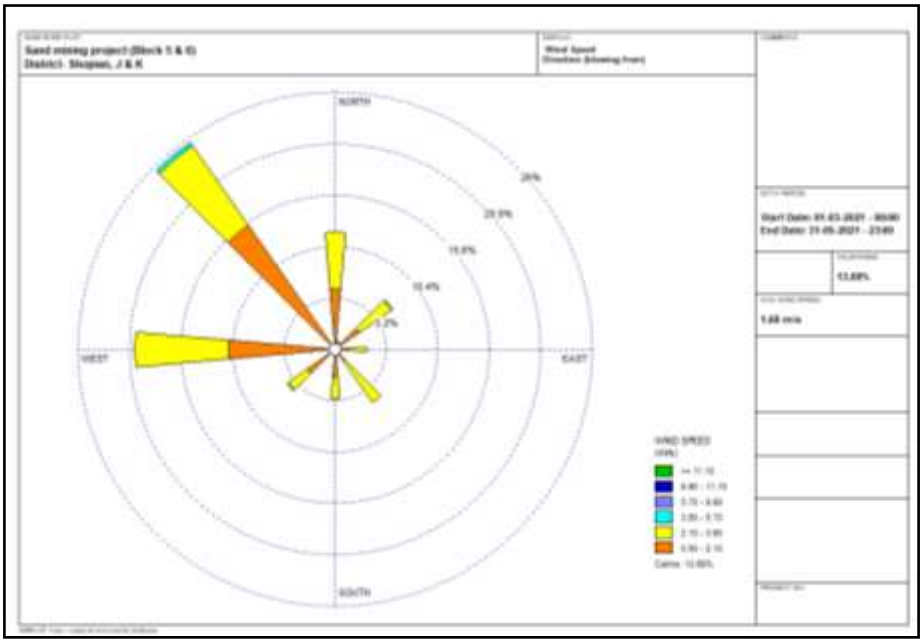

Figure 3.3 Project Site Wind-rose

3.3.1 Secondary Data

Secondary data has been collected for temperature, relative humidity, rainfall, wind speed and direction. The data at IMD is usually measured twice a day viz., at 0830 and 1730 hr.

The monthly maximum, minimum and average values are collected for all the parameters except wind speed and direction.

3.3.2 Ambient Air Quality

The ambient air quality was monitored in the impact area as per MoEF & CC guidelines. The study area represents entirely rural environment. The prime objective of the baseline air quality study was to assess the ambient air quality of the mining lease area.

3.3.3 Selection criteria for monitoring location

The baseline status of the ambient air quality has been assessed through a scientifically designed ambient air quality network. The design of monitoring network in the air quality surveillance programme has been based on the following consideration.

- Meteorological parameters including wind direction

- Topography of the study area
- Representative of regional background air quality for obtaining baseline status
- Representative of likely impact areas.

Ambient Air Quality Monitoring (AAQM) stations were set up at 8 locations with due consideration to the above mentioned points. AAQM locations were selected in downwind, upwind as well as crosswind direction of the proposed mining lease area covering core and buffer zones. The monitoring stations are shown in **Figure 3.4** and shown in **Table-3.8.**

Ambient air quality monitoring was carried out twice a week with a frequency of 24 hours for three months during the study period. The common air pollutant namely Particulate Matter-10 (PM_{10}) & $PM_{2.5}$, Sulphur-dioxide (SO_2) and Oxides of Nitrogen (NO_2) has been measured through a planned field monitoring.

The baseline values of the air pollutants of concern are presented in Tables below statistical parameters like minimum, maximum, average and 98th percentiles have been computed from the observed field data for all sampling stations. These are compared with the standards prescribed by Central Pollution Control Board (CPCB) for industrial, residential and rural zone.

Table 3.8, Ambient Air Quality Monitoring Stations

Locations Code	Locations	Distance (km)	Direction
AAQ1	Mine Site	-	-
AAQ2	Zerakan	3.2	NW
AAQ3	Shopian	2.0	ESE
AAQ4	Danger Pora	6.0	SE
AAQ5	BaganderMohallah	2.0	S
AAQ6	Day Gam	3.5	SW
AAQ7	Pohan	3.6	NE

AAQ8	Near Bongam	0.2	E

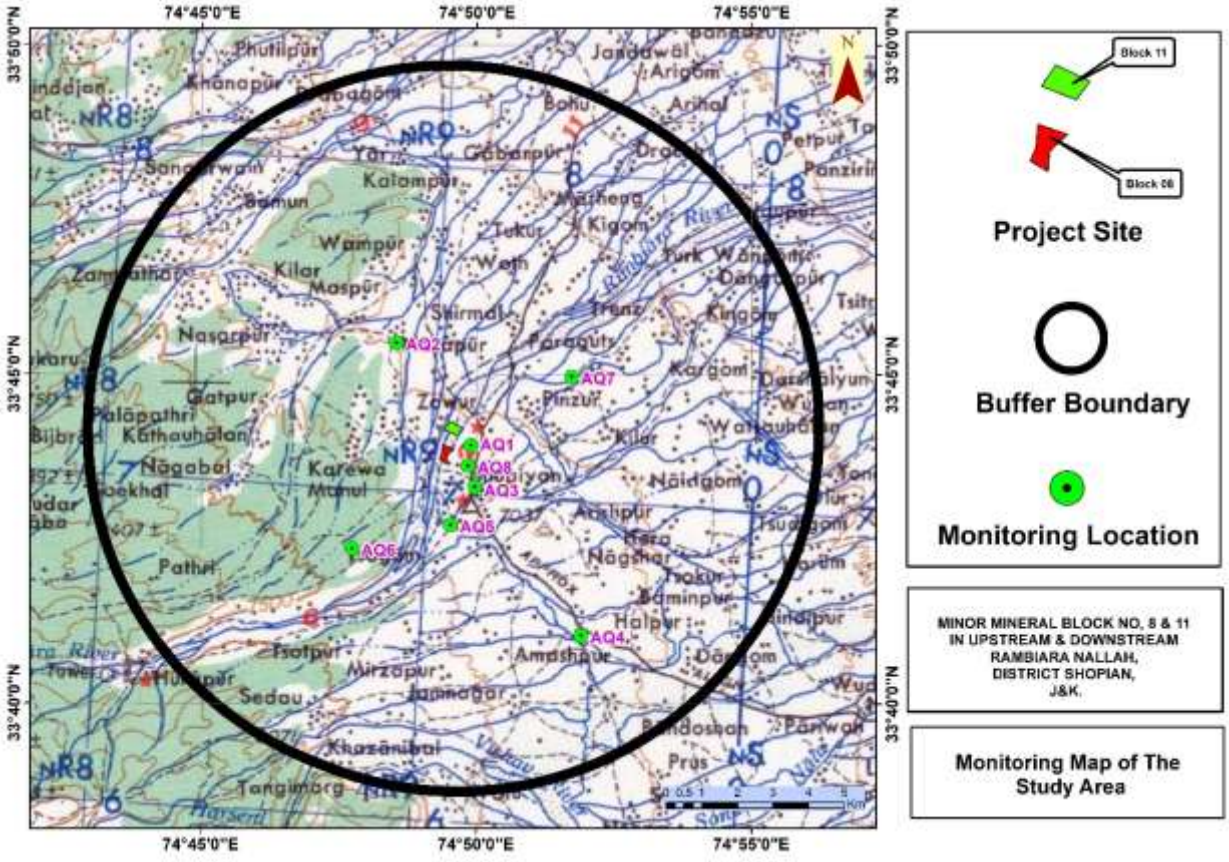

Figure 3 4, Ambient Air Quality Monitoring Stations

3.3.4.1 Baseline Scenario

Ambient Air Quality in the Study Area PM2.5

Location Code	PM2.5 (µg/m^3)				
	Name of the station	Min	Max	Average	98th Percentile
AAQ1	Mine Site	20.32	39.74	26.37	38.66
AAQ2	Zerakan	17.63	31.66	22.23	31.53
AAQ3	Shopian	23.48	39.56	27.62	39.50
AAQ4	Danger Pora	20.80	35.13	27.20	34.96
AAQ5	BaganderMohallah	20.76	38.16	27.35	37.95
AAQ6	Day Gam	19.15	32.91	24.55	32.57

AAQ7	Pohan	19.51	35.38	25.32	35.07
AAQ8	Near Bongam	21.64	36.55	28.30	36.38

Ambient Air Quality in the Study Area PM10

Location Code	**PM10 (µg/m^3)**				
	Name of the station	**Min**	**Max**	**Average**	**98th Percentile**
AAQ1	Mine Site	37.16	55.3	44.44	54.90
AAQ2	Zerakan	34.82	47.48	40.00	46.44
AAQ3	Shopian	41.42	55.5	50.10	54.85
AAQ4	Danger Pora	38.28	49.40	44.35	49.06
AAQ5	BaganderMohallah	39.2	51.36	45.81	49.62
AAQ6	Day Gam	35.73	47.03	43.46	46.86
AAQ7	Pohan	35.30	48.38	39.90	46.22
AAQ8	Near Bongam	37.88	48.88	43.88	48.54

Ambient Air Quality in the Study Area SO2

Location Code	**SO2 (µg/m^3)**				
	Name of the station	**Min**	**Max**	**Average**	**98th Percentile**
AAQ1	Mine Site	5.31	10.42	6.86	10.02
AAQ2	Zerakan	4.72	9.79	6.65	9.32
AAQ3	Shopian	6.27	10.86	8.16	10.48
AAQ4	Danger Pora	6.1	10.01	7.95	9.86
AAQ5	BaganderMohallah	5.9	10.42	7.95	10.25
AAQ6	Day Gam	6.12	9.08	7.57	8.98
AAQ7	Pohan	5.49	9.46	7.11	9.31
AAQ8	Near Bongam	6.1	10.01	7.94	9.86

Ambient Air Quality in the Study Area NO2

Location Code	**NO_2 (µg/m^3)**				
	Name of the station	**Min**	**Max**	**Average**	**98th Percentile**
AAQ1	Mine Site	11.18	21.68	14.67	21.53
AAQ2	Zerakan	10.66	18.89	14.38	18.22
AAQ3	Shopian	12.56	22.0	16.37	21.14

AAQ4	Danger Pora	11.69	21.15	15.50	20.04
AAQ5	BaganderMohallah	11.19	20.76	15.69	20.11
AAQ6	Day Gam	11.8	17.96	14.84	17.86
AAQ7	Pohan	11.35	20.91	15.64	20.18
AAQ8	Near Bongam	11.11	19.16	14.70	18.54

Ambient Air Quality in the Study Area Free Silica

Location	**Free Silica (µg/m^3)**		
Code	**Name of the Station**	**Min**	**Max**
AAQ1	Project Site	1.08	1.14
AAQ2	Zerakan	0.72	0.84
AAQ3	Shopian	1.15	1.22

The Ambient Air Quality Monitoring reveals that of monitoring stations with minimum Concentrations of PM10 were 34.82µg/m3 and maximum 55.5µg/m3 . The result of PM2.5 reveals that the minimum concentration of 17.63µg/m3 while maximum concentration of 39.56µg/m3.

The gaseous pollutants SO2 and NOx were within the prescribed CPCB limit of 80 µg/m3. For residential and rural areas at all stations. The minimum & maximum concentrations of SO2 were found to be 4.72µg/m3&10.86µg/m3 respectively. The minimum & maximum concentrations of NOx were found to be 10.66µg/m3 at AQ2&22.0µg/m3at AQ3.

The free silica content in PM10 was found to be minimum 0.72g/m3 and maximum 1.22g/m3 at AQ2 and AQ3 respectively.

3.4 SOIL ENVIRONMENT

Soil may be defined as a thin layer of earth's crust, a medium for the growth of plants. The soil characteristics include both physical and chemical properties. The soil survey and soil sample were carried out / collected to assess the soil characteristics of the study area. Soil samples were collected

from 8 locations and analyzed as per CPCB norms. The soil sampling locations are marked in **Figure 3.5** and shown in **Table 3.9** The physico-chemical characteristic of these soil samples is given in **Table 3.10.**

Table 3.9 Soil Sampling Locations

Code	Monitoring location	Distance (km)	Direction
SQ1	Mine Site	-	-
SQ 2	Zerakan	3.2	NW
SQ 3	Shopian	2.0	ESE
SQ 4	Danger Pora	6.0	SE
SQ 5	BaganderMohallah	2.0	S
SQ 6	Day Gam	3.5	SW
SQ 7	Pohan	3.6	NE
SQ8	Near Bongam	0.2	E

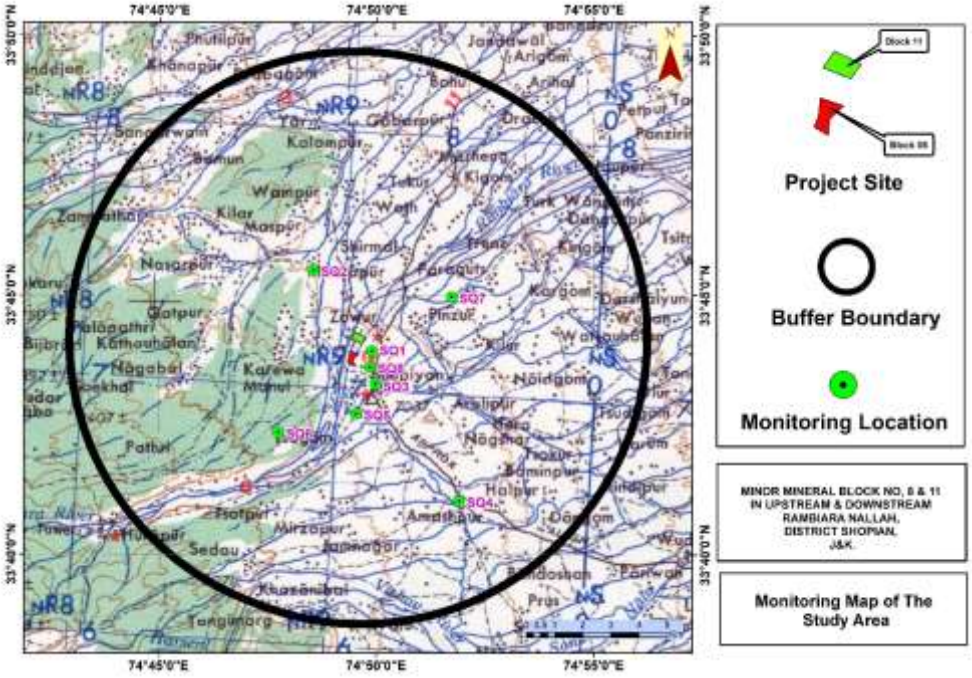

Figure 3.5, Soil Sampling Locations

Table 3.10 Physico-chemical properties of soil

S. No.	Parameter	Units	SQ1(Project site)	SQ2 (Zerakan)	SQ3 (Shopian)	SQ4 (Danger Pora)	SQ5 (Bagander Mohallah)	SQ6 (Day Gam)	SQ7 (Pohan)	SQ 8 (Near Bongam)
1.	pH (at 25 ^{0}C)	--	7.44	7.63	7.40	7.54	7.71	7.20	7.29	7.82
2.	Conductivity	mS/cm	0.413	0.391	0.411	0.407	0.386	0.380	0.425	0.378
3.	Soil Texture	--	Silty Loam	Silty Loam	Silty Loam	Silt Loam	Silt Loam	Sandy Loam	Sandy	Sandy Loam
4.	Color	--	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Brown	Brownish White	Brownish White	Brownish White
5.	Water holding capacity	%	24.64	22.72	23.43	21.98	25.10	23.46	25.09	21.83
6.	Bulk density	gm/cc	1.30	1.28	1.29	1.27	1.30	1.31	1.32	1.33
7.	Chloride as Cl	mg/100gm	18.36	21.31	20.73	24.23	22.36	23.55	21.54	23.35
8.	Calcium as Ca	mg/100gm	21.61	23.15	21.45	25.26	23.76	19.96	18.92	25.31
9.	Sodium as Na	mg/100gm	11.93	12.72	14.63	13.72	15.57	13.38	16.55	12.83
10.	Potassium as K	kg/hec.	87.42	82.38	80.43	75.29	77.81	88.76	72.84	91.20
11.	Organic Matter	%	0.60	0.55	0.62	0.51	0.67	0.65	0.58	0.54
12.	Magnesium as Mg	mg/100gm	10.27	9.87	10.10	8.92	9.69	9.30	10.19	9.61
13.	Available Nitrogen as N	kg./hec.	282.18	273.46	243.31	246.35	229.54	257.31	237.46	253.23
14.	Available Phosphorus	kg./hec.	30.86	32.45	36.39	27.78	32.34	29.43	28.34	26.49
15.	Zinc as Zn	mg/100gm	4.44	3.87	4.36	4.56	5.11	3.96	4.79	5.16
16.	Manganese as Mn	mg/100gm	0.92	1.11	1.03	0.92	0.79	0.95	0.87	1.18
17.	Chromium as Cr	mg/100gm	0.50	0.59	0.57	0.60	0.44	0.58	0.49	0.53
18.	Lead as Pb	mg/100gm	0.23	0.22	0.25	0.22	0.20	0.24	0.25	0.20
19.	Cadmium as Cd	mg/100gm	0.57	0.57	0.46	0.55	0.52	0.57	0.45	0.48
20.	Copper as Cu	mg/100gm	1.64	1.50	1.34	1.95	1.43	1.76	1.52	1.30

Observations:

Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.20 to 7.82, which shows that the soil is alkaline in nature. Potassium is found to be from 72.84mg/kg to 91.20mg/kg.

3.5 NOISE ENVIRONNENT

The noise levels within the study area were recorded using Sound Level Meter and noise monitoring results were compared with the Ambient Noise Quality Standard notified under Environment Protection Act, 1986. The levels recorded are as stated in **Table 3.11** The noise level monitoring locations are marked in **Figure 3.6** and shown in **Table 3.12.**

Table 3.11 Noise quality monitoring stations

Locations Code	Locations Code	Distance (km)	Direction
NQ1	Mine Site	-	-
NQ2	Zerakan	3.2	NW
NQ3	Shopian	2.0	ESE
NQ4	Danger Pora	6.0	SE
NQ5	Bagander Mohallah	2.0	S
NQ6	Day Gam	3.5	SW
NQ7	Pohan	3.6	NE
NQ8	Near Bongam	0.2	E

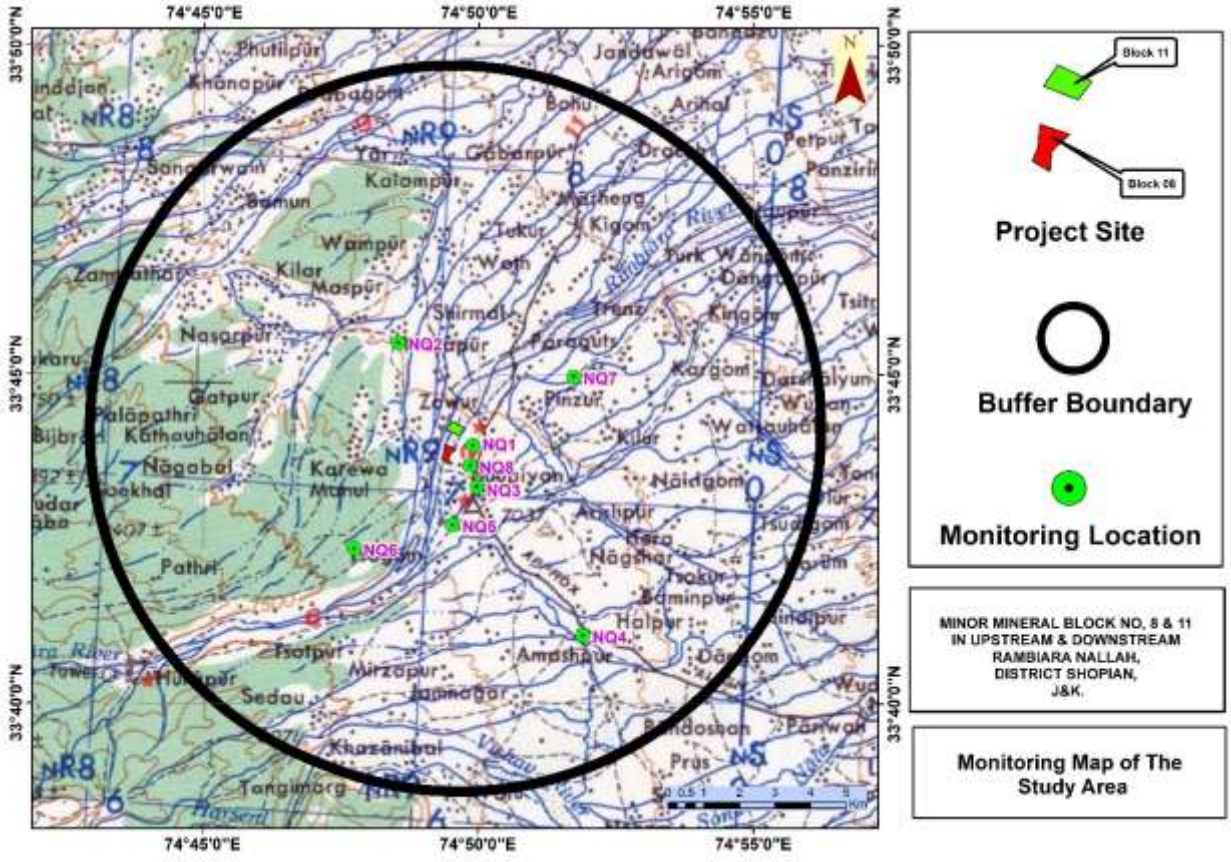

Figure 3.6, Noise quality monitoring stations

Table 3.12 Noise Monitoring Results

S. No.	Locations		Equivalent Noise Level, dB (A)			
			Limit (as per CPCB Guidelines),Leq, dB(A)		Observed value Leq, dB(A)	
			DAY*	NIGHT*	DAY*	NIGHT*
1	NQ1 (Project site)	Industrial Zone	75	70	60.78	49.83
2	NQ2 (Zerakan)	Residential Zone	55	45	40.17	30.54
3	NQ3 (Shopian)	Residential Zone	55	45	50.28	39.79
4	NQ4 (Danger Pora)	Residential Zone	55	45	42.62	30.86

5	NQ5 (BaganderMohallah)	Residential Zone	55	45	46.34	35.47
6	NQ6 (Day Gam)	Residential Zone	55	45	41.25	34.18
7	NQ7(Pohan)	Residential Zone	55	45	41.47	32.07
8	NQ8 (Near Bongam)	Residential Zone	55	45	43.79	35.86

Results

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 40.17dB (A) &60.78 dB (A) respectively. The minimum & maximum noise levels at night time were found to be 30.54 dB (A) &49.83 dB (A) respectively.

