

8.	Drilling & Blasting	Not proposed
9.	Land utilization Pattern	Mineral will be excavated from area by manual method
10.	Water requirements and source	4.2 KLD Approx. for Drinking & Dust Suppression/Plantation
11.	Power Requirement	No electrical power shall be required for mining operation
12.	Man Power Requirement	22
13.	Lease Period	GO No. 1362/VII-1/2018/41KHA/2018, dated 5 July 2018, for a period of five (5) years.
14	Project Cost	3.0 Lakh Approximately

Source: Site visit and Approved Mining Plan

2.1 INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

2.2 IDENTIFICATION OF PROJECT PROPONENT

The State Govt. willing to grant Mining Lease over an area of 4.865 Ha. to Sri. Vijay Joshi S/o Mangat Ram Joshi, village- Badkholu Tehsil- Pauri, District- Pauri Garhwal, State- Uttarakhand, vide **GO No. 1362/VII-1/2018/41KHA/2018, dated 5 July 2018, for a period of five (5) years.**

2.2 MINING LEASE STATUS

The Mining Lease area is outer river area. The proposed lease area comprises of river bed. Applicant has obtained no objection certificate for the RBM (Sand, Bajri, and Boulder) mines.

About 1,12,383 tons of recoverable quantities of RBM (Sand, Bajri, and Boulder) will be produced by the end of fifth year and mine get fully developed at that time. After five years, the remaining area shall be explored with mining pits & exploratory pits, therefore mineable reserve shall be enhanced & accordingly the life of mine shall be increased.

2.3 BRIEF INFORMATION ABOUT THE PROJECT

The project has been proposed for the mining of RBM (Sand, Bajri, and Boulder) from the river bed by open cast manual Mining method. The mineral been exploited / excavate manually with the help of spade, crowbar, chisel etc. The area has mild slope towards north to east directions & vegetated with scanty shrubs, bushes & plants. The entire lease hold comprises of agriculture fields nearby. The RBM (Sand, Bajri, and Boulder) will be exploited manually. The mineral is not

meant for captive use. The extracted / collected RBM (Sand, Bajri, and Boulder) will be sold to different industrial use.

NEED FOR THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY OR

Adequate amount of sand, bajari and boulder in reserve is available for meeting consumer demand. Moreover mining will be carried out by batch rotation manner and the mined out area is annually replenishable.

DEMAND-SUPPLY GAP

Considering the increasing development of industries in the State of Uttarakhand as well as other nearby States, there is huge demand of RBM (sand, bajari and boulders) as a raw material in construction. Therefore, partial demand of material used in such industries can be accomplished from this mine.

2.5 IMPORTS VS. INDIGENOUS PRODUCTION

Import does not apply in the present case as RBM (sand, bajari and boulders) is indigenously available at a number of mines under operation in Uttarakhand & other States of India.

2.6 EXPORT POSSIBILITY

Export possibility is neither conceivable nor there is any such demand.

2.7 DOMESTIC/ EXPORT MARKETS

The proposed mining activity is for obtaining RBM (sand, bajari and boulders) for indigenous consumption in construction area.

2.8 EMPLOYMENT POTENTIAL

Depending upon the General shifts working, following will be the proposed manpower.

