To,
Member Secretary,
Jammu and Kashmir Expert Impact Assessment Authority,
Paryavaran Bhawan, Transport Nagar, Jammu

Date: 31.01.2022

Subject: Regarding Grant of Environment Clearance for Minor Mineral (River Bed Material) mining project in Ans River at Block no. 18 Village- Dhamni Plan 3rd, Tehsil-Mahore, District Reasi, State- Jammu & Kashmir. (Area- 7.26 ha).

Ref: Your ADS letter no JKIEAA/2020/292/3091- 94 Dated 03.11.2021

Respected Sir,

I am herewith submitting pointwise reply for the ADS reply along with the updated documentary requirements of JKEIAA.

Query 1: The detailed impact study of loaded tippers and other traffic on the terrain and report of Sub-Committee of JKEAC to be constituted for site visit, once the PP applies for EC, to have an overall assessment of the impacts of all the mining projects in the area and to recommend acceptance of EIA/EMP prescriptions or outrightly reject the cases or recommend appropriate mitigative measures to preserve the fragile ecology of the area. mining will be done as per SSMG 2016.

Reply: Keeping in mind the Geology of the site in mind the proponent has decided against using the heavy Loaders and Tippers for transportation of the Mined out RBM, instead only tractor trolley with maximum capacity of 5 tons. This will help to negate any impact which it may be caused due to use of heavy tippers and Loaders for transportation. The detailed impact study of traffic on the terrain of the area have been done in the EIA Report which is attached.

Query 2: The account of the fragile geology prevalent in the area and the comparatively narrowness of the roads marked with steep gradient, the detailed assessment of impact resulting from increased traverse of heavy loaded vehicles.

Reply: The detailed impact study of traffic on the terrain of the area have been done in the EIA Report which is attached.

Query 3: The G&M Dept. may obtain the present status of the irrigation network executed in Mahore-Dharmari area under various schemes of the Govt. The Committee is given to understand that most of the irrigation network created under DPAP program is presently defunct or only partly functional due to spate of slips & slides at the take-off points. Besides, keeping in view the past experience of mining activity in hilly areas, the G&M Dept. may be asked to convey its considered opinion whether the area is fit for mining activity and that excavation in the deep Nalas will not set off landslides.

Reply: The authenticated buffer map from Irrigation Department stating that there are no irrigation structures present within 200 m buffer of the mining site is attached as Annexure 1 with this reply. The report from Geology & Mining Department Regarding possibility of landsides is attached as Annexure 2 with this reply.

Query 4: A considerable area of the mining block falls under active water channel which needs to be excluded while calculating targeted mineral production. However, as per the EIA document/PFR, the consultant has calculated the targeted mineral on the entire area that includes even the active water channel.

Reply: The production has been reduced on account of the active water channel has been excluded while calculating targeted mineral production has been done in the EIA Report which is attached.

Query 5: The NOC have been obtained individually from the concerned Depts. The title of the land under the block has not been got verified from the concerned revenue authority for which action needs to be taken.

Reply: The Tittle Verification from the revenue authority is attached to Annexure 3 with this reply.

Query 6: Project cost has been underestimated by the consultant as it does not include cost of Consent fee of JKPCC and therefore, needs to be revised.

Reply: The PP undertakes that Project cost has been revised in the EIA Report which is attached.

Query 7: Revision of the mining plan with mine closure plan, revised mining depth, surface plan, area targeted mineral production and replenishment and its denovo approval by the competent authority prior to grant of EC or as decided by JKEIAA.

Reply: The PP undertakes that revised mining plan within 3 months of grant of EC will submit its report after completion.

We hope the reply are as per the requirement of JKEIAA and EC will be issued to us immediately.

Thanking you

Yours Truly

Karanvir Singh.

Karanvir Singh

ENVIRONMENTAL IMPACT ASSESSMENT
&
ENVIRONMENTAL MANAGEMENT PLAN

FOR

River bed mining of Minor Mineral Block No-18, ANS River downstream Sungri Bridge Village-Dhamni Plan 3rd, Tehsil-Mahore, District-Reasi, State-Jammu & Kashmir
Area: 7.26 Ha Production: 1,30,680 TPA

PROJECT PROPONENT :

Mr. Karanvir Singh
Pathankot, State-Punjab

Environment Consultant :

CONSULTANT
P&M Solution
C-88, Sector 65, Noida -201301 – U.P
A QCI –NABET Accredited Organization

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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 mines of Block 18, Block 19, & Block 20 on Downstream Sungri Bridge, is proposed for mining of sand in the applied mining lease area in cluster measuring 18.45 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 mine sand in an area of 18.45 hectares for cluster of mines. The Mining sites are situated at Block 18, Block 19, & Block 20 on River Bed of Ans River, District Reasi.

S no	Block on Ans River	Area (Ha)	Location	Production	Consent Letter
1	Block 18	7.26	Village- Dhamni Plan 3rd, Tehsil-Mahore, District Reasi, State- Jammu & Kashmir.	1,30,680 MTPA	Mr. Karanvir Singh 506/MCC/DGM/EAR/20/541-47 Dated: 03-06-2020.
2	Block 19	5.43	Village- Sungri, Tehsil Mahore, District- Reasi, State- Jammu & Kashmir.	97,740 MTPA	Mr Kishori Lal 507/MCC/DGM/EAR/19/20/2854-60 dated: 27/03/2020
3	Block 20	5.76	Village-Sungri, Tehsil Mahore, District- Reasi, State- Jammu & Kashmir.	1,03,680 MTPA	Mr Kapil Aggarwal 508/MCC/DGM/EAR/20/20/3022-28 dated: 27/03/2020
Cluster Area		18.45		**3,32,100 MTPA**	

The clusters of mines (Block 18, Block 19 & Block 20) are proposed by the following proponent:

1 Block No. 18,

Mr. Karanvir Singh

S/o Sh. Surinder Singh

R/O Lane No-03, Shaheed Udham Singh Nagar, Pathankot, Punjab-145001

The above Block have an area of 7.26 ha, ToR was issued by JKEIAA vide letter no. JKEIAA/2020/292/1190-93 Dated 05.11.2020.

2 Block No. 19,

Mr Kishori Lal

S/O Shri Kuldeep Singh

R/O Makhwal Kathua.

The above Block have an area of 5.43 ha, ToR was issued by JKEIAA vide letter no. JKEIAA/2020/214/646-649 Dated 17.08.2020.

3 Block No. 20,

Mr Kapil Aggarwal

S/O Shri Jugesh Aggarwal

R/O House No 179 Near Panjpir Mandir Mohalla Anandpur, Pathankot,Punjab.

The above Block have an area of 5.76 ha, ToR was issued by JKEIAA vide letter no. JKEIAA/2020/214/646-649 Dated 17.08.2020.

Status of the Block

The above Blocks have an area in cluster 18.45 ha, and lies in the River Bed of Ans River.

Table- 1.1, TOR detail

S.no	Block No	Vide Letter No	TOR date
1	**Block No. 18**	JKEIAA/2020/292/1190-93	05.11.2020
2	**Block No. 19 & 20**	JKEIAA/2020/214/646-649	17.08.2020

1.2 BRIEF DESCRIPTION OF PROJECT

The proposed project is open cast semi-mechanized mining/OTFM of sand (mineral mineral) with a proposed production of 3,32,100MT per annum in clusters of mines.

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	Block No. (18), Mr.Karanvir Singh S/o Sh. Surinder Singh R/O Lane No-03, Shaheed Udham Singh Nagar, Pathankot, Punjab-145001	18	7.26	1,30,680
2	Block No. (19), Mr Kishori Lal S/O Shri Kuldeep Singh R/O Makhwal Kathua.	19	5.43	97,740
3	Block No. (20), Mr Kapil Aggarwal S/O Shri Jugesh Aggarwal R/O House No 179 Near Panjpir Mandir Mohalla Anandpur, Pathankot,Punjab	20	5.76	1,03,680
Total			**18.45 ha**	**3,32,100 MTPA**

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. 18**	(1. Bidding cost 102.52 Lakhs (2. EC Processing Cost 0.40 Lakh (3. PH fees 3.5 Lakhs (4. Consent Fees 0.40 (5. Consultancy fee 4 Lakhs (6. Labor and Machinery Cost 94.50 Lakhs (7. Infrastructure (Rooms, shelter etc.) 5 Lakhs **Total : 210.32 Lakhs**	Rs. 4.20 Lakhs
		EMP Cost (1. EMP capital cost 11.50 lakhs (2. EMP recurring cost 29.0 lakhs **Total: 40.50 Lakhs**	
Total Project Cost - 250.82			
2	**Block No. 19**	(1. Bidding cost 36.00 Lakhs (2. EC Processing 0.40 Lakh (3. PH fees 3.5 Lakhs (4. Consent Fees 0.40 (5. Consultancy fee 4 Lakhs (6. Labor and Machinery Cost 67.50 Lakhs (7. Infrastructure (Rooms, shelter etc.) Cost 5 Lakhs **Total : 116.80 Lakhs**	Rs. 2.34 Lakhs
		EMP Cost (1. EMP capital cost 11.50 lakhs (2. EMP recurring cost 29.0 lakhs **Total: 40.50 Lakhs**	
		Total Project Cost - 157.30	
3	**Block No. 20**	(1. Bidding Cost 88.72 Lakhs (2. EC Processing 0.40 Lakh (3. PH fees 3.5 Lakhs (4. Consent Fees 0.40 (5. Consultancy fee 4 Lakhs (6. Labor and Machinery Cost 55.00 Lakhs (7. Infrastructure (Rooms, shelter etc.) cost 5 Lakhs **Total : 157.02 Lakhs**	Rs. 3.14 Lakhs
		EMP Cost (1. EMP capital cost 11.50 lakhs (2. EMP recurring cost 29.0 lakhs **Total: 40.50 Lakhs**	
		Total Project Cost - 197.52	
Total		**Rs. 605.64 Lakhs**	**Rs 9.68 Lakhs**

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

Table: 1.4, Mine lease Pillar Co-ordinates for cluster of mines/site surrounding

	S.N	Block No	Latitude/ Longitude
Coordinates	1	**Block No. 18**	A 33°20'49.76"N 74°49'2. 86"E B 33° 20’ 49.62”N 74° 49’5. 84”E C 33° 20’ 48.11”N 74° 49’8. 94”E D 33° 20’ 46.01”N 74° 49’10.31”E E 33° 20’ 41.78”N 74° 49’10.87”E F 33° 20’ 37.66”N 74° 49’10. 94”E G 33° 20’ 35.09”N 74° 49’11.67”E H 33° 20’ 34.13”N 74° 49’13.20”E I 33° 20’ 32.52”N 74° 49’11.67”E J 33° 20’ 34.58”N 74° 49’2. 22”E K 33° 20’ 38.85”N 74° 49’8. 79”E L 33° 20’ 42.00”N 74° 49’8. 21”E M 33° 20’ 44.14”N 74° 49’6. 88”E N 33° 20’ 46.62”N 74°49’4. 50”E O 33° 20’ 46.54”N 74°49’2. 13”E P 33° 20’ 45.23”N 74°49’59. 77”E Q 33° 20’ 42.64”N 74°49’58. 80”E R 33° 20’ 36.76”N 74°49’0. 40”E S 33° 20’ 34.72”N 74°49’58. 89”E T 33° 20’ 35.69”N 74°49’57. 24”E U 33° 20’ 39.06”N 74°49’57. 45”E V 33° 20’ 43.04”N 74°49’56. 97”E W 33° 20’ 46.51”N 74°49’58. 39”E X 33° 20’ 48.80”N 74°49’0. 19”E
	2	**Block No. 19**	A 33°20'44.86"N 74°48'44.12"E B 33°20'47.83"N 74°48'42.79"E C 33°20'50.38"N 74°48'41.22"E D 33°20'51.55"N 74°48'25.46"E E 33°20'53.67"N 74°48'15.34"E F 33°20'51.78"N 74°48'14.76"E G 33°20'48.09"N 74°48'38.33"E H 33°20'46.55"N 74°48'41.60"E I 33°20'43.37"N 74°48'42.60"E J 33°20'38.00"N 74°48'41.43"E K 33°20'33.89"N 74°48'41.95"E L 33°20'34.52"N 74°48'43.02"E
	3	**Block No. 20**	A 33° 21'6.13"N 74°47'40.59"E B 33° 21'8.89"N 74°47'41.78"E C 33° 21'10.27"N 74°47'43.77"E D 33° 21'10.23"N 74°47'46.10"E E 33° 21'9.30"N 74°47'40.59"E F 33° 21'5.15"N 74°47'57.02"E

				G 33° 20'59.93"N 74°48'1.57"E H 33° 20'56.19"N 74°48'8.14"E I 33° 20'54.75"N 74°48'7.32"E J 33° 20'58.38"N 74°48'1.20"E K 33° 21'3.06"N 74°47'56.77"E L 33° 21'7.01"N 74°47'51.92"E M 33° 21'8.85"N 74°47'48.07"E N 33° 21'8.98"N 74°47'48.07"E O 33° 21'7.99"N 74°47'43.73"E P 33° 21'5.30"N 74°47'42.95"E Q 33° 21'1.90"N 74°47'43.69"E S 33° 20'58.27"N 74°47'45.28"E T 33° 20'55.86"N 74°47'44.96"E U 33° 20'56.36"N 74°47'43.24"E V 33° 20'58.26"N 74°47'43.46"E
Nearest Railway Station	Shri Mata Vaishno Devi Katra Station -About 45.05 km in SE from the lease area.			
Nearest Airport	Jammu Airport about 94.1 km in SE from the lease area.			
Nearest Highway	Budhal-Ramban Rd at near from the lease area. NH-1A at a distance of 34.39 Km from the lease area.			
State, National boundaries.	There is no Interstate boundary within the study area.			

CLUSTER MAP

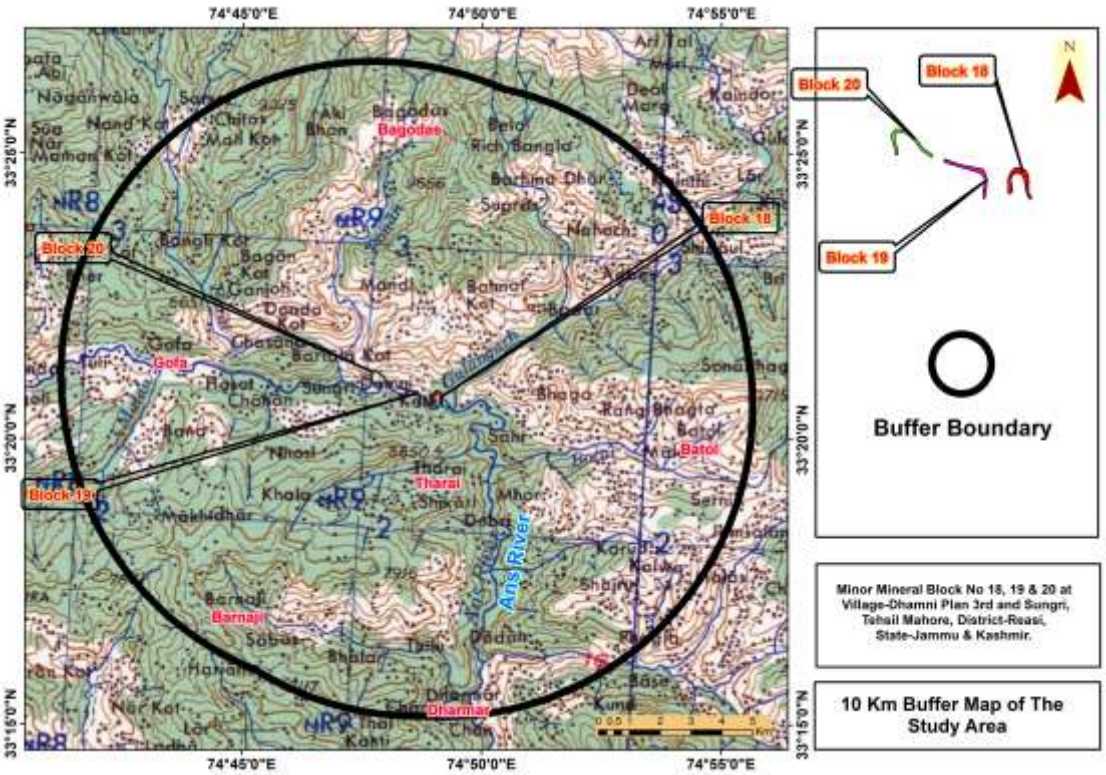


Figure 1.1, 10 km composite buffer map of Cluster (Block 18, 19 & 20)

Karanvir Singh Rishori Lal Kapil Aggarwal

Table: 1.5, Details of environmental settings

Sl. No.	Particulars	Details
1	Elevation	S.N / Block No / Elevation 1 / **Block No. 18** / 858 MSL to 854 MSL 2 / **Block No. 19** / 880 MSL to .857 MSL 3 / **Block No. 20** / 893 MSL to 857 MSL
2	Ecological Sensitive Areas (National Park, Wildlife Sanctuaries)	None
3	Nearest water body	The above cluster of mine site lies on the downstream River Bed of Ans.
4	Seismic Zone	The lease area falls under Seismic Zone-IV (Very Severe Intensity Zone), which indicates high possibility of Earthquake.

The EIA-EMP report is prepared as per the TOR granted under the EIA Notification. In order 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 identification and assessment of impacts on the environment of the proposed operation.

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 sand, 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.

Table: 1.6, Point wise compliance for TOR

(For Block No. 18 , 19 & Block No. 20)

Conditions		Reply
1.	Year-wise production details should be given, clearly stating the highest production achieved in any one year.	This is a new mine. Mining will be started only after lease deed is executed.
2.	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	LOI has been attached as **Annexure-II.**
3.	All documents including approved mine plan, EIA and Public hearing should be compatible with one another in terms of the	All documents including approved mine plan, EIA are compatible with one

	mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of lessee.	another. The EIA report is prepared on the basis of information given in the approved mine plan and supportive documents like lease deed, Khasra Panchshala etc. Copy of approved mining plan is attached as **Annexure- IV.** Production details are given in **Chapter 2.** Waste generation & its management are given in **Chapter 2.**
4.	All corner coordinates of the mine lease area, superimposed on a High Resolution/ 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).	The corner co-ordinates of the mine lease area superimposed on High Resolution Imagery/ toposheet are shown in **Figure 2.1**.
5.	Information should be provided on high resolution satellite image on with geological map of the area, geomorphology of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.	Information has been provided in survey of India Topo-Sheet RF 1:2, 50,000 in **Chapter-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	Detail of land proposed for mining activities has been given in **Chapter 2**. Present mining conforms to the land use policy of the State. There is no land diversion has been proposed.

	land use board or the concerned authority.	
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 process/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 ensuring compliance 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.	The Environment 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. Details are given in **Chapter 6**.
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 should also be provided.	Issue related to mine safety has been given in **Chapter 7.**
9.	The study area will comprise of 10 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 the mine / lease period.	The EIA study has been carried out in the 10 km radius zone from the periphery of ML area. All the data so generated have been incorporated in EIA/EMP report. There will be no generation of waste.

		A map showing study area (10 km radius) is given in **Chapter 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 of the study area delineating forest area, agricultural land, grazing land, water bodies, human settlements, and other ecological features etc. are shown in **Chapter 3** and is supported by area breakup of the land use within 10 km radius from the mine site in **Chapter 3.**
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.	No OB will be generated.
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	There is no forest land involved in the ML area.

	JKEACs.	
13.	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	There is no forest land involved hence this point is not applicable.
14.	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	This project does not attract the recognition of forest right.
15.	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	The vegetation in the RF/PF areas is given in **Chapter 3.**
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.	A study has been done to ascertain the impact of the mining project on wild life. Details of mitigation measures have been given in **Chapter 4.**
17.	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location	There is no National Parks, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease area.

	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.	
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 details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	No flora or fauna species are found in the core zone. The species found in the study area are detailed under **Chapter 3.**
19.	Proximity to Areas declared as 'Critically Polluted' 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	Proposed project does not fall in the Critically Polluted area.

	considered.	
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 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.	There is no R & R plan involved in the project area.
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	Primary baseline data on ambient air quality is given in Section 3.3 of Chapter 3 Water quality is given in Section 3.2 of Chapter 3. Noise level is given in Section 3.4 of Chapter 3. Soil characteristics is given in section 3.5 of Chapter 3 Details of flora and fauna are given in Section 3.6 of Chapter 3.