There are several sources in the 10 km radius of study area, which contributes to the local noise level of the area. On the commencement of the project, the sound from traffic activities will add to the ambient noise level of the area. This will be kept under check by taking proper suggestive measures.

3.6 BIOLOGICAL ENVIRONMENT

3.6.1 Introduction

The biodiversity we see today is the fruit of billions of years of evolution, shaped by natural processes. The vast array of interactions among the various components of biodiversity makes the planet habitable for all species, including humans. There is a growing recognition that, biological diversity is a global asset of tremendous value to present and future generations. At the same time, the threat to species and ecosystems has never been as great as it is today. Species extinction caused by human activities continues at an alarming rate. Protecting biodiversity is in our self-interest.

The biological study was under taken by Ecology & Biodiversity Expert, as a part of the EIA study report to understand the present status of ecosystem prevailing in the study area, to compare it with past condition with the help of available data, to predict changes in the biological environment as a result of present activities and to suggested measures for maintaining its health.

The state of J & K has been regarded as heaven on earth, and is also called the biomass of state of India. The biodiversity of the rich area of J&K happens to be one of the 26 hotspots in India with high endemicity. The whole Himalayan belt is one hotspot mega ventre having 8 critical areas which

includes two regions from the state viz Ladakh and Kashmir. The environments, social and economic value of plants are very well known. On the other hand, the faunal component of biodiversity of the state is rich with interesting and unique forms both in the forest zone and above forest line. The variety of animal forms ranges from higher groups like vertebrates, including mammals, birds, reptiles, amphibians and lower groups like invertebrates including insects and even unicellular micro organisms.

The information to study the flora around 10 km radius was gathered from the local habitants. All the collected data interpret the impact of pollution on the flora and fauna of that region. Local survey of the mild plants as well as cultivated crop plants was made and all the available information was recorded.

3.6.1.4 Survey Methodology

Detailed survey was conducted to evaluate floral and faunal composition of the study area. Primary data on floral and faunal composition was recorded during site visit and secondary data was collected.

3.6.1.5 Field study period:

The ecological survey has been conducted for one season. The details are given below:

Core zone: At the project site.

Buffer zone: Around the project site in 10 km radius.

Inventory of flora and fauna has been prepared on the basis of collected data. The mode of data and parameters considered during field investigations is given below:

3.6.1.6 Proposed methodology for Terrestrial Ecology

The primary objective of survey was to describe the floral and faunal communities within the study area. The sampling plots for floral inventory were selected randomly in the suitable habitats (Anderson, 1867; Jain and Rao, 1983). The methodology adopted for faunal survey involve random survey, opportunistic observations, diurnal bird observation, active search for reptiles, faunal habitat assessment, active search for scats and foot prints, animal call, and review of previous studies. The aim was to set baselines in order to monitor and identify trends after the commissioning of the mining activity. Emphasis has been placed on presence of endemic species, threatened species if any present

in the study area.

Proposed Methodology for Inland water sampling

The samples for qualitative and quantitative analysis of planktons were collected from the sub surface layer at knee depth. Water samples were filtered through plankton net of 20µ mesh size (APHA, 1971). The filtered samples were concentrated by using the centrifuge. By using Lackey's drops method and light microscope (Lackey, 1938), the quantitative analysis was carried out for phytoplankton and zooplankton. The standard flora and other literature were followed for the qualitative evaluation of Plankton (Welch 1948; Vollenweider, 1969; Edmondson, 1974).

Floral Diversity of the Study area

The climatic, edaphic and biotic variations with their complex interrelationship and composition of species, which are adapted to these variations, have resulted in different vegetation cover, characteristic of each region (Ohasi, 1975). The tree species, herbs, shrubs, climbers and major crops, were documented during this base line study.

Trees: The dominant trees in the study area are following*:*

Table 3.13: Trees in the study area

S.No.	Tree Species	Family	Common Name	Status
1.	*Abies pindrow Royle.*	Pinaceae	Silver fir, Budul, Taleesha	Common
2.	*Acer caesium*	Aceraceae	Chaind, Tilpattar	Common
3.	*Betula utilis D.Don.*	Betulaceae	Burja, Bhojpatra	Common
4.	*Celtis australis Linn.*	Ulmaceae	Kharak brimij	Common
5.	*Crataegus songaric G.Koch.*	Rosaceae	Ringkul, Shonth	Common
6.	*Euonymus hamitonian Wallich.*	Celastraceae	Sheelkul, Chhalchhattar	Uncommon
7.	*Euonymus fimbriatus Wall roxb*	Celastraceae	Tran, Lichhoi	Uncommon
8.	*Fraxinus hookeri Wenzig*	Oleaceae	Sinnu, Soom, Hoom	Threatened
9.	*Juglans regia Linn.*	Juglandaceae	Walnut, dun, khod, Achho	Common
10.	*Morus alba*	Moraceae	Tut	Common
11.	*Morus indica*	Moraceae	Tut	Common
12.	*Morus nigra*	Moraceae	Tut	Common
13.	*Parrotiopsis jacquimontia (Decne) Rehder.*	Hamamelidaceae	Hatab, Pasaid	Common
14.	*Pinus excelsa*	Pinaceae		Common

15.	*Platanus orientalis L.*	Plantanaceae	Booin, Chinaar, Chanaar	Common
16.	*Populus caspica Bornm.*	Salicaceae	Frass, Safeda	Common
17.	*Prunus cerasifera*	Rosaceae	Chaier	Common
18.	*Prunus cornuta(Wall ex. Royl steudel*	Rosaceae	Bharath	Common
19.	*Pyrus malus*	Rosaceae		
20.	*Quercus robber L.*	Fagaceae	Oak, Vilaiti, Banj	Common
21.	*Rubinia psedoacacia*	Papilionaceae		Common
22.	*Salix alba Linn.*	Salicaceae	Bot vir, white willow	Common
23.	*Salix babylonica*	Salicaceae	Majnoo kashirveer	Common
24.	*Salix wallichiana*	Salicaceae	Girveer, Geur, Bhanshri	Common
25.	*Taxus wallichiana*	Taxaceae	Postul	Threatened
26.	*Ulmus lavigata*	Ulmaceae		Common
27.	*Ulmus wallichiana planchon.*	Ulmaceae	Marnu brin, Braari, Brade	Common
28.	*Ziziphus mauritiona Lamk.*	Rhamnaceae	Ber, Badra	Common

Source: Management Plan of Dachigam National Park 2011-2016.

Shrubs: Total 15 shrub species belong to 7 families are enumerated from the study area. The shrubs observed in the study area are given in the table.

Table 3.14: Shrubs in the study area

S. No.	Shrub	Family	Local name	Status
1.	*Berberis huegeliana* Schaeider	Berberidaceae	Sumbal, Daruharidra	Rare
2.	*Indigofera hebepetala* Benth.ex.Baker.	Fabaceae	Krass, Sakena	Scarcely distributed
3.	*Indigofer haterantha wallich ex. Brandis*	Fabaceae	Krass, kainthi	Common
4.	*Rosa webiana Wallich ex. Royle.*	Rosaceae	Arwal, Jungli gulaab	Common
5.	*Rosa antennifer*	Rosaceae	Jhaanshi, chhanchh	Common
6.	*Rubus pungens Comb.*	Rosaceae	Chhansh, Jhaansh	Common
7.	*Rubus ulmifolius Schott*	Rosaceae	Jhaanshi, Chhansh	Common
8.	*Sorbaria tomentosa (lindley) Rehder*	Rosaceae	Karukni, Kidsungal	Common
9.	*Spiraea canescens D.Don*	Rosaceae	Dhakk, Takky	Common

10.	*Hydrangea macrophylla L.*	Hydrangea	Himgainda	Abundant
11.	*Chaerophyllum acuminatum Lindley*	Apiaceae	Chikmi, Neochha	Common
12.	*Vibernum cotinifolium D.Don*	Caprifoliaceae	Kumansh, Bhutnoi	Abundant
13.	*Lonicera quinquelocularis Hardw.*	Caprifoliaceae	Bakkadu, Paakhar	Common
14.	*Gaultheria trichophylla Royle.*	Ericaceae	Gandhpuri booti, Gandhpura	Abundant
15.	*Rhododendron anthopogon D.Don.*	Ericaceae	Nchhni, Inga	Common

Source: Management Plan of Dachigam National Park 2011-2016.

Table 3.15: List of Herbs species in the study area

S No.	Herbs	Family	Local name	Status
1.	*Anemone obtusiloba*	Ranunculaceae	Rattan jot	Uncommon
2.	*Aquilegia pubiflora wallich ex royle*	Ranunculaceae	Sita di panni	Uncommon
3.	*Aquilegia fragrance. Benth*	Ranunculaceae	Maime hait, kalumb	Common
4.	*Clath alba* Camb.	Ranunculaceae	Tahool , Ashpmaar	Common
5.	*Clematis connata* DC	Ranunculaceae	Hathkad bel, Dhanvati	Common
6.	*Clematis montana*	Ranunculaceae	Dashraanth , Dudh chivara	Common
7.	*Delphinium denudatum wallich ex hook.f. &Thomas*	Ranunculaceae	Nirbis , Nirvisha	Common
8.	*Delphinium roylei munz*	Ranunculaceae	Nirbis ,Nirvisha	Common
9.	*Thalictrum minus L*	Ranunculaceae	Peeli bani, Haichinsah	Common
10.	*Thalictrum pedunculatum Edqew.*	Ranunculaceae	Mamira ,Pinjaari	Uncommon
11.	*Viola sylvatica*	Violaceae	Nunposh	Common
12.	*Arenaria serpylliofolia Linn.*	Cryophyllaceae	Letarluni	Uncommon
13.	*Lychnis cornaria (L.)Desr.*	Cryophyllaceae	Laltraukal, Angaarda	Threatened
14.	*Hypericum perforatum L.*	Hypericaceae	Basantadu, Basanti	Common
15.	*Tribulus terresteris L.*	Zygophyllaceae	Bhakhada, Tirkundi	Common
16.	*Impatiens bicolor Royle.*	Balsaminaceae	Trul, Hajlu,	Common
17.	*Lathyrus emodi (Wall.ex.Fritsch)Ali*	Fabaceae	Khukni, Triputa	Abundant
18.	*Lathyrus pratensis Linn.*	Fabaceae	Khukni	Common
19.	*Lotus corniculatus*	Fabaceae		Common

20.	*Genum elatum Wallich.*	Rosaceae	Gogji mool, Bhadrashaak	Common
21.	*Potentilla atrosanguina Lodd.*	Rosaceae	Bajardantu, Rolu	Threatened
22.	*Astilbe rivularis Buch.Ham.Ex.D.Don.*	Saxifragaceae	Pothi	Common
23.	*Sexifraga Sibirica*	Saxifragaceae		Common
24.	*Sedum adenotrichum Wall.Ex.Edgew.*	Crassulaceae	Dazanposh	Abundant
25.	*Epilobium parviflorum Schreb.*	Onagraceae	Mellu, Loontar jadi	Common
26.	*Bupleurum swatianum Nasir.*	Apiaceae	Zardzaari, Shashparni	Common
27.	*Chaerophyllum acuminatum Lindley.*	Apiaceae	Chikmi, Neochha	Common
28.	*Chaerophyllum reflexum Lindley.*	Apiaceae	Jadgagari, Mukhach	Common
29.	*Ferula jaeschkeana Vatke.*	Apiaceae	Haput Kanphur, Hinga, Ghud-kaindal	Common
30.	*Heracleum lantum Michx.*	Apiaceae	Shuriyal, Phulao,	Common
31.	*Chaerophyllum villosum Wall.ex.DC.*	Apiaceae	Mukhach	Common
32.	*Pimpinella diversifolia DC.*	Apiaceae	Jehn,tirua	Common
33.	*Scandix pecten-veneris L.*	Apiaceae	Indusaag , Kachhidana	Common
34.	*Seseli libanotis (L)W.Koch.*	Apiaceae	Sappad gajari	Common
35.	*Vicatia coniifolia DC.*	Apiaceae	Shila dhaniya	Abundant
36.	*Asperrula oppositifolia Regal.&Schmalth.*	Rubiaceae	Machheet, Chhalmajeeth	Common
37.	*Gallium asperuloides edgew*	Rubiaceae	Machheetu	Common
38.	*Gallium vernum Linn.*	Rubiaceae	Peela machete	Common
39.	*Anaphalis margaritacea(L)Benth.*	Asteraceae	Bhojli,Kinja	Common
40.	*Anaphalis nepalensis (Sprengel)Hand.*	Asteraceae	Telgangi, Bhujli	Common

41.	*Artemisia dubia Wallich ex.Besser*	Asteraceae	Joon, krinidru	Common
42.	*Artemisia parviflora Roxb.*	Asteraceae	Joon, Tethwan	Common
43.	*Aster diplostephioids C.B.Clark*	Asteraceae	Tarakpushp, phullala	Abundant
44.	*Carpesium abrotanoides Linn.*	Asteraceae	Lihur	Common
45.	*Picris hieracioides Linn.*	Asteraceae	Trumbadu	Rare
46.	*Saussurea albescens (DC)Sch.Bip.*	Asteraceae	Baklol	Common
47.	*Saussurea atkinsonii C.B.Clark*	Asteraceae	Lokat, Baklol	Common
48.	*Saussurea heteromalla (D.Don)Hand-mazz*	Asteraceae	Batola, Dashund	Common
49.	*Solidago virgaaurea Linn.*	Asteraceae	Thanthaana, Sondandi, Kanakshalakha	Common
50.	*Tarracetum dolichophyllum(Kitam)Kitam*	Asteraceae	Lidd guggli, chinnparni	Abundant
51.	*Taraxacum officinale Webr.*	Asteraceae	Handri, Hand, Dullal	Common
52.	*Tragopogon dubius Scop.*	Asteraceae	Thulkal,Girginok	Common
53.	*Tussilago Farfara Linn.*	Asteraceae	Chilchiloti, Ghudkhura	Threatened
54.	*Asyneuma thomsonii (HK.f.et.Th.)Bornm*	Campanulaceae	Branzbooti,Branzhaak	Threatened
55.	*Campanula aristata Wall*	Campanulaceae	Padi-branz	Common
56.	*Campanula cachmeriana Royle.*	Campanulaceae	Kashir branz	Common
57.	*Campanula lotifolia L.*	Campanulaceae	Branz ghainti	Common
58.	*Codonopsis ovata Benth.*	Campanulaceae	Tokerkachh, Dodad	Threatened
59.	*Androsace rotundifolia*	Primulaceae	Golpattri tuttan	Common
60.	*Androsace sempervivoids*	Primulaceae	Ashamkund	Abundant
61.	*Primula macrophylla D.Don*	Primulaceae	Kaangla-Naakla,	Common

62.	*Primula rosea Royle.*	Primulaceae	Mundaal, peetsevti	Common
63.	*Cynanchum arnottianum*	Asclepiadaceae	Dudhad	Threatened
64.	*Cynanchum auriculatum*	"	Dudhad	Threatened
65.	*Gantiana marginata (. Don)*	Gentianaceae	Neelkanth, Shirkanth	Common
66.	*Nymphoides peltata (S.*	Menyanthaceae	Lidd khur	Common
67.	*Asperugo procumbens L.*	Boraginaceae	-	Common
68.	*Cynoglossum lanceolatum*	Asclepiadaceae	Khitdi	Common
69.	*Onosma hispidum Wallich*	Asclepiadaceae	Ratanjot, loljad	Threatened
70.	*Veronica biloba Linn.*	Scrophulariaceae	Titni	Common
71.	*Veronica persica Poiret.*	Scrophulariaceae	Ashvashaak	Common
72.	*Pedicularis pectinata Wallich*	Scrophulariaceae	Kankatyukaparn,	Common
73.	*Orobanche solmsii C.B.Clark*	Orobanchaceae	Lothus, Jadkhaar	Common
74.	*Petracanthus utricifolius*	Acanthaceae	Pardaad,Mauhwa,	Common
75.	*Verbena officinalis Linn.*	Verbenaceae	Bareen	Abundant
76.	*Nepeta erecta (Benth) Benth.*	Lamiaceae	Neelpat, Bidaal Parnaas	Common
77.	*Nepeta lacvigata (D.Don.)*	Lamiaceae	Neelpat, Gandhsoi	Common
78.	*Rumex acetosa Linn.*	Plygonaceae	Ulloh, Tsoktsin	Common
79.	*Rumex nepalensis Sprengel.*	Plygonaceae	Ubaj, Chooka	Abundant
80.	*Euphorbia helioscopia L.*	Euphorbiaceae	Dudhi, Gur sutchsul,	Common
81.	*Euphorbia plorifera hook f.*	Plygonaceae	Dudhli, Dudhi	Common
82.	*Parieteria lusitanica linn*	Urticaceae	-	Common

83.	*Epipactis royleana Lindley.*	Orchidaceae	Amarkand,phullchamba	Common
84.	*Spiranthes sinensis*	Plygonaceae	Muchhmarool,	Abundant
85.	*Iris germanica L.*	Iridaceae	Majaarmund, Sosem	Common
86.	*Hemerocallis fulva Linn.*	Liliaceae	Riudd, Sunaari	Common
87.	*Juncos articulatus Linn.*	Juncaceae	Pranad, Tillar	Common
88.	*Carex stenophylla*	Cyperaceae	Phikal	Abundant
89.	*Kobresia laxa Nees.*	Cyperaceae	Kubber	Threatened
90.	*Scripus setaceus*	Cyperaceae	Kaseru, Ghussad	Common
91.	*Eriocaulon cinereun*	Eriocaulaceae	Irka	Common
92.	*Agrostis pilosula*	Poaceae	Ghaas	Abundant
93.	*Datylis glomerata*	Poaceae	Trakkad,	Common
94.	*Digitaria*	Poaceae	Chhal, Trakkad	Common
95.	*Phleum alpinum*	Poaceae	Jaamno gha	Common
96.	*Poa alpine Linn.*	Poaceae	Humulu, Shaadal	Common

Agriculture/Crop Pattern:

Agriculture land use includes two distant concepts: first is the functional use of land to meet human needs (e.g. agricultural, recreational, and residential) and second is the form of ground cover (e.g. crops, trees, houses). Agriculture regions may be categorized on the basis of land use. District Shopian is also having many crops in combination with rice, wheat and barley as major crops. This part of Jammu division for a part of Great Plains of India and have good climatic condition, irrigation facilities accompanied by rich alluvial soil. Agriculturally this is rich belt of the province.

Jammu districts ranks first in production of wheat i.e. 48.67% area followed by rice, maize, bajara and pulses which occupies area of 28.87%, 9.9% , 5.91% and4.06% of total cropped area of the district respectively .In Udampur district maize is first ranking crop followed by wheat with 47.37% and 33.26% of the total area in hectare respectively .In districts of Rajouri, Poonch and Doda wheat is the first ranking crop with total of 46.41%,54.92% and 61.81% area under production of maize crop respectively. The reason being climatic conditions and irregular terrain. Reason of rice cultivation being sub tropical type of climatic conditions and plain topography

Table 3.16: Variety of Crops Recommend for District

Crop name	Details
Paddy (Dhan)	Gobhi Sarson
Wheat (Gehon)	Oat
Maize (Makka)	Sudan Grass
Pearl Millet (Bajra/Bulrush Millet/Spiked Millet)	Onion
Sorghum (Jowar/Great Millet)	Cabbage
Black Gram (Urd Bean)	Cauliflower
Bengal Gram (Gram/Chick Pea/Kabuli/Chana)	Knol-Khol
Green Gram (Moong Bean/ Moong)	Bitter Gourd
Lentil (Masur)	Bottle Gourd
Peas (Field Peas/ Garden Peas/Matar)	Cucumber
Groundnut (Pea Nut/Mung Phalli)	Indian Squash (Tinda/Round Melon)
Indian Rapeseed And Mustard (Yellow Sarson)	Brinjal
Raya (Indian Mustard)	Chillies
Sesame (Gingelly/Til)	Bhendi
Sunflower (Suryamukhi)	Tomato
Berseem (Egyptian Clover)	Fenugreek

Rajmash Bean	Spinach
Pea (Vegetable)	Radish
Coriander	Turnip (Saljam)

Faunal Biodiversity of Study area

The fauna of Jammu and Kashmir is diverse due to its unique location and climatic condition. About 16% of the Indian mammals, birds, reptiles, amphibians and butterflies are presented in the state. Birds contribute much to the chordate diversity following by mammals, reptiles, fishes and amphibians. The state is home to about 75 species of mammals, besides several sub-species, belonging to 54 genera, 21 families and 8 orders. Carnivores represent 32% of the total mammalian fauna in the state. Of the 19 species of the ungulates reported from the state, 13 have been listed as globally threatened.

