CHANGE OF CONSULTANT

This is to inform that I have changed my consultant from M/s Oceao Enviro Management Solutions (India) Private Limited. NABET Accreditation No. NABET/EIA/1821/IA0033 Address 217, Ist Floor, Judge Colony, Sector-12, Vasundhara, Ghaziabad- 201012to M/s Atmos Sustainable Solutions Private Limited. Accreditation No. NABET/EIA/2023/IA0063 Address A-73, III rd Floor, Sector-65, Noida- 201301 as I was not satisfied with the work of previous consultancy firm. In this regard, I hereby authorize M/s Atmos Sustainable Solutions Private Limited to submit my above cited project related documents on Environmental clearance portal for grant of TORs/EC and to present the case before the Expert Appraisal Committee/Authority J&K on all matters relating to the project. I shall be personally and solely responsible for legal implications if any by whomsoever involved in changing the consultant. Further, same does not involve violation of any standing guidelines of the MOEF&CC, GOI.

Proponent

Feroz. Ahmad wani
S/o Ghulam mohd wani
R/o Sempora Pantachowk.
(Srg)

Project Mineral Block

Block No.- 28 29 & 30
District- Shopian

To **Date: 26.07.2021**

The Member Secretary
J&K Environment Impact Assessment Authority (JKEIAA)
Department of Ecology, Environment & Remote Sensing
Paryavaran Bhavan, Gladeni, Transport Nagar, Narwal,
District: Jammu (J&K U.T.) - 180006
Email: jkseiaa@gmail.com

Sub: River Bed Mining Project – Total Cluster Area 27.19 (Block No. 28 , Area 9.89 Ha & Block No. 29, Area 9.09 Ha, and Block No. 30 , Area 8.21) of Mr. Feroz Ahmad Wani located at Minor Mineral Block 03, Nallah Rambaira, Tehsil : Chitragam & District- Shopian & U.T.: Jammu & Kashmir. **– Submission of Final EIA Report regarding.**

Respected Sir,

In regards to above, I am herewith submitting Final EIA Report along with necessary documents in the prescribed format of your esteemed Committee for your kind perusal and scrutiny.

Please be good enough to issue an Environmental Clearance at your earliest.

Thanking you,

Yours faithfully

Feroz Ahmad Wani
S/o Sh. Ghulam Mohammad Wani
R/o: Sempora, Panthachowk
District: Srinagar, J&K UT.

FINAL
ENVIRONMENT IMPACT ASSESSSMENT
AND
ENVIRONMENT MANGEMENT PLAN
FOR
ENVIRONMENTAL CLEARANCE OF PROPOSED
RIVER BED MINING PROJECT

AT

MINOR MINERAL BLOCK NO – 28, 29, and, Nallah Rambaira
TEHSIL – Chitragam
DISTRICT – Shopian
UT: JAMMU & KASHMIR
(Block No. 28- AREA – 9.89 Ha)
(Block No. 29- AREA – 9.09 Ha)
(Block No. 30- AREA – 8.21 Ha)

PROJECT PROPONENT

Feroz Ahmad Wani
S/o Sh. Ghulam Mohammad Wani
R/o Sempora,
District – Srinagar,

Prepared By

ENVIRONMENT CONSULTANT

Atmos Sustainable Solutions Pvt. Ltd.

A-73, 3rd Floor, Sector -65, Noida, Uttar Pradesh- 201301

Certification No. NABET/EIA/2023/IA0063

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CHAPTER-I

INTRODUCTION

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1.0 PREMBLE

The sole purpose of the Environmental Impact Assessment report is to assess beneficial and adverse impacts of the project on existing environmental system and to propose appropriate pollution control measures. Thus, the EIA report is a summarized presentation of environmental consequences of the project activity so that all the factors are considered before making a decision.

Economic, social and environmental change is inherent to development. Whilst development aims to bring about positive change it can lead to conflicts. In the past, the promotion of economic growth as the motor for increased well being was the main development thrust with little sensitivity to adverse social or environmental impacts. The need to avoid adverse impacts and to ensure long term benefits led to the concept of sustainability. This has become accepted as an essential feature of development if the aim of increased wellbeing and greater equity in fulfilling basic needs is to be met for this and future generations.

Mankind, as it is developed today, cannot live without taking up developmental activities for his food, security and other needs. Consequently, there is a need to harmonize developmental activities with the environmental concerns. Environmental Impact Assessment (EIA) is one of the tools available with the planners to achieve the above mentioned goals.

An Environmental Impact Assessment (EIA) may be defined as:

"A formal process to predict the environmental consequences of human development activities and to plan appropriate measures to eliminate or reduce adverse effects and to augment positive effects".

EIA is an assessment of the possible impact—positive or negative—that a project may have on the environment, together consisting of the natural, social and economic aspects.''

The purpose of the assessment is to ensure that decision makers consider the ensuing environmental impacts when deciding whether to proceed with a project or not.

EIA, thus, has three main functions:

1. To predict problems/impacts

2. To find ways to avoid them, and
3. To enhance positive effects.

Law requires that every project proponent must take Environmental Clearance from MoEF & CC, New Delhi/State Environment Impact Assessment Authority (SEIAA) before starting up any project. The environmental clearance is also mandatory for the expansion, modernization projects. The conditions are applicable as per the SEAC guidelines and EIA notifications issued and amended from time to time.

To keep the environment congenial for better standard of living, the provisions have been made in the constitution of India and many Enactments have taken place, so that, industrialization may not have adverse impact on the environment. There are many Acts / Rules / Notifications issued by SEAC, J & K few of them are mentioned below:

1. Environment (Protection) Act, 1986;
2. Environment (Protection) Rules, 1986;
3. Water (Prevention & Control of Pollution) Act, 1974;
4. Air (Prevention & Control of Pollution) Act, 1981;
5. Environmental Impact Assessment (EIA) Notification, dated 14th September¬ 2006 amended time to time.
6. Jammu & Kashmir Minor Mineral Concession Rules, 1962.
7. Enforcement & Monitoring Guidelines for Sand Mining issued by MoEF & CC, Jan. 2020.
8. SRO 105 – 31st March, 2016.

1.1 IDENTIFICATION OF PROJECT PROPONENT

- **For Minor Mineral Block No. 28**

Letter of Intent has been allotted in favor of Shri. Feroz Ahmad Wani (Project Proponent) by Government of Jammu and Kashmir Directorate of Geology and Mining, Srinagar for Minor

Mineral Block No. 28 and Vide Letter No. 607/MCC/DGM/EAS/20/75-82 dated 02.05.2020 over an area of 9.89 Ha and the validity of Letter of Intent period is from 02-05-2020. i.e. 5 years. **(Copy of LOI is enclosed as Annexure – II-A).**

Terms of Reference has been awarded in favor of Shri. Feroz Ahmad Wani (Project Proponent) by J&K Environment Impact Assessment Authority, Jammu & Kashmir for Minor Mineral Block No. 28 and Vide Letter No. JKEIAA/2020/224/711-15 dated 26.08.2020 over an area of 9.89 Ha. **(Copy of TOR is enclosed as Annexure – V-A).**

Mining Plan has been approved in favor of Shri Feroz Ahmad Wani (Project Proponent) by Department of Geology & Mining Govt. of Jammu & Kashmir for Mineral Block No. 28 and Vide Letter No. 607/MCC/DGM/EAS/20/75-82 dated 02.05.2020 over an area of 9.89 Ha. **(Copy of Mining Plan is enclosed as Annexure – III-A).**

- **<u>For Minor Mineral Block No. 29</u>**

Letter of Intent has been allotted in favor of Shri. Feroz Ahmad Wani (Project Proponent) by Government of Jammu and Kashmir Directorate of Geology and Mining, Srinagar for Minor Mineral Block No. 29 and Vide Letter No. 608/MCC/DGM/EAS/20/99-106 dated 02.05.2020 over an area of 9.09 Ha and the validity of Letter of Intent period is from 02-05-2020. i.e. 5 years. **(Copy of LOI is enclosed as Annexure – II-B).**

Terms of Reference has been awarded in favor of Shri. Feroz Ahmad Wani (Project Proponent) by J&K Environment Impact Assessment Authority, Jammu & Kashmir for Minor Mineral Block No. 29 and Vide Letter No. JKEIAA/2020/223/706-10 dated 26.08.2020 over an area of 9.09 Ha. **(Copy of TOR is enclosed as Annexure – V-B).**

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Mining Plan has been approved in favor of Shri Feroz Ahmad Wani (Project Proponent) by Department of Geology & Mining Govt. of Jammu & Kashmir for Minor Mineral Block No. 29 and Vide Letter No. SMCC/259-63 dated 09-06-2020 over an area of 9.09 Ha. **(Copy of Mining Plan is enclosed as Annexure – III-B).**

- **For Minor Mineral Block No. 30**

Letter of Intent has been allotted in favor of Shri. Feroz Ahmad Wani (Project Proponent) by Government of Jammu and Kashmir Directorate of Geology and Mining, Srinagar for Minor Mineral Block No. 30 and Vide Letter No. 609/MCC/DGM/EAS/20/83-90 dated 02.05.2020 over an area of 8.21 Ha and the validity of Letter of Intent period is from 02-05-2020. i.e. 5 years. **(Copy of LOI is enclosed as Annexure – II-C).**

Terms of Reference has been awarded in favor of Shri. Feroz Ahmad Wani (Project Proponent) by J&K Environment Impact Assessment Authority, Jammu & Kashmir for **Minor** Mineral Block No. 30 and Vide Letter No. JKEIAA/2020/223/716-20 dated 26.08.2020 over an area of 9.09 Ha. **(Copy of TOR is enclosed as Annexure – V-C).**

Mining Plan has been approved in favor of Shri Feroz Ahmad Wani (Project Proponent) by Department of Geology & Mining Govt. of Jammu & Kashmir for Minor Mineral Block No. 30 and Vide Letter No. SMCC/264-68 Dated 09.06.2020 over an area of 8.21 Ha. **(Copy of Mining Plan is enclosed as Annexure – III-C).**

Total area for the Cluster Projects:

The distance between block 30 & 29 is 84.98 m from 29 in ENE direction, between 29 & 28 is 68.38 m from 28 in ENE direction and between 28 & 30 is 424.18 m from 28 in ENE direction.

Fig.: 1.1 Showing distance between minor mineral blocks

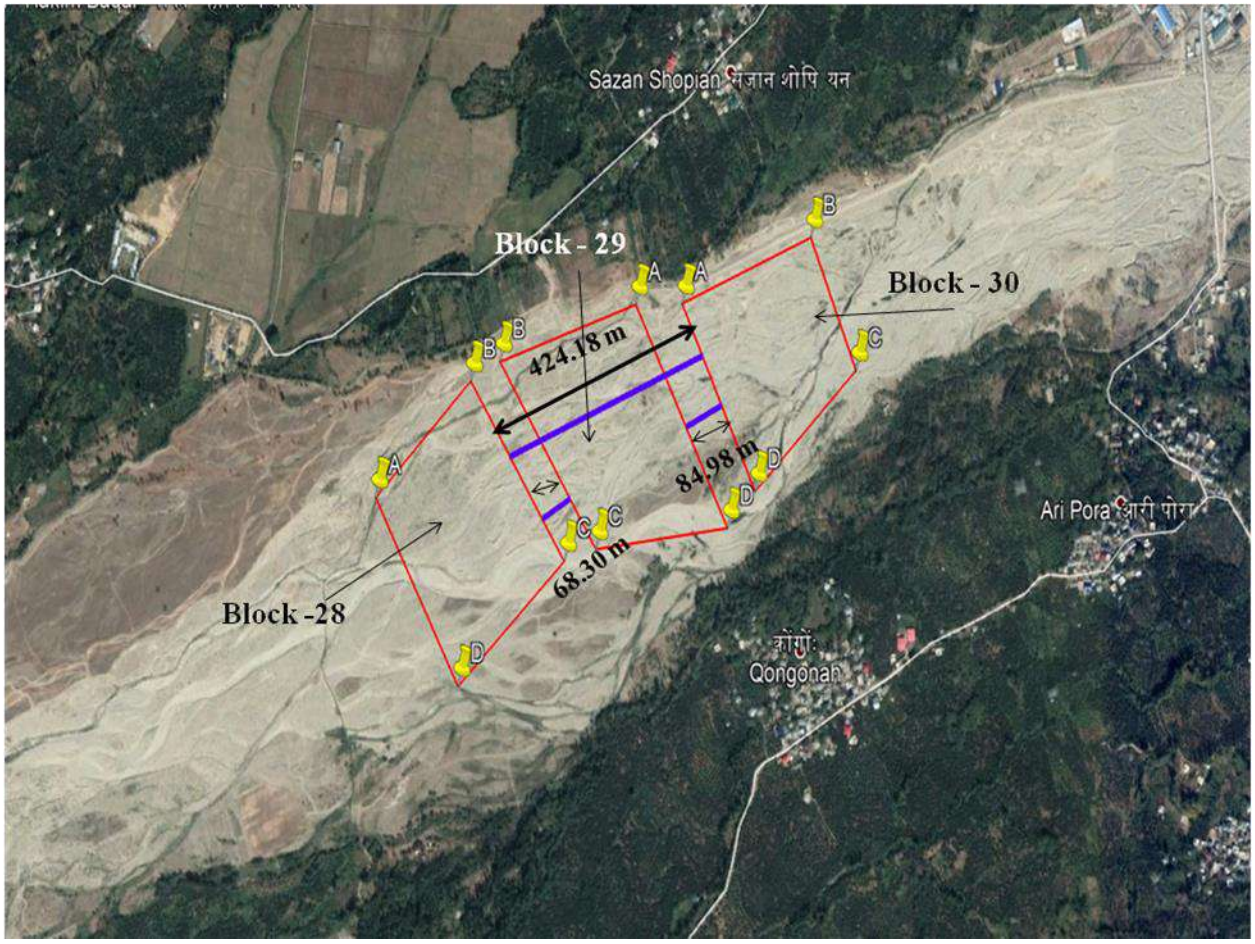

Table 1.1 Table showing location and area of minor mineral blocks

S. no.	Block Number	Area	Location
1.	28	9.89 Ha	Army camp Aghama D/Stream, Nallah – Rambiara, Village – Aghama, Tehsil – Chitragam, District – Shopian, UT – Jammu & Kashmir.
2.	29	9.09 Ha	Irrigation Scheme Nowpora U/Stream, Nallah – Rambiara, Village – Nowpora Bala, Tehsil – Chitragam, District – Shopian, UT – Jammu & Kashmir.

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3.	30	8.21 Ha	Irrigation Scheme Nowpora D/Stream, Nallah – Rambiara, Village – Nowpora Bala, Tehsil – Chitragam, District – Shopian, UT – Jammu & Kashmir.
Total Area		**27.19 Ha**	

1.2 BRIEF DESCRIPTION OF PROJECT

For Minor Mineral Block No. 28:

This is a project for mining by opencast semi mechanized method with helping of JCB, Hywa, Excavator, Dumper etc. The proposed average production is 2, 05,545.25 TPA and The lessee is Shri Feroz Ahmad Wani for mining lease of River Bed Mining over an area of 9.89 Ha at Village: Aghama, Tehsil: Chitragam, District: Shopian, UT: Jammu & Kashmir. The life of the mine will be 5 years as per targeted production.

1.2.1 Project Nature, Size & Location

i. Nature

The proposed project is River Bed Mining project. Open Cast Manually method will be used during Mining Operation on project site.

ii. Size

The lease area is 9.89 Ha.

iii. Location

The mining area is located in the Village: Aghama, Tehsil: Chitragam, District: Shopian, Jammu & Kashmir UT.

Table No. 1.2 Latitude & Longitude of Lease Area

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Geographical Pillar Co-ordinates	Latitude	Longitude
A	33°47'08.49" N	74°54'26.88" E
B	33°47'14.60" N	74°54'34.42" E
C	33°47'05.64" N	74°54'42.46" E
D	33°46'59.08" N	74°54'33.96" E

Figure – 1.2 – Location map of proposed project site

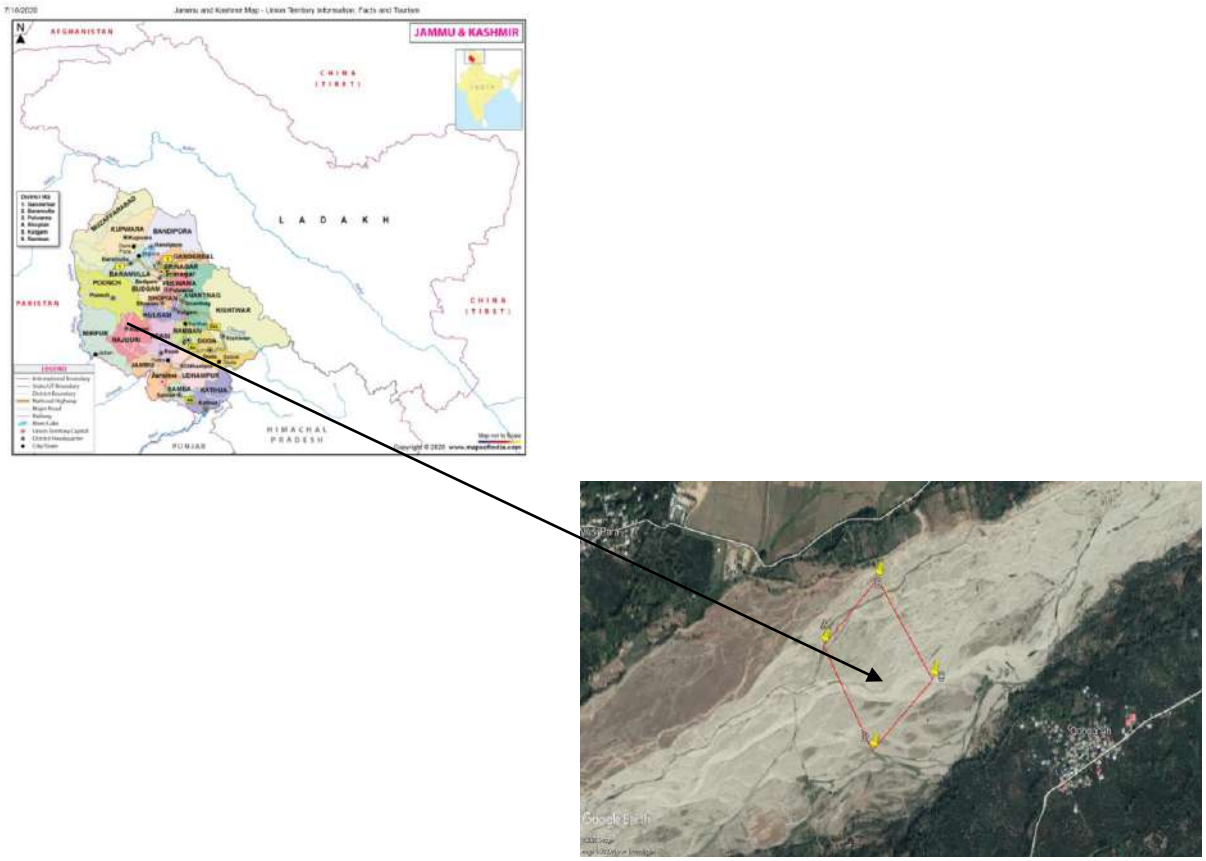

Figure – 1.3 – 500 m Buffer Map on Google Earth

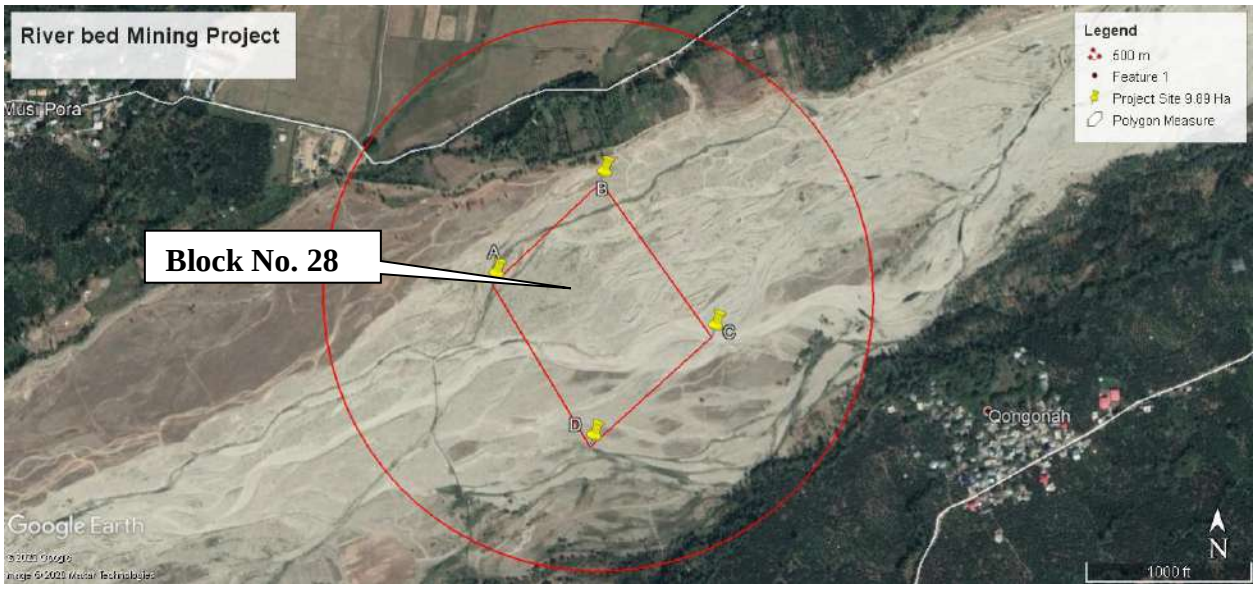

Table No. 1.3 Salient Features of Project

Project Name	River Bed Mining
Location of mine	Village : Aghama Tehsil : Chitragam District : Shopian State/U.T. : Jammu & Kashmir
Toposheet number	43 K/13
Minerals of mine	Sand, *Bajri* & Boulder
Total Mineable reserves	10,27,726.25 T
Life of mine	5 years
Proposed average production of mine	2,05,545.25 TPA

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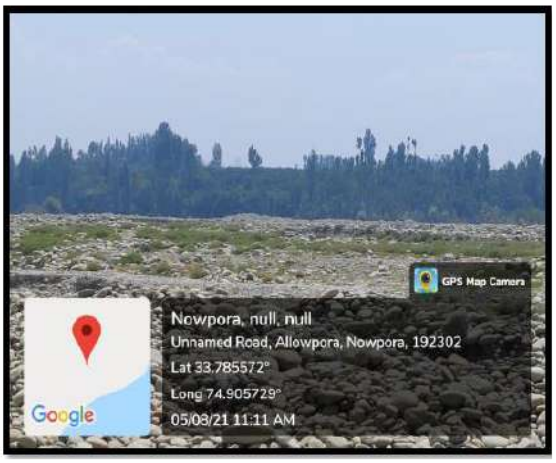
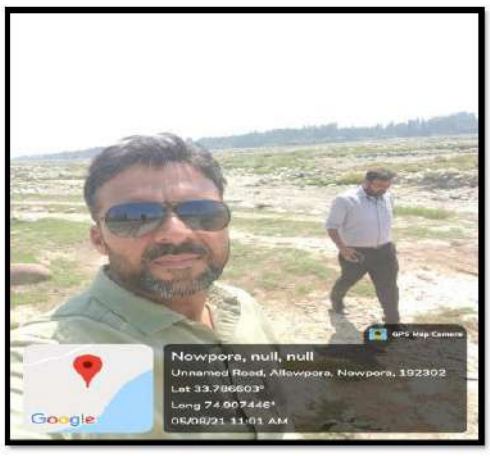
Ownership of land	Government land
Method of mining	opencast Semi Manually method
No of working days	270 days
Details of others quarries for a radius of 500 m around the quarry site	Three mines within 500 m radius total area of the 3 sites is 27.19 Ha. The distance between block 30 & 29 is 84.98 m from 29 in ENE direction, between 29 & 28 is 68.38 m from 28 in ENE direction and between 28 & 30 is 424.18 m from 28 in ENE direction.
Water demand	Total water requirement is about 7.34 KLD= 0.54 KLD (Drinking & Domestic Uses) + 4.8 KLD (Plantation) + 2.0 KLD (Dust Suppression).
Sources of water	PHED Supply
Man power	50
Seismic zone	Zone IV
No. of Trees	100

Figure – 1.4 – Site Photographs





<u>For Minor Mineral Block No. 29</u>:

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Open Cast Manually method will be used during Mining Operation on project site. The proposed average production is 1, 85,920.50 TPA and The lessee is Shri Feroz Ahmad Wani for mining lease of River Bed Mining over an area of 9.09 Ha at Village: Nowpora, Tehsil: Chitragam, District: Shopian, Jammu & Kashmir UT.

The life of the mine will be 5 years as per targeted production.

i. Nature

The proposed project is River Bed Mining project. Open Cast Manually method will be used during Mining Operation on project site.

ii. Size

The lease area is 9.09 Ha.

iii. Location

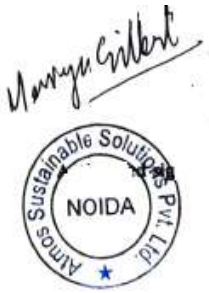
The mining area is located in the Village: Nowpora Bala Tehsil: Chitragam, District: Shopian, Jammu & Kashmir UT.

Table No. 1.4 Latitude & Longitude of Lease Area

Geographical Pillar Co-ordinates	Latitude	Longitude
A	33°47'18.89" N	74°54'47.87" E
B	33°47'15.67" N	74°54'36.79" E
C	33°47'06.30" N	74°54'45.02" E
D	33°47'07.64" N	74°54'55.83" E

Table No. 1.5 Salient Features of Project

Project Name	River Bed Mining
Location of mine	Village : Nowpora Tehsil : Chitragam District : Shopian State/U.T. : Jammu & Kashmir
Toposheet number	43 K/13



Minerals of mine	Sand, *Bajri* & Boulder
Total Mineable reserves	9,29,602.5 T
Life of mine	5 years
Proposed average production of mine	1,85,920.50 TPA
Life of Mine	5 years
Ownership of land	Government land
Method of mining	Opencast Manually Method
No of working days	270 days
Details of others quarries for a radius of 500 m around the quarry site	Three mines within 500 m radius total area of the 3 sites is 27.19 Ha. The distance between block 30 & 29 is 84.98 m from 29 in ENE direction, between 29 & 28 is 68.38 m from 28 in ENE direction and between 28 & 30 is 424.18 m from 28 in ENE direction.
Water demand	Total water requirement is about 7.34 KLD= 0.54 KLD (Drinking & Domestic Uses) + 4.8 KLD (Plantation) + 2.0 KLD (Dust Suppression).
Sources of water	PHED Supply
Man power	40

Figure – 1.5 – Location map of proposed project site

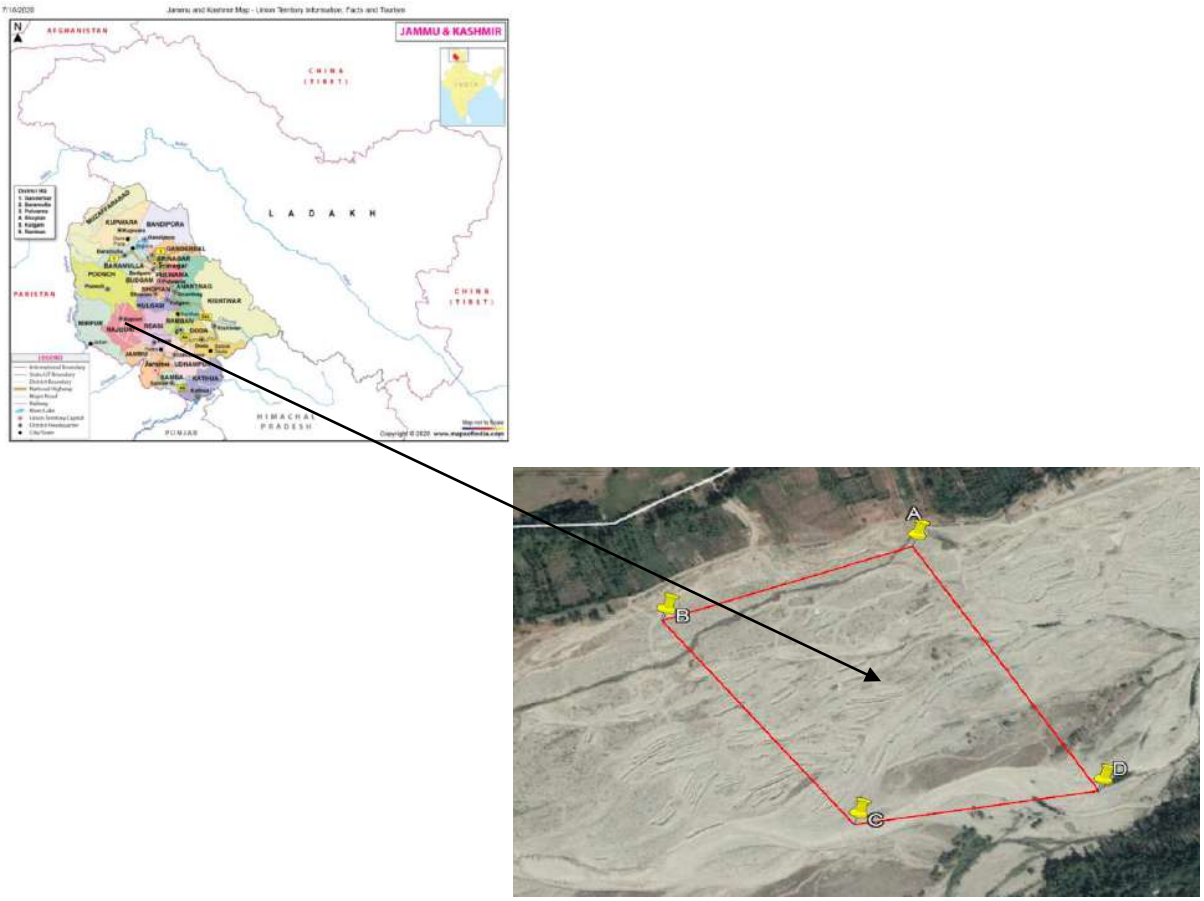


Figure – 1.6 – 500 m Buffer Map on Google Earth

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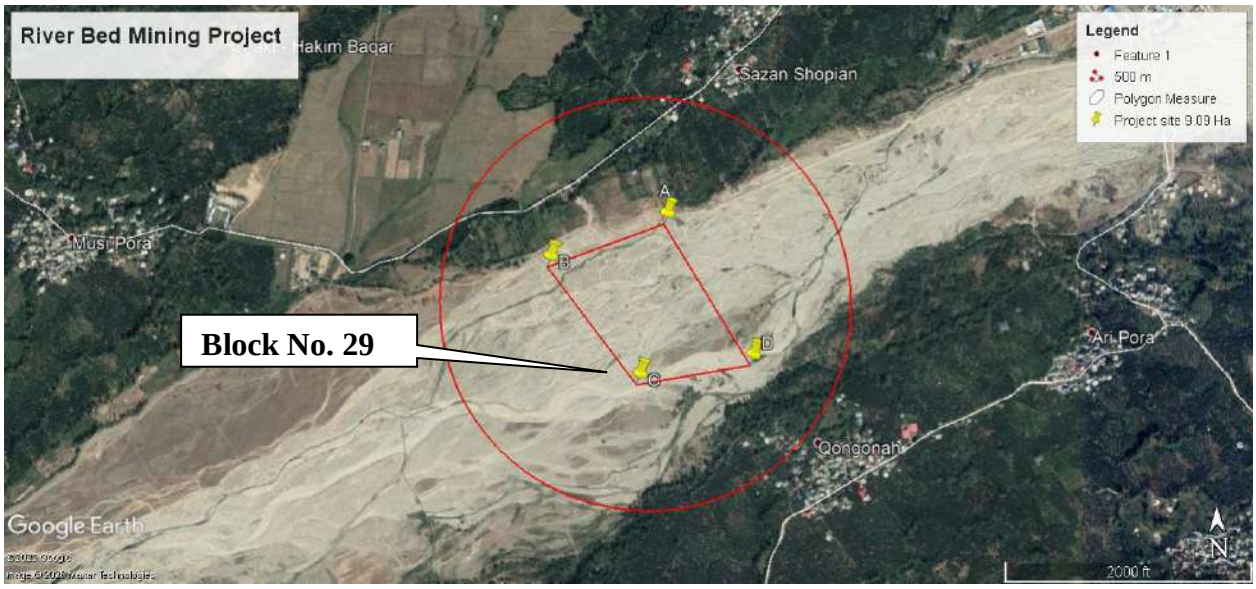
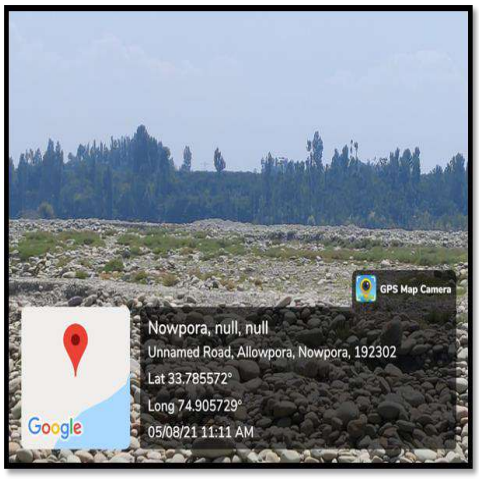


Figure – 1.7 – Site Photographs



<u>For Minor Mineral Block No. 30</u>:

Open Cast Manually method will be used during Mining Operation on project site. The proposed average production is 1, 68,837.25 TPA and the estimated project cost is 2.80 Crores. The lessee is Shri Feroz Ahmad Wani for mining lease of River Bed Mining over an

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area of 8.21 Ha at Village: Nowpora, Tehsil: Chitragam, District: Shopian, Jammu & Kashmir UT.

The life of the mine will be 5 years as per targeted production.

i. Nature

The proposed project is River Bed Mining project. Open Cast Manually method

ii. Size

The lease area is 8.21 Ha.

iii. Location

The mining area is located in the Village: Nowpora Bala Tehsil: Chitragam, District: Shopian, Jammu & Kashmir UT.