Employment Break-up

S.NO.	CATEGORY	NUMBERS
1.	MINING COMPETENT PERSON	1
2.	ADMINISTRATIVE	1
3.	SUPERVISOR	1
4.	UNSKILLED	19
	TOTAL	22

3.1 PROJECT DESCRIPTION

3.2 TYPE OF PROJECT INCLUDING INTERLINKED AND INTERDEPENDENT PROJECTS, IF ANY

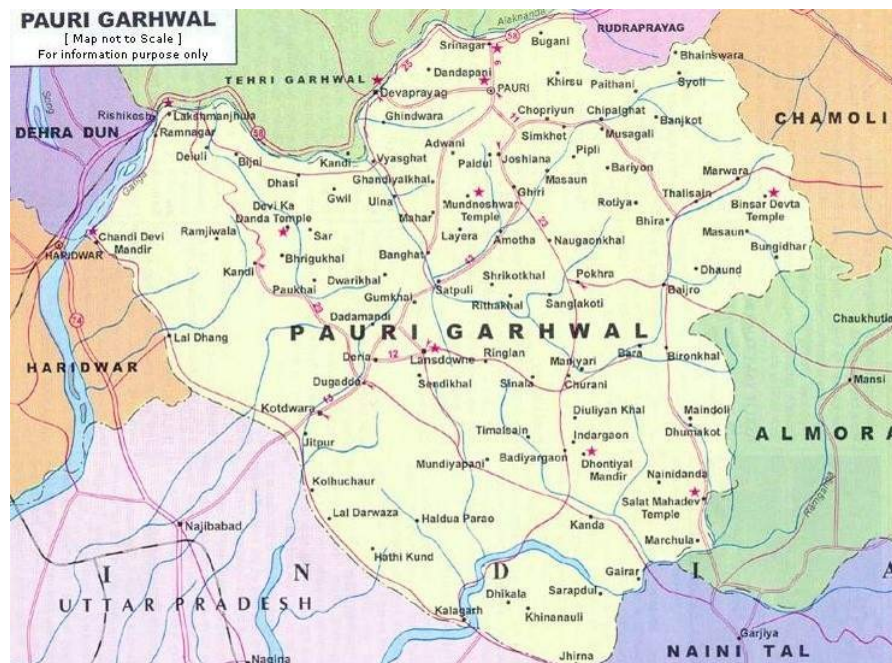
The project has been proposed for the production of about maximum 1,12,383 Tones/Annum of RBM (sand, bajari and boulders) by open cast manual method without drilling/blasting for extraction method in to outer river. The lease area (4.865 Ha.) and the project have no other interlinked project.

3.2 LOCATION

The proposed lease area is situated in village- Badkholu, Tahsil- Pauri, and District- Pauri Garhwal.

3.3 DETAILS OF ALTERNATE SITES

The mine lease area covered under 4.865 Ha. Villag- Badkholu, Tehsil & District – Pauri Garhwal, Uttarakhand is a mine lease allotted to project proponent. There is a sufficient reserve of RBM (sand, bajari and boulders) within the lease area as per the mine plan, therefore no alternate site was considered.



LOCATION MAP OF THE PAURI GARHWAL

3.4 SIZE OR MAGNITUDE OF OPERATION

The mine lease area is 4.865 Ha. of river bed on hilly terrain and the project is contemplated to extract the Sand, Bajari and Boulders by manual open cast method of mining without blasting.

3.5 GEOLOGY

3.5.1 Physiography:-

The lease area falls in to outer part of river bed showing undulating topography. The highest & lowest levels found in the area are of 552 mRL and 542.4 mRL respectively. The slopes in hill area vary from moderate to gentle. The drainage pattern of the area is dendrites in pattern & in first & second order. The area is infertile in nature.

3.5.2 Climate: -

Climatically the area falls in temperate zone with pleasant summer & extreme cold in winter. The area receives moderate snowfalls during winters between Decembers to February. The maximum temperature goes up to 40°C whereas the average temperature ranges in between 20°C to 30°C in months of January and February.

3.5.3 Relative Humidity: -

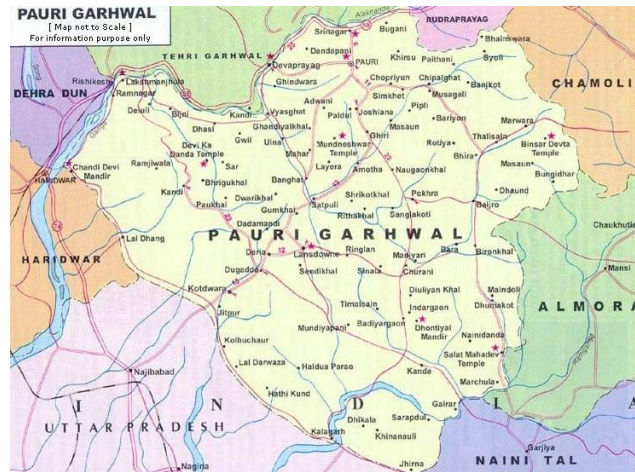
The relative Humidity rises from June to February with highest value recorded in the month of January & decreases during month of April and May. On the basis of past experience reveals that the maximum average humidity in the month of January is about 96.33% while the minimum average humidity is about 31.43% during the month of April.

3.5.4 Rainfall: -

The area receives 70% on an average rainfall in between June end to mid September. The annual rainfall is 1280mm. the maximum rainfall receives during July to September while minimum rainfall receives during the month of January to February.