The avian diversity of the state varies seasonally and available data suggests the existence of as many as 358 species of birds belonging to 179 genera, 51 families under 16 orders. The state is home to 14 species of amphibians belonging to 6 genera, 5 families and 1 order, and 68 species of reptiles belonging to 43 genera, 12 families and 2 orders. The available data suggests that 44 species of fishes belonging to 14 genera under 5 families occur in the state. The available data also reveals that as many as 225 species of insects, besides several sub-species, belonging to 136 genera, 35 families and 4 orders occur in the state.

Mammals: List of species given below:

S. No.	Common Name	Scientific Name	WL Schedule
1.	Jackal	*Canis aureus*	-
2.	Himalayan wolf	*Canis lupus*	I
3.	Hangul or Kashmir Stag	*Cervus elaphus hanglu*	I
4.	Jungle Cat	*Felis chaus*	-
5.	Indian porcupine	*Hystrix indica*	-
6.	Rhesus macaque	*Macaca mulatta*	-

7.	Himalayan yellow-throated Marten	*Martes flavigula*	-
8.	Himalayan Musk Deer	*Moschus chrysogaster*	I
9.	Himalayan weasel	*Mustela sibirca*	-
10.	Serow	*Capricornis sumatraensis*	I
11.	Himalayan Mouse Hare	*Ochotona roylei*	-
12.	Common Leopard	*Panthera pardus*	I
13.	Leopard Cat	*Felis bengalensis*	I
14.	Kashmir Gray Langur	*Semnopithecus ajax*	-
15.	Himalayan Brown Bear	*Ursus arctos isabellinus*	I
16.	Asiatic Black Bear	*Ursus thibetanus*	-
17.	Red Fox	*Vulpes vulpes*	-

Source: Biodiversity and environment Management

Birds: Some of them even breed in the state. List of species given below:

Family	COMMON NAME	Scientific Name	Status
Family-Accipitridae			
1.	Black Kite	*Milvus migrans*	**R**
2.	Sparrow Hawk	*Hiereatus nisus nisosimilis*	**RM**
3.	Booted Eagle	*Hiereatus pennatus*	**RM**
4.	Golden Eagle	*Aquila chrysaetos*	**R**
5.	Eurasian Griffon	*Gyps fulvus*	**RM**
6.	White-Rumped Vulture	*Gyps bengalensis*	**R**
7.	Bearded Vulture	*Gypaetus barbatus*	**R**
Family-Falconidae			
8.	Common Kestrel	*Falco tinnunculus*	**RM**
Family- Phasianidae			
9.	Snow Partridge	*Lerwa lerwa*	**R**
10.	Himalayan Snowcock	*Tetraogallus himalayensis*	**R**
11.	Chukar	*Alectoris chukar*	**R**
12.	Western Tragopan	*Tragopan melanocephalus*	**R**
13.	Himalayan Monal	*Lophophorus impejanus*	**R**
14.	Koklass Pheasant		**R**
Family-Columbidae			
15.	Snow Pigeon	*Columba leuconota*	**R**
16.	Rock Pigeon	*Columba livia*	**R**
17.	Oriental Turtle Dove	*Streptopelia orientalis*	**RM**
18.	Eurasian Collared Dove	*Streptopelia decaocto*	**R**
19.	Red Collared Dove	*Streptopelia tranquebarica*	**R**

20.	Spotted Dove	*Streptopelia chinensis*	**R**
Family-Psittacidae			
21.	Rose-Ringed Parakeet	*Psittacula krameri*	**R**
22.	Slaty-Headed Parakeet	*Psittacula himalayana*	**R**
23.	Indian Cuckoo	*Cuculus micropterus*	**RM**
24.	Eurasian Cuckoo	*Cuculus canorus*	**RM**
Family- Strigidae			
25.	Eurasian Eagle Owl	*Bubo bubo*	**R**
26.	Little Owl	*Athene noctua*	**R**
27.	Long-Eared Owl	*Asio otus*	**RM**
Family- Aodidae			
28.	Himalayan Swiftlet	*Collocalia brevirostris*	**R**
29.	Alpine Swift	*Tachymarptis melba*	**RM**
30.	Common Swift	*Apus apus*	**M**
31.	House Swift	*Apus affinis*	**RM**
Family-Alcedinidae			
32.	Pied Kingfisher	*Ceryle rudis*	**R**
33.	Common Kingfisher	*Alceodo atthis*	**RM**
34.	White-Throated Kingfisher	*Halcyon smyrnensis*	**R**
Family-Coraciidae			
35.	European Roller	*Coracias garrulus*	**RM**
Family- Upupidae			
36.	Common Hoopoe	*Upupa epops*	**RM**
Family- Picidae			
37.	Eurasian Wryneck	*Jynx torquilla*	**M**
38.	Scaly-Bellied Woodpecker	*Picus squamatus*	**R**
39.	Grey-Headed Woodpecker	*Picus canus*	**R**
40.	Himalayan Woodpecker	*Dendrocopos himalayensis*	**R**
Family- Alaudidae			
41.	Crested Lark	*Melanocorypha bimaculata*	**R**
Family- Hirundinidae			
42.	Dusky Crag Martin	*Hirundo concolor*	**R**
43.	Barn Swallow	*Hirundo rustica*	**RM**
44.	Striated Or Redrumped Swallow	*Hirundo daurica*	**R**
Family- Oriolidae			
45.	Eurasian Golden Oriole	*Oriolus oriolus*	**RM**
Family- Surnidae			
46.	Common Starling	*Sturnus vulgaris*	**RM**

47.	Common Myna	*Acridotheres tristis*	**R**
48.	Jungle Myna	*Acridotheres fuscus*	
Family- Corvidae			
49.	Yellow-Billed Blue Magpie	*Urocissa flavirostris*	**R**
50.	Rufous Treepie	*Dendrocitta vagabunda*	**R**
51.	House Crow	*Corvus splendens*	**R**
52.	Large-Billed Crow	*Corvus macrorhynchos*	**R**
53.	Nutcracker	*Nuctifraga caryocatactes*	
54.	Yellow-Billed Or Alpine Chough	*Pyrrhocorax graculus*	
55.	Eurasian Jackdaw	*Corvus monedula*	
56.	Raven	*Corvus corax*	
57.	Jungle Crow	*Corvus macrorphynchos*	
Family-Pycnonotidae			
58.	White-Cheeked Bulbul	*Pycnonotus leucogenys*	
59.	Black Bulbul	*Hypsipetes madagascariensis*	**R**
Family- Muscicapidae			
Sub. Family- Timalinae			
60.	Jungle Babbler	*Turdoides striatus*	
61.	Striated Laughing Thrush	*Garrulax striatus*	
62.	Variegated Laughing Thrush	*Garrulax ariegatus*	
63.	Streaked Laughing Thrush	*Garrulax lineatus*	
Sub. Family- Muscicapinae			
64.	Kashmir Redbreasted Flycatcher	*Muscicapa subrubra*	
65.	Little-Pied Flycatcher	*Muscicapa westermannt*	
66.	White-Browed Blue Flycatcher	*Muscicapa supercillaris*	
67.	Slaty Blue Flycatcher	*Muscicapa leucomelanura*	
68.	Verditer Flycatcher	*Muscicapa thalassina*	
69.	Grey-Headed Flycatcher	*Culicicapa ceylonensis*	
70.	Paradise Flycatcher	*Terpsiphone paradist*	RM
Sub. Family-Sylvina			
71.	Plain Leaf Warbler	*Phylloscopus neglectus*	**R**
72.	Tytler's Leaf Warbler	*Phylloscopus tytleri*	**R**
73.	Tickell's Leaf Warbler	*Phylloscopus affinis*	**R**
74.	Sulphur-Bellied Warbler	*Phylloscopus griseolus*	**RM**
75.	Yellow-Browed Warbler	*Phylloscopus inornatus*	**R**

76.	Lemon-Rumped Warbler	*Phylloscopus chloronotus*	**R**
77.	Blyth's Leaf Warbler	*Phylloscopus reguloides*	**RM**
78.	Gold Crest	*Regulus regulus*	
Sub. Family-Turdinae			
79.	Orange-Flanked Bush Robin	*Tarsiger cyanurus*	
80.	Blue-Capped Redstart	*Phoenicurus caeruleocephala*	**R**
81.	Black Redstart	*Phoenicurus ochruros*	**R**
82.	White-Winged Redstart	*Phoenicurus erythrogastrus*	
83.	Plumbeous Water Redstart	*Rhyacornisfuliginosus*	**R**
84.	Little Forktail	*Enicurus scouleri*	**M**
85.	Spotted Forktail	*Enicurus maculates*	
86.	White-Capped Water Redstart	*Chaimarrornis leucocephalus*	**R**
87.	Blue Rock Thrush	*Monticola solitarius*	**R**
88.	Blue Whistling Thrush	*Myophonus caeruleus*	**R**
89.	Grey-Winged Blackbird	*Turdus boulboul*	
90.	Chestnus Thrush	*Turdus rubrocanus*	
Family-Troglodytidae			
91.	Winter Wren	*Troglodytes troglodytes*	
Family- Cinclidae			
92.	White-Throated Dipper	*Cinclus cinclus*	
93.	Brown Dipper	*Cinclus pallasii*	
Family- Prunillidae			
94.	Alpine Accentor	*Prunella collaris*	
95.	Altai Accentor	*Prunella hamalayana*	
Family- Paridae			
96.	Grey Tit	*Parus major*	
97.	Green-Backed Tit	*Parus moniticolus*	
98.	Crested Black Tit	*Parus melanolophus*	
99.	Black Tit	*Parus rufonuchalis*	
100.	Yellow-Cheeked Tit	*Parus xanthogenys*	
101.	Fire-Capped Tit	*Cephalopyrus flammiceps*	
102.	White-Throated Tit	*Aegithalos niveogularis*	
Family- Sittidae			
103.	European Nuthatch	*Sitta europaea nagansis*	
104.	White-Cheeked Nuthatch	*Sitta leucopsis*	
Family-Certhidae			
105.	Tree Creeper	*Certhia familiaris*	
106.	Himalayan Tree Creeper	*Certhia himalayana*	
Family-Motacillidae			
107.	Yellow Wagtail	*Motacilla flava*	

108.	Grey Wagtail	*Moctacilla cinerea*	
109.	Pied Or White Wagtail	*Motacilla alba*	
110.	Large Pied Wagtail	*Motacilla maderaspatensis*	
Family-Zosteropidae			
111.	White Eye	*Zosterops palpebrosa*	
Subfamily-Passerinae			
112.	House Sparrow	*Passer domesticus*	
113.	Russet Sparrow	*Passer rutilans*	
114.	Eurasian Tree Sparrow	*Passer montanus*	
Family-Campephagidae			
115.	Scarlet Minivet	*Pericrocotus flammeus*	
116.	Long-Tailed Minivet	*Pericrocotus ethologus*	
117.	Small Minivet	*Pericrocotus cinnamomeus*	
Family-Emberizidae			
118.	Pine Bunting	*Emberza leucocephalos*	
119.	White-Capped Bunting	*Emberiza stewarti*	
120.	Grey-Necked Bunting	*Emberiza bunchanani*	
121.	Rock Bunting	*Emberiza cia*	

Table3.17: List of Butterflies in the Study Area

Family	Common name	Scientific name	Status
Papilionidae	1. Common Yellow Swallowtail	*Papilio machaon* (Linnaeus)	Common
Pieridae	2. Large Cabbage White	*Pieris brassicae* (Linnaeus)	Common
	3. Indian Cabbage White	*Pieris canidia* (Sparrman)	Common
	4. Bath White	*Pontia daplidice* (Linnaeus)	Common
	5. Common Gull	*Cepora nerissa* (Fabricius)	Common
	6. Dark Clouded Yellow	*Colias fieldii* (Menetries)	Common
	7. Common Brimstone	*Gonepteryx rhammi* (Linnaeus)	Common
	8. Pale Clouded Yellow	*Colias erate* (Esper)	Common
Lycaenidae	9. Common Copper	*Lycaena phlaeas* (Linnaeus)	Common
	10. White-Bordered Copper	*Lycaena pavana Kollar*	Common
	11. Dark Grass Blue	*Zizeeria karsandra* (Moore)	Common
	12. Indian Cupid	*Everres lacturnus* (Godarts)	Common
	13. Red Pierrot	*Talicada nyseus* (Guerin- meneville)	Common
	14. Dusky Hedge Blue	*Oreolyce vardhana* (Moore)	Common
	15. White Hedge Blue	*Udara akasa (Horsfield)*	Common

	16. Plain Hedge Blue	*Celastrine Lavendularis (Moore)*	Common
	17. White-Disc Hadge Blue	*Celatoxia albidisca (Moore)*	Common
	18. Orange Bordered Argus	*Aricia astrarche (Bergsrasser)*	Common
	19. Plains Cupid	*Chilades pandava (Horsfield)*	Common
	20. Lime Blue	*Chilades lajus (Stoll)*	Common
Nymphalidae	21. Common Beak	*Libythea lepita (Moore)*	Common
	22. Club Beak	*Libythea myrrha (Godart)*	
	23. Striped Tiger	*Danaus genutia (Cramer)*	Common
	24. Plain Tiger	*Danaus chrysippus (Linnaeus)*	Common
	25. Great Satyr	*Aulocera padma (Kollar)*	Common
	26. Common Satyr	*Aulocera swaha (Kollar)*	Common
	27. Common Fivering	*Ypthima baldus (Fabricius)*	Common
	28. Common Fourring	*Ypthima huebneri (Kirby)*	Common
	29. Himalayan Fivering	*Ypthima sacra (Moore)*	Common
	30. Common Threering	*Ypthima asterope(Klug)*	Common
	31. Large Threering		Common
	32. Western Fivering		
	33. Common Wall		
	34. Indian Fritillary	*Argyreus hyperbius (Linnaeus)*	Common
	35. large silver stripe	*Chidrena children*	Common
	36. Small Leopard	*Phalantha alcippe (Stoll)*	
Nymphalidae	37. Common Leopard	*Phalanta phalantha (Drury)*	Common
	38. Indian White Admiral	*Limenitis trivena (Moore)*	Common
	39. Himalayan Sergeant	*Athyma opalina (Kollar)*	Common
	40. Common Sailer	*Neptis hylas (Linnaeus)*	Common
	41. Short-Banded Sailer	*Phaedyma columella (Cramer)*	Common
	42. Indian Purple Emperor	*Apatura ambica (Kollar)*	Common
	43. Painted Lady	*Vanessa cardui (Linnaeus)*	Common
	44. Indian Tortoiseshell	*Aglais casmiriensis (kollar)*	Common
	45. Mountain Tortoiseshell	*Aglais urticae (Linnaeus)*	Rare
	46. Comma Tortoiseshell	*Nyphalis vau-albm*	Rare
	47. Eastern Comma	*Polygonia egea (Cramer)*	Common
	48. Blue Admiral	*Kaniska canace (Linnaeus)*	Common

	49. Red Admiral		
	50. Blue Pansy	*Junonia orithia (Linnaeus)*	Common
	51. Chocolate Pansy	*Junonia iphita (Cramer)*	Common
	52. White Commodore	*Parasarpa dudu (Doubleday)*	
	53. Ringed Argus	*Callerebia ananda (Moore)*	
	54. Small Grass Yellow		
	55. Green-veined white	*Pieris napi (Linnaeus)*	
	56. Himalayan Blackvein	*Aporia leucodice (Eversmann)*	

Flora of the study Area

Acacia catechu, Wild

Cinnamomum camphora

Pinus roxburghii

Zizyphus jujube

Chenopodium murale

Medicinal plants

Aegle marmelos Corr.

Bombax ceiba Linn.

Fauna of the study Area

Indian Crested Porcupine

Rufous-Tailed Hare

Butterflies in the study Area

Anaphaeis aurota

Ixias Marianne

3.7 Socio-Economic Environment

SOCIO – ECONOMIC ENVIRONMENT

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. The geographical area is often called Study Area or Impact Area. SEIA is carried out simultaneously with Environment Impact Assessment (EIA). The prime objective of SEIA is to identify and evaluate potential socio-economic and cultural impacts of a proposed development project on the lives and conditions of people, their families and their communities. If the potential impacts are significant and adverse, SEIA assist the developers and other stakeholders to reduce, remove or prevent these impacts from happening. The objectives of the proposed SEIA are as follows:

- To identify and assess socio-economic activities, which may be influenced by mining of minerals like sand.
- To examine the perceptions of local people on mining of minerals.
- To suggest interventions that can assist the Government and other stake holders in mitigating the negative impacts of the proposed mining project.

Socio-economic study is multidisciplinary, using theories and methods from Sociology, Economics, History, Psychology, Geography etc. As per Notification dated 14th September, 2006 of the then Ministry of Environment & Forests (Since renamed as 'Ministry of Environment, Forests and Climate Change). Socio-economic impact assessment of the study area of a project is mandatory for all the listed projects classified under various sectors.

STUDY AREA

The study area, also known as Impact Area has been defined as sum total of core and buffer area with a radius of ten kilometres from the periphery of the project site. All the landmarks, be it natural or manmade, falling in the study area has been taken into consideration while undertaking the impact

assessment study. The entire study area of the proposed mining project falls in the state of J&K. There are **63** villages and no urban area in the study area.

HYPOTHESIS

"River bed Mining project" has significant socio-economic impacts on livelihoods of local communities".

APPROACH

Research approach plays an important role to decide suitable methodology. It helps to develop research design and increase the effectiveness of research study. In the present study inductive approach has been adopted, which is also known as 'bottom top approach' or 'climbing the hill approach'. Under this approach data is first collected from primary and secondary sources. After scrutiny tables are generated in pre-designed formats. Subsequently, draft report is prepared after detail analysis of data. The final report is prepared after incorporating the comments and suggestions of the client.

METHODOLOGY

Accordingly, both qualitative and quantitative data was collected through primary and secondary sources. For collection of primary data a Sample Survey was carried out in the study area.

The qualitative data deals with description; they can be observed but not measured. Hence, codes were extensively used during collection of qualitative data. They were decoded after data processing to facilitate data analysis and report writing.

Sample Design

In rural areas two stage stratified sample design were adopted. The first stage units were census villages and the ultimate stage units were households.

BASELINE DATA

Baseline data refers to basic information collected before a project/scheme is implemented. It is used later to provide a comparison for assessing impact of a project. Any attempt to collect base line data while undertaking actual impact assessment study is faced with recall error. The baseline data was collected from secondary sources. It consists of demographic particulars and amenities. The data presented in the table below pertains to study area as a whole.

Table3.18: Demographic Particulars of the Study Area

S.No.	Description	Number	Percentage to Respective totals
1	**Gender wise Total Population of the Study Area**	**75820**	**100**
	Male	38666	51.0
	Female	37154	49.0
	Sex Ratio (No. of females per 1000 males)	959	
	Shopian District Overall density of population (per sq. km)	3,000/km^2 (7,800/sq mi)	
2	**Gender wise Total Population (0-6 age group)**	**12541**	**100**
	Male	6637	52.9
	Female	5904	47.1
	Sex Ratio of 0-6 age group population (No. of females per 1000 males)	889	
3	**Number of Households**	**12887**	
	Average Household size in the Study Area (Rural) as a whole	5	
	Highest Household size in the Study Area	6	
	Lowest Household size in the Study Area	4	
4	**Total Population of Schedule Caste Community in the Study Area**	**0**	**100**
	Male	0	0

	Female	0	0
	Sex Ratio (No. Of females per 1000 males)	**0**	
5	**Total Population of Schedule Tribe Community in the Study Area**	**12074**	**100**
	Male	6189	51.3
	Female	5885	48.7
	Sex Ratio (No. Of females per 1000 males)	950	
6	**Total Literates in the Study Area**	**35693**	**100**
	Male	21109	59.1
	Female	14584	40.9
	Overall Literacy Rate in the Study Area	47.07	
	Male	27.84	
	Female	19.23	
	Gender gap in literacy rate	8.61	
7	**Total Workers in the Study Area**	**21125**	**100**
	Male	16772	79.4
	Female	4353	20.6
	Overall Work Participation Rate in the Study Area	**27.86**	
	Male	22.12	
	Female	5.74	
	Gender Gap in work participation rate	16.38	
	Overall Dependency Rate of Non-workers	**11.32**	
	Dependency Rate of Male Non-workers	13.36	
	Dependency Rate of Female Non-workers	-2.04	
8	**Total Main Workers in the Study Area**	**13310**	**100**
	Male	12310	92.5
	Female	997	7.5

	Overall Work Participation rate of Main Workers	17.55	
	Work Participation rate of males	16.23	
	Work Participation rate of females	1.28	
	Overall Gender Gap in Work Participation rate of main workers	14.95	
9	**Total Marginal Workers in the Study Area**	**7815**	**100**
	Male	4459	57.1
	Female	3356	42.9
	Overall work participation rate in the Study Area	10.30	
	Work participation rate of males	5.88	
	Work participation rate of females	4.42	
	Overall gender gap in work participation rate of Marginal workers	1.46	
10	**Total Agricultural Workers in the Study Area**	**1904**	**100**
	Male	1825	95.9
	Female	79	4.1
	Overall work participation rate in Areas	2.51	
	Work participation rate of males	2.40	
	Work participation rate of females	0.10	
	Gender Gap in work participation rate of Agricultural Workers in the Study Area	2.30	
11	**Total Cultivators in the Study Area**	**7573**	**100**
	Male	7196	95.0
	Female	377	5.0
	Overall work participation rate in the Study Area	9.98	
	Work participation rate of males	9.49	
	Work participation rate of females	0.49	
	Gender Gap in work participation rate of	9.0	

	Cultivators in the Study Area		
12	**Total 'Non Workers' in the Study Area**	**54695**	**100**
	Male	21894	40
	Female	32801	60
	Overall work participation rate in the Study Area	71.79	
	Work Participation rate of males	28.88	
	Work Participation rate of females	42.91	
	Gender Gap in work participation rate of Non Workers in the Study Area	14.03	

Source: Census 2011

NB: All the rates and ratios provided in the above table have been compiled on the basis of Census 2011 demographic data.