Table No. 1.6 Latitude & Longitude of Lease Area

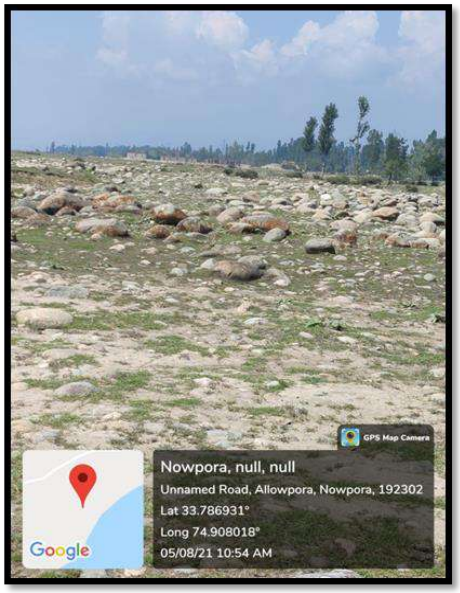
Geographical Pillar Co-ordinates	Latitude	Longitude
A	33°47'15.98" N	74°55'06.22" E
B	33°47'19.02" N	74°54'51.69" E
C	33°47'22.71" N	74°55'02.24" E
D	33°47'09.57" N	74°54'58.06" E

Table No. 1.7 Salient Features of Project

Project Name	River Bed Mining
Location of mine	Village : Nowpora Tehsil : Chitragam District : Shopian State/U.T. : Jammu & Kashmir
Toposheet number	43 K/13
Minerals of mine	Sand, *Bajri* & Boulder
Total Mineable reserves	8,44,186.25 T

Life of mine	5 years
Proposed average production of mine	1,68.837.25 TPA
Life of Mine	5 years
Ownership of land	Government land
Method of mining	Open Cast Manually method
No of working days	270 days
Details of others quarries for a radius of 500 m around the quarry site	Three mines within 500 m radius total area of the 3 sites is 27.19 Ha. The distance between block 30 & 29 is 84.98 m from 29 in ENE direction, between 29 & 28 is 68.38 m from 28 in ENE direction and between 28 & 30 is 424.18 m from 28 in ENE direction.
Water demand	Total water requirement is about 7.34 KLD= 0.54 KLD (Drinking & Domestic Uses) + 4.8 KLD (Plantation) + 2.0 KLD (Dust Suppression).
Sources of water	PHED Supply
Man power	40
Seismic zone	Zone V

Figure – 1.8 – Site Photographs



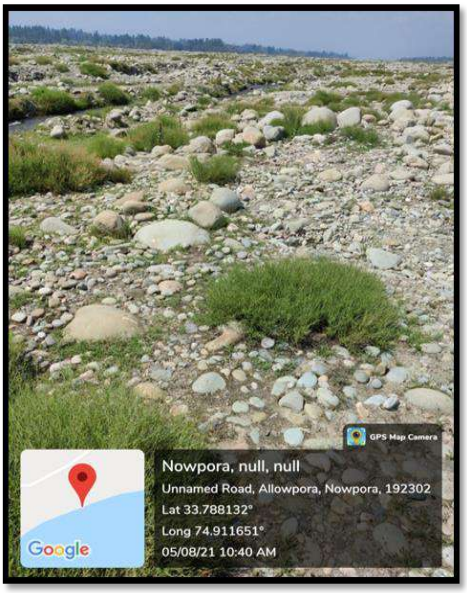


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Figure – 1.9 – Location map of proposed project site

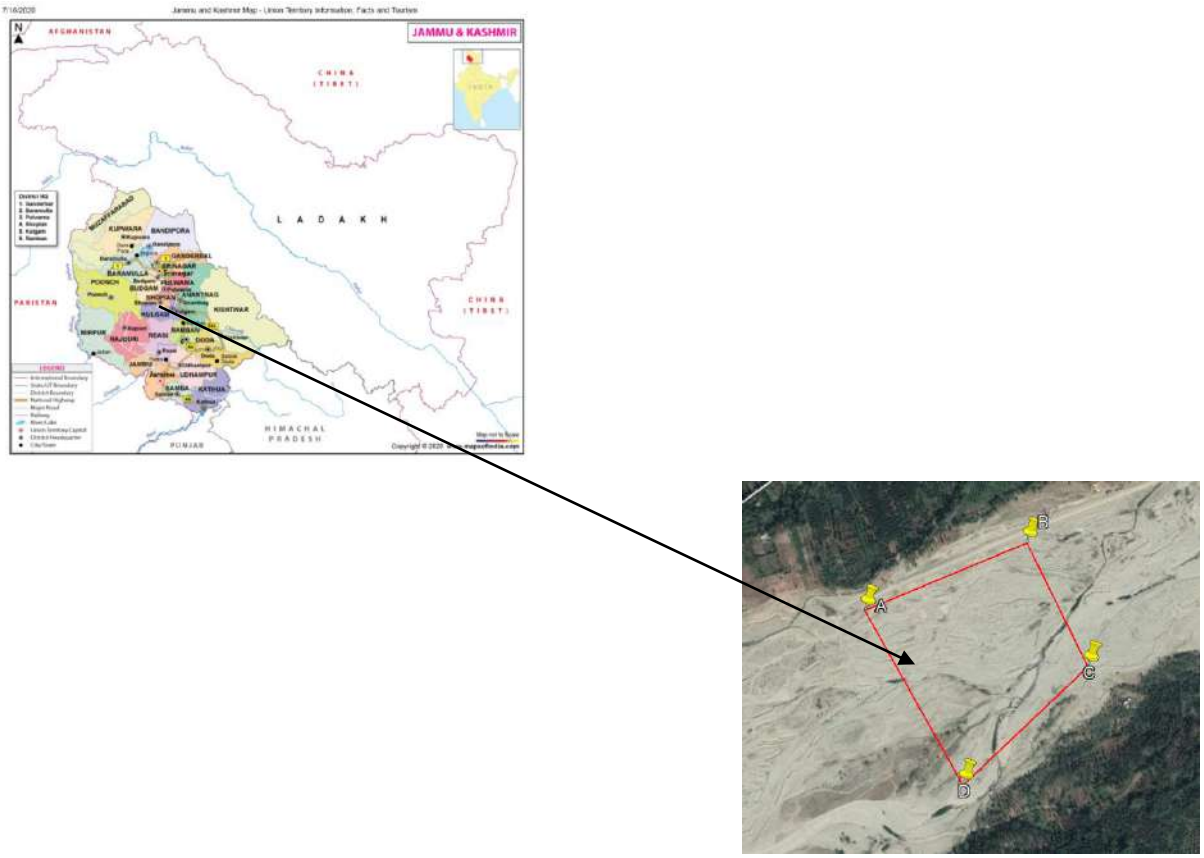
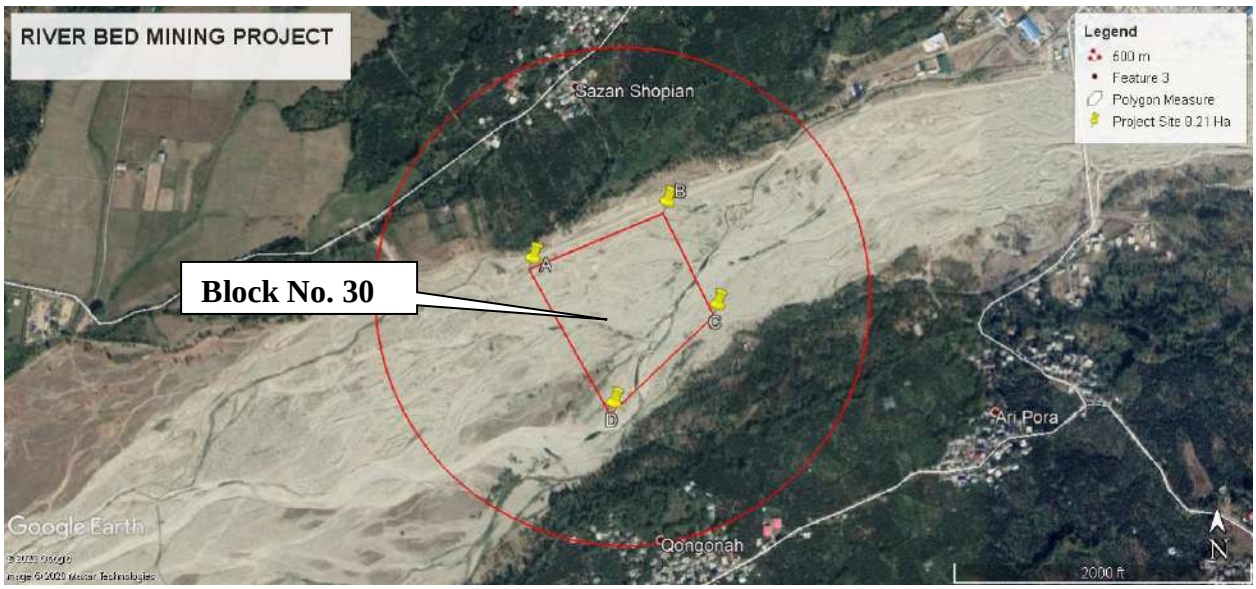


Figure – 1.10 – 500 m Buffer Map on Google Earth



Project's importance to the country and the region

The project involves collection of Sand, *Bajri* & Boulder, thus the proposed mining project would improve the supply of construction materials like Sand, *Bajri* & Boulder, making a positive impact on the infrastructural projects like construction of roads, buildings, bridges etc in the state.

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 by the way of royalty.

This project operation will generate employment to the people residing in vicinity for about 270 days annually and approximately 40 people will be benefited directly and indirectly by the project.

1.3 REGULATORY COMPLIANCES & APPLICABLE LAWS/REGULATIONS

a) There is no legal case against the project and project proponent.

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b) There is no national park / Sanctuary notified under the Wildlife Protection Act in the study area.

1.4 SCOPE OF THE STUDY

The JKEAC in the Minutes of meeting held on 13 August, 2020 has observed that mineral Block No's 28, 29 & 30 are located within 100 mtr distance from each other and therefore, in order to assess the cumulative impact on environmental settings, the committee agreed to treat it as a cluster falling under category B1 and desired a joint EIA, EMP, CER, CSR be prepared along with joint public hearing for the three mining blocks. In view of above deliberations, the committee recommended General & Specific TOR for three projects without prejudice to the standing court orders, if any, with respect to concerned mining project or final outcome of writ petitions/ PILs pending disposal before any court of law.

1.5 POST-ENVIRONMENTAL CLEARANCE MONITORING

For category B1 projects, it shall be mandatory for the project proponent to make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the district or state where the project is located and in addition, this shall also be displayed in the project proponent's website permanently. For category B projects, irrespective of its clearance by MOEF&CC/SEIAA, the project proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and the details of MoEF website where it is displayed.

The project management shall submit half-yearly compliance reports in respect of the stipulated prior environmental clearance terms and conditions on 1st June and 1st December of each calendar year. All such reports shall be public documents. The latest such compliance report shall be displayed on the web site of the concerned regulatory authority.

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(Source: EIA Notification, 2006 and its amendments & thereof)

1.6 TRANSFERABILITY OF ENVIRONMENTAL CLEARANCE

A prior environmental clearance granted for a specific project or activity to an applicant may be transferred during its validity to another legal person entitled to undertake the project or activity on application by the transferor or the transferee with a written "no objection" by the transferor, to, and by the regulatory authority concerned, on the same terms and conditions under which the prior environmental clearance was initially granted, and for the same validity period.

(Source: EIA Notification, 2006 and its amendments thereof)

1.7 GENERIC STRUCTURE OF ENVIRONMENTAL IMPACT ASSESSMENT DOCUMENT

In terms of the EIA notification of the MoEF dated 14th September 2006 and its subsequent amendment thereof, the generic structure of the EIA document should be as under:

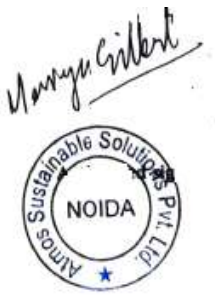
1) Study of the Geological report, Pre-Feasibility report (PFR) or mining plan made available by the client.

2) Present Environmental Setting

3) Identification, prediction and evaluation of Anticipated Environmental Impact due to the Proposed mine and related facilities.

The environmental impacts would be anticipated in core and buffer zone on:

- Topography and drainage
- Climate
- Water quality (Surface/Ground)
- Hydro-geological Regime
- Air quality
- Noise Levels
- Soil Quality



- Flora and Fauna
- Land-Use
- Socio-Economic Conditions
- Habitat
- Health, culture, human environment including public health, occupational health and safety
- Sensitive Places/Historical Monuments.
- Risk Hazard

This Draft EIA Report is prepared in accordance with the Term of Reference issued by J&K Expert Appraisal Committee (JKEAC), Jammu & Kashmir on 26.08.2020 as per the ToR letter of Minor Mineral Block No. 28, 29 & 30 vide letter no. JKEIAA/2020/224/711-15, JKEIAA/2020/223/706-10 and JKEIAA/2020/223/716-20 respectively.

This Draft EIA Report has been divided into twelve chapters (in addition to Executive Summary) as briefed here under:

Chapter 1 – Introduction

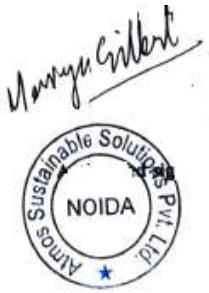
The chapter provides description of project background, site and surroundings, objectives, scope and Organization of the study and format of this report.

Chapter 2 – Project Description

This chapter provides information on project and capacity; need for the project; location; size or magnitude of operation; technology and process description; maps showing project layout, component of projects etc.

Chapter 3 – Description of the Environment

This chapter deals with the methodology and findings of field studies undertaken with respect to ambient air, meteorology, water, soils, noise levels, ecology to define the various existing



environmental status in the area of the project. This also deals with the infrastructural development as a part of project and sources of pollution from the proposed mining project.

Chapter 4 – Anticipated Environmental Impacts and Mitigation Measures

In this chapter, the potential impacts of the proposed mining and allied activities, which could cause significant environmental concerns, are identified and discussed. This discussion will form the basis for environmental management activities.

Chapter 5 – Analysis of Alternatives (Technology and Site)

This chapter will include a comparison of alternatives in this chapter to determine the best method of achieving the project objectives with minimum environmental impacts or indicates the most environmentally friendly and cost effective options, if any.

Chapter 6 – Environmental Monitoring Program

This chapter will include ascertaining the environmental impacts; state of pollution within the mine lease and in its vicinity; planning for predictive or corrective actions in respect of pollution to keep it within permissible limits.

Chapter 7 – Additional Studies

This chapter will include outcomes of public consultation, risk assessment, social impact assessment, R&R action plan, biodiversity conservation plan, watershed management etc.

Chapter 8 – Project Benefits

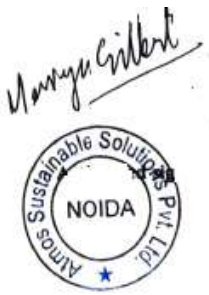
This chapter deals with improvements in the physical infrastructure, social infrastructure, employment potential and other tangible benefits due to proposed project activity.

Chapter 9 – Environmental Cost Benefit Analysis

This chapter includes environmental value enhancement (biodiversity, crop productivity, eco tourism etc.)

Chapter 10 – Environmental Management Plan

This chapter will include the description of administrative aspects of ensuring that the mitigation measures suggested are implemented and their effectiveness is monitored, after approval of the EIA.



Chapter 11 – Summary

This will constitute the summary of EIA Report.

Chapter 12 – Disclosure of Consultant

This will includes the names of the consultants engaged in preparation of EIA and nature of consultancy rendered.

1.8 PROFILE OF THE PROJECT PROPONENT

Mr. Feroz Ahmad Wani
S/o Sh. Ghulam Mohammad Wani
Sempora, Panthachowk
District – Srinagar,
UT: - Jammu & Kashmir,
Pin Code – 191101**.**

1.9 COMPLIANCE OF TOR CONDITION

For Block No. 28 (Ref. No: Vide Letter No. JKEIAA/2020/224/711-15 dated 26.08.2020)
For Block No. 29 (Ref. No: Vide Letter No. JKEIAA/2020/223/706-10 dated 26.08.2020)
For Block No. 30 (Ref. No: Vide Letter No. JKEIAA/2020/223/716-20 dated 26.08.2020)

Point Wise Compliance of ToR

Standard Terms of reference

S. No.	ToR	Compliance
1	Year-wise production details should be given, clearly stating the highest production.	A year-wise production detail is mentioned in Chapter 2, point 2.7.3 and page no. 14/II.
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	The Letter of Intent (LOI) has been approved by Government of Jammu and Kashmir Department of Geology and Mining, Srinagar for Minor Mineral Block No**.**- 28 and Vide No.

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		607/MCC/DGM/EAS/20/75-82 Dated 02.05.2020 as attached ***Annexure–II–A.*** The Letter of Intent (LOI) has been approved by Government of Jammu and Kashmir Department of Geology and Mining, Srinagar for Minor Mineral Block No.- 29 and Vide No. 608/MCC/DGM/EAS/20/98-105 Dated 02.05.2020 as attached ***Annexure–II–B.*** The Letter of Intent (LOI) has been approved by Government of Jammu and Kashmir Department of Geology and Mining, Srinagar for Minor Mineral Block No.- 30 and Vide No. 609/MCC/DGM/EAS/20/83-90 Dated 02.05.2020 as attached ***Annexure–II–C.***
3	All documents including approved mine plans, EIA and public hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management and mining technology, etc. and should be in the name of the lessee.	The EIA report is prepared on the basis of information given in the approved mine plan and supportive documents like lease deed etc. Production details are given in point 2.7.3 and page no. 14/II of Chapter 2. No OB/ Waste material will be produced. All the material retrived will

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		be fully utilized. Public Hearing information has been attracted as **Annexure VIII &IX**. All the documents including approved mine plan, EIA report, lease deed is in the name of lessee.
4	All corner coordinates of the mine lease area, superimposed on High Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Corner coordinates of the mine lease area showing the land use and other ecological features of the study area (core and buffer zone) appended in as an ***Annexure XVIIIC.***
5	Information should be provided on high resolution satellite image on with geological map of the area, geomorphology of land-forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.	All information is incorporated in chapter - 2.
6	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	The details is incorporated in chapter - 2 and attached as *Ref*. ***Annexure IIA, IIB & IIC.***

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7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating 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.	Yes, the details of Environment Policy laid down by the Company are attached as an ***Annexure XII.*** 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. The hierarchical flow diagram is attached as *Ref.* ***Annexure XII.*** Yes, the Company has a well laid out policy of reporting non compliances/ violations of Environmental Norms to Board of Directors/ owner of the Company.
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.	Issues relating to Mine safety have been detailed in Chapter 7 & Page No. 6/VII.
9	The study area will comprise of 10 km zone around the mine lease from lease	The EIA study has been carried out in the 10 km radius zone from the

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	periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.	periphery of ML area. All the data so generated have been incorporated in EIA/EMP report. No OB/ Waste material will be produced. All the material retrieved will be fully utilized. A map showing study area (10 km radius) is given Chapter 3.
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, if any and other ecological features etc are shown by area breakup of the land use within 10 km radius from the mine site in Table 3.13 page 26/III of 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.	There are no overburden dumps outside the mine lease area. There will be no resettlement or rehabilitation involved in the project area, hence compensation details are not applicable.

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12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	No forest land is involved in this project so no certificate in this regard is required.
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.	No forest land is involved in this project so no clearance is required.
14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	No such policy is applicable as there is no settlement near to mine lease area.

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	should be indicated.	
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	There is no RF/PF in the buffer zone of the lease area.
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.	There is no impact of mining project on wildlife of the area. There are no endangered species, wildlife sanctuary, wildlife corridors, faunal migratory routes or eco-sensitive area near the whole study area. However, care will be taken to protect wildlife in the study area.
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 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.	There are no National parks, and Biosphere Reserves, Wildlife Corridor, Tiger/ elephant reserve in the study area of 10 km radius surrounding the ML area.
18	A detailed biological study of the study	Flora or fauna species are found in the

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	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.	core zone. The species found in the study area are detailed under Section 3.11.4 Page 32/III of 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 Department should be secured and furnished to the effect that the proposed mining activities could be considered.	The project does not come in the proximity to areas declared as 'Critically Polluted'.
20	R&R Plan/compensation details for the Project Affected People (PAP) should be	There will be no resettlement or rehabilitation involved in the project

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	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.	area, hence compensation details are not applicable.
21	One season (non-monsoon) [i.e. March-May (Summer Season); October to 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	Primary baseline data on ambient air quality is given in Section 3.5 on Page 3/III of Chapter 3. Water quality is given in Section 3.7 Page 13/III of Chapter 3. Noise level is given in Section 3.6 Page 10/III of Chapter 3. Soil characteristics are given in Section 3.8 Page 22/III of Chapter 3. Details of flora and fauna are given in

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	specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	Section 3.11.4 Page 32/III of Chapter 3. Site-specific metrological data have been collected, as prescribed, for Summer Season of 1st January to 31st December 2020 in Chapter -3 & Page No 2/III.
22	Air quality modelling 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 modelling 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 Modeling carried out for air quality of the area has been incorporated Chapter 4.
23	The water requirement for the Project, its	**For Minor Mineral Block No. 28.**

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	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 is about 8.6 KLD= 1.8 KLD (Drinking & Domestic Uses) + 0.5 KLD (Plantation) + 0.5 KLD (Dust Suppression). **<u>For Minor Mineral Block No. 29.</u>** Total water requirement is about 8.6 KLD= 1.8 KLD (Drinking & Domestic Uses) + 0.5 KLD (Plantation) + 0.5 KLD (Dust Suppression). **<u>For Minor Mineral Block No. 30.</u>** Total water requirement is about 8.6 KLD= 1.8 KLD (Drinking & Domestic Uses) + 0.5 KLD (Plantation) + 0.5 KLD (Dust Suppression). Source of water - PHED Supply.
24	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	As the lease area falls under semi critical zone as notified by CGWB, so no permission is required for drawl of water less than 100 KLD.
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.	Backfilling of the pit will not be required since the material in the pit will get retored to it natural topography by the action of the river.
26	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard	The detailed impact and control measure w.r.t the quality of water in the surrounding area is discussed under

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	measures, if any required, should be provided.	Section 4.4.2 Page 5/IV of 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 interalia, 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.	Ground water level of the plateau area in general is 40-35 m bgl approx. The mining activity has been restricted up to a 3 m depth, so mining activity will not intersect the groundwater.
28	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	Project falls on Nallah Rambiara.
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	The information is incorporated in Chapter- 11 & page No. 6/XI.

	for the same.	
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.	A time bound Progressive greenbelt development plan is incorporated in chapter VIII, Table 8.1, 8.2 & 8.3 and page No. 4/VIII.
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 is capable of handling	Details of traffic are discussed in chapter 3.

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	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.	
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.	There is no Reclamation and rehabilitation in the lease area as the project is river bed mining project.
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	The detail of occupational Health Impact has been given in chapter 4.

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	examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	
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.	The detail of Public Health implications has been given in chapter 4.
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.	Measures of socio-economic influence to the local community have been furnished and described 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 10 of EIA report.
38	Public Hearing points raised and commitment of the Project Proponent on	A public hearing point has been attached as **Annexure VIII & IX.**

	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.	
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	There is no litigation pending against this project.
40	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Budget for Environmental protection is given in Table 10.1 page. 8/X of Chapter 10.
41	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Detailed Environmental Management Plan is discussed under Chapter 10 of 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.	Discussed in Chapter – 3 and page No. 45/III.
43	Besides the above, the below mentioned general points are also to be followed: a) Executive Summary of the EIA/EMP Report b) All documents to be properly referenced with index and continuous	All general points are incorporated in Final EIA Report.

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	page numbering. 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. 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. e) Where the documents provided are in a language other than English, an English translation should be provided. f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry, should be	

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	followed. h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation. 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. j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features,	

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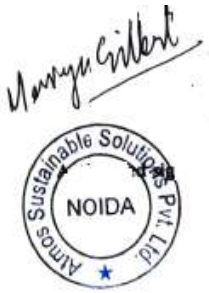
	drainage and physical measurements mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	

Specific Terms of Reference:

1.	Impact of mining activity on adjacent agricultural lands with particular reference to run off, soil erosion and top-soil loss due to change in topography.	Discussed in Chapter 4.
2.	Details of Gradient of riverbed and 3-D view draped on the satellite image	As **Attached XVIII D.**
3.	Details of excavation schedule & sequential mining plan.	Discussed in Chapter 2.
4.	Details of transportation of mined out materials with respect to axle load specified for the road as per the Indian Road congress for both the ways (loaded as well as unloaded trucks) load and its impact on the environment.	Discussed in Chapter 3.
5.	Impact on mining activity on the existing land use in the study area.	Discussed in Chapter 2.

6.	Impact on mining on aquatic life.	Impact on mining on aquatic life have been incorporated in Chapter 3 in Table 3.15, page no.
7.	NOCs from competent authorities of Forest Department, Irrigation and Flood Control Dept. and Fisheries Dept. should be obtained and submitted while applying for EC	These NOCs from competent authorities of Forest Department, Irrigation and Flood Control Dept. and Fisheries Dept has been attached as **Annexure VII.**
8.	Excavation to be proposed and studied for a maximum depth of 1 meter from the riverbed or 1 m above water table whichever comes first, subject to further review by JKEAC at the time of appraisal for grant of EC on due merits of study material.	Complied.
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.	Discussed in Chapter 4.
10.	The Photography and videography of the mining block shall be part of the Terms of Reference.	Complied.
11.	The maps shall be submitted on a scale of 1: 3000 and 1: 1500 within 10 kms. Radius.	Incorporated in Chapter 2.



12.	The shortest extraction route leading to the main road but with minimum interference into human settlements should be the focus of operation. Detailed contour map of the approach road from river bed to district road / National highway should be furnished.	Complied.
13.	Dust suppression measures should be prescribed in the EIA/EMP.	Discussed in Chapter 4.
14.	Post project monitoring plan should be included in the study.	Discussed in Chapter 6.
15.	Occupational health impacts should be assessed and plan for implementation of COVID-19 SOPs in the mining activity should be detailed.	Discussed in Chapter 4.
16.	The Public Hearing should be got conducted jointly by the project proponents for the cluster.	Complied.
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 providing mechanism for involvement of local Panchayat.	Complied.
18.	The Consultant while presenting field data in the EIA report should ensure that the	Attached as **Annexure XIII.**

	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.	
19.	The impact of mining activity on the neighboring villages need to be studied and extraction road need to be such that it has least crossing through village settlements.	Complied.
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.	Complied.

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CHAPTER-II

PROJECT DESCRIPTION

INDEX

2.0 GENERAL

The project is proposed for the excavation of sand, Bajri, and Boulder from the Nallah bed of Rambaira Nallah. It is an opencast mining project where the entire activity will be done manually.

2.1 DESCIPTION OF PROJECT

The project is proposed for the excavation of sand, *bajri* & boulder from the bed of Nallah Rambiara. It is an opencast mining project to excavate sand, *bajri* and boulder by Manually Method.

2.2 NEED FOR THE PROJECT

Demand of River Bed Material will be fulfilled by this project in the local nearby market. The mineral River Bed Material is self sufficient to meet quality requirement in the industries mentioned above. Therefore, its exploitation to fulfill the demand of market, this project will be essential. Besides this, the project will improve beneficial in terms of socio-economic development as it will provide employment to locals. Further, the average income level, which is the indicator of socio – economic status of house hold is expected to increase, which is ultimately result in the better standard of living of the people.

2.3 LOCATION DETAILS

2.3.1 Minor Mineral Block No. 28

The River Bed Mining Project is located in Village: Aghama, Tehsil: Chitragam, District: Shopian, and State/UT: Jammu & Kashmir. The lease area falls in Survey of India Toposheet 43K/13. The lease co-ordinates and connectivity details are listed below:

Geographical Pillar Co-ordinates	Latitude	Longitude
A	33°47'08.49" N	74°54'26.88" E
B	33°47'14.60" N	74°54'34.42" E
C	33°47'05.64" N	74°54'42.46" E
D	33°46'59.08" N	74°54'33.96" E

Table 2.1: Environment Sensitivity

S. No	Particulates	Name of Places	Distance (Km)	Direction
1.	Nearest Airport	Seikh Ul Alam International Airport, Srinagar	27.96	NNW
2.	Nearest Railway Station	Panzgom Railway Station	13.35	ENE
		Bijbiara Railway Station	15.14	E
3.	Nearest Bus Stand	Sofannam Bus Stop	2.12	SW
		Shopian bus station	5.59	SSW
4.	Nearest State Highway/Any other road	Musi Pora Link Road	0.17	N
		Qongonah - Aripora	0.53	SE
5.	Nearest National Highway	NH-1A	15.84	ENE
6.	Nearest School/College	Govt. High School, Trenz	2.56	WSW
		Public Model High School Turkawangam	1.75	East
7.	Nearest Masjid	Masjid Shareef, Danger Pora	1.36	SSW
		Masjid e Usman Batpora	1.75	East
8.	Nearest Hospital	Primary health centre, Trenz	2.81	SW
		Government Primary Health Centre	7.28	SSE
9.	Nearest Police Station	Police Station Litter	3.32	ENE
		Police Station Imamsahib	4.87	S
10.	Nearest Fire Station	Keegam Fire Station	4.29	W
		Rajpora Fire Station	6.61	NW
11.	National Border	No National Border present in 10 km around project site		
12.	International Border	No International Border present in 10 km around project site		
13.	Nearest Pond	No Pond present in 10 km around project site		
14.	Nearest River/Nallah/ Canal	Project lies on Nallah Rambiara		
15.	Wild Life Sanctuary	No Wild Life Sanctuary present in 10 km around project site		

16.	Reserved Forest	No Reserved Forest present in 10 km around project site		
17.	Protected Forest	No Protected Forest present in 10 km around project site		
18.	Wetland	No Wetland present in 10 km around project site		
19.	Nearest Defence Installation	Army Camp Behibagh Kulgam	10.54	SE
20.	Historical Importance Place	No Historical Importance Place present in 10 km around project site		
21.	Nearest Cremation Ground	No Cremation ground present in 10 km around project site		

(Source: Google Earth)

2.3.2 Minor Mineral Block No. 29

The River Bed Mining Project is located in Village: Nowpora bala, Tehsil: Chitragam, District: Shopian, and State/UT: Jammu & Kashmir. The lease area falls in Survey of India Toposheet 43K/13. The lease co-ordinates and connectivity details are listed below:

Geographical Pillar Co-ordinates	Latitude	Longitude
A	33°47'18.89" N	74°54'47.87" E
B	33°47'15.67" N	74°54'36.79" E
C	33°47'06.30" N	74°54'45.02" E
D	33°47'07.64" N	74°54'55.83" E

Table 2.2: Environment Sensitivity

S. No	Particulates	Name of Places	Distance (Km)	Direction
1.	Nearest Airport	Seikh Ul Alam International Airport, Srinagar	27.06	NNW
2.	Nearest Railway Station	Panzgom Railway Station	13.40	ENE

		Bijbiara Railway Station	15.20	E
3.	Nearest Bus Stand	Sofannam Bus Stop	2.12	SW
		Shopian bus station	5.59	SSW
4.	Nearest State Highway/Any other road	Musi Pora Link Road	0.20	N
		Qongonah - Aripora	0.55	SE
5.	Nearest National Highway	NH-1A	15.44	ENE
6.	Nearest School/College	Govt. High School, Trenz	2.59	WSW
		Public Model High School Turkawangam	1.75	East
7.	Nearest Masjid	Masjid Shareef, Danger Pora	1.40	SSW
		Masjid e Usman Batpora	1.80	East
8.	Nearest Hospital	Primary health centre, Trenz	2.88	SW
		Government Primary Health Centre	7.27	SSE
9.	Nearest Police Station	Police Station Litter	3.32	ENE
		Police Station Imamsahib	4.87	S
10.	Nearest Fire Station	Keegam Fire Station	4.98	W
		Rajpora Fire Station	6.79	nw
11.	National Border	No National Border present in 10 km around project site		
12.	International Border	No International Border present in 10 km around project site		
13.	Nearest Pond	No Pond present in 10 km around project site		
14.	Nearest River/Nallah/ Canal	Project lies on Nallah Rambiara		
15.	Wild Life Sanctuary	No Wild Life Sanctuary present in 10 km around project site		
16.	Reserved Forest	No Reserved Forest present in 10 km around project site		
17.	Protected Forest	No Protected Forest present in 10 km around project site		
18.	Wetland	No Wetland present in 10 km around project site		
19.	Nearest Defence Installation	Army Camp Behibagh Kulgam	10.04	SE

20.	Historical Importance Place	No Historical Importance Place present in 10 km around project site
21.	Nearest Cremation Ground	No Cremation ground present in 10 km around project site

(Source: Google Earth)

2.3.3 Minor Mineral Block No. 30

The River Bed Mining Project is located in Village: Nowpora bala, Tehsil: Chitragam, District: Shopian, and State/UT: Jammu & Kashmir. The lease area falls in Survey of India Toposheet 43K/13. The lease co-ordinates and connectivity details are listed below:

Geographical Pillar Co-ordinates	Latitude	Longitude
A	33°47'15.98" N	74°55'06.22" E
B	33°47'19.02" N	74°54'51.69" E
C	33°47'22.71" N	74°55'02.24" E
D	33°47'09.57" N	74°54'58.06" E

Table 2.3: Environment Sensitivity

S. No	Particulates	Name of Places	Distance (Km)	Direction
1.	Nearest Airport	Seikh Ul Alam International Airport, Srinagar	27.96	NNW
2.	Nearest Railway Station	Panzgom Railway Station	13.35	ENE
		Bijbiara Railway Station	15.14	E
3.	Nearest Bus Stand	Sofannam Bus Stop	2.12	SW
		Shopian bus station	5.59	SSW
4.	Nearest State Highway/Any other road	Musi Pora Link Road	0.17	N
		Qongonah - Aripora	0.53	SE
5.	Nearest National Highway	NH-1A	15.84	ENE
6.	Nearest School/College	Govt. High School, Trenz	2.56	WSW
		Public Model High School	1.76	East

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		Turkawangam		
7.	Nearest Masjid	Masjid Shareef, Danger Pora	1.89	SSW
		Masjid e Usman Batpora	1.20	East
8.	Nearest Hospital	Primary health centre, Trenz	2.45	SW
		Government Primary Health Centre	7.65	SSE
9.	Nearest Police Station	Police Station Litter	3.32	ENE
		Police Station Imamsahib	4.80	S
10.	Nearest Fire Station	Keegam Fire Station	4.29	W
		Rajpora Fire Station	6.61	nw
11.	National Border	No National Border present in 10 km around project site		
12.	International Border	No International Border present in 10 km around project site		
13.	Nearest Pond	No Pond present in 10 km around project site		
14.	Nearest River/Nallah/ Canal	Project lies on Nallah Rambiara		
15.	Wild Life Sanctuary	No Wild Life Sanctuary present in 10 km around project site		
16.	Reserved Forest	No Reserved Forest present in 10 km around project site		
17.	Protected Forest	No Protected Forest present in 10 km around project site		
18.	Wetland	No Wetland present in 10 km around project site		
19.	Nearest Defence Installation	Army Camp Behibagh Kulgam	10.69	SE
20.	Historical Importance Place	No Historical Importance Place present in 10 km around project site		
21.	Nearest Cremation Ground	No Cremation ground present in 10 km around project site		

(Source: Google Earth)

2.4 LEASE HOLD AREA

- **<u>Minor Mineral Block No. 28</u>**

The total lease area is 9.89 Ha. This is a government land which has been acquired by the lessee.

Table 2.4 Ancillary Features developed in the vicinity of the mining area

S.NO	Land Use	Present land
1	Excavated area/ Pit	Nil
2	Total area under Dumps	Nil
3	Area under Road	Nil
4	Undisturbed area	9.89
TOTAL		**9.89**

- **Minor Mineral Block No. 29**

The total lease area is 9.09 Ha. This is a government land which has been acquired by the lessee.

Table 2.5 Ancillary Features developed in the vicinity of the mining area

S.NO	Land Use	Present land
1	Excavated area/ Pit	Nil
2	Total area under Dumps	Nil
3	Area under Road	Nil
4	Undisturbed area	9.09
TOTAL		**9.09**

- **Minor Mineral Block No. 30**

The total lease area is 8.21 Ha. This is a government land which has been acquired by the lessee.

Table 2.6 Ancillary Features developed in the vicinity of the mining area

S.NO	Land Use	Present land
1	Excavated area/ Pit	Nil
2	Total area under Dumps	Nil

3	Area under Road	Nil
4	Undisturbed area	8.21
TOTAL		**8.21**

TOPOGRAPHY

Minor Mineral Block No. 28

The applied area is a part of flood plain of Nallah Rambiara with almost flat topography. The highest contour in the lease area is 1757 mRL and the lowest contour is 1750 mRL, Rambiara Nallah. The general slope of the area is towards north east.

(Source: Approved Mining Plan).

Minor Mineral Block No. 29

The applied area is a part of flood plain of nalla Rambiara with almost flat topography. The highest contour in the lease area is 1749 mRL and the lowest contour is 1740 mRL. Rambiara Nalla. The general slope of the area is towards north east.

(Source: Approved Mining Plan).

Minor Mineral Block No. 30

The applied area is a part of flood plain of nalla Rambiara with almost flat topography. The highest contour in the lease area is 1738 mRL and the lowest contour is 1731 mRL. Rambiara Nalla. The general slope of the area is towards north east.

(Source: Approved Mining Plan).

2.5 GEOLOGY

2.5.1 Regional Geology

For Minor Mineral Block No. 28, 29 & 30

District Shopian forms the southern part of Kashmir basin wherein Proterozoic to Quaternary rocks of diverse origin area exposed. The main Geological Formations constituting the bed rocks and the surrounding mountains include the Salkhala, Panjal

Volcanics and the Triassic Limestone covered by Quaternary Karewas and Alluvium deposits. A generalized regional stratigraphic sequence of the district is given below-

Table 2.7: Regional Geological Succession of the area

Group	Formation	Lithology	Age
	Quaternary	Unconsolidated clay, slit, sand and pebble	Holocene
Karewa	Naugam	Sand, clay, marl, conglomerate and losses sediments	Pliocene to Pleistocene
	Hirpur	Clay intercalated with silt, sand, conglomerate and lignite	
	Triassic Limestone	Limestone, shale, siliceous limestone, sandstone, quartzite	Triassic
Pir Panjal	Panjal Volcanic	Light and dark color amygdaloidal andesitic to basaltic lava flow	Early Permian
	Salkhala	Gametiferous sericite phyllite, Quartz chlorite schist, calc-schist, graphic limestone, marble with gypsum and graphite	Proterozoic

2.5.2 Local Geology

For Minor Mineral Block No. 28, 29 & 30

The instant lease area falls in the fluvial bed of Nallah Rambiara represented by the Quaternary sediments bounded by Upper Karewas. Upper Karewas mainly comprise yellow silt, grey clay, calcareous layers and sand with conglomerate in the lower part an continental loss and reworked loss in the upper part. This Formation is disposed horizontally and is reported devoid of fossils or presence of lignite. Nallah Rambiara along with its tributaries area involved in weathering of catchment lithologies and finally transport and deposit its sediment lo0ad in the form of boulder, *Bajri*, and sand at convenient locations like meanders, etc. the deposits represent recent geological

Formation and contain several meter thickness of sediments of basalt, limestone, quartize with fine nature of sand, silt and clay. The present deposits are of good quality and can be used for building purposes.