	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 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	Site-specific metrological data have been collected, as prescribed, for non monsoon season of October, 2020 to December, 2020 in Table 3.5 of Chapters 3.
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.	Details of Air Quality impact and mitigation measures are given in **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.	Total water requirement of the proposed project is 7 KLD. Detail has been given in Table 2.11, **Chapter 2.**
24.	Necessary clearance from the Competent Authority for drawl of requisite quantity of	Water will be taken from the private water

	water for the Project should be provided.	tanker from nearby village.
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 mine site is located on river bed. The mining should be practiced every year since mineral never gets exhausted due to regular replenishment during rainy season.
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.	The proposed mining will not intersect the ground water table. The detailed impact and control measure w.r.t the quality of water in the surrounding area is discussed under **Chapter 4.**
27.	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may 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.	The proposed mining will be done upto 1.0 m depth. So, ground water table will not be intersected. No hydrological study is required.
28.	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any,	No diversion is proposed.

	and the impact of the same on the hydrology should be brought out.	
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 mine site is located on Ans river bed. The proposed mining will be done upto 1 m depth.
30.	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative 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.	Approx. 183 trees will be planted around haul road during the plan period. A time bound Progressive Greenbelt Development Plan has been given. Detail has been given in item 9.5, **chapter 9.**
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 the Project area) should be worked out, indicating whether it	From traffic analysis it can be seen that the LOS remains same at Highway intersection that is 'A' (Excellent') respectively, as per classification, whereas the LOS for near village intersection will remaim same "A" (Excellent'). Impact on

	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.	local transport has been given in section 4.6 of **Chapter 4.**
32.	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Infrastructure facilities to be provided for the mine workers are as under:- i. Rest shelter/ rest room. ii. Separate facility for female and male workers. iii. First aid room. iv. Training center. v. Canteen facilities.
33.	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Conceptual plans and sections are attached in mining plan.
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	Details of Occupation health, Public health with its mitigation measures has been given in section 8.2 of Chapter 8.

	in the mining area may be detailed.	
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 allocations.	Detail of public health has been given in **Chapter 6.**
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 frames for implementation.	Socio economic significance and influence to the local community proposed to be provided by the Project Proponent has been given in **Chapter 3.**
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.	Detailed Environmental Management Plan is discussed under **Chapter 9** of EIA report.
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 dated 31-03-2021. Public Hearing points raised and commitment of the Project Proponent on the same along with time bound action plan has been given in table 7.2 on chapter 7.
39.	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project	There is no litigation pending against the project.

	should be given.	
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.	Budget for Environmental protection is given in Table 9.2 of **Chapter 9.**
41.	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	A disaster management plan has been prepared and given in **Chapter 7** of the EIA report.
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.	Details of project benefits have been given in **Chapter 8.**

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 numbering.	Detail has been complied.
c)	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	Detail has been complied.
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.	Detail has been complied.

e)	Where the documents provided are in a language other than English, an English translation should be provided.	Detail has been complied.
f)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Detail has been complied.
g)	While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF&CC vide OM No. J-11013/41/2006 – IA II (I) dated 4th August 2009 which are available on the website of this Ministry should be followed.	Detail has been complied.
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 SEIAA and SEAC, Chhattisgarh 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.	Detail has been complied.
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.	Agreed but it is a fresh mine.

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) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	Detail has been complied.

(Block No. 18)

SPECIFIC TERMS OF REFERENCE:-

	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.	3D Map has been attached as Annexure VIII.
3	Details of excavation schedule & sequential mining plan	Mining will be done by opencast semi mechanized 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 IV.**
4	Details of transportation of mined out	Traffic study has been done as per the Indian

	materials with respect to axle load 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.	Road congress & given in **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 measures will be taken to further minimize.

		NOC from fisheries department has been attached as ***Annexure V.***
7	NOCs from HoD/competed authority of Irrigation and Flood Control Dept. and Fisheries Dept. should be obtained and submitted while applying for EC.	Nocs has been attached as **Annexure V.**
8	The quantification of river bed material be based on excavation only upto a maximum depth of 1m in the riverbed or 1m above water table whichever comes first to safeguard ecological conditions.	The mining will be done upto only 1m depth.
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.	Detail has been given in mining plan. **Annexure IV.**
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. NOC from the fisheries department has been attached as ***Annexure V.***
11	The Photography and videography of the mining block shall be part of the	Detail has been complied.

	Term of Reference.	
12	The land use maps shall be submitted on a scale 1:3000 and 1:500 within 10 kms. Radius.	LU/LC map given in Chapter **3.**
13	The shortest extraction route leading to the main road but with minimum interference with human settlements should be identified and described ib detail. The along with the map and 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.	Detail 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 table 8.4 chapter 8.
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	Data sheet has been attached as Annexure X.

	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.	The Loading and unloading/transportation of the material will be far away from the nearby habitation and for this traffic study has been done as per the Indian Road congress. Has been given in Chapter 4 .
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.	Complied.
20	Mining Shall be proposed manually minimally supported by semi-mechanized methods.	Agreed
21	The mining plan be approved de novo by the competent authority, after it is technically reviewed by the Irrigation and Flood Control Depart and should be based on the technical feasibility report of I&FC Dept.	Mining plan has been approved and attached as Annexure IV.

(Block No.19 & 20)

SPECIFIC TERMS OF REFERENCE:-

	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.	3D map has been attached as ***Annexure VIII.***
3	Details of excavation schedule & sequential mining plan.	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 IV.**
4	Details of transportation of mined out materials with respect to axle load 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.	Traffic study has been done as per the Indian Road congress & given in **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 measures will be taken to further minimize. NOC from fisheries department has been attached as ***Annexure V.***
7	NOCs from HoD/competed authority of Irrigation and Flood Control Dept. and Fisheries Dept. should be	Nocs form Irrigation and Flood department & Fisheries department has been attached as **Annexure V.**

	obtained and submitted while applying for EC.	
8	Excavation to be carried out upto a maximum depth of 1m in the riverbed or 1m above water table whichever comes first.	Mining will be done upto 1m depth till replenishment study has not completed.
9	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.**
10	The Photography and videography of the mining block shall be part of the Term of Reference.	Detail has been complied.
11	The land use maps shall be submitted on a scale 1:3000 and 1:500 within 10 kms. Radius.	Land use map has been given in EIA report. **Chapter 3.**
12	The shortest extraction route leading to the main road but with minimum interference with human settlements should be identified	Transportation route is away from human settlement. Route map has been shown in **Chapter 4.**
13	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.
14	Post project monitoring plan should	Detail has been included in **Chapter 6.**

	be included in the study.	
15	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 table 8.4 chapter 8.
16	The Public Hearing should be got conducted jointly by the project proponents for the cluster.	Agreed. Public hearing for the cluster has been conducted on 31-03-2021. The public hearing proceedings & related papers are attached as **Annexure-IX.**
17	A comprehensive EIA/EMP should be formulated jointly by the concerned project proponents and CER/CSR plans should be comprehensive and integrated together for all the three mining sites provided mechanism for involvement of local panchayat.	Noted & Agreed.
18	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 report.	Data sheet has been attached as ***Annexure X***.
19	The impact of mining activity on the neighbouring villages need to be	The Loading and unloading/transportation of the material will be far away from the nearby

	studied and extraction road need to be such that it has least crossing through village settlements.	habitation and for this traffic study has been done as per the Indian Road congress. Has been given in Chapter 4.
20	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.	Photographs has been attached Annexure XI.

2.0 TYPE OF PROJECT

The project is proposed for the excavation of RBM situated at Block 18, Block 19 & Block 20 River Bed of Ans, Village Dhamni Plan 3rd & Sungri, Tehsil Mahore, District Reasi (J&K). The proposed project is open-cast mining project.

2.1 NEED FOR THE PROJECT

The cluster of project sites lies on Ans River. The River Bed Material gets replenished by the rain water and carries sediment consisting of sand, boulders etc during monsoon season, generally.

Sand & Bajri are used widely in the construction industry. It is usually mixed with cement and other ingredients to create mortar for building. This project will also provide employment to local people helping them earn livelihood.

2.2 LOCATION DETAILS

The project site situated at Block 18, Block 19 & Block 20 in Village- Dhamni Plan 3rd and Sungri, Tehsil- Mahore, District- Reasi, State-Jammu & Kashmir. The lease co-ordinates and other Details are listed below:

Table 2.1, Mine lease co-ordinates/Details

S.N	Block No	Latitude/ Longitude
1	**Block No. 18**	A 33°20'49.76"N 74°49'2.86"E B 33° 20’ 49.62”N 74° 49’5. 84”E C 33° 20’ 48.11”N 74° 49’8. 94”E D 33° 20’ 46.01”N 74° 49’10.31”E E 33° 20’ 41.78”N 74° 49’10.87”E F 33° 20’ 37.66”N 74° 49’10. 94”E G 33° 20’ 35.09”N 74° 49’11.67”E H 33° 20’ 34.13”N 74° 49’13.20”E I 33° 20’ 32.52”N 74° 49’11.67”E J 33° 20’ 34.58”N 74° 49’2. 22”E K 33° 20’ 38.85”N 74° 49’8. 79”E L 33° 20’ 42.00”N 74° 49’8. 21”E M 33° 20’ 44.14”N 74° 49’6. 88”E N 33° 20’ 46.62”N 74°49’4. 50”E O 33° 20’ 46.54”N 74°49’2. 13”E P 33° 20’ 45.23”N 74°49’59. 77”E Q 33° 20’ 42.64”N 74°49’58. 80”E R 33° 20’ 36.76”N 74°49’0. 40”E S 33° 20’ 34.72”N 74°49’58. 89”E

		T 33° 20’ 35.69”N 74°49’57. 24”E U 33° 20’ 39.06”N 74°49’57. 45”E V 33° 20’ 43.04”N 74°49’56. 97”E W 33° 20’ 46.51”N 74°49’58. 39”E X 33° 20’ 48.80”N 74°49’0. 19”E
2	**Block No. 19**	A 33°20'44.86"N 74°48'44.12"E B 33°20'47.83"N 74°48'42.79"E C 33°20'50.38"N 74°48'41.22"E D 33°20'51.55"N 74°48'25.46"E E 33°20'53.67"N 74°48'15.34"E F 33°20'51.78"N 74°48'14.76"E G 33°20'48.09"N 74°48'38.33"E H 33°20'46.55"N 74°48'41.60"E I 33°20'43.37"N 74°48'42.60"E J 33°20'38.00"N 74°48'41.43"E K 33°20'33.89"N 74°48'41.95"E L 33°20'34.52"N 74°48'43.02"E
3	**Block No. 20**	A 33° 21'6.13"N 74°47'40.59"E B 33° 21'8.89"N 74°47'41.78"E C 33° 21'10.27"N 74°47'43.77"E D 33° 21'10.23"N 74°47'46.10"E E 33° 21'9.30"N 74°47'40.59"E F 33° 21'5.15"N 74°47'57.02"E G 33° 20'59.93"N 74°48'1.57"E H 33° 20'56.19"N 74°48'8.14"E I 33° 20'54.75"N 74°48'7.32"E J 33° 20'58.38"N 74°48'1.20"E K 33° 21'3.06"N 74°47'56.77"E L 33° 21'7.01"N 74°47'51.92"E M 33° 21'8.85"N 74°47'48.07"E N 33° 21'8.98"N 74°47'48.07"E O 33° 21'7.99"N 74°47'43.73"E P 33° 21'5.30"N 74°47'42.95"E Q 33° 21'1.90"N 74°47'43.69"E S 33° 20'58.27"N 74°47'45.28"E T 33° 20'55.86"N 74°47'44.96"E U 33° 20'56.36"N 74°47'43.24"E V 33° 20'58.26"N 74°47'43.46"E

Figure 2.1:- Pillar Coordinate map (Block 18)

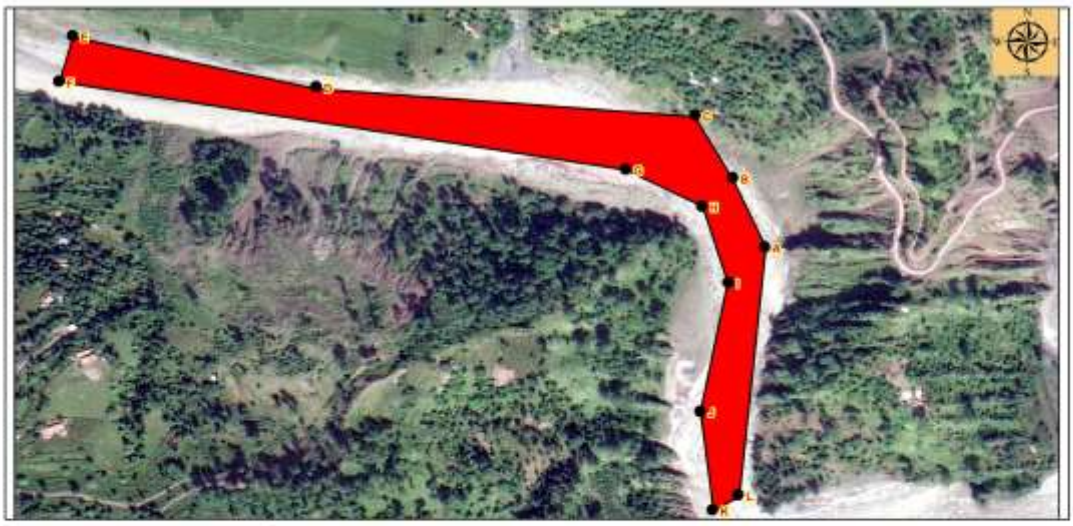


Figure 2.2:- Pillar Coordinate map (Block 19)

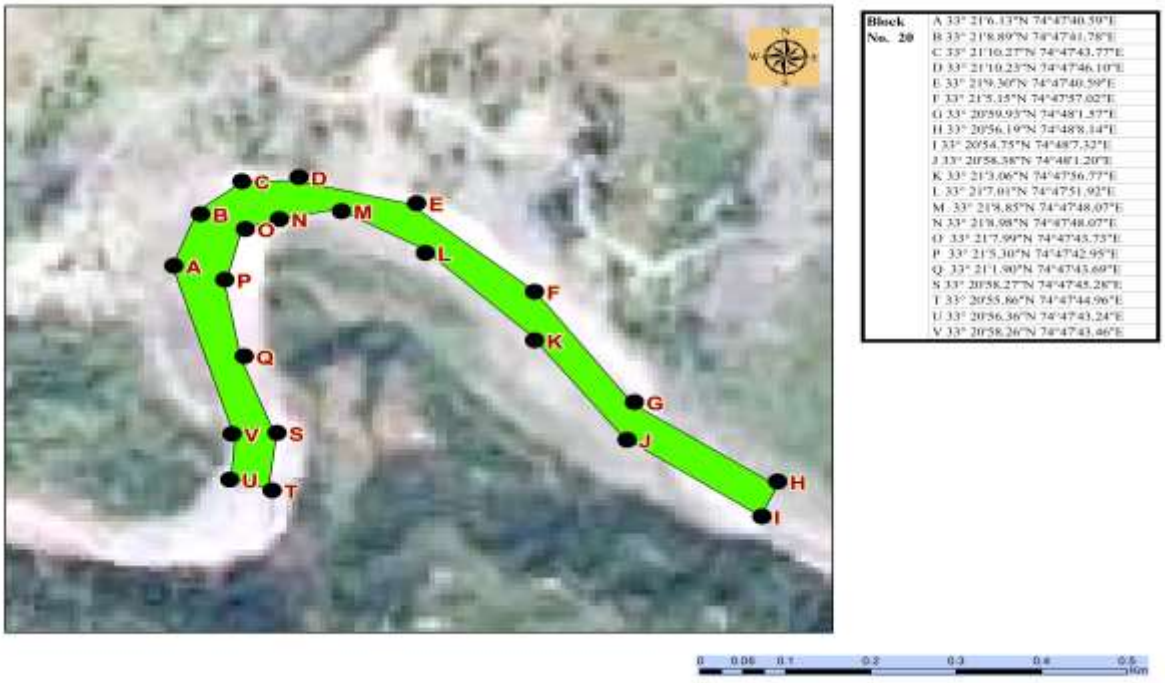


Figure 2.3:- Pillar Coordinate map (Block 20)

2.2.1 Lease / Block Area

The above block has a cluster area of 18.45 ha, and lies at the River Bed of Ans River.

Table 2.2 : Lease Detail

S.no	Lessee	Block No	Area (ha)	Proposed Capacity (TPA)
1	Block No. (18), Mr.Karanvir Singh S/o Sh. Surinder Singh R/O Lane No-03, Shaheed Udham Singh Nagar, Pathankot, Punjab-145001	18	7.26	1,30,680 MTPA
2	Block No. (19), Mr Kishori Lal S/O Shri Kuldeep Singh R/O Makhwal Kathua.	19	5.43	97,740 MTPA
3	Block No. (20), Mr Kapil Aggarwal S/O Shri Jugesh Aggarwal R/O House No 179 Near Panjpir Mandir Mohalla Anandpur, Pathankot,Punjab	20	5.76	1,03,680 MTPA
Total			**18.45 ha**	**3,32,100 MTPA**

Karanvir Singh Kishori Lal Kapil Aggarwal

1. Block No. 18,

Mr.Karanvir Singh

S/o Sh. Surinder Singh

R/O Lane No-03, Shaheed Udham Singh Nagar, Pathankot, Punjab-145001

The above Block have an area of 7.26 ha, ToR was issued by JKEIAA vide letter no. JKEIAA/2020/292/1190-93 Dated 05.11.2020.

2. Block No. 19,

Mr Kishori Lal

S/O Shri Kuldeep Singh

R/O Makhwal Kathua.

The above Block have an area of 5.43 ha, ToR was issued by JKEIAA vide letter no. JKEIAA/2020/214/646-649 Dated 17.08.2020.

3. Block No. 20,

Mr Kapil Aggarwal

S/O Shri Jugesh Aggarwal

R/O House No 179 Near Panjpir Mandir Mohalla Anandpur, Pathankot,Punjab.

The above Block have an area of 5.76 ha, ToR was issued by JKEIAA vide letter no. JKEIAA/2020/214/646-649 Dated 17.08.2020.

2.3 TOPOGRAPHY & GEOLOGY

2.3.1 Topography

The Elevation of the applied areas is given below:

<table>
<tr><th>Sl. No.</th><th>Particulars</th><th>Details</th></tr>
<tr><td>1</td><td>Elevation</td><td>
<table>
<tr><th>S.N</th><th>Block No</th><th>Elevation</th></tr>
<tr><td>1</td><td>Block No. 18</td><td>858 MSL to 854 MSL</td></tr>
<tr><td>2</td><td>Block No. 19</td><td>880 MSL to .857 MSL</td></tr>
<tr><td>3</td><td>Block No. 20</td><td>893 MSL to 857 MSL</td></tr>
</table>
</td></tr>
</table>

Karanvir Singh Kishori Lal Kapil Aggarwal

2.3.2 REGIONAL GEOLOGY

Generalized Geological Sequence area: Stratigraphic succession worked out after V.P. Sharma, S.N. Verma, A.R. Sharma, S.S. Gupta& B.M Datta GSI (1974-75)

Formation	Lithology	Age
Murree Group	Red, brown and grey sandstones, siltstone, clay stone and shale with thick bands of boulder bed and conglomerate	Miocene
----------Murree Thrust----------		
Intrusive Granites	Coarse to medium grained porphyritic and equigranular granite with xondiths of quartz, quartz schist and basic intrusives	
Panjal Trap	Vesicular amygdaloidal, massive, schistose trap at places highly epidotised with bands of tuffs etc.	Upper carbonifero us to Lower Permian
Gondwana Plant beds	Grey to black carbonaceous shale slate, buff coloured tuff and thick band of white and dark grey conglomerates and boulder bed with lenticular trap flows-richly fossiliferous	Upper carbonifero us to Lower Permian
Agglomeratic Slates	Gritty, pebbly and bouldery slate and quartzites with thick bands of Conglomerates, boulder beds, slate, quartzite, trap flows, tuffs etc. richly fossiliferous	

i) Physical characters of the River Bed Material

The river borne material predominantly consists of sand, light grey to dark grey, cherty & non cherty dolomitic limestone with a few bands of flaggy limestone, trap & black shale

beds boulder, cobbles, pebbles and gravels of quartzite, sandstone rocks. There is huge potential of minor minerals in the area.

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 paleochannels, 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 paleochannels of the river will be leveled & restored back.

Source: Mining Plan

MEANDERING EFFECT: A meander, in general, is a bend in a sinuous watercourse or river. A meander forms when moving water in a stream erodes the outer (concave) banks and widens its valley, and the inner (convex) part of the river has less energy and deposits more sand, silt, bajri etc. A stream of any volume may assume a meandering course, alternately eroding sediments from the concave side of a bend/bank and depositing them on the convex side.

In the present scenario, if not mined from the convex side of the river (having high depositional rate) may lead to erosion of the river banks, bank cutting and lead to a decrease in forest lands bordering the river banks due to flooding.

Scientific methods of mining are recommended to protect the river bank from erosion and leading to floods.

- Sand/bajri will not be allowed to be extracted where erosion will occur, such as at the concave bank.
- Sand/bajri will be extracted from the convex side of the bank where deposition occurs, such that it maintains the flow pattern & protects the banks.

2.3.3 CLIMATE

There is a wide variation in climatic conditions in different parts of the district experiencing a typical temperate climate in high altitude which experience snowfall and cold winter whereas tropical climate at low altitude. The summer season starts from April to June followed by rainy season from July to September. The winter season begins from December and ends in March. The high altitude areas experience very cold winter and mild summer. The temperature in the snowfall zone varies between sub-zeros to about 35°C. Sub-tropical climate prevails in the low altitude area where there is cold winter but

scorching summers. The temperature in the District Reasi rises continuously after January and May is the hottest month (max. 42°C, min. 23°C) and January is coldest month (max. 17.4°C and min 2.8°C) of the year.

Source: Mining Plan

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. 18

S. No	Category	Reserves
1	Total Geological Reserve	4,90,050 MT
2	Proposed Production	1,30,680 TPA
3	Ultimate depth of Mining	1 m

Table-2.4:- Summary of Reserves Block No. 19

S.No	Category	Reserves
1	Total Geological Reserve	4,07,250 MT
2	Proposed Production	97,740 TPA
3	Ultimate depth of Mining	1 m

Table-2.5- Summary of Reserves Block No. 20

S.No	Category	Reserves
1	Total Geological Reserve	3,88,800 MT
2	Proposed Production	1,03,680 TPA
3	Ultimate depth of Mining	1.0 m

Table-2.6:- Summary of Reserves Cluster of Mines

Block No	Total Geological Reserve (MT)	Proposed Production(TPA)	Proposed Production(TPA) after 10% loss due to active water body in lease.
Block No.	4,90,050	1,45,200	1,30,680

18			
Block No. 19	4,07,250	1,08,600	97,740
Block No. 20	3,88,800	1,15,200	1,03,680
Total	**12,86,100**	**3,69,000**	**3,32,100**

Source Mining Plan

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. Mining activity will be carried out by open cast Semi-mechanized method.
2. Lightweight excavators will be used for digging & loading of mineral in Tippers.
3. No OB/ waste material will be produced.
4. No drilling/ blasting are required as the material is loose in nature.
5. Proper benching of 2.5 m height with sub benching 1.25 will be maintained.
6. Roads will be properly made and sprayed by water for suppression of dust.
7. Extraction activities will start in the blocks from the upstream side 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:

The block wise annual exploitation of sand from downstream Ans River is given below:-

Table-2.7:- Summary of Production of Cluster of Mines

Block No	Depth (m)	Bulk Density	Proposed Production(TPA)
Block No. 18	1	2.0	1,30,680
Block No. 19	1	2.0	97,740
Block No.	1	2.0	1,03,680

20			
Total			3,32,100

Source: Mining Plan

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.**

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. There is no forest land or agriculture land in the mine lease area. The entire mining lease lies within River.