3.5.5 Regional Geology:-

The geology of Pauri Garhwal is represented by large rugged and except for the narrow strip of Bhabar, the entire region is mountainous. The highest point of the area is 3116 mtrs at Dudatoli and the lowest point of the area is 295 mtr near chilla. The cross profiles of the fluvial valleys show convex form with steep valley sides, interlocking spurs descending towards the main channel, hanging valleys, waterfalls, rapids and terraced agricultural fields on the gentle slopes on the valley sides. The clustering of villages is confined mainly on the gentle slopes of the ridges on the fluvial terraces. Most of the part of the area is approachable by road from its district headquarter. The proposed mining area deposit is a product of fluvial activity deposit *i.e.*, Sand, Bajari and Boulders and lies in river Ganga.



GEOLOGICAL MAP OF DISTRICT PAURI GARHWAL

3.5.6 Geological Axis: The exposure of RBM is seen in the entire stretch & thickness of RBM varies 2.5m to 3.0m. Therefore geological axis has been considered as G-1.

In order to calculate the mineable reserve the geological map on the 1:1000 scale was prepared and main litho units were marked on the plan to know the surface spread of each unit. The different constituents of the deposits such as sand, bajri, boulder and mixture of clay, soil, silt, based on sized classification were considered for the reserve calculation. Although it is not possible to mark these units separately on the geological map, as such three pits of 1x1x1 meters were got dug in the mineable lease area and material so excavated was separated into different size and their percentage was worked out. This percentage was taken into account during calculation of the reserve.

Bulk density is taken as 2.2 for calculation (as per Go UK, Industrial Development Section Notification 1033/VII-1/ 2015/ 146– Kha/ 2010, dated 31st July 2015). Calculation of reserve has been done as following:

- 1 Cross sections have been prepared at intervals. Refer Plate No.5
- 2 Area of every cross section has been taken. For example, if the area of cross section A-A' is 'X' and area of B-B' is 'Y', then average of both calculating the reserve (i.e. $(X+Y)/2$).
- 3 Distance between the two sections has been multiplied with the average area of the two sections to get the total volume. eg. $[(X+Y)/2] \times \text{Distance between A-A' \& B-B'}$.

The overall geological reserves have been estimated through geological cross section method. The area of each section line is calculated. The section area is multiplied by the strike influence to get the volume. The target geological reserve classified in to three

categories i.e. Proved reserve, Probable reserve & possible reserve. In this project the proved reserve assessed as 3m depth & further 2m as probable reserve whereas 1m considered as possible reserve. Out of total volume the 90% considered as the recoverable reserve & 2.2 bulk density.

Mineral Reserve	Code	Quantity of RBM in (m³)	Quantity of RBM in Tons
Proved Reserve	111	116055	229788
Probable Reserve	122	77070	152598
Possible Reserve	133	38535	76298

Mineable Reserve: - The mineable reserve is calculated as referred in **Notification No.1582/VIII/2017/31kha/17, dated 31 October 2017** under Uttarakhand Minor Mineral Rules (Revised) 2017.

- Total Area= 4.865= 48650 M²
- Proposed mine working shall be confined upto 1.5m bgl or above the ground water table, whichever is less.
- Non-mineable area=0.28 Ha.

4. YEARWISE DEVELOPMENT & PRODUCTION

YEARWISE PRODUCTION

YEAR	MINEABLE AREA	DEPTH (M)	PRODUCTION (Saleable Quantity of RBM) (tonnes/year)
FIRST YEAR	45850 m ²	1.5	1,12,383
SECOND YEAR	45850 m ²	1.5	1,12,383
THIRD YEAR	45850 m ²	1.5	1,12,383

FOURTH YEAR	45850 m ²	1.5	1,12,383
FIFTH YEAR	45850 m ²	1.5	1,12,383
TOTAL	-	-	5,61,915 Tonnes

ABOUT THE SALEABLE PRODUCTION-

DEVELOPMENT & PRODUCTION FOR FIRST YEAR (2018-19)

For year 1st year the Development & Production Programme, the mining is proposed 15870 sqm area. The saleable production of each mineral constituent would be on an average as under:-

4.1 PRODUCTION IN FIRST YEAR

DEVELOPMENT & PRODUCTION FOR FIRST (1st) YEAR - the mining is proposed within **45850 sqm** area. The saleable production of each ($\approx\pm$) mineral constituent would be on an average as under:-

PRODUCTION IN FIRST YEAR BENCH LEVEL FROM 542.4 M TO 552 M

SR. NO.	MINERAL CONSTITUENTS	PRODUCTION ($\approx\pm$) IN TONNES
1.	Sand (75%)	67429.8
2.	Bajri (20%)	22476.6
3.	Boulder (5%)	22476.6
	TOTAL	1,12,383 TONNES