Shopian District has vast stretches of a largely flat landform created by the deposition of sediments over a long period of time by the Nallah Rambiara originating from Pir Panjal Range. These alluvial plains are gently sloping surfaces formed of sediments of very fertile nature and mostly lie along the course of the Nallah Rambiara. These plains are particularly put to the paddy cultivation producing large varieties of rice in bulk quantities. These plains have an average elevation of 1600 m above mean sea level and are often flooded by the Nallah Rambiara. Alluvium is typically made up of a variety of materials, including fine particles of slit, clay, sand and larger particles of cobbles, pebble and gravels that are loosely held with clayey and silty matrix. The material becomes finer in the area when it merges in the downstream plains.

(Source: CGWA.gov.in & Approved Mining Plan).

2.5.3 CLIMATE

For Minor Mineral Block No. 28, 29 & 30

Shopian Weather Forecast. Providing a local hourly Shopian weather forecast of rain, sun, wind, humidity and temperature. The Long-range 12 day forecast also includes detail for shopian weather today. Live weather reports from shopian weather stations and weather warnings that include risk of thunder, high UV index and forecast gales. Shopian is 2041 m above sea level and located at 33.72° N 74.83° E. Shopian has a population of 13565.

During winter period rainfall also occurs in lower hills and valleys parts.

Mean Maximum Temperature	:	30^0C
Mean Minimum Temperature	:	-2^0C
Average Annual Rainfall	:	61.7 mm

(Source: https://www.weather-forecast.com/locations/Shupiyan/forecasts/latest)

2.5.4 SURFACE DRAINAGE PATTERN

For Minor Mineral Block No. 28, 29 & 30

The present mining project represents sub surface minor mineral exploitation in the form of replenishable fluvial deposits of Nallah Rambiara without the involvement of any drilling, blasting and use of chemical. Further, water shall be drained along river flow. As such area does not require any specific mine drainage pattern. Surface drainage Map is attached as an ***Annexure IV.***

(Source: Approved Mining Plan).

2.6 RESERVE

To estimate the reserve of river bed material, the following parameters are considered:

- The reserves are calculated on the basis of established width, thickness and strike length/influence of the mineralized formation in the area.
- A barrier of 7.5 m width has been left from the lease boundary as a statutory area.
- The mining reserves are calculated up to the depth of 1.0 m from the existing river bed. There is no overburden and all reserves are proved reserves.
- The river bed deposit comprises of boulder, *bajri* and sand and as such the average bulk density is assumes as 2.3 for calculation of the tonnage.

<u>For Minor Mineral Block 28</u>:

Geological Reserve

Sectional Line	Sectional area (l x b = m^2)	Depth (m)	Volume (m^3)	Specific gravity	Reserves (T)
A-B	98,900	1	98,900	2.3	2,27,470

Mineable Reserve

Sectional Line	Sectional area (l x b = m^2)	Depth (m)	Volume (m^3)	Specific gravity	Reserves (T)	Reserve Calculated as per Replenishment study of 5 years (T)

A-B	89367.5	1	89367.5	2.3	2,05,545.25	10,27,726.25

For Minor Mineral Block 29:

Geological Reserve

Sectional Line	Sectional area (l x b = m^2)	Depth (m)	Volume (m^3)	Specific gravity	Reserves (T)
A-B	90,900	1	90,900	2.3	2,09,070

Mineable Reserve

Sectional Line	Sectional area (l x b = m^2)	Depth (m)	Volume (m^3)	Specific gravity	Reserves (T)	Reserve Calculated as per Replenishment study of 5 years (T)
A-B	80,835	1	80,835	2.3	1,85,920.5	9,29,602.5

For Minor Mineral Block 30:

Geological Reserve

Sectional Line	Sectional area (l x b = m^2)	Depth (m)	Volume (m^3)	Specific gravity	Reserves (T)
A-B	82,100	1	82,100	2.3	1,88,830

Mineable Reserve

Sectional Line	Sectional area (l x b = m^2)	Depth (m)	Volume (m^3)	Specific gravity	Reserves (T)	Reserve Calculated as per Replenishment study of 5 years (T)
A-B	73,407.5	1	73,407.5	2.3	1,68,837.25	8,44,186.25

2.7 MINING

2.7.1 Methodology of Mining

For Minor Mineral Block No. 28, 29 & 30

The proposed mining will be carried out by open cast semi-manually method. The river bed material (RBM) excavated will be scrapped manually with conventional hand tools. in tippers from the place of excavation to the mineral processing units or construction sites. Following geo-scientific methods are proposed to carry out during the mining operations.

1. Mining will be restricted to the lease area to a maximum depth of 1.0 m from the surface as per the provision of Jammu & Kashmir Minor Mineral Concession, Storage, Transportation of Minerals and Prevention of Illegal Mining Rules, 2016.
2. A barrier of 7.5m width has been left from the lease boundary as a statutory area and further pit slope shall be maintained below 45°.
3. Proper benching of 1.0 m height will be maintained in the river bed parallel to the banks of the nallah. Mining shall be carried out in a single bench of 1.0 m height divided into 5 sub blocks, one sub- block to be excavated each year, extracted block as such left for subsequent replenishment.
4. The natural gradient of the river bed will be maintained during the course of mining. Mining activities will be carried out in such a fashion so that there is no obstruction to the movement of water flow.
5. The mining shall be done during daytime only to avoid any environmental pollution and accidental hazards. Working will be carried out for 270 working days in a calendar year.
6. The Mining of RBM will not generate any topsoil or waste, therefore, no space will be needed for soil stacking yard or waste dumps.
7. 40 employments will be required/engaged for the proposed project.
8. System of working in the lease will be as per the provisions of mines Act 1952 and Metalliferous Mines regulations: 1961.

9. Haul roads will be properly maintained and sprayed by water for suppression of dust.
10. Personal protection equipments life safety helmet, safety shoes, safety goggles, dust respirators etc. will be provided to the labours as per the mining regulations.
11. The maximum extraction of the mineral is planned in the lean discharge period of the water body.
12. The river bed material so excavated shall be transported by trucks through approach roads which finally merge with tar roads for final destinations.
13. Safety zones with respect to bridge, hydraulic points and or/embankment as prescribed by the Department of Geology and Mining should be strictly adhered to,
14. Mining operations in the river mine block will be in accordance with all other provisions applicable as per Mines Act, 1952, Metalliferous Mines Regulations; 1961, Mines and Minerals (Development and Regulation) Act, 1957, Sustainable Sand Mining Management Guidelines 2016, Jammu & Kashmir Minor Mineral Concession, Storage. Transportation of Minerals and Prevention of Illegal Mining Rules, 2016, Jammu and Kashmir Water Resources (Regulation and Management) Act, 2010 Forest (Conservation) Act, 1980 and Environment (Protection) Act, 1986, Wild Life (Protection) Act, 1972, Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 and any other applicable law.

2.7.2 Restriction of mining:

For Minor Mineral Block No. 28, 29 & 30

1. No mining operation shall be carried out within 50 m of railway line, reservoir or road horizontally from the outer toe of the bank or the outer age of the cutting as the case may be.
2. The mining will not be allowed below the water table.
3. No mining operation will be allowed in forest area.
4. No mining will be done during monsoon season and during night times.

5. Sand, *Bajri*, Boulder shall not be extracted up to a distance of 1 kilometer (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.
6. Mining depth should be restricted to 1 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters.
7. A buffer distance /un-mined block of 50 meters after every block of 1000 meters over which mining is undertaken or at such distance as may be the directed/prescribed by the regulatory authority shall be maintained.
8. River bed sand mining shall be restricted within the central 3/4th width of the river/rivulet or 7.5 meters (inward) from river banks but up to 10% of the width of the river, as the case may be and decided by regulatory authority while granting environmental clearance in consultation with irrigation department. Regulating authority while regulating the zone of river bed mining shall ensure that the objective to minimize the effects of riverbank erosion and consequential channel migration are achieved to the extent possible. In general, the area for removal of minerals shall not exceed 60% of the mine lease area, and any deviation or relaxation in this regard shall be adequately supported by the scientific report.
9. The reclamation of mined out areas will be natural, as during the next monsoon the void will be replenished with sand, which will be available for fresh quarrying for the next dry season.
10. The contractor will abide by provision of Mines Act, 1952, Interstate Migrant Work Man Act, the contractor with the satisfaction of competent authority will provide drinking water, rest shelter, first aid box, welfare facilities as Central and State Govt. labor laws.
11. The contractors will abide at the time of mining with the term and condition as laid down under Mines Act, 1952 and Mines & Minerals (Regulation and

Development) Act, 1957, SRO 105-31st March, 2016, Forest (Conservation) Act, 1980 and the stipulations of the EIA/EMP.

2.7.3 Details of Production

For Minor Mineral Block 28

Year	ROM as per Replenishment study
I Year	2,05,545.25
II Year	2,05,545.25
III Year	2,05,545.25
IV Year	2,05,545.25
V Year	2,05,545.25
Total	**10,27,726.25**

Total production of minor mineral block no. 28 is 10, 27, 726.25 T for 5 years, which will be excavated by opencast semi-mechanized method for 2, 05, 545.25 TPA.

For Minor Mineral Block 29

Year	ROM as per Replenishment study
I Year	1,85,920.50
II Year	1,85,920.50
III Year	1,85,920.50
IV Year	1,85,920.50
V Year	1,85,920.50
Total	**9,29,602.5**

Total production of minor mineral block no. 29 is 9, 29,602.5 T for 5 years, which will be excavated by opencast semi-mechanized method for 1, 85,920.50 TPA.

For Minor Mineral Block 30

Year	ROM as per Replenishment study
I Year	1,68,837.25
II Year	1,68,837.25
III Year	1,68,837.25
IV Year	1,68,837.25
V Year	1,68,837.25
Total	**8,44,186.25**

Total production of minor mineral block no. 30 is 8, 44,186.25 T for 5 years, which will be excavated by opencast semi-mechanized method for 1, 68,837.25 TPA.

Block Number	Area	Location	Mineable Reserve	Average production Capacity
28	9.89 Ha	Army camp Aghama D/Stream, Nallah – Rambiara, Village – Aghama, Tehsil- Chitragam, District- Shopian, and State/U.T.- J & K	2,05,545.25 T	41,109.05 TPA
29	9.09 Ha	Irrigation Scheme Nowpora U/Stream, Nallah – Rambiara, Village – Nowpora Bala, Tehsil- Chitragam, District- Shopian, and State/U.T.- J & K	1,85,920.5 T	37,184.10 TPA
30	8.21 Ha	Irrigation Scheme Nowpora D/Stream, Nallah – Rambiara, Village – Nowpora Bala, Tehsil- Chitragam, District- Shopian, and State/U.T.- J & K	1,68,837.25 T	33,767.45 TPA

2.8 BLASTING

For Minor Mineral Block No. 28, 29 & 30

Mineral is soft & easily mineable so no drilling & blasting will be required.

2.9 STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTES

Mining of River Bed is fresh material and will not generate any waste, thus disposal of waste and its arrangements will not be required.

2.11 USE OF MINERAL

The river bed mineral (boulder, *bajri* & sand) are of good quality and will be used in the construction industries and making highways.

2.12 SITE SERVICES

2.12.1 Working Office:

Temporary working office will be based at mine site. This will be a temporary structure and can easily be shifted one side to another side as & when required.

2.12.2 Rest Shelter:

A temporary structure with toilet facility as a rest shelter to labors will be provided to the workers near mine site.

2.12.3 Primary Health/First Aid:

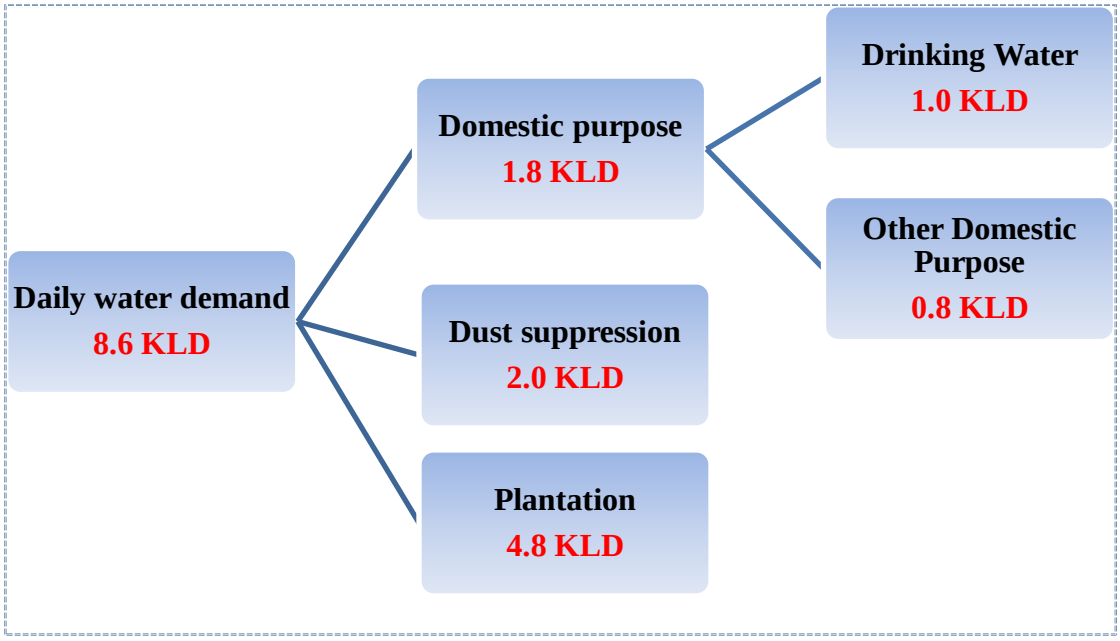
First aid box with principal medicine will be kept at mine site to facilitate the first aid treatment to the workers in case of any eventuality.

2.12.4 Water arrangement:

Separate arrangements for drinking water for the labors will also be made in the working office and rest shelter.

For Minor Mineral Block No. 28

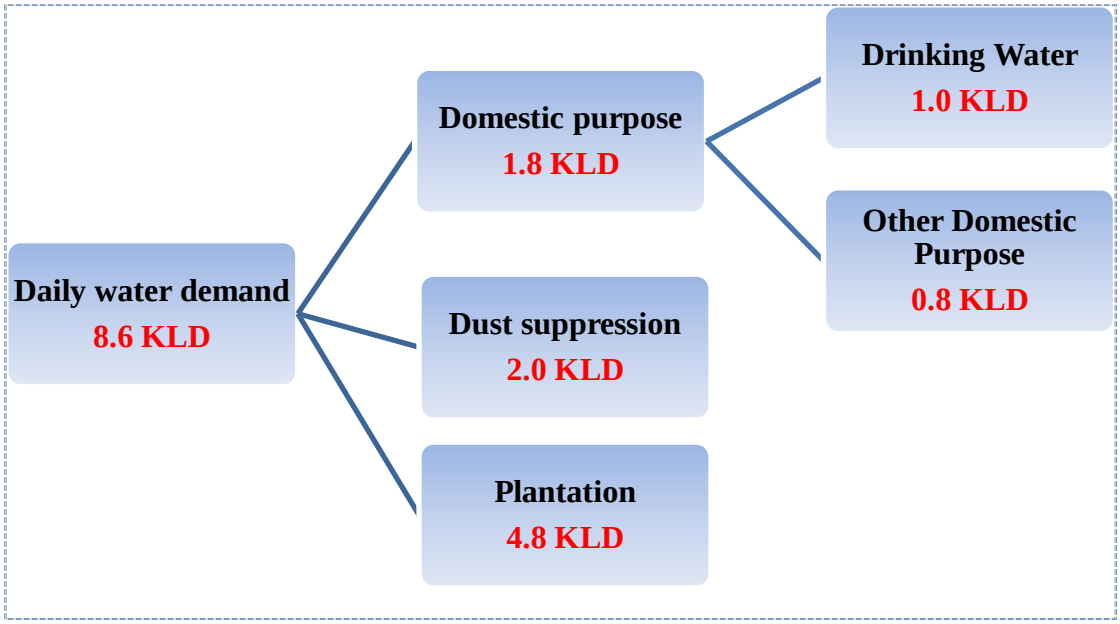
Water requirement for the proposed project will be provided for the workers for drinking & domestic purpose. Water will also be provided for dust suppression. Fresh water will be only used for drinking purpose. The break up for water requirement is given below:



The water will be supplied from available sources from PHED supply.

For Minor Mineral Block No. 29

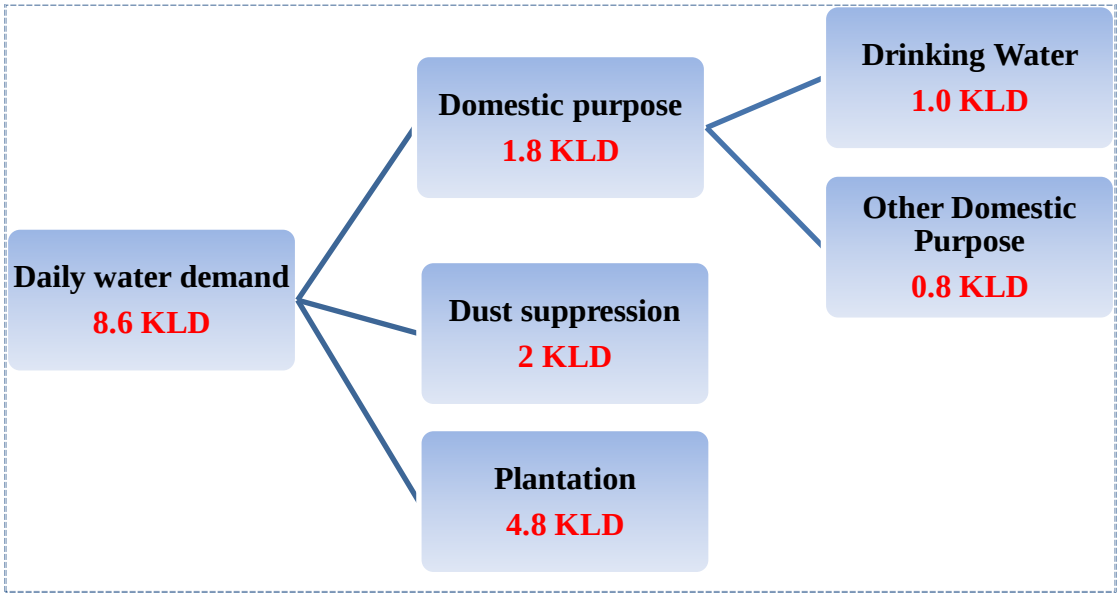
Water requirement for the proposed project will be provided for the workers for drinking & domestic purpose. Water will also be provided for dust suppression. Fresh water will be only used for drinking purpose. The break up for water requirement is given below:



The water will be supplied from available sources from PHED supply.

For Minor Mineral Block No. 30

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:

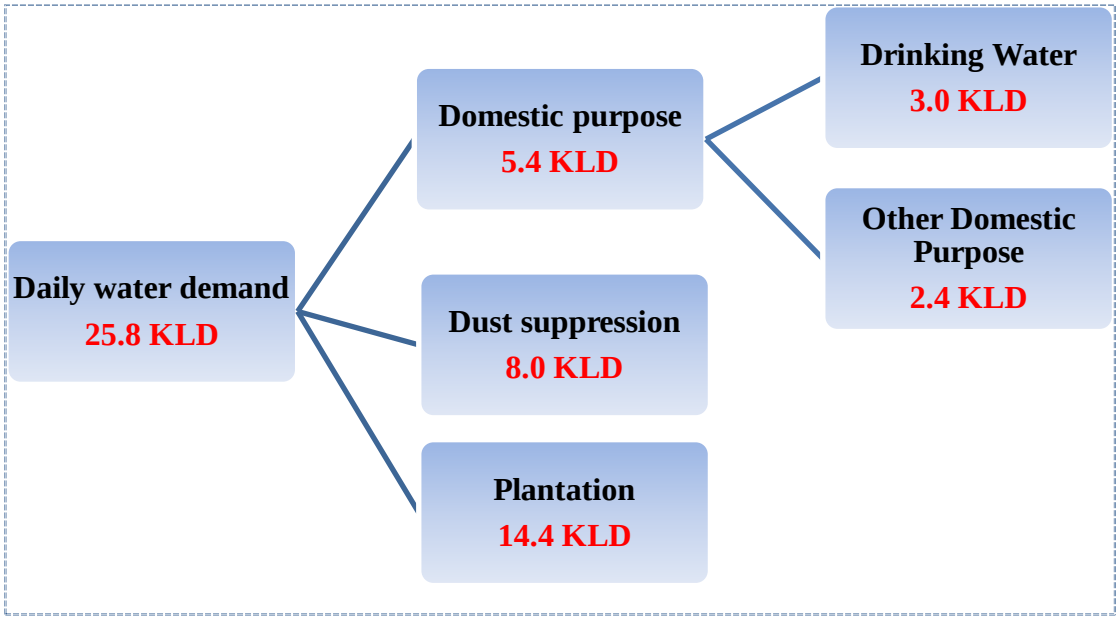


The water will be supplied from available sources from PHED supply.

Combine Water Table

S. No.	Particulates	Water Requirement
1.	Population (120)	5.4
2.	Dust Suppression	8.0
3.	Plantation	14.4
Total Water Requirement		**25.8**

Combine Water Balance



The water will be supplied from available sources from PHED supply.

2.12.5 Sanitary facilities:

Temporary latrines & urinals shall be maintained at convenient places for use of labors.

2.12.6 Man Power Requirement:

For Minor Mineral Block 28

The manpower requirement for the proposed project is given below along with the breakup, who will be utilized for excavation & loading of minerals into trucks or tractor-trolleys.

S. No.	Category	Numbers

1.	Skilled	2
2.	Semi skilled	2
3.	Unskilled	36
TOTAL		**40**

*****Additional workers include workers for dust suppression purpose, providing water for drinking & domestic purpose, for maintenance of roads, etc.

For Minor Mineral Block 29

The manpower requirement for the proposed project is given below along with the breakup, who will be utilized for excavation & loading of minerals into trucks or tractor-trolleys.

S. No.	Category	Numbers
1.	Skilled	2
2.	Semi skilled	2
3.	Unskilled	36
TOTAL		**40**

*****Additional workers include workers for dust suppression purpose, providing water for drinking & domestic purpose, for maintenance of roads, etc.

For Minor Mineral Block 30

The manpower requirement for the proposed project is given below along with the breakup, who will be utilized for excavation & loading of minerals into trucks or tractor-trolleys.

S. No.	Category	Numbers
1.	Skilled	2
2.	Semi skilled	2
3.	Unskilled	36
TOTAL		**40**

*****Additional workers include workers for dust suppression purpose, providing water for drinking & domestic purpose, for maintenance of roads, etc.

****

CHAPTER- 3

DESCRIPTION OF ENVIRONMENT

INDEX

3.0 DESCRIPTION OF THEENVIRONMENT

3.1 Preamble

Baseline environmental status in and around proposed mining lease area depicts the existing environmental 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 main aim of the impact assessment study depends mainly on two factors. One is the estimation of impact from proposed project on the environment and second one is the assessment of the environmental condition. Both are key factors to arrive at the post project scenario. The estimated impact due to the proposal mine lease area can be superimposed over the existing conditions to arrive at the post project scenario. The scope of the baseline studies includes detailed characterization of following environmental components, which are most likely to be influenced by the setting up of a mine lease area.

- ✓ Metrological conditions
- ✓ Ambient Air Quality
- ✓ Noise levels
- ✓ Water Quality (Surface + Ground water)
- ✓ Soil Quality
- ✓ Socio economic status

3.2 Study Area

The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring.

3.3 Study Period

The baseline environment quality was carried out over a radial distance of 10 km around the mine during post monsoon season covering the months of **October 2020 to December 2020.**

3.4 Meteorological Conditions

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 plant premises. Meteorological data was

generated during the post-monsoon season monitoring period.

The following parameters were recorded at hourly intervals continuously during monitoring period:

- ✓ Wind speed
- ✓ Wind Direction
- ✓ Temperature

Rainfall was recorded on daily basis.

Table-3.1: Summarized Meteorological Data for the Monitoring Period

(Jan 2020 –Dec 2020) To be taken

(Jan2020– Dec2020)

Parameters	Jan	Feb	Mar.	April	May	June	July	Aug	Sep.	Oct.	Nov.	Dec.	Annual
Max. Temp.	46	65	68	78	86	90	92	96	90	80	69	57	76.42
Min. Temp.	34	0	37	40	47	55	59	0	50	35	0	39	33.00
R.H. %	80.23	68.47	68.95	65.83	61.27	60.22	56.08	64.43	64.48	62.02	73.29	75.99	66.77
W. Speed in Km/hr.	0.79	1.16	1.41	1.33	1.80	1.57	1.39	1.43	1.10	0.68	0.70	1.16	1.21
Rainfall in mm.	0.17	0.01	0.13	0.085	0.05	0.06	0.004	0.17	0.03	0.00	0.03	0.06	0.07

Source: - https://www.wunderground.com/history/monthly/in/budgam/VISR/date/2020-12

3.5 AIR ENVIRONMENT

3.5.1 Ambient Air Quality

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

Methodology adopted for the study

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
- ✓ 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 18 locations with due consideration to the above mentioned points. AAQM locations were selected in downwind and upwind direction of the proposed mining lease area covering core and buffer zones. The details of the monitoring stations are given in **Figure 3.1.**

Ambient air quality monitoring was carried out twice a week with a frequency of 24 hours for 12 weeks during the study period. The common air pollutant namely, Particulate Matter-10 (PM_{10}), Sulphur-dioxide (SO_2), Oxides of Nitrogen (NO_2) has been measured through a planned field monitoring.

Statistical parameters like minimum, maximum, average and 98^{th} 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 rural and other area.

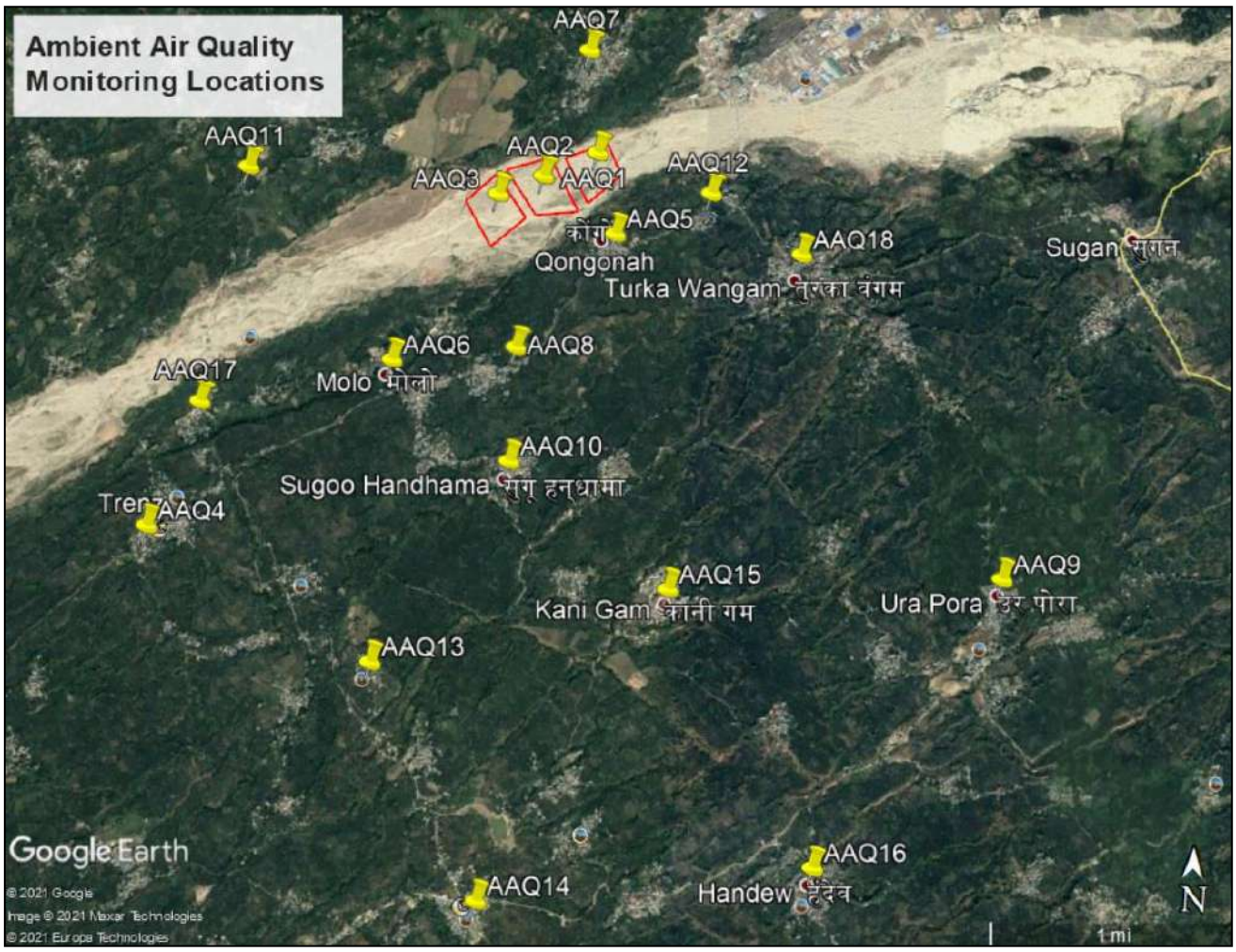


Figure 3.1 Showing Ambient Air Monitoring Locations marked within the Study Area

Table-3.2: Location of Ambient Air Quality Monitoring Stations

Locations	Locations Code	Direction	Distance (km)	Latitude	Longitude
Project site (Block No. 28)	AAQ 1	----	----	33°47'16.71"N	74°54'58.83"E
Project site (Block No. 29)	AAQ 2	----	----	33°47'10.99"N	74°54'45.35"E
Project site (Block No. 30)	AAQ 3	----	----	33°47'6.59"N	74°54'34.04"E
Govt Girls Middle School	AAQ 4	SSW	1.61	33°45'52.23"N	74°53'11.20"E
Qongonah	AAQ 5	SSE	0.34	33°46'59.35"N	74°55'4.49"E
Molo	AAQ 6	S	9.55	33°46'29.94"N	74°54'9.78"E
Allowpora	AAQ 7	NNW	0.59	33°47'38.64"N	74°54'55.30"E
Chitragam	AAQ 8	S	0.78	33°46'34.07"N	74°54'40.92"E

Urapora	AAQ 9	SE	3.73	33°45'50.90"N	74°56'47.31"E
Sugoo Handhama	AAQ 10	ESE	1.51	33°46'9.92"N	74°54'40.97"E
Adora Ram Pathri	AAQ 11	NNW	0.76	33°47'9.20"N	74°53'30.36"E
Aripora	AAQ 12	S	0.61	33°47'9.36"N	74°55'28.48"E
Haripora	AAQ 13	S	2.34	33°45'26.64"N	74°54'9.49"E
Imamsahib	AAQ 14	S	3.69	33°44'38.87"N	74°54'39.25"E
Kanigam	AAQ 15	SSW	3.06	33°45'44.98"N	74°55'22.70"E
Handew	AAQ 16	SSE	4.29	33°44'48.95"N	74°56'2.61"E
Govt High School Trenz	AAQ 17	SSW	0.73	33°46'18.97"N	74°53'22.16"E
Turka Wangam	AAQ 18	ESE	1.32	33°46'57.36"N	74°55'52.46"E

Table-3.3 (a) Ambient Air Quality in the Study Area PM_{10}.

Location		**PM_{10} (µg/m^3)**			
Code	**Name of the Station**	**Min**	**Max**	**Average**	**98th percentile**
AAQ 1	Project site (Block No. 28)	64.6	84.5	72.7	84.3
AAQ 2	Project site (Block No. 29)	**67.8**	83.3	**74.1**	82.2
AAQ 3	Project site (Block No. 30)	63.3	**85.6**	72.0	**84.6**
AAQ 4	Govt. Girls Middle School	65.9	80.9	72.3	80.3
AAQ 5	Qongonah	56.2	76.1	63.6	75.9
AAQ 6	Molo	60.5	76.0	67.4	75.4
AAQ 7	Allowpora	60.4	82.7	69.2	81.7
AAQ 8	Chitragam	65.0	80.5	71.4	79.5
AAQ 9	Urapora	59.6	81.9	68.3	80.9
AAQ 10	Sugoo Handhama	61.5	76.5	67.9	75.9
AAQ 11	Adora Ram Pathri	**55.0**	74.9	**62.4**	74.7
AAQ 12	Aripora	55.9	78.2	64.6	77.2
AAQ 13	Haripora	58.9	**73.9**	65.3	**73.3**
AAQ 14	Imamsahib	58.9	78.8	66.3	78.6

AAQ 15	Kanigam	64.1	79.6	71.0	79.0
AAQ 16	Handew	61.5	83.8	70.3	82.8
AAQ 17	Govt. High School Trenz	63.0	78.5	69.4	77.5
AAQ 18	Turka Wangam	60.6	82.9	69.3	81.9

Table-3.3 (b) Ambient Air Quality in the Study Area $PM_{2.5}$

Location		**$PM_{2.5}$(µg/m^3)**			
Code	**Name of the Station**	**Min**	**Max**	**Average**	**98th percentile**
AAQ 1	Project site (Block No. 28)	**31.5**	**44.5**	36.3	43.3
AAQ 2	Project site (Block No. 29)	30.8	42.1	35.7	41.8
AAQ 3	Project site (Block No. 30)	30.9	45.4	**36.4**	**44.7**
AAQ 4	Govt Girls Middle School	30.8	42.1	36.3	42.1
AAQ 5	Qongonah	27.7	40.0	31.8	38.5
AAQ 6	Molo	29.0	39.5	34.1	39.4
AAQ 7	Allowpora	29.6	43.8	34.6	43.2
AAQ 8	Chitragam	31.1	41.8	35.8	41.6
AAQ 9	Urapora	29.2	43.4	34.5	42.8
AAQ 10	Sugoo Handhama	28.8	39.8	34.0	39.7
AAQ 11	Adora Ram Pathri	**27.1**	39.4	**31.2**	**37.9**
AAQ 12	Aripora	27.5	41.4	32.7	40.8
AAQ 13	Haripora	27.7	**38.4**	32.7	38.2
AAQ 14	Imamsahib	28.9	41.4	33.2	39.9
AAQ 15	Kanigam	30.6	41.4	35.9	41.4
AAQ 16	Handew	30.1	44.4	35.2	43.7
AAQ 17	Govt High School Trenz	30.2	40.7	34.8	40.5
AAQ 18	Turka Wangam	29.7	43.9	35.0	43.3

Table-3.3 (c) Ambient Air Quality in the Study Area SO_2

Location		**SO_2 (µg/m^3)**			
Code	**Name of the Station**	**Min**	**Max**	**Average**	**98th percentile**

AAQ 1	Project site (Block No. 28)	**5.6**	**7.5**	**6.4**	**7.5**
AAQ 2	Project site (Block No. 29)	5.4	7.2	6.3	7.1
AAQ 3	Project site (Block No. 30)	5.5	7.6	6.4	7.5
AAQ 4	Govt Girls Middle School	5.4	7.2	6.4	7.1
AAQ 5	Qongonah	5.0	6.8	5.6	6.8
AAQ 6	Molo	5.1	6.8	6.0	6.7
AAQ 7	Allowpora	5.3	7.4	6.1	7.3
AAQ 8	Chitragam	5.4	7.2	6.3	7.1
AAQ 9	Urapora	5.2	7.3	6.1	7.2
AAQ 10	Sugoo Handhama	5.1	6.8	6.0	6.8
AAQ 11	Adora Ram Pathri	4.9	6.7	**5.5**	6.6
AAQ 12	Aripora	5.0	7.0	5.7	6.9
AAQ 13	Haripora	**4.9**	**6.6**	5.8	**6.5**
AAQ 14	Imamsahib	5.2	7.0	5.9	7.0
AAQ 15	Kanigam	5.3	7.1	6.3	7.0
AAQ 16	Handew	5.4	7.5	6.2	7.4
AAQ 17	Govt High School Trenz	5.3	7.0	6.1	6.9
AAQ 18	Turka Wangam	5.3	7.4	6.1	7.3

Table-3.3 (d) Ambient Air Quality in the Study Area NO_x

Location		**NOx (µg/m^3)**			
Code	**Name of the Station**	**Min**	**Max**	**Average**	**98th percentile**
AAQ 1	Project site (Block No. 28)	7.5	12.6	**10.2**	12.4
AAQ 2	Project site (Block No. 29)	8.1	11.7	10.1	11.6
AAQ 3	Project site (Block No. 30)	7.4	13.3	10.2	13.0
AAQ 4	Govt Girls Middle School	8.1	12.4	10.2	12.1
AAQ 5	Qongonah	6.6	11.4	8.9	11.1
AAQ 6	Molo	7.6	11.6	9.5	11.4
AAQ 7	Allowpora	7.0	12.9	9.8	12.5
AAQ 8	Chitragam	**8.1**	11.7	10.0	11.6

AAQ 9	Urapora	7.0	12.8	9.7	12.4
AAQ 10	Sugoo Handhama	7.7	11.7	9.6	11.4
AAQ 11	Adora Ram Pathri	**6.4**	**11.2**	**8.7**	**10.9**
AAQ 12	Aripora	6.5	12.2	9.1	11.8
AAQ 13	Haripora	7.4	11.3	9.2	11.0
AAQ 14	Imamsahib	6.9	11.8	9.3	11.5
AAQ 15	Kanigam	8.0	12.2	10.0	11.9
AAQ 16	Handew	7.2	13.1	9.9	**12.7**
AAQ 17	Govt High School Trenz	7.9	11.4	9.7	11.3
AAQ 18	Turka Wangam	7.1	**12.9**	9.8	12.6

Table-3.3 (e) Ambient Air Quality in the Study Area (CO)

Location		**CO (mg/m^3)**			
Code	**Name of the Station**	**Min**	**Max**	**Average**	**98th percentile**
AAQ 1	Project site (Block No. 28)	**0.21**	**0.65**	0.42	0.62
AAQ 2	Project site (Block No. 29)	0.20	0.62	0.43	0.62
AAQ 3	Project site (Block No. 30)	0.20	0.66	**0.44**	**0.65**
AAQ 4	Govt Girls Middle School	0.20	0.62	0.43	0.62
AAQ 5	Qongonah	0.18	0.58	0.38	0.55
AAQ 6	Molo	0.19	0.58	0.42	0.58
AAQ 7	Allowpora	0.20	0.61	0.40	0.58
AAQ 8	Chitragam	0.20	0.62	0.43	0.62
AAQ 9	Urapora	0.19	0.63	0.42	0.62
AAQ 10	Sugoo Handhama	0.19	0.59	0.40	0.58
AAQ 11	Adora Ram Pathri	0.18	0.57	0.38	**0.54**
AAQ 12	Aripora	**0.18**	0.60	0.40	0.59
AAQ 13	Haripora	0.18	**0.57**	**0.38**	0.56
AAQ 14	Imamsahib	0.19	0.60	0.40	0.57
AAQ 15	Kanigam	0.20	0.61	0.44	0.61

AAQ 16	Handew	0.20	0.62	0.41	0.59
AAQ 17	Govt High School Trenz	0.19	0.60	0.42	0.60
AAQ 18	Turka Wangam	0.20	0.64	0.43	0.63

3.5.3: Baseline Scenario

a) Suspended Particulate Matter(PM_{10})

Suspended particulate matter in general terms is the particulate matter in suspension in ambient air. It includes dust, smoke etc. In general some of the important sources of suspended particulate matter are mines. The following sources of suspended particulate matter in the study area are identified:

- ✓ Emission due to vehicular movement
- ✓ Dust generation from ground or other mining operations

The minimum and maximum level of PM_{10} recorded within the study area was in the range of 55.0 µg/m^3 to 85.6 µg/m^3 with the 98th percentile ranging between 73.3 µg/m^3 to 84.6 µg/m^3. The 24 hourly average values of PM_{10} were compared with the National Ambient Air Quality Standards (NAAQS) and found that all sampling stations recorded in the study area are within the applicable limits i.e., 100 µg/m^3 for PM_{10} in industrial, residential, rural and other area.

b) Particulate Matter ($PM_{2.5}$)

Fine particles include all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes. In general, some of the important sources of particulate matter are mines. The following sources of particulate matter in the study area are identified:

- ✓ Emission due to vehicular movement
- ✓ Dust generation from ground or other mining operations

$PM_{2.5}$ recorded within the study area was in the range of 27.1 µg/m^3 to 44.5 µg/m^3 with the 98th percentile ranging between 37.9 µg/m^3 to 44.7 µg/m^3 were compared with the National Ambient Air Quality Standards (NAAQS) and found that all sampling stations recorded in the study area are within the applicable limits i.e., 60µg/m^3 for $PM_{2.5}$ for industrial, residential, rural and other areas.

c) Sulphur Dioxide (SO_2)

Sulphur dioxide gas is an inorganic gaseous pollutant. Sulphur dioxide emissions are expected to be emitted wherever combustion of any fuel containing Sulphur takes place. The Sulphur in the fuel will combine with oxygen to form Sulphur dioxide. The following sources of Sulphur dioxide in the study area are identified:

- ✓ Emissions from domestic/consumption of fuel (coal, diesel, etc.)

