

Environment Impact Assessment Report

For Public Hearing

Mining Lease for Sh. Lekh Raj, C/o M/s Sheetal Stone Crusher: Sand, Stone & Bajri, situated in Khasra No. 233, 64 and 317, Measuring 6-29-34 Hectares, in Mauza Hathol, Mohal Dadhoon, Tehsil Nadaun, District Hamirpur, H.P.

Submitted by



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**Terms of Reference as Issued by Expert Appraisal Committee on Mining Projects in its
13th Meeting on 23-25 February, 2011**

S. No.	ToR	Cross Ref. in EIA Report
1.	All documents including approved mine plan (eco friendly mine plan), EIA report 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.	Yes Chapter-I provides details on Project Mining Lease at Annexure-I and Mining Plan Approval at Annexure-IV and Land Details at Annexure-V (Form-F).
2.	The terms and conditions imposed, if any, by the Competent Authority in the State Government while granting mining lease / permit / contract should be built into the mine plan (eco friendly mine plan) as well as the EIA report. It may inter-alia include; area of working (length and breadth of the river stretch), mode of working, working shift, transportation of mineral, restriction, if any imposed for working etc.	Yes, the approved Mining Plan at Annexure-IV. The Chapter-7 EMP reports on Compliance to Mining Conditions. See 3.4 Description of Mine Area.
3.	Involvement of forestland, if any, in the project and status of forestry clearance should be given.	No Forest Land involved A-II Joint Inspection Report by Government of H.P. See comments of Forest Department.
4.	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc should be for the life of the mine / lease period.	Chapter-2 and Chapter-3 The mining lease is for 5 years from 17-9-09.
5	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary and national park, migratory routes of fauna, water bodies, human settlements and other ecological features.	Chapter-3
6	Land use plan of the mine lease area should be prepared to encompass pre-operational, operational and post operational phases.	Chapter-3 No schedule-1 flora/fauna is there.
7.	Impact of the project on the wildlife in the surrounding and any other protected area and accordingly detailed mitigation measures required should be worked out with cost implications.	Chapter-3
8.	The vegetation in the RF / PF in the study area, if any, should be indicated.	Chapter-3
9.	A study shall be got done to ascertain the impact of the mining project on wildlife of the area including aquatic life.	Chapter-3, Chapter-4 No study applicable as seasonal rivulet does not support aquatic life (fishes etc).

10.	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Tiger/Elephant Reserves (existing as well as proposed) within 10 km of the mine lease should be clearly indicated supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance from the Chief Wildlife Warden for operating the mine within 10 km of the National Park/Sanctuary, if any, should also be obtained and furnished.	Not Applicable. There are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Tiger/Elephant Reserves (existing as well as proposed) within 10 km of the mining lease area.
11.	A detailed biological study for the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] including the aquatic fauna in the riverine system shall be carried out. Details of flora and fauna, duly authenticated, separately for core and buffer zone should be furnished based on 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 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.	The flora and fauna prominent in core zone (2 km) and buffer zone (10 km) is given in Chapter 3. The mining is in a seasonal rivulet that does not support aquatic life (fishes etc). No schedule-1 flora and fauna is there.
12	Impact of the project on land use including change of river course, if any, should be given.	Chapter-4 The mining is in a seasonal rivulet. There is no impact on land use.
13.	Impact on topography, drainage, agricultural fields, cattle fields, wildlife, water logging leading to water borne diseases, if any. It may also be shown whether it will lead to change of watercourse of the river. Modeling exercise should also be carried out through an expert agency to show the change in river flow dynamics, if any.	Chapter-4 A seasonal rivulet, the proposed mining is allowed only till 3 feet in a cyclic pattern as per approved mining plan. Thus, no chance of change in water course..
14.	Collection of one season (non-monsoon) primary baseline data on ambient air quality (PM ₁₀ , SO ₂ and NO _x), water quality, noise level, soil and flora and fauna, site-specific meteorological data should also be collected. The location of the monitoring stations should be justified. Date wise collected baseline AAQ data should form part of EIA and EMP report. The mineralogical composition of PM ₁₀ particularly for free silica should be given. There should be at least one AAQ monitoring station within 500 m of the mine lease in the pre-dominant downwind direction.	Chapter-3, Chapter-4 Annexure-VI