2.7.2 Surface drainage pattern

The mine sites lies on the downstream of Ans river so there will be no impact on surface water.

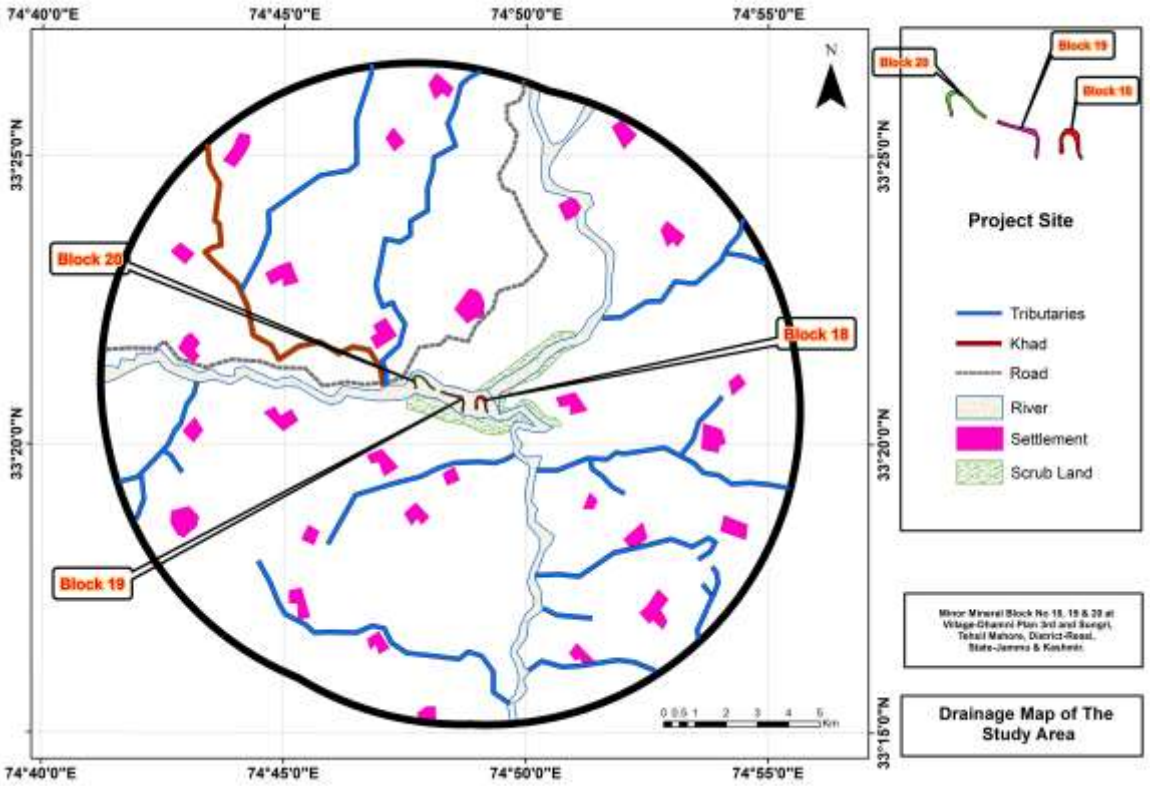


Figure 2-2: Drainage pattern (Block 18, 19 & 20)

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 2.8: Manpower Requirement

Table 2.8 (a): Manpower Requirement Block No (18)

S No	Employment	No of Person
1	Mining Foreman	1
2	Office Assistant/Dispatch Supervisor	1
3	Environment supervisor	1
4	Office Boy	1
5	Skilled Worker/mechanic	3

6	Piece rated workers	6
	Other	1
Total		**14**

Table 2.8 (b): Manpower Requirement Block No. (19)

S. No.	Category	Numbers
1.	Mining Foreman	1
2.	Office Assistant/Dispatch Supervisor	1
3.	Environment supervisor	1
4.	Office Boy	1
5.	Skilled Worker/mechanic	2
6.	Piece rated workers	4
	Other	1
TOTAL		**10**

Table 2.8 (c): Manpower Requirement Block No. (20)

S. No.	Category	Numbers
1.	Mining Foreman	1
2.	Office Assistant/Dispatch Supervisor	1
3.	Environment supervisor	1
4.	Office Boy	1
5.	Skilled Worker/mechanic	1
6.	Piece rated workers	2
	Other	1
TOTAL		**10**

Table 2.9: Manpower Requirement Cluster situation (Block 18, 19 & 20)

S. NO	Block No	Manpower
1	Block No. (18)	14
2	Block No. (19)	10
3	Block No. (20)	10

Total	**34**

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 2.10 Water Requirement

Table 2.10(a), Water Requirement for Block No. (18)

1	**Domestic Purpose**	0.14 KLD
2	**Dust suppression**	0.78 KLD
3	**Green belt development**	0.29 KLD
Daily Water Demand		1.21 KLD ~ 2 KLD

Table 2.10(b), Water Requirement for Block No. (19)

1	**Domestic Purpose**	0.1 KLD
2	**Dust suppression**	2.16 KLD
3	**Green belt development**	0.22 KLD
Daily Water Demand		3.0 KLD

Table 2.10(c), Water Requirement for Block No (20)

1	**Domestic Purpose**	0.1 KLD
2	**Dust suppression**	1.74 KLD
3	**Green belt development**	0.23 KLD
Daily Water Demand		2.07 KLD

Table 2.11, Water Requirement for Cluster situation (Block 18, 19 & 20)

S.No	Block No	Total Water Demand (KLD)
1	Block No. (18)	2.00
2	Block No. (19)	3.00
3	Block No. (20)	2.07
Total		**7.00**

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.

2.7.6 Extent of mechanization

The operation will be open cast semi- mechanized/OTFM 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.

****

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 Post-Monsoon Season covering the months of Oct 2020 to Dec 2020.

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 (Oct 2020 to Dec 2020) 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 3-1: Land Use detail

Land Use Type	Area (Ha.)	Percent (%)
Scrub land	706.02	1.89
Forest	22946.55	61.46
Settlement	1292.19	3.46
River	987.39	2.64
Agriculture	11403.26	30.54
Total	**37335.41**	**100**

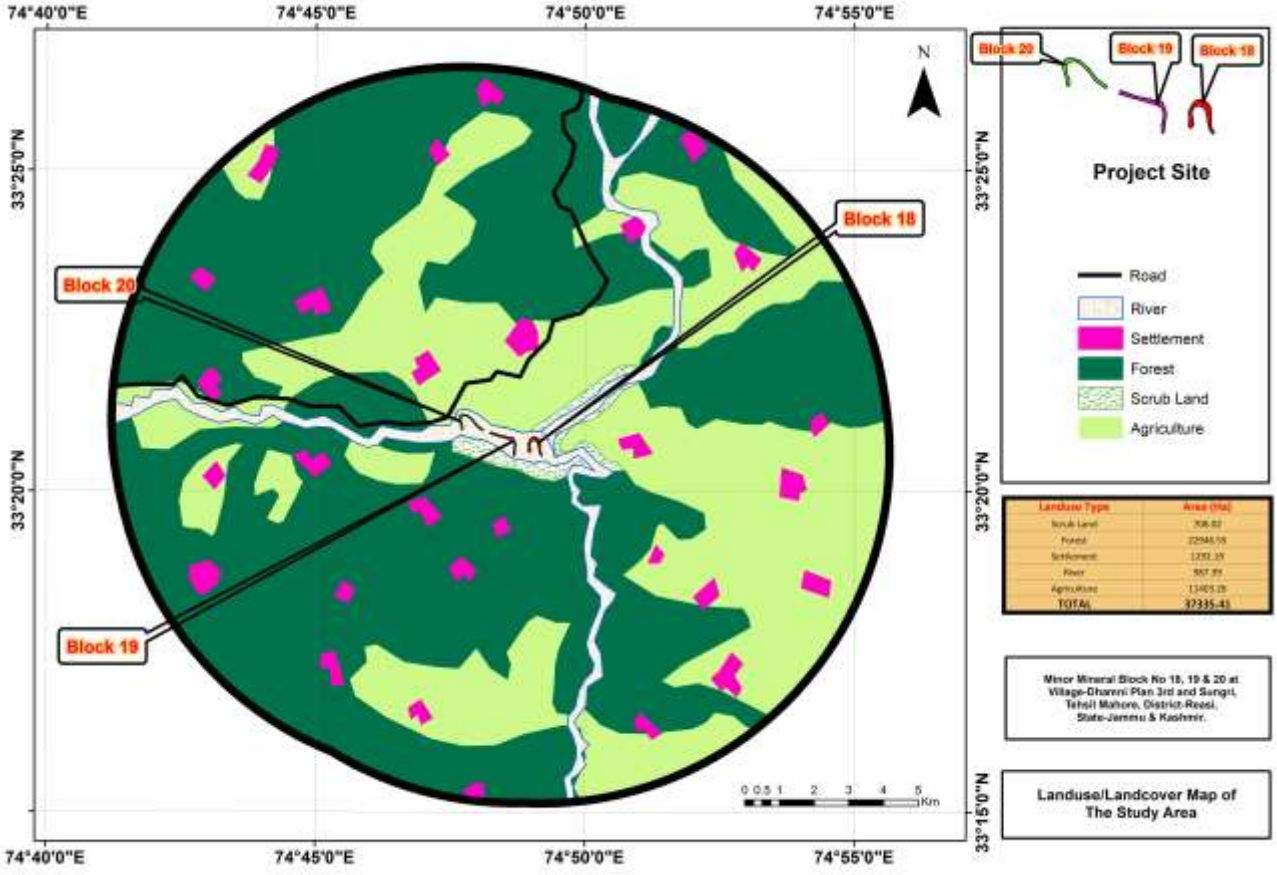


Figure 3-1: Land use detail

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 Oct, 2020. 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

Locations Code	Locations	Distance (km)	Direction
GW1	Sarh	4.1	E
GW2	Sungri	2.7	W
GW3	Chassana	6.1	W
GW4	Baddar	0.34	NNW
GW5	Mahore	5.7	SE
GW6	Arhbais	3.5	NE

Table 3.3 Location of Surface Water Sampling Sites

Location code	Monitoring site	Distance /direction
SW1	Near Village **Sungri** (upstream)	2.7 km/W
SW2	Near Village **Sarh** (downstream)	2.5 km/E

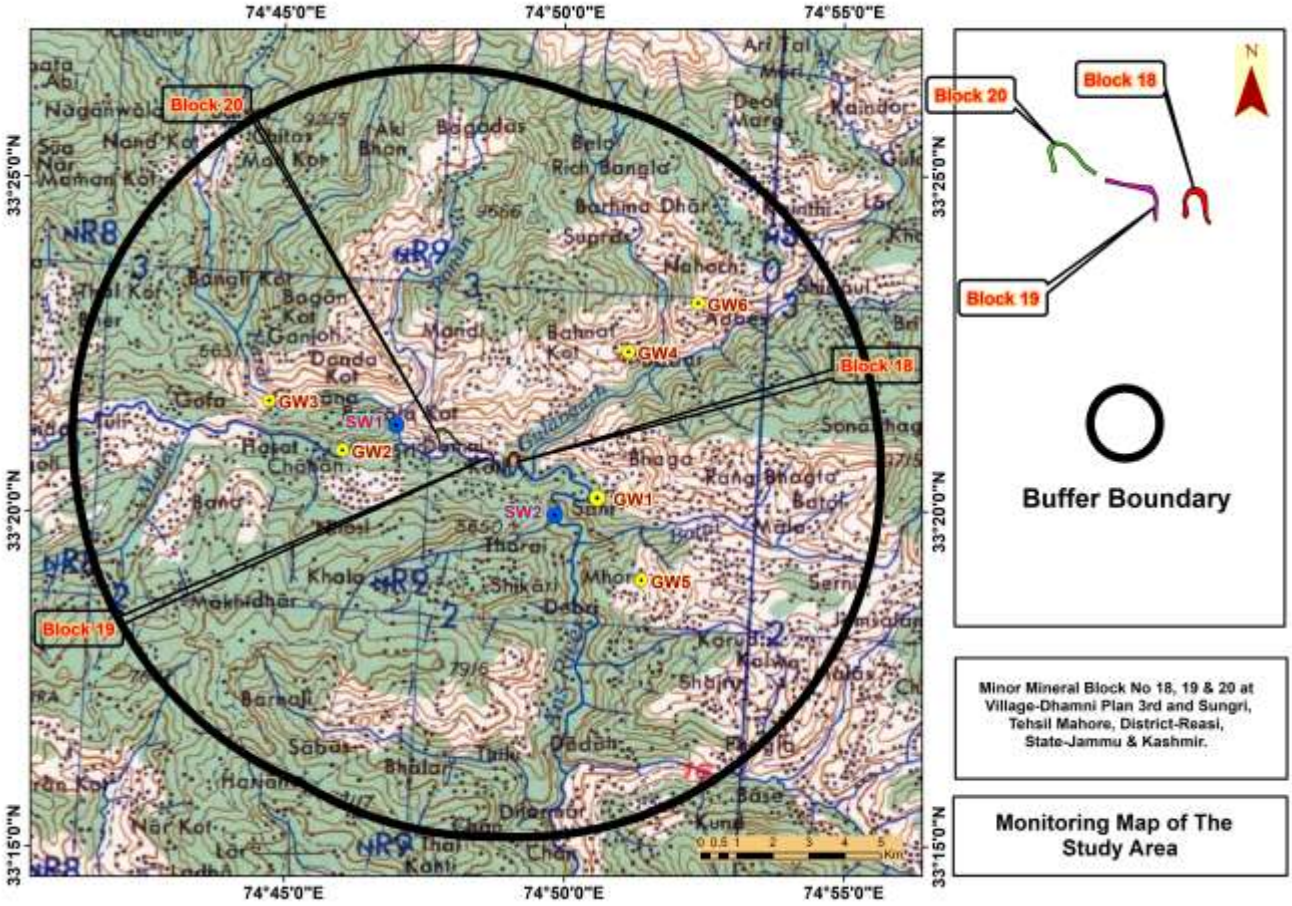


Figure 3.2, Location of Water Sampling Sites

Table 3.4 Ground water Sample Analysis Results

S. No.	Parameter	Test method	Ground Water Analysis Results of Locations						Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
			GW-1	GW-2	GW-3	GW-4	GW-5	GW-6			
		Organoleptic & Physical parameters									
1.	Colour	IS-3025(P-04)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NTU	1	5
5.	pH value	IS-3025(P-04)	7.53	7.72	7.41	7.59	7.66	7.63	-	6.5-8.5	-
6.	Total Dissolve Solid (TDS)	IS-3025(P-16)	310	327	332	359	275	322	mg/l	500	2000
		General Properties -									
7.	Aluminum (as Al)	IS: 3025 (P- 55)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	0.03	0.2
8.	Total Ammonia	IS: 3025 (P- 34)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/l	0.5	No Relaxation
9.	Anionic surface Detergents(as MBAS)	Annex K of IS-13428	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/l	0.2	1.0
10.	Barium (as Ba)	IS: 15302	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/l	0.7	No Relaxation
11.	Boron (as B)	IS: 3025 (P- 57)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/l	0.5	1.0
12.	Calcium (as Ca)	IS: 3025	40.55	46.58	50.19	37.12	39.13	42.09	mg/l	75	200

		(P- 40)									
13.	Chloramines (as Cl_2)	IS: 3025 (P- 26)	<1.0	<1.0	<1.0	<1.00	<1.0	<1.0	mg/l	4.0	No Relaxation
14.	Chloride (as Cl)	IS: 3025 (P- 32)	44.28	54.16	51.06	46.02	45.01	51.12	mg/l	250	1000
15.	Copper (as Cu)	IS : 3025 (P-42)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/l	0.05	1.5
16.	Fluoride (as F)	IS: 3025 (P-60)	<0.1	<0.1	<0.1	<0.10	<0.1	<0.1	mg/l	1.0	1.5
17.	Free Residual Chlorine	IS: 3025 (P-26)	<0.1	<0.1	<0.1	<0.10	<0.1	<0.1	mg/l	0.2	1.0
18.	Iron (as Fe)	IS: 3025(P-53)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/l	0.3	No Relaxation
19.	Magnesium (as mg)	IS: 3025 (P-46)	19.46	15.14	10.96	13.11	16.34	15.32	mg/l	30	100
20.	Manganese (as Mn)	Clause 35 of IS 3025	<0.1	<0.1	<0.1	<0.10	<0.1	<0.1	mg/l	0.1	0.3
21.	Mineral Oil	Clause 6 of IS: 3025	<0.5	<0.5	<0.5	<0.50	<0.5	<0.5	mg/l	0.5	No Relaxation
22.	Nitrate (as NO_3)	IS: 3025 (P- 34)	8	8	7	5.13	10	8	mg/l	45	No Relaxation
23.	Selenium (as Se)	IS: 3025 (P- 56)	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	mg/l	0.01	No Relaxation
24	Silver (as Ag)	Annex J IS: 13428	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/l	0.1	No Relaxation
25	Sulphate (as SO_4)	IS: 3025 (P- 24)	21.23	21.31	22.14	24.63	19.22	15.87	mg/l	200	400
26	Sulphide(as H_2S)	IS-3025 (P-29)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/l	0.05	No Relaxation
27	Alkalinity (as Ca CO_3)	IS: 3025 (P- 23)	156.95	163.44	165.34	151.30	146.87	153.53	mg/l	200	600
28	Total Hardness (as $CaCO_3$)	IS: 3025 (P- 23)	177.12	178.87	182.65	177.63	162.31	172.89	mg/l	200	600
29	Zinc (as Zn)	IS: 3025 (P- 49)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/l		15

		Toxic Properties									
30.	Cadmium (as Cd)	IS-3025(P-41)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	mg/l	0.003	No Relaxation
31.	Cyanide (as CN)	IS-3025(P-27)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	0.05	No Relaxation
32.	Lead (as Pb)	IS-3025(P-47)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	0.01	No Relaxation
33.	Mercury (as Hg)	IS-3025(P-48)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	mg/l	0.001	No Relaxation
34.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/l	0.07	No Relaxation
35.	Nickel (as Ni)	Annex L of IS-13428	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	0.02	No Relaxation
36.	Poly nuclear Aromatic	APHA 6440	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	mg/l	0.0001	No Relaxation
37	Poly chlorinated biphenyl	APHA 6630	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	mg/l	0.0005	No Relaxation
38.	Arsenic (as As)	IS-3025(P-37)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	0.01	0.05
39.	Total Chromium (as Cr)	Annex J of IS-13428	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/l	0.05	No Relaxation
		Biological Properties									
40.	*Escherichia coli*	IS-1622	Absent	Absent	Absent	Absent	Absent	Absent	Absent/250ml		
41	*Coliform Bacteria*	IS-1622	Absent	Absent	Absent	Absent	Absent	Absent	Absent/250ml		

Table 3.5 Surface water Sample Analysis Results

S. No.	Parameter	Test method	Ground Water Analysis Results of Locations		Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
			SW-1	SW-2			
1.	Colour	IS-3025(P-04)	<1.0	<1.0	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.0	<1.0	NTU	1	5
5.	pH value	IS-3025(P-04)	7.61	7.14	-	6.5-8.5	-
6.	Total Dissolve Solid (TDS)	IS-3025(P-16)	269	287	mg/l	500	2000
7.	Aluminum (as Al)	IS: 3025 (P-55)	<0.01	<0.01	mg/l	0.03	0.2
8.	Total Ammonia	IS: 3025 (P-34)	<0.1	<0.1	mg/l	0.5	No Relaxation
9.	Anionic surface Detergents(as	Annex K of IS-13428	<0.1	<0.1	mg/l	0.2	1.0

	MBAS)						
10.	Barium (as Ba)	IS: 15302	<0.1	<0.1	mg/l	0.7	No Relaxation
11.	Boron (as B)	IS: 3025 (P-57)	<0.1	<0.1	mg/l	0.5	1.0
12.	Calcium (as Ca)	IS: 3025 (P-40)	45.12	41.51	mg/l	75	200
13.	Chloramines (as Cl_2)	IS: 3025 (P-26)	<1.0	<1.0	mg/l	4.0	No Relaxation
14.	Chloride (as Cl)	IS: 3025 (P-32)	45.13	42.21	mg/l	250	1000
15.	Copper (as Cu)	IS : 3025 (P-42)	<0.05	<0.05	mg/l	0.05	1.5
16.	Fluoride (as F)	IS: 3025 (P-60)	<0.1	<0.1	mg/l	1.0	1.5
17.	Free Residual Chlorine	IS: 3025 (P-26)	<0.1	<0.1	mg/l	0.2	1.0
18.	Iron (as Fe)	IS: 3025(P-53)	<0.05	<0.05	mg/l	0.3	No Relaxation
19.	Magnesium (as mg)	IS: 3025 (P-46)	13.48	17.91	mg/l	30	100
20.	Manganese (as Mn)	Clause 35 of IS 3025	<0.1	<0.1	mg/l	0.1	0.3

21.	Mineral Oil	Clause 6 of IS: 3025	<0.5	<0.5	mg/l	0.5	No Relaxation
22.	Nitrate (as NO_3)	IS: 3025 (P-34)	8	9	mg/l	45	No Relaxation
23.	Selenium (as Se)	IS: 3025 (P-56)	<0.1	<0.01	mg/l	0.01	No Relaxation
24	Silver (as Ag)	Annex J IS: 13428	<0.05	<0.05	mg/l	0.1	No Relaxation
25	Sulphate (as SO_4)	IS: 3025 (P-24)	19.22	23.23	mg/l	200	400
26	Sulphide(as H_2S)	IS-3025 (P-29)	<0.05	<0.05	mg/l	0.05	No Relaxation
27	Alkalinity (as $CaCO_3$)	IS: 3025 (P-23)	143.80	156.24	mg/l	200	600
28	Total Hardness (as $CaCO_3$)	IS: 3025 (P-23)	146.22	167.00	mg/l	200	600
29	Zinc (as Zn)	IS: 3025 (P-49)	<0.05	<0.05	mg/l		15
30.	Cadmium (as Cd)	IS-3025(P-41)	<0.001	<0.001	mg/l	0.003	No Relaxation
31.	Cyanide (as CN)	IS-3025(P-27)	<0.01	<0.01	mg/l	0.05	No Relaxation
32.	Lead (as Pb)	IS-3025(P-47)	<0.01	<0.01	mg/l	0.01	No Relaxation

33.	Mercury (as Hg)	IS-3025(P-48)	<0.001	<0.001	mg/l	0.001	No Relaxation
34.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	<0.05	mg/l	0.07	No Relaxation
35.	Nickel (as Ni)	Annex L of IS-13428	<0.01	<0.01	mg/l	0.02	No Relaxation
36.	Poly nuclear Aromatic	APHA 6440	<0.001	<0.0001	mg/l	0.0001	No Relaxation
37	Poly chlorinated biphenyl	APHA 6630	<0.001	<0.0001	mg/l	0.0005	No Relaxation
38.	Arsenic (as As)	IS-3025(P-37)	<0.01	<0.01	mg/l	0.01	0.05
39.	Total Chromium (as Cr)	Annex J of IS-13428	<0.05	<0.05	mg/l	0.05	No Relaxation
40.	*Escherichia coli*	IS-1622	Absent	Absent	Absent/250ml		
41	*Coliform Bacteria*	IS-1622	Absent	Absent	Absent/250ml		

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 3.4** 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 October. 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 7.41 to 7.72. 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 275 mg/l to 359 mg/l. The TDS of the samples were within the desirable limit & the permissible limit of 500mg/l & 2000 mg/l respectively.