Sulphur dioxide in atmosphere is significant because of its toxicity; Sulphur dioxide is capable of producing illness and lung injury. Further it can combine with water in the air to form toxic acid aerosols that can corrode metal surfaces, fabrics and the leaves of plants. Sulphur dioxide is an irritant to the eyes and respiratory system. Excessive exposure to Sulphur dioxide causes bronchial asthma and other breathing related diseases as it affects the lungs.

The minimum and maximum level of SO_2 recorded within the study area was in the range of 4.9 to 7.5 µg/m^3 with the 98th percentile ranging between 6.5 µg/m^3 to 7.5 µg/m^3.

The 24 hourly average values of SO_2 were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 µg/m^3 for industrial, residential, rural and other area.

d) Oxides of Nitrogen (NO_2)

The important sources of oxides of Nitrogen are from utilities and auto exhaust due to vehicular movement in mine lease area. The following sources of oxides of nitrogen in the study area are identified.

- ✓ Emissions from vehicular movements in the study area.

Oxides of Nitrogen in the presence of sunlight will undergo reactions with a number of organic compounds to produce all the effects associated with photochemical smog. NO_x has inherent ability to produce deleterious effects by themselves like toxicity. It causes asphyxiation when its concentration is great enough to reduce the normal oxygen supply from the air.

The minimum and maximum level of NO_x recorded within the study area was in the range of 6.4 µg/m^3 to 12.9 µg/m^3 with the 98th percentile ranging between 10.9 µg/m^3 to 12.7 µg/m^3. The 24 hourly average values of NO_2 were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 µg/m^3 for industrial, residential, rural and other area.

e) Carbon Monoxide (CO)

The seasonal minimum, maximum, average and 98 percentile values within the study area ranged between 0.18 to 0.21 µg/m^3, 0.57 to 0.65 µg/m^3, 0.38 to 0.44 µg/m^3 and 0.54 to 0.65 µg/m^3 respectively. (IS 5182)

Observation: CO concentration was on within permissible limits when compared to NAAQS level i.e. (< 2 mg/m3) for 8 hourly at all locations.

USEPA based modeling for the Air dispersion has been carried out for prediction of the MGLC incremental load and isopleths have been plotted for study in the subsequent chapter –IV.

3.6 NOISE LEVELS

Noise is one of the most undesirable and unwanted by-products of our modern life style. It may not seem as insidious or harmful as air and water pollutants but it affects human health and well-being and can contribute to deterioration of human well-being in general and can cause neurological disturbances and physiological damage to the hearing mechanism in particular. It is therefore, necessary to measure both the quality as well as the quantity of noise in and around the proposed site.

3.6.1 Source of Noise

The main sources of noise in the study area are domestic activities, industrial activities and vehicular traffic. The main occupation of the villagers in the study area is agriculture and business.

3.6.2 Noise level in the Study Area

The baseline noise levels have been monitored at 9 locations within the study zone, using a sound level meter and noise level measurement locations were identified for assessment of existing noise level status, keeping in view the land use pattern, industrial area, Silence Zone, residential areas in villages etc., if available within 10 km radius of the study area. The day levels have been monitored during 6.00 AM to 10.00 PM and night noise levels, during 10.00 PM to 6.00 AM. The noise monitoring stations are shown in **Figure 3.3** and represented in **Table 3.4.** The results are presented in **Table 3.6**.

Table 3.4: Noise Level Monitoring Stations in the Study Area

Code	Locations	Zone	Direction	Distance	Latitude	Longitude
NQ1	Project Site (Block No. 30)	Industrial	---	---	33°47'13.93"N	74°54'52.51"E
NQ2	Project Site (Block No. 29)	Industrial	---	---	33°47'11.41"N	74°54'45.77"E
NQ3	Project Site (Block No. 28)	Industrial	---	---	33°47'7.17"N	74°54'35.56"E
NQ4	Ari Pora	Residential	E	0.8	33°47'10.63"N	74°55'36.20"E
NQ5	Bagh Hari Pora	Residential	SE	0.79	33°46'28.38"N	74°54'16.20"E
NQ6	Qongonah	Residential	SSE	0.37	33°46'58.44"N	74°55'4.05"E
NQ7	Adora Ram Pathri	Residential	NW	0.73	33°47'6.87"N	74°53'29.44"E
NQ8	Allowpora	Residential	N	0.58	33°47'40.09"N	74°55'3.08"E
NQ9	Turka Wangam	Residential	ESE	1.64	33°46'57.21"N	74°55'56.92"E

Ambient Noise Standards

Ministry of Environment Forests& Climate Change (MoEF&CC) has notified the noise standards vide gazette notification dated February 14, 2000 for different zones under the Environment Protection Act (1986). These standards are given in **Table-3.5**

Table 3.5 Ambient Quality Standards in respect of Noise

Area Code	Category of Area	Noise dB (A) L_{eq}	
		Daytime*	**Night time***
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note:

1. Daytime is from 6.00 am to 10.00 pm and Night time is from 10.00 pm to 6.00am.
2. Silence zone is defined as area up to 100 meters around premises of hospitals,

educational institutions and courts. Use of vehicle hours, loud speakers and bursting of crackers are banned in these zones.

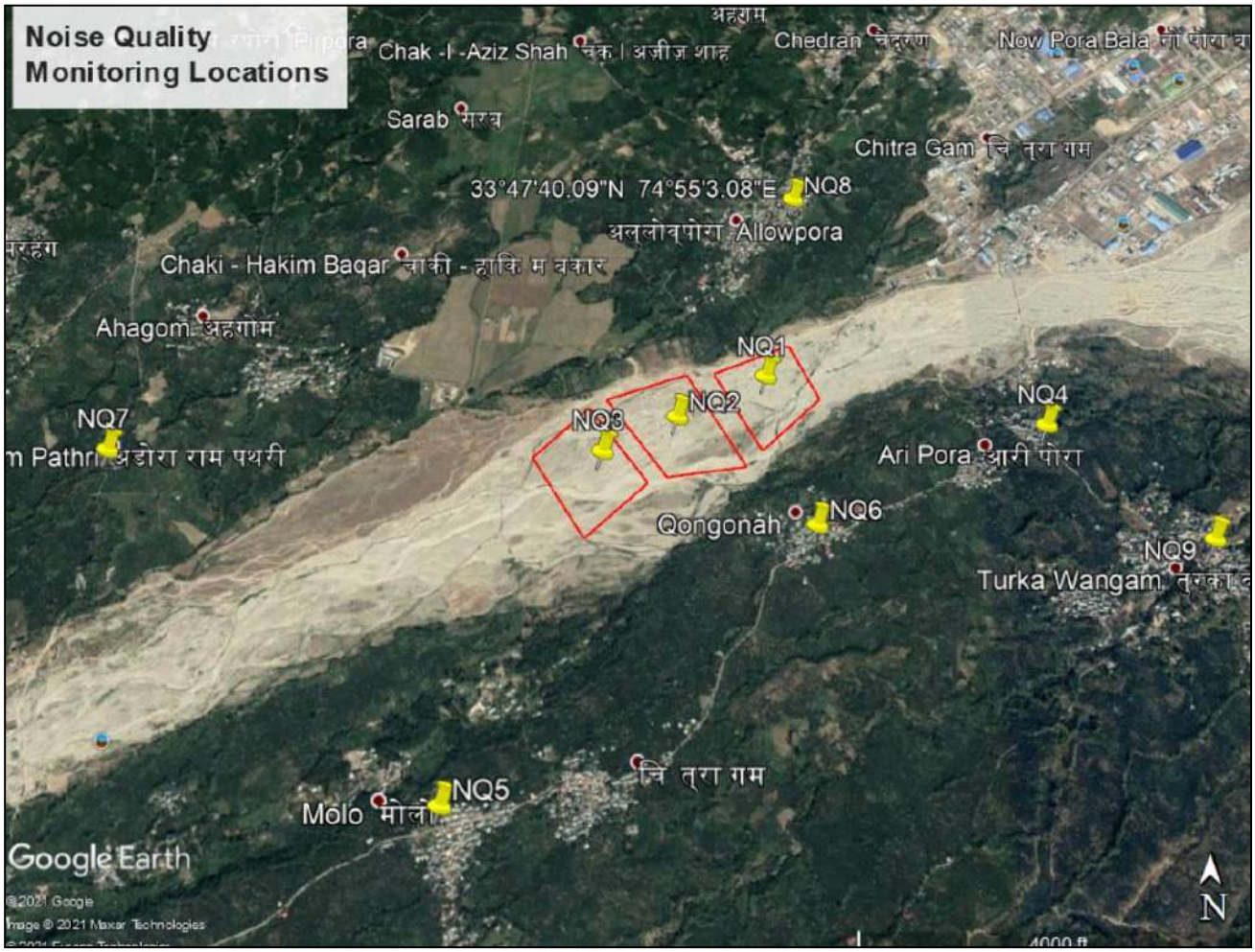


Figure 3.3: Showing Ambient Noise Quality Monitoring Locations marked within the Study Area

Baseline Scenario

The values of noise observed in some of the areas are primarily owing to vehicular traffic and other anthropogenic activities. Assessment of hourly night time Leq (Ln) varies from 33.8 to 58.5 dB (A) and the hourly daytime Leq (Ld) varies from 41.6 to 67.5 dB (A) within the study area.

Table 3.6: Hourly Leq Noise Level in the Study Area

SI. No.	Monitoring Stations	Zone	Locations	Equivalent Noise Level, dB (A)	
				Observed Value, dB(A)	Prescribed Limit, dB(A)

				Day	Night	Day	Night
	Core Zone						
1.	NQ1	Industrial Zone	Project Site (Block No. 30)	67.5	58.5	75	70
2.	NQ2	Industrial Zone	Project Site (Block No. 29)	65.0	55.2	75	70
3.	NQ3	Industrial Zone	Project Site (Block No. 28)	67.6	58.1	75	70
	Buffer Zone						
4.	NQ4	Silent Zone	Near Sr. Primary School	45.6	33.8	50	40
5.	NQ5	Residential Zone	Bagh Hari Pora	**45.2**	40.4	55	45
6.	NQ6	Residential Zone	Qongonah	48.2	36.7	55	45
7.	NQ7	Residential Zone	Adora Ram Pathri	48.8	**39.8**	55	45
8.	NQ8	Residential Zone	Allowpora	41.6	**33.4**	55	45
9.	NQ9	Residential Zone	Turka Wangam	**50.3**	39.9	55	45

The status of noise quality within the 10 km zone of the study area is, therefore, within the MoEF&CC standards.

3.7 WATER ENVIRONMENT

Water Quality

Surface and groundwater samples were collected from different sources within the study area and some important physical and chemical parameters were considered for depicting the baseline status of the study area. The sources of surface water in the study area is given below-

- Upstream of Nallah Rambiara.
- Middle Stream of Nallah Rambiara.
- Downstream of Nallah Rambiara.

Location for water sampling sites is given in **Figure 3.4**

Sampling Frequency and Sampling Techniques

Parameters for analysis of water quality were selected based on the utility of the particular source of water as per MoEF&CC guidance. Hence quality of ground water was compared with IS: 10500: 1991 (Reaffirmed 1993 With Amendment NO -3 JULY 2010) for drinking purposes. Surface 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 in a 5 liter plastic jerry can and 250 ml sterilized clean glass/pet bottle for complete physico-chemical and bacteriological tests respectively. The samples were analyzed as per standard procedure / method given in IS: 3025 (Revised Part) and standard method for examination of water and wastewater Ed.21st, published jointly APHA, AWWA and WPCF. The surface water quality is compared with CPCB water quality criteria mentioned in **Table 3.7** below.

Table 3.7: 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 Coli forms 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 absorpt ion 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 each month in the study period. Sampling was done by standard sampling technique as per the Standard Methods. Necessary precautions were taken for preservation of samples.

Water Quality Assessment

Selected water quality parameters for water resource of the study area have been used for describing the water environment and assessing the impacts. Eight ground water samples were collected in the study area to assess the water quality. Water samples also drawn from the hand pumps and open wells and three surface water samples were drawn from Upstream of Nallah Rambiara, Middle Stream of Nallah Rambiara and Downstream of Nallah Rambiara. Sampling locations for water samples are shown in **Figure 3.4** and the details of locations are given in **Table 3.8**. The water samples collected from the above locations were analyzed for important major and minor ions, and the analytical results of the water samples were compared with CPCB drinking water standards and the results are shown in **Table 3.9 & Table 3.10** for Groundwater sample and Surface water sample respectively..

Table 3.8: Location of Water Sampling Sites

Location No.		**Sample collected from**			
Ground Water Samples					
Code	**Locations**	**Distance in Km**	**Direction**	**Latitude**	**Longitude**
GW1	Govt. UPS Karewa Lassipora	1.29	N	33°48'10.73"N	74°55'47.91"E
GW2	Govt Higher Secondary School Turkwangam	1.09	S	33°46'50.38"N	74°55'49.23"E
GW3	Bagh Hari Pora	0.77	SE	33°46'28.20"N	74°54'16.31"E

GW4	Govt Girls Middle School	1.61	SSW	33°45'52.23"N	74°53'11.20"E
GW5	Govt Middle School	3.27	NNW	33°48'45.38"N	74°53'28.13"E
GW6	Kanigam	1.29	SSE	33°45'46.69"N	74°55'22.87"E
GW7	Allowpora	1.09	NNW	33°47'39.44"N	74°54'56.48"E
GW8	Adora Ram Pathri	0.77	W	33°47'8.57"N	74°53'29.95"E
Surface Water Samples					
Code	**Locations**	**Distance in Km**	**Direction**	**Latitude**	**Longitude**
SW1	Upstream Nallah Rambiara	0.56	ENE	33°47'24.59"N	74°55'25.25"E
SW2	Middle Stream Nallah Rambiara	0.04	NNE	33°47'14.40"N	74°54'52.71"E
SW3	Downstream Nallah Rambiara	0.36	WSW	33°46'58.50"N	74°54'17.63"E

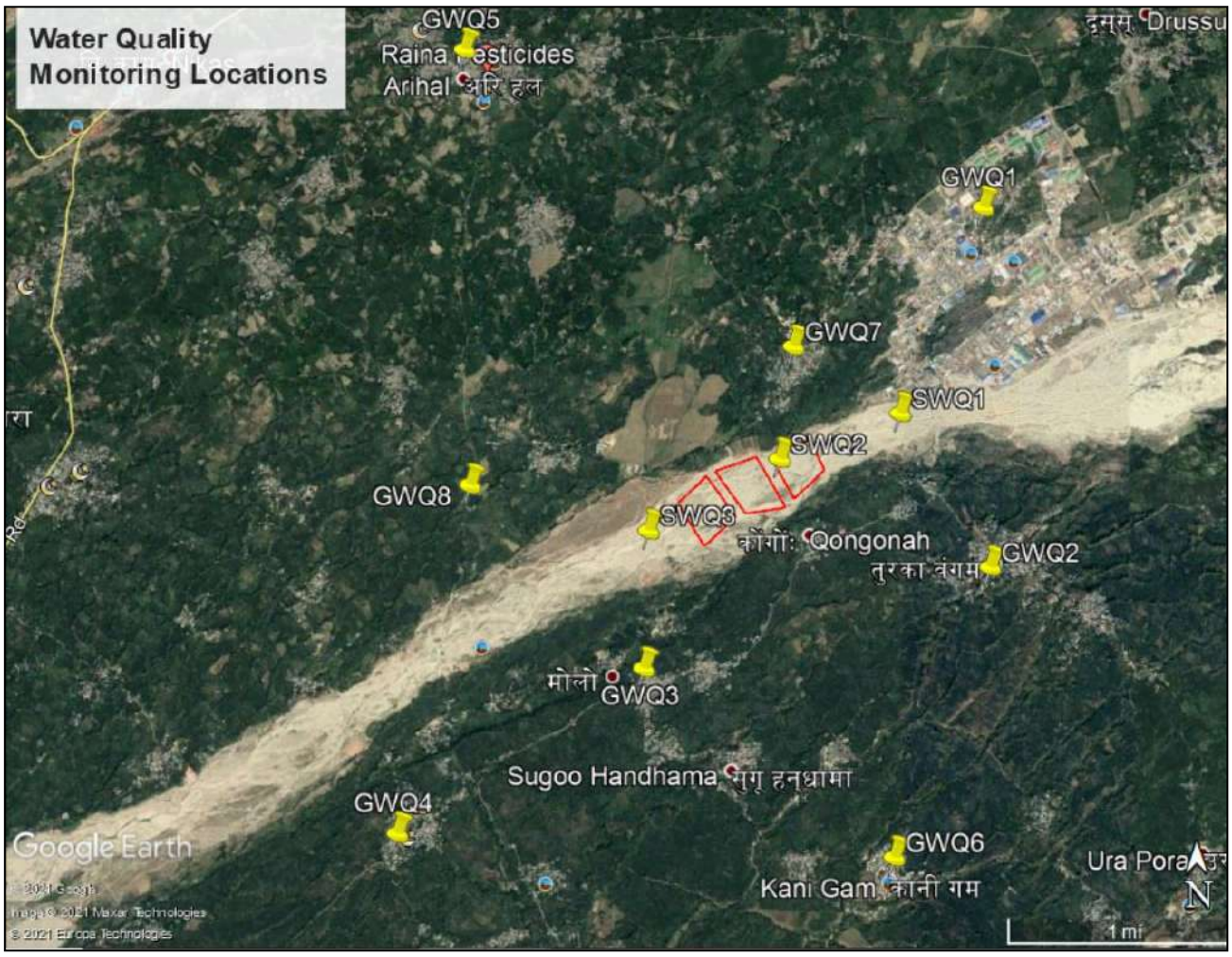


Figure 3.4 Showing Water Quality Monitoring Locations marked within the Study Area.

Table 3.9: Groundwater Sample Analysis Results during December 2020

S. No.	Test Parameter	Unit	Govt. UPS Karewa Lassipora	Govt. Higher Secondary School, Turkwangam	Bagh Haripora	Govt. Girls Middle School	Allowpora	Govt. Middle School	Kanigam	Adoraram Pathri	Specification/Limit (As per IS:10500: 2012)		Test Method
			GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8	Desirable	Permissible	
1	Temperature	o C	12.5	11.5	11.9	11	10.8	12.2	12	12.8	Not Specified	Not Specified	APHA 2550-B
2	Colour	Hazen	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5	15	APHA 2120-B
3	Odour	…	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	APHA 2150-B
4	Taste	…	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	APHA 2160-C
5	pH	…	7.2	7.2	7.23	7.14	7.1	7.1	7.1	7.21	6.5 - 8.5	No Relaxation	APHA 4500-H+
6	Turbidity	NTU	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1	5	APHA 2130-B
7	Total Dissolved Solids, (TDS)	mg/L	185.6	218.8	238	277.3	241.3	295.5	240	265	500	2000	APHA 2540-C
8	Fluoride,(F)	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1	1.5	APHA 4500:(F-)-D
9	Total Alkalinity, (CaCO3)	mg/L	89.1	105	114.24	133.104	115.824	141.8	115.2	127.2	200	600	APHA 2320-B
10	Total Hardness, (CaCO3)	mg/L	115.1	143.8	147.56	146.969	149.606	150.7	108	108.65	200	600	APHA 2340-C
11	Calcium,(Ca)	mg/L	22.3	24.1	30.94	38.822	36.195	41.4	24	29.15	75	200	APHA 3500:(Ca)-B
12	Chloride,(Cl)	mg/L	26	39.4	45.22	44.368	41.021	47.3	33.6	39.75	250	1000	APHA 4500:(Cl-)-B
13	Magnesium, (Mg)	mg/L	14.3	20.1	16.8504	11.97936	14.18844	11.3	11.5	8.586	30	100	APHA 3500:(Mg)-B

14	Nitrate, (NO3)	mg/L	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	45	No Relaxation	APHA 4500:(NO3-)-B
15	Sulphate, (SO4)	mg/L	15.8	16.4	17.85	22.4613	18.0975	23.6	20.4	19.875	200	400	APHA 4500:(SO4)-E
16	Boron,(B)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.5	1	APHA 4500:(B)-C
17	Potassium,(K)	mg/L	9.3	10.9	11.9	13.865	12.065	14.8	12	13.25	Not Specified	Not Specified	APHA-3120B
18	Sodium, (Na)	mg/L	27.8	32.8	35.7	41.595	36.195	44.3	36	39.75	Not Specified	Not Specified	APHA-3120B
19	Total Nitrogen (as Total NH3-N)*	mg/L	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	Not Specified	Not Specified	APHA 4500:(NH3)-C
20	Total Phosphorus (P)	mg/L	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	Not Specified	Not Specified	APHA 4500:(P)-D
21	Salinity	%	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	Not Specified	Not Specified	APHA 2520B
22	Iron,(Fe)	mg/L	0.2	0.4	0.44268	0.587876	0.299212	0.5	0.2	0.4346	0.3	No Relaxation	APHA-3120B
23	Lead,(Pb)	mg/L	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	0.01	No Relaxation	APHA-3120B
24	Manganese, (Mn)	mg/L	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	0.1	0.3	APHA-3120B
25	Mercury,(Hg)	ug/L	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	0.001	No Relaxation	APHA-3114C
26	Selenium,(Se)	mg/L	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	0.01	No Relaxation	APHA-3120B
27	Zinc,(Zn)	mg/L	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	5	15	APHA-3120B
28	Anionic Detergent, (MBAS)	mg/L	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	0.2	1	APHA 5540-C

29	Mineral Oil	mg/L	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	0.5	No Relaxation	IS 3025 (Part-39)
30	Phenolic Compound, (C6H5OH)	mg/L	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	0.001	0.002	APHA 5530-C
31	Total Coliform Count	MPN/100mL	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Shall Not Be Detectable		IS 1622
32	Escherichia coli	MPN/100mL	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Shall Not Be Detectable		IS 1622

Table 3.10: Surface water Sample Analysis Results during December 2020

S. No.	Parameter	Unit	SW1	SW2	SW3	Test Method
			Upstream Nallah Rambiara	Middle stream Nallah Rambiara	Downstream Nallah Rambiara	
1	Temperature	o C	10.5	11.1	11	APHA 2550-B
2	Colour	Hazen	< 1	< 2	< 3	APHA 2120-B
3	Odour	…	Odourless	Odourless	Odourless	APHA 2150-B
4	pH	…	7.8	7.8	7.6	APHA 4500-H+
5	Total Dissolved Solids, (TDS)	mg/L	268	245.3	290.5	APHA 2540-C
6	Biological Oxygen Demand (BOD3d270C)	mg/L	3.2	3.5	4	IS: 3025 (Part-44)
7	Chemical Oxygen Demand, (COD)	mg/L	6.5	7.5	6	APHA 5220-C
8	Calcium, (Ca)	mg/L	30.3	35.8	32.6	APHA 3500:(Ca)-B
9	Turbidity	NTU	<1.0	<1.0	<1.0	APHA 2130-B
10	Total Hardness, (CaCO3)	mg/L	191	188	179	APHA 2340-C
11	Dissolved Oxygen, (DO)	mg/L	7.2	6.7	6	APHA 4500:(O)-C
12	Anionic Detergent, (MBAS)	mg/L	N.D.	N.D.	N.D.	APHA 5540-C
13	Magnesium, (Mg)	mg/L	27.7	23.6	23.4	APHA 3500:(Mg)-B

14	Chloride, (Cl)	mg/L	27.2	34.8	28.3	APHA 4500:(Cl-)-B
15	Conductivity	µs/cm	406.1	371.7	440.2	APHA 2510-B
16	Nitrate, (NO3)	mg/L	0.4	0.4	0.3	APHA 4500:(NO3-)-B
17	Sulphate, (SO4)	mg/L	21.6	32.3	24.5	APHA 4500:(SO4)-E
18	Potassium, (K)	mg/L	14.5	18.3	22.9	APHA-3120B
19	Fluoride, (F)*	mg/L	0.2	0.2	0.3	APHA 4500:(F-)-D
20	Chromium, (Cr+6)	mg/L	N.D.	N.D.	N.D.	APHA 3500:(Cr)-B
21	Cyanide, (CN)	mg/L	N.D.	N.D.	N.D.	APHA 4500:(CN-)-D
22	Cadmium, (Cd)	mg/L	N.D.	N.D.	N.D.	APHA 3120B
23	Sodium, (Na)	mg/L	48.5	52.5	42.3	APHA-3120B
24	Copper, (Cu)	mg/L	N.D.	N.D.	N.D.	APHA 3120B
25	Iron, (Fe)	mg/L	0.5	0.6	0.6	APHA-3120B
26	Boron, (B)	mg/L	N.D.	N.D.	N.D.	APHA 4500:(B)-C
27	Zinc, (Zn)	mg/L	N.D.	N.D.	N.D.	APHA-3120B
28	Manganese, (Mn)	mg/L	N.D.	N.D.	N.D.	APHA-3120B
29	Phenolic Compound, (C6H5OH)	mg/L	N.D.	N.D.	N.D.	APHA 5530-C
30	Mineral Oil	mg/L	N.D.	N.D.	N.D.	IS 3025 (Part-39)
31	Total Coliform Count	MPN/100mL	30	40	70	IS 1622
32	Fecal Coliform (FC)	MPN/100mL	50	70	90	IS 1622

3.7.2 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 7.1 to 7.23 and the surface waters are 7.1. 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 limits in absence of alternate source is 2000mg/l, beyond this palatability decreases and may cause gastro intestinal irritation. In ground water samples collected from the study area, the total dissolved solids are varying from 185.6 mg/l to 265 mg/l, in the surface water samples collected in the study area were ranging from 139.5mg/l to a maximum of 168 mg/l. The TDS of the samples were above the desirable limit but within the permissible limit of 2000mg/l.
- The desirable limit for chlorides is 250 as per IS-10500 Standards whereas permissible limit of the same is 1000 mg/l beyond this limit taste, corrosion and palatability are affected. The chloride level in the surface water samples collected in the study area were ranging from 14.8 mg/l to a maximum of 19 mg/l, in ground water samples 43 mg/l to 57.3 mg/l. the chloride samples are within the desirable limits.
- The desirable limit as per IS-10500 Standards for hardness is 300 mg/l where as the permissible limit for the same is 600 mg/l beyond this limit encrustation in water supply structure and adverse effects on domestic use will be observed. In the ground water samples collected from the study area, the hardness is varying from 115 mg/l to 142 mg/l and for surface water is varying from 79 mg/l to 91 mg/l.

Overall all the samples collected from the study area were found to be fit for consumption, Most of ground water samples are well within the permissible limits as per IS-10500. Most of the heavy metals in all samples are below detectable limits.

Based on the results it is evident that most of the parameters of the river samples comply with 'Category C' standards of CPCB indicating their suitability as Drinking water source after conventional treatment and disinfection.

3.8 SOIL CHARACTERISTICS

The composite soil samples were collected from site and the study area and were analyzed for characterization. The locations of the monitoring sites are depicted in **Table 3.11** and the result of the monitoring and analysis is presented in the **Table 3.12 and Figure 3.5** showing soil sample collection points marked within the study area.

Methodology

The soil samples were collected in the month of Dec 2020. Soil samples were collected from5locations as given in Table 3.15 at each of these locations 6 sub-locations were identified randomly from where soil was collected from 30 cm below the surface. The final samples represent homogenously mixed soil from these 4 sub-locations for each location. The samples were filled in polythene bags, labeled in the field with number and site name and sent to laboratory for analysis.

Particulars	Details
Frequency	One grab sample from each station– once during the Study Period
Methodology	Composite grab samples of the topsoil were collected from 3 depths, and mixed to provide a representative sample for analysis. They were stored in airtight Polythene Bags and analyzed at the laboratory

Table 3.11: Soil Sample Collection Points

Code	Locations	Distance in km.	Direction	Latitude	Longitude
SQ1	Ari Pora	0.8	E	33°47'10.49"N	74°55'36.22"E
SQ2	Turka Wangam	1.64	ESE	33°46'57.28"N	74°56'6.39"E
SQ3	Near Project Site	0.46	SW	33°46'28.11"N	74°53'26.39"E
SQ4	Adora Ram Pathri	0.73	NW	33°47'6.72"N	74°53'29.44"E
SQ5	Allowpora	0.58	N	33°47'36.69"N	74°55'0.67"E
SQ6	Bagh Hari Pora	0.77	SE	33°46'28.24"N	74°54'16.35"E

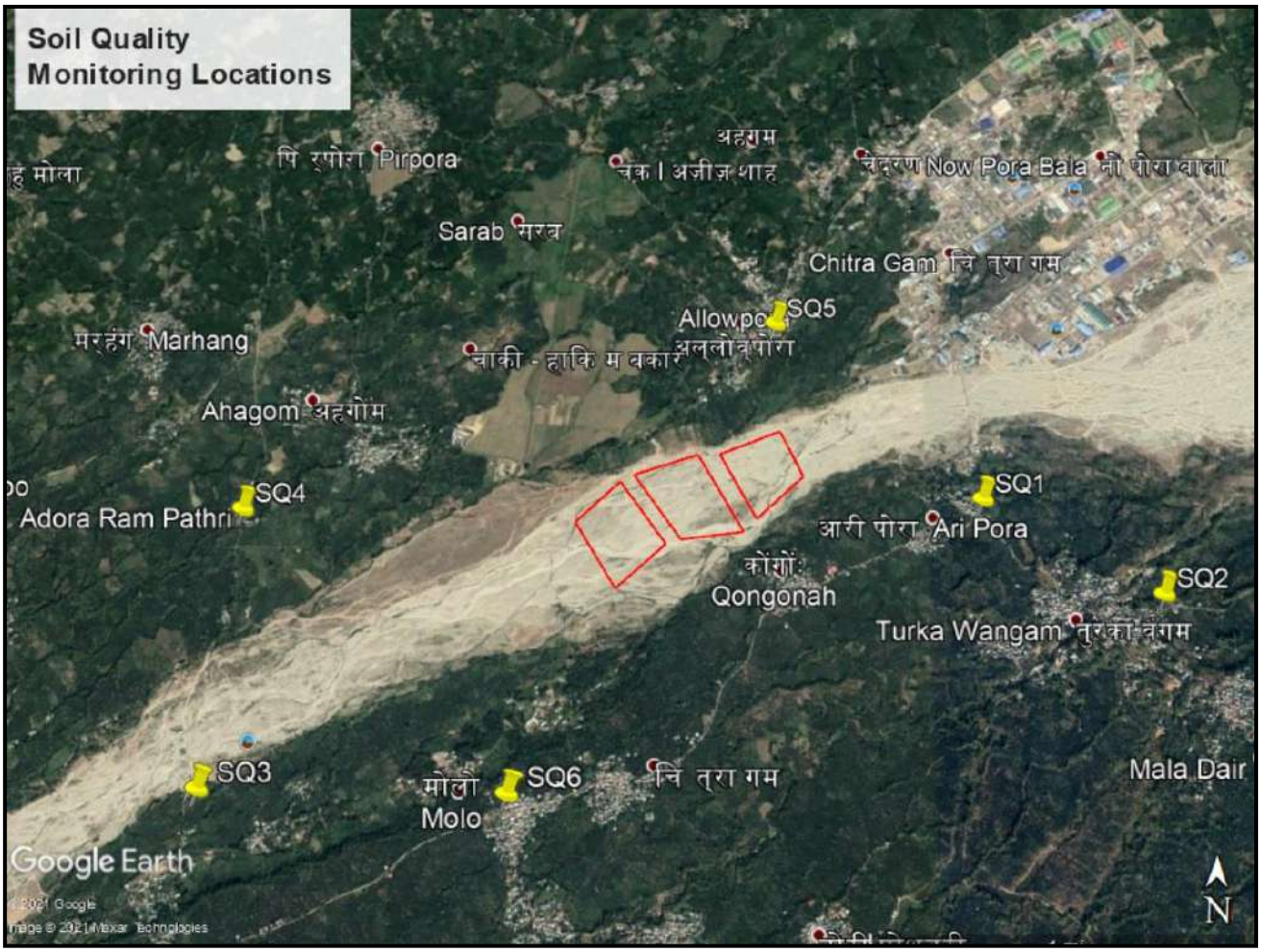


Figure 3.5 Showing Soil Sample Collection Points marked within the Study Area

Table 3.12 Phyisco-Chemical Properties of Soil

S. No.	Parameters	Units	SQ1	SQ2	SQ3	SQ4	SQ5	SQ6
1	Texture*	…	Clay Lome	Clay Lome	Clay Lome	Clay Lome	Clay Lome	Clay Lome
2	Sand*	%	22	23.8	23.1	27.1	22.9	24.7
3	Silt*	%	38	33	34.9	23.7	35.5	30.4
4	Clay	%	40	43.2	42	49.2	41.6	44.9
5	Electrical Conductivity (EC)*	µs/cm	35	39.2	35.7	44.8	37.8	48.6
6	pH*	…	7.05	7.4	7.26	7.19	7.33	7.7
7	Bulk Density*	g/cm3	1.31	1.55	1.38	1.61	1.36	1.76
8	Water Holding Capacity (WHC)*	%	9.11	10.7	11.5	11.4	9.5	10.9
9	Sodium,(Na)*	mg/kg	157.2	174.5	169.8	160.3	163.5	181.5
10	Potassium (K)*	mg/kg	87	94	94.8	88.7	90.5	97.7
11	Total Nitrogen (N)*	mg/kg	9.8	10.6	10.4	12.3	10.2	11
12	Chloride,(Cl)*	ml/kg	491.3	535.5	520.8	501.1	511	556.9
13	Magnesium,(Mg)*	ml/kg	112	121	118.7	114.2	116.5	125.8
14	Organic Matter,(OM)*	%	1.85	2.07	1.96	2.09	1.92	2.15
15	Aluminium,(Al)	mg/kg	1.13	1.22	1.36	1.16	1.3	1.4
16	Cadmium,(Cd)	mg/kg	0.35	0.38	0.42	0.36	0.4	0.43
17	Porosity*	%	21.09	24.9	22.1	25.9	21.9	28.4

18	Copper,(Cu)	mg/kg	1.75	1.89	2	1.79	1.82	1.97
19	Iron,(Fe)	mg/kg	83.2	94.8	89.9	84.9	86.5	98.6
20	Lead,(Pb)	mg/kg	0.28	0.3	0.3	0.52	0.29	0.31
21	Manganese,(Mn)	mg/kg	1.72	2.03	1.82	1.75	1.79	2.11
22	Zinc,(Zn)	mg/kg	4.81	5.2	5.2	4.9	5	5.4
23	Nickel,(Ni)	mg/kg	26.5	47.2	28.1	33.1	27.6	49.1
24	Calcium,(Ca)	mg/kg	604.5	834.2	683.1	616.6	628.7	867.6
25	Phosphorus (PO4)	mg/kg	37.1	51.2	39.3	46	46.4	64

Results of Analysis of the Soil

Physical characteristics of soil were characterized through specific parameters viz bulk density, porosity, water holding capacity, pH, electrical conductivity and texture. Soil pH plays an important role in the availability of nutrients. Soil microbial activity as well as solubility of metal ions is also dependent on pH. In the study area, variations in the pH of the soil were found to be slightly alkaline (7.05 to 7.7). Electrical conductivity (EC) is a measure of the soluble salts and ionic activity in the soil. In the collected soil samples the conductivity is 58 µmhos/cm.