Current Socio-Economic Status

Population Composition

According to 2011 Population Census the study area has a total population of **75820**. Of this 51.0 percent are male and the remaining 49.0 percent are female. Further 16.13 percent of the total population belongs to 0-6 age group. About 52.9 percent of them are male and the remaining 47.1 percent are female.

Sex Ratio

The overall sex ratio in the study area has been worked out to 959 females per 1000 males, which is less than the national average of 940 females per 1000 males.. Sex ratio of Children belonging to 0-6 age group has been worked out to 889 females per 1000 males.

Density of Population

The overall density of population in the **Shopian** District has been worked out to 3,000/km2 (7,800/sq mi).

Households

There are 12887 households in the study area and the average household size is Six.

Social Structure

In the study area the total number of persons belonging to Scheduled Tribe community is 12074, which is 15.92 percent of the total population. The gender wise distribution of schedule Tribe population indicates male 51.3 percent and female 48.7 percent, registering a sex ratio of 950 females per one thousand males.

Further analysis of data reveals that in the study area, no any persons belonging to Scheduled caste community residing in the study area.

Literates and Literacy Rate

The total numbers of literate persons in the study area are 35759, which is 47.93 percent of the total population. Of the total number of literate persons 59.2 percent are male and the remaining 40.9percent are female.

The overall literacy rate in the study area has been worked out to 47.07 percent. The gender wise distribution of literacy rate reveals that 27.84 percent of the literate persons are male and 19.23 percent are female. This creates a gender gap of 8.61 percent.

Workers and Work Participation Rate

A worker has been defined as a person who participates in a productive activity with or without compensation, wages or profit and such participation may be physical and/or mental in nature. A worker may be a main worker or a marginal worker. The main workers are those workers who had worked for the major part of the total working period.

The total number of workers in the study area has been worked out to 21125, which is 27.86 percent of the total population. Of the total number of workers 79.4 percent are male and the remaining 20.6 percent are female. The overall work participation rate is 27.86 percent. While the work participation

rate of male is 11.32 percent, it is only 13.36 percent in the case of females. This creates a gender gap of 2.04 percent, which is significantly high. The Main workers constitute 13310 percent of the total workers, while marginal workers constitute only 17.55 percent. The females prefer to work as marginal workers as they have very little time to spare for other work outside their houses as they are to undertake household work besides rearing their children. The total number of main and marginal workers in the study area is 13310 and 7815 respectively.

Further classification of the workers has revealed that in the study area total agricultural workers about 9.98 percent are Cultivators and the remaining 2.51 percent are Agricultural Labour. About 95.0 percent of cultivators are male and the remaining 5.0 percent are female. On the other hand, 95.9 percent of Agricultural workers are male and the remaining 4.1 percent are female. The wages of women agricultural labour is miserably low in comparison to their male counterpart, though they put same amount of hard work as the male does. The 'Other Workers' include white collar workers, blue collar workers, pink collar workers, informal workers, etc.

Dependency Ratio

Based on total number of workers gainfully employed and non-workers either in search of a job or very old & retired or physically handicapped or mentally retarded or students continuing their studies or people who have no intention to work, the overall dependency rate has been worked out to 11.32 percent.

Table 3.19: AMENITIES

	Number of schools available		**Number of institutions/facilities**	
	Schools In Villages		Institutions/facilities	
(A) INSTITUTIONAL EDUCATIONAL FACILITIES				
Schools	Government	Private	Government	Private
Primary Schools	35	2	-	-
Middle Schools	20	-	-	-
Secondary School	2	-	-	-
Senior Secondary School	1	-	-	-

	Number of schools available		**Number of institutions/facilities**	
Total no. Of Institutions	**58**	**2**	-	-
(B) HEALTH FACILITIES				
Health facilities	Government		Private	
Dispensary	2		-	
Maternity Child Welfare Center	3		-	
Veterinary Hospital	-		-	

(Functioning all round the year)

(C)WATER FACILITIES

Wells	Covered Well	Un-Covered Well
	1	36
Hand Pump	39	
Tank/pond/lake	-	
River/Canal	2	
Tube well	16	
Others	2	
Spring	1	

(D) ELECTRICITY		
Power Supply for Domestic Use	66	-
Power Supply for Agriculture Use	66	-
Power Supply for Commercial Use	66	-
Power Supply for All Uses	66	-
(E) HIGHWAYS AND ROADS		
Rural Areas		

National Highway	76	-
State Highway	75	-
Major District Roads	66	-
Other District Road	66	-
Pucca Road	53	-
Kuchha road	46	-

Amenities available in Village

Number of institutions/facilities in Village		
(A) INSTITUTIONAL EDUCATIONAL FACILITIES		
Schools	Government	Private
Primary Schools	1	1
Middle Schools	1	-
Secondary School	-	-
Senior Secondary School	-	-
Total no. of institutions	3	
(B) HEALTH FACILITIES		
Dispensary	2	
Maternity Child Welfare Center	-	
Veterinary Hospital	1	
(C) DRINKING WATER FACILITIES (Functioning all round the Year)		
Wells	Covered Well functioning all round the year	Un-Covered Well functioning all round the year
	-	1
Hand Pump	1	
Tank/pond/lake	10	
River/Canal	3	
Tube well	1	
Others	0	

Spring	0
(D) ELECTRICITY	
Power Supply for Domestic Use	1
Power Supply for Agriculture Use	1
Power Supply for Commercial Use	1
Power Supply for All Uses	1
(E) HIGHWAYS AND ROADS	
Rural Areas	
National Highway	-
State Highway	1
Major District Roads	-
Other District Road	-
Pucca Road	5
Kuchha road	12

10.0 Assessment of likely socio-economic impact

10.1 Impact on population composition

In general, no impact is envisaged on the population composition of the study area as there will be no in-migration or out-migration of villagers. Since all the workers will be recruited locally in-migration of people in search of job in the proposed mining project is not expected. Similarly, chances of out-migration of people due to environmental degradation resulting from mining activities are remote as mineral is not so lethal even if it is handled loosely. Hence, there will be no negative impact on the population composition of the study area. If on the other hand, the project proponent is compelled to recruit few highly skilled workers from distant places outside the study area the impact on population composition will be insignificant or marginal.

Impact on Employment

For removal of sand, the project proponent intends to recruit the local people. The total number of people to be recruited will depend upon quantity of sand to be extracted over a period of time.

The project will operate under the supervision of a Mining Foreman having adequate experiences. Besides providing direct employment to the local people there will be indirect employment of persons for the informal sector, who is either Semi-Skilled and or Un-skilled workers.

Piece rate is a system of making payment of wages to an employee. Under this system an employee is paid for each unit of production at a fixed rate. Thus piece rate is the amount of money paid per task performed or piece produced.

Impact on Health

Mining is always a health hazard. The major health problem originates from mining of the mineral is the generation of dust and other pollutants. It exposes communities to airborne particulate matter that damages lungs of infants, children, elderly persons and those with existing health problems. This must be checked when mine starts operating, otherwise it will lead to permanent respiratory diseases.

The table below presents types of social & economic impacts that people in the study area are expected to endure when the mining activity will commence near village.

Social & Economic impacts of mining project

Sr. No.	Description	Impact Type				
		Positive Impact		Negative Impact		No Impact
		Direct	In-direct	Direct	In-direct	
1	Population Composition	-	-	-	-	Yes
2	Formal Employment Generation	Yes	-	-	-	-
3	Informal Employment Generation	Yes	-	-	-	-
4	Increased Supply of	Yes	-	-	-	-

	mineral for end users					
5	Scope for promotion of mineral based industries in the study area.	-	Yes	-	-	-
6	Scope for development and maintenance of roads in the area	-	Yes	-	-	-
7	Impact on Agriculture	-	-	-	-	Yes
8	Improvement in Quality of life of the local people	-	Yes	-	-	-
9	Increase in State Income	Yes	-	-	-	-
10	Impact on Law & Order	-	-	-	-	Yes
11	Check on illegal mining	Yes	-	-	-	-
12	Impact on Health	-	-	Yes	-	-

It is clear from the above table that the up-coming mining project that it will yield positive impact on eight variables, negative impact on one variable and no impact on three variables.

Suggestions

The Public opinion is in favor of community health programme under which the mine operators should be encouraged to invest in building of healthcare infrastructure like hospitals, clinics, health education resources, emergency response personnel and equipment, doctors, nurses and hygienists. Furnished below are few steps need to be taken by the mine operator to meet any health hazard during the course of mining practices.

Safe work environment

The project proponent must ensure health and safety of all the employees at work. He must maintain safe work environment and ensure that the machinery and equipment in use are safe for his employees. Further, he must make sure that work arrangements are non-hazardous to employees.

Provision of first aid and regular health examination

There should be provision for First Aid and the first aiders must be well trained in handling patients working in mines. Periodical medical examination as per Mines Rule 1955 should be undertaken for all the mine workers. This must be made compulsory for all workers engaged in extraction of minerals. The regular health examination must 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.

Health education

Adequate health education and information related to the job must be provided to the workers. Baseline health information should be recorded for future references.

Tie up with the nearest hospital for medical help

To meet the medical needs of the mine workers tie-ups with nearest hospitals should be made. Efforts must be made to reserve few beds in the above hospitals for the workers of the upcoming mining project. This will ensure timely medical aid to the affected persons.

Supply of mask, gloves etc

The workers in the mines are subject to respiratory diseases. For protection from dust it must be made compulsory for all workers to wear masks and gloves, while working in a mine.

Administration of anti-venom injections

Provision of Anti-venom therapy must be made available for administration to the workers in case of snake, spider and insect bites, while working in the mine.

Special telephone number

A special telephone number should be made available to the workers in case of emergency so that they can dial the same for medical assistances. Further, efforts may be made to provide vehicles to the patients in short duration for shifting to the health institutions.

Perception of local people

During the course of site visit people living in the villages were requested to express their views about the up-coming mining project. Irrespective of the distance of the villages from the mining site they all supported it. They stated that it should be given top priority as the related industries depended upon it. However, people living in the study area stated that extraction of sand should be allowed with the following conditions:

a) All the persons to be deployed for extraction of mineral should be recruited locally from nearby villages.
b) The road connecting the quarry with the Tar road should be well maintained and there should not be any pot hole or uneven surface. This will ensure speedy transportation of mineral from the quarry to the end users.
c) The local communities should be involved while implementing the CSR activities.
d) The CSR activities should be carried on under the supervision of a team drawing members from affected villages.

Conclusion

During the course of the study 12 social factors were identified that may influence the socio-economic life of the people in the study area. Except one all of them are positive impacts, which are expected to improve the quality of life of the local people. Beside the above the mining will bring revenue to the state government.

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4.0 GENERAL

Identification of all potential environmental impacts due to project is an essential step of Environmental Impact Assessment. In case of mining projects, impacts on biodiversity, air pollution, water pollution, waste management and social issues are significant. Both direct and indirect environmental impacts will be created on various environmental attributes due to proposed mining activity in the surrounding environment, during the operational phase.

The occurrence of sand (minor mineral) deposits, being site specific, their exploitation often does not allow for any choice except adoption of eco-friendly operation. Positive impacts on socio-economic environment are expected due to creation of employment opportunities. Mining activities are normally carried out over a long period which also encourages development in the area such as roads, schools, hospitals etc.

Keeping in mind, the environmental baseline scenario as detailed in Chapter III and the proposed mining activity described in Chapter II, it is attempted to assess the likely impact and its extent on various environmental parameters and likely mitigation measures to be adopted.

The following parameters are of significance in the Environmental Impact Assessment and are being discussed in detail:

1. Land Environment
2. Water Environment
3. Air Environment
4. Noise Environment
5. Biological Environment
6. Socio-Economic Environment
7. Solid Waste
8. Traffic Environment

4.1 LAND ENVIRONMENT

The proposed extraction of stream bed materials, mining below the existing streambed, and alteration of channel-bed form and shape may lead to several impacts such as erosion of channel bed and

banks, increase in channel slope, and change in channel morphology if, the operations are not carried out scientific & systematically.

The mining and allied activities involved due to mining result in creation of temporary haul roads and formation of mined pits, etc. affecting the land use pattern. In this project, silt and clay are also produced as a constituent along with minerals, which are considered to be waste.

Anticipated Impacts:

- Mining activity will impact river bed topography by formation of excavation voids.
- River bed mining may bring in 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.
- The mine working will remain confined to allotted river bed only, so it will not disturb any surface area outside the mine lease area which may affect topography or drainage.
- Solid waste will not be stacked on the bank side as it will hinder the flow of water in monsoon season.

4.2 WATER ENVIRONMENT

Anticipated Impacts:

Mining of sand from within or near *river* has an indirect impact on the physico-chemical habitat characteristics during monsoon season. These characteristics include in stream roughness elements, depth, velocity, turbidity, sediment transport and stream discharge.

The detrimental effects, if any, to biota resulting from bed material mining are caused by following:

- Alteration of flow patterns resulting from modification of the *river*

- An excess of suspended sediment during monsoon season.

Mitigation measures

Project activity will be carried out only in the nalla of Rimbiara River. Hence, none of the project activities affect the water environment directly. In the project, it is not proposed to divert or truncate any stream in monsoon season only. No proposal is envisaged for pumping of water either from the *River* (in monsoon) or tapping the ground water.

In the lean months, the proposed mining will not expose the base flow of the *River* and hence, there will not be any adverse impact on surface hydrology.

Further mining will be completely stopped during the monsoon seasons to allow the excavated area to regain its natural profile.

4.3 AIR ENVIRONMENT

The proposed project includes various activities like approach roads, haul roads, excavation and transportation of sand. These operations generally result in generation of dust and thereby pose health hazards. However, it is proposed that adequate control measures will be provided at every stage of operation such as, water sprinkling at loading, unloading points and on haul roads before transportation to reduce the fugitive dust emissions.

The mining is proposed to be carried out by opencast Semi- mechanized method. The air borne particulate matter ($PM_{10\ \&\ 2.5}$) generated by transportation of sand is the main respirable air pollutant. The emissions of Sulphur dioxide (SO_2), Nitrogen Oxides (NO_2) contributed by vehicles plying on haul roads will be marginal. Prediction of impacts on air environment has been carried out taking into consideration proposed production and net increase in emissions.

Air Modeling

In general, mining operations generate substantial quantities of airborne respirable dust, which leads release of huge amount of dust. These air borne dust particles, generally below 100 micron in size, are nuisance particulates and cause health hazards as an ill effect of mining activities. Extraction activities like drilling, blasting, material handling and transport are a potential source of air pollution Therefore, a detailed study on emission sources and quantification of pollutant concentration by

means of dispersion modeling is required to access the environmental impact of a mine. On the basis of the predicted increments to air pollutant concentrations, an effective mitigation and environmental plan can be devised for sensitive areas. In case of river bed Sand mining, as there is no blasting and drilling activities, the impacts are caused by material handling and transportation activities.

FUGITIVE DUST- MODELING In the present study in Village- Shopian, District Shopian and State-Jammu & Kashmi was selected. Air quality modeling was done using line source model as published by USEPA for transportation though roads and the empirical emission factor equations from article, Jyothi Prabha, Gurdeep Singh and I.N. Sinha, 2003 "Emission Factor Equations for Haul roads: The Indian Perspective", Indian Journal of Air Pollution Control Vol. VI No. I March pp 37-43. Emission factors to be used in Line source Dispersion equation is adopted from formula as given below:

E = [{(100-m)/m} 0.8 {s/ (100-s)} 0.1 u0.3 {2663 + 0.1 (v+fc)} 10-6] ---------- (1)

Concentration of the fugitive dust was calculated using the empirical equations for unpaved roads published by USEPA- AP42. The Concentration of the fugitive Dust is given below:

Where

E = Emission Rate (g/sec/m)

m = Moisture Content of the road = 10%

s = Silt Content of the Road = 10%

u = Wind Speed =1.68 m/s

v = Average Vehicle Speed = 4.5 m/sec

f = frequency of Vehicle movement in no per hour = 10 vehicles / hour

c = Capacity of the dumper in tons = 20 ton

Thus using equation (1)

E = 0.0007 g/sec/ m **C = (2/π) 1/2 (E / σz υ) Exp- [(h2) / (2 σz2)] x 106 ---------- (2)**

Where

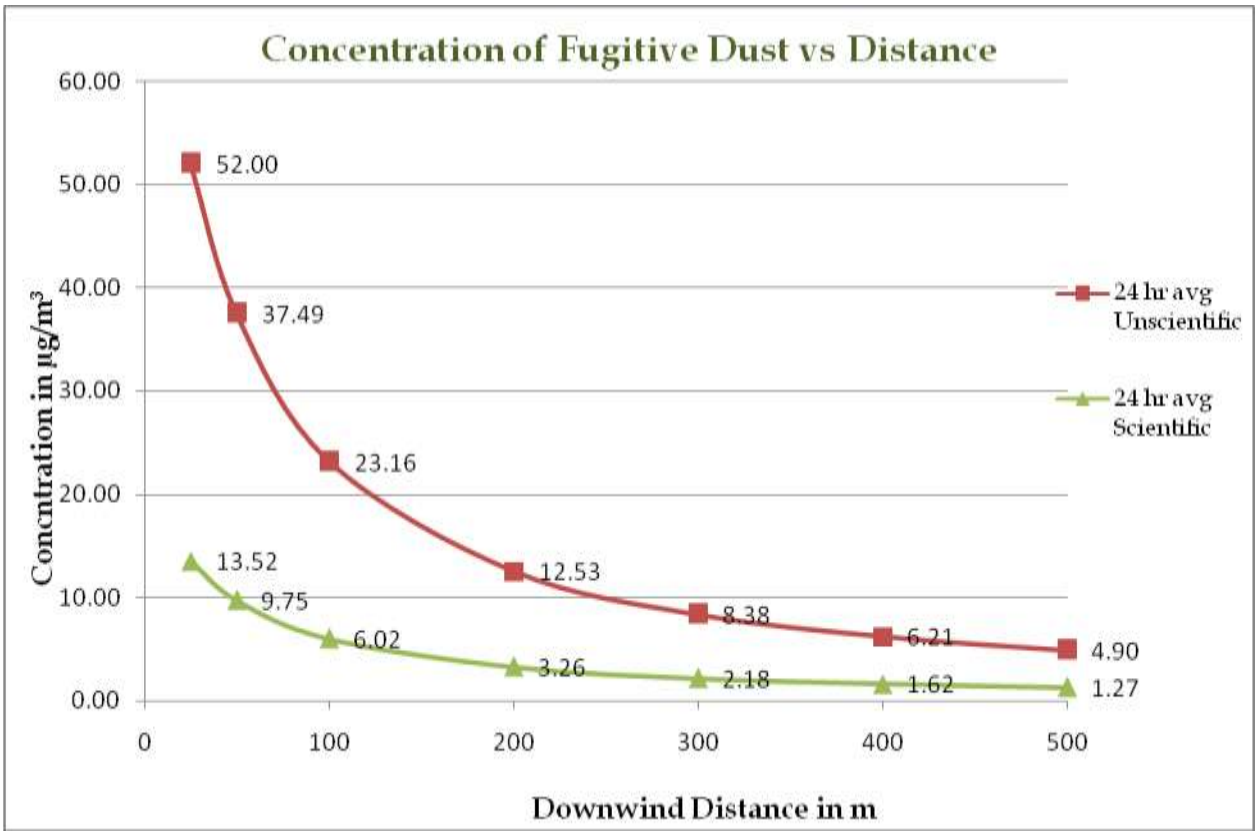
C = Concentration in microgram/ m^3

E = Emission Rate = 0.0013 g/sec/m

υ = Wind Speed = 1.68 m/s

h = 1m

Modeling was done for an infinite line source assuming unpaved road. For conservative calculation wind was assumed to blow at a velocity of 0.32 m/s perpendicular to the road. The results are given in the graph:



It is observed that the ground level concentration (GLC) decreases from 52.0 µg/m^3 at 50 m from the centre line of the road to 4.90 µg/m^3 at 500 m from the centre line of the road. These values have been predicted for a dry unpaved road.