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		Relative Humidity (%)	
	Min	Max	Min	Max
October 2020	15	30	55.2	58.3
November 2020	10	22	46.8	50.9
December 2020	5	15	45.2	50.7
Source : World Weather online				

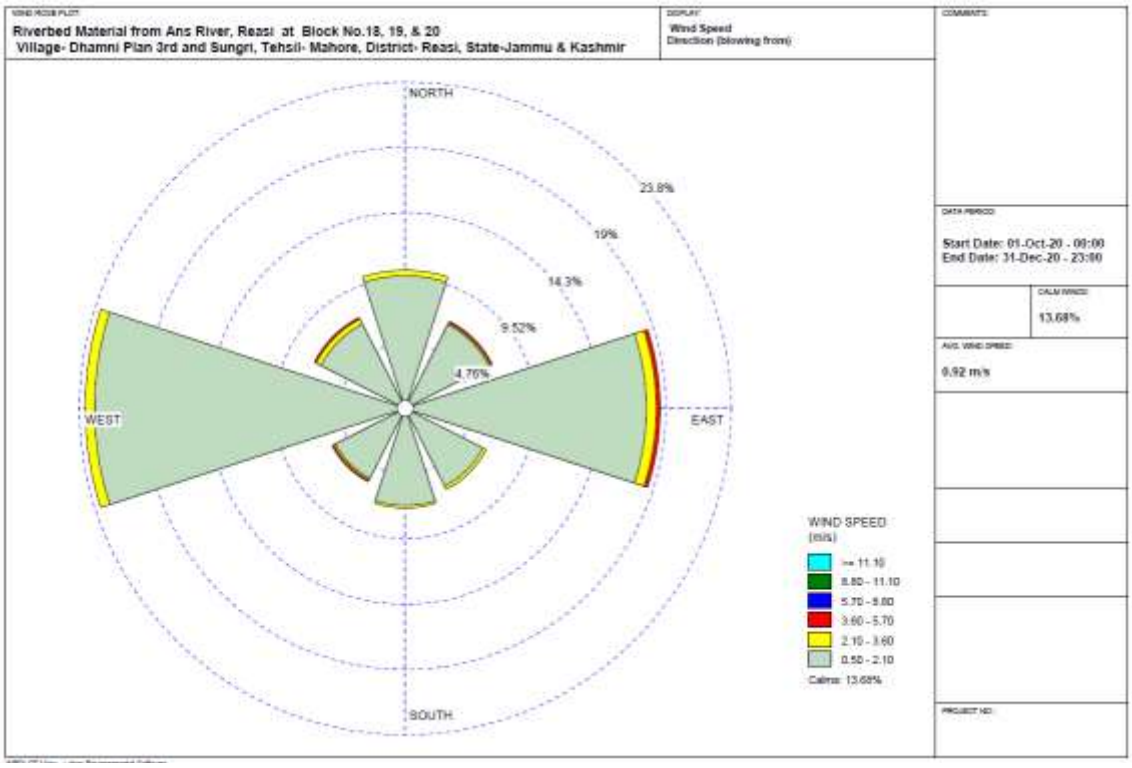


Figure 3.3 Project Site Wind-rose

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 7 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
AAQ-1	Project site	0	-
AAQ-2	Sarh	4.1	E
AAQ-3	Sungri	2.7	W
AAQ-4	Chassana	6.1	W
AAQ-5	Baddar	0.34	NNW
AQQ-6	Mahore	5.7	SE
AQQ-7	Arhbais	3.5	NE

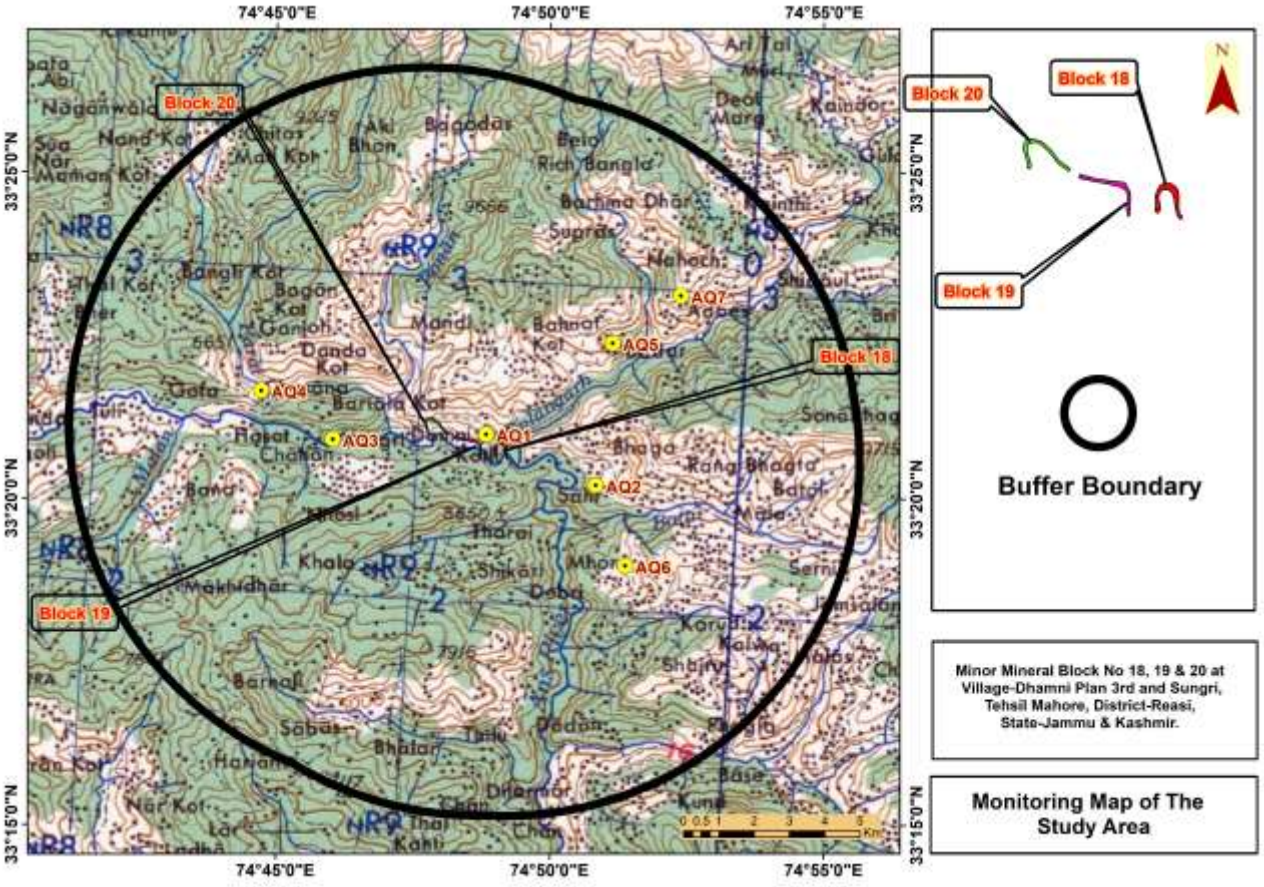


Figure 3.4, Ambient Air Quality Monitoring Stations

3.3.4.1 Baseline Scenario

3.3.4.1.1 Ambient Air Quality in the Study Area $PM_{2.5}$

Location Code	PM2.5 (µg/m³)				
	Name of the station	Min	Max	Average	98th Percentile
AAQ1	Project site	15.91	21.73	19.04	21.33
AAQ2	Sarh	16.59	22.21	19.59	21.81
AAQ3	Sungri	14.55	19.98	17.47	19.58
AAQ4	Chassana	16.68	22.6	20.46	22.25
AAQ5	Baddar	16.39	21.83	19.69	21.47
AAQ6	Mahore	16.88	19.4	18.27	19.31
AAQ7	Arhbais	18.14	20.08	19.04	19.99

3.3.4.1.2 Ambient Air Quality in the Study Area PM_{10}

Location Code	PM10 (µg/m³)				
	Name of the station	Min	Max	Average	98th Percentile
AAQ1	Project site	35.9	46.27	41.98	45.39
AAQ2	Sarh	37.25	48.38	42.52	46.93
AAQ3	Sungri	33.7	43.49	39.42	42.65
AAQ4	Chassana	37.73	48.67	43.64	48.32
AAQ5	Baddar	36.38	47.62	42.41	45.98
AAQ6	Mahore	41.86	50.02	45.74	49.40
AAQ7	Arhbais	43.58	51.94	47.53	51.37

3.3.4.1.3 Ambient Air Quality in the Study Area SO_2

Location Code	SO2 (µg/m³)				
	Name of the station	Min	Max	Average	98th Percentile
AAQ1	Project site	4.32	7.43	5.57	7.30
AAQ2	Sarh	4.61	8.08	6.07	8.0
AAQ3	Sungri	4.23	7.24	5.40	7.11
AAQ4	Chassana	7.79	7.9	6.27	7.77
AAQ5	Baddar	4.32	7.71	5.91	7.62
AAQ6	Mahore	4.14	6.86	5.36	6.73
AAQ7	Arhbais	4.98	7.71	6.23	7.62

3.3.4.1.4 Ambient Air Quality in the Study Area NO_2

Location Code	NO_2 (µg/m^3)				
	Name of the station	Min	Max	Average	98th Percentile
AAQ1	Project site	6.98	12.93	9.68	12.50
AAQ2	Sarh	7.16	12.93	10.18	12.76
AAQ3	Sungri	6.6	12.28	9.15	11.85
AAQ4	Chassana	8.09	13.95	10.38	13.18
AAQ5	Baddar	6.79	13.39	10.07	12.96
AAQ6	Mahore	7.16	12.56	9.35	12.04
AAQ7	Arhbais	8.56	14.14	10.85	13.67

The Ambient Air Quality Monitoring reveals that of monitoring stations with minimum Concentrations of PM_{10} were 33.7µg/m^3 and maximum 51.94µg/m^3. The result of PM2.5 reveals that the minimum concentration of 14.55µg/m^3 while maximum concentration of 22.21µg/m^3.

The gaseous pollutants SO2 and NOx were within the prescribed CPCB limit of 80µg/m^3. For residential and rural areas at all stations. The minimum & maximum concentrations of SO2 were found to be 4.14µg/m^3 & 8.08µg/m^3 respectively. The minimum & maximum concentrations of NOx were found to be 6.6µg/m^3 at AQ7 & 14.14µg/m3

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 7 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

Locations Code	Locations	Distance (km)	Direction
SQ1	Project site	0	-
SQ2	Sarh	4.1	E
SQ3	Sungri	2.7	W

SQ4	Chassana	6.1	W
SQ5	Baddar	0.34	NNW
SQ6	Mahore	5.7	SE
SQ7	Arhbais	3.5	NE

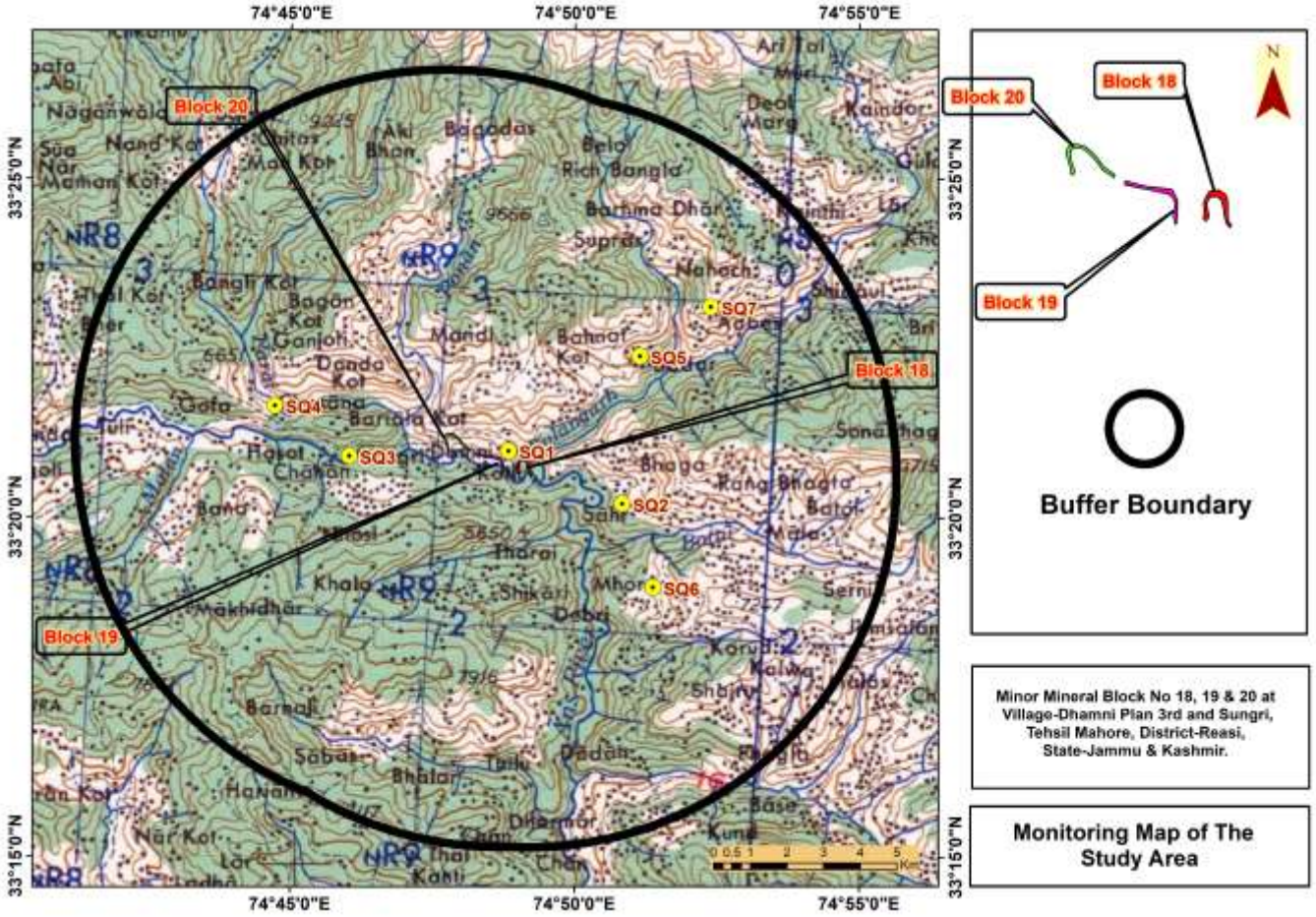


Figure 3.5, Soil Sampling Locations

Table 3.10 Physico-chemical properties of soil

S. No.	Parameter	Unit	SQ1 Project Site	SQ2 Sarh village	SQ3 Sungri village	SQ4 Chassana village	SQ5 Baddar village	SQ6 Mahore village	SQ7 Arhbais village
1.	pH(1:5 suspension)	-	8.22	8.03	7.58	8.10	8.01	7.42	7.52
2.	Electrical Conductivity at 25^{O}C (1:5suspension.)	µS/cm	450	435	426	420	410	461	432
3.	Calcium (as Ca)	mg/kg	432.11	473.25	445.44	482.12	408.77	442.31	423.32
4.	Magnesium(as Mg)	mg/kg	109.81	119.52	113.61	117.86	104.94	117.57	113.62
5.	Sodium (as Na)	mg/kg	236.41	218.96	214.54	208.74	211.13	223.58	215.35
6.	Potassium (as K)	mg/kg	97.76	95.94	98.12	90.82	96.45	98.74	94.62
7.	Water holding Capacity	% by mass	38.14	33.58	35.14	32.11	30.06	31.51	34.65
8.	Porosity	% by mass	32.18	34.49	32.47	35.16	28.45	39.27	30.76
9.	Sand	% by mass	55.12	53.85	52.14	51.02	54.87	52.16	51.35
10.	Clay	% by mass	33.85	31.89	30.66	31.25	34.56	33.61	32.40
11.	Silt	% by mass	12.03	11.26	13.50	11.73	12.57	10.63	16.25
12.	Cation Exchange Capacity	Meq/100gm	13.52	12.31	11.11	14.18	10.54	12.46	13.65
13.	Sodium Absorpation Ratio	-	2.14	1.51	1.25	1.28	1.32	1.69	1.56
14.	Nitrogen	% by mass	0.17	0.08	0.06	0.07	0.08	0.09	0.05
15.	Phosphorus	mg/kg	10.14	09.57	10.40	09.16	8.62	09.28	09.32

16.	Zinc	mg/kg	10.25	10.12	09.68	09.74	10.18	10.51	10.32
17.	Bulk Density	gm /cc	1.10	1.61	1.46	1.21	1.38	1.54	1.34

Observations:

Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.42 to 8.22, which shows that the soil is alkaline in nature. Potassium is found to be from 90.82 mg/kg to 98.74 mg/kg.

3.5 NOISE ENVIRONMENT

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 noise level monitoring locations are marked in **Figure 3.6** and shown in **Table 3.11.**

Table 3.11 Noise quality monitoring stations

Locations Code	Locations	Distance (km)	Direction
NQ1	Project site	0	-
NQ2	Sarh	4.1	E
NQ3	Sungri	2.7	W
NQ4	Chassana	6.1	W
NQ5	Baddar	0.34	NNW
NQ6	Mahore	5.7	SE
NQ7	Arhbais	3.5	NE

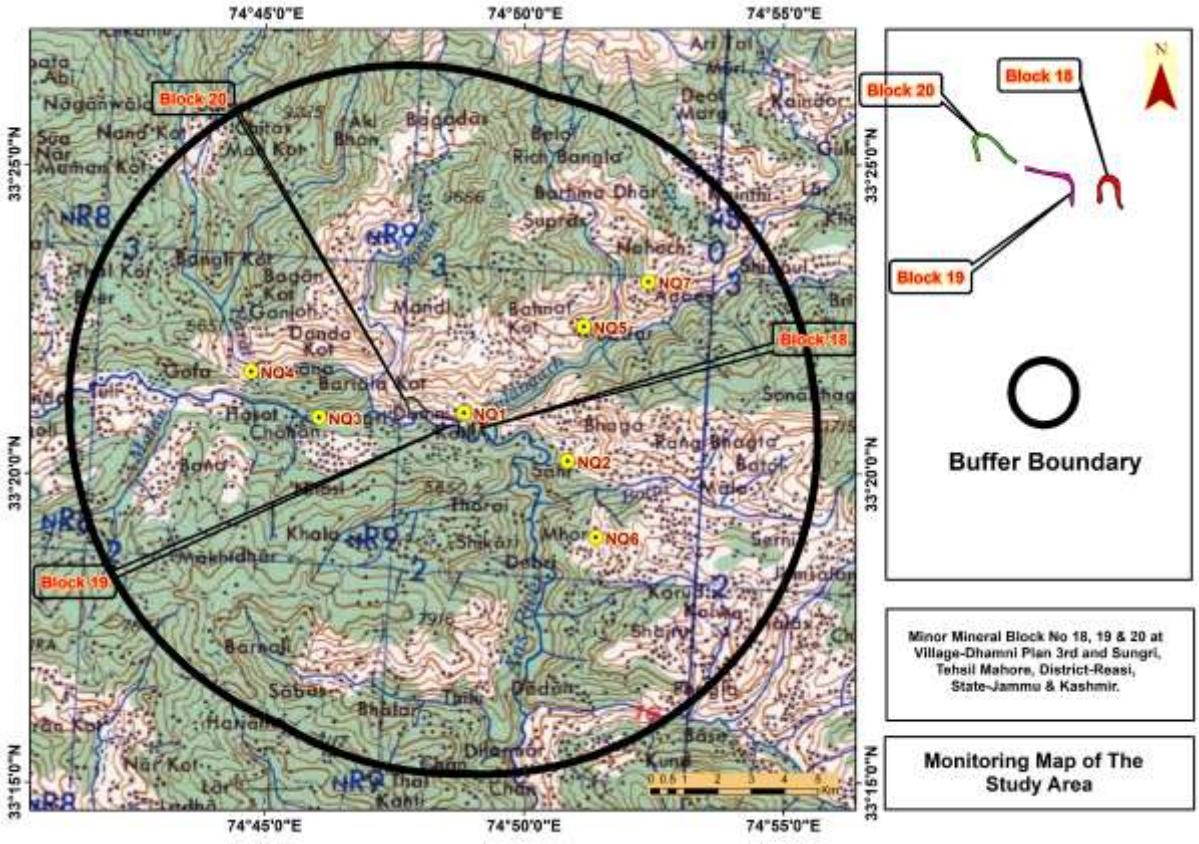


Figure 3.6, Noise quality monitoring stations

Table 3.12 Noise Monitoring Results

S.No.	PROJECT SITE	STATIONS	Leq LIMIT (as per CPCB Guidelines), in dB(A)		Leq Value monitored, in dB(A)	
			DAY*	NIGHT*	DAY*	NIGHT*
1	NQ-1	Project site	75	70	60.23	49.36
2	NQ-2	Sarh	55	45	46.51	41.08
3	NQ-3	Sungri	55	45	51.16	46.06
4	NQ-4	Chassana	50	40	41.65	36.00
5	NQ-5	Baddar	55	45	48.82	40.76
6	NQ-6	Mahore	55	45	46.04	39.87
7	NQ-7	Arhbais	55	45	43.31	35.34

* Day time Leq in **dB(A)** (6.00AM TO 10.00PM)
Night time Leq in **dB(A)** (10.00PM TO 6.00AM)

Results

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 41.65 dB (A) & 60.23 dB (A) respectively. The minimum & maximum noise levels at night time were found to be 36.00 dB (A) & 49.36 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

3.6.1.1 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.