The soils with low bulk density have favorable physical condition where as those with high bulk density exhibit poor physical conditions for agriculture crops.

3.9 LAND USE/LAND COVERMAPPING

To assess the land use pattern surrounding the 10 km radius of the site, a detailed study was carried out.

Table 3.13: Land use pattern of Mining area

S.N.	Land Use Pattern	Area (Hectares)	% to the total
1	Water bodies	192.4	0.56
2	Forest	358.75	1.05
3	River	1,630.33	4.79
4	Settlement	782.27	2.29
5	Agriculture	31,050.32	91.28
Total		**34,014.07**	**100**

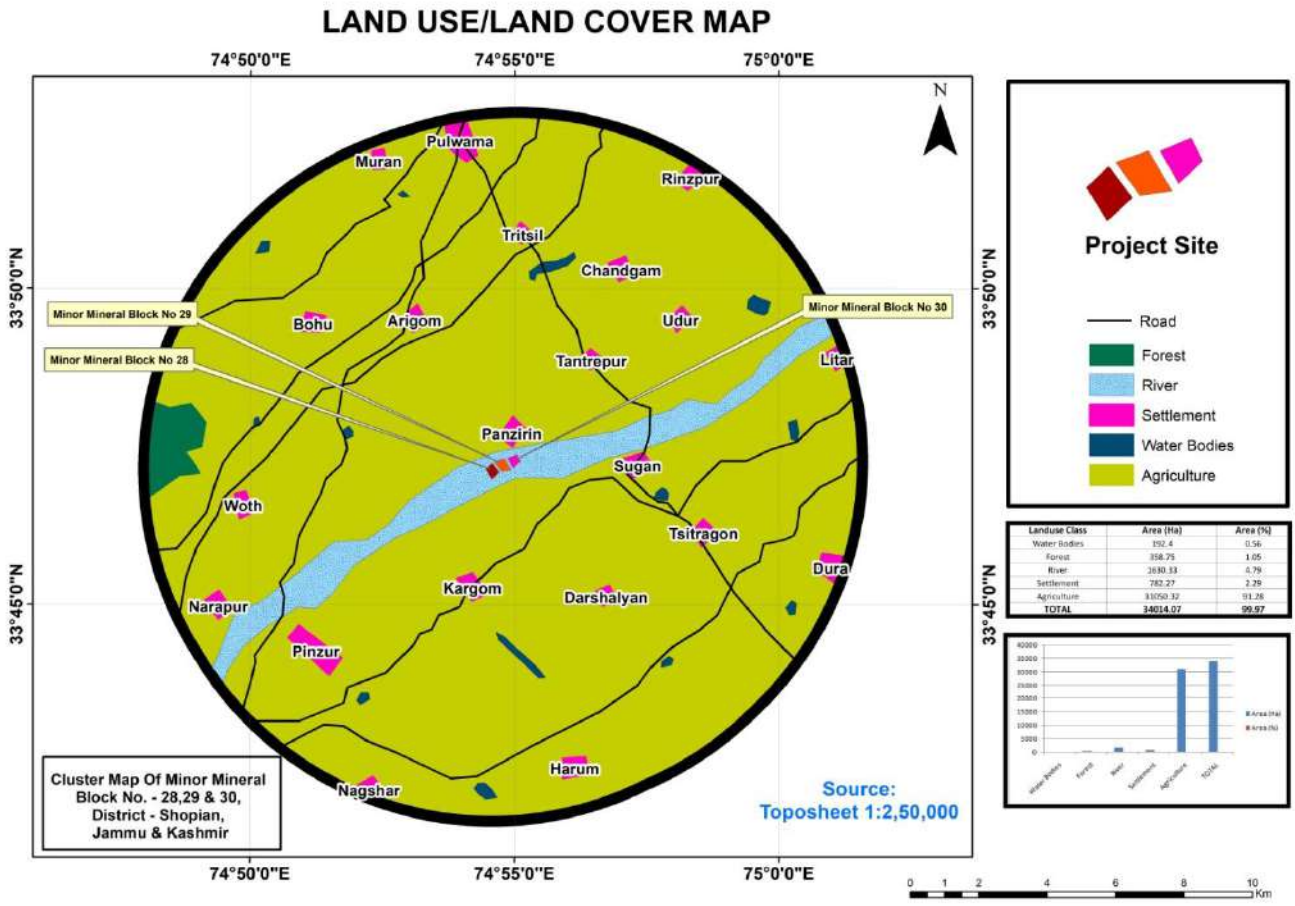


Figure 3.6: Land use delineation of 10 km radius area

3.10 Traffic Analysis for Minor Mineral Block 28, 29 & 30

Traffic study is carried out for understanding the existing carrying capacity of the road in the vicinity of site and flow towards MDR 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 3.14 (a): Existing Traffic Scenario & LOS

Road	V(PCU/day)	C(PCU/day)	Existing V/C Ratio	LOS
Vicinity of site	90	1800	0.05	A
Road towards Pulwama – Srinagar Road	530	6000	0.08	B

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

The existing Level of Service is Excellent at both site and PWD respectively.

Table.3.14 (b): Table of LOS

Level of Service	Definition	Volume to capacity ratios		Performance
		Freeways	All other roadways	
A	Conditions of free flow; speed is controlled by driver's desires; speed limits, or physical Roadway conditions.	0.0-0.34	0.0-0.34	Excellent
B	Conditions of stable flow; operating speeds beginning to be restricted; little or no restriction on maneuverability from other vehicles.	0.35-0.54	0.35-0.50	Very Good
C	Conditions of stable flow; speeds and maneuverability more closely restricted; occasional backups behind left-turning vehicles at intersections.	0.55-0.77	0.51-0.74	Good / Average / Fair
D	Conditions approach unstable flow; tolerable speeds can be maintained but temporary restrictions may cause extensive delays; little freedom to maneuver; comfort and convenience low; at intersections, some motorists, especially those making left turns, may wait through one or more signal changes.	0.78-0.93	0.75-0.89	Poor
E	Conditions approach capacity; unstable flow with stoppages of momentary duration; maneuverability severely limited.	0.94-0.99	0.90-0.99	Very Poor
Source: San Joaquin County General Plan 2010				

Total Capacity of Block No. 28, 29, & 30 : 560303 TPA

No. of working days : 270 days

Average Production per day : 2075.19 tonnes

Truck Capacity : 40 tonne approx

No. of truck strips/day : 51.87

Trucks approx. No. of truck trips per day to & for: 51.87x2 = 103.74

Increase in PCU per day : 103.74 x 4 = 414.96

Table.3.14 (c): Modified Traffic Scenario & LOS

Road	V(PCU/day)	C(PCU/day)	Modified V/C Ratio	LOS
Vicinity of site	96 + 414.9 = 510.9	1800	0.28	A
Road towards Pulwama – Srinagar Road	530 + 414.9 = 944.96	6000	0.15	A

From the above analysis it can be seen that V/C ratio is "excellent" in the vicinity area, whereas for

the road approaching Pulwama – Srinagar Road is also "excellent". As per the classification the additional load on the carrying capacity of the concerned roads will not have any significant change.

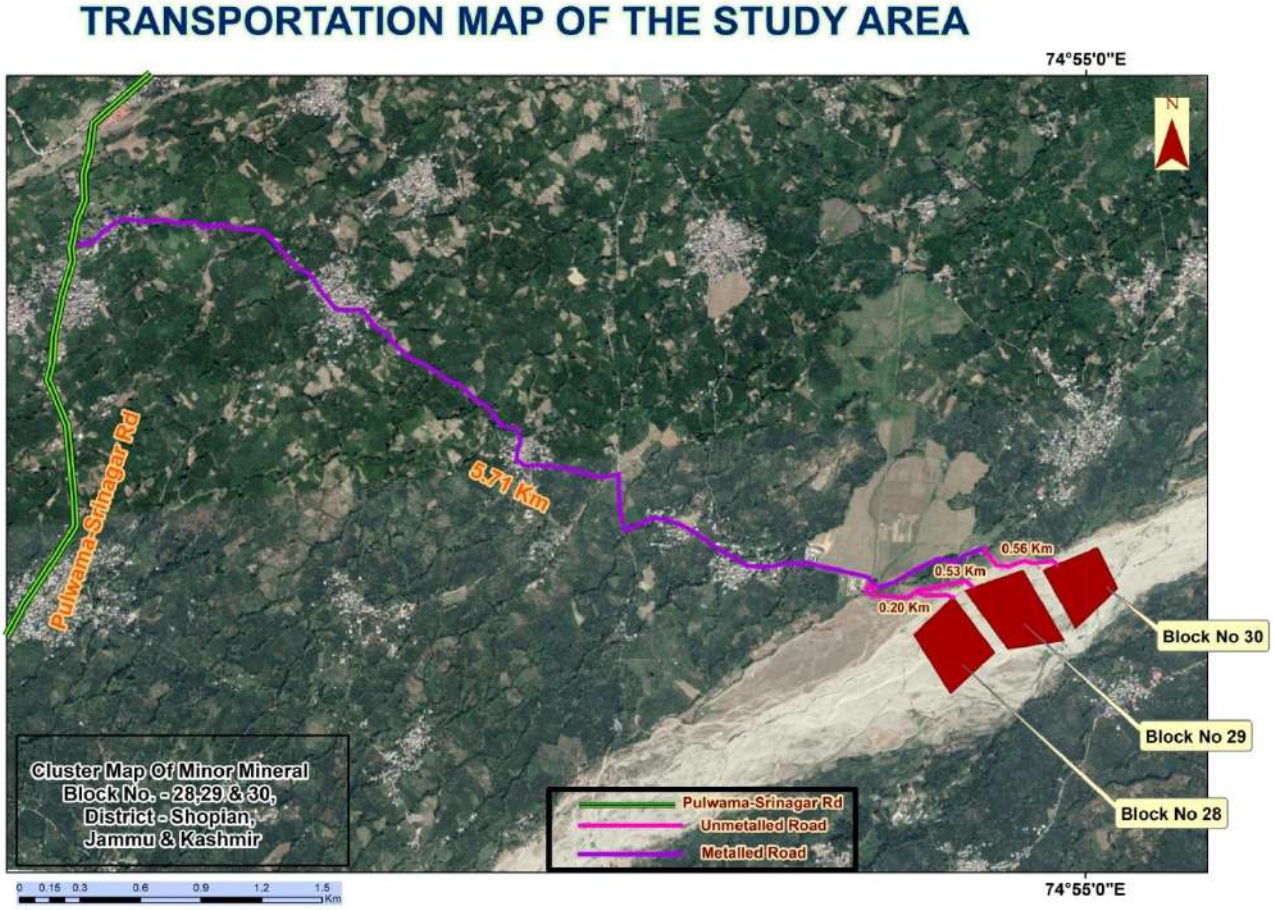


Figure 3.7: Transportation Route Map

3.11 BIOLOGICAL ENVIRONMENT

3.11.1. Introduction:

Biodiversity of reflects the potential of a regional ecosystem. Biota of particular area is considered as indicators of the environment as they quickly respond not only to one environmental factor but also to an interactive group of factors. These communities influence and react sensitively to change in the balance of environmental stresses.

Biological diversity comprises the variability of genus, species and ecosystems and is very crucial for maintaining the basic processes on which the life depends. On the basis of biological physiology biodiversity broadly can be divided into two category i.e. the floral diversity and faunal diversity. Conservation of the biodiversity is essential for the sustainable development as it not only provides the food, fodder and medicine but also contribute in improvement of essential environmental attributes like air, water, soil, etc. Before starting any Environmental Impact Assessment study, it is necessary to identify the baseline of relevant environmental parameters which are likely to be affected as a result of operation of the proposed project. A similar approach has been adopted for conducting the study on Biological Environment for this Project. Both terrestrial and aquatic ecosystems have been studied to understand the biological environment nearby the project site.

The study was conducted in the project area to assess all possible consequences on the biological environment. Floral and faunal surveys and data collection conducted for assessing the biological diversity and its status over a period of time that forms an integral part of Impact Assessment Techniques. The present study is highlighting the various issues pertaining to floristic diversity and the faunal wealth in the core area i.e. Minor Mineral Block No. 28, 29, 30, District Shopian J&K UT and buffer zone i.e. area within 10 km radius.

3.11.1. Objective of the study:

- To collect Baseline data for the study along with a description of the existing terrestrial, wetland and aquatic vegetation.
- To assess scheduled species in the proposed site (Rare, endangered, critically, endangered, endemic and vulnerable).
- To identify locations and features of ecological significance.
- To identify impact of proposed project before, after and during development phase.

3.11.2. Period of Sampling: The ecological survey has been conducted during Post monsoon season for the collection of primary data of flora-fauna, vegetation, soil and other environmental observations. The details are given as below:

Post –monsoon : 1st October, 2020 to 31st December, 2020

Core zone **:** At the project site

Buffer zone **:** Around 10 km radius of the project site

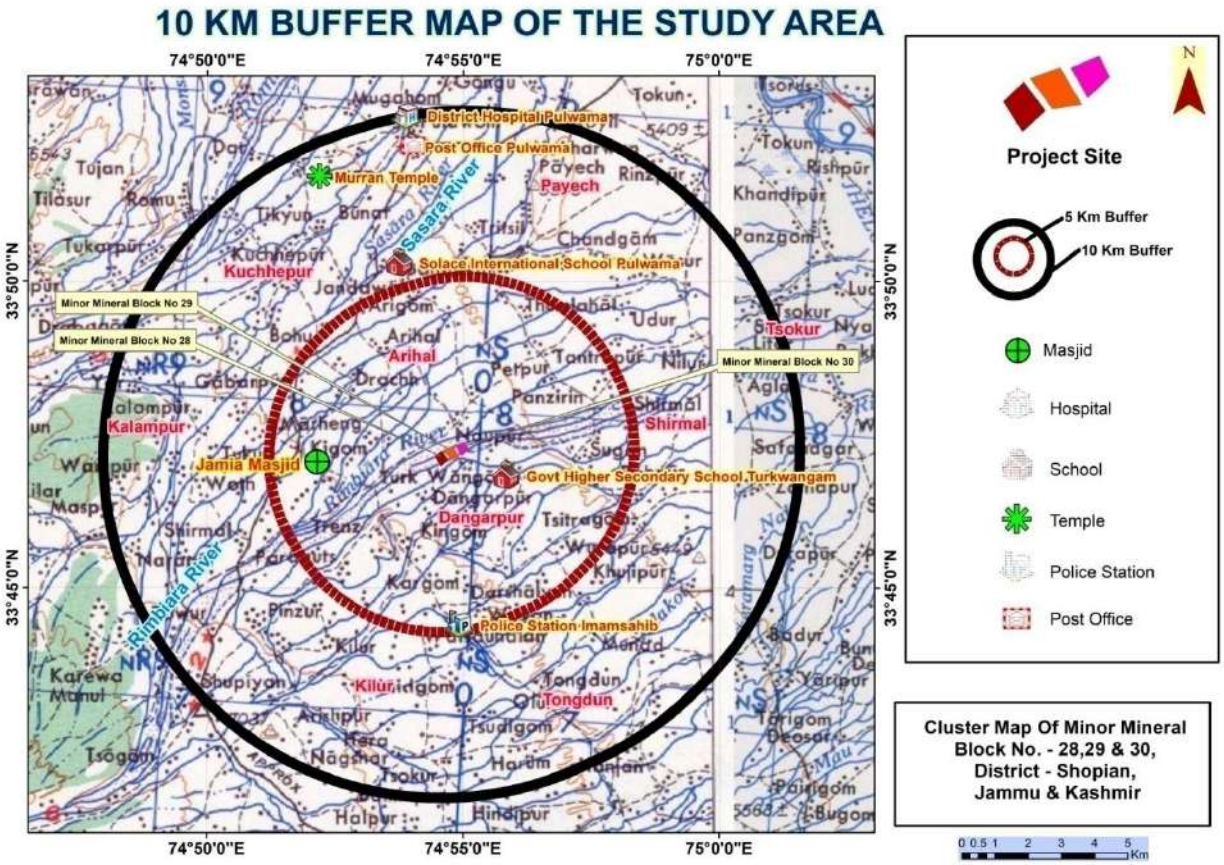
3.11.3. Mode of Data collection: Detailed survey was conducted to evaluate floral composition of the study area. Primary data on floral and faunal composition was record during site visit. The field notes were taken regularly, included habitat, flora, association another appropriate features. Secondary Data Collection was collected from the official websites and published relevant literature.

Table: 3.15 Mode of data collection and parameters considered during the survey

S.No.	Aspect	Data	Mode of Data collection	Parameters Monitored	Remarks
1.	Terrestrial Biodiversity	Primary data collection.	By Field survey	Floral and Faunal diversity	**For Floral Diversity:** Random survey, sapling Survey/forest inventory, Walking transect, collection and Identification with the help of relevant literature. **For Faunal Diversity:** Direct and indirect sampling, walking transect, point sampling and nest sampling etc. and identification with the help of relevant literature.
2.		Secondary Data Collection	From authentic source like Forests department and available published literatures from ZSI, BSI etc.	Flora and Fauna diversity and study of vegetation, forest type, importance etc.	Data collected from the working plan of the region, forest type from the authentic literature of champion & Seth.
3.	Aquatic Biodiversity	Primary data collection	By field survey	Floral and Faunal diversity	**For Plankton Study** : Lackey's drop method and light microscope. **For other aquatic**: Random survey, opportunistic observations.
4.		Secondary Data collection	From authentic Sources like Forests department.	Floral and Faunal diversity and study of	Desktop literature review to identify the representative spectrum of threatened

				vegetation, forest type, importance etc.	species, population and ecological communities.

Fig. 3.8: Location Map of Minor Mineral Block No. 28, 29 & 30, District Shopian (J&K UT)



3.11.4. <u>Biological Component of Core Zone</u> :

3.11.4.1 Flora: The applied area is a part of flood plain of Nallah Rambiara with almost flat topography where mining is proposed & there is no vegetation within the project site except few bushes.

3.11.4.2 Fauna: During the faunal survey in the area no wildlife corridor or movement of animals was recorded from proposed project area. A list of animals of the study area has been prepared on the basis of local inquiry from the villagers and from the available published literatures. The animals thus recorded were cross checked with Wildlife Protection Act, 1972 for their schedule.

No bird's habitats like nesting, breeding and forging patterns are noticed in the core zone. Local birds are noticed crossing over the area. No fixed pattern in migratory behavior is noticed.

3.11.5. Vegetation in and Around Human Settlement:

Agricultural crops:

The three main cropping seasons in the district are Kharif, Rabi and Zaid. The other crops raised in the district include wheat, paddy, maize, pulses and oilseeds. Main fruits grown are mango and guava. The autumn or Kharif is usually known as siyari, and the spring or Rabi as Unhari. The Zaid or extra harvest is insignificant in this area. Gram, Wheat, Barley, Peas, Arhar and Masoor are the main crops of Rabi. Jowar, Rice, Bajra, Urad, Moong and Moth are the main crops of Kharif. Melon, Water-melon, Bitter gourd and Pumpkin are the main crops of Zaid.

3.11. 5.1 Terrestrial Flora of the Buffer Zone

The most common tree species observed in the buffer zone are Cedrus Deodara, Juglans regia, Quercus dilatata, Mangifera indica, etc. A list of different types of plant species observed in during the present investigation is given **Table 3.16**

Sl. No.	Scientific Name	Local Name	Family	Image
1.	*Cedrus Deodara*	Deodar	Pinaceae	
2.	*Quercus leucotrichophora*	Banjh Oak/ Banj Oak	Fagaceae	
3.	*Lyonia ovalifolia*	Angeri	Ericaceae	
4.	*Juglans regia*	Akhrot	Juglandaceae	
5.	*Cornus macrophylla*	Large Leaf Dogwood	Cornaceae	
6.	*Rhus succedanea*	Wax Tree	Anacardiaceae	

7.	*Litsea umbrosa*	Nees	Lauraceae	
8.	*Betula utilis*	Bhurj	Betulaceae	
9.	*Taxus baccata*	Birmi	Conifer/ Taxaceae	
10.	*Grewia optiva*	Bhimal/Bihul/Dhaman	Tiliaceae	
11.	*Prunus cornuta*	Janmin	Rosaceae (Rose family)	
12.	*Pyrus pashia*	Tangi/Mahal Mol	Rosaceae	
13.	*Pisacia integerrima*	Karkatshringi	Anacardiaceae	
14.	*Celtis australis*	Kharak/European Nettle Tree	Cannanaceae	
15.	*Acaia nilotica*	Babul	Fabaceae	

16.	*Quercus dilatata*	Mohru	Fagaceae	
17.	*Ficus roxburghii*	Anjeer/ Himalayan Fig Tree	Moraceae	
18.	*Terminalia arjuna*	Arjun	Combretaceae	
19.	*Acacia nilotica*	Kikar	Leguminosae	
20.	*Saccharum bengalense*	Khar	Poaceae	
21.	*Senna sulfurea*	Cassia	Leguminosae	
22.	*Phyllanthus emblica*	Amla	Phyllanthaceae	
23.	*Pinus roxbhurghii*	Chir	Pinaceae	
24.	*Bombax ceiba*	Simba	Malvaceae	

25.	*Platanus orientalis*	Chinar	Platanaceae	

3.11.6 Fauna of the Buffer Zone

A list of animals of the study area has been prepared on the basis of survey and inquiry from local people and from the available published literatures.

Mammals: Many domesticated mammal species are reported from buffer zone during the field survey. Common domestic animals like Buffalo, cow, goat etc. can be noticed in open grass fields while grazing. Small mammals like Indian palm squirrel and field mouse are noticed in vicinity of the village.

Avifauna or Birds: *Monticola solitaries Bulbul, Ardea cinerea* etc. were observed. House crow (*Corvus splendens*) & House sparrow (*Passer domesticus*) are of common occurrence.

Reptiles: The reptilian species commonly reported are Garden lizard (*Calotes versicolor*) and *Eutropis macularia* along shady places in agricultural field or where growth of bushes is noticed. Among non-poisonous snakes rat snakes (*Ptyas mucosus*) are commonly noticed in field and Common Babbler is occasionally encountered by the farmers.

Table 3.17 Fauna of the buffer zone

Sl. No.	Scientific Name	English Name/ Common Name	Schedule (WPA,1972)	IUCN Status	Image
		Mammals			
1	*Presbytis entellus*	Common Langur	II	NT	

2	*Nemorhaedus goral*	Grey Himalayan Goral	III	NT	
3	*Ursus thibetanus*	Himalayan Black Bear	II	VU	
4	*Cuon alpinus*	Wild Dog	II		
5	*Canis aureus*	Jackal	II		
6	*Herpestes javanicus*	Small Indian Mangoose	II		
7	*Felis chaus*	Jungle Cat	II		
Reptiles					
8	*Amphiesma stolatum*	Buffed striped	IV	LC	
9	*Ptyas mucosa*	Rat snake	II		
10	*Oligodon amensis*	Banded Kukri Snake	IV		

11	*Calotes versicolor*	Common Garden Lizard	IV		
12	*Chamaeleo zeylanicus*	Indian Chameleon	II		
13	*Hemidactylus frenatus*	Common House Gecko	III		
14	*Mabuya dissimilis*	Striped Grass Skink	IV		
15	*Mabuya macularia*	Bronze Grass Skink	IV		
16	*Bungarus caeruleus*	Common krait	IV		
Aves					
17	*Monticola solitaries Bulbul*	Blue Rock Thrush	IV		
18	*Phoenicurus ochruros sparrow*	Black Redstart	IV		
19	*Bubulcus ibis*	Cattle Egret	IV		

20	*Corvus splendens*	Common Crow	V		
21	*Turdoides caudate*	Common Babbler	IV		
22	*Ardea cinerea*	Grey Heron	IV		
IUCN Status =LC: Least Concern**, NE:** Not Evaluated**, EN:** Endangered**, NT:** Near Threatened, **VU:** Vulnerable					

3.11.7 Conclusion:

No species was reported from the project area which is listed under Schedule I of Wildlife Protection Act (WPA), 1972. The project is not likely to affect the terrestrial species as it does not fall into habitat of above mentioned species.

3.12 SOCIO-ECONOMIC ENVIRONMENT

Socio-Economic Impact Assessment (SEIA) refers to systematic analysis of various social and economic characteristics of human being living in a given geographical area. The geographical area is often called Study Area or Impact Area. SEIA is carried out simultaneously with Environment Impact Assessment (EIA).The prime objective of SEIA is to identify and evaluate potential socio-economic and cultural impacts of a proposed development project on the lives and conditions of people, their families and their communities. If the potential impacts are adverse, the SEIA will assist the promoter and other stakeholders to reduce, remove or prevent these impacts from happening.

The study area consists of the core area where the proposed project is expected to come up and a buffer area encircling the project area with a radius of 10 kilometers from the periphery of the core area. For every new project, existing projects bound for expansion, modernization and 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 effect may be direct or indirect. Again, the impact may be positive or negative.

3.12.3 Scope of the study

The Scope of socio-economic impact assessment of river bed material leased to Feroz Ahmad Wani 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.

3.12.4 Steps to prepare the SEIA report

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

Step 2: Referring to TOR to get aware of the direction of the State Environment Impact Assessment committee.

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 the facts through observations

Step 7: Firming up of approach and methodology

Step 8: Finalization of Questionnaires – Listing schedule, Village and Household questionnaire.

Step 9: Collection of secondary data from Census Report, District profile, published and un-published literatures, administrative records etc.

Step10: Data entry and data validation

Step 11: Generation of Tables

Step 12: Data Analysis and preparation of report.

3.12.5 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 Kilometers from the periphery of the project site. The study area includes all the land marks both natural and manmade, falling therein.

Quality of Life: 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 taken 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 is the 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 and people in prisons stay-at home people 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.

3.12.6 Approach

Research approach plays an important role to decide suitable methodology. It helps to develop effective research design. There are two types of approaches – Deductive and Inductive.

For the preparation of the present report Inductive approach has been adopted. The work started with collection of both primary and secondary data, observed a pattern in the data, developed a hypothesis and finally prepared the report.

3.12.7 Methodology

For Socio-Economic Impact assessment (SEIA) of the proposed River bed mining project which recourse to systematic analysis of various Socio-Economic characteristics, both in terms of quality and quantity. Accordingly, both qualitative and quantitative data was collected through primary and secondary sources. For collection of primary data, a sample survey was conducted across the study area. For collection of secondary data approached the Census Authority in the state for published data/information, visited state and district portal and referred to administrative records of the state and district administration. The qualitative data deals with description; they can be observed but not measured. Hence, codes were extensively used during collection of qualitative data. They were decoded after data processing to facilitate data analysis and report writing.

Sample design

In the rural areas two stage sampling design was adopted. The first stage unit was census villages and the Ultimate Stage Units were households in the selected villages. The villages and households were selected scientifically for collection of information.

In the urban area three stage sampling design was adopted. The first stage unit was town, second stage was municipal wards and ultimate stage unit were households.

Sample Size

The sample size was selected taking into consideration the following factors:

95 % Confidence Limit (Table value: 1.96)

Margin of error (5%) (Table value: 0.05)

Standard deviation (∂)

Design effect

Non-response rate

The Sample size at each level was worked out by applying the following formula:

n = [z*s/E] ^ 2,

Where z is the z value for the level of confidence chosen, s is the estimated standard deviation and E is the allowable error.

3.12.8 Method of selection of First Stage Units

Probability Proportional to Size (PPS) was adopted to select the villages from the list of census villages. The households were selected by adopting linear systematic sampling method.

Mapping & Listing

In each sample village complete mapping and listing was undertaken. The maps were prepared for the sample villages. These maps are hypothetical and not to the scale. Listing was done in Schedule 0.0. The objective of mapping & listing was to develop a frame for selection of households for sample survey. The Listing of structures was undertaken from south-west corner of the village moving in clock-wise direction and all the structures including hidden structures were covered for listing. Both residential and non-residential structures were listed for the preparation of village frame.

3.12.9 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 present report is provided with following base line data for the study area as a whole.

3.12.10 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 present report is provided with following base line data for the study area as a whole.

Table 3.18: Demographic Particulars of the Study Area as on 2011

Sr. No.	Name of Village	Distance from the Project Site	Direction from the Project Site
1.	Aripora	0.60 Km	ESE
2.	Chitragam	1.23 Km	NE
3.	Qongonah	0.32 Km	SSE
4.	Turka Wangam	1.35 Km	ESE
5.	Kegam	4.09 Km	West
6.	Sugan	3.39 Km	East
7.	Hef-Kuri	3.36 Km	ESE
8.	Molo	1.08 Km	SW
9.	Kanigam	2.56 Km	SSE
10.	Urapora	3.78 Km	SE
11.	Trenz	2.73 Km	SW
12.	Chillipora	4.01 Km	East
13.	Dasso	3.55 Km	NE
14.	Utra Pora Pahali Pora	3.96 Km	WSW
15.	Heff	5.19 Km	East
16.	Haji Pora	7.32 Km	South
17.	Arahama	8.42 Km	WSW
18.	Haider Gund	7.36 Km	ESE
19.	Hanji Pora	8.20 Km	NNW
20.	Chitra Gam	0.88 Km	South

Source: Google Earth

3.12.10 Socio-economic Impact of the project

Impact on Demographic composition

The proposed river bed mining project at Tehsil- Chitragam, District- Shopian 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 river bed mining project at Tehsil- Chitragam, District- Shopian will provide direct employment up to 40 persons in each block, of this 8 will be skilled labor 24 will be driver, 4 will be operator and 4 will be Supervisory staffs. The Supervisory staffs will include Mines Manager and Supervisor. The project promoter has planned to recruit the semi-skilled and unskilled workers locally. Every effort will be made to recruit and deploy the skilled and Supervisory staffs locally after imparting proper training to them. In rare cases they will be recruited from outside the study

area. Besides, the above employment for persons belonging to informal sector will be generated due to opening of the above River bed mine. It is a positive and direct impact of the project since it will provide employment opportunities to the local people.

Impact on Agriculture

No negative impact on agricultural production in the study area is anticipated due to mining of river bed material at Tehsil- Chitragam, and District- Shopian. Hence no agriculture is possible in the lease area due to its sand, boulder and B*ajri.*

Impact on road development

Movement of trucks and other vehicles to and fro the mine is expected to increase substantially, when mining will start. The existing roads connecting the river bed with the national and state highways are mostly narrow mud roads. There will be mud slide and traffic bottle neck if these roads are not widened and their conditions are not improved by making them paved roads. Hence, there is ample scope for road development in and around the mining areas.

Impact on Law & Order

As most of the workers to be employed are local people 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

a) **Safe work environment:** The project proponent shall ensure health and safety of all the employees at work. He will provide and maintain a safe work environment and ensure that the machinery and equipment in use is safe for employees. Further, he will ensure that working arrangements are not hazardous to employees.

b) **Provision of First Aid:** The first aid treatment shall reflect the hazards associated with the mining of sand, boulder and *Bajri.* The first aiders must be well trained in handling patients working in river bed mining material.

c) **Regular health examination:** For all mine workers regular health examination must be compulsory. The regular health examination will cover treatment of serious back injury; existing asthma or respiratory diseases, existing skin diseases, lung function test (pre and post ventolin, Audiograms, Chest X- ray etc.)

d) **No work for temporal disabilities:** The workers having temporary disability must stop doing the job till he/she recovers from disabilities.

e) **Health Education:** Adequate health education and information related to the job shall be provided to the workers. Baseline health information shall be recorded for future references.

f) **Tie up with the nearest hospital for medical help:** To meet the medical needs of the mine workers tie-ups with nearest hospitals may be made. Efforts will be made to reserve few beds in the above hospitals for the workers of the upcoming mining project. This will ensure timely medical aid to the affected persons.

g) **Supply of Mask, Gloves:** The workers in the river bed material mine are subject to respiratory diseases. For protection from dust it will be made compulsory for all workers to wear masks and gloves, while working in the mine.

h) **Administration of Anti-venom injections:** Provision of Anti-venom therapy will be made available for administration to the workers in case of snake, spider and insect bites, while working in the mine.

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

j) **Special Group Insurance Scheme:** All the mine workers have been planned to be covered under a Group Insurance Scheme of LIC or any other Insurance company.

Perception of the people

During site visit people living in the study area were asked to indicate their perception about the proposed river bed mining project at Minor mineral Block 28, 29 & 30, Tehsil- Chitragam, District- Shopian. Majority of them welcomed the project since it would create employment opportunities for the local people. They retorted that by implementing such employment oriented projects the economic condition of the common people can be improved. The overall perception of the people in the study area on the proposed mining project was ‘Very Good’. They said that they will welcome the project whole heartedly if employment opportunities in the proposed mining project are guaranteed for the local people.