6.6.2 DEVELOPMENT & PRODUCTION FOR SECOND (2nd) YEAR - the mining is proposed within **45850 sqm** area. The saleable production of each ($\approx\pm$) mineral constituent would be on an average as under:-

PRODUCTION IN SECOND YEAR

BENCH LEVEL FROM 542.4 M TO 552 M

SR. NO.	MINERAL CONSTITUENTS	PRODUCTION ($\approx\pm$) IN TONNES
1.	Sand (75%)	67429.8
2.	Bajri (20%)	22476.6
3.	Boulder (5%)	22476.6
	TOTAL	1,12,383 TONNES

6.6.3 DEVELOPMENT & PRODUCTION FOR THIRD (3rd) YEAR - the mining is proposed within 45850 sqm area. The saleable production of each ($\approx\pm$) mineral constituent would be on an average as under:-

**PRODUCTION IN THIRD YEAR
BENCH LEVEL FROM 542.4 M TO 552 M**

SR. NO.	MINERAL CONSTITUENTS	PRODUCTION ($\approx\pm$) IN TONNES
1.	Sand (75%)	67429.8
2.	Bajri (20%)	22476.6
3.	Boulder (5%)	22476.6
	TOTAL	1,12,383 TONNES

6.6.4 DEVELOPMENT & PRODUCTION FOR YEAR FOURTH (4th) YEAR - the mining is proposed within 45850 sqm area. The saleable production of each ($\approx\pm$) mineral constituent would be on an average as under:-

**PRODUCTION IN FOURTH YEAR
BENCH LEVEL FROM 542.4 M TO 552 M**

SR. NO.	MINERAL CONSTITUENTS	PRODUCTION ($\approx\pm$) IN TONNES
1.	Sand (60%)	67429.8
2.	Bajri (20%)	22476.6
3.	Boulder (20%)	22476.6
	TOTAL	1,12,383 TONNES

6.6.5 DEVELOPMENT & PRODUCTION FOR FIFTH (5th) YEAR - the mining is proposed within 45850 sqm area. The saleable production of each ($\approx\pm$) mineral constituent would be on an average as under:-

**PRODUCTION IN FIFTH YEAR
BENCH LEVEL FROM 542.4 M TO 552 M**

SR. NO.	MINERAL CONSTITUENTS	PRODUCTION ($\approx\pm$) IN TONNES
1.	Sand (75%)	67429.8
2.	Bajri (20%)	22476.6
3.	Boulder (5%)	22476.6
	TOTAL	1,12,383 TONNES

4.7 LOADING

After excavation, sorting of RBM (Sans, Bajari, Boulders) will be done manually. The sorted out mineral will be filled into bags & transported to road side by mules or manually for loading into trucks.

4.8 STACKING OF SUB GRADE MINERALS

Some sub-grade minerals will be generated during the mining / sorting of RBM (Sans, Bajari, Boulders).

4.9 CONCEPTUAL MINING PLAN

The area is too small & entire lease area shall be explored during Mining Plan period. Therefore no proposal of exploration has been envisaged during conceptual period.

4.10 LANDFORM

The mine lease area is in the outer part of the river.

4.11 LAND USE

The land use of the mine lease area is classified as outer part of the river. The impact on land form or physiography will be land use on the hilly terrain will undergo radical changes due to the open cast mining.

4.12 LAND OWNERSHIP

The designated mine area is outer part of river & is free from forest land. Project proponent has obtained No Objection Certificate from the government for the exploration of RBM (sand, bajari and boulder) from the river.

5 DISPOSAL OF WASTE MATERIAL

6 Exact quantitative calculation about reserve/saleable production/waste generated in RBM mining project is not possible but logical classification/assessment may be considered. As per the logical assessment of the production of mining lease, the Ultimate Mineable Reserve in this project is 1,51,305 tonnes/year, of which about 74% is considered/ assessed as saleable production for proposed mining lease i.e. 1,12,383 tonnes/year and about 26% of total material has been considered as waste material, it includes wastage during transportation and unused/ low value material like silt/clay etc which gets deposited as crust material on the bed profile, shall be scrapped and carefully stored for depositing into the mine pits in the river bed or in the upper terraces earmarked for plantation purpose.

6.1 Sewerage System:

For the disposal of sewage Ecofriendly mobile Toilets will be provided.