Mitigation measures

The collection and lifting of minerals will be done by loaders. Therefore, the dust generated is likely to be insignificant as there will be no drilling & blasting. The only air pollution sources are the road transport network of the trucks. The mitigation measures like the following will be resorted:

- ✓ Water sprinkling will be done on the haul roads twice in a day.
- ✓ Deploying PUC certified vehicles to reduce their emissions
- ✓ Proper tuning of vehicles to keep the gas emissions under check
- ✓ Monitoring to ensure compliance with emission limits would be carried out during operation
- ✓ There is no major source of emissions except emission from combustion of fuels from the Transportation Vehicles and Material Handling.
- ✓ Besides this, to control the emissions further regular preventive maintenance of Equipment / Transportation Vehicles will be carried out on contractual basis.
- ✓ It will be ensured that all transportation vehicles carry a valid PUC certificate.
- ✓ Plantation will be carried out along the approach road, river banks & at all strategic places in the vicinity area.
- ✓ Periodic air quality monitoring will be done to assess the quality and for timely corrective actions.
- ✓ Water sprinkling will be done on the haul roads twice in a day. This will reduce dust emission further by 74%
- ✓ 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.

4.4 NOISE ENVIRONMENT

The proposed mining activity is semi-mechanized in nature. No drilling & blasting is envisaged for the mining activity. Hence, the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals.

Anticipated Impacts:

- Mental disturbance, stress & impaired hearing.

- Decrease in speech reception & communication.
- Distraction and diminished concentration affecting job performance efficiency.

The noise level in the working environment are compared with the standards prescribed by Occupational Safety and Health Administration (OSHA-USA) which has been adopted and enforced by the Govt. of India through model rules framed under Factories Act, 1980 and CPCB 2000 norms. The summary of the permissible exposures in cases of continuous noise as per above rules is given below:

Table 4.1, Damage risk criteria for hearing loss OSHA regulations

Maximum allowable duration per day in hour	Sound pressure dB(A)	Remarks
(1)	**(2)**	**(3)**
8.0	90	1. For any period of exposure falling in between any figure and lower figure as indicated in column (1), the permissible sound is to be determined by extrapolation or proportionate scale. 2. No exposure in excess of 115 dB (A) is permissible.
6.0	92	
4.0	95	
3.0	97	
2.0	100	
1 ½	102	
1	105	
¾	107	
½	110	
¼	115	

Noise at lower levels (sound pressure) is quite acceptable and does not have any bad effect on human beings, but when it is abnormally high- it incurs some maleficent effects.

a. Mitigation measures

The following measures have been envisaged to reduce the impact from the transportation of minerals:

- The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.

- In addition, truck drivers will be instructed to make minimum use of horns in the village area and sensitive zones.
- No such machinery is used for mining which will create noise to have ill effects.
- Awareness will be imparted to the workers about the permissible noise levels & maximum exposure to those levels.

4.5 BIOLOGICAL ENVIRONMENT

Mining which leads to the removal of channel substrate, re-suspension of streambed sediment and stockpiling on the streambed, will have ecological impacts. These impacts may have an effect on the direct loss of stream reserve habitat, disturbances of species attached to streambed deposits, reduced light penetration, reduced primary production, and reduced feeding opportunities. Sand mining generates additional traffic, which negatively impairs the environment.

Anticipated Impacts:

Flora

The proposed project of river bed sand mining shall be carried out on the riverbed of Chenab River. There are no trees in the project area. The project shall also not lead to any change in land use and will be replenished every year after successive rains. The proposed mining activity, which although is an economically gainful activity, also constitutes river training work. It allows for necessary dredging activity which may otherwise lead to flooding of the valley.

There shall be negligible air emissions or effluents from the project site during loading of the truck. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly.

Fauna

Animals are sensitive to noise and avoid human territory. The project stretch of the river is not an identified drinking water point for the animals. However, any animal desirous of accessing the river can continue to do so upstream or downstream of the stretch during the mining activities, as there will not be any damming or diverting of water. Hence, no significant impact is anticipated from the proposed project.

Anticipated Impacts:

- Excessive and unscientific mining results in the destruction in the channel morphology.
- Reduction in the yield of agriculture due to deposition of dust on the leaves, etc. of the crops.
- Fragmentation of wildlife habitat and blocking of migratory paths/corridors. Isolation may lead to local decline of species, or genetic.
- Mining on the streambed, braided flow or subsurface inter-sand flow may hinder the movement of fishes between pools.

Mitigation measures

As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated, however, the following mitigation measures will be taken to further minimize it:

1. 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.
2. As the mining site has no vegetation, no clearance of vegetation will be done.
3. Prior to closure of mining operations / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts on aquatic habitats.
4. Haul roads will be sprinkled with water which would reduce the dust emission, thus avoiding damage to the crops.
5. No discard of food, polythene waste etc. will be allowed in the lease area which would distract/attract the wildlife.
6. No night time mining will be allowed which may catch the attention of wild life.
7. If wildlife are noticed crossing the area, they will not be disturbed at all.
8. Workers will be made aware of the importance of the wildlife and signage will be displayed at the sensitive areas to caution the workers & other passerby.

Flora

Although, the project will not lead to any tree cutting, plantation activities shall be undertaken to improve the vegetation cover of the area. To avoid dust emissions, the mined materials will be covered with tarpaulin during transportation.

Fauna

The workers shall be directed to not venture out of the leased area for collecting fuel wood, or hunting. They shall also be trained not to harm any wildlife. No work shall be carried out after sunset.

4.6 TRAFFIC ANALYSIS

Transportation Route:

The sand extracted will store the nearby storage point. From there sand will be transported to the market. As in present area there are number of cluster sand mining, it is not feasible to transport sand directly to the market as it will increase traffic in the area. Due to above reason it has been proposed that some trucks will be send directly to the market by using two transportation path and rest sand will be stored in to storage point and from there it will be transported in the night time when traffic load is low on nearest SH or NH.

Traffic analysis is carried out by understanding the existing carrying capacity of the roads near to the project site and the connecting main roads in the area. Then depending on the capacity of the mine, the number of trucks that will be added to the present scenario will be compared to the carrying capacity.

Table 4.2 (i): Existing Traffic Scenario & LOS

Road	V	C	Existing V/C Ratio	LOS
Mughal road	750	6000	0.125	A

Source: Capacity as per IRC: 64-1990

V= Volume of Vehicles in PCU's/day & C= Capacity of Road in PCU's/day

The existing Level of Service (LOS) is "A" & ''B'' i.e. excellent & very good.

V/C	LOS	Performance
0.0 - 0.2	A	Excellent
0.2 - 0.4	B	Very Good
0.4 - 0.6	C	Good / Average / Fair
0.6 - 0.8	D	Poor
0.8 - 1.0	E	Very Poor

Reference: ENVIS Technical Report, IISc, Bangalore.

During Mine operation

Proposed Capacity of mine/annum : 3,04,400 MT/Annum (Cluster of Mines)

No. of working days : 250 days

Proposed Capacity of mine/day : 1216.60 TPD

Truck Capacity : 20 tonnes

No. of trucks deployed/day : 61 Trucks

PCU/day (62*3) : 183 trucks

Table 4.2 (ii): Modified Traffic Scenario & LOS

Road	V	C	Modified V/C Ratio	LOS
Mughal road	750 + 183 = 933	6000	0.155	A

Results

From the above analysis it can be seen that the LOS remains same at Mughal road that is 'A' (Excellent') respectively, as per classification. Hence, there will not so much adverse affect on the proposed evacuation roads due to additional traffic. Traffic management has been proposed as given below.

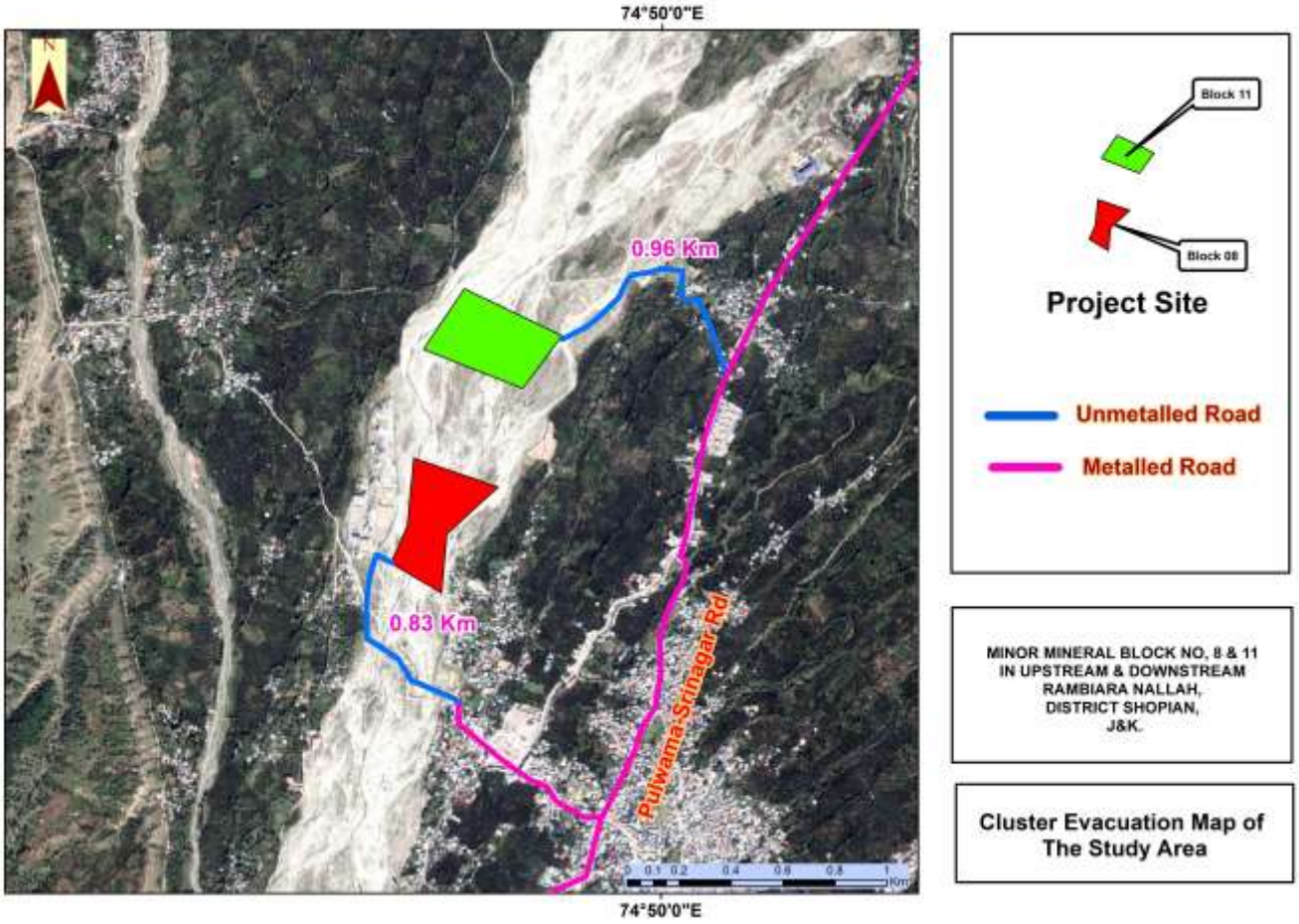


Fig 4.1, Evacuation route map

Traffic Management:

1. Roads will be repaired regularly and maintained in good conditions.
2. Haul roads will be sprinkled with water to keep the dust suppressed.
3. A supervisor will be appointed to regulate the traffic movement near the site.
4. Speed breakers will be constructed near accident prone areas to calm the traffic and its speed.
5. Signage will be erected at the sensitive & precarious places to caution or provide information to road users.

****

5.0 ANALYSIS OF ALTERNATIVE TECHNOLOGY AND SITE

5.1 Site Alternatives under Consideration

Presence of sand for commercial exploitation has been identified based on the result of geological investigations and exploration. The mining projects are site specific as such alternate sites were not considered.

5.2 Analysis of Alternative Technology

5.2.1 Choice of Method of Mining

Factors in the choice of an actual mining method for a given deposit are deposit characteristics, requirement of health and safety and environmental concerns, production, scheduling scope of mechanization, workforce requirements wage rates, replenishment, operating and capital cost estimates. The selection of the mining method (development and extraction) is a key decision to be made in the opening up of a mine.

Surface or open cast mining is used for large, near-surface mineral deposits. Mineral is exploited, loaded into trucks, and hauled to a market.

The open cast Method will be adopted because of the following reasons:

- The open-cast mining operations ensure higher mineral conservation.
- Replenishment

The method used for mining is efficient for sand mining, so no alternative mining method is proposed.

****

6.0 INTRODUCTION

Regular monitoring of the various environmental parameters is necessary to evaluate the effectiveness of the management programme so that the necessary corrective measures can be taken in case there are some drawbacks in the proposed programme. Since environmental quality parameters at work zone and surrounding areas are important for maintaining sound operating practices of the project in conformity with environmental regulations, the post project monitoring work forms part of Environmental Monitoring Program.

Environmental Monitoring Program will be implemented once the project activity commences. Environmental monitoring program includes (i) Environmental surveillance, (ii) analysis & interpretation of data, (iii) Preparation of reports to support environmental management system and (iv) Organizational set up responsible for the implementation of the programme.

6.1 ENVIRONMENTAL MONITORING AND REPORTING PROCEDURE

Monitoring shall confirm that commitments are being met. This may take the form of direct measurement and recording of quantitative information, such as amounts and concentrations of discharges and wastes, for measurement against corporate or statutory standards, consent limits or targets. It may also require measurement of ambient environmental quality in the vicinity of a site using ecological/biological, physical and chemical indicators. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints.

The preventive approach to environment management may also require monitoring of process inputs, for example, type and method used, resource consumption, equipment and pollution control performance etc.

The key aims of environment monitoring are:

1. To ensure that results/ conditions are as forecast during the planning stage, and where they are not, to pinpoint the cause and implement action to remedy the situation.
2. To verify the evaluations made during the planning process, in particular with risk and impact assessments and standard & target setting and to measure operational and process efficiency.
3. Monitoring will also be required to meet compliance with statutory and corporate requirements.
4. Finally, monitoring results provide the basis for auditing i.e. to identify unexpected changes.

6.2 MONITORING METHODOLOGIES AND PARAMETERS

Air quality monitoring

Air Quality monitoring is essential for evaluation of the effectiveness of abatement programmes and to develop appropriate control measures. Suspended Particulate Matter (SPM), Sulphur Dioxide (SO_2) and Nitrogen Dioxide (NO_2) will be monitored at the workplace i.e. core zone. The methodology proposed for is shown below:

Table 6.1, Monitoring methodologies and parameters

Parameters	Technique	Technical Protocol
PM_{10}	Gravimetric method	**IS 5182 (Part-XXIII)**
Sulphur Dioxide	Improved West and Gaeke	**IS-5182 (Part-II)**
Nitrogen Dioxide	Modified Jacob & Hochheiser	**IS-5182 (Part-VI)**

Water quality monitoring

Water quality monitoring involves periodical assessment of quality of surface water and the ground water near the mining project.

- Surface water samples will be analyzed for all the parameters as per EPA, 1986
- Ground water samples will be analyzed for all the parameters as per IS-10500:2012.

Soil quality monitoring

The soil quality monitoring is carried out to assess the soil characteristic. The soil quality will be analyzed as per CPCB norms.

Noise level monitoring

Noise level monitoring will be done for achieving the following objectives:

a) To compare sound levels with the values specified in noise regulations

b) To determine the need and extent of noise control of various noise generating sources

Noise level monitoring will be done at the work zone to assess the occupational noise exposure levels. Noise levels will also be monitored at the noise generating sources like mineral handling

arrangements, vehicle movements and also at the nearest village for studying the impact due to higher noise levels for taking necessary control measures at the source.

Socio-economic Survey

Socio economic condition will be monitored to assess the demographic particulars of the area including the impacts on the social & economical condition on the residents nearby.

Plantation Monitoring Programme

Plantation monitoring will be done to ensure survival & growth rate of plantations.

6.3 MONITORING SCHEDULE

The schedule has been shown below for the parameters proposed for monitoring.

Table 6.2, Details of monitoring schedule

S.No.	Description of Parameters	Schedule of Monitoring
1	Air Quality	24 hourly samples twice a week for one month in each season except monsoon will be collected at the mine site and nearby villages and analyzed.
2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in a year in project area
4	Noise Level	Twice a year for first two years & then once a year
5	Socio-economic Condition	Once in 3 years
6	Plantation Monitoring	Once in a season

6.4 MONITORING SCHEDULE - IMPLEMENTATION

An implementation programme has been prepared as it serves no purpose if it is not implemented in letter and spirit.

Implementation of proposed control measures and monitoring programme has an implication on mining site as well as on the surrounding area. Therefore, mine management should strengthen the existing control measures as elaborated earlier in this report and monitor the efficacy of the control measures implemented in the entire study area:

a) Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
b) Collection of soil samples at strategic locations once every two years and analysis thereof with regard to deleterious constituents, if any.
c) Measurement of water level fluctuations in the nearby ponds dug wells and bore wells and to assess if mining has got any impact on it or not.
d) Measurement of noise levels at mine site and adjacent villages will be done twice a year for first two years and thereafter once a year.
e) Post plantation, the area will be regularly monitored in every season for evaluation of success rate. For selection of plant species local people should also be involved.

An Environmental Management Cell (EMC) is envisaged which will be responsible for monitoring EMP and its implementation. EMC members should meet periodically to assess the progress and analyze the data collected during the month.

6.5 BUDGET ALLOCATION FOR MONITORING

The EMC will be responsible to carry on the monitoring. Budget allotment has also been proposed for the same:

Table 6.3,

Table 6.3, Budget for monitoring for cluster of two mines

S. No.	Description	Cost to be incurred (in lakhs/annum)
1	Water Quality (Surface & Groundwater)	2.0
2	Soil Quality	1.0
3	Air Quality	2.0
4	Noise Level	1.0
5	Plantation Monitoring	1.0
6	Socio-economic Condition	1.0
TOTAL		**8.0**

6.6 REPORTING SCHEDULES OF THE MONITORING DATA

It is proposed that voluntary reporting of environmental performance with reference to the EMP should be undertaken. The environmental monitoring cell shall co-ordinate all monitoring programmes at site to furnish the data to the State regulatory agencies regularly in respect of the stipulated prior environmental clearance terms and conditions. The proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and also the details of website where it is displayed.

****

7.0 PUBLIC CONSULTATION

As per EIA Notification dated 14th September, 2006, as amended from time to time, The committee has suggested various Terms of Reference (ToRs) for the preparation of the Environmental Impact Assessment (EIA) Report and Environmental Management Plan (EMP) vide their letter nos. JKEIAA/2021/400/235-39 dated 12.02.2021 (Block 8), JKEIAA/2021/395/220-24 dated 12-02-2021 (Block 11). The following Additional Studies were carried out as per Terms of Reference:

1. Public Hearing
2. Risk Assessment &
3. Disaster Management Plan

7.1 PUBLIC HEARING

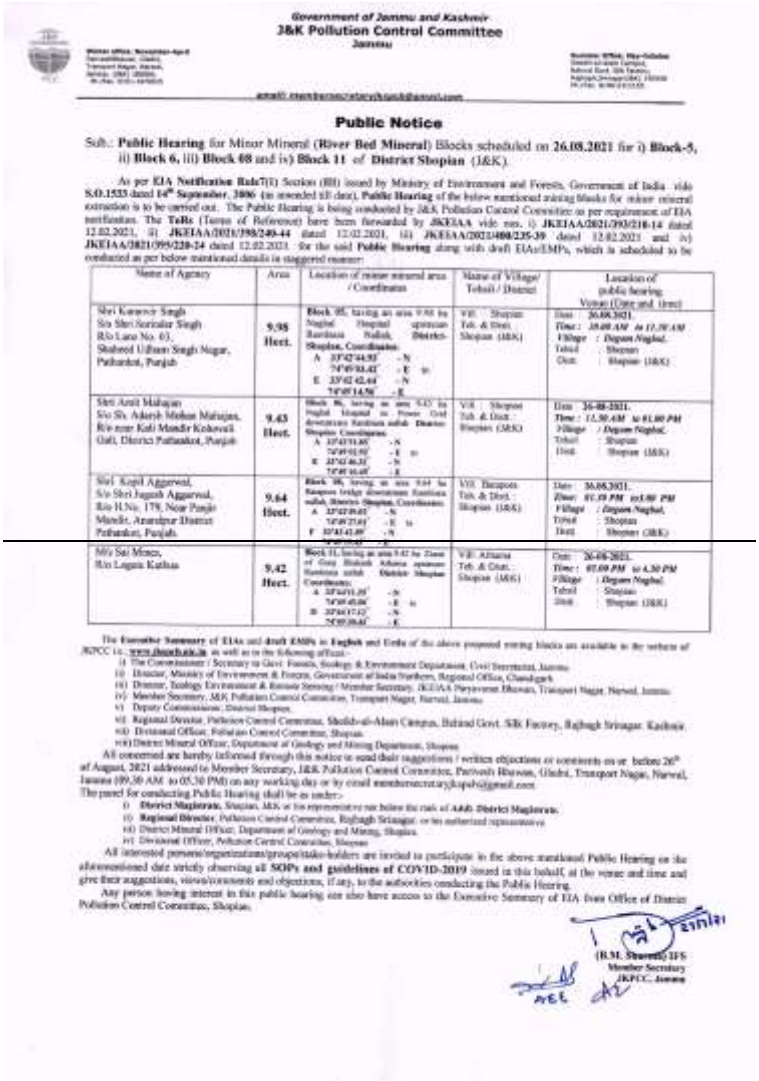
Public hearing has been conducted as per EIA Notification for the proposed River bed mining of Minor Minerals Block- 8 and 11 area 15.22 Ha. for a production 3,04,400 MTPA of Sand on dated 26-08-2021 at Village Degam Nagbal, Shopian, J & K.