3.6.1.2 Forest cover in the district

This Division is bound on the West by Nowshera Forest Division in the North by Mahore Forest Division, in the East by Udhampur Forest Division and in the South by Jammu Forest Division. The presence of large number of Chaks inside the demarcated Forests is a prominent feature of the division. The lower fringes of the Forest are honey combed with human habitations and are under heavy biotic pressure. The Forests are bounded all along their lengths at least on one side by the habitation. .

3.6.1.3 Forest Division

This division has an area of 136.78 Sq. Kms. The Main tree species The main species found are *Accacia catechu, Dalbergia sissoo, Olea cuspiodata, Accacia modesta, Cassia fistula, Terminalia beterica, Anogeissusw latifolia, Mallotus phikllpinensis, Lannea cormandalica with occasional Phoenixhumillis, Toona ciliata, Bombex cebia, Syzygiym cumini* etc. Pure patches of Dalbergia sissoo are at Dehra baba (Bhabbar). Division is divided into 3 territorial ranges Viz. Katra, Reasi and Thakrakote. There is one Soil Conservation Range.

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 *Albizia lebbeck, Benth., Bauhinia variegata, Linn.,* Celtis tetrandra, Roxb., Salix alba, L. Total 27 species of trees belong to 27 families are enumerated from the study area.

Table 3.13: Trees in the study area

S.No.	***Botanical Name***	**Family**	**Vernacular**
1	*Albizia lebbeck, Benth.*	*Mimosaceae*	Siris
2	*Albizia chinensis, (Osbeck) Merr.*	*Mimosaceae*	Sanura, Ola,
3	*Acacia nilotica, L.*	*Mimosaceae;*	Kikar
4	*Acacia catechu, Willd.*	*Mimosaceae*	Khair
5	*Bauhinia variegata, Linn.*	*Caesalpinniaceae*	Krael
6	*Bauhinia vahlii, Wight and Arn.*	*Caesalpiniaceae*	Blungad
7	*Butea monosperma, (Lam.) Kuntze.*	*Papilionaceae*	Palah
8	*Celtis tetrandra, Roxb.*	*Urticaceae*	Kharak
9	*.Cordia dichotoma, Forst.*	*Boraginaceae*	Lasura
10	*Dendrocalamus strictus, Nees.*	*- Poaceae*	Chuanthi
11	*.Dalbergia sissoo, Roxb.*	*Papilionaceae*	Tahli
12	*Erythrina subrosa, Roxb.*	*- Papilionaceae*	.Thubb
13	*.Ehertia laevis,*	*Boraginaceae*	Chamrod
14	*Ficus hispida, Linn*	*Moraceae*	Lana
15	*Grewia serrulata, DC.*	*Tiliaceae*	Dhamani
16	*.Leucaena leucocephala, (Lam.) de Wit.*	*Mimosaceae*	Laseeni
17	*Moringa oleifera, Lamk.*	*Moringaceae;*	Suhanjana
18	*Mitragyna parviflora, Korth.*	*Rubiaceae*	Sangla
19	*Pistacia chinensis*	*Anacardiaceae*	Kakarsinghi;
20	*Pyrus pashia, Ham.*	*- Rosaceae*	Kainth
21	*Quercus semecarpifolia, Smith.*	*- Fagaceae*	Khrew
22	*Quercus dilatata, Lindl.*	*Fagaceae*	Maru
23	*Salix alba, L.*	*Salicaceae*	Badhaa

24	*Sapindus mukorossi, Gaertn*	*Sapindaceae*	Ritha
25	*Terminalia bellirica, Roxb*	*Combretaceae*	Bahera
26	*Zizyphus mauritiana, Lamk.*	*Rhamnaceae*	Ber
27	*Zizyphus nummularia, W. et A., Prodr*	*Rhamnaceae*	Fuadi

Shrubs: Total 14 shrub species belong to 14 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.	Botanical Name	Family	Vernacular	Common Name
1	*Achyranthus aspera Linn.*	*Amaranth aceae*	Puthkanda	Prickly chaff Flower
2	*Barleria cristata Linn.*	*Acanthaceae*	Kali Barenker	Philippine violet
3	*Berberis lyceum Royle*	*Berberida ceae*	Kaverlli	Barberry
4	*Calotropis proceraR.Br.*	*Asclepid aceae*	Desi akk.	Sodom apple
5	*Camabis sativa Linn.*	*Cannabaceae*	Bhang	Marijuana
6	*Carrisa opaca Stapf.*	*Apocyanaceae*	Garna	-
7	*Clematis buchananiana*	*Ranunculaceae*	Berkella	-
8	*Colebrookea appositifolia*	*Lamiaceae*	Chitti Suali Duss	Indian Squirrel

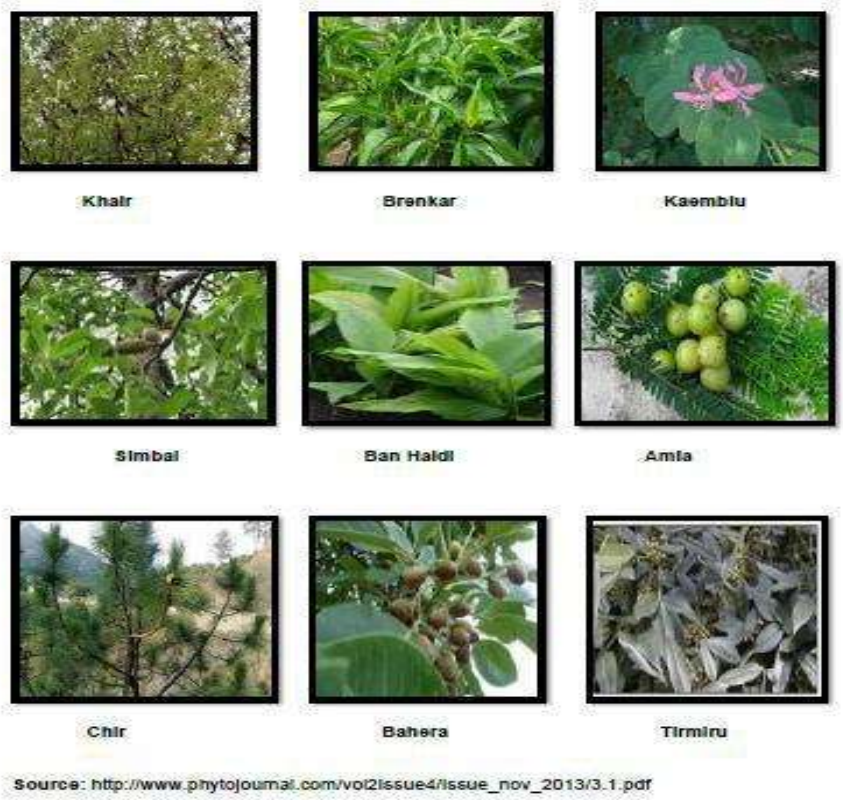
Source: http://www.openaccessscience.com/

Medicinal Plants in the Study Area

Table 3.15: Medicinal Plants in the study area

S.No	***Botanical Name***	**Local Name**	***Families***	***Plant Part***	***Medicinal Uses***
1	*Acacia catechu (Linn.) Wild.*	Khair	*Mimosaceae*	*Stem*	*Source of kattha, which is astringent, digestive and useful*

					in ailments of throat, mouth, gums, cough and diarrhoea.
2	*Acacia nilotica (Linn.) Del.*	Kikar	*Mimosaceae*	*Pods, bark, flowers, gum, leaves and roots.*	*1. Pods are effective in urinogenital disorders.* *2. Gum is used along with Calotropis procera latex to cure asthma, stop bleeding and urinary & vaginal discharges.* *3. It is also useful in diabetes, cure skin diseases and bleeding piles.* *4. Flowers are used as tonic in diarrhoea and dysentery.*
3	*Achyranthes aspera Linn.*	Parkanda	*Amaranthaceae*	*Leaves and Seeds*	*1. The roasted seed powder mixed with honey is given during cough & throat irritations.* *2. Leaf juice is given to cure diarrhea.*
4	*Adhatoda vasica Nees.*	Brenkar	*Acanthaceae*	*Flower and Leaves*	*Flower ash with honey is given to cure whooping cough.*
5	*Aegle marmelos Corr.*	Bel, Bill	*Rutaceae*	*Leaf, Fruit and Root.*	*1. The unripe or half-ripe fruits improve appetite and digestion.* *2. The antibiotic activity of the leaf, fruit and root has been confirmed.*



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 Reasi is also having three crop 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.

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

Table 3.17: List of Birds

S.No	**Family**	**Scientific Name**
1	Podicipedidae	Little Grebe
2	Ardeidae	Indian Pond Heron

3	Accipitridae	Pariah Kite
4	Charadriidae	Red wattled lapwing
5	Scolopacidae	Common Sandpiper
6	Galliformes	Grey Partridge
7	Columbiforms	Little Brown Dove
8	Psittaciformes	Large Indian Parakeet
9	Strigidae	Great Horned Owl
10	Coraciidae	Blue Jay
11	Alcedinidae	Small Blue Kingfisher
12	Meropidae	Indian small green beer eater
13	Capitonidae	Large Green Barbet
14	Picidae	Lesser Golden Backed Woodpecker
15	Lanidae	Rufous-backed shrike
16	Oriolidae	Indian Golden Oriole
17	Dicruridae	Black Drongo
18	Strurnidae	Bank Myna
19	Corvidae	House Crow
20	Motacillidae	India White Wagtail

Source: Biodiversity and environment Management

Table3.18: List of Butterflies in the Study Area

Scientific Name	**Family**	**Common Name**
Anaphaeis aurota	Fabricius	The Pioneer White or African Caper White butterfly
Aporia leucodice	Eversmann	The Himalayan Blackvein butterfly.

Catopsilia pomana	Fabricius	Lemon Emigrant butterfly
Ceporia nerissa	Fabricius	The Common Gull butterfly

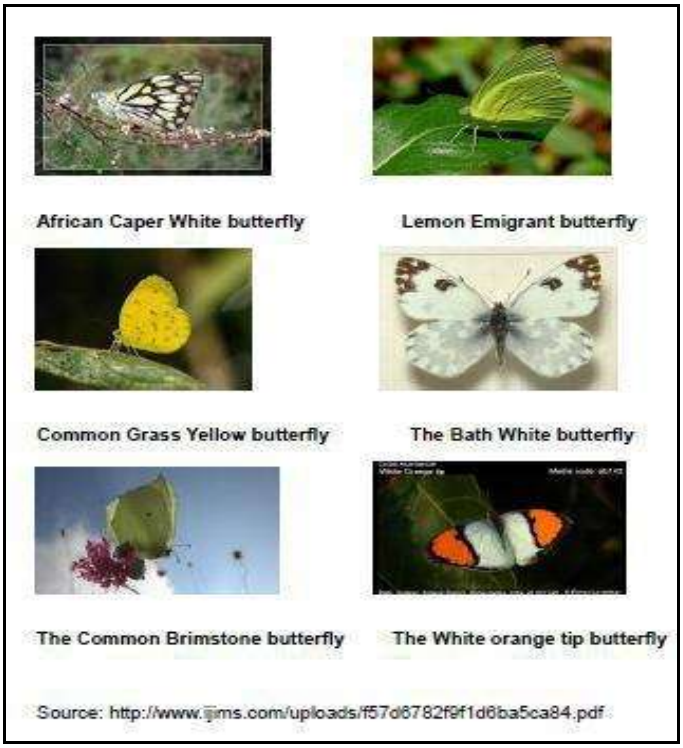


Table3.19: List of Mammal in the Study Area

S.No	Name	Global IUCN Status	Indian Wildlife protection Act
1	Rhesus Monkey	LR-lc	II
2	Asiatic Jackal	LR-lc	II
3	Indian Fox	LR-nt	II
5	Small Indian Civet	LR-nt	II
6	Common Grey Mongoose	LR-lc	IV
7	Spotted Deer	LR-lc	III
8	Barking Deer	LR-lc	III
9	Wild Boar	LR-lc	III
10	Rufous-Tailed Hare	LR-lc	IV
11	Grey Musk Shrew	LR-lc	V
12	Five Stripped Squirrel	LR-lc	IV

13	Indian Crested Porcupine	LR-lc	IV
14	House Mouse	LR-lc	V
15	House Rat	LR-lc	V
16	Indian Mole Rat	LR-lc	V

LR-lc: Lower Risk-least concern

LR-nt: Lower risk-near threatened

VU: Vulnerable

3.7 Socio-Economic Environment

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 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. The study area consists of a core area where the proposed project is expected to come up and a buffer area encircling the project area with a radius of ten kilometers from the centre of the project site. The Socio-economic impact assessment focuses the effect of the project on social and economic well-being of the community. The above assessment is made through a socio-economic survey conducted by a team of experts that often consist of a demographer, statistician, econometrician, social scientist, health expert and gender specialist. The outcome of the study relies on both quantitative and qualitative measure of impacts. The impacts are evaluated in terms of changes in community demographics, housing, employment & income, market effects, public services, retail business, quality of life and artistic qualities of the community. Qualitative assessment of community perceptions about development is an important measure of development impacts. Assessing proposed developments in socio-economic context help the community leaders and local people identify potential social equity issues, evaluate the adequacy of social services and determine whether the project has adverse effects on overall social well-being or not.

2.0 Scope of the Proposed Study

1) To collect socio-economic baseline data of the study area.

2) To comprehend socio-economic status of people living in the study area.
3) To assess likely impact of the project on social and economic life of the people in the study area.
4) To measure the impact of the project on Quality of life of the people living in the study area.
5) To ensure sustainability of positive impacts.
6) To recommend mitigation measures on adverse impacts.

3.0 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 kilometers from the periphery of the project site. The study area includes all the land marks both natural and manmade, falling therein. The study area of the proposed mining project is spread over in Reasi district of Jammu & Kashmir. There are 42 villages in the study area.

4.0 Steps taken to prepare the socio-economic report

Step 1: Literature review, which includes state profile, district profile, Form 1, Pre – feasibility report, Mining Plan, maps etc.

Step 2: Referred to TOR to get aware of the directions of the Central Environment Impact Assessment committee for the preparation of the report.

Step 3: Identification of the study area and important landmarks therein.

Step 4: Preparation of List of villages and urban areas located in the study area and their distance and direction from the project site.

Step 5: Grouping of villages and urban areas falling under core and buffer area.

Step 6: Site visit to collect facts through observations.

Step 7: Firming up of approach and methodology.

Step 8: Sample design, determination of sample size, selection of sampling units, Segmentation etc

Step 9: Finalization of Questionnaires / Schedules of enquire

Step 10: Collection of data from secondary sources namely Census Report, District profile, Reports on Annual Health Surveys, reports on BP Surveys, other published literatures, administrative records etc.

Step11: Collection of primary data from sample villages and households therein.

Step 12: Manual scrutiny of filled-in schedules (Each filed-in- schedule was scrutinized as per the scrutiny programme developed. The manual scrutiny aimed at removal of duplicate records, missing records, alien records and consistency checks.

Step 13: Data entry and data validation.

Step 14: Generation of Tables

Step 15: Data Analysis and preparation of report.

5.0 Hypothesis

"Sand Mining" has significant socio-economic impacts on livelihoods of local communities.

6.0 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.

7.0 Concept & Definition of terms used in the report

Study Area: The study area, also known as impact area has been defined as the sum total of core area and buffer area with a radius of 10 km from the periphery of the project site. The study area includes all the land marks both natural and manmade, falling therein.

QoL: The Quality of Life (QoL) refers to degree to which a person enjoys the important possibilities of his/her life. The 'Possibilities' result from the opportunities and limitations, each person has in his/her life and reflect the interaction of personal and environmental factors. Enjoyment has two components: the experience of satisfaction and the possession or achievement of some characteristic**.**

Household: A group of persons who normally live together and take their meals from a common kitchen are called a household. Persons living in a household may be related or unrelated or a mix of both. However, if a group of related or unrelated persons live in a house but do not take their meals from the common kitchen, then they are not part of a common household. Each such person is treated

as a separate household. There may be one member households, two member households or multi-member households.

Sex Ratio: Sex ratio is the ratio of females to males in a given population. It is expressed as 'number of females per 1000 males.

Literates: All persons aged 7 years and above who can both read and write with understanding in any language are considered as literate. It is not necessary for a person to have received any formal education or passed any minimum educational standard for being treated as literate. People who are blind but can read in Braille are also treated as literates.

Literacy Rate: Literacy rate of population is defined as the percentage of literates to the total population aged 7 years and above.

Labour Force: The labour force refers to number of people employed and unemployed in a geographical entity. The size of the labour force is the sum total of persons employed and unemployed. An unemployed person is defined as a person not employed but actively seeking work. Normally, the labour force of a country consists of everyone of working age (commencing from 16 years) and below retirement (65 years) that are participating workers, that is people actively employed or seeking employment. People not counted under labour force are students, retired persons, stay-at home people, people in prisons, permanently disabled persons and discouraged workers.

Work: Work is defined as participation in any economically productive activity with or without compensation, wages or profit. Such participation may be physical and/or mental in nature. Work involves not only actual work but also includes effective supervision and direction of work. The work may be part time or full time or unpaid work in a farm, family enterprise or in any other economic activity.

Worker: All persons engaged in 'work' are defined as workers. Persons who are engaged in cultivation of land or milk production even solely for domestic consumption are also treated as workers.

Main Workers: Those workers who had worked for the major part of the reference period (i.e. 6 months or more in the case of a year) are termed as Main Workers.

Marginal Workers: Those workers who did not work for the major part of the reference period (i.e. less than 6 months) are termed as Marginal Workers.

Work Participation Rate: The work participation rate is the ratio between the labour force and the overall size of their cohort (national population of the same age range). In the present study the work participation rate is defined as the percentage of total workers (main and marginal) to total population.

Birth Rate: The ratio of total live births to total population in a specified community or area over a specified period of time. The birth rate is often expressed as the number of live births per 1,000 of the population per year.

Death Rate: The ratio of total deaths to total population in a specified community or area over a specified period of time. The death rate is often expressed as the number of deaths per 1,000 of the population per year. It is also called fatality rate or mortality rate.

Maternal Mortality Rate: The maternal mortality rate refers to number of maternal deaths per 1,000 women of reproductive age in the population (generally defined as 15-44 years of age).

Infant Mortality Rate: The infant mortality rate refers to number of deaths of children less than 1 year old per 1000 live births.

8.0 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 the 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.