15.	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	Chapter-3, Chapter-4, Annexure-VI There is no point source of air pollution. The number of vehicles is also restricted to 3 tractor/trolley which will take @ 10 trips a day with a maximum distance of 1 km. Modeling with limited parameters as above not applicable.
16.	The water requirement for the project, its availability and source to be furnished. A detailed water balance should also be provided. Fresh water requirement for the project should be indicated.	Chapter-4 No water is used in mining process.
17.	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the project should be provided.	Chapter-4 Not applicable
18.	Impact of the project on the water quality should be assessed and necessary safeguard measures, if any required should be provided.	Chapter-4
19.	Information on site elevation, working depth, groundwater table should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	Chapter-4
20.	Quantity of solid waste generation, if any, should be estimated and details for its disposal and management should be provided.	Chapter-2, Chapter-4
21.	Impact on local transport infrastructure due to the project should be evaluated. Projected increase in truck traffic as a result of the project in the present road network (including those outside the project area) and whether it is capable of handling the increased load should be estimated. Arrangement for improving the infrastructure, if contemplated including action to be taken by other agencies such as State Government, if any, should be covered.	Chapter-4 The mine is operational. Only three tractors/trolleys operate to carry material from mine to stone crusher which is adjacent to mine lease area. This does not interfere with any road networks.
22.	Details of the infrastructure facilities to be provided for the mine workers should be furnished.	Chapter-7 Only 10 local workers.
23.	Phase-wise plan of greenbelt development, plantation and compensatory afforestation clearly indicating the area to be covered under plantation and the species to be planted should be provided.	Chapter-7 No compensatory afforestation applicable as no forest land is involved. Plantation as per approved mining plan.

24.	Occupational health impacts of the project activity should be anticipated and reported and proposed preventive measures indicated. These along with details of pre-placement medical examination and periodical medical examination schedules and medical facilities proposed to be provided should be incorporated in the EMP.	Chapter-4 Only 10 workers engaged in manual lifting of material and filling in tractor/trolley. First aid is made available. Workers are provided boots, gloves, helmets etc.
25.	Measures of socio economic influence to the local community, proposed to be provided by project proponent should be spelt out. As far as possible, quantitative dimensions should be given.	Chapter-4, 6,7
26.	Detailed environmental management plan to mitigate the environmental impacts. Specific safeguard measures to control PM ₁₀ as well as pollution due to transportation should be given.	Chapter-7
27.	Public hearing points raised and commitment of the project proponent on the same along with time bound action plan to implement the same should be provided.	Yes shall be incorporated after public hearing
28.	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the project should be given.	No litigation is there
29.	The cost of the project (capital cost and recurring cost) as well as the cost towards implementation of EMP should clearly be spelt out.	Chapter-6

EIA REPORT

1	Chapter 1: INTRODUCTION
1.1	<u>PURPOSE OF THE REPORT</u> This report provides information on the environment impact assessment relevant to Mining Lease for Sand, Stone and Bajri situated in Khasra No. 233, 64 and 317, Measuring 6-29-34 Hectares, Max. 30000 MT/Annum in Private land at Mauza Hathol, Mohal Dadhoon, Tehsil Nadaun, District Hamirpur, H.P. The report follows the Generic structure of Environment Impact Assessment Document, given in Appendix III/IIIA of EIA Notification, 2006.
1.2	<u>IDENTIFICATION OF PROJECT & PROJECT PROPONENT</u> <u>PROJECT</u> Mining Lease for Sand, Stone and Bajri situated in Khasra No. 233, 64 and 317, Measuring 6-29-34 Hectares, Max. 30000 MT/Annum in Private land at Mauza Hathol, Mohal Dadhoon, Tehsil Nadaun, District Hamirpur, H.P. The project site is located on Rangas-Dhaneta Road at a distance of about 2 Kms. short from Dhaneta. The lease area lies in Maan Khad near village Dhadoon. <u>PROJECT PROPONENT</u> The project is by M/s Sheetal Stone Crusher. The contact person for the purpose is- Sh. Lekh Raj Proprietor M/s Sheetal Stone Crusher Village Badehra, P.O. Batran, The Nadaun, District Hamirpur, H.P. M: 09418049532
1.3	<u>BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY, REGION</u> The mine is operating at Khasra No. 233, 64 and 317, Measuring 6-29-34 Hectares, Max. 30000 MT/Annum in Private land at Mauza Hathol, Mohal Dadhoon, Tehsil Nadaun, District Hamirpur, H.P. at Longitude: 76° 22' 30", 76° 42' 30" Latitude: 31° 40' 31", 31° 41' 45". <u>Maps attached:</u> Drawing 1: Topographic Sheet Drawing 2. Google View Drawing 3: Location Map Drawing 4: Contour and Geological Map Drawing 5: Year wise working Map <u>SIZE:</u> The project is a category 'B' project at S. No. 1(a) <50 ha ≥ 5 ha .of mining lease area in respect of non coal mine lease. It is a mine of only 6-29-34 Hectares for maximum mining of 30000 MT/annum. Total material handling is (1) First year- 29000 MT (2) Second year- 30000 MT (3) Third year- 30000 MT (4) Forth year- 30000 MT (5) Fifth year- 30000 MT.