Table 7-1, Public hearing details

Particular	Description
Advertisement for Public Hearing ➢ Date of Advertisement in Newspapers	27/07/2021
Date of Public Hearing	26th Aug, 2021 01.30 AM to 03:00 PM (Block8) 11:30AM to 1:00 PM (Block 6)
Venue	At Village Degam Nagbal, Shopian, J & K.
Members	• Sh. Mushtaq Ahmed Simnani, Additional District Commissioner, Shopian. • Sh. Khurshid Ahmad Ganai, Divisional Officer Pollution Control Committee, Shopian.

The Technical Consultant briefed the public about the purpose of organizing the hearing and asked the project proponent to explain the salient features of project with specific reference to the impacts on environment, its management and social welfare measures including community development activities proposed.

The public hearing proceedings & related papers are attached as **Annexure-X.**



Government of Jammu and Kashmir
J&K Pollution Control Committee
Jammu

Public Notice

Sub.: **Public Hearing** for Minor Mineral (**River Bed Mineral**) Blocks scheduled on **26.08.2021** for i) **Block-5,** ii) **Block 6,** iii) **Block 08** and iv) **Block 11** of **District Shopian** (J&K).

As per **EIA Notification Rule7**(1) Section (III) issued by Ministry of Environment and Forests, Government of India vide **S.O.1533** dated **14th September, 2006** (as amended till date), **Public Hearing** of the below mentioned mining blocks for minor mineral extraction is to be carried out. The Public Hearing is being conducted by J&K Pollution Control Committee as per requirement of EIA notification. The **ToRs** (Terms of Reference) have been forwarded by **JKEIAA** vide nos. i) **JKEIAA/2021/393/218-14** dated 12.02.2021, ii) **JKEIAA/2021/398/240-44** dated 12.02.2021, iii) **JKEIAA/2021/400/235-39** dated 12.02.2021 and iv) **JKEIAA/2021/395/220-24** dated 12.02.2021 for the said **Public Hearing** along with draft EIAs/EMPs, which is scheduled to be conducted as per below mentioned details in staggered manner:

Name of Agency	Area	Location of mineral area / Coordinates	Name of Village/ Tehsil / District	Location of public hearing Venue (Date and time)
Shri Kanwar Singh S/o Shri Surinder Singh R/o Lane No. 03, Shaheed Udham Singh Nagar, Pathankot, Punjab	9.98 Hect.	Block 05, having an area 9.98 ha Nagbal Hospital upstream Rambiara Nallah, District-Shopian. Coordinates: A 33°42'44.93" -N 74°49'50.42" -E to E 33°42'42.64" -N 74°49'54.58" -E	Vill. Shopian Teh. & Distt. Shopian (J&K)	Date: 26.08.2021. Time: 10.00 AM to 11.30 AM Village : Degam Nagbal. Tehsil : Shopian Distt. : Shopian (J&K)
Shri Amit Mahajan S/o Sh. Ashok Mohan Mahajan, R/o near Kali Mandir Kokewali Gali, District Pathankot, Punjab	9.43 Hect.	Block 06, having an area 9.43 ha Nagbal Hospital to Power Grid downstream Rambiara nallah. District-Shopian. Coordinates: A 33°43'31.60" -N 74°49'49.92" -E to E 33°43'46.31" -N 74°49'46.68" -E	Vill. Shopian Teh. & Distt. : Shopian (J&K)	Date: 26-08-2021. Time : 11.30 AM to 01.00 PM Village : Degam Nagbal. Tehsil : Shopian Distt. : Shopian (J&K)
Shri Kapil Aggarwal, S/o Shri Jagnath Aggarwal, R/o H.No. 179, Near Punjab Mandir, Anandpur District Pathankot, Punjab.	9.64 Hect.	Block 08, having an area 9.64 ha Batapora bridge downstream Rambiara nallah, District-Shopian. Coordinates: A 33°43'39.03" -N 74°49'27.03" -E to F 33°43'43.09" -N 74°49'30.02" -E	Vill. Batapora Teh. & Distt. : Shopian (J&K)	Date: 26.08.2021. Time: 01.30 PM to 03.00 PM Village : Degam Nagbal. Tehsil : Shopian Distt. : Shopian (J&K)
M/s Sai Mines, R/o Lagam Kathua	9.42 Hect.	Block 11, having an area 9.42 ha Zone of Gaaj Bridge Athasa upstream Rambiara nallah. District- Shopian Coordinates: A 33°43'51.35" -N 74°49'45.06" -E to B 33°44'17.12" -N 74°49'39.61" -E	Vill. Athasa Teh. & Distt. : Shopian (J&K)	Date: 26-08-2021. Time : 03.00 PM to 4.30 PM Village : Degam Nagbal. Tehsil : Shopian Distt. : Shopian (J&K)

The **Executive Summary** of **EIAs** and **draft EMPs** in **English** and **Urdu** of the above proposed mining blocks are available in the website of JKPCC i.e. **www.jkpcb.nic.in** as well as in the following offices:-

i) The Chief Secretary / Secretary to Govt. Forests, Ecology & Environment Department, Civil Secretariat, Jammu
ii) Director, Ministry of Environment & Forests, Government of India Northern, Regional Office, Chandigarh
iii) Director, Ecology, Environment & Remote Sensing / Member Secretary, JKEIAA Paryavaran Bhawan, Transport Nagar, Narwal, Jammu
iv) Member Secretary, J&K Pollution Control Committee, Transport Nagar, Narwal, Jammu
v) Deputy Commissioner, District Shopian,
vi) Regional Director, Pollution Control Committee, Shaikh-ul-Alam Campus, Bulvard Govt. Silk Factory, Rajbagh Srinagar, Kashmir
vii) Divisional Officer, Pollution Control Committee, Shopian.
viii) District Mineral Officer, Department of Geology and Mining Department, Shopian.

All concerned are hereby informed through this notice to send their suggestions / written objections or comments on or before 20th of August, 2021 addressed to Member Secretary, J&K Pollution Control Committee, Parivesh Bhawan, Gladni, Transport Nagar, Narwal, Jammu (09.30 AM to 05.30 PM) on any working day or by email membersecretary.jkpcb@gmail.com.

The panel for conducting Public Hearing shall be as under:-

i) **District Magistrate,** Shopian, J&K or his representative not below the rank of **Addl. District Magistrate.**
ii) **Regional Director**, Pollution Control Committee, Rajbagh Srinagar, or his authorized representative.
iii) District Mineral Officer, Department of Geology and Mining, Shopian.
iv) Divisional Officer, Pollution Control Committee, Shopian.

All interested persons/organizations/groups/stake-holders are invited to participate in the above mentioned Public Hearing on the aforementioned date strictly observing **all SOPs and guidelines of COVID-2019** issued in this behalf, at the venue and time and give their suggestions, views/comments and objections, if any, to the authorities conducting the Public Hearing.

Any person having interest in this public hearing can also have access to the Executive Summary of EIA from Office of District Pollution Control Committee, Shopian.

(B.M. Sharma) IFS
Member Secretary
JKPCC, Jammu

Figure 7 1, Notice for public hearing

Figure 7 2, Public hearing photographs

7.1.1 Issues rose during public hearing and commitment

Action plan to address the issues raised during public hearing is discussed in **Table-7.2**.

7.1.2 Conclusion on public hearing

After the questions raised by the public present during the public hearing, were suitably replied to their satisfaction and no further questions were coming, the Regional director, JKPCB summed up the Proceedings of the Public hearing and declared the Public Hearing as over. The details of persons attended and representations received in writing during the public hearing are enclosed along with the minutes of the public hearing.

Table 7-2, Details of action plan for the issues raise during the public hearing

S. No.	Applicant's Name	Issued raised by the applicant	Answers given by mine management	Action Plan
1	Mr Raja Waheed DDC Member	He opposed all such activities on Nallah Rambiara and mentioned that an agitation against the move shall be started in coming months and he is ready to face any dare consequences. He urged that it should be done by the locals manually.	Environment consultant replied that it is a legal mine and scientific method will be adopted in all mining activities and will generate employment for locals.	
2	Mr Mansoor Ahmad Magray, Social	He opposed the project and suggested a "Dream Project from Heerpora to Lassipora bridge on the banks of Nallah Rambiara and	Environment consultant replied that it is a legal mine and	--

	Activist	throws light on environmental conservations and saving ecosystem of whole district including that of Nallah Rambiara. He also showed serious concerns of unemployment of locals and threat of flood to the people residing in close proximity of Nallah.	scientific method will be adopted in all mining activities and will not harm ecosystem and also generate employment for locals.	
3	Mr Abdul Wahid Naik S/o Shams ud Din Naik R/o Degam Shopian, (Private school teacher)	He Opposed the project on the banks of Nallah and impressed for safety of 300 students studying there from apprehensive Noise and Air Pollution before taking any decision	Environment consultant replied that scientific method will be adopted in all mining activities and all safety and pollution control measures will be taken for Air and Noise pollution.	--
4	Mr Chowdary Abdul Hamid DDC Member Shopian from Devpora.	He condemned the deep dredging on banks of Nallah through illegal Mining by JCBs and requested for proper drinking water supply schemes. He also urged for employment of local youth, proper drinking water supply schemes.	Environment consultant replied that it is a legal mine and scientific method will be adopted in all mining activities, proper	--

			drinking water supply will be ensured and will provide employment for local youth.	
5	Mr Chowdary Abdul Aziz, Gujjar Leader	He opposed the illegal mining at night hours by most of the people through JCBs. He also showed concern of local employment in these projects and safety of flora and fauna.	Environment consultant replied that it is a legal mine and scientific method will be adopted in all mining activities, locals will be employed and safety of flora and fauna will be ensured.	
6	Mr Gulam Qadir Sheikh Sarpanch of Nagbal Shopian	He requested to stop the illegal encroachments in and around the Nallah Rambiara and save the all its boundaries for future generations	Environment consultant replied that it is a legal mine and scientific method will be adopted in all mining activities.	-
7	Mr Javid	He raised question about illegal	Environment	-

	Ahmad Baba S/o Khurshid Ahmad Baba R/o Bongam Shopian	mining and its impact on cost of material due to non-fixation of rates. He also stated that the DDC members should have remain present till the proceedings of entire Public Hearing but they left mid-way	consultant replied that it is a legal mine and scientific method will be adopted in all mining activities.	

7.2 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:

- ✓ Elimination of hazards.
- ✓ Substitute something safer.
- ✓ Use engineering/design controls.
- ✓ Use administrative controls such as safe work procedures.
- ✓ 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

Table 7.3, Risk Likelihood Table for Guidance

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 7.1(ii)

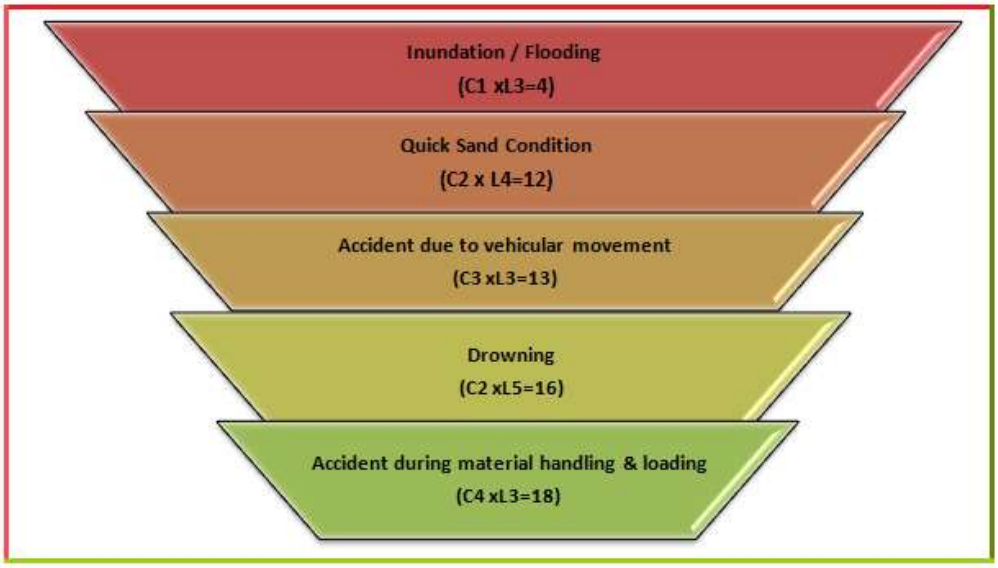
Table 7.4, Qualitative Risk Assessment

Risk Rank Likelihood Consequence	L1 Almost certain	L2 Likely	L3 Possible	L4 Unlikely	L5 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**

7.3 RISK ASSESSMENT



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

The key risk (hazard x probability) event rating associated with sand mining and to assess its consequences of such events occurring and the likelihood based on above Table 7.1 (ii) are as:-
The Risk rating of such hazards is as follows:

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* 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.

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* 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.

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/repaired 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.

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.

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 bank of *river* 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.
2. The loading should be done from one side of the truck only to avoid over throw of materials.
3. 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.

7.4 DISASTERS & ITS MANAGEMENT

Anticipated Disaster

1. **Floods**: Most of the areas of this district are flood prone owing to the presence of seasonal rivers. Rivers and its tributaries cause heavy losses to the human lives, livestock, land and property mainly due to flash floods. Hence no mining has been proposed during monsoon and flood alerts will be given, if any.
2. **Earth Quake**: Jammu District like other areas of Jammu & Kashmir is moderately vulnerable to earthquake as it exists in Zone III. However the vulnerability to damage near the site is quite low as there are no built in structures at the site.

Drought: due to deficiency in rainfall prime reasons of recurring drought in Jammu & Kashmir is the nature of soil with low mineral and humus-contents besides extremely poor water holding capacity. Recurrent rainfall variability and sustained departure from the normal rainfall vis-a-vis low reliability, fluctuating both surface and underground water resources and extremely poor water holding capacity of the major soil group appear to have clubbed together to cause frequent droughts in Jammu & Kashmir. Beside, there is a positive relationship between reducing forest land and the

increasing rainfall variability and the phenomenon is well manifested in Jammu & Kashmir scenario of recurrent droughts.

Disaster Management Plan & Strategy

The Disaster Management Plan of the Jammu District has three components:

(A) Risk Analysis and Vulnerability Assessment:

The Risk Analysis and Vulnerability Assessment depict the present picture for each disaster-exposure, loss of life, property damage, etc. It also shows geographic distribution of each hazard. The various monitoring facilities, regulatory regimes, countermeasures available for each disaster are identified and listed.

(B) Response Plan:

The response plan presents an organizational structure of the District to effectively handle the disaster in a coordinated and quickest possible manner to mitigate the impact of disaster. It identifies functional areas such as relief, restoration, communication, information, transport, emergency health services etc and proposes assignments to various departments; including identifying lead and supporting departments. The response plan also lays down preparedness checklists and standing operating procedure (SOP) guidelines.

(C) Mitigation Strategy:

The mitigation strategy and plan focus on the long-term planning for impact reduction. It deals with the issues of continued commitment to hazard identification and risk assessment, applied research and technology transfer, investment- incentives for mitigation, and leadership and co-ordination for mitigation.

The mine management will be in regular contact with the District administration to gather information on natural disasters and will pass on the message at the site to avoid any loss of health or wealth due to impending disasters.

Though the responsibility of disaster management is vested with the center and state Governments, it is extremely difficult for them to deal effectively all the aspects of disaster management according to the needs of the affected people.

Thus disaster management plan of the Jammu District has been prepared through incorporation of the features of Community Based Disaster Management and involvement of local governments, Municipalities etc.

7.5 SOCIO-ECONOMIC IMPACT OF THE PROJECT & SAFETY MEASURES

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 Assessment (EIA). 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 km 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 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 the 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 around 51 people will get employment in this mining project for a period of ten months in a year. 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 sand in the market

The demand for minerals is ever increasing with the growth of the infrastructure development in our country. Both Government departments and private developers have taken up construction of roads, bridges and buildings in a big way. 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 & supply will decrease to some extent, if not fully.

Impact on agriculture

It is non-forest land and the proposed activity is to take place in the bed of the nala of Rambiara River. 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 be free from annual floods, which destroy standing crops and land & property. This is a positive impact of the proposed mining project.

Impact on road development

Movement of trucks and other vehicles to and fro the mining site is expected to increase, when mining will start. The existing roads are connecting the quarry with the national highway connected by metalled followed by un-metalled roads. Hence, there is need for road maintenance and repairing regularly 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 may be set up closed to the mining site.

Impact on Health

There are no chances of occurring diseases, due to mining. The minerals excavated are non-toxic. To avoid respiratory problem from dust necessary protection should 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 minerals. The first-aiders will be well trained in handling patients working in the Project.

c) **Regular Health Examination:** For all mine workers regular health examination will be made compulsory. 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. will also be taken care of.

d) **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.

e) **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.

f) **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.

g) **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.

h) **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.

i) **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 mining activity will provides employment to local people who are in search of the same. The granting of environment clearance to proponents make mining of sand 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 project the occupational pattern of the

people in the area will change making more people engaged in mining, industrial and business activities rather in agriculture only. The study area is still lacking in health and educational facilities. It is expected that same will improve to a great extent with opening of the project and associated industrial & business activities.

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8.0 GENERAL

Various benefits are envisaged while planning for the mining of sand from Rambiara River Bed. Sand is very important minor mineral and is the principal raw material for meeting the huge demand of construction material required in building construction and infrastructure works, road material for construction and maintenance of roads / highway; elastic ballast material for rail tracks in the State of J&K and nearby cities and towns of Jammu. The natural available materials in shoal deposits of Chenab River bed quarry site have been found suitable from techno-economic consideration.

8.1 PHYSICAL BENEFITS

The opening of the proposed project will enhance the following physical infrastructure facilities in the adjoining areas.

a. **Road Transport:** There will be improved road communication due to the proposed project and maintenance will also be done time to time.
b. **Market:** Generating useful economic resource for construction. Excavated minor mineral sand will provide a good market opportunity.
c. **Enhancement of green cover:** As a part of reclamation plan, plantation will be carried along the river banks or along the road sides or near the civic amenities.
a. **Creation of community assets** (infrastructure) like provision for drinking water, construction of school buildings, village roads/ linked roads, dispensary & health centre, community centre, market place etc, as a part of corporate social responsibility.

8.2 SOCIAL BENEFITS

a) **Increase in Employment Potential due to the project activity:** Employment opportunities will increase both directly as well indirectly.
b) **Contribution to the Exchequer** as the saleable minerals will be given royalty. Since the quarries will be leased out to successful allottees, mining operation in the state will get legalized and it will fetch income to the state exchequer.
c) **Increased Health related activities**: Healthcare promotional activities will be undertaken. Pre-placement & and Periodic medical checkups will be done, which will lift the general health status

of the residents of the area. Health camps, medical aids, family welfare programs, immunization camp, sports will be arranged.

Table-8.1, Budget for Public health for Cluster of Mines

S. No.	Activities recommended for communities level services	Tentative cost (Lakh Rs.)
1	Awareness campaigns regarding health issues in the nearby villages.	**4.0**
2	Provide free health checkups & medicines to the nearby villagers of the project site.	**4.0**
3	Assistance to set up a temporary health center during the lease tenure.	**2.0**
	Total	**10.0**

d) **Educational attainments**: Educational activities will be promoted by the lessee. Awareness program will be arranged covering basic issues related to primary level education, environment, health and hygiene etc.

e) **Strengthening of existing community** facilities through the Community Development Programme.

Table 8.2, Budget for Occupational Health for cluster of Mines

Particulars	Recurring Cost per year (Rs.)
For occupational health checkup	2,00,000
Total	**2,00,000**

Table 8.3, Budget for water, shelter and sanitation for mine worker for cluster of Mines

Scheme	Capital Cost (In Rs)	Recurring Cost (In Rs)
Drinking water facility	2,00,000	1,00,000

Rest shelter	2,00,000	20,000
Sanitation (Urinal and Toilet)	2,00,000	30,000
Total	**6,00,000**	**1,50,000**

Regular health check up of the labour will be done.

8.3 ENVIRONMENTAL BENEFITS

a. Protection of banks
b. Reducing submergence of adjoining agricultural lands due to flooding.
c. Reducing aggradations of river level.
d. Protection of crops being cultivated along the bank.
e. A check on illegal mining activity.

8.4 CORPORATE ENVIRONMENTAL RESPONSIBILITY

2% of capital cost of the project cost will be allotted for the Corporate Environmental Responsibility. The following has been proposed considering the needs & demand of the people. **Rs. 8.07 Lakhs** in cluster situation.