Table 3.20: Demographic particulars of the study area

S.N.	Description	Number	Percentage to Respective totals
1.	Gender wise Total Population of the Study Area	108224	**100**
	Male	55890	51.64
	Female	52334	48.36
	Sex Ratio (No. of females per 1000 males)	936	
2.	Gender wise Total Population (0-6 age group)	19694	**100**
	Male	9991	50.73
	Female	9703	49.27
	Sex Ratio of 0-6 age group population (No. of females per 1000 males)	971	
3.	Total number of Households	17455	
	Average Household size in the Study Area as a whole	4	
	Highest Household size in the Study Area	5	
	Lowest Household size in the Study Area	3	
4.	Total no. of villages in the study area	41	
5.	Total Population of Schedule Caste Community in the Study Area	33006	**100**
	Male	16922	51.26
	Female	16084	48.74
	Sex Ratio (No. Of females per 1000 males)	950	
6.	Total Population of Schedule Tribe Community	72	**100**
	Male	37	51.39
	Female	35	48.61
	Sex Ratio of Schedule Tribe population in Study Area (No. Of females per 1000 males)	946	
7.	Total Literates in the Study Area	56041	**100**
	Male	33383	59.57
	Female	22658	40.43
	Overall Literacy Rate in the Study Area	51.78	
	Male	59.57	
	Female	40.43	
	Gender gap in literacy rate	19.14	

S.N.	Description	Number	Percentage to Respective totals
8.	Total Workers in the Study Area	40000	**100**
	Male	26301	65.75
	Female	13699	34.25
	Overall Work Participation Rate in the study area	36.96	
	Male	47.05	
	Female	26.11	
	Gender Gap in work participation rate	20.94	
	Overall Dependency Rate of Non-workers	63.04	
	Dependency Rate of Male Non-workers	43.37	
	Dependency Rate of Female Non-workers	56.63	
9.	Total Main Workers in the Study Area	25166	**100**
	Male	17970	71.40
	Female	7196	28.60
10.	Total Marginal Workers in the Study Area	14834	**100**
	Male	8331	56.16
	Female	6503	43.84
11.	Total main Agricultural Workers in the Study Area	11326	**100**
	Male	7336	64.77
	Female	3990	35.23
12.	Total Cultivators in the Study Area	5252	**100**
	Male	4192	79.82
	Female	1060	20.18
13.	Total Marginal Agricultural Labour in the Study Area	7743	**100**
	Male	4696	60.64
	Female	3047	39.36
14.	Main 'Other Workers' in the Study Area	7049	**100**
	Male	5545	78.66
	Female	1504	21.34

Source: Census 2011

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

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	44	5	-	-
Middle Schools	23	3	-	-
Secondary School	7	-	-	-
Senior Secondary School	4	-	-	-
Total no. Of Institutions	**78**	**8**	-	-
(B) HEALTH FACILITIES				
Health facilities	Government		Private	
Dispensary	1		-	
Maternity Child Welfare Center	2		-	
Veterinary Hospital	-		-	

(Functioning all round the year)

(C)WATER FACILITIES

Wells	Covered Well	Un-Covered Well
	3	40
Hand Pump	45	
Tank/pond/lake	1	
River/Canal	11	
Tube well	25	
Others	-	
Spring	1	

(D) ELECTRICITY

Power Supply for Domestic Use	51	-
Power Supply for Agriculture Use	51	-
Power Supply for Commercial Use	51	-
Power Supply for All Uses	51	-
(E) HIGHWAYS AND ROADS		
Rural Areas		
National Highway	81	-
State Highway	74	-
Major District Roads	65	-
Other District Road	64	-
Pucca Road	57	-
Kuchha road	52	-

Assessment of likely socio-economic impact

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 of people in the study area that 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 mineral for end users	Yes	-	-	-	-
5	Scope for promotion of mineral based	-	Yes	-	-	-

	industries in the study area.					
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 will yield positive impact on eight variables, negative impact on one variable and no impact on three variables.

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.

****

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 Ans 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.

4.3.1 Air Modeling

In general, mining operations generate substantial quantities of airborne respirable dust, which leads to the development of respirable diseases in mine workers. The increasing trend of mining leads to 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 Sand site in Village- Dhamni Plan 3rd & Sungri, Tehsil Mahore & District- Reasi, State-Jammu & Kashmir 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:

$E = [\{(100-m)/m\}^{0.8} \{s/(100-s)\}^{0.1} u^{0.3} \{2663 + 0.1(v+fc)\} 10^{-6}]$ ---------- (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 =0.92 m/s

v = Average Vehicle Speed = 4.5 m/sec

f = frequency of Vehicle movement in no per hour = 4 vehicles / hour

c = Capacity of the dumper in tons = 20 ton

Thus using equation (1)

E = 0.0006 g/sec/ m

$C = (2/\pi)^{1/2} (E / \sigma z\, \upsilon) Exp-[(h^2) / (2\, \sigma z^2)] \times 10^6$ ---------- (2)

Where

C = Concentration in microgram/ m^3

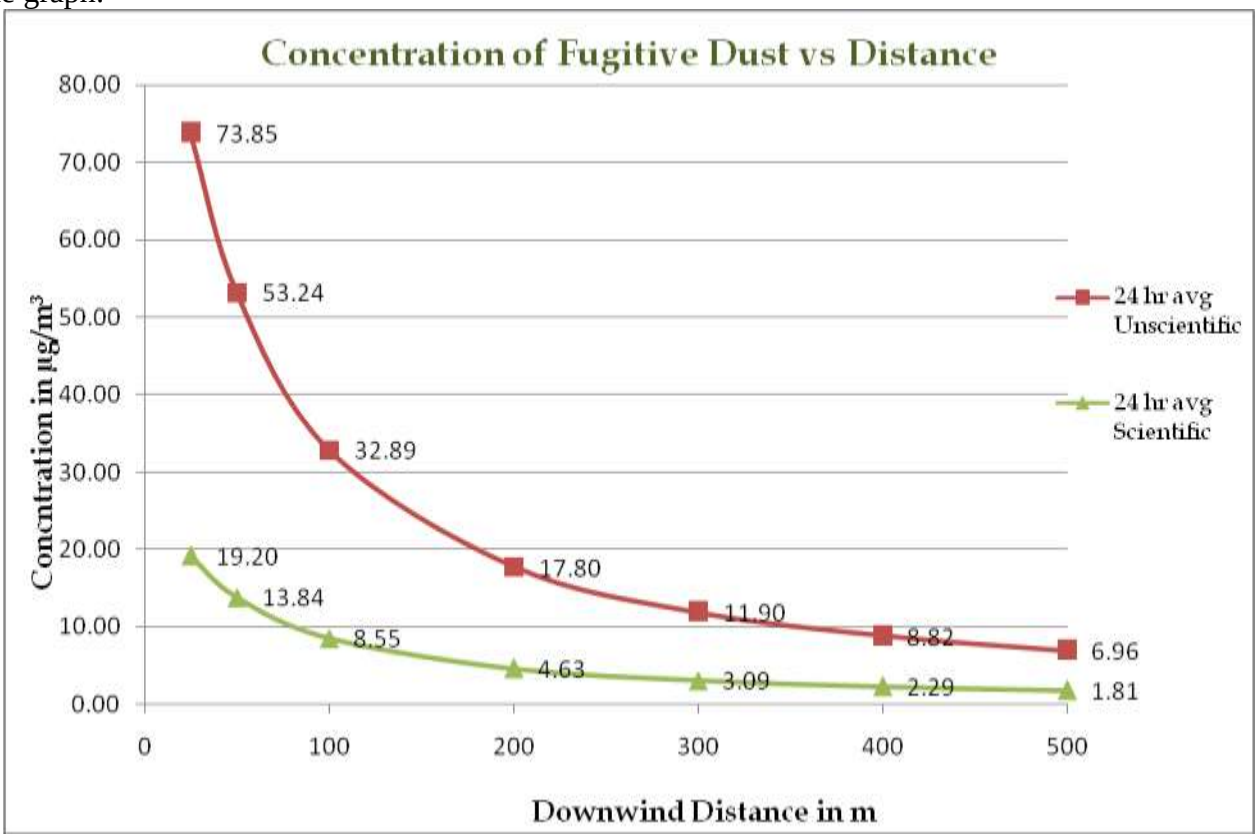
E = Emission Rate = 0.0010 g/sec/m

υ = Wind Speed = 0.92 m/s

h = 0.78Km (For all three cluster)

Modeling was done for an infinite line source assuming unpaved road. For conservative calculation

wind was assumed to blow at a velocity of 0.92m/s perpendicular to the road. The results are given in the graph:



It is observed that the ground level concentration (GLC) decreases from 73.85µg/m^3 at 50 m from the centre line of the road to 6.96µg/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 Ans 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.

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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.

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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, Budget for monitoring for cluster of three mines

S. No.	Description	Cost to be incurred (in lakhs/annum)
1	Water Quality (Surface & Groundwater)	3.0
2	Soil Quality	1.5
3	Air Quality	3.0
4	Noise Level	1.5
5	Plantation Monitoring	1.5
6	Socio-economic Condition	1.5
TOTAL		**12.0**

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.

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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 no. JKEIA/2020/292/1190-93 dated 05.11.2020 (Block 18), letter no. JKEIA/2020/214/646-649 dated 17.08.2020 (Block 19&20). 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- Block No.18, 19, & 20 in Ans River at Village Dhamni Plan 3rd & Sungri , Tehsil Mahore, District Reasi (J&K) area 18.45Ha of Sand on dated 31-03-2021 near mine site Dhamni Plan 3rd & Sungri , Tehsil Mahore, District Reasi (J&K).

Table 0-1, Public hearing details

Particular	Description
Advertisement for Public Hearing ➢ Date of Advertisement in Newspapers	28/02/2021
Date of Public Hearing	31st March, 2021 at 10.30A.M
Venue	At project Site village Sherkotla
Members	• Shri Rajinder kumar sharma, KAK, Additional Deputy Commissioner, Reasi. • Sh. Angrez singh, Divisional officer, J&K Pollution Control Board, Reasi. • Sh. Shafiq Ahmed, District Mineral

Particular	Description
	Officer, Reasi. • Sh. Hans Raj Galoach, Divisional Officer, Pollution Control Board, Reasi.

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-IX.**

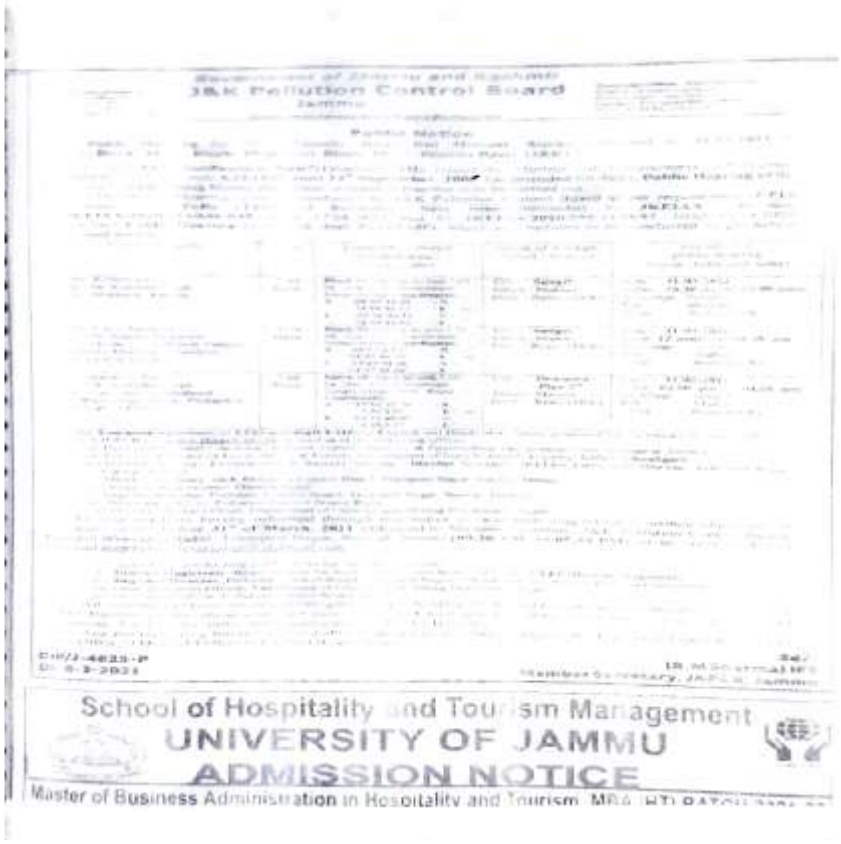


Figure 0-1, Notice for public hearing

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 0-2, 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	Shri Gurdeep Singh, Resident, Pouni, Reasi, Jammu and Kashmir	He demanded that a protection wall should be constructed for the agricultural lands situated along the river bank to save the crops in their agricultural lands from the intrusion of wild animals. He told that for want of the same, the frequent intrusion of wild animals has made it impossible to recover even the investment cost of sowing of seeds.	Environment consultant replied that the suggestion has been noted and CER fund will be used in construction of protection walls alongside the riverbed.	About 2% of the project cost will be used for the developme nt of the social infrastructu re of the area.
2	Shri Ghulam Hussain, Sarpanch, Upper Talwara, Reasi, Jammu and Kashmir	He told the panel and the audience that all the developmental works had got stalled due to scarcity of minor minerals. He said they could not lift the minor minerals from their own nallahs due to ban on mining. He expressed happiness that with clearance of mining cluster in the Public hearing, mining activity in the area shall be started very soon. He further demanded that the DDC members, BDC Chairpersons and the Sarpanches should be given their due share of the funds to carry out	Environment Consultant replied that the mining activities will get started after obtaining the environmental clearance and CER fund will be given to panchayat for developmental activities of the village.	About 2% of the project cost will be used for the developme nt of the social infrastructu re of the area.

		developmental works in their respective jurisdiction. He requested the panel that the CER funds should be directly given to the concerned panchayats.		
3	Shri Karuna Nidhi, Sarpanch, Keralair, Reasi, Jammu and Kashmir	He told the panel that due to ban on mining activity in the area, minor minerals were not available to carry out developmental works as well as construction of houses and whatever minor mineral material is available; the same is sold at exorbitant rates that are out of reach of general public. He demanded that once the mining cluster is opened, the locals should get the minor minerals at concessional rates. He also demanded that all the mining blocks should be opened, particularly the minor mineral blocks at Kund Khanayari, Bharakh, Keralair and Beullian so that the general public can easily obtain the minor minerals at genuine rates for construction of their houses and the developmental works of the panchayats also get started.	Environment consultant replied that the riverbed material will provided to panchayat free of cost and for individual works it will be provided at concessional rates.	--
4	Shri Jaspal Singh,	He told the audience and the panel that it was for the first time that the	Environment consultant told that	--

	Sarpanch, Bharakh, Reasi, Jammu and Kashmir	Public hearing was being organized for opening of minor mineral blocks. He said that they had been waiting since long for opening of mining blocks so that all the stalled developmental works get re-started. He demanded that the mining blocks in his Bharakh panchayat should also be opened and instead of auctioning of the mining blocks in his panchayat, the mining rights should be given to panchayats or social activists. He said that the rates of minor minerals should be fixed in a manner that they are within the affordability range of all and it was not possible to construct houses under PMAY with existing high rates of Sand and Bajri.	public hearing will be conducted for all the projects falling in B1 category and the riverbed material will be provided to the public at concessional rates.	
5	Shri Shamun Bahadur, Resident, Jerri, Reasi, Jammu and Kashmir	He told the panel that three villages in Jerri panchayat are situated along the banks of Chenab river namely Jerri, Jambri and Pandhal and the lands in these villages had already got damaged from the floods in Chenab. He said that the mining should be allowed in Chenab riverbed but before that the lands situated along banks of Chenab river must be protected. He said he	Environment consultant replied that, It is mandatory to do mining for reducing the level of flood in the area. For the water table degradation, the project proponent will install a hand pump in village for	About 2% of the project cost will be used for the developme nt of the social infrastructu re of the area.

		favored the opening of mining activity as the people are facing scarcity of minor minerals since last 1- 1.5 years; however there should be no tendering of the mining blocks as already in many places in the Chenab riverbed, mining has previously been done to the extent of 20 ft. and allowing further mining in the riverbed will render their lands vulnerable to damage from floods In near future.	the drinking purpose with the help of gram panchayat. Responding against the apprehensions projected by Sh. Shamun Bahadur, the Environment Consultant told him and the audience that the mining shall be carried out only in the earmarked area that has been allotted to the project proponent. He informed that the mining shall be restricted to a depth of only 3 m in the riverbed and the mining will be stopped once a depth of 3 m is reached in particular portion of the mining block. He further told that scientific mining to be undertaken by the Project proponent will only lessen the	

			chances of flooding of the adjoining lands. He however assured that the proposal of building a Boulder protection wall along the bank of river from the CER funds to save the adjoining lands from seasonal floods could be deliberated upon. He further assured the public that the mining shall not be carried out along the embankments and the methodology of leaving out the prescribed margins from the embankments shall be strictly adhered to while carrying out the mining in the allotted block.	
6	Shri Dev Raj, Ex Sarpanch, Jerri, Reasi,	He told the panel that lands situated along the Chenab river bank got damaged in 1992 floods, when about 7.5 Lakh cusecs of water was	Environment consultant replied that As per onsite survey the mining	-

	Jammu and Kashmir	released from Salal dam. He informed that after construction of dam, no fresh minor mineral deposition is taking place in the riverbed in their area. He demand that the mining blocks should be opened with adoption of previous practice of allowing lifting of minor minerals by anyone after payment of royalty to the department and he did not favour the tendering process for making the minor minerals available to the locals.	plan has been approved by directorate of Jammu and LOI has been approved by the Gov. of Jammu.	
7	Shri Darshan Lal, Resident, Jerri, Reasi, Jammu and Kashmir	He demanded that the minor minerals should not be excavated from the embankments of the river along which the proprietary lands are situated. He also demanded that measures to prevent intrusion of wild animals into agricultural lands should be put in place at the initiative of District administration.	Environment consultant replied that the mining work will get started only after obtaining the environmental clearance and the suggestion for constructing protection wall has been noted.	About 2% of the project cost will be used for the developme nt of the social infrastructu re of the area.
8	Shri Sunil Kumar Sharma, Panch, Kolsar, Reasi,	He told the panel and the audience that the rates of minor minerals should be fixed before the tendering process. He demanded that for construction of houses under PMAY, Sand & Bajri should either	Environment consultant replied that construction material will be provided at concessional rates to	--

	Jammu and Kashmir	be provided free of cost or at concessional rates	the local people and will be provided free of cost to Gram Panchayat for development purposes.	
9	Shri Gautam Kumar, Sarpanch, Kolsar, Reasi, Jammu and Kashmir	He told the panel and the audience that the public wants the mining to be opened but the mining should not be carried out with mechanical excavating machinery. He demanded that the mining in riverbed should be restricted to a depth of 1 m only. He also demanded the mining rights for the panchayats and said that the same should have been granted before allotting minor mineral blocks to private contractors. He also told the panel that the rates of minor minerals should have been fixed before the allotment of mining blocks to highest bidders and demanded that the locals should get a priority in lifting of minor minerals from the allotted mining blocks.	Environment consultant replied that opencast semi mechanized method will be adopted for mining. He ensured the public that river bed material will be provided at concessional rates to the public and depth of mining will be according to the Jammu and Kashmir rules and orders.	--
10	Shri Ajay Kumar, Resident,	He demanded that the mining blocks in Kund Khanayari and Reyalla village in Jagir panchayat	Environment consultant replied that the suggestion	--

	Pouni, Reasi, Jammu and Kashmir	should also be opened.	has been noted.	
11	Shri Rahul Jamwal, Representative of the project proponent	He told the audience that the excavation of minor minerals shall not be carried out at the banks of river. He further assured that all the commitments made in the Public hearing shall be fully honoured by utilizing funds under CER. He said that the nature of works to be carried out under CER shall be decided by the concerned panchayats. He assured the public that Crate wall shall be constructed, as per the popular demand, to prevent erosion of lands situated along the banks of Chenab river and falling in the project area.	--	--
12	Shri Pawan Kumar Sharma, BDC Chairman, Pouni, Reasi, Jammu and Kashmir	He told the audience that the mining blocks for clearance of which the public hearing was being conducted are in the State land only and no private proprietary land Is involved in the proposed mining blocks. He appreciated the endeavour of the government to elicit the views and opinions of the public before opening of the mining	Environment consultant replied that construction material will be provided at half rates to the local people and will also be provided to Gram Panchayat for development	--

		blocks. He requested the panel that for the widows of concerned panchayat and BPL people as well as those constructing their houses under PMAY, the minor minerals should be provided free of cost. He said that as an elected public representative, he has been given mandate by the public to usher in a phase of development in the panchayats falling in his block. He requested the panel that all genuine issues raised during the public hearing should be duly addressed and demanded that the contractor should undertake the mining activity in a systematic and transparent manner.	purposes.	
13	Smt. Reeta Sharma, DDC Member, Pouni, Reasi, Jammu and Kashmir	She thanked Deputy Commissioner, Reasi for conducting the Public hearing in the far flung Jerri panchayat of Pouni block. She said that as elected representatives, they had been facing questions from the public as to when the mining activity shall be re started and they had been assuring the public that the mining activity shall recommence very soon. She supported the opening of mining	Environment consultant ensured the public that river bed material will be provided at concessional rates to the public for individual construction works.	--

		blocks in the area and demanded that at the same time the problems of the people including the apprehensions of possible damage to the lands falling along the banks of river should be duly addressed. She also demanded that mining block at Kund Khanayari in Pouni panchatyat and also a small Khad called Pouni khad should be opened at the earliest so that the locals in the area can meet their requirement of Sand and Bajri. Lastly, she demanded that for construction of houses under Pradhan Mantri Awaas Yojana (PMAY), the minor minerals should be provided at concessional rates.		
14	Shri Kewal Krishan, DDC Member, Pouni, Reasi, Jammu and Kashmir	He demanded that as an assurance to fulfill the popular demand emerging during the public hearing regarding construction of a protection wall to save the agricultural lands adjoining to river bank from intrusion of wild animals; the concerned contractor should furnish an undertaking on a affidavit to the people that the said demand shall be fulfilled in a time bound manner. He also demanded	Environment consultant replied that the suggestion has been noted and CER fund will be used in construction of protection walls alongside the riverbed and ensured the public that river bed material will be provided at	About 2% of the project cost will be used for the developme nt of the social infrastructu re of the area.

		that rates of minor minerals should be fixed before opening of mining blocks in the area and if the rates of minor minerals in Jammu district are considered reasonable, then the same should be adopted for this area as well. He told the panel that with the existing high prices of Sand & Bajri, people are finding it extremely difficult to construct houses under PMAY having a limited budgetary support of Rs 1.5 lakhs. He demanded that for construction of houses under PMAY, minor minerals should be provided at 1/3" or 1/4 bf the rates and the widows of the area should be provided the same free of cost. He further demanded that the mining blocks in Bharakh panchayat and Kheral khad in Pouni block should also be opened. He told the panel that as elected public representatives, they wanted that all the commitments made during the public hearing by the representative of the contractor regarding provisioning of CER funds in presence of Deputy Commissioner should be duly	concessional rates to the public for individual construction works.	

		honoured by the contractor.		
15	Shri Hemraj Sharma, Resident, Jerri, Reasi, Jammu and Kashmir	He told the panel that the locals of the area wherein the proposed mining blocks fall, have natural rights over the minor minerals and as such there should be a written assurance that most of the people to be engaged in the project activity, whether labourers or tipper and JCB service providers, shall mostly be locals of Jerri, Pandhal and Jambri villages only, as these villages will be most affected from the mining in the area.	Environment Consultant replied that priority in giving employment will be given to local villagers.	--

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)

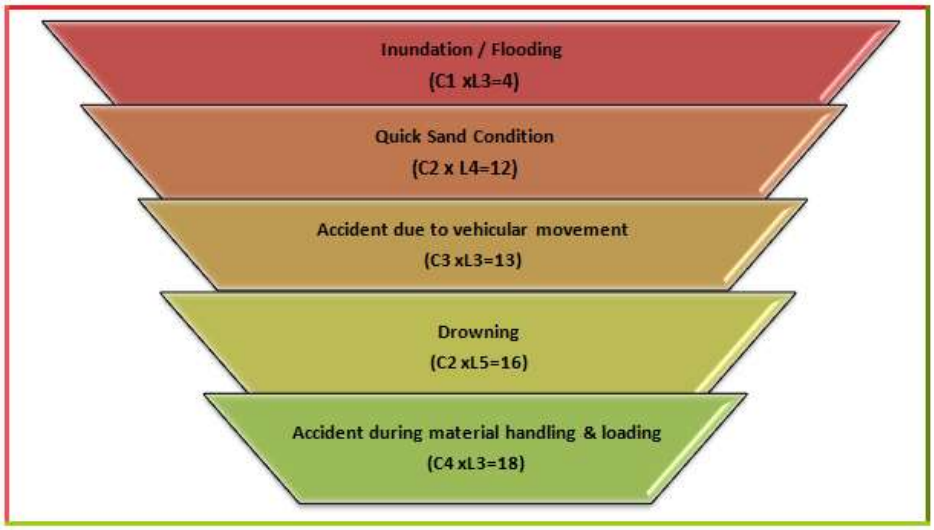
Table 7.4, Qualitative Risk Assessment

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.
3. **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.