	<p><u>Importance of the Project:</u></p> <p>The urban sector in India presents an attractive investment proposition. Increased disposable incomes, easy availability of loans and a general reduction in applicable interest rates coupled with encouragement to genuine buyers by the central government in the form of income tax benefits are some of the factors that have fuelled demand for quality urban infrastructure developments.</p> <p>The liberalization of the regulatory regime by permitting FDI in India offers foreign investors an opportunity to exploit the potential of this development.</p> <p>The urban population is expected to increase from 300million in 2001 to 465 million in 2011. The urban housing shortfall in India is 6.6million units. The infrastructure shortfall is also huge. The government is therefore encouraging housing projects.</p> <p>Similar initiatives are also being taken up in road sector by National Highway Authority of India and Ministry of Transport.</p> <p>Achieving such a huge infrastructure requires basic building materials and sand, bajri and boulders is one of primary building material required for the purpose.</p> <p>The mining activities are the backbone of all construction and infrastructure projects as the raw material for construction is available only from such mining. The mining being done supports demand for sand, stone and bajri in area.</p>
1.4	<p><u>SCOPE OF THE STUDY</u></p> <p>The study is done in Season April-June 2011 as per ToR provided and covers an area of 10 Km around the site.</p> <p>However, the lease is over a small area of 6-29-34 Hectares only with mining of minor minerals Sand, Stone and Bajri as per lease requirements of Govt. of H.P. manually in a seasonal rivulet. No objection from village Panchayat is obtained, No Forest land is involved, the project is jointly inspected by the team of H.P government and Mining Plan is available and approved. The lease is in operation since 17-09-09 for five years, taking into consideration the process and impacts as explained in Environmental Impact Assessment Guidance Manual for-MINING OF MINERALS-the impacts are limited and many studies are not applicable.</p>

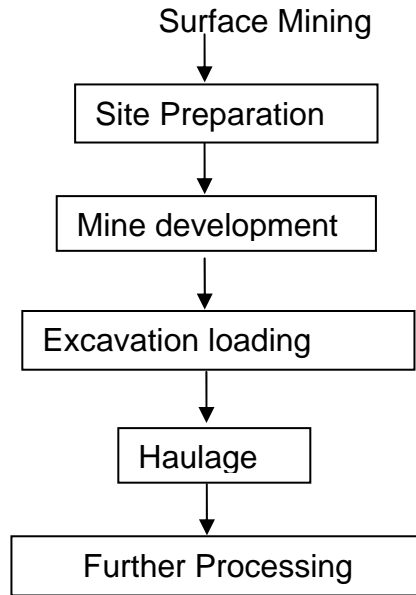
2	Chapter 2: PROJECT DISCRPTION
2.1	<p><u>INTRODUCTION TO CHAPTER</u></p> <p>This chapter provides details as per generic structure of EIA:</p> <ul style="list-style-type: none"> • Type of project. • Need for the project. • Location (maps showing general location, specific location, project boundary & project site layout). • Size or magnitude of operation (incl. Associated activities required by or for the project). • Proposed schedule for approval and implementation. • Technology and process description. • Project description. Including drawings showing project layout, components of project etc. Schematic representations of the feasibility drawings which give information important for EIA purpose. • Description of mitigation measures incorporated into the project to meet environmental standards, environmental operating conditions, or other EIA requirements (as required by the scope). • Assessment of New & untested technology for the risk of technological failure.
2.2	<p><u>TYPE AND NEED OF PROJECT</u></p> <p>The project as submitted in Chapter-I is already operating. The project is a category 'B' project at S. No. 1(a) <50 ha≥5 ha .of mining lease area in respect of non coal mine lease.</p> <p>It is a mine of only 6-29-34 Hectares for maximum mining of 30000 MT/annum. Total material handling is (1) First year-29000 MT (2) Second year-30000 MT (3) Third year-30000 MT (4) Forth year-30000 MT (5) Fifth year-30000 MT. No blasting is done.</p> <p>Achieving a huge infrastructure as being envisaged by Government of India particularly in road and housing sector requires basic building materials. The sand, bajri and stone are primary building material required for the purpose. The mining activities are the backbone of all construction and infrastructure projects as such raw material for construction is available only from mining of this nature.</p>
2.3	<p><u>LOCATION</u></p> <p>The mine is operating at Khasra No. 233, 64, and 317 Measuring 6-29-34 Hectares, Max. 30000 MT/Annum in Private land at Mauza Hathol, Mohal Dadhoon, Tehsil Nadaun, District Hamirpur, H.P. at Longitude: 76° 22' 30", 76° 42'30" Latitude: 31° 40' 31", 31° 41' 45".</p> <p>There is no National Park, Sanctuary, Elephant/Tiger Reserve, eco-sensitive area, interstate boundary, migratory routes within 10 km of the project site. The joint inspection report by the team of Himachal Pradesh Government has also clarified that there is no Forest Land involved.</p>