For each activity the funds to be earmarked by the proponent will be decided after discussion with the local authority/people and the beneficiaries during Public Hearing. It has been planned to undertake a concurrent evaluation of the activities to be taken up under the CER programme.

Table 8.4: CER Cost for cluster of mines

S.no	Block No	CER Cost
1	**Block No. 8**	Rs 4.20 Lakhs
2	**Block No. 11**	Rs 3.87 Lakhs
Total		**Rs 8.07 Lakhs**

Table 8.4(a): CER Cost for Block no. 08

S. No	Activities	fund in lakhs/ year (Capital Cost in lakh)
1	Health check-up facility for Panchayat and villagers of nearby villages.	1,20,000
2	Drinking water facility in nearby villages	1,00,000
3	Distribution of Sanitizer, gloves and Mask to the nearby village and panchayat.	1,00,000
4	Construction of separate toilets (2) for men & women at public place in nearby villages.	1,00,000
TOTAL		**4,20,000**

Table 8.4(b): CER Cost for Block No.11

S. No	Activities	fund in lakhs/ year (Capital Cost in lakh)
1	Health awareness and camps for local community in nearby villages.	1,00,000
2	Distribution of Sanitizer, gloves and Mask to the locals of surrounding villages. *500/ Sanitizer, gloves and Mask.	87,000
3	Renovation of toilets of nearby school.	1,00,000
4	Distribution of books & educational kits to the poor children of nearby villages.	1,00,000
TOTAL		**3,87,000**

Table 8.5 Budget for Surveillance Cluster situation (Block 8 & 11)

S no.	Particulars Particulars	Block No. 8		Block No. 11	
		Capital Cost (In Lakhs)	Recurring Cost (In Lakhs)	Capital Cost (In Lakhs)	Recurring Cost (In Lakhs)
1	**Transport Permit**	2.0	-	2.0	-

2	**CCTV Camera**	1.0	0.10	1.0	0.10
3	**Weight Bridge**	10.00	1.00	10.00	1.00
4	**Personal Computer with power backup**	0.50	0.05	0.50	0.05
4	**Mobile Application Barcode scanner**	0.50	0.05	0.50	0.05
6	**Radio Frequency Identification Tag(RFID) and GPS**	1.00	0.10	1.00	0.10
7	**Annual Audit of lease**	-	0.70	-	0.70
8	**Security Guard**	-	0.80	-	0.80
Total		**15.00**	**2.80**	**15.00**	**2.80**

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9.0 INTRODUCTION

The environmental management must be integrated into the process of mine planning so that ecological balance of the area is maintained and adverse effects are minimized. The Environmental Management Plan (EMP) consists of a set of monitoring programme, mitigation measures, and management control strategies to minimize adverse environmental impacts.

The EMP has therefore been made considering implementation and monitoring of environmental protection measures during and after mining operations. Measures to be taken for each of the impact areas are detailed in the following paras:

9.1 ENVIRONMENTAL MANAGEMENT CELL (EMC)

It is imperative to establish an effective organization to implement, maintain, monitor and control the environmental management system. A separate Environmental Management Cell (EMC) will be formed to look after the environment related matter of the mine. The structure of EMC is as follows:

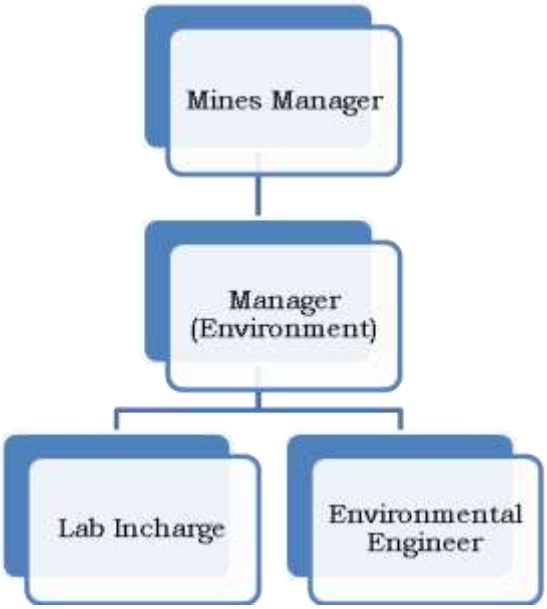

Figure 9.1 Environment Management Cell

The EMC will perform the following activities:

- EMC will oversee that environmental control measures are implemented as per the plan.

- EMC will ensure ambient Field monitoring like air monitoring, meteorological monitoring and noise monitoring in coordination with outside agencies.
- Coordinating the environment related activities within the organization as well as with outside agencies.
- Reporting the status report to the statutory authorities.
- Systematically document and record keeping w.r.t. environmental issues.
- Plantation and their maintenance
- Collection statistics of health of workers and population of surrounding villages.
- Environmental compliance to the regulatory authorities.
- Communication with the concerned department on the environmental issue.
- Monitoring the progress of implementation of environmental management programme.

9.2 AIR POLLUTION CONTROL MEASURES

During the course of sand mining, no toxic substances are released into the atmosphere, so there seems to be no potential threat to health of human beings. In river bed mining activities, dust will be generated during mining, loading and transportation. The only source of fugitive gaseous emission during mining is vehicles which will be used for transportation. The environmental management for air pollution control includes:

- Plantation will be done along the road-sides and also the vacant land present under Gram Panchayat after consultation with local villagers/authority.
- Dust mask provided to the workers engaged at dust generation points like excavations, loading and unloading points.
- The only air pollution sources are the road transport network of the trucks. The dust suppression measures like water spraying will be done on the roads.
- Utmost care will be taken to prevent spillage of sand and stone from the trucks.
- Water sprinkling will be done to reduce the emission of dust due to transportation of minerals.
- Overloading will be prevented. The trucks/ tractor trolley will be covered by tarpaulin covers.

- Plantation activities in consultation with village Panchayat along the roads will also reduce the impact of dust in the nearby villages.

9.3 WATER POLLUTION CONTROL MEASURES

During the operational phase of mine no waste water or industrial effluent will be generated. The environmental management for water pollution control includes:

- Water requirements for drinking, plantation and dust suppression will be met by tanker supply on the daily basis.
- Local people will be employed and no permanent housing will be done so no permanent drainage pattern for sewerage system is required as domestic sewage shall be disposed off into septic tank followed by soak pits.
- Mining in the area will be done up to depth of 3 m from the surface level well above the ground water table, therefore impact on water regime is not anticipated.
- Monitoring of water quality of nearby surface water, ground water and domestic water will be conducted once in every season except monsoon to evaluate the performance of the mitigation measures.

9.4 NOISE POLLUTION CONTROL MEASURES

As there will be no heavy earth moving machinery there will not be any major impact on noise level due to sand mining and other association activities a detailed noise survey has been carried out and results were cross referenced with standards and were found to be well within limits. Blasting technique is not used for sand mining hence no possibility of land vibration. It was found that the proposed mining activity will not have any significant impact on the noise environment of the region. The only impact will be due to transportation of sand and by excavator involve trucks and tractor trolleys.

- Proper maintenance of all machines is being carried out, which help in reducing generation of noise during operations.
- No other equipments accept the Transportation vehicles and Excavator and Loaders (as and when required) for loading is allowed.

- Noise generated by these equipments is intermittent and does not cause much adverse impact.
- Periodical monitoring of noise will be done to adopt corrective actions wherever needed.
- Plantation will be taken up along the approach roads. The plantation minimizes propagation of noise and also arrests dust.

9.5 BIOLOGICAL ENVIRONMENT

Although, there are no significant adverse impacts from the project, the following measures are proposed to minimize anticipated impacts:

- It will be ensured that no mining activity will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species.
- As the mining site has no vegetation, no clearance of vegetation will be done.
- Prior to closure of mining operations / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts on aquatic habitats.
- Sprinkling will be done on the haul roads with water to avoid the dust emission, thus avoiding damage to the crops.
- Mining will be carried out on the dry part of the lease area to avoid disturbance to the aquatic habitat and movement of fish species.
- No discard of food, polythene waste etc. will be allowed in the lease area which would distract/attract the wildlife.
- No night time mining will be allowed which may catch the attention of wild life.
- Workers will be made aware of the importance of the wildlife and signage will be displayed at the sensitive areas to caution the workers & other passerby.
- ***Greenery development*:** The project will not lead to any tree cutting. However, as social responsibility, greenery will be developed along the both sides of road and the bank of river. Community services will be deployed in raising these plantations. Trees of economic importance and native origin such as fruit trees shall be planted.
- Approx. 200 trees will be planted around haul road during the plan period.
- The trees proposed for plantation are:

Table 9.0, Greenbelt development

Year	No of plants	
	Block 8	**Block 11**
1st	100	100
2nd	maintenance	maintenance
3rd		
4th		
5th		
Total	**200**	

9.6 LAND USE PLANNING

Degradation of land is not a very significant adverse impact of riverbed mining due to creation of access roads, mining operations, and transportation of mined material. In order to prevent the environmental degradation of leased mine area and its surroundings, the following measures shall be taken;

- Mineral will be mined out after leaving sufficient safety zone from the bank as per sustainable sand mining guidelines-2016 for bank stability.
- No foreign material shall be allowed to remain/spill in river bed and catchment area, or no pits/pockets will be allowed to be filled with such material.
- The mining is planned in non-monsoon seasons only, so that the excavated area gets replenished during the monsoon each year.
- Pits will get replenished naturally every year after monsoon.

9.7 Occupational Health & Safety

Occupational safety and health is very closely related to productivity and good employer-employee relationship. The factor of occupational health is mainly dust. Safety of employees during operation and maintenance etc. shall be as per Mines rules and regulations.

To avoid any adverse effect on the health of workers due to various pollutants, sufficient measures relating to safety and health will also be practiced:

- Provision of rest shelters for mine workers with amenities like drinking water, portable toilets etc.
- All safety measures like use of safety appliances, such as dust masks, shoes, non breakable goggles as the case may be, shall be ensured. Safety awareness programs, awards, posters, slogans related to safety etc. will be encouraged.
- Training of employees for use of safety appliances and first aid in vocational training center.
- Regular maintenance and testing of all equipment as per manufacturers' guidelines.
- Periodical Medical Examination (PME) of all workers by a Medical Officer.
- First Aid facility will be provided at the mine site.
- Close surveillance of the factors in working environment and work practices which may affect environment and worker's health.
- Working of mine as per approved mining plan and environmental plans.

9.8 SOCIO-ECONOMIC ENVIRONMENT

This project operation will provide livelihood to the poorest section of the society. The overall impact of riverbed mining of sand on the social economics of the area shall be a very positive one, as not only it will generate employment opportunities for local population at mine site for transportation of mined material, etc. It will also give a good boost to the general economy of the area.

The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes. However, there is an apprehension that local people may get engaged in illegal activities if the proposed mining operation or the project is shelved or there is inordinate delay in its execution.

9.9 ENVIRONMENT POLICY

Proponents of proposed Blocks in cluster of mines believes that responsible environmental stewardship comprises diligent application of well-established natural resource management, controls and practices for the protection of the mined out land, preservation of biodiversity and proper disposal of waste if any following the best environmental practices during the process of mining.

Environmental policy prescribed for standard operating process to bring into focus any violation/deviation of the environment and forest norms/conditions that the company

operations will implement operational and risk management practices that provide for maximum protection of people and the environment. To this end, the owner resolves that company will follow the below mentioned practices:

Operate in accordance with prescribed industry standards while complying with all applicable environmental, health and safety laws and regulations.

- Establish and maintain a well-defined environmental, health and safety management system to guide its operations.
- Ensure that all employees, officers and directors understand and adhere to its environmental, health and safety management program.
- Provide operations with the necessary resources, expertise and training to effectively carry out its EHS management programs.
- Engage employees at all levels in programs directed towards minimizing adverse effects on the environment resulting from mining activity.
- Work proactively with governments and the public in the development of cost effective and realistic regulations that promote enhanced environmental, health and safety protection.
- Promote environmental awareness among its employees, their families and the communities in which it operates.
- Require those who provide services and products to practice good environmental stewardship.
- Mitigate its environmental impacts through efficient use of resources, and the reduction of input materials and waste.
- Maintain a high degree of emergency preparedness.

9.10 BUDGET ALLOCATION FOR EMP IMPLEMENTATION

Annual budget for EMC is very essential for successful implementation of EMP. Costs will be both Capital and Recurring cost as given below. The fund allocated will not be diverted for any other purposes and the top management will be responsible for this.

Table 9.1, Budget of EMP

Table 9.1 (a), Budget of EMP for Block No.08 (As per recommended by JKEAC meeting)

S. No	Description	Capital Cost 1st year (in lacs)	Recurring Cost (in lacs) 2nd year	Recurring Cost (in lacs) 3rd year	Recurring Cost (in lacs) 4th Year	Recurring Cost (in lacs) 5th Year
1	Green belt development	6.00	5.00	5.00	5.00	5.00
2	Haulage route Maintenance	8.00	7.00	7.00	7.00	7.00
3	Environment Awareness programme	0.50	0.50	0.50	0.50	0.50
4	Pollution Monitoring	2.00	2.00	2.00	2.00	2.00
5	Dust Suppression	3.00	4.00	4.00	4.00	4.00
6	Occupational health and safety of mine workers	2.00	2.00	2.00	2.00	2.00
7	Laying of Hume pipes	00.00	00.00	00.00	00.00	00.00
Total		21.50	20.50	20.50	20.50	20.50

Table 9.1 (b), Budget of EMP Budget for Block No. 11

S no.	Description	Capital Cost (Rs) 1st year	Recurring Cost (Rs) 2nd year	Recurring Cost (Rs) 3rd year	Recurring Cost (Rs) 4th Year	Recurring Cost (Rs) 5th Year
1.	Pollution Control & Dust Suppression	-	2,97,000	2,97,000	2,97,000	2,97,000
2	Pollution Monitoring	-	2,00,000	2,00,000	2,00,000	2,00,000
3.	Plantation and salary for one	1,00,000	1,20,000	1,20,000	1,20,000	1,20,000

	gardener (part time basis).					
4.	Haul road Maintenance Cost (960 m)	4,80,000	1,50,000	1,50,000	1,50,000	1,50,000
5	Occupational health and safety cost	-	2,00,000	2,00,000	2,00,000	2,00,000
TOTAL (Rs)		**5,80,000**	**9,67,000**	**9,67,000**	**9,67,000**	**9,67,000**

Note: *100 plants * 1000 Rs (for each plants including hedges and fences) = 1,00,000

- Salary of Labour for haul road maintenance 250 days* 1 labor*600= 1,50,000/-
- Salary of 1 gardener (10000) /month * 12 = 1,20,000 / year
- * 5 lakh per kilometer (500000 *0.96 km haul road = 4,80,000)

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10.0 INTRODUCTION

10.1 Purpose of the Report

Environmental Impact Assessment report is prepared to comply with the Terms of Reference (TOR) received from SEIAA, Jammu & Kashmir under EIA notification of the MoEF&CC dated 14th September, 2006 and its subsequent amendment there-off and also the EIA Guidance Manual for Mining of Minerals (Feb, 2010) of MoEF&CC, Govt. of India, for seeking environmental clearance for mining of Sand in the applied mining lease area.

10.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

The project is proposed to sand mining in an area of 15.22 hectares in cluster. The Mining sites are situated at Block No. 08 (Area 5.80 ha.) Batapora Bridge Downstream Rambiara Nallah & Block No. 11 (Area 9.42ha.) Ziarat of Gunj Bhakash Arhama Upstream Rambiara Nallah, District- Shopian, Jammu & Kashmir.

Identification of Project :-

Block 8

Name- Mr. Kapil Agarwal

Address-S/O Sh. Jugesh Agarwal

R/O H. no. 179 Near Panjpir Mandir Anandpur Pathankot,

Gurdaspur, Punjab

Block-11

Name- M/S Sai Mines

Address- R/O Logate, Kathua

Jammu and Kashmir

Table- 10.1, TOR detail

S.no	Block no	Vide Letter No	TOR date
1	Block no. 8	JKEIAA/2021/400/235-39	12-02-2021
2	Block no. 11	JKEIAA/2021/393/210-14	12-02-2021

10.3 BRIEF DESCRIPTION OF PROJECT

The proposed project is open cast semi-mechanized mining of sand (mineral mineral) with a proposed production of 3,04,400 MT/Annum in cluster of mines.

The proposed mining lease area falls in Survey of India Topo sheet No - **43K/14.**

The mine lease co-ordinates and connectivity details are listed below:

Table: 10.2 Environmental Settings

S. No.	Particulars	Details
A.	Nature & Size of the Project	"Minor Mineral (River Bed Material)" at Block No. 08 (Area 5.80 ha.) Batapora Bridge Downstream Rambiara Nallah & Block No. 11 (Area 9.42 ha.) Ziarat of Gunj Bhakash Arhama Upstream Rambiara Nallah, District- Shopian, Jammu & Kashmir.
B.	Location	
Name of Village		Arhama and Batapora Shopian
Tehsil		Shopian
District		Shopian
State		Jammu & Kashmir

<table>
<tr><td>Coordinates</td><td colspan="3">
<table>
<tr><th colspan="3">Block 8</th></tr>
<tr><th>Points</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>D1</td><td>33˚43’48.53”</td><td>74˚49’22.04”</td></tr>
<tr><td>B1</td><td>33˚43’46.65”</td><td>74˚49’28.22”</td></tr>
<tr><td>C</td><td>33˚43’52.29”</td><td>74˚49’35.60”</td></tr>
<tr><td>D</td><td>33˚43’55.85”</td><td>74˚49’22.89”</td></tr>
<tr><th colspan="3">Block 11</th></tr>
<tr><th>Points</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>A</td><td>33˚44’11.25”</td><td>74˚49’45.00”</td></tr>
<tr><td>B</td><td>33˚44’04.63”</td><td>74˚49’39.20”</td></tr>
<tr><td>C</td><td>33˚44’09.52”</td><td>74˚49’24.25”</td></tr>
<tr><td>D</td><td>33˚44’17.12”</td><td>74˚49’30.43”</td></tr>
<tr><td>E</td><td>33^{0}42’46.32”</td><td>74049’16.45”</td></tr>
</table>
</td></tr>
<tr><td>Toposheet No.</td><td colspan="3">43K/14</td></tr>
<tr><td>Block No.</td><td colspan="3">Block No. Block 8 & Block 11</td></tr>
<tr><td>C.</td><td colspan="3">Mine Lease Area Details</td></tr>
<tr><td></td><td>Lease Area in cluster</td><td colspan="2">15.22 ha</td></tr>
<tr><td></td><td>Type of Land</td><td colspan="2">River bed minor material</td></tr>
<tr><td></td><td>Topography</td><td colspan="2">The proposed lease area located in the upstream & Downstream Nallah Rambiara</td></tr>
<tr><td></td><td>Site Elevation Range</td><td colspan="2">
<table>
<tr><th>S.N</th><th>Block No</th><th>Elevation</th></tr>
<tr><td>1</td><td>Block 8</td><td>2001 m to 2019 m RL</td></tr>
<tr><td>2</td><td>Block 11</td><td>1987 m to 1991m RL</td></tr>
</table>
</td></tr>
<tr><td>D.</td><td colspan="3">Details of Environmental Setting</td></tr>
</table>

	Ecological Sensitive Areas (National Park, Wild Life Sanctuary, Biosphere Reserve, Reserve/ Protected Forest etc.) within 10 km distance	There is no National Park, Wild Life Sanctuary, and Biosphere Reserve within 10 km distance from the lease area.
	Water Bodies	River Rambiara, Core Zone
	Nearest Town	Shopian, approx. 1.60 Kms. towards SSE.
	Nearest Railway Station	Kakapora Railway Station, approx. 25.20 km in NNE direction.
	Nearest National Highway	NH-1A, approx. 28.40 Km in NNE direction.
	Nearest Airport	Sheikh Ul Alam Airport, Srinagar, approx. 29.80 km in NNW direction.
	Seismic Zone	As per the 2002 Bureau of Indian Standards (BIS) map, J&K falls in Zones V.

10.4 PROJECT DESCRIPTION

10.4.1 Mineral Reserves and production

The reserves have been each stretches & for individual blocks. Geological reserves and mineable reserves have been completed through cross sectional area method. The area of each section line is multiplied by strike influence to get the volume.

Table-10.3:- Summary of Reserves Block No. 08

S. No	Category	Reserves
1	Total Geological Reserve	6,07,320 MT
2	Mineable Reserve	5,42,493 MT
3	Proposed Production	1,16,000 MT/Annum
4	Ultimate depth of Mining	1 m

Table-10.4:- Summary of Reserves Block No. 11

S. No	Category	Reserves
1	Total Geological Reserve	5,93,437 MT
2	Mineable Reserve	5,35,437 MT
3	Proposed Production	1,88,400 MT/Annum
4	Ultimate depth of Mining	1 m

10.4.2 Conceptual Plan

The digging depth will be restricted to 1 m only. This will be further get replenished during the rainy season. The deposit in the river bed will never exhaust. The material will be regularly replenished during floods by the action of river water. The following steps will be taken care in mining:

- Pit limit at the end of lease period
- Sites of disposal of waste rock and top soil at the end of lease period
- No top soil or waste will be generated in the mining as such no disposal of waste is needed.

10.4.3 Method of Mining

Mining activity will be carried out by open cast semi- mechanized method. The operation will be semi-mechanized with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.