3.12.11 OCCUPATIONAL PATTERN

The overall percentage of workers in the area is **32.14 %.**

Table: 3.19 Occupational Patterns of People in Buffer Zone

S. No.	Village Name	Total Population Person	Total Worker Population Person	Total Worker Population Male	Total Worker Population Female	Main Working Population Person	Main Cultivator Population Person	Main Agricultural Labourers Population Person	Main Household Industries Population Person	Main Other Workers Population Person	Marginal Worker Population Person	Non- Working Population Person	Non- Working Population Male	Non-Working Population Female
1.	Aripora	396	72	71	1	72	48	0	0	24	0	324	115	209
2.	Chitragam	922	332	205	127	179	115	0	2	62	153	590	253	337
3.	Qongonah	517	116	107	9	20	0	4	3	13	96	401	143	258
4.	Turka Wangam	2,680	600	574	26	480	222	7	17	234	120	2,080	793	1,287
5.	Kegam	2,700	1,326	748	578	952	627	12	8	305	374	1,374	643	731
6.	Sugan	1,618	559	410	149	272	131	28	6	97	287	1,059	422	637
7.	Hef-Kuri	760	427	214	213	137	115	0	0	22	290	333	173	160
8.	Molo	587	113	111	2	104	80	0	0	24	9	474	172	302
9.	Kanigam	850	128	126	2	121	103	0	3	15	7	722	308	414
10.	Urapora	1,115	231	216	15	211	105	51	2	53	20	884	343	541
11.	Trenz	2,939	769	692	77	586	341	13	16	216	183	2,170	834	1,336
12.	Chillipora	286	95	50	45	44	21	5	1	160	51	191	86	105
13.	Dasso	1,079	228	221	17	200	107	52	8	33	28	851	335	516
14.	Utra Pora Pahali Pora	843	237	220	17	161	101	1	3	56	76	606	194	412
15.	Heff	2,125	865	522	343	490	323	4	3	160	375	1,260	528	732
16.	Haji Pora	446	70	60	10	462	2	10	1	33	24	376	169	207
17.	Arahama	927	243	232	2	150	119	2	1	28	93	684	245	439
18.	Haider Gund	709	329	165	164	78	29	3	0	46	251	380	198	182
19.	Hanji Pora	640	92	87	5	15	1	0	3	11	77	548	235	313
20.	Chitra Gam	2,634	1,130	671	459	526	371	16	3	136	604	1,504	649	855

Source: https://censusindia.gov.in/2011census/dchb/0113_PART_B_DCHB_SUPHIYAN.pdf

3.12.12 LITERACY

The overall percentage of literate in the area is **54.17%.** Total literate population is **13,420.** The literacy rate of male is **7,735** while literacy rate in female is **5,685.**

Table: 3.20 Literacy Rate around the project site in Buffer zone

S. No.	Village Name	Total Population	Literate Total	Literate Male	Literate Female	Illiterate Total	Illiterate Male	Illiterate Female
1	Aripora	396	166	93	73	230	93	137
2	Chitragam	922	594	335	259	328	123	205
3	Qongonah	517	282	148	134	235	102	133
4	Turka Wangam	2,680	1,495	876	619	1,185	491	694
5	Kegam	2,700	1,467	872	595	1,233	519	714
6	Sugan	1,618	818	497	321	800	335	465
7	Hef-Kuri	760	376	214	162	384	173	211
8	Molo	587	389	202	187	198	81	117
9	Kanigam	850	467	264	203	383	170	213
10	Urapora	1,115	597	322	275	518	237	301
11	Trenz	2,939	1,521	900	621	1,418	626	792
12	Chillipora	286	136	76	60	150	60	90
13	Dasso	1,079	478	284	194	601	262	339
14	Utra Pora Pahali Pora	843	508	271	237	335	143	192
15	Heff	2,125	1,211	657	554	914	393	521
16	Haji Pora	446	205	125	80	241	104	137
17	Arahama	927	503	298	205	424	179	245
18	Haider Gund	709	390	228	162	319	135	184
19	Hanji Pora	640	369	213	156	271	109	162
20	Chitra Gam	2,634	1,448	860	588	1,186	460	726

Source: https://censusindia.gov.in/2011census/dchb/0113_PART_B_DCHB_SUPHIYAN.pdf

3.12.13 SOCIAL STRUCTURE

Out of total population, **0 %** is SC population and **0%** is ST Population.

Table: 3.21 Social Structures in Buffer Zone

S. No.	Village Name	Total Population	Scheduled Cast Population			Scheduled Tribes Population		
			Total	Male	Female	Total	Male	Female
1	Aripora	396	0	0	0	0	0	0
2	Chitragam	922	0	0	0	0	0	0
3	Qongonah	517	0	0	0	0	0	0
4	Turka Wangam	2,680	0	0	0	0	0	0
5	Kegam	2,700	0	0	0	0	0	0
6	Sugan	1,618	0	0	0	0	0	0
7	Hef-Kuri	760	0	0	0	0	0	0
8	Molo	587	0	0	0	0	0	0
9	Kanigam	850	0	0	0	0	0	0
10	Urapora	1,115	0	0	0	0	0	0
11	Trenz	2,939	0	0	0	0	0	0
12	Chillipora	286	0	0	0	0	0	0
13	Dasso	1,079	0	0	0	0	0	0
14	Utra Pora Pahali Pora	843	0	0	0	0	0	0
15	Heff	2,125	0	0	0	0	0	0
16	Haji Pora	446	0	0	0	0	0	0
17	Arahama	927	0	0	0	0	0	0
18	Haider Gund	709	0	0	0	0	0	0
19	Hanji Pora	640	0	0	0	0	0	0
20	Chitra Gam	2,634	0	0	0	0	0	0

Source: https://censusindia.gov.in/2011census/dchb/0113_PART_B_DCHB_SUPHIYAN.pdf

3.12.14 SEX RATIO

Villages with 10 km Study Area on Google Image

Sex ratio is number of females per 1000 males. As per the Census 2011 the male population is 52.03% while female population is 47.97% of the total

population

Table: 3.22 Sex Ratio in Buffer Zone.

S. No	Village	No of Households	Total Population	Male	Female	Sex Ratio (females/ males) * 1000
1	Aripora	70	396	186	210	1,129
2	Chitragam	152	922	458	464	1,013
3	Qongonah	77	517	250	267	1,068
4	Turka Wangam	451	2,680	1,367	1,313	960
5	Kegam	466	2,700	1,391	1,309	941
6	Sugan	264	1,618	832	176	212
7	Hef-Kuri	102	760	387	373	964
8	Molo	88	587	283	304	1,074
9	Kanigam	131	850	434	416	959
10	Urapora	200	1,115	559	556	995
11	Trenz	489	2,939	1,526	1,413	926
12	Chillipora	45	286	136	150	1,103
13	Dasso	187	1,079	546	533	976
14	Utra Pora Pahali Pora	156	843	414	429	1,036
15	Heff	310	2,125	1,050	1,075	1,024
16	Haji Pora	64	446	229	217	948
17	Arahama	162	927	477	450	943
18	Haider Gund	108	709	363	346	953
19	Hanji Pora	95	640	640	322	503
20	Chitra Gam	436	2,634	1,320	1,314	995

Source: https://censusindia.gov.in/2011census/dchb/0113_PART_B_DCHB_SUPHIYAN.pdf

3.12.15 CONCLUSION

The implementation of the river bed mining project at minor Mineral Block 28, 29 & 30, Tehsil-Chitragam, District- Shopian, and State – Jammu & Kashmir will generate both direct and indirect employment for the local aspirants. The issue of environment clearance to the mine lease holder will make mining of river bed material 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 of the project area to provide employment opportunities to the local people. With the implementation of the proposed river bed mining 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. Thus there will be a gradual shifting of population from agriculture to other sectors of the economy including service sectors.

The study area is still lacking in health and educational facilities. It is expected that same will improve to a great extent with the commissioning of proposed River bed mining project and associated industrial and business activities.

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CHAPTER-IV

ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

INDEX

4.0 GENERAL

Human activity affects environment. Environment Parameters (such as Ambient Air Quality, Water quality, Soil, Noise level, Flora and Fauna and Socio –economic status) get affected. It has direct relation with health and hygiene of people on environment may be adverse or beneficial depends on activates it brings on environment changes in physical, chemical and biological status of air, water, land including biota and in socio – cultural life styles. Regular monitoring is required to know current status of environmental parameters. Mitigation measures are required and suggested once values are exceeding the stimulated limit. The potential is noted and mitigation measures are explored and implemented.

On the basis of the impact analysis, the mitigating action and future monitoring requirement are focused in Environment Management Plan for counting or minimizing adverse impacts.

4.1 IDENTIFICATION OF IMPACTS

The areas of environmental concerns for which the impacts and their predictions are taken into consideration are mainly:

- Land Environment
- Water Environment
- Air Environment
- Noise Environment
- Biological Environment
- Socio economic Environment
- Solid Waste
- Occupational Health and Safety
- Traffic Environment

The impacts can be further categorized as positive impacts and negative impacts depending upon their nature, potential and magnitude in construction phase and in operation phase.

4.2 METHODOLOGY OF ASSESSMENT

The overall impact on Air, Water, Noise, Soil, Socio Economic, Ecological, Land environment etc. will be assessed. In addition, it will be weighed in positive impact and negative impact

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created by the project. To estimate the impact produced, a framework has been designed as given ahead:

• Environmental Sensitivity is defined
• Status of work done till date
• Status of activities (in quantitative terms) undertaken during project period.

4.3 CRITERIA OF ASSESSMENT

A detailed damage to environment resulted due to construction activities assessed by ascertaining weight-age matrix index method. Seven scale of matrix has been fixed ranging major positive (+3) to major negative (-3). Various parameters like land, air, water etc. were assigned scale for assessment of the damage occurred due to construction, operation and proposed construction

Criteria followed to assess the impact is presented in table 4.1 below -

Table 4.1 Assessment criteria of Impact

S. No.	Score	Rating
1.	+3	Major
2.	+2	Moderate
3.	+1	Minor
4.	0	None
5.	-1	Minor
6.	-2	Moderate
7.	-3	Major

4.4 ASSESSMENT OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES DURING CONSTRUCTION PHASE

4.4.1 Land Environment

The proposed extraction of streambed 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 mining and allied activities involved in river bed mining result in creation of temporary haul roads and formation of mined pits inside river, etc. affecting the landuse pattern. In this project, silt and clay are also produced as a constituent of the River-Bed Material, which are considered to be waste.

Anticipated Impacts

1. Undercutting and collapse of river banks.
2. Excessive and unscientific riverbed material mining is a threat to bridges, dams and nearby structures.
3. River bank cutting and erosion.
4. Upstream erosion as a result of an increase in channel slope and changes in flow velocity.
5. Downstream erosion due to increased carrying capacity of the stream
6. Downstream changes in patterns of deposition.
7. Changes in channel bed and habitat type.

Mitigation Measures

1. Since the project is mainly for sand, *bajri* and boulder excavation (soil deficient), no loss of top soil is involved.
2. The silt and clay generated as waste will be used for plantation or filling up low lying area elsewhere.
3. Mining will be restricted to the lease area to a maximum depth of 1.0 m from the surface as per the provision of Jammu & Kashmir Minor Mineral Concession, Storage, Transportation of Minerals and Prevention of Illegal Mining Rules, 2016.
4. A barrier of 7.5 m width has been left from the lease boundary as a statutory area and further pit slope shall be maintained below 45°.
5. Safety zones with respect to bridge, hydraulic points and or/embankment as prescribed by the Department of Geology and Mining should be strictly adhered to
6. In this activity, the work is proposed to be done opencast semi-mechanized method. The river bed material (RBM) excavated will be removed by light weight excavators and directly loaded in tippers from the place of excavation to the mineral processing units or construction sites.

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7. The mining is planned in non monsoon seasons only, so that the excavated area gets replenished during the monsoon each year.
8. Grasses and bushes which have fibrous roots at the first instance are proposed to grown along the banks which enhances the binding properties of the soil. Hence protecting the banks.
9. The systematic and scientific removal of sand, *bajri* and boulder will not cause bed degradation.
10. Restoration of bank will be ensured at the end of mine closure every year.

Scale of Matrix / Parameters	Major	Moderate	Minor	None	Minor	Moderate	Major	Impact*
	(-3)	(-2)	(-1)	0	(+1)	(+2)	(+3)	
Undercutting and collapse of river bank				0				None
Top soil degradation				0				None
Impact on vegetation					+1			Positive
Soil Erosion				0				None
Impact on Soil Quality				0				None

*Impact must be Negative or Positive or None

Conclusion:

As per the scoring matrix, minor positive impact i.e., +1 will be anticipated with project.

4.4.2 Water Environment

Anticipated Impacts

Mining of sand from within or near a river bed has a direct impact on the physico-chemical habitat characteristics. These characteristics include in stream roughness elements, depth,

velocity, turbidity, sediment transport and stream discharge. Altering these habitat characteristics can have deleterious impacts on both in-stream biota and associated riparian habitat.

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

1. Alteration of flow patterns resulting from modification of the river bed
2. An excess of suspended sediment
3. Damage to riparian vegetation and in-stream habitat
4. Aquatic life

The disturbance activities can also disrupt the ecological diversity in many ways.

Mitigation Measures

1. Project activity will be carried out only in the dry part of the river bed. Hence, none of the project activities affect the water environment directly.
2. In the project, it is not proposed to divert or truncate any stream. No proposal is envisaged for pumping of water either from the river or tapping the ground water.
3. In the lean months, the proposed sand mining will not expose the base flow of the river and hence, there will not be any adverse impact on surface hydrology.
4. The deposit will be worked from the top surface to a maximum depth of 1.0 m below ground level or above the ground water table whichever comes first. Hence mining will not affect the ground water regime as well.
5. Further mining will be completely stopped during the monsoon seasons to allow the excavated area to regain its natural profile.

Scale of Matrix / Parameters	Major	Moderate	Minor	None	Minor	Moderate	Major	Impact*
	(-3)	(-2)	(-1)	0	(+1)	(+2)	(+3)	
Impact on surface water quality			-1					Negative
Impact on ground				0				None

water quality								
Impact on human health				0				None
Intersection of ground water table				0				None
Impact on Aquatic life			-1					Negative

*Impact must be Negative or Positive or None

Conclusion:
As per the scoring matrix, moderate negative impact i.e., -2 will be anticipated with project.

4.4.3 Air Environment

Emission of fugitive dust is envisaged due to:

i. Mining Activities includes excavation and lifting of minerals. The whole process will be done opencast semi-mechanized. Therefore the dust generated is likely to be insignificant as compared to mining processes involving drilling, blasting, mechanized loading etc.

ii. Transportation of minerals will be done by road using trucks. Fugitive dust emission is expected from the transportation of trucks on the haul roads. Evaluation of fugitive dust emission has been done by using line source model as given below:

Air Modeling

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 mining, as there are no blasting and

drilling activities, the impacts may only be caused by material handling and transportation activities. The material is mostly wet, and therefore effect is minimal.

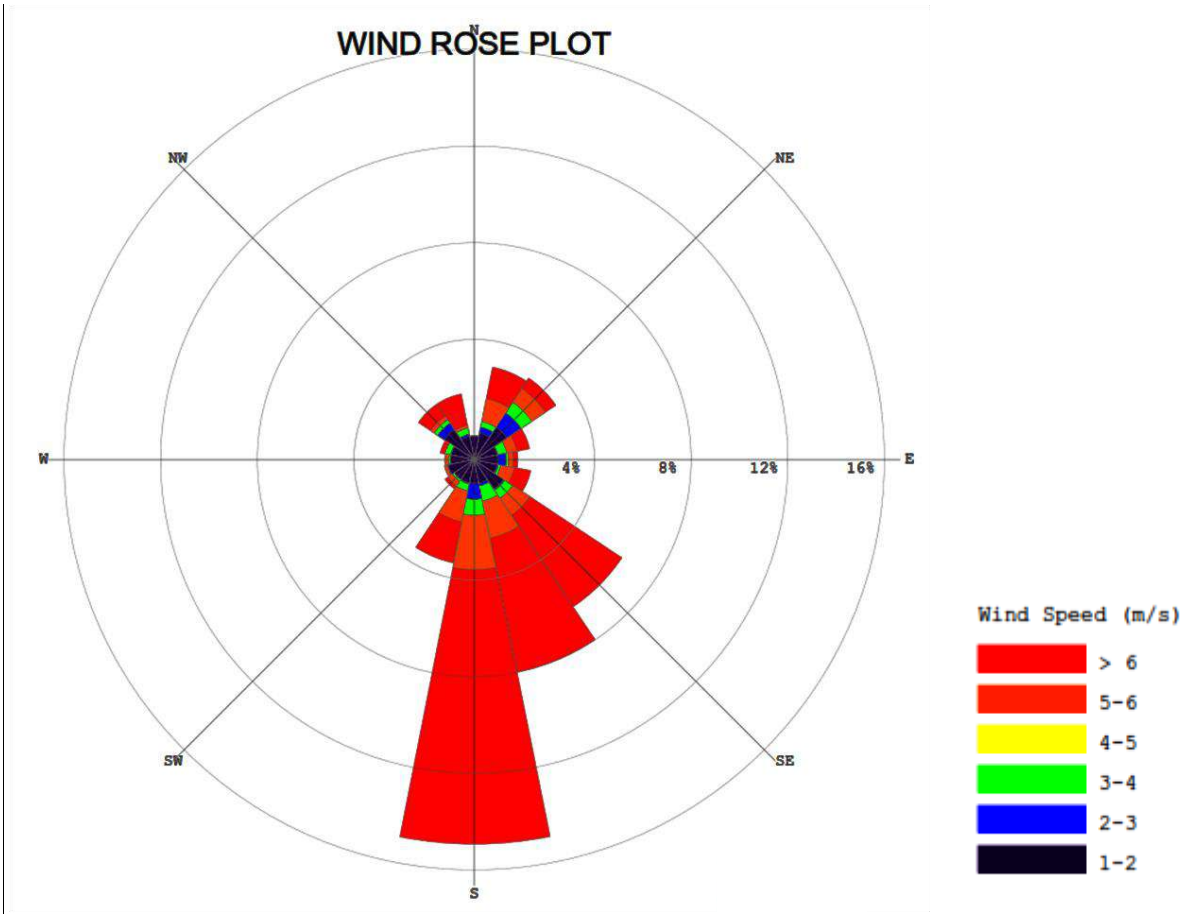


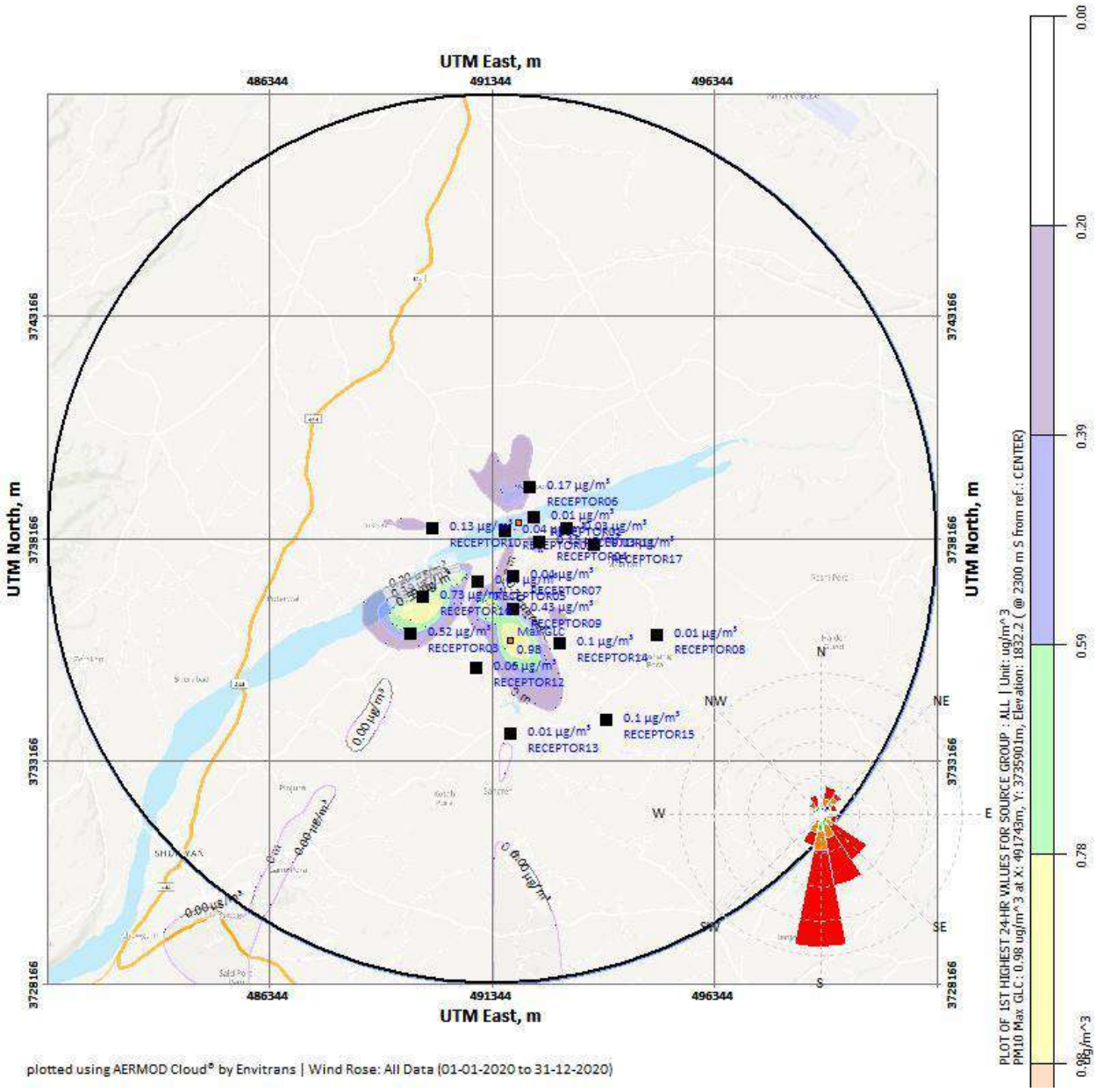
Figure 4.1 Wind-rose Diagram

Table 4.2 The predicted incremental GLC is the maximum value predicted study area

Location	Parameter	Max Baseline Concentrations (µg/m^3)	Predicted GLC – Aermod (µg/m^3)	Cumulative GLC (µg/m^3)
Minor Mineral Block 28, 29 & 30, located at village – Aghama & Nowpora Bala, Tehsil – Chitragam & District –	PM_{10}	85.6	0.98	86.58
	$PM_{2.5}$	44.5	0.49	44.99
	SO_2	7.5	2.89	10.39

Shopian, and UT – Jammu & Kashmir.	NOx	12.9	17.36	30.26
	CO	0.65	1.96	2.61

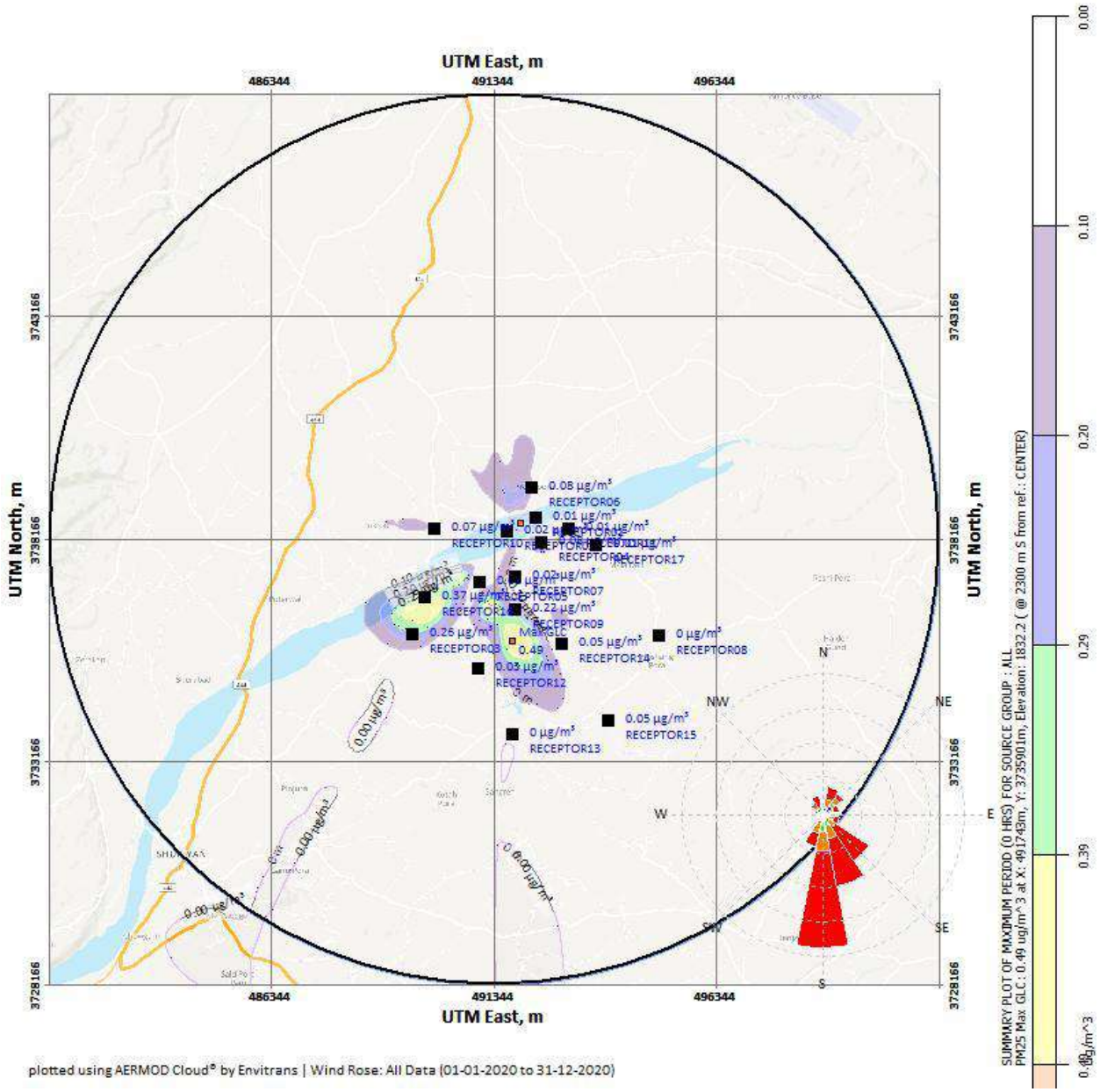
Spatial Distribution of 24-hours average PM_{10} Concentration (µg/m^3)



Maximum GLC of PM_{10} 0.98 ($\mu g/m^3$) at (491743 m, 373590 m)

Figure 4.2 Resultant GLC in the form of Isopleths for PM_{10}

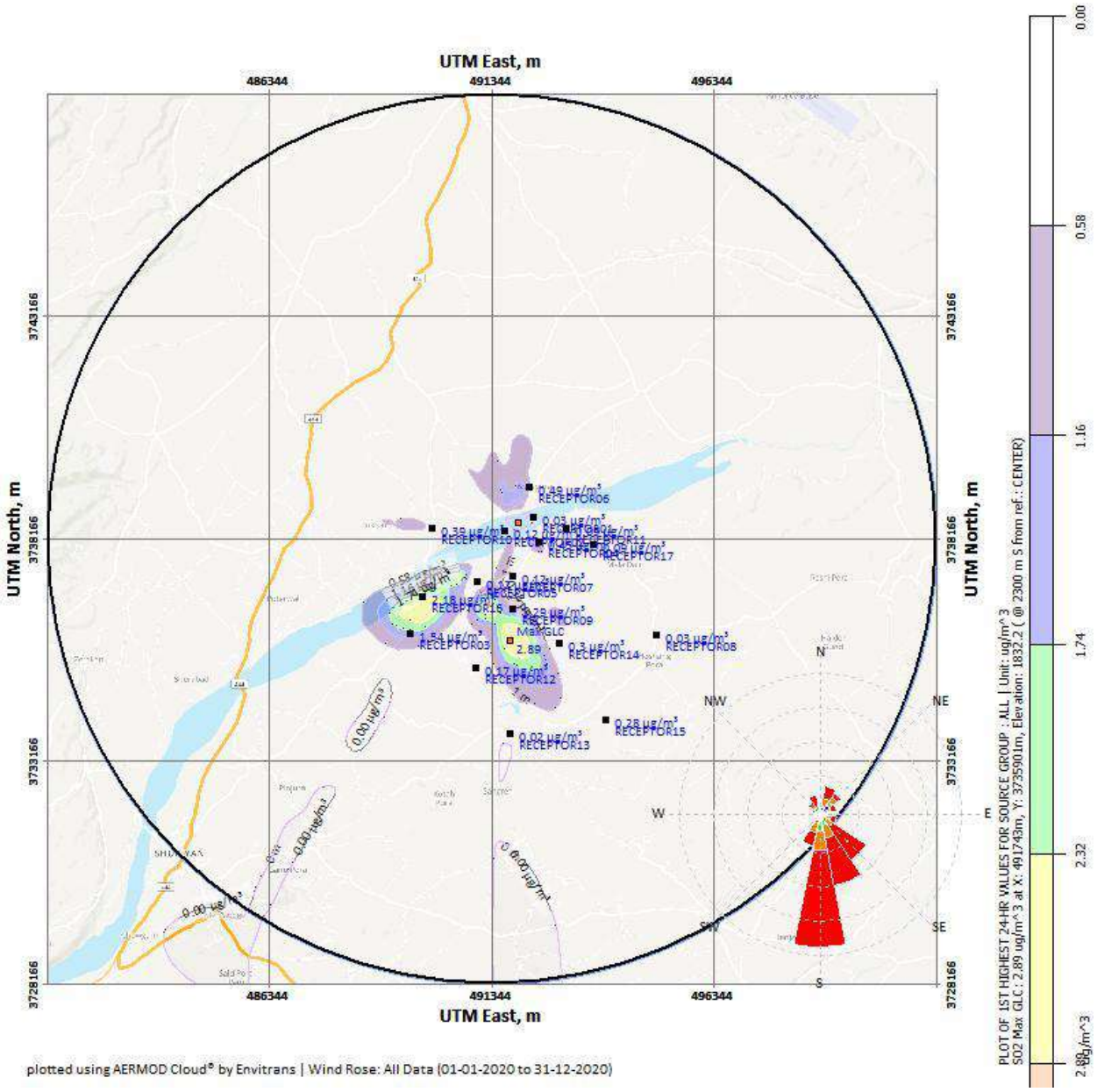
Spatial Distribution of 24-hours average $PM_{2.5}$ Concentration (µg/m^3)



Maximum GLC of $PM_{2.5}$ 0.49 (µg/m^3) at (491743 m, 373590 m)

Figure 4.3 Resultant GLC in the form of Isopleths for $PM_{2.5}$

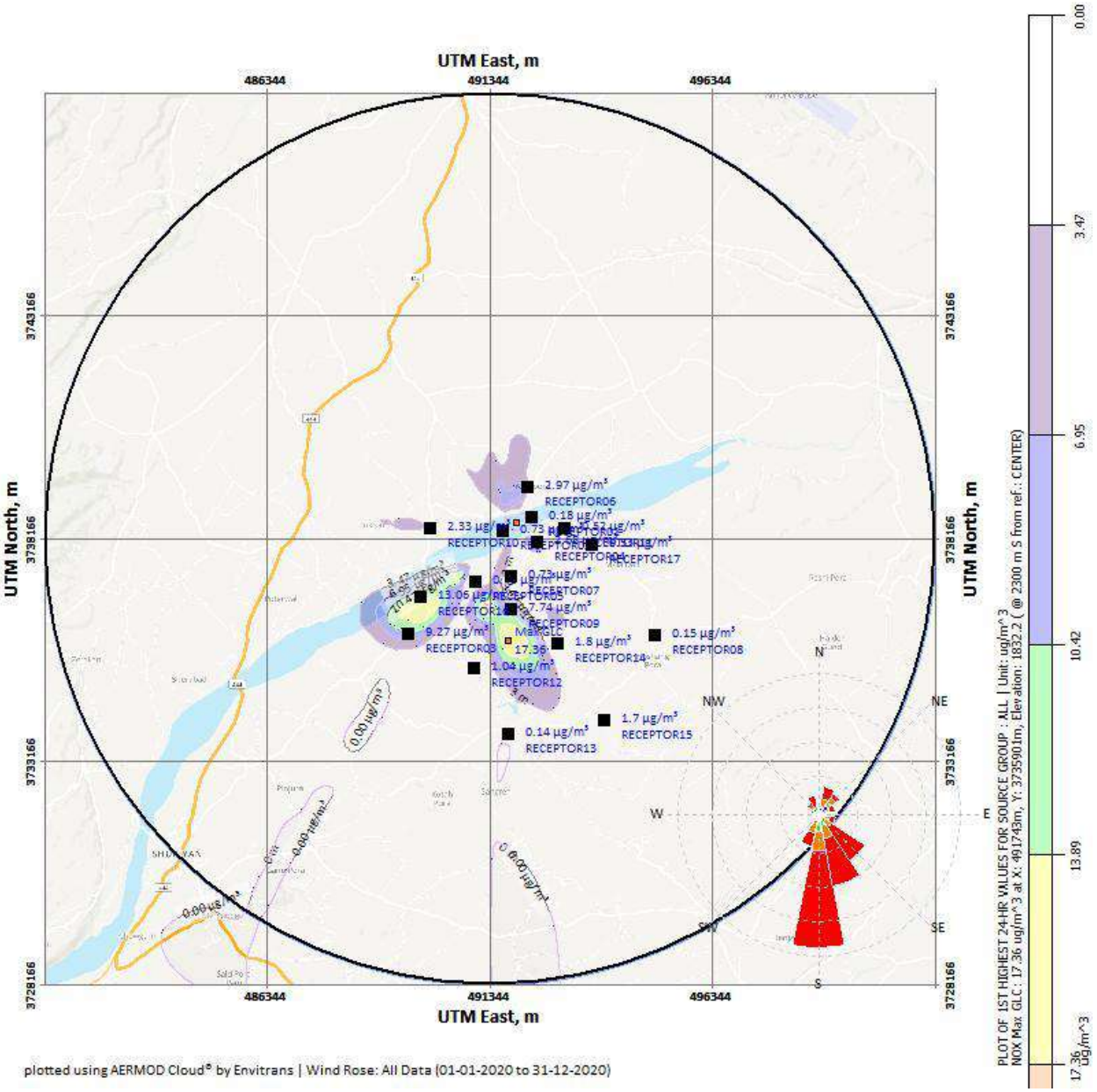
Spatial Distribution of 24-hours average SO_2 Concentration (µg/m^3)



Maximum GLC of SO_2 2.89 (µg/m^3) at (491743 m, 373590 m)

Figure 4.4 Resultant GLC in the form of Isopleths for SO_2

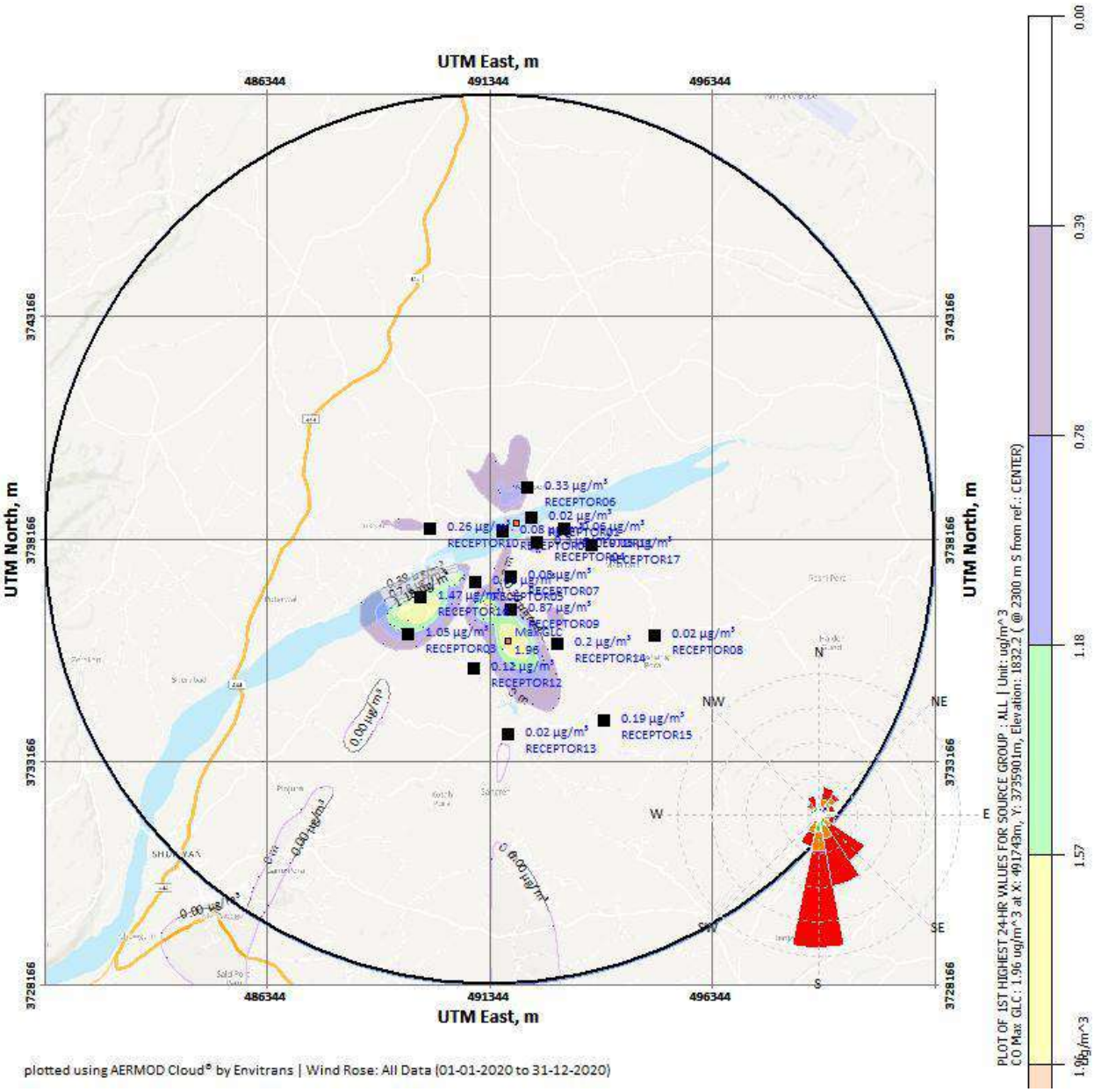
Spatial Distribution of 24-hours average NOx Concentration (µg/m^3)



Maximum GLC of NOx 17.36 (µg/m^3) at (491743 m, 373590 m)

Figure 4.5 Resultant GLC in the form of Isopleths for NOx

Spatial Distribution of 24-hours average CO Concentration (µg/m^3)



Maximum GLC of CO 1.96 (µg/m^3) at (491743 m, 373590 m)

Figure 4.5 Resultant GLC in the form of Isopleths for CO

Mitigation measures

The collection and lifting of minerals will be done manually. 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:

1. Water sprinkling will be done on the haul roads twice in a day. This will reduce dust emission further by 74% (*Ref. Haul road dust control by WR REED & JA Organiscak*). The same can be seen as shown in the above graph (Fig.4.1).
2. Speed limits will be enforced to reduce airborne fugitive dust from vehicular traffic.
3. Spillage from the trucks will be prevented by covering tarpaulin over the trucks.
4. Deploying PUC certified vehicles to reduce their emissions.
5. Proper tuning of vehicles to keep the gas emissions under check.
6. Monitoring to ensure compliance with emission limits would be carried out during operation.