4. **Landslide** : Factors that influence landslides are of two types:

- **Conditioning :**

  Conditioning factors usually have to do with the terrain — such as the soil, geology, land use, drainage and groundwater.

- **Triggering factors:**

  Triggering factors are direct causes that influence landslides: Rainfall, earthquakes and man-made activities fall under this type

  Man-made activities include water leakage from utilities, excavation of slope or its tow, loading of slope or its crest, the drawdown of reservoirs, irrigation, mining, artificial vibration and deforestation.

  Generally mechanized method of mining including drilling and blasting will create a vibrations which may triggered landslide activity.

Management

- Afforestation: Afforestation programmes should be taken up immediately in the hills, as trees has the capacity to attach soil firmly together, reducing chances of landslides in these regions.

- Geometric methods: The geometry of the hillside is changed (in general the slope).
- Proper drainage facilities in these regions is another way to reduce the chances of landslides.

- Chemical and mechanical methods: Attempts are made to increase the sheer strength of the unstable mass or to introduce active external forces (anchors, rock or ground nailing) or passive (structural wells, piles or reinforced ground) to counteract destabilising forces.

- Establishment of local monitoring and emergency response systems

- Education and awareness about the impact of landslides: Each of these methods vary somewhat with the type of material that makes up the slope.

- As the project activity is carried out in dry part of the river bed, none of the project activities affect the water environment or riparian habitats or fragile ecology of water. To reduce the landslide we have applied the mining activity in the dry part of the with leaving the safety margin from the bank in case of meandering of the river the mining activity will be done on the of the convex side of meandering river.
- To reduce the vibrations we have applied the manual method of mining without heavy machinery and drilling and blasting. we also use low capacity (5 tonn) trucks & trippers for transportation of minerals from proposed roadside.
- We have proposed gabions and retaining wall to reduce the erosion from the slopy bank we have proposed.

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 EIA

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 34 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 Ans 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 the Cluster Situations 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 Ans 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 Ans 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.	**6.0**
2	Provide free health checkups & medicines to the nearby villagers of the project site.	**6.0**
3	Assistance to set up a temporary health center during the lease tenure.	**3.0**
	Total	**15.0**

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 Routine checkup	7,00,000
Medical aid as per ESI Scheme	20,00,000
Training	7,00,000
Total	**34,00,000**

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 as per OM dated 1st May 2018. The following has been proposed considering the needs & demand of the people. **Rs. 9.68 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 8.3: Project & CER Cost for cluster of mines

S.no	Block No	Total Cost	CER Cost
1	**Block No. 18**	(8. Bidding cost 102.52 Lakhs (9. EC Processing Cost 0.40 Lakh (10. PH fees 3.5 Lakhs (11. Consent Fees 0.40 (12. Consultancy fee 4 Lakhs (13. Labor and Machinery Cost 94.50 Lakhs (14. Infrastructure (Rooms, shelter etc.) 5 Lakhs **Total : 210.32 Lakhs**	Rs. 4.20 Lakhs
		EMP Cost (3. EMP capital cost 11.50 lakhs (4. EMP recurring cost 29.0 lakhs **Total: 40.50 Lakhs**	
Total Project Cost - 250.82			
2	**Block No. 19**	(8. Bidding cost 36.00 Lakhs (9. EC Processing 0.40 Lakh (10. PH fees 3.5 Lakhs (11. Consent Fees 0.40 (12. Consultancy fee 4 Lakhs (13. Labor and Machinery Cost 67.50 Lakhs (14. Infrastructure (Rooms, shelter etc.) Cost 5 Lakhs **Total : 116.80 Lakhs**	Rs. 2.34 Lakhs

		EMP Cost (3. EMP capital cost 11.50 lakhs (4. EMP recurring cost 29.0 lakhs **Total: 40.50 Lakhs**	
		Total Project Cost - 157.30	
3	**Block No. 20**	(8. Bidding Cost 88.72 Lakhs (9. EC Processing 0.40 Lakh (10. PH fees 3.5 Lakhs (11. Consent Fees 0.40 (12. Consultancy fee 4 Lakhs (13. Labor and Machinery Cost 55.00 Lakhs (14. Infrastructure (Rooms, shelter etc.) cost 5 Lakhs **Total : 157.02 Lakhs**	Rs. 3.14 Lakhs
		EMP Cost (3. EMP capital cost 11.50 lakhs (4. EMP recurring cost 29.0 lakhs **Total: 40.50 Lakhs**	
		Total Project Cost - 197.52	
Total		**Rs. 605.64 Lakhs**	**Rs 9.68 Lakhs**

Table 8.3 (a): CER Cost for Block No. (18)

S. No	Activities	fund in lakhs/ year (Capital Cost in lakh)
1	Health awareness and medical camps for local community in nearby village and panchyat.	1.07
2	Installation of hand pump (1) in nearby village and panchayat.. *50,000/ hand pump	2.65
3	Distribution of Sanitizer, gloves and Mask to the nearby village and panchayat.	0.55
TOTAL		4.20 Lakhs

Table 8.3 (b): Block No. (19)

S. No	Activities	fund in lakhs/ year (Capital Cost in lakh)

1	Health awareness and medical camps for local community in nearby village and panchyat.	1.50
2	Distribution of Sanitizer, gloves and Mask to the nearby village and panchayat.	0.84
TOTAL		2.34 Lakhs

Table 8.3 (c), Block No. (20)

S. No	**Activities**	**fund in lakhs/ year (Capital Cost in lakh)**
1	Health awareness and medical camps for local community in nearby village and panchayat.	1.08
2	Drinking water facility in nearby village.	1.78
3	Distribution of Sanitizer, gloves and Mask to the nearby village and panchayat.	0.28
TOTAL		**3.14 Lakhs**

Table 8.4: Budget for Surveillance Cluster situation (Block 18 , 19 & 20)

S no.	**Particulars Particulars**	**Block No. (18)**		**Block No. (19)**		**Block No. (20)**	
		Capital Cost (In Lakhs)	**Recurring Cost (In Lakhs)**	**Capital Cost (In Lakhs)**	**Recurring Cost (In Lakhs)**	**Capital Cost (In Lakhs)**	**Recurring Cost (In Lakhs)**
1	**Transport Permit**	2.0	-	2.0	-	2.0	-
2	**CCTV Camera**	1.0	0.10	1.0	0.10	1.0	0.10
3	**Weight Bridge**	10.00	1.00	10.00	1.00	10.00	1.00
4	**Personal Computer with power backup**	0.50	0.05	0.50	0.05	0.50	0.05
4	**Mobile Application Barcode scanner**	0.50	0.05	0.50	0.05	0.50	0.05

6	**Radio Frequency Identification Tag(RFID) and GPS**	1.00	0.10	1.00	0.10	1.00	0.10
7	**Annual Audit of lease**	-	0.70	-	0.70	-	0.70
8	**Security Guard**	-	0.80	-	0.80	-	0.80
Total		**15.00**	**2.80**	**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:

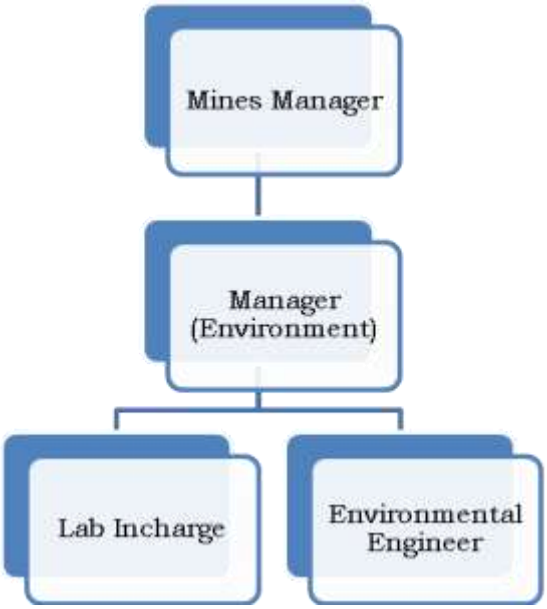

Figure 9.1 Environment Management Cell

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 0.5 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. 180 trees will be planted around haul road during the plan period.
- The trees proposed for plantation are:

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, 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. 18

Sl. No	Description	Capital Cost (lakh) 1st year	Recurring Cost (lakh) 2nd year	Recurring Cost (lakh) 3rd year
1	Pollution Control & Dust Suppression	2.0	2.0	2.0
2	Pollution Monitoring	1.00	2.00	2.00
3	Environment Awareness Programme	0.50	0.50	0.50
3	Green Belt Development	4.00	3.00	3.00

4	Haul road Maintenance Cost	3.00	2.00	2.00
5	Occupational Health and Safety of mine workers	1.00	5.00	5.00
TOTAL		**11.50**	**14.50**	**14.50**

Table 9.1 (b), Budget of EMP Budget for Block No. 19

Sl. No	**Description**	**Capital Cost (lakh) 1st year**	**Recurring Cost (lakh) 2nd year**	**Recurring Cost (lakh) 3rd year**
1	Pollution Control & Dust Suppression	2.0	2.0	2.0
2	Pollution Monitoring	1.00	2.00	2.00
3	Environment Awareness Programme	0.50	0.50	0.50
3	Green Belt Development	4.00	3.00	3.00
4	Haul road Maintenance Cost	3.00	2.00	2.00
5	Occupational Health and Safety of mine workers	1.00	5.00	5.00
TOTAL		**11.50**	**14.50**	**14.50**

Table 9.1 (c), Budget of EMP for Block No.20

Sl. No	**Description**	**Capital Cost (lakh) 1st year**	**Recurring Cost (lakh) 2nd year**	**Recurring Cost (lakh) 3rd year**
1	Pollution Control & Dust Suppression	2.0	2.0	2.0

2	Pollution Monitoring	1.00	2.00	2.00
3	Environment Awareness Programme	0.50	0.50	0.50
3	Green Belt Development	4.00	3.00	3.00
4	Haul road Maintenance Cost	3.00	2.00	2.00
5	Occupational Health and Safety of mine workers	1.00	5.00	5.00
TOTAL		**11.50**	**14.50**	**14.50**

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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

Identification of Project

1 Block No. 18,

Mr.Karanvir Singh

S/o Sh. Surinder Singh

R/O Lane No-03, Shaheed Udham Singh Nagar, Pathankot, Punjab-145001

The above Block have an area of 7.26 ha, ToR was issued by JKEIAA vide letter no. JKEIAA/2020/292/1190-93 Dated 05.11.2020..

2 Block No. 19,

Mr Kishori Lal

S/O Shri Kuldeep Singh

R/O Makhwal Kathua.

The above Block have an area of 5.43 ha, ToR was issued by JKEIAA vide letter no. JKEIAA/2020/214/646-649 Dated 17.08.2020.

3 Block No. (20),

Mr Kapil Aggarwal

S/O Shri Jugesh Aggarwal

R/O House No 179 Near Panjpir Mandir Mohalla Anandpur, Pathankot,Punjab.

The above Block have an area of 5.76 ha, ToR was issued by JKEIAA vide letter no. JKEIAA/2020/214/646-649 Dated 17.08.2020.

10.3 BRIEF DESCRIPTION OF PROJECT

The proposed project is open cast semi-mechanized mining/OTFM of sand (mineral mineral) with a proposed production of 3,32,100 MTPA in cluster of mines.

Plot Wise Area & Production Details are given below:

S no	Block on Ans River	Area (Ha)	Location	Production	Consent Letter
1	Block 18	7.26	Village- Dhamni Plan 3rd, Tehsil-Mahore, District Reasi, State- Jammu & Kashmir.	1,30,680 MTPA	Mr.Karanvir Singh 506/MCC/EAR/20/541-47 Dated: 03-06-2020.
2	Block 19	5.43	Village- Sungri, Tehsil Mahore, District- Reasi, State- Jammu & Kashmir.	97,740 MTPA	Mr Kishori Lal 507/MCC/DGM/EAR/19/20 /2854-60 dated: 27/03/2020
3	Block 20	5.76	Village-Sungri, Tehsil Mahore, District- Reasi, State- Jammu & Kashmir.	1,03,680 MTPA	Mr Kapil Aggarwal 508/MCC/DGM/EAR/20/20 /3022-28 dated: 27/03/2020
Cluster Area		18.45		**3,32,100MTPA**	

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

Table: 10.1 Mine lease Co-ordinates

	S.N	Block No	Latitude/ Longitude
Coordinates	1	**Block No. 18**	A 33° 20'49.76"N 74° 49'2.86"E B 33° 20’ 49.62”N 74° 49’5. 84”E C 33° 20’ 48.11”N 74° 49’8. 94”E D 33° 20’ 46.01”N 74° 49’10.31”E E 33° 20’ 41.78”N 74° 49’10.87”E F 33° 20’ 37.66”N 74° 49’10. 94”E G 33° 20’ 35.09”N 74° 49’11.67”E

Karanvir Singh Kishori Lal Kapil Aggarwal

			H 33° 20’ 34.13”N 74° 49’13.20”E I 33° 20’ 32.52”N 74° 49’11.67”E J 33° 20’ 34.58”N 74° 49’2. 22”E K 33° 20’ 38.85”N 74° 49’8. 79”E L 33° 20’ 42.00”N 74° 49’8. 21”E M 33° 20’ 44.14”N 74° 49’6. 88”E N 33° 20’ 46.62”N 74°49’4. 50”E O 33° 20’ 46.54”N 74°49’2. 13”E P 33° 20’ 45.23”N 74°49’59. 77”E Q 33° 20’ 42.64”N 74°49’58. 80”E R 33° 20’ 36.76”N 74°49’0. 40”E S 33° 20’ 34.72”N 74°49’58. 89”E T 33° 20’ 35.69”N 74°49’57. 24”E U 33° 20’ 39.06”N 74°49’57. 45”E V 33° 20’ 43.04”N 74°49’56. 97”E W 33° 20’ 46.51”N 74°49’58. 39”E X 33° 20’ 48.80”N 74°49’0. 19”E
	2	**Block No. 19**	A 33°20'44.86"N 74°48'44.12"E B 33°20'47.83"N 74°48'42.79"E C 33°20'50.38"N 74°48'41.22"E D 33°20'51.55"N 74°48'25.46"E E 33°20'53.67"N 74°48'15.34"E F 33°20'51.78"N 74°48'14.76"E G 33°20'48.09"N 74°48'38.33"E H 33°20'46.55"N 74°48'41.60"E I 33°20'43.37"N 74°48'42.60"E J 33°20'38.00"N 74°48'41.43"E K 33°20'33.89"N 74°48'41.95"E L 33°20'34.52"N 74°48'43.02"E
	3	**Block No. 20**	A 33° 21'6.13"N 74°47'40.59"E B 33° 21'8.89"N 74°47'41.78"E C 33° 21'10.27"N 74°47'43.77"E D 33° 21'10.23"N 74°47'46.10"E E 33° 21'9.30"N 74°47'40.59"E F 33° 21'5.15"N 74°47'57.02"E G 33° 20'59.93"N 74°48'1.57"E H 33° 20'56.19"N 74°48'8.14"E I 33° 20'54.75"N 74°48'7.32"E J 33° 20'58.38"N 74°48'1.20"E

				K 33° 21'3.06"N 74°47'56.77"E L 33° 21'7.01"N 74°47'51.92"E M 33° 21'8.85"N 74°47'48.07"E N 33° 21'8.98"N 74°47'48.07"E O 33° 21'7.99"N 74°47'43.73"E P 33° 21'5.30"N 74°47'42.95"E Q 33° 21'1.90"N 74°47'43.69"E S 33° 20'58.27"N 74°47'45.28"E T 33° 20'55.86"N 74°47'44.96"E U 33° 20'56.36"N 74°47'43.24"E V 33° 20'58.26"N 74°47'43.46"E
Nearest Railway Station	Shri Mata Vaishno Devi Katra Station -About 45.05 km in SE from the lease area.			
Nearest Airport	Jammu Airport about 94.1 km in SE from the lease area.			
Nearest Highway	Budhal-Ramban Rd at near from the lease area. NH-1A at a distance of 34.39 Km from the lease area.			
State, National boundaries.	There is no Interstate boundary within the study area.			

The details of environmental setting are given in **Table-10.2**.

Sl. No.	Particulars	Details		
1	Elevation	**S.N**	**Block No**	**Elevation**
		1	**Block No. 18**	858 MSL to 854 MSL
		2	**Block No. 19**	880 MSL to .857 MSL
		3	**Block No. 20**	893 MSL to 857 MSL
2	Ecological Sensitive Areas (National Park, Wildlife Sanctuaries)	None		
3	Nearest water body	The above cluster of mine site lies on the downstream River Bed of Ans.		
4	Seismic Zone	The lease area falls under Seismic Zone-IV (Very Severe Intensity Zone), which indicates high possibility of Earthquake		

10.4 PROJECT DESCRIPTION

10.4.1 Mineral Reserves and production

Slices of height 1.5m & width 6.0 m has been drawn in geological sections to calculate the mineable reserves. The area of each bench level has been calculated & multiplied by strike influence to get the volume. Volume is multiplied by bulk density (2.0) to get tonnes.

Table-10.3:- Summary of Reserves Block No. 18

S. No	Category	Reserves
1	Total Geological Reserve	490050 MT
2	Proposed Production	1,30,680 TPA
3	Ultimate depth of Mining	1 m

Table-10.4:- Summary of Reserves Block No. 19

S.No	Category	Reserves
1	Total Geological Reserve	407250 MT
2	Proposed Production	97,740 TPA
3	Ultimate depth of Mining	1 m

Table-10.5- Summary of Reserves Block No. 20

S.No	Category	Reserves
1	Total Geological Reserve	388800 MT
2	Proposed Production	1,03,680 TPA
3	Ultimate depth of Mining	1 m

Table-10.6:- Summary of Reserves Cluster of Mines

Block No	Total Geological Reserve (MT)	Proposed Production(TPA)
Block No. 18	490050	1,30,680
Block No. 19	407250	97,740
Block No. 20	388800	1,03,680
Total	1286100	**3,32,100**

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:

10.4.3 Method 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. Mining activity will be carried out by open cast Semi-mechanized method.
2. Lightweight excavators will be used for digging & loading of mineral in Tippers.
3. No OB/ waste material will be produced.
4. No drilling/ blasting are required as the material is loose in nature.
5. Proper benching of 2.5 m height with sub benching 1.25 will be maintained.
6. Roads will be properly made and sprayed by water for suppression of dust.
7. Extraction activities will start in the blocks from the upstream side to downstream side. This will not obstruct the movement of water, if any, during monsoon period in the river course.

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 Oct 2020 to Dec 2020 representing post monsoon season. It was observed that the during study period, temperature ranged from 30 ^{0}C to 3^{0}C.

10.7.3 Ambient Air Quality

The Ambient Air Quality Monitoring reveals that of monitoring stations with minimum Concentrations of PM10 were 33.7µg/m^3 and maximum 51.94µg/m^3.The result of $PM_{2.5}$ reveals that the minimum concentration of 14.55µg/m^3 while maximum concentration of 22.21µg/m^3.

The gaseous pollutants SO_2 and NOx were within the prescribed CPCB limit of 80µg/m^3.For residential and rural areas at all stations. The minimum & maximum concentrations of SO2 were found to be 4.14µg/m^3 & 8.08µg/m^3 respectively. The minimum & maximum concentrations of NOx were found to be 6.6µg/m^3 at AQ7 & 14.14µg/m^3.

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 7.41 to 7.72. 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 275 mg/l to 339 mg/l. The TDS of the samples were within the desirable limit & the permissible limit of 500mg/l & 2000 mg/l respectively.

10.7.5 Noise Quality

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 41.65 dB (A) & 51.16 dB (A) respectively. The minimum & maximum noise levels at night time were found to be 35.34 dB (A) & 46.06 dB (A) respectively.