10.5 AFFORESTATION PROGRAMME

Topsoil if any would be utilized for intensive plantation and greenbelt development, all along the bank of the river. The details of plantation and number of saplings to be planted are given below.

10.6 LAND USE PATTERN

The mine lease area is flat river bed and river banks. There is no forest land or agriculture land in the mine lease area. The entire mining lease lies within River.

10.7 BASELINE ENVIRONMENTAL STATUS

10.7.1 Soil Quality

Three soil samples were collected in and around the mine lease area to assess the present soil quality of the region. The pH of the soil indicates that the soil is slightly alkaline in nature. Based on the results, it is evident that the soils are not contaminated by any polluting sources.

10.7.2 Meteorology

Meteorological data at the site was monitored during March to May, 2021 representing summer season. It was observed that the during study period, temperature ranged from -4 ^{0}C to 25 ^{0}C.

10.7.3 Ambient Air Quality

The Ambient Air Quality Monitoring reveals that of monitoring stations with minimum Concentrations of PM10 were 34.82µg/m3 and maximum 55.5µg/m3 . The result of PM2.5 reveals that the minimum concentration of 17.63µg/m3 while maximum concentration of 39.56µg/m3.

The gaseous pollutants SO2 and NOx were within the prescribed CPCB limit of 80 µg/m3. For residential and rural areas at all stations. The minimum & maximum concentrations of SO2 were found to be 4.72µg/m3&10.86µg/m3 respectively. The minimum & maximum concentrations of NOx were found to be 10.66µg/m3 at AQ2&22.0µg/m3at AQ3.

The free silica content in PM10 was found to be minimum 0.72g/m3 and maximum 1.22g/m3 at AQ2 and AQ3 respectively.

10.7.4 Water quality

To assess the physical and chemical properties of water in the region, water samples from three locations were collected from various water sources around the mine lease area.

•The pH limit fixed for drinking water samples as per IS-10500 Standards is 6.5 to 8.5 beyond this range the water will affect the mucus membrane or water supply system. During the study period, the pH was varying for ground waters from 7.28to 8.02 and for surface waters from 7.27 to 7.74. The pH values for all the samples collected in the study area during study period were found to be within the limits.

•The desirable limit for total dissolved solids as per IS-10500 Standards is 500 mg/l whereas the permissible limit in absence of alternate source is 2000mg/l. In ground water samples collected from the study area, the total dissolved solids are varying from 180.63mg/l to 216.47mg/l. In surface water samples collected from the study area, the total dissolved solids are varying from 280.23mg/l to 287.83mg/l. The TDS of the samples were within the desirable limit & the permissible limit of 500mg/l & 2000 mg/l respectively.

- The Dissolved oxygen and BOD of the samples were also within the desirable limit & the permissible limit.

10.7.5 Noise Quality

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 40.17dB (A) &60.78 dB (A) respectively. The minimum & maximum noise levels at night time were found to be 30.54 dB (A) &49.83 dB (A) respectively.

There are several sources in the 10 km radius of study area, which contributes to the local noise level of the area. On the commencement of the project, the sound from traffic activities will add to the ambient noise level of the area. This will be kept under check by taking proper suggestive measures.

10.7.6 Ecological Environment

Based on the field studies and review of published literature, it is observed that there are. There are no wildlife sanctuaries and National Parks within the study area of 10-km radius.

10.8 ANTICIPATED ENVIRONMENTAL IMPACTS

10.8.1 Impact on Air Environment

The proposed mining activities loading and movement of other transport vehicles used in mining will generate dust (SPM/RSPM). Proper water sprinkling shall be carried out at the mine site. The mineral will be transported by road through covered tarpaulin trucks/tippers to reduce the fugitive emission caused by the wind.

10.8.2 Impact on Water Environment

Mining of sand from within or near river has an indirect impact on the physico-chemical habitat characteristics during monsoon season. These characteristics include in stream roughness elements, depth, velocity, turbidity, sediment transport and stream discharge.

The detrimental effects, if any, to biota resulting from bed material mining are caused by following:

- Alteration of flow patterns resulting from modification of the river
- An excess of suspended sediment during monsoon season.

Project activity will be carried out only in the dry part of the river Rambiara upstream & Downstream Nallah Rambiara. Hence, none of the project activities affect the water environment directly. In the project, it is not proposed to divert or truncate any stream in monsoon season only. No proposal is envisaged for pumping of water either from the *River* (in monsoon) or tapping the ground water.

10.8.3 Impact on Water Quality

Analysis results of water samples collected from the buffer zone indicate that the pH, total dissolved solids (TDS) are well below the prescribed limits.

No wastewater generation is envisaged due to the mining operations. The sanitary wastewater will be sent to septic tanks.

10.8.4 Impact on Noise Environment

The proposed mining activity is semi-mechanized in nature. No drilling & blasting is envisaged for the mining activity. Hence, the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals. The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.

10.8.5 Impact on Land Environment

The proposed extraction of stream bed materials, mining below the existing streambed, and alteration of channel-bed form and shape may lead to several impacts such as erosion of channel bed and banks, increase in channel slope, and change in channel morphology if, the operations are not carried out systematically.

The systematic and scientific removal of sand will not cause bed degradation. The silt and clay generated as waste will be used for plantation or filling up low lying area elsewhere. The mining is planned in non monsoon seasons only, so that the excavated area gets replenished gradually during the monsoons each year.

10.8.6 Impact on flora and fauna

As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated. 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. The mining site has no vegetation, no clearance of vegetation will be done. Haul roads will be sprinkled with water which would reduce the dust emission, thus avoiding damage to the crops.

10.8.7 Impact on Socio - Economic Aspects

The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement. No public buildings, places, monuments etc exist within the lease area or in the vicinity. The mining operation will not disturb/ relocate any village or need resettlement. Thus no adverse impact is anticipated. The impact of mining activity in the area is positive on the socio-economic environment of the region. Sand mining will be providing employment to local people whenever there is requirement of manpower.

10.9 ENVIRONMENTAL MANAGEMENT PLAN

- Extraction will be done from the bed leaving safety zone from bank.
- The maximum working depth will remain above ground water table of the area.
- Provide health facilities to the workers & surrounding people in the impact area to reduce the health impacts.
- Ensuring wildlife protection & arranging awareness campaigns for the same.
- Minimize activities that release fine sediment to the river.
- Effective mitigation measures will be adopted to minimize disturbance during transportation & handling of minerals:
- Establishment of reclamation program with plantation of local/native & fast growing species
- Establishment of restoration plan during the closure of mine at the onset of monsoon season.
- Establishment of effective Disaster Management Plan to take timely precautionary measures to avoid effects of impending disasters.
- Establishment of effective Monitoring Program monitored by Environment Management Cell.

10.10 ENVIRONMENTAL MONITORING PROGRAM

Table 10.5: Post project environmental monitoring

S. No.	Description of Parameters	Schedule of Monitoring
1	Air Quality	24 hourly samples twice a week in each season except monsoon

2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in a year in project area
4	Noise Level	Twice a year for first two years & then once a year.
5	Socio-economic Condition	Once in 3 years
6	Plantation Monitoring	Once in a season

10.11 ADDITIONAL STUDIES

10.11.1 Risk Assessment

The complete mining operation will be carried out under the management control and direction of a qualified mine manager holding. The DGMS have been regularly issuing standing orders, model, standing orders and circulars to be followed by the mine management in case of disaster, if any.

10.11.2 Disaster Management Plan

Emergency preparedness is an important aspect in the planning of Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel shall be trained in the operations.

10.11.3 Public Consultation

Public hearing yet to be conducted.

10.12 PROJECT BENEFITS

Physical Benefits: Road Transport, Market, Enhancement of green cover & Creation of community assets.

Social Benefits: Increase in Employment Potential, Contribution to the Exchequer, Increased Health related activities, Educational attainments & Strengthening of existing community facilities.

Environmental Benefits:

- Controlling river channel and protection of banks.

- Reducing submergence of adjoining agricultural lands due to flooding.
- Reducing aggradation of river level.
- A check on illegal mining activity.

Corporate Social Responsibility

2% of capital cost of the project cost will be allotted for the Corporate Environmental Responsibility. The following has been proposed considering the needs & demand of the people. **Rs. 8.07 Lakhs in** cluster situation.

CER budget detail has been given in chapter 8.

10.13 CONCLUSIONS

- The mining operations will meet the compliance requirements of MoEF&CC;
- Community impacts will be beneficial, as the project will generate significant economic benefits for the region;
- Monitoring program will be followed till the mining operations continue.
- With the effective implementation of the Environment Management Plan (EMP) during the mining activities, the proposed project can proceed without any significant negative impact on environment.

****

CONSULTANTS ENGAGED

Name of the Consultant	P and M Solution
Address	C-88, Sector 65, Noida -201301 – U.P
Credentials	Accredited by QCI/NABET

Consultant accreditation details are given below:

Quality Council of India

National Accreditation Board for Education & Training

CERTIFICATE OF ACCREDITATION

P and M Solution

First Floor, C-88, Sector-65, Noida, Uttar Pradesh- 201301

Accredited as Category -A organization under the QCI-NABET Scheme for Accreditation of EIA Consultant Organizations: Version 3 for preparing EIA/EMP reports in the following sectors:

Sl. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals including opencast / underground mining	1	1 (a) (i)	A
2.	River Valley projects	3	1 (c)	B
3.	Metallurgical industries (ferrous & non-ferrous)	8	3 (a)	B
4.	Highways,	34	7 (f)	A
5.	Building and construction projects	38	8 (a)	B
6.	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in IA AC Minutes dated December 20, 2019 on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/20/1223 dated February 3, 2020. The accreditation needs to be renewed before the expiry date by P and M Solution, Noida following due process of assessment.

Sr. Director, NABET
Dated: February 3, 2020

Certificate No.
NABET/EIA/1922/IA0053

Valid till
Dec 10, 2022

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

S No	Name	EC/FAE	DETAILS
1	Subhash Kumar	EC	EC
2	Pravin Kumar Sinha	FAE	GEO
3	Tapan Majumdar	FAE	HG
4	Subhash Kumar	FAE	SC
5	Manoj Kumar Pandey	FAE	EB
6	Vikas Chand Tripathi	FAE	RH,AP
7	Neha Singh	FAE	NV, AQ
8	Abhay Nath Mishra	FAE	SE
9	Hussain Ziauddin	FAE	WP
10	Poonam Kumari Mangalam	FAE	LU

Consultant Contact Details:

P and M Solution

Address –C-88, Sector 65 Noida

Mobile no. - +8377871554, 8826287364

Jammu and Kashmir Union Territory

Office of The Executive Engineer Irrigation Division Shopian

Phone/Fax No. : 01933-261312
Email: idshopian@rediffmail.com

The District Mineral Officer ,
Shopian

No: 4279-83
Dt: 25-11-021.

Sub: Issuance of NOCs under district level Single Window Committee for mineral blocks 05, 06, 08, 20 and 21.

Sir,

In compliance to the instructions of District Development Commissioner, Shopian, a joint visit was made to the locations of above subjected mineral blocks and observations as recorded below were made:

Sr. No	Mineral Block No	Observation
1	**05**	Proposed mining block located at distance of 40 mtr from Off take point of Natoo Canal (Represented on Annexure **A**) Proposed mining block located at distance of 50 mtr from Off take point of Sanigaloo Canal (Represented on Annexure **A**)
2	**06**	Proposed mining block located at an average distance of 20 mtr from Supply Channel of Natoo Canal (Represented on Annexure **B**) Proposed mining block located at an average distance of 40 mtr from Supply Channel of Sanigaloo Canal (Represented on Annexure **B**)
3	**08**	NOC Cleared as no hydraulic structure lies within the buffer zone (Represented on Annexure **C**)
4	**20**	Supply channel of Keegam/Saller Khul lies within the buffer zone (Represented on Annexure **D**)
5	**21**	Supply channel of Keegam/Saller Khul intersects the mining block (Represented on Annexure **E**)

In light of the above observations, it is recommended that the blocks be resized so as to keep a safe distance of **50 mtr** from irrigation facilities in order to fulfil the clearance criteria. The above conditions shall be applicable in addition to the conditions already communicated by this office in respect of above subjected blocks.

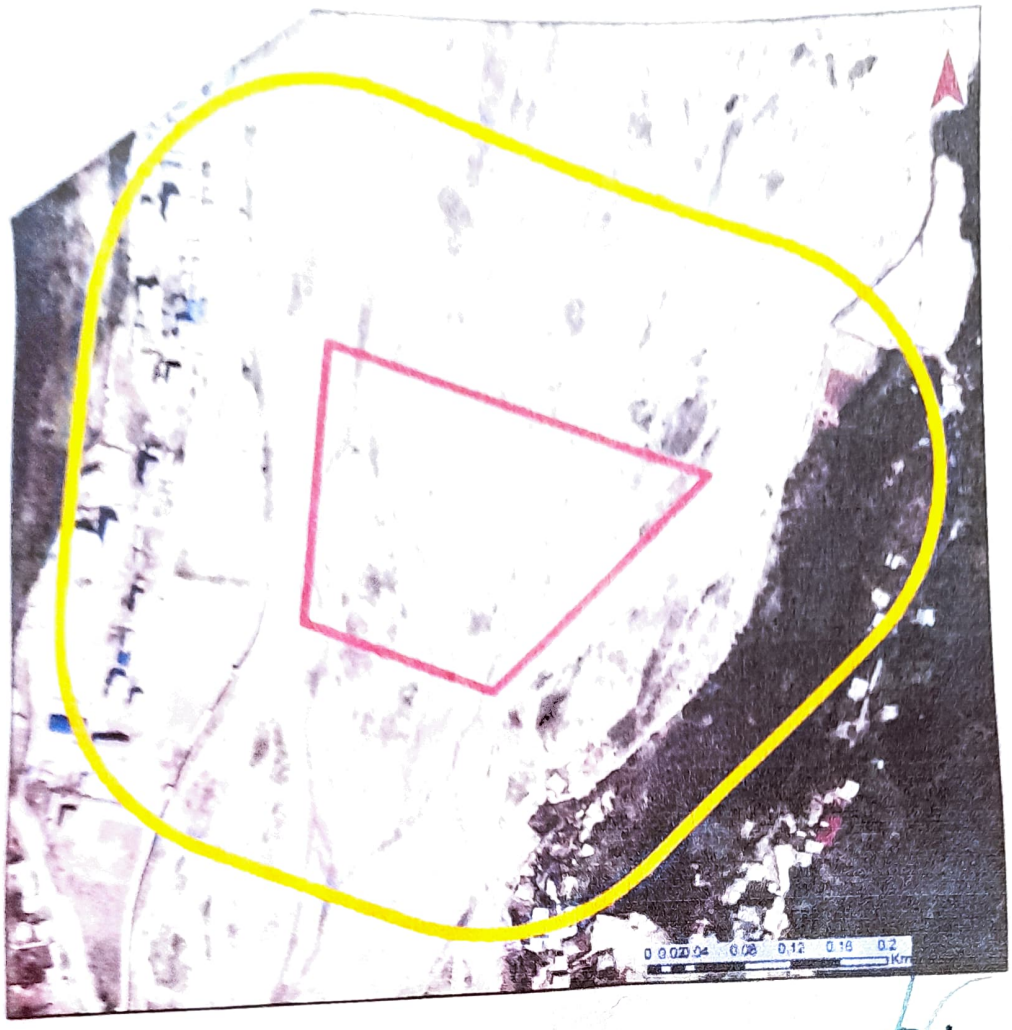
Yours Faithfully

Executive Engineer
Jal Shakti Department
Irrigation Division Shopian

Copy to the:

1. District Development Commissioner, Shopian for favour of information please.
2. Chief Engineer Kashmir, I&FC Department Srinagar for favour of information please.
3. Superintending Engineer Hydraulic Circle Pulwama HQ Shopian for favour of information please.
4. Assistant Executive Engineer, Irrigation sub-Division Shopian/Manul Zoura for information.

Scanned with CamScanner



Project Site

Buffer Boundary

MINOR MINERAL BLOCK NO. 08
BATAPORA BRIDGE DOWNSTREAM
RAMBIARA NALLAH,
DISTRICT SHOPIAN, J&K.

200 Meters Buffer Map of The Study Area

Asstt. Ex. Engineer
Irrigation Sub-Division
Shopian

Panch
Mohd. Abass Bhat
Kanipora Halqa Manloo-A
Block Keller

Government of Jammu and Kashmir,
OFFICE OF THE DISTRICT MINERAL OFFICER,
DEPARTMENT OF GEOLOGY AND MINING SHOPIAN.

The Principal
Shah-i- Hamdian Memorial Institute
Batapora Shopian

No: DMO/DGM/SPN/NOC's/981-84 Dated: 29/04/2021
Sub: Constitution of District Level Single Window Committee(s) for each district of Union territory of Jammu and Kashmir for facilitating the execution of mining leases.

Sir,

Kindly refer to the above captioned subject. In context of which, it is submitted that the minor mineral Block -8 (Batpora bridge Downstream Nallah Rambiara) has been provided NoC from line departments which is pre-requisite for mining operation in the block. The Committee has desired a NoC from your institution as your institution is in proximity and mining operations will be started 500mts Downstream from Batapora Bridge As such, you are requested to provide the NoC for the block which may enable this office to proceed further in the matter and oblige.

Yours faithfully,

20.XI.2021
District Mineral Officer
Shopian

Copy to;

1. The Worthy Deputy Commissioner, Shopian for favour of information please.
2. The Additional Deputy Commissioner(Convener) District Level Single Window Committee Shopian
3. The joint Director (K), Geology Mining Deptt.Srinagar for favour of information please.

Office of the Principal Shah- I- Hamdan Memorial Institute

Batapora Shopian

No: 122/SHMI/Spn-21 Dated: 23/11/21

The

District Mineral Officer

District Shopian

Subject: Conditional NOC for evacuation of Nallah Rambiarah, in reply to your letter no DMO/DGM/spn/NOC's/ 981-84 of 20/11/2021

Sir,

in reply to letter mentioned in the subject NOC is being granted from this office on the following conditions:

I) As our institute is situated on the bank of Nallah Rambiarah in its close proximity. So any kind of evacuation may be made at least 200mts from outer boundary line of the instruction.

II) The water direction may not be diverted towards institute as there always remains threat of floods.

III) Only one deep water channel should be construed for safety of the Institute and a concrete bund should be construed on the bank of the nallah.

IV) In order to avoid any kind of mishap, the road leading to nallah in front of the main gate of the Institute should not be used for carrying any kind of material in any case.

Hope your good self will consider these conditions prior to evacuation.

Thanking you in anticipation sir.

Yours faithfully

Principal 23/11/2021.

SHMI BATAPORA SHOPIAN

Copy to :

1) ***Worthy Chairman SHMES Shopian for information.***
2) ***Worthy secretary SHMAES Shopian for information.***
3) ***Copy for Office record.***

Copy of Revenue extracts (Khasra Girdawari) for the village Batapora, Tehsil Shopian and District Shopian

1	2	3	4		5	6	
KHASRA NO.	NAME OF THE OWNER WITH PARTICULARS	NAME OF THE CULTIVATOR WITH PARTICULAR	TOTAL LAND		NTURE OF LAND	Rabi kharif year	
			KANAL	MARLAS		Total	Mutation
1803/2	STATE LAND	STATE	1554	18	BARREN LAND (GAIR MUMKIN AAR)	1555	Nill

Note:-

1. Copy has been issued on the direction of Tehsildar Shopian for perusal
2. The said land falls under Block no. **08**

M. Zubair Mir
Patwari Halqa
Tehsil
District Shopian

29/11/21

Attested

29/11/21

Naib
Tehsildar, Shopian

حکومت جموں و کشمیر

انتخاب خسرہ گرداواری

ضلع سوپور

تحصیل

باموضع سیئہ پورہ

۱	۲	۳	۴		۵	۶	
	نام مالک معہ احوال	نام کاشتکار معہ احوال	تعداد کنال	رقبہ مرلہ	قسم زمین	ربیع / خریف ۲۰۲۱ء جنس	انتقالات حقیت کاشت ولگان
[illegible]	سری سرکار	سرکار	100	18	[illegible]	1000	

[illegible]

M. Zubair Mir
Patwari Halqa 23/11/21
Tehsil
District Shopian

Attested
29/11/21
Naib
Tehsildar, Shopian

GOVERNMENT OF JAMMU AND KASHMIR

DEAPRTMENT OF GEOLOGY AND MINING

DISTRICT MINERAL OFFICE SHOPIAN

The Joint Director (K)
Geology and Mining Deptt.
Srinagar.

No:- DMO/DGM/SPN/1026-27 **Dated:-** 29 **/11/2021**

Subject:- Regarding fit for mining certificate of minor mineral Block 08 Batapora Bridge D/S Nallah Rambiara Tehsil and Dist Shopian.

Sir,

This office is in receipt of application submitted by project proponent (Copy enclosed)Block No. 08 Batapora Bridge D/S Nallah Rambiara Tehsil and Dist Shopian regarding issuance of certificate Fit for mining the said block. In this connection it is submitted that Block No. 08 is Fit for Mining and having good potential of River Bed Materials.

Yours faithfully

District Mineral Officer
Shopian

District Mineral Office
Deptt. Of Geology & Mining
Shopian (Kmr)

Copy to the:-

01. **Project Proponent Block No. 08 Batapora Bridge D/S Nallah Rambiara Tehsil and Dist Shopian M/S Kapil Aggarwal for information**