Scale of Matrix / Parameters	Major	Moderate	Minor	None	Minor	Moderate	Major	Impact*
	(-3)	(-2)	(-1)	0	(+1)	(+2)	(+3)	
Impact on quality of air			-1					Negative
Mineral Transportation			-1					Negative
Dust Emission			-1					Negative
Human health				0				None

Vehicular Movement		-2						Negative

*Impact must be Negative or Positive or None

Conclusion:

As per the scoring matrix, high negative impact i.e., -5 will be anticipated with project.

4.4.4 Noise Environment

The proposed mining activity is manual 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:

1. Mental disturbance, stress & impaired hearing.
2. Decrease in speech reception & communication.
3. 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:

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
6.0	92	
4.0	95	
3.0	97	

2.0	100	permissible sound is to be determined by extrapolation or proportionate scale. 2. No exposure in excess of 115 dB (A) is permissible.
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.

Mitigation measures

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

1. The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.
2. In addition, truck drivers will be instructed to make minimum use of horns in the village area and sensitive zones.
3. No such machinery is used for mining which will create noise to have ill effects.
4. Awareness will be imparted to the workers about the permissible noise levels & maximum exposure to those levels

Scale of Matrix / Parameters	Major (-3)	Moderate (-2)	Minor (-1)	None 0	Minor (+1)	Moderate (+2)	Major (+3)	Impact*
Impact of noise			-1					Negative
Human health				0				None
Equipment and Machinery Noise		-2						Negative
Vehicular Noise			-1					Negative

*Impact must be Negative or Positive or None

Conclusion:

As per the scoring matrix, high negative impact i.e., -4 will be anticipated with project.

4.4.5 Biological Environment – Ecological Flora & Fauna

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.

River bed mining generates additional traffic, which negatively impairs the environment.

Anticipated Impacts:

1. Excessive and unscientific riverbed sand mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology.
2. Access roads crossing the riparian areas will have impact on the species disturbing the ecosystem.
3. Mining may drive away the wild life from their habitat, and significantly affect wildlife and nearby residents.
4. Diminution of the quality and quantity of habitat essential for aquatic and riparian species.
5. Reduction in the yield of agriculture due to deposition of dust on the leaves, etc. of the crops.
6. Fragmentation of wildlife habitat and blocking of migratory paths/corridors. Isolation may lead to local decline of species, or genetic.
7. 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. 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.
6. No discard of food, polythene waste etc will be allowed in the lease area which would distract/attract the wildlife.
7. No night time mining will be allowed which may catch the attention of wild life.
8. If wildlife are noticed crossing the area, they will not be disturbed at all.
9. Workers will be made aware of the importance o the wildlife and signage will be displayed at the sensitive areas to caution the workers & other passerby.
10. Access roads will not encroach into the riparian zones and if any riparian vegetation cleared off for the mining activity will be restored at the end of closure of mine.

Scale of Matrix / Parameters	Major (-3)	Moderate (-2)	Minor (-1)	None 0	Minor (+1)	Moderate (+2)	Major (+3)	Impact*
Impact on the local Flora					+1			Positive
Impact on the local Fauna				0				None
Impact on the Forest land or any eco-sensitive area involved.				0				None
Impact of Aquatic life			-1					Negative

*Impact must be Negative or Positive or None

Conclusion:

As per the scoring matrix, insignificant impact i.e., 0 will be anticipated with project.

Green Development Plan

For Minor Mineral Block No. 28

Plantation programme will be carried out side boundary limit of lease area on the both the banks of Nallah Rambiara in consultation with Soil Conservation Department.

Year- wise plantation programme for first five years is given as under:

Year	Outside B.L.	Along Road	Along Drain	Around Dump	Total
1st	20	Nil	Nil	Nil	20
2nd	20	Nil	Nil	Nil	20
3rd	20	Nil	Nil	Nil	20
4th	20	Nil	Nil	Nil	20
5th	20	Nil	Nil	Nil	20
Total	**100**	**Nil**	**Nil**	**Nil**	**100**

For Minor Mineral Block No. 29

Plantation programme will be carried out side boundary limit of lease area on the both the banks of Nallah Rambiara in consultation with Soil Conservation Department.

Year- wise plantation programme for first five years is given as under:

Year	Outside B.L.	Along Road	Along Drain	Around Dump	Total
1st	20	Nil	Nil	Nil	20
2nd	20	Nil	Nil	Nil	20
3rd	20	Nil	Nil	Nil	20
4th	20	Nil	Nil	Nil	20
5th	20	Nil	Nil	Nil	20
Total	**100**	**Nil**	**Nil**	**Nil**	**100**

For Minor Mineral Block No. 30

Plantation programme will be carried out side boundary limit of lease area on the both the banks of Nallah Rambiara in consultation with Soil Conservation Department.

Year- wise plantation programme for first five years is given as under:

Year	Outside B.L.	Along Road	Along Drain	Around Dump	Total
1st	20	Nil	Nil	Nil	20
2nd	20	Nil	Nil	Nil	20
3rd	20	Nil	Nil	Nil	20
4th	20	Nil	Nil	Nil	20
5th	20	Nil	Nil	Nil	20
Total	**100**	**Nil**	**Nil**	**Nil**	**100**

4.4.7 Socio-economic Condition

1. The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement.
2. No public buildings, places, monuments etc exist within the lease area or in the vicinity.
3. The mining operation will not disturb/ relocate any village or need resettlement. Thus no impact is anticipated.
4. The impact of mining activity in the area is positive on the socio – economic environment of region.
5. River Bed Mining Project is providing employment to local population and it will be give preference to the local people whenever there is requirement of man power.

Scale of Matrix / Parameters	Major	Moderate	Minor	None	Minor	Moderate	Major	Impact*
	(-3)	(-2)	(-1)	0	(+1)	(+2)	(+3)	
Loss of habitation				0				None
Immigration/ Emigration of workers				0				None
Health impacts					+1			Positive
Loss/gain of culture				0				None

and religion								
Employment Generation							+3	Positive

*Impact must be Negative or Positive or None

Conclusion:
As per the scoring matrix, high positive impact i.e., +4 will be anticipated with project.

4.4.8 Occupational Health and Safety

Occupational Health and Safety professionals develop and coordinate safety and health systems and strategies within organizations. They identify workplace hazards, assess risks to employee health and safety, and recommend solutions. Increasingly, Health and Safety Professionals are also responsible for many of the environmental aspects of their workplace. As this profession matures there is an increased emphasis on risk management strategy and on the development of workplace culture.

Occupational Health and Safety professionals in the minerals industry may perform the following tasks:

1. Dust masks will be provided to the workers working in the dust prone areas as additional personal protective equipment.
2. Periodical medical checkup will be conducted.
3. The collection of minerals from the mine does not cause any occupational ill effects.
4. Any workers health related problem will be properly addressed.
5. Except dust generation there is no source which can show a probability for health related diseases and proper dust suppression will control generation and dispersion.
6. Develop and implement training sessions for management, supervisors and workers on health and safety practices and legislation.
7. Labour will work under supervision with proper safety equipments and safety belt at the mining site.
8. There will be proper barrier zone around the lease area.

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Under Covid – 19 following precautions will be done:

- ✓ Temperature of employees will be checked by Thermometer Gun twice a day and log book for the same will be maintained.
- ✓ Face protection shields along with masks and PPEs and along with sanitizer will be provided.
- ✓ Gloves, masks and hand sanitizers will be provided.
- ✓ Social distance will be maintained.

It is ensured by PP that the updated guidelines of MHA in content of Covid -19 will be followed during Mining operation at Mining site.

Hence, as per the study of areas of environmental concerns and scoring matrix, the overall result comes to have major negative impact anticipated from the project.

4.5 IMPACT MATRIX

Various activities from the Minor Mineral Block No. 28, 29 & 30 projects are likely to have some impact on the environmental constituents during its operational phase. The impact assessment matrix given in **Table 4.3** reveals the impact associated with each activity of the project on various environmental parameters during operational phase before any mitigation measures are implanted. To assess the severity of the impacts, they are categorized as follows:

Table 4.8 Overall Scenario of Potential Environmental Impacts

Environmental Parameters	Local	Regional	Short term	Long Term	Reversible	Irreversible	Adverse	Beneficial	No Impact	Significant	Insignificant
Topography									√		
Drainage	√			√	√			√			√
Soil									√		
Water Resources									√		
Water Quality	√		√			√					√
Land Use	√			√		√		√		√	
Air Quality	√		√		√						√
Noise	√		√		√						√
Flora	√	√		√		√		√		√	
Fauna	√			√		√		√		√	
Employment	√			√		√		√		√	
Aesthetic	√			√		√		√		√	

CHAPTER-V

ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

5.0 GENERAL

Consideration of alternatives to a project proposal is a requirement of EIA process. During the scoping process, alternatives to a proposal can be considered or refined, either directly or by reference to the key issues identified. A comparison of alternatives help to determine the best method of achieving the project objectives with minimum environmental impacts or indicates the most environmentally friendly and cost effective options.

5.1 ALTERNATIVE FOR MINE LEASE

Points for consideration of suitability of alternate site for mining of sand, bajri, boulder other than the proposed site are as follows:

During monsoon season, when rivers reach high stage, Rambaira Nallah also bears significant catchment area and it transports river bed material (sand, bajri, and boulder) which gets accumulated at such stretch which widens river width and concave banks. Thus, it is evident that the proposed site shall be mined for the purpose of preventing land cutting during heavy rainfall and floods.

Sand/Bajri/Boulder (minor mineral) deposits are site specific and in Rambaira river bed, mining of the material will be done by open cast manual method. No new technology is involved. The mining shall be done as per laid down procedures by IBM. Solid Waste generated during mining will consist of silt mixed soil which will be backfilled in the excavated pits. The mined out area will get replenished annually after monsoon. Therefore, no alternate site is suggested as existing land use of mine lease area belongs to forest land which is further classified as "River body" and shall continue to be so even after the current mining project is over.

5.2 ALTERNATIVE FOR TECHNOLOGY AND OTHER PARAMETERS

Some alternatives considered during EIA study are discussed below in 5.1

S. No.	Particular	Alternative Option 1	Alternative option 2	Remarks
1.	Technology	Open cast	Open-cast	Open-cast Manual Mining is

		Manual Mining	Mechanical mining	preferred. Benefits 1.No electrical power requirement 2. Minimal noise will be generated Minimal air pollution will be generated. 3. Overburden will not be generated
2.	Employment	Local Employment	Outsource Employment	Local Employment is preferred. **Benefits :** 1. Provides employment to local people along with Financial Benefits. 2. No residential building/ housing are required.
3.	Laborer Transportation	Public Transport	Private Transport	Local labours will be deployed so they will either reach mine site by bicycle or by foot. **Benefits :** Cost of transportation of men will be negligible
4.	Material Transportation	Public Transportation	Private Transportation	Material will be transported through truck/trolley on the contract basis. **Benefits:**

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				It will give indirect employment.
5.	Water Requirement	Tanker Supply	Groundwater/surface water supply	Tanker supply will be preferred **Benefits :** No change in the surface water or ground water quality It will provide indirect employment.
6.	Road	Haul Road	Metallic Road	Haul road will be considered for linking mine site from metallic road for transportation purpose. Mining distance will be measured along with less number of tree for considering optimum haul road route. **Benefits :** Less distance, less fuel used. Mining or negligible number of trees will be cut in best opted haul road route.

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CHAPTER-VI

ENVIRONMENTAL MONITORING PROGRAMME

INDEX

6.0 GENERAL

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

Monitoring is important to measure the efficiency of control measures. An environmental impact assessment study is carried over for a specified period of time and the data generated for that specific period cannot bring out all variations induced by the natural or human activities. Therefore, regular monitoring programme of the environmental parameters is essential to take into account the changes in the environmental quality. The objectives of monitoring are to:-

• Verify effectiveness of planning decisions;

• Measure effectiveness of operational procedures;

• Confirm statutory and corporate compliance; and

• Identify unexpected changes.

6.0.1 Identify unexpected changes, Environmental Monitoring & reporting Procedure

Monitoring will confirm that emissions are within the prescribed limits. This will take the form of direct measurement and recording of quantitative information, such as quantity and concentrations of discharges, emissions 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 socioeconomic interaction, through local liaison activities or even assessment of complaints. The preventive approach by management may also require monitoring of process inputs, for example, type and method used, resource consumption, equipment and pollution control performance etc. Monitoring will also be

required to meet compliance with statutory and corporate requirements. Finally, monitoring results will provide the basis for auditing.

MONITORING SCHEDULE

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

Monitoring Parameters	Frequency of Monitoring
Ambient Air: Ambient Air Quality at appropriate location for PM_{10}, $PM_{2.5}$, SO_2, NO_x • In the vicinity of the mine area. • In the surrounding area covering project site only.	**Six Monthly**
Water: • Drinking water one sample. • Mine area for Water Portability Confirming to Drinking Water Standards IS : 10500:2011	**Six Monthly**
Noise: Day & Night level Noise Monitoring	**Six Monthly**
Soil: Soil Monitoring, Qualitative and quantitative testing/analysis to check the soil fertility, porosity, texture, water holding capacity, etc.	**Six Monthly**
Socio-economic Condition	**Once in 3 Year**

S. No.	Description of Parameters	Schedule of Monitoring

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1	Air Quality	24 hourly samples twice a week for one month in each season except monsoon
2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in two years on project area
4	Noise Level	Twice a year for first two years & then once a year
5	Socio-economic Condition	Once in 3 years

6.1 MONITORING OF VARIOUS PARAMETERS

Monitoring Methods

The Mine site is considered as core zone and the area lying within 10km radius from the mine site is considered as buffer zone.

6.1.1 Slope Failure

The proposed mining for sand, bajri, boulder from the river bed of Nallah Rambaira will be done by opencast manual method up-to the depth of 1.0 m from the ground level. There will be no slope formation as the excavated pits will be backfilled by the solid waste (soil) generated during the mining of sand, bajri, boulder and it will get replenished during monsoon. Hence there will be no slope failure.

6.1.2 Drainage

Local workers will be deployed for the project. Therefore no concrete based sewerage system will be constructed. Domestic sewage generated shall be disposed into the septic tanks followed by soak pits. No domestic waste water will be disposed into the river body or near area. Regular checking will be carried out to find any blockage due to silting or accumulation of loose materials. The drains will also be checked for any damage in lining/stone pitching etc.

6.1.3 Blasting Effects

The proposed project is for extraction of sand, bajri, boulder which will opt for an open cast manual method of mining. Hence blasting is not required.

6.1.4 Air Quality Monitoring

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Ambient air quality should be monitored both upwind & downwind directions along with adequate meteorological measurement for proper interpretation of data of PM10, SO2 and NO2. The number of monitoring stations, air pollutants and frequency of monitoring will be decided as per the CPCB guidelines in 2009. Meteorological stations will be monitored for wind direction and speed, rainfall, temperature & humidity and evaporation.

6.1.5 Water Quality Monitoring

Monitoring of surface run-off and ground infiltration will be done once in every season except monsoon. Quality of groundwater and surface water samples will be analyzed for all the parameters as per IS-10500 and IS-2296 respectively.

6.1.6 Noise Quality Monitoring

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 nearby villages for studying the impact due to higher noise levels for taking necessary control measures at the source.

6.2 REPORTING SCHEDULE OF MONITORING DATA

The frequency of reporting of monitored data will be on six monthly bases to the State PCB and to Regional Office of MoEF, New Delhi. Compliance report will be submitted twice in a year for 6 months interval. The Environmental statement will be prepared for the entire year of operations and will be regularly submitted to regulatory authorities.

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CHAPTER-7
ADDITIONAL STUDIES
INDEX

7.1 PUBLIC CONSULTATION

The public hearing for the Minor Mineral Block No. 28, 29, 30 in village, Lassipora, District Shopian (J&K UT) was conducted on 05.05.2021, as per the Environment Impact Assessment Notification dated 14th September 2006. The public hearing details are summarized in the **Table-7.1**.

Table-7.1 Public Hearing Details

Particular	Description
Advertisement for Public Hearing ➢ Date of Advertisement in Newspapers	04.04.2021
Date of Public Hearing	05.05.2021 at 10.30 am to 01.00 pm
Venue	At Village : Bala Nowpora Shopian Village Ahgam Nera Army Camp District Shopian
Members	**1.**Additional District Magistrate, Shopian **2**.District Mineral Officer, Department of Geology & Mining, Shopian **3.**Divisional Officer, Pollution Control Committee, Shopian

The press notification indicating the date and venue of the public hearing was issued in prominent news papers Viz. Local News Paper with project details inviting suggestions, views, comments and objections from the public regarding Block No. 28, 29, and 30 District Shopian.

Public hearing meeting was convened by Regional Officer, JKPCB, Shopian along with the Additional District Magistrate, Pulwama.

Around 50 people attended the public hearing.

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

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 and specific reference to

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the impacts on environment, its management and social welfare measures including community development activities proposed.

Figure 7.1: Notice for Public Hearing

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

email: membersecretaryjkspcb@gmail.com

Public Notice

Sub.: **Public Hearing** for Minor Mineral **(River Bed Mineral)** Blocks scheduled on **05.05.2021** for i) **Block- 15,** ii) **Block-26,** iii) **Block- 28, 29, 30 (cluster)** and **vi) Block-33** for Distt. Shopian, Kashmir, J&K.

As per **EIA Notification Rule 7(1)** Section **(III)** issued by Ministry of Environment, Forests and Climate Change GoI vide **S.O.1533** dated **14th September, 2006** (as amended till date), **Public Hearing** of the below mentioned mining blocks for minor mineral extraction is to be carried out.

The Public Hearing is being conducted by J&K Pollution Control Committee as per requirement of EIA notification. The **ToRs** (Terms of Reference) have been forwarded by **JKEIAA** vide nos. i) **JKEIAA/2020/324/1434-36** dt. 21.11.2020, ii) **JKEIAA/2020/287/1198-1201** dt. 05.11.2020 iii) **JKEIAA/2020/716-20** dated 26.08.2020, iv) **JKEIAA/ 2020/ 323/1409-12** dated 21.11.2020 for the said **Public Hearing** along with draft EIAs/EMPs, which is scheduled to be conducted as per below mentioned details:

Name of Agency	Area	Location of minor mineral area / Coordinates	Name of Village/Tehsil / District	Location of public hearing Venue (Date and Time)
Sh. Danish Yousaf S/o Sh. Mohd. Yousuf Mir R/o Daughama, Kakpora, District Pulwama	4.63 Hect.	**Block -15** having an area 4.63 ha. Army camp Balapur downstream nallah Rambiara, Village Balapur Distt. Shopian. **Coordinates:** A 33°44'58.48" - N 74°49'56.34" - E to F 33°44'53.48" - N 74°50'06.02" - E	Vill. : **Balapur.** Distt. : Shopian (J&K)	Date : **05-05-2021.** Time: **10.30 am** to **11.30 am.** At Village : Bala Nowpora, Shopian Village Ahgam Near Army Camp Distt. : Shopian (J&K)
Sh. Bashir Ahmad Wani S/o Sh. Jalal ud Din Wani R/o Ladhoo, Khrew, District Pulwama	9.50 Hect.	**Block-26** having an area 9.50 ha., Sheikhpora downstream nallah Rambiara Village Sheikhpora Tehsil Chitergam, Distt. Shopian. **Coordinates:** A 33°46'51.84" - N 74°53'51.88" - E to D 33°46'46.05" - N 74°53'55.56" - E	Vill. : **Sheikhpora** Distt. : Shopian (J&K)	Date : **05-05-2021.** Time : **11.30am.** to **12.30 pm.** At Village : Bala Nowpora, Shopian Village Ahgam Near Army Camp Distt. : Shopian (J&K)
Sh. Feroz Ahmad Wani S/o Sh. Ghulam Moh. Wani R/o Sempora, Pantha Chowk, Srinagar	9.89, Hect.	**Blocks 28** having an area 9.89, Army camp /Aghama/Stream nallah Rambiara Distt. Shopian **Coordinates:-** A 33°47'08.49" - N 74°54'26.88" - E to D 33°46'59.08" - N 74°54'33.96" - E	Vill. : **Aghama** Distt. : Shopian (J&K)	Date : **05-05-2021.** Time : **12.30 pm** to **1.30 pm.** At Village : Bala Nowpora, Shopian Village Ahgam Near Army Camp Distt. : Shopian (J&K)
	9.09 Hect.	Blocks 29 having an area 9.09 Irrigation scheme Nowpora upstream nallah Rambiara Village Nowpora Bala Distt. Shopian **Coordinates:-** A 33°47'18.89" - N 74°54'47.87" - E to D 33°47'07.64" - N 74°54'55.83" - E	Vill.: **Nowpora Bala** Distt. : Shopian (J&K)	Date : **05-05-2021.** Time : **02.00 pm** to **03.00 pm.** At Village : Bala Nowpora, Shopian Village Ahgam Near Army Camp Distt. : Shopian (J&K)
	8.21 Hect.	**Blocks 30** having an area 8.21 ha. Irrigation scheme Nowpora downstream nallah Rambiara Village Nowpora Bala Distt. Shopian **Coordinates:-** A 33°47'18.89" - N 74°55'06.22" - E to D 33°47'09.57" - N 74°54'58.06" - E	Vill. : **Nowpora Bala** Distt. : Shopian (J&K)	Date : **05-05-2021.** Time : **03.00 pm** to **04.00 pm.** At Village : Bala Nowpora, Shopian Village Ahgam Near Army Camp Distt. : Shopian (J&K)
Sh. Farooq Ahmad Wani S/o Sh. Gh. Ahmad Wani R/o Oudipora, Awantipura, Pulwama	9.81 Hect.	Block-33 having an area 9.27 ha. Ab. Gaffar Bhat Sugan, upstream nallah Rambiara, Sugan Distt. Shopian. **Coordinates:-** A 33°47'30.97" - N 74°56'42.43" - E to D 33°47'37.67" - N 74°56'29.46" - E	Vill. : **Sugan.** Distt. : Shopian (J&K)	Date : **05-05-2021.** Time : **04.00 pm** to **05.00 pm** At Village : Bala Nowpora, Shopian Village Ahgam Near Army Camp Distt. : Shopian (J&K)

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

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

All concerned are hereby informed through this notice to send their suggestions / written objections or comments on or before **5th of May, 2021** addressed to Member Secretary, J&K Pollution Control Committee, Parivesh Bhawan, Gladni, Transport Nagar, Narwal, Jammu **(09.30 AM to 05.30 PM)** on any working day or by *email membersecretaryjkspcb@gmail.com*

The panel for conducting public hearing shall be as under:

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

All interested persons/organizations/groups/stake-holders are invited to participate in the above mentioned Public Hearing on the aforementioned date, venue and time and give their suggestions, view/comments and objections, if any, to the authorities, conducting the Public Hearing. Any person having interest in this public hearing can also have access to the Executive Summary of EIAs from Office of District Pollution Control Committee, Shopian.

5/4/21
(B.M. Sharma) IFS
Member Secretary
JKPCC, Jammu

AEE

Figure 7.2: Photographs Showing Public Hearing

Authorised Signatory
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7.1.2 Conclusion on Public Hearing

As there is no further representation from the Public present during public hearing, Regional Officer, JKPCB, Shopian summed up the Proceedings of the Public hearing and declared the Public Hearing as over. The details of people attended,

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representations received in writing during the public hearing are enclosed along with the minutes of the public hearing as **Annexure VIII & IX.**

7.2 RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN

7.2.1 Definition

A major emergency in a work is one, which has the intensity to cause serious injury or loss of life. It may cause extensive damage to property and serious disruption both inside and outside the work. It would normally require the assistance of emergency services to handle it effectively.

7.2.2 Scope

An important element of mitigation is emergency planning i.e. recognizing that accidents are possible, assessing the consequences of such accidents and deciding on the emergency procedures, both on site and off site that would need to be implemented in the event of an emergency. Emergency planning is just one aspect of safety and cannot be considered in isolation.

7.2.3 Objective

The overall objectives of the emergency plan are:

(a) To localize the emergency and, if possible, eliminate it; and

(b) To minimize the effect of the accident on people and property.

Elimination requires well planned process/technology and its effective implementation, so that such situation should either not arise or if it comes, a pre warning is received for timely action in built or by preparedness for zeroing the effects. Minimizing the effects may include prompt action, rescue, and first aid, and evacuation, fire fighting and also passing on information promptly to people living nearby.

7.2.4 Identification of Hazards

The possibility of the following may be there for such projects:

(a) Inundation of pit during excessive rains.

(b) Falling of the persons in the pit.

(c) Accidents due to machinery.

(d) Fire in the machinery explosives related explosions

7.2.5 Disaster Management

1. This is a proposed mine and will be worked in day shift only.

2. No drilling¬ & blasting will be carries out during mining operation.

3. The mines manager will make the arrangements to deal with disaster.

4. Manually Method will be used during the mining operation on project site.

If the disaster is of higher magnitude, he will inform the same to Police, District Collector, DGMS and IBM. The following arrangements will be made at the mine.

(a) Availability of high-capacity pumps, firefighting equipment, ambulances etc.

(b) Formation of team to deal with the hazards.

(c) Arrangements for removal of employed persons from disaster site.

(d) Telephone Nos. of District Collector, Police and Hospital.

7.2.6 Post Disaster Analysis and Evaluation

When the emergency is over, the team will carry out a detailed analysis of cause of accident/occurrence, evaluate the influence of various factors and find out the procedures to minimize them in future. At the same time adequacy of disaster management plan will be evaluated and shortcomings will be rectified to improve the plan.

7.4 DISASTER MANAGEMENT PLAN

This should deal with action plan for high risk accidents like Landslides, Earthquakes, subsidence, Avalanches & Snow Blizzards, Hailstorm, Biological Hazards, Drought, Wind Strom, Cloudburst, flood, inundation, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The

capability of lessee to meet such eventualities and the assistance to be required from the local authorities should be described.

The shallow depth of activities in river bed mining will not involve any high risk accident due to side falls/collapse.

The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.

1. All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955 and other laws applicable to mine will strictly be complied with.
2. During heavy rainfall the mining activities will be closed.
3. All persons in supervisory capacity will be provided with proper communication facilities.
4. Proper coordination with Irrigation Department will be maintained so that at the time of releasing water, if any, from the dam suitable warning/information is given in advance.
5. "Disaster Warning System" as developed will be strictly implemented

7.5 REPLENISHMENT STUDY:

Sedimentation- In the geological sciences is a process of deposition of a solid material from a state of suspension or solution in a fluid (usually air or water). Broadly defined it also includes deposits from glacial ice and those materials collected under the impetus of gravity alone as in talus deposits, or accumulations of rock debris at the base of cliffs. The term is commonly used as a synonym for sedimentary petrology and sediment logy. Sedimentation is generally considered by geologists in terms of the textures, structures, and fossil content of the deposits lay down in different geographic and geomorphic environments. As per District Survey Report there is non-availability of Replenishment data.

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

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place to protect workers prior to them being exposed to the actual hazard.

Step II: Risk Assessment

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

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

Step III: Risk Control

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

Step IV: Implementation of risk controls

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

The most effective methods of control are:

i. Elimination of hazards

ii. Substitute something safer

iii. Use engineering/design controls

iv. Use administrative controls such as safe work procedures

v. Protect the workers i.e. by ensuring competence through supervision and training, etc.

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

Step V: Monitor and Review

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

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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 No- 7.1: 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

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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.

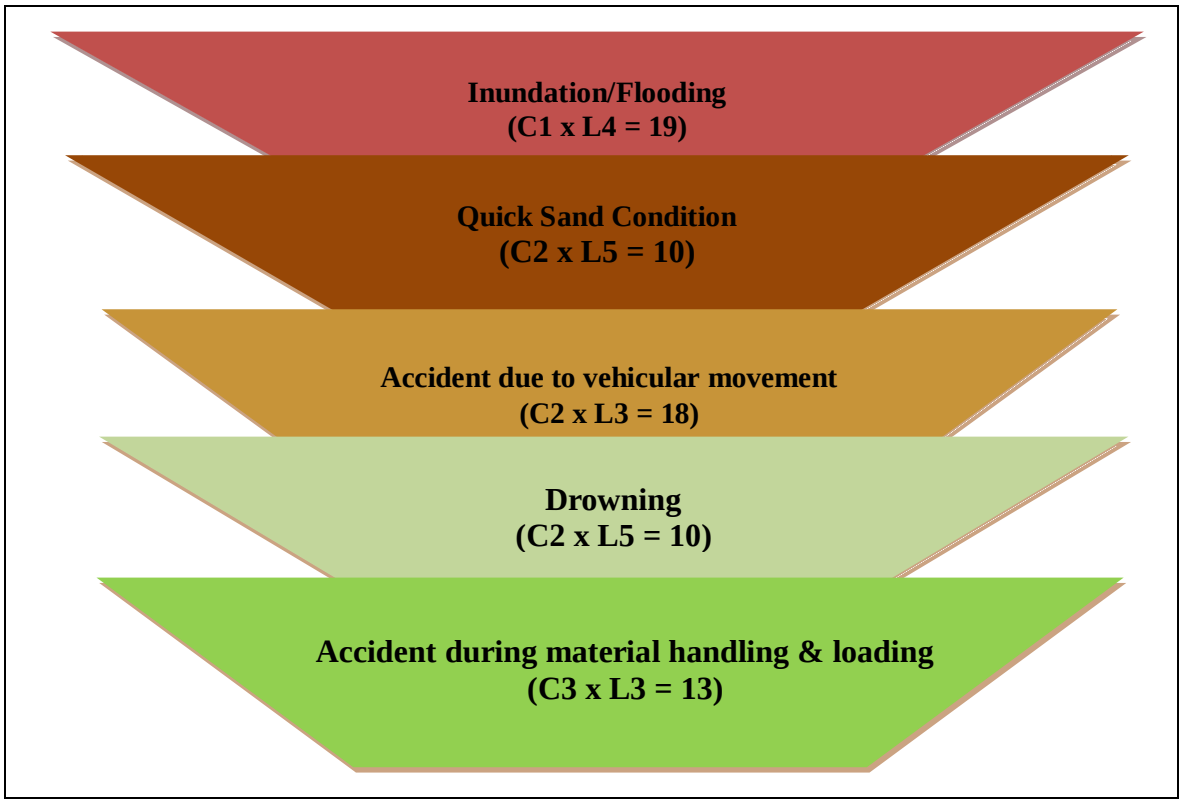
Table 7.2 Risk Rank

Risk Rank **LikelihoodxConsequence**	**L1** **Almost certain**	**L2** **Likely**	**L3** **Possible**	**L4** **Unlikely**	**L5** **Rare**
C1 **Catastrophic**	**25**	**24**	**22**	**19**	**15**
C2 **Major**	**23**	**21**	**18**	**14**	**10**
C3 **Moderate**	**20**	**17**	**13**	**09**	**06**
C4 **Minor**	**16**	**12**	**08**	**05**	**03**
C5 **Insignificant**	**11**	**07**	**04**	**02**	**01**

RISK RATING:

HIGH RISK 16-25	**MEDIUM RISK 7-15**	**LOW RISK 1-6**

RISK ASSESSMENT



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

The key risk (hazard x probability) event **rating** associated with sand bed mining and to assess its consequences of such events occurring and the likelihood based on above **Table-7.2** are as:-

The Risk rating of such hazards is as follows:

INUNDATION/FLOODING

The risk rating assigned to this activity is assigned as '19' i.e., it is Unlikely and will have catastrophic with major consequences, if work started without assessment of the river bed condition especially during monsoon season. Inundation or flooding is expected and beneficial for these mines as during this time only the mineral reserve gets replenished.

Measures to prevent consequences of Inundation/Flooding

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

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

6.1.1 Quick Sand Condition

The risk rating assigned to this activity is assigned as '10' i.e., it is an rare event with major consequences as frequency of this risk is less likely to occur.

Two things may create the conditions to form quicksand. Underground water may seep-up and saturate the sand, thereby reducing the friction between the sand grains and giving the sand a liquid nature. Or, sand or another soil may be sifted by the force of an earthquake so that friction is lessened and the earth becomes unsteady.
This creates danger condition to the trucks plying near the river bed and banks for transportation of minerals.

Measures to Prevent Quick Sand Condition

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

ACCIDENT DUE TO VEHICULAR MOVEMENT

The risk rating assigned to this activity is assigned as '18' i.e., it is possible event with major 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.

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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 '10' 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 '13' i.e. it is possible event with moderate consequences", as frequency of this operation is more but the predicted/assumed intensity is more like minor cuts, abrasion, etc. may be due to river bank collapse, over thrown boulders/pebbles, injuries due to carelessness use of hand tools, etc.

Measures to Prevent Accidents during material handling & loading

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

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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.

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CHAPTER-VIII

PROJECT BENEFITS

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8.0 GENERAL

Various benefits are envisaged while planning for the mining of sand, bajri, boulder from Nallah Rambaira. Sand/Bajri/Boulder are 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 UT of Jammu & Kashmir and nearby cities and state of Punjab. The natural available materials in shoal deposits of River bed quarry site have been found suitable from techno-economic consideration.

• Social Infrastructure:

1. Project will help to channelize the river course.
2. Extraction of sand, bajri, boulder will help in land cutting from nearby agricultural fields and forests.

• Employment Potential:

1. The proposed project will provide direct employment to skilled/unskilled and semiskilled laborers.
2. The proposed project will also provide indirect employment to local people in different activities such as transportation, food points, plantation activities, water tanker supply, hand equipments etc.
3. Besides labours managerial and administrative staff will also be employed.

• Tangible Social Benefits:

Company will undertake awareness program and community activities like health camps, medical aids, family welfare camps, and AIDS awareness programme etc.

• Direct/Indirect Benefits:

1. It will generate revenue for the UT of Jammu & Kashmir.
2. It will cater the demand of raw material for construction purpose.

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CHAPTER-9

COST BENEFIT ANALYSIS

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9.0 Environmental Cost Benefit Analysis

As per the ToR points issued by JKEIAA
For Minor Mineral Block 28 Vide Letter No. JKEIAA/2020/224/711-15 dated 26.08.2020
For Minor Mineral Block 29 Vide Letter No. JKEIAA/2020/223/706-10 dated 26.08.2020
For Minor Mineral Block 30 Vide Letter No. JKEIAA/2020/223/716-20 dated 26.08.2020

For the mining project activity, the 'Environmental Cost Benefit Analysis' is not required.

Henceforth, this chapter is not applicable.

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CHAPTER-X

ENVIRONMENTAL MANAGEMENT PLAN

INDEX

10.0 INTRODUCTION

To mitigate the adverse impacts which are likely to be caused due to the mining operation and overall scientific development of local habitat, environmental management plan (EMP) has been formulated and integrated with the mine planning. The details of the anticipated impacts and mitigative measures have been discussed in Section IV of this report, based on the results of present environmental conditions and environmental impact assessment. The EMP has therefore been made considering implementation and monitoring of environmental protection measures during and after mining operations.

The mitigation measures which reduce the impact have already been identified earlier in Section IV. To minimize the adverse impact, certain additional EMP is enumerated below for implementation.