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 Ans 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.

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/OTFM 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 10.7: **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.

10.12 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 as per OM dated 1st May 2018. The following has been proposed considering the needs & demand of the people. **Rs. 9.68 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.

****

CONSULTANT

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 ***Certificate No.*** ***Valid till***

Dated: February 3, 2020 ***NABET/EIA/1922/IA0053*** ***Dec 10, 2022***

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

Consultant Contact Details:

P and M Solution

Address –C-88, Sector 65 Noida

Mobile no. - +91-9555548342, 8826287364

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	Dr. R K Tiwary	FAE	RH
7	Neha Singh	FAE	NV, AP
7	Rahul Kumar	FAE	AQ
8	Abhay Nath Mishra	FAE	SE
9	Hussain Ziauddin	FAE	WP
10	Poonam Kumari Mangalam	FAE	LU

****

12.1 Introduction

The transportation of river bed material has been carried out using the three roads which will be called as/made up of kacha road (Unmetalled Road) from which one haul road is 0.29 Km (Block 20) (Kacha Road- Unmetalled Road) connected to NH 1A (Pakka Road- Metalled Road) width of 3.73m and one another haul road is 0.36 Km (Block 19) (Kacha Road- Unmetalled Road) connected towards NH 1A (Pakka Road- Metalled Road) width of 3.73 m. one another haul road is 0.13 Km (Block 18) (Kacha Road- Unmetalled Road) connected towards NH 1A (Pakka Road- Metalled Road) width of 3.73 m It is to be ensure that during the mining operations and after mining proper maintenance of the road will done and water sprinkling will also done on regular basis to overcome the dust suppression.

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 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
Near village Intersection	200	1600	0.12	A
NH 1A	2400	7000	0.34	B

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 : 3,32,100 TPA (Cluster of Mines)

No. of working days : 270 days

Proposed Capacity of mine/day : 3,32,100/270 = 1230 TPD

Truck/Tractor Capacity : 5 tonnes

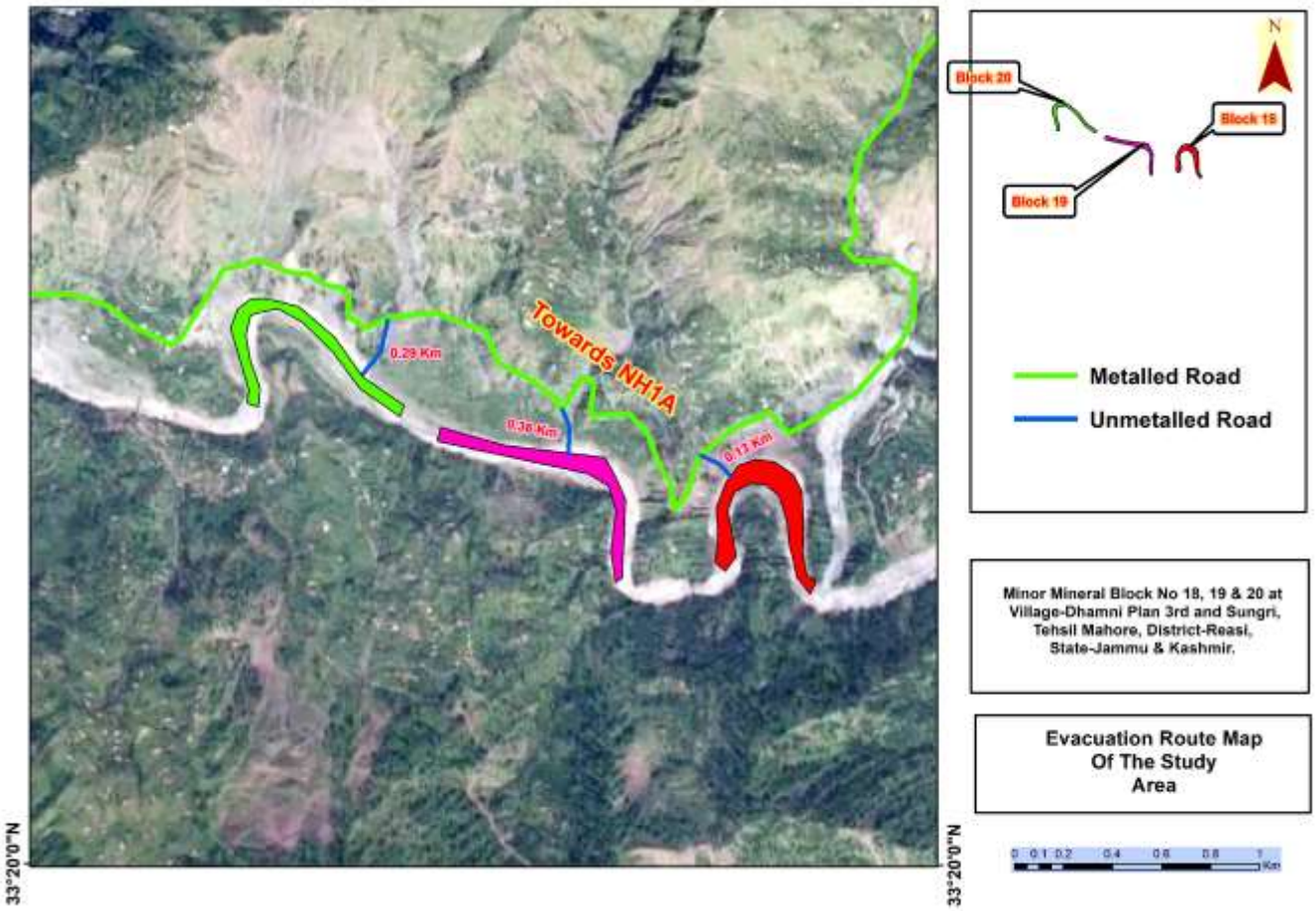
No. of trucks/tractor deployed/day : 246 per day

Table 4.2 (ii): Modified Traffic Scenario & LOS

Road	V	C	Modified V/C Ratio	LOS
Near village Intersection	200+ 246 = 446	1600	0.27	B
NH 1A	2400+ 246 =2646	7000	0.37	B

Results

From the above analysis it can be seen that the LOS remains same at Highway intersection that is 'B' (Excellent') respectively, as per classification, whereas the LOS for near village intersection will be changed from "B" (Very Good') to "B" (Very Good') . Hence, there will not so much adverse affect on the proposed evacuation roads due to additional traffic. But due mining in the area there is heavy load in the study area hence it has been proposed to use to alternative transportation path. Traffic management has been proposed as given below:



Evacuation map

Mitigation measures

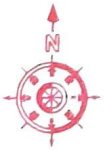
1. Roads will be repaired regularly and maintained in good conditions.
2. To ensure safety within the mining area, the speed of the vehicles will be restricted to 10 Kmph.
3. While loading and unloading there dust generation takes place, this will be controlled by water sprinkling.
4. Adequate turning radius for the loaded vehicles to turn safely must be ensured (1.5 of times the maximum length of the vehicle).
5. All precautionary measures are ensured for the safety of construction labourers while working at the site.
6. Road marking, STOP lines, parking lanes, slot numbers etc., must be clearly painted so as to guide the drivers.

7. Speed breakers will be constructed near accident prone areas to calm the traffic and its speed.
8. Signage will be erected at the sensitive & precarious places to caution or provide information to road users.
9. Surveillance facilities will also installed on the road side, Budget for the Surveillance has been given below:

S no.	Particulars	Capital Cost (In Lakhs)	Recurring Cost (In Lakhs)
1.	Transport Permit	2.0	-
2.	CCTV Camera	1.0	0.10
3.	Weight Bridge	10.00	1.00
4.	Personal Computer with power backup	0.50	0.05
5.	Mobile Application Barcode scanner	0.50	0.05
6.	Radio Frequency Identification Tag(RFID) and GPS	1.00	0.10
7.	Annual Audit of lease	-	0.70
8.	Security Guard	-	0.80
Total		**15.00**	**2.80**

Budget for Haul road construction and Maintenance (Block 18)	**Capital Cost** 11.50 Lakhs	**Recurring Cost** 14.50 Lakhs
Budget for Haul road construction and Maintenance (Block 19)	**Capital Cost** 11.50 Lakhs	**Recurring Cost** 14.50 Lakhs
Budget for Haul road construction and Maintenance (Block 20)	**Capital Cost** 11.50 Lakhs	**Recurring Cost** 14.50 Lakhs
Elevation / Slope of Road (Block 18)	Min 829 m	Max 927 m
Elevation / Slope of Road (Block 19)	Min 874m	Max. 943 m
Elevation / Slope of Road (Block 20)	Min. 870 m.	Max. 947 m.

Annexure 1-Irrigation NOC/MAP



LEGEND:-

S.NO.	PARTICULARS	SYMBOLS
1.	*SITE PLAN BOUNDARY*	
2.	*CORE ZONE*	

BLOCK NO. 18

GOOGLE MAP FOR MINOR MINERAL BLOCK IN ANS RIVER, DOWNSTREAM SUNGRI BRIDGE, AT VILLAGE DHAMNIDISTT. REASI (PLAN-III) AREA = 7.26 HECTARES

SHEET TITLE:-	***CORE ZONE (RADIAL) 1.0 KM***
SCALE	***1:8000***

As per field verification, No Irrigation canal/Khul of above points falling within periphery of 200m of the mining blocks.
Hence, this Department has no objection if EC is granted by JKEIAA in favour of Block No. (18)

Javed Ahmed
Sarpanch Pyt. Channa-B
Block Chassana

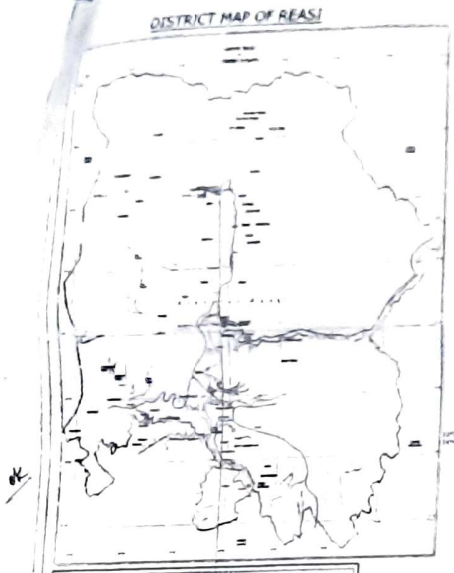
Panchayat
Gari

PLAN SHOWING MINOR MINERAL BLOCK IN 'AN' RIVER DOWN STREAM SUNGRI BRIDGE AT VILLAGE DHAMNI, PLAN-III, DISTT. REASI

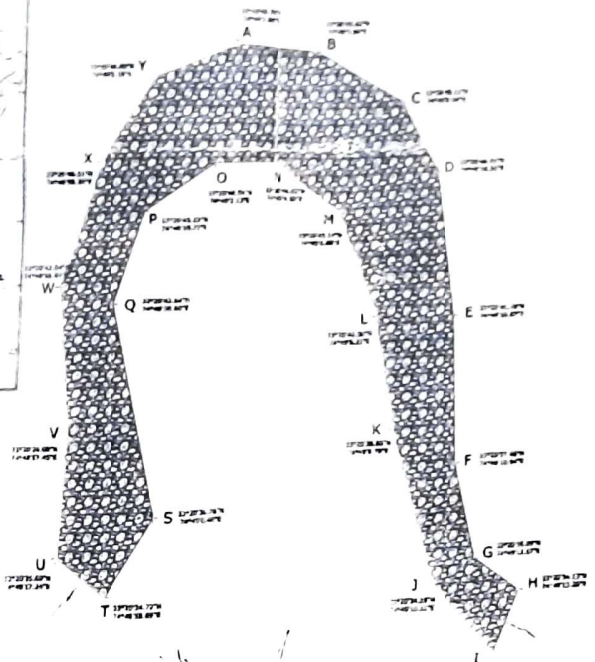
DISTRICT MAP OF REASI

AREA = 7.26 Hectare

SCALE - 1:3000



KEY PLAN
SCALE - N.T.S



INDEX -

STATION FROM	TO	BEARING	DISTANCE
R	A	145°	184 m
A	B	93°	77 m
B	C	120°	92 m
C	D	151°	73 m
D	E	173°	131 m
E	F	179°	128 m
F	G	167°	84 m
G	H	126°	50 m
H	I	204°	56 m
I	J	318°	84 m
J	K	344°	137 m
K	L	351°	99 m
L	M	340°	100 m
M	N	20°	6 m
N	O	289°	61 m
O	P	237°	74 m
P	Q	197°	83 m
Q	S	167°	185 m
S	T	212°	75 m
T	U	307°	54 m
U	V	03°	105 m
V	W	354°	123 m
W	X	18°	112 m
X	Y	32°	85 m
Y	A	69°	79 m

REFERENCE POINT - ®
JUNCTION OF ROAD ON LEFT BANK OF ANS RIVER (TAKE OFF POINT DHAMNI)

LEGEND:-

1.	PLAN AREA	
2.	BOULDER, SAND ETC.	
3.	ROAD/ EXIT POINT	
4.	BRIDGE	
5.	TRIBUTARY	
6.	HABITATION	
7.	RIVER FLOW	

Surinder Dar
(GEOLOGICAL ASSISTANT)

(DY. DIRECTOR)

DEPARTMENT OF GEOLOGY & MINING,
J & K GOVT.

P.T.O

Annexure 2-Geology & Mining Department Report

Office of the Joint Director, Geology & Mining Department, Jammu

Note on Geological features of the area in respect of the E-Auctioned Minor Mineral Blocks No's 18, 19 & 20 of District Reasi

Land Use Pattern: The area under reference falls in Chassana Block. The detail is cited below (SOURCE: Agriculture Department) as per DSR, Reasi of 2018.

Total Geographical area(Ha)	Gross Cropped Area(Ha)	Net sown area(Ha)	Area under Forest(Ha)	Area under wasteland(Ha)	Area under other uses(Ha)
34538	6153.6	3578.6	25330	590	15896

On regional geological scale the area constitutes the South Western flank of the Pir Panjal Range which forms the part of Lesser Himalaya. The area is delimited by the crest of the Pir Panjal Range towards northwest and by the Murree Thrust towards southwest. It has mountainous and rugged topography, comprising high ranges, deep valleys, flat or gently sloping meadows, steep slopes, escarpments and cliff faces and shows a great variation in elevation.

The hills around the blocks are characterized by the presence of thinly forested negative & undefined slopes with an altitude ranging from 900 m to 2000 m. Lithologically, the area comprise of fragile unclassified agglomeratic slates conglomerates, conglomeratic quartzite, pebbly and gritty slates, gritty quartzite, ash beds and tuffs etc with bands of quartzite and slates. The Ans River, in the tract around the Minor Mineral Blocks flows in its middle course characteristically forming repeated meanders. The analysis made shows that the width of river in the stretch under observation varies from 50 m to 105m with an average gradient of about 5%. The angle of slopes located on the left bank of the river course is comparatively steeper than that of right bank.

Scanned with CamScanner

Landslide occurrences

As per inventory of the department available no incidence of landslide activity has yet been reported form the area enclosing the blocks. The local inquiry of the site specific conducted also reveal that no evidence of landslide/ subsidence has ever been reported in the area. However, some induced cases of landslide due to blasting might have been recorded while executing the construction of PMGSY roads in the vicinity of the region.

The visual analysis of lithological characters located on the northern bank of the river comprises steep slopes of fragile ash beds, shales & slates which are generally vulnerable to mass movement and the right bank hill slope are comparatively less steeper.

Since the slopes are forested thus no immediate threat to its stability is apprehended. The activity as proposed in the mining plans within the guided principles of mining shall not induce the landslide activity.

Existing Minerals & Mining History

Amongst major minerals the surrounding areas are reported to have occurrences of limestone and gypsum deposits but no exploitation of the identified resources have been made yet but detail exploration and techno economic feasibility studies are necessitated to utilize the mineral potential. No mining operations in the area are underway. However, there is huge potential of unutilized minor mineral resource in the river stretches & hill quarrying material such as quartzite, slates and conglomeratic material which finds use in the construction industry. But presently, no block exists in the area which can legally cater the raw material needs of the construction material required for developmental projects of national and local importance.

01/07/2021

H. L. Langeh
Joint Director (J)

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Annexure 3-Title Verification

Government of Jammu & Kashmir
OFFICE OF THE DEPUTY COMMISSIONER REASI
Mini Secretariat District Administrative Complex, Reasi-182311 (J&K) India
Phone No:- 01991-245587 Fax No:- 01991-245586 E-Mail:-dcreasi@gmail.com

Directorate of Mining Department Jammu/Srinagar
3892
Receipt No.....
Dated 24-11-2021
Encls 37

Director Geology & Mining,
Jammu.

Dated:-23-11-2021

No:-DC/Rsi/21-22/NSQ/2387-88

Sub:- Grant of Environmental Clearance for Minor Mineral Block No. 2,4,6,10,12,15,16,17,18,19,20,26,29 & 31 in District Reasi.

Sir,

In reference to your office letter No. 447/MCC/DGM/EAR/19/9054-56 dated 12-11-2021 kindly find enclosed herewith the field verification report furnished by Executive Engineer, Mahore Irrigation Division Dharmari on colour Google Map and title verification reports furnished by concerned Tehsildars alongwith the compiled report in respect of minor mineral block no. 2,4,6,10,12,15,16,17,18,19,20,26,29 & 31 in District Reasi for your kind perusal.

Yours faithfully

23/11/21

Abdul Star (JKAS)
Additional Deputy Commissioner
Reasi

Encl:- 37 Leaves

Copy to:-
1. District Mineral officer Reasi for information & n/a.

Government of Jammu & Kashmir
OFFICE OF THE TEHSILDAR EXECUTIVE MAGISTRATE 1ST CLASS CHASSANA

Email: -tehsildarchassana20@gmail.com

To,

The Deputy commissioner,
Reasi.

No: 620/TC Date 22/11/2021

Sub: Field verification report of irrigation dept and title verification report in respect of Minor Mineral block no.18,19 and 20 in Tehsil chassana

Sir,

With reference to the subject cited above in this regard title verification report pertaining to Tehsil chassana of block 18,19 and 20 has been submitted to your goodself

Thanking you
Yours faithfully

TEHSILDAR
Chassana
22/11/2021

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جناب عالی

گزارش حضور ہے کہ حسب الحکم جناب والا آرڈر چیف منسٹر صاحب ڈپٹی کمشنر صاحب بہادر شکارپور بمطابق لیٹر نمبر DC/RS/21-22/MSC/2347-52 مورخہ 20-11-2021 کے تحت سائٹ کی چیکنگ و معائنہ کیا گیا۔ Minor Mineral بلاک نمبر 18، 19 اور 20 کا معائنہ کیا گیا۔ بلاک نمبر 18 ... [illegible]

... بلاک نمبر 19، 20 ... [illegible]

... [illegible]

لہٰذا رپورٹ برائے مہربانی آپ کے حضور پیش ہے۔

گزارش حضور

22/11/2021

CTI Shikarpur

No:- 345/NTCS

Dated: 22-11-2021

... [illegible]

... [illegible]

لہٰذا رپورٹ ... جناب ڈپٹی کمشنر صاحب بہادر ...

گزارش ہے

TEHSILDAR

Shikarpur

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Annexure 4- Extension of LOI

Government of Jammu and Kashmir(UT)
Department of Geology and Mining, Jammu.

Mr. Karanvir Singh
S/o Sh. Surinder Singh
R/o Shaheed Udham Singh Nagar
Pathankot (PB)

No.506/MCC/DGM/EAR/20/ 382-87 Dated: -28.12.2021

Subject:- Extension of Letter of Intent(LoI)

The Letter of Intent (LoI) i.r.o Minor Mineral Block No. 18 over an area of 7.26 hectares in Ans River Downstream, Sungri Bridge at Village Dhamni Plan 3rd District, Reasi was issued vide this office No. 506/MCC/DGM/EAR/20/541-47 dated 03.06.2020 for obtaining and submission of Approved Mining Plan & Environmental Clearance besides, deposition of remaining 50 % Bid amount and Consent to Operate within a period of 06 months read with S.O. 137 dated 16.04.2021 whereunder, the words "Six Months" have been substituted with the words "One Year". Despite extension of LoI thrice by the Administrative Department, Mining (latest vide Government Order No. 26-MNG of 2020 dated 31.08.2021 whereby LoI has been extended upto 30.11.2021), to facilitate you to fulfill requirements for grant of Mining Lease, the requisite formalities are still pending on your part. Keeping in view the progress of the said case (being in advanced stages) and in reference to Department of Mining Notification S.O No.436 dated 24.12.2021, the validity of Letter of Intent (issued vide this office No. 506/MCC/ DGM/ EAR/ 20/ 541-47 dated 03.06.2020) is further extended upto 31.03.2022.

As such, you are advised to submit the requisite documents as per Letter of Intent issued vide this office letter No. 506/MCC/DGM/EAR/20/541-47dated 03.06.2020viz-a-vizApproved Mining Plan, Environmental Clearance, Consent to Operate etc. from the Competent Authority within the validity period of Letter of Intent i.eupto 31.03.2022.

In case of failure on your part to submit the aforesaid requisite documents within prescribed time period i.e. upto 31.03.2022 for grant of Mining Lease, the entire Bid amount so deposited shall be forfeited and Block shall be treated as cancelled.

28.12.2021

Director
Geology and Mining
J&K(UT) Govt; Jammu.

28/12/21

Copy to :-

1. The Principal/Secretary to Govt; (Mining Department) Civil Secretariat, Jammu for kind information.
2. The Deputy Commissioner, Reasi for information.
3. The Joint Director (J) Geology and Mining Deptt; Jammu for information and necessary action.
4. The Officer I/C Web Site, Geology and Mining Department, Jammu for information and necessary action.
5. The District Mineral Officer, Geology and Mining Deptt; Reasi for information and necessary action.