6.2 Solid Waste Management:

7. As per the logical assessment of the production of mining lease, the Ultimate Mineable Reserve in this project is 1,51,305 tonnes/year, of which about 74% is considered/ assessed as saleable production for proposed mining lease i.e. 1,12,383 tonnes/year and about 26% of total material has been considered as waste material, it includes wastage during transportation and unused/ low value material like silt/clay etc which gets deposited as crust material on the bed profile, shall be scrapped and carefully stored for depositing into the mine pits in the river bed or in the upper terraces earmarked for plantation purpose. It would be in fitness of things to repeat that there will be no solid waste generated in the proposed activity (other than mining waste).

8. USE OF MINERALS

Sand, bajari and boulders are used in construction activities like building, roads, bridges etc. The requirement for the mineral is always high in the nearby cities and towns.

7.1. OTHERS

7.1.1 HAULAGE AND SURFACE TRANSPORT

Mode of transportation of materials by trucks/tractors, of size of 10 tons capacity have been planned. The mine road is adequate to permit easy maneuverability of trucks allowing cross over and changing points. Water will be sprayed two times a day by tractor mounted sprinklers until dust remains airborne.

7.1.2 MINE MACHINERY

Mining will be done by manually open cast method using hand tools like shovel, spades, and pick-axes. Other machineries on the mining site will be water sprinkler.

7.1.3 SITE SERVICES

Temporary rest Shelter: A temporary rest shelter will be provided for the workers near the site for rest

First aid box: First aid box along with anti-venoms to counteract poison by certain species of small insects, if any

Sanitation facility: Facilities such as septic tank or community toilet will be provided for workers

7.1.4 WATER REQUIREMENT

Water Supply Water Requirement for the proposed project will be provided for the workers for drinking & domestic purpose. Water will also be provided for dust suppression. Fresh water will be only used for drinking purpose. The water will be supplied from available sources from nearby village. The break up for water requirement is given below:

Water Requirement

S. No.	Purpose	Water Requirement (KLD)
1.	Dust Suppression	2.0
2.	Drinking	1.2
3.	Miscellaneous (Plantation etc)	1.0
Total		4.4 KLD

7.1.5 EMPLOYMENT

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. The break up for employment is as under:
Employment Break-up

S.NO.	CATEGORY	NUMBERS
1.	MINING COMPETENT PERSON	1
2.	ADMINISTRATIVE	1
3.	SUPERVISOR	1
4.	UNSKILLED	19
	TOTAL	22

7.1.6 SAFETY PROVISION

All provision in safety rules & regulation will be maintained by providing required materials to the employees. The lessee will provide safety shoes, safety helmets to all the employees. There will be no violation of safety provision.

8.1.7 MINERAL BENEFICIATION

Mineral Sand, Bajari & Boulders doesn't require processing or beneficiation.

8 CLIMATIC DATA FROM SECONDARY SOURCES

The climate in Pauri Garhwal district is temperate to sub-humid. The northern part of the district experiences sub-zero temperature almost throughout the year whereas the central and southern parts are comparatively warm and humid. Severe winter is the chief climatic feature in the district. In general, the district experiences a tropical to sub-tropical and sub-humid climate except for the northern part where a cold temperate climate prevails.

9.1 TEMPERATURE, RELATIVE HUMIDITY & WIND

January is the coldest month with mean maximum temperature of 10°C, the mean minimum temperature being about 2°C. Temperature drops down to -6°C during January and February in the northern part of the district. June is the warmest month with the mean maximum and the mean minimum temperatures of 25°C and 15°C respectively.

The Relative Humidity increases rapidly with the onset of monsoon and reaches at about 80% during July to September. The driest part of the year is the pre-monsoon period, when the humidity is as low as 30% in the afternoons. Skies are heavily clouded during the monsoon

months and for short spells when the district is affected by Western Disturbances. Two broad wind patterns are observed in the district viz. north easterly to easterly (May to September) and south easterly to westerly (October to March).

9.2 RAINFALL

Most of the Rainfall (about 75% of the annual value) occurs during monsoon months of June to September. July is the rainiest month followed by August. In September, depressions from Bay of Bengal occasionally reach Uttarakhand and affect the weather of Bageshwar district also. This phenomenon may cause heavy rains. With the withdrawal of monsoon in September, the intensity of rainfall rapidly decreases. The decrease continues till November, which is a practically rainless month. Winter precipitation is associated with the passage of the Western Disturbances and is in the form of snowfall over higher elevations.

9.3 SOCIAL INFRASTRUCTURE

The mine is not facilitated by tar road and power line. The nearest telephonic facility is available at Naugaon village. Water for drinking purpose is normally brought from nearby springs. The Uttarakhand Jal Sansthan has provided pipes to the supply drinking water. Nearly all the villages have been provided tab water.