10.1 LAND USE PATTERN

River bed mining can lead to river bank erosion and sedimentation arising from changes in hydrology due to alteration in water depths and river bed morphology. Sand and gravel in lowland river landforms are biologically important and an economic asset. Keeping this in mind, the following management plans are suggested:

i. The area under mining at a given time will be kept minimum and the area will be reclaimed by top soil.

ii. There will be no mining near the banks. This is to protect the bank erosion and river migration.

iii. Proper wide benches in the mining area will be created to prevent any erosion.

iv. Grass/plants will be planted on the slopes and benches to prevent soil erosion.

10.2 AIR ENVIRONMENT MANAGEMENT

Mitigative measures suggested for air emission control will be based on the baseline ambient air quality monitoring data. From the point of view of maintenance of an acceptable ambient air quality in the region, it is desirable that the air quality needs to be monitored on a regular basis to check it vis-à-vis the NAAQS prescribed by MoEF&CC and in cases of non-compliance, appropriate mitigative measures will be adopted. In order to minimize impacts of mining on air and to maintain it within the prescribed limits of CPCB/ SPCB, an Environmental Management Plan (EMP) has been prepared. This will help in resolving all environmental and ecological issues likely to cause due to mining in the area. During the course of mining no toxic substances are released into the atmosphere as such there seems to be no potential threat to health of human beings. In the mining activities, the only source of gaseous emissions is from the engines of vehicles. The reasons may be quality of fuel, improper operation of the engine, etc; proper maintenance of engines will improve combustion process and brings reduction in pollution.

10.2.1 Control of Gaseous Pollution

In mining activities, the only source of gaseous emissions is from the engines of transport vehicles. The emissions from the diesel engines of the machinery can be controlled by proper maintenance and monitoring of machines.

10.2.2 Control of Dust Pollution

The main pollutant in air is PM10, which is generated due to various mining activities. However to reduce the impact of dust pollution the following steps have been taken during various mining activities.

a) During loading operation

i. Latest loading equipment like hydraulic excavators will be used with dumpers. This reduces the number of buckets to fill from height and thus have comparatively less dust generation. The propagation of this dust is confined to loading point only and does not affect any person both the operators of excavator and dumpers who will sit in closed chamber and will be equipped with dust mask.

ii. Skilled operators will operate excavators.

iii. Avoid overloading of dumpers and consequent spillage on the roads.

iv. The operators' cabin in the drills, dumpers will be provided with dust free enclosure and persons working at high dust prone areas will be provided with dust mask.

b) During Transport operation

i) All the haulage roads including the main ramp be kept wide, leveled, compacted and properly maintained and watered regularly during the shift operation to prevent generation of dust due to movement of dumpers, and other vehicles.

ii) Mineral carrying trucks will be effectively covered by Tarpaulin to avoid escape of fines to atmosphere.

iii) Regular Compaction and grading of haul roads to clear accumulation of loose material.

iv) Air quality will be regularly monitored both in the core zone and the buffer zone.

c) Plantation work carried out

In order to reduce air pollution in the surroundings, green belt will be developed around mines office, mine approach road. The plantation will be done around the lease boundary.

d) Monitoring of air pollution

Periodic air quality survey will be carried out to monitor the changes consequent upon mining activities as per the norms of Jammu & Kashmir Pollution Control Board.

10.3 NOISE AND VIBRATION ENVIRONMENT

The ambient noise level monitoring carried out in and around the proposed mine lease area shows that ambient noise levels are well within the stipulated limits of MoEF&CC. There is no drilling and blasting for mineral extraction. Noise pollution will only be due to loading and transporting equipment. Effective steps will be taken to keep the noise level well below the DGMS prescribed limit of 85 dbA.

10.3.1 Noise Abatement and Control

i. Proper maintenance of all machines is being carried out, which help in reducing generation of noise during operations.

ii. No other equipments accept the Transportation vehicles and Excavator and Loaders (as and when required) for loading is allowed.

iii. Noise generated by these equipments is intermittent and does not cause much adverse impact.

iv. Periodical monitoring of noise will be done to adopt corrective actions wherever needed.

v. Plantation will be taken up along the approach roads. The plantation minimizes propagation of noise and also arrests dust.

10.4 WATER MANAGEMENT

There will be no wastewater generation from the mining operations. Only wastewater generation will be sanitary wastewater, which will be treated in septic tank followed by subsurface dispersion.

10.4.1 Surface and Ground Water Management

i. Mining will neither intersect the ground water table of the area. So not at all disturbing water environment.

ii. The mining does not have any impact on topography and natural drainage of surrounding area.

iii. Rain water harvesting pits will be proposed on the mining site.

10.4.2 Waste Water Management

No waste water is generated from the mining activity of minor minerals as the project only involves lifting/excavation of Sand and transportation directly to the consumers.

10.4.3 Water Conservation The projects do not consume any process water except for drinking, dust suppression and plantation. Plantation is proposed, which will increase the water holding capacity and help in recharging of ground water. No artificial rainwater harvesting is proposed for the present project.

10.5 SOLID WASTE MANAGEMENT

Waste management is an important facet of environment management. Thus, solid waste management is important from both aesthetics and environment viewpoints.

i. Solid waste (sand and silt) that will be generated during mining activities as spillage will be utilized for filling of the mine voids. Apart from this, no other solid wastes will be generated from the said mining operations.

ii. Generated food waste or any other domestic waste will be collected in dustbins and will be properly disposed off.

iii. There are no toxic elements present in the mineral which may contaminate the soil or river water.

10.6 GREEN BELT DEVELOPMENT

The proposed green belt in the lease area is to be developed taking into consideration the availability of area as the efficiency of green belt in pollution control mainly depends on tree species, its width, distance from pollution sources, side of the habitat from working place and tree height. The proposed green belt has been designed to control PM10, gaseous pollutants, noise, surface run off and soil erosion etc. While considering the above aspects due care will be taken for selecting the suitable characteristics plant species such as fast growing, locally suitable plant species, resistant to specific pollutant and those which would maintain the regional ecological balance, soil and hydrological conditions.

Guidelines for plantation: The plant species identified for greenbelt development will be planted using pitting technique. The pit size will be either 45 cm x 45 cm x 45 cm or 60 cm x 60 cm x 60 cm. bigger pit size will be considered at marginal and poor quality soil. Soil used for filling the pit should be mixed with well decomposed farm yard manure or sewage sludge at the rate of

2.5 kg (on dry weight basis) and 3.6 kg (on dry weight basis) for 45cm x 45 cm x 45 cm and 60 cm x 60 cm x 60 cm size pits respectively. The filling of soil should be completed at least 5-10 days before actual plantation. Healthy sapling of identified species should be planted in each pit with the commencement of monsoon. Provision for regular and liberal watering during the summer period during the commissioning stage of the plant will be arranged from the local available resources. The authorities responsible for plantation will also make adequate measures for the protection of the saplings. While making choices of plant species for cultivation in green belt, weight age has been given to the natural native species, bio climatic condition, plants which can be grown as per normal horticultural practices. Plant species identified for greenbelt development, considering the bio-climatic and soil condition.

10.7 SOCIO-ECONOMIC ENVIRONMENT

10.7.1 Management Plan for Socio-Economic Environment

i. In general, socio-economic environment will have positive impact due to the mining project in the area.

ii. The deployed laborers will be from nearby villages only as these people are mainly dependent upon such mining activities.

iii. In order to further improve the socio-economic conditions of the area, the management will contribute for development works in consultation with local bodies**.**

10.8 OCCUPATIONAL HEALTH AND SAFETY

Occupational Health and Safety professionals develop and coordinate safety and health systems and strategies within organizations. They identify workplace hazards, assess risks to employee health and safety, and recommend solutions.

Increasingly, Health and Safety Professionals are also responsible for many of the environmental aspects of their workplace. As this profession matures there is an increased emphasis on risk management strategy and on the development of workplace culture.

Occupational Health and Safety professionals in the minerals industry may perform the following tasks:

i. The collection of minor minerals from the River bed mining material does not cause any occupational ill effects.

ii. Except fugitive dust generation there is no source which can show a probability for health related diseases and proper dust suppression will control dust generation and dispersion.

iii. Dust masks will be provided to the workers working in the dust prone areas as additional personal protective equipment.

iv. The occupational health hazards have so far not been reported.

v. Awareness program will be conducted about likely occupational health hazards so as to have preventive action in place.

vi. Any workers health related problem will be properly addressed.

vii. Periodical medical checkup will be conducted.

viii. Promote occupational health and safety within their organization and develop safer and healthier ways of working;

ix. Help supervise the investigation of accidents and unsafe working conditions, study possible causes and recommend remedial action;

x. Develop and implement training sessions for management, supervisors and workers on health and safety practices and legislation;

xi. Coordinate emergency procedures, mine rescues, fire fighting and first aid crews;

xii. Communicate frequently with management to report on the status of the health and safety strategy and risk management strategy, and Develop occupational health and safety strategies and systems, including policies, procedures and manuals.

10.9 COST OF EMP MEASURES

The mining activities involve, excavation, loading, haulage and transportation of mineral. These activities lead to generation of air borne dust, which can cause air pollution in and around the mining lease area, if appropriate control measures are not taken. Similarly mining causes Land Degradation, Noise and Water Pollution etc. in the area.

In order to minimize impacts of mining on different environmental parameters and to keep air and water quality within prescribed limits of CPCB, a rapid Environmental Management Plan (EMP) is prepared to strictly follow it. This helps in resolving all environmental and ecological issues due to mining in the area. The environmental management plan includes all measures and safety precautions necessary for safe mining along with rehabilitation measures for mined out areas.

Block No. 28

Table 10.1 Annual Environmental Management Plan Cost

S. No.	Project Activity	Project Stage	Mitigation Measure	Location	Mean of verification	Frequency of Monitoring	Responsibility	Reporting Requirement	Budget (INR/Annum

1.	Environment Pollution Monitoring i.e. Water, Air, Soil & Noise etc.	Operational Phase	1. Plantation 2. Dust 3. Suppression	Location of Air, Water, soil and noise monitoring.	Site Inspection Visual observation and Monitoring records	Half Yearly	Environmental Officer	Half Yearly compliance reporting to MOEF & CC R.O. and JKEIAA Office., PCB Jammu.	Air Sample 6 Location: 6x2x5000 = 60,000/- Ground Water Location: 4x2x4000 = 32,000/- Surface Water Location: 2x2x4000 = 16,000/- Noise Sample Location : 6x2x3500 = 42,000/- Soil Sample Location:6x2x4000 =48,000/- Total cost of monitoring Year wise = 1,98,000/-

2.	Road Maintenance and Dust Suppression (Water Sprinkling)	Operational Phase	Regular Water Sprinkling generating areas, Water will be done twice during the day on road and connecting mine to National Highway.	Near Mine Site/ Kachha road	Site Inspection Visual observation	Daily	Environmental Officer	Project Proponent	3.0 Lac
3.	Environmental Awareness Programme	Operational Phase	Promote environment awareness among the employees and encourage them to work in an environmentally responsible manner. Communicate the environment commitment and performance of the organization to its clients, customers and the public. Purchase products and services as far as possible, that do the least damage to the environment on a life	Mine Site and Nearby Villages	Site Inspection Records, Visual Assessment	Monthly	Environmental Officer	Half Yearly compliance reporting to MOEF & CC R.O. and JKEIAA Office., PCB Jammu.	0.52 Lacs

			cycle basis.						
Plantation									
1.	Green Belt	Operational Phase	3 Layer Plantation on both site of the Kachha road will increase the floral diversity of the area. Sufficient availability of water will beensured for greenbelt. The green belt are once marked will be disturbed during life of mine. The lease area is devoid of any vegetation Total of about 8185 tree of native species along with some fruit bearing and medicinal plant will be planted at various places 1st year in self.	Kachha Road	Site Inspection Records, Visual Assessment	During Project operation phase	Environment Officer	During the project phase / Half Yearly Compliance reporting to MOEF & CC.	1.5 Lac

Total	7.0 Lac per Annum and For 5 Year 35.00 Lac only.

S. No.	Description	Unit	Total (Lacs)

10.9.1 Estimated Project Cost Along With Analysis In Terms of Economic Viability ofthe Project:

Initial cost of the project has been estimated as 115.52 Lacs.

1.	Laborers charge (Excavation & Loading)	Rs. 500/day(Man power 50) Assuming 250	62.5 Lacs
2.	Equipment's/Tools/Machineries	250 days Assuming Rs. 5000/day	13.5 Lacs
3.	Royalty Charge paid to Govt. (As per annual production)	Annual	14.82 Lacs
4.	Haulage Road Repair & Maintenance	Annual	3.0 Lacs
5.	Bid Amount as per LOI		21.70 Lacs
6.	Total Project Cost		115.52 Lacs

10.9 .2 Corporate Environment Responsibilities:

CER (Corporate Environment Responsibility) details for the project.

CER plan is given below:

Total Cost of the Project = 115.52 Lacs

Yearly CER cost for the project, i.e. 5% of the total project cost

Rs. **115.52 Lacs** x 0.05 **= 5.77 Lacs**

Budgetary Provision for corporate Environment Responsibility (CER) Activities								
S. No.	**Project stage**	**Project Stage**	**Project Activity**	**Ist Year Budget (Lacs)**	**IInd Year Budget (Lacs)**	**IIIrd Year Budget (Lacs)**	**IVth year Budgat (Lacs)**	**Vth year Budget (Lacs**
1.	Health	Operation Phase	Free Distribution of medicines, health check –	1.92 Lacs	1.92 Lacs	1.92 Lacs	1.92 Lacs	1.92 Lacs

			up campus in nearby villages.					
2.	Electrification including solar power	Operation Phase	Solar Lamp distribution & Solar street light installation in nearby villages.	1.92 Lacs	1.92 Lacs	1.92 Lacs	1.92 Lacs	1.92 Lacs
3.	Education	Operation Phase	Distribution of school bags & books in nearby Primary School Education Grants to girl child to check drop outs in schools.	1.92 Lacs	1.92 Lacs	1.92 Lacs	1.92 Lacs	1.92 Lacs
Total				**5.76 Lacs**	**5.76 Lacs**	**5.76 Lacs**	**5.76 Lacs**	**5.76 Lacs**

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Block No. 30

Table 10.2 Annual Environmental Management Plan Cost

S. No.	Project Activity	Project Stage	Mitigation Measure	Location	Mean of verification	Frequency of Monitoring	Responsibility	Reporting Requirement	Budget (INR/Annum
1.	Environment Pollution Monitoring i.e. Water, Air, Soil & Noise etc.	Operational Phase	1. Plantation 2. Dust 3. Suppression	Location of Air, Water, soil and noise monitoring.	Site Inspection Visual observation and Monitoring records	Half Yearly	Environmental Officer	Half Yearly compliance reporting to MOEF & CC R.O. and JKEIAA Office., PCB Jammu.	Air Sample 6 Location: 6x2x5000 = 60,000/- Ground Water Location: 4x2x4000 = 32,000/- Surface Water Location: 2x2x4000 = 16,000/- Noise Sample Location : 6x2x3500 =

									42,000/- Soil Sample Location:6x2x4000 =48,000/- Total cost of monitoring Year wise = 1,98,000/-
2.	Road Maintenance and Dust Suppression (Water Sprinkling)	Operational Phase	Regular Water Sprinkling generating areas, Water will be done twice during the day on road and connecting mine to National Highway.	Near Mine Site/ Kachha road	Site Inspection Visual observation	Daily	Environmental Officer	Project Proponent	3.0 Lac
3.	Environmental Awareness Programme	Operational Phase	Promote environment awareness among the employees and encourage them to work in an environmentally responsible manner. Communicate the environment commitment and	Mine Site and Nearby Villages	Site Inspection Records, Visual Assessment	Monthly	Environmental Officer	Half Yearly compliance reporting to MOEF & CC R.O. and JKEIAA Office., PCB Jammu.	0.52 Lacs

			performance of the organization to its clients, customers and the public. Purchase products and services as far as possible, that do the least damage to the environment on a life cycle basis.						
Plantation									
1.	Green Belt	Operational Phase	3 Layer Plantation on both site of the Kachha road will increase the floral diversity of the area. Sufficient availability of water will beensured for greenbelt. The green belt are once marked will be disturbed during life of mine. The lease area is devoid of any vegetation Total of about 8185 tree of native species along	Kachha Road	Site Inspection Records, Visual Assessment	During Project operation phase	Environment Officer	During the project phase / Half Yearly Compliance reporting to MOEF & CC.	1.5 Lac

			with some fruit bearing and medicinal plant will be planted at various places 1st year in self.						
Total									7.0 Lac per Annum and For 5 Year 35.00 Lac only.

Estimated Project Cost Along With Analysis In Terms of Economic Viability ofthe Project:

Initial cost of the project has been estimated as 117.72 Lacs.

S. No.	Description	Unit	Total (Lacs)
1.	Laborers charge (Excavation & Loading)	Rs. 500/day(Man power 50) Assuming 250	62.5 Lacs
2.	Equipment's/Tools/Machineries	250 days Assuming Rs. 5000/day	13.5 Lacs
3.	Royalty Charge paid to Govt. (As per annual production)	Annual	14.82 Lacs
4.	Haulage Road Repair & Maintenance	Annual	3.0 Lacs
5.	Bid Amount as per LOI		23.90 Lacs
6.	Total Project Cost		117.72 Lacs

Corporate Environment Responsibilities:

CER (Corporate Environment Responsibility) details for the project.

CER plan is given below:

Total Cost of the Project = 117.72 Lacs

Yearly CER cost for the project, i.e. 5% of the total project cost

Rs. **117.72 Lacs** x 0.05 **= 5.88 Lacs**

Budgetary Provision for corporate Environment Responsibility (CER) Activities								
S. No.	**Project stage**	**Project Stage**	**Project Activity**	**Ist Year Budget (Lacs)**	**IInd Year Budget (Lacs)**	**IIIrd Year Budget (Lacs)**	**IVth year Budgat (Lacs)**	**Vth year Budget (Lacs**

1.	Health	Operation Phase	Free Distribution of medicines, health check – up campus in nearby villages.	1.96 Lacs	1.96 Lacs	1.96 Lacs	1.96 Lacs	1.96 Lacs
2.	Electrification including solar power	Operation Phase	Solar Lamp distribution & Solar street light installation in nearby villages.	1.96 Lacs	1.96 Lacs	1.96 Lacs	1.96 Lacs	1.96 Lacs
3.	Education	Operation Phase	Distribution of school bags & books in nearby Primary School Education Grants to girl child to check drop outs in	1.96 Lacs	1.96 Lacs	1.96 Lacs	1.96 Lacs	1.96 Lacs

NOIDA

			schools.					
Total				**5.88 Lacs**	**5.88 Lacs**	**5.88 Lacs**	**5.88 Lacs**	**5.88 Lacs**

Block No. 29

Table 10.3 Annual Environmental Management Plan Cost

S. No.	Project Activity	Project Stage	Mitigation Measure	Location	Mean of verification	Frequency of Monitoring	Responsibility	Reporting Requirement	Budget (INR/Annum
1.	Environment Pollution Monitoring i.e. Water,	Operational Phase	1. Plantation 2. Dust 3. Suppression	Location of Air, Water, soil and noise	Site Inspection Visual observation	Half Yearly	Environmental Officer	Half Yearly compliance reporting to MOEF & CC	Air Sample 6 Location: 6x2x5000 =

	Air, Soil & Noise etc.			monitoring.	and Monitoring records			R.O. and JKEIAA Office., PCB Jammu.	60,000/- Ground Water Location: 4x2x4000 = 32,000/- Surface Water Location: 2x2x4000 = 16,000/- Noise Sample Location : 6x2x3500 = 42,000/- Soil Sample Location:6x2x4000 =48,000/- Total cost of monitoring Year wise = 1,98,000/-
2.	Road Maintenance and Dust	Operational Phase	Regular Water Sprinkling generating areas, Water will be	Near Mine Site/ Kachha	Site Inspection Visual	Daily	Environmental Officer	Project Proponent	3.0 Lac

	Suppression (Water Sprinkling)		done twice during the day on road and connecting mine to National Highway.	road	observation				
3.	Environmental Awareness Programme	Operational Phase	Promote environment awareness among the employees and encourage them to work in an environmentally responsible manner. Communicate the environment commitment and performance of the organization to its clients, customers and the public. Purchase products and services as far as possible, that do the least damage to the environment on a life cycle basis.	Mine Site and Nearby Villages	Site Inspection Records, Visual Assessment	Monthly	Environmental Officer	Half Yearly compliance reporting to MOEF & CC R.O. and JKEIAA Office., PCB Jammu.	0.52 Lacs
Plantation									

1.	Green Belt	Operational Phase	3 Layer Plantation on both site of the Kachha road will increase the floral diversity of the area. Sufficient availability of water will beensured for greenbelt. The green belt are once marked will be disturbed during life of mine. The lease area is devoid of any vegetation Total of about 8185 tree of native species along with some fruit bearing and medicinal plant will be planted at various places 1st year in self.	Kachha Road	Site Inspection Records, Visual Assessment	During Project operation phase	Environment Officer	During the project phase / Half Yearly Compliance reporting to MOEF & CC.	1.5 Lac
Total									7.0 Lac per Annum and For 5 Year 35.00 Lac only.

Estimated Project Cost Along With Analysis In Terms of Economic Viability ofthe Project:

Initial cost of the project has been estimated as 106.42 Lacs.

S. No.	Description	Unit	Total (Lacs)
1.	Laborers charge (Excavation & Loading)	Rs. 500/day(Man power 50) Assuming 250	62.5 Lacs
2.	Equipment's/Tools/Machineries	250 days Assuming Rs. 5000/day	13.5 Lacs
3.	Royalty Charge paid to Govt. (As per annual production)	Annual	14.82 Lacs
4.	Haulage Road Repair & Maintenance	Annual	3.0 Lacs
5.	Bid Amount as per LOI		12.60 Lacs
6.	Total Project Cost		106.42 Lacs

Corporate Environment Responsibilities:

CER (Corporate Environment Responsibility) details for the project.

CER plan is given below:

Total Cost of the Project = 106.42 Lacs

Yearly CER cost for the project, i.e. 5% of the total project cost

Rs.**106.42 Lacs** x 0.05 **= 5.32 Lacs**

Budgetary Provision for corporate Environment Responsibility (CER) Activities								
S. No.	**Project stage**	**Project Stage**	**Project Activity**	**Ist Year Budget (Lacs)**	**IInd Year Budget (Lacs)**	**IIIrd Year Budget (Lacs)**	**IVth year Budgat (Lacs)**	**Vth year Budget (Lacs**

1.	Health	Operation Phase	Free Distribution of medicines, health check – up campus in nearby villages.	1.77 Lacs	1.77 Lacs	1.77 Lacs	1.77 Lacs	1.77 Lacs
2.	Electrification including solar power	Operation Phase	Solar Lamp distribution & Solar street light installation in nearby villages.	1.77 Lacs	1.77 Lacs	1.77 Lacs	1.77 Lacs	1.77 Lacs
3.	Education	Operation Phase	Distribution of school bags & books in nearby Primary School Education Grants to girl child to check drop outs in	1.77 Lacs	1.77 Lacs	1.77 Lacs	1.77 Lacs	1.77 Lacs

			schools.					
Total				**5.32 Lacs**	**5.32 Lacs**	**5.32 Lacs**	**5.32 Lacs**	**5.32 Lacs**

10.10 SUMMARY

As per Above discussion there is no measure impact on the environment due to mining except fugitive emission in the form of dust generated during handling of mineral. The adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Plantation development will be carried out in the mine premises, along the approach roads, around Govt. buildings, schools approx 20 trees per year for both leases. It will prove an effective pollution mitigate technique, and help avoid soil erosion during monsoon season. Employment opportunities will be provided to the locals only as providing extraction of minerals from the mine site is the only prevailing occupation for them for their livelihood.

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CHAPTER-11

SUMMARY AND CONCLUSION

INDEX

11.0 INTRODUCTION

- **For Minor Mineral Block No. 28**

River bed mining project as per *approval letter from Government of Jammu and Kashmir Directorate of Geology and Mining, Srinagar Vide letter no. 607/MCC/DGM/EAS/20/75-82 dated 02.05.2020* (**Annexure--IIIA**) for five years and the project is situated near village Aghama, Tehsil-Chitagam, Dist-Shopian, State- Jammu & Kashmir over an area of 9.89 ha. Shri Feroz Ahmad Wani S/o Shri Ghulam Mohammad Wani proposes the concerned River Bed Mining Project. The project proponent is intended to the production 2, 05,545.25 TPA.

- **For Minor Mineral Block No. 29**

River bed mining project as per *approval letter from Government of Jammu and Kashmir Directorate of Geology and Mining, Srinagar Vide letter no. 608/MCC/DGM/EAS/20/99-106 dated 02.05.2020* (**Annexure-IIIB**) for five years and the project is situated near village Nowpora Bala, Tehsil-Chitagam, Dist-Shopian, State- Jammu & Kashmir over an area of 9.09 ha. Shri Feroz Ahmad Wani S/o Shri Ghulam Mohammad Wani proposes the concerned River Bed Mining Project. The project proponent is intended to the production 1,85,920.50 TPA.

- **For Minor Mineral Block No. 30**

River bed mining project as per *approval letter from Government of Jammu and Kashmir Directorate of Geology and Mining, Srinagar Vide letter no.609/MCC/DGM/EAS/20/83-90 dated 02.05.2020* (**Annexure-IIIC**) for five years and the project is situated near village Nowpora Bala, Tehsil-Chitagam, Dist-Shopian, State- Jammu & Kashmir over an area of 8.21 ha. Shri Feroz Ahmad Wani S/o Shri Ghulam Mohammad Wani proposes the concerned River Bed Mining Project. The project proponent is intended to the production 1, 68,837.25 TPA.

11.1 ENVIRONMENTAL CLEARANCE:

Environmental Impact Assessment (EIA) is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision making tool, which guides the decision makers in taking appropriate decisions for proposed projects. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are taken into account during the project designing.

The Environmental Impact Assessment Documentation has been prepared in terms of EIA notification of the MoEF&CC dated 14-9-2006 and its subsequent amendments thereof. This project is at Dist-Shopian and State Jammu & Kashmir. This project is falling under category **'B1'** due to amendment in EIA Notification 2006 on 15th January 2014.

11.2 TERMS OF REFERENCE:

TOR was issued on 26.08.2020 for Minor Mineral Block 28, 29 & 30 vide letter no. **JKEIAA/2020/224/711-15, JKEIAA/2020/223/706-10 & JKEIAA/2020/223/716-20** respectively by JK Environment Impact Assessment Authority, Ministry of Environment, Forest & Climate Change, Government of India. Department of Ecology, Environment & Remote Sensing, Paryavaran Bhawan, Transport Nagar, Narwal, Jammu, Jammu & Kashmir **(Annexure – VA, VB, AND VC).**

11.3 BRIEF DESCRIPTION OF PROJECT:

- **<u>For Minor Mineral Block No. 28</u>**

A. Project Proponent	
Project Proponent	Shri Faroq Ahmad Wani
Nature of Project	River Bed Mining Project
B. Size of the Project	
Project Name	Minor Mineral Block No. 28
New/ existing / Renewal mine/ Lease Period	New
Area	9.89 Ha
C. Project Location	
Block No.	Block No. 28
Location	Minor Mineral Block No. 28, Army camp Aghama D/Stream, Nallah – Rambiara Village – Aghama, Tehsil – Chitragam, Dist – Shopian, State – Jammu & Kashmir.

<table>
<tr><td>Co-ordinate</td><td>
<table>
<tr><th>Geographical Pillar Co-ordinates</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>A</td><td>33°47'08.49" N</td><td>74°54'26.88" E</td></tr>
<tr><td>B</td><td>33°47'14.60" N</td><td>74°54'34.42" E</td></tr>
<tr><td>C</td><td>33°47'05.64" N</td><td>74°54'42.46" E</td></tr>
<tr><td>D</td><td>33°46'59.08" N</td><td>74°54'33.96" E</td></tr>
</table>
</td></tr>
<tr><td>Survey of India Topo Sheet</td><td>43K/13</td></tr>
<tr><td>Life of Mines</td><td>5 year</td></tr>
<tr><td>Minable Reserve</td><td>10,27,726.25 T</td></tr>
<tr><td>Water Requirement</td><td>8.6 KLD</td></tr>
<tr><td>Manpower Requirement</td><td>40 persons</td></tr>
<tr><td>Present land use at the proposed site</td><td>The area is a Government Land</td></tr>
<tr><td colspan="2">D. Environmental Settings Details</td></tr>
<tr><td>Nearest village</td><td>Aghama</td></tr>
<tr><td>Nearest Town/City</td><td>Shopian</td></tr>
<tr><td>Nearest Railway Station</td><td>Panzgom Railway station</td></tr>
<tr><td>Nearest Airport</td><td>Sheikh Ul Alam International Airport, Srinagar</td></tr>
<tr><td>Nearest Highway</td><td>NH-1A</td></tr>
<tr><td>Ecology Sensitive Zone</td><td>There is no ecology sensitive zone present in 10 km</td></tr>
<tr><td>Seismic Zone</td><td>Zone V</td></tr>
</table>

For Minor Mineral Block No. 29

A. Project Proponent	
Project Proponent	Shri Faroq Ahmad Wani
Nature of Project	River Bed Mining Project
B. Size of the Project	
Project Name	Minor Mineral Block No. 29

<table>
<tr><td>New/ existing / Renewal mine/ Lease Period</td><td>New</td></tr>
<tr><td>Area</td><td>9.09 Ha</td></tr>
<tr><td colspan="2">C. Project Location</td></tr>
<tr><td>Block No.</td><td>Block No. 29</td></tr>
<tr><td>Location</td><td>Minor Mineral Block No. 29, Irrigation Scheme Nowpora U/Stream, Nallah – Rambiara
Village – Nowpora Bala,
Tehsil – Chitragam,
Dist – Shopian,
State – Jammu & Kashmir.</td></tr>
<tr><td>Co-ordinate</td><td>
<table>
<tr><th>Geographical Pillar Co-ordinates</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>A</td><td>33°47'18.89" N</td><td>74°54'47.87" E</td></tr>
<tr><td>B</td><td>33°47'15.67" N</td><td>74°54'36.79" E</td></tr>
<tr><td>C</td><td>33°47'06.30" N</td><td>74°54'45.02" E</td></tr>
<tr><td>D</td><td>33°47'07.64" N</td><td>74°54'55.83" E</td></tr>
</table>
</td></tr>
<tr><td>Survey of India Topo Sheet</td><td>43K/13</td></tr>
<tr><td>Life of Mines</td><td>5 year</td></tr>
<tr><td>Minable Reserve</td><td>9,29,602.5 T</td></tr>
<tr><td>Water Requirement</td><td>8.6 KLD</td></tr>
<tr><td>Manpower Requirement</td><td>40 persons</td></tr>
<tr><td>Present land use at the proposed site</td><td>The area is a Government Land</td></tr>
<tr><td colspan="2">D. Environmental Sensitivity Details</td></tr>
<tr><td>Nearest village</td><td>Nowpora Bala</td></tr>
<tr><td>Nearest Town/City</td><td>Shopian</td></tr>
<tr><td>Nearest Railway Station</td><td>Panzgom Railway station</td></tr>
<tr><td>Nearest Airport</td><td>Sheikh Ul Alam International Airport, Srinagar</td></tr>
<tr><td>Nearest Highway</td><td>NH-1A</td></tr>
<tr><td>Ecology Sensitive Zone</td><td>There is no ecology sensitive zone present in 10 km</td></tr>
<tr><td>Seismic Zone</td><td>Zone V</td></tr>
</table>

For Minor Mineral Block No. 30

A. Project Proponent	
Project Proponent	Shri Faroq Ahmad Wani
Nature of Project	River Bed Mining Project
B. Size of the Project	
Project Name	Minor Mineral Block No. 30
New/ existing / Renewal mine/ Lease Period	New
Area	8.21 Ha
C. Project Location	
Block No.	Block No. 30
Location	Minor Mineral Block No. 30, Irrigation Scheme Nowpora D/Stream, Nallah – Rambiara, Village – Nowpora Bala, Tehsil – Chitragam, Dist – Shopian, State – Jammu & Kashmir.
Co-ordinate	
Survey of India Topo Sheet no.	43K/13
Life of Mines	5 year
Minable Reserve	8,44,186.25 T
Water Requirement	8.6 KLD
Manpower Requirement	40 persons

Geographical Pillar Co-ordinates	Latitude	Longitude
A	33°47'15.98" N	74°55'06.22" E
B	33°47'19.02" N	74°54'51.69" E
C	33°47'22.71" N	74°55'02.24" E
D	33°47'09.57" N	74°54'58.06" E

Present land use at the proposed site	The area is a Government Land
D. Environmental Sensitivity Details	
Nearest village	Nowpora Bala
Nearest Town/City	Shopian
Nearest Railway Station	Panzgom Railway station
Nearest Airport	Sheikh Ul Alam International Airport, Srinagar
Nearest Highway	NH-1A
Ecology Sensitive Zone	There is no ecology sensitive zone present in 10 km
Seismic Zone	Zone V

11.4 MINING DETAILS:

For Minor Mineral Block No. 28

Particulars	Details
Method of Mining	Opencast Semi-Manually Mining.
Minable Reserve	10,27,726.25 T
Life of Mines	5 years
Bench Height	1.0 m
Water Table	5-10 mBGL
Water Requirement	8.6 KLD
Manpower Requirement	40 persons
No. of Working Days	270 days

Source: Mining Plan & Progressive Mine Closure Plan

For Minor Mineral Block No. 29

Particulars	Details
Method of Mining	Opencast Semi-Manually Mining
Minable Reserve	9,29,602.5 T
Life of Mines	5 years
Bench Height	1.0 m
Water Table	5-10 mBGL
Water Requirement	8.6 KLD
Manpower Requirement	40 persons
No. of Working Days	270 days

Source: Mining Plan & Progressive Mine Closure Plan

For Minor Mineral Block No. 30

Particulars	Details
Method of Mining	Opencast Semi-Manually Mining
Minable Reserve	8,44,186.25 T
Life of Mines	5 years
Bench Height	1.0 m
Water Table	5-10 mBGL
Water Requirement	8.6 KLD
Manpower Requirement	40 persons
No. of Working Days	270 days

Source: Mining Plan & Progressive Mine Closure Plan

11.5 SUMMARY:

Baseline studies have been carried out in the previous chapters as per the provisions of EIA notification 14.09.2006 and its amendments thereof.

One season monitoring has been conducted and all the parameters related to the biotic, physical and socio-economic factors (Land, Water, Air, Biological, Noise, Socio-economic)

has been considered and studied. Depending upon the data, values and the study conducted a full proof planned Environment Impact assessment with mitigation; monitoring and Management plan has been given.

All the point given by the JKEIAA, J & K in the Terms of Reference has been complied with along with all the points raised during the public consultation has been addressed.

11.6 CONCLUSION:

As discussed, it is safe to say that the proposed facilities are not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigative technique, as well as to serve as biological indicators for the pollutants released from the premises of "River Bed Mining Project.

The proposed river bed mining project will prove beneficial to the local people as direct and indirect employment opportunity will be generated. There will be increase in revenue generation to the government by way of government taxes etc. Further improvement in infrastructure will take place like education, roads, availability of drinking water, medical facilities in adjacent villages.

There will be no significant pollution of air, water, soil and noise. Regular monitoring of all the components of environment will be done and according to that the proposed mitigation measures will be adopted. Increased social welfare measures taken by the proponent will bring development in the near-by villages.

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CHAPTER-12

DISCLOSURE OF THE CONSULTANT

The EIA/EMP Report for RBM (River Bed Mineral) Mineral Block No. 28, 29, and 30 District Shopian, has been prepared by Atmos Sustainable Solutions Pvt. Ltd., Noida, Uttar Pradesh.

Quality Council of India

National Accreditation Board for Education & Training

Certificate of Accreditation

Atmos Sustainable Solutions Pvt. Ltd.

A-73, 3rd Floor, Sector-65, Noida, Uttar Pradesh-201301

Accredited as Category – 'B' 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 and underground mining	1	1 (a) (i)	A
2.	River Valley projects	3	1 (c)	A
3.	Industrial estates/ parks/ complexes/areas, export processing Zones(EPZs), Special Economic Zones(SEZs), Biotech Parks, Leather Complexes	31	7 (c)	A
4.	Highways,	34	7 (f)	A
5.	Common Municipal Solid Waste Management Facility (CMSWMF)	37	7 (i)	B
6.	Building and construction projects	38	8 (a)	B
7.	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 4, 2020 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/21/1592 dated January 6, 2021. The accreditation needs to be renewed before the expiry date by Atmos Sustainable Solutions Pvt. Ltd., Noida following due process of assessment.

Sr. Director, NABET
Dated: January 6, 2021

Certificate No.
NABET/EIA/2023/IA0063

Valid till
September 8, 2023

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