10 PLANNING BRIEF

10.1 PLANNING CONCEPT

Open cast manual mining method will be adopted for RBM (sand, bajari and boulders) mining. Project will produce about 32140 T/Annum RBM (sand, bajari and boulders), which will be used for meeting the demand of various industries as important raw material.

10.2 ASSESSMENT OF INFRASTRUCTURE DEMAND (PHYSICAL & SOCIAL)

Adequate infrastructure facilities are available in the vicinity of mine lease area and due to the mining activities; no extra infrastructure over and above the existing infrastructure is required.

10.3 AMENITIES/FACILITIES

As per Mine Rules & Regulations following statutory site services have been made available:-

10.4 MINES OFFICE

The facilities include Manager's office, other offices including Time Office, First aid facility, Mine Planning & Central Stores, etc.

10.5 REST SHELTER

Rest shelter has been provided by project proponent outside lease area.

10.6 WATER SUPPLY

A water storage tank with adequate capacity provided to cater to the water requirement for mined workers. Water will be supplied through Jeri cans from nearby villages & natural springs for human consumption, dust suppression and for plantation.

10.7 POWER SUPPLY

The work at mine will be carried at day time only, therefore no lightening arrangement is needed.

10.8 TRANSPORT OF MEN AND MATERIAL

Employee will report to the duty on own means. The material from the mine will be transported by trucks.

10.9 COMMUNICATION

Mobile phones shall be used for communication.

10.10 SECURITY ARRANGEMENTS

Appropriate security arrangement shall be made.

11. PROPOSED INFRASTRUCTURE

11.1 INDUSTRIAL AREA (PROCESSING AREA)

Temporary arrangements like Site Office, Rest Shelter & approach road etc. shall be provided. No permanent infrastructure is proposed.

11.2 RESIDENTIAL AREA (NON PROCESSING AREA)

As the local person shall be employed, no residential building / housing are proposed.

11 AFFORESTATION

In the river bed area/lease area the plantation is not possible however in the outer bank area & in the village panchayat land the plantation is proposed with consultation of mining officer and district/local administration. Trees will be planted along roadsides, to arrest auto exhaust and noise pollution, and in such a way that there is no direct line of sight to the working site when viewed from a point outside the foliage perimeter.

12 SOCIAL INFRASTRUCTURE

In-line with the Social Responsibility Activities at other operational sites, relevant developmental assistance shall be rendered depending on the local needs identified through studies.

13 CONNECTIVITY

The lease area is situated in district Pauri Garhwal of Uttarakhand and is approachable through NH 58. The mine lease is connected to NH 58 through a metalled road of about 19km. The nearest

railway station is Rishikesh Railway station and is approachable at a distance of about 43 km. Nearest airport is Jolly Grant Airport at a distance of about 42 km from the lease area.

13.1 DRINKING WATER MANAGEMENT

Water requirement for drinking and operations will be 4.2 KLD, which will be met from nearby village & natural spring and river water as per availability & suitability for the purpose.

13.2 SEWERAGE SYSTEM

Effluent is not generated in mining activities Hence treatment is not required. Domestic sewage will be disposed through eco-friendly Mobile Toilet.

13.3 INDUSTRIAL WASTE MANAGEMENT

Not applicable, as the mining activity will not be generating any overburden or waste water.

13.4 SOLID WASTE MANAGEMENT

14 Exact quantitative calculation about reserve /saleable production/waste generated in RBM mining project is not possible but logical classification/assessment may be considered so within Ultimate Mineable Reserve in this project i.e. 1,51,305 tonnes/year, of 74% is considered/ assessed as saleable production for proposed mining lease i.e. 1,12,383 tonnes/year and about 26% of total material has been considered as waste material, it includes wastage during transportation and unused/ low value material like silt/clay etc. It will be backfilled into the mined area.

14.1 POWER REQUIREMENT & SUPPLY/ SOURCE

No electrical power requirement for mining activities.

15 REHABILITATION AND RESETTLEMENT (R&R) PLAN

The existing mine lease area is river bed and has no human settlements and hence, no R & R is envisaged.

16 PROJECT SCHEDULE & COST ESTIMATES

15.1 LIKELY DATE OF START OF CONSTRUCTION AND LIKELY DATE OF COMPLETION

No construction activity or mining is involved under the project activity. The mining shall be started after getting environmental clearance and shall be continued for a period of 5 years as stated in the G.O.