	<p><u>Maps attached:</u> Drawing 1: Topographic Sheet Drawing 2: Google View Drawing 3: Location Map</p>
2.4	<p><u>PROPOSED SCHEDULE FOR APPROVAL & IMPLEMENTATION</u></p> <p>Unit is operating and mining lease is in place since 17.09.09 and is valid for 5 years.</p> <p>Following approvals are in place and documents are attached: A-I: Approval Letter from Department of Industries, Government of H.P-Grant of mining lease (Lease from 17.09.09 for 5 years). A-II: Joint Inspection report from SDM, Forest Department, Pollution Control Board, PWD and IPH Department. A-III: NOC from Village Panchayat. A-IV: Approval of Mining Plan.</p>
2.5	<p><u>MAGNITUDE OF OPERATION</u></p> <p>The project as submitted in Chapter-I is already operating. The project is a category 'B' project at S. No. 1(a) <50 ha ≥ 5 ha .of mining lease area in respect of non coal mine lease.</p> <p>It is a mine for mining of 30000 MT/annum.</p> <p>Total material handling is (1) First year- 29000 MT (2) Second year- 30000 MT (3) Third year- 30000 MT (4) Forth year- 30000 MT (5) Fifth year- 30000 MT. No blasting is done.</p>
2.6	<p><u>TECHNOLOGY & PROCESS DESCRIPTION</u></p> <p>As per Environmental Impact Assessment Guidance Manual for -MINING OF MINERALS released by MoEF-the project is a surface mining. The typical operations involved in a surface mining are,</p> <div style="text-align: center;"> <p>Surface Mining</p> <pre> graph TD A[Surface Mining] --> B[Site Preparation (Pole/Marking)] B --> C[Overburden Removal x NOT DONE] C --> D[Drilling x NOT DONE] D --> E[Blasting x NOT DONE] E --> F[Excavation/Loading (Manual only)] F --> G[Haulage] G --> H[Beneficiation x NOT DONE] H --> I[Further Processing in Stone crusher] </pre> </div>

The project does not involve any processes as overburden removal, drilling, blasting and beneficiation. The mining will involve collection of material by simple hand tool, sorting, manual picking, stacking and loading into trucks/tractor-trolley for transporting. The pits from where the material is picked are not deeper than one meter as allowed in mining lease and shall follow the normal channel direction of the khad. These get replenished during monsoon. No blasting is done. The only waste is silt/clay which is added back to the pits.

2.7 **PROJECT DESCRIPTION**

The Process Flow diagram is given below:



There is no source of air pollution like Flue Gas emissions from boilers, furnace etc. The water required is only for drinking purpose and toilet needs of @ 10 workers for which toilet with septic tank is provided at stone crusher site. The water is further required for sprinkling on haulage road which is done twice a day in morning and evening with a tanker but in this case haulage road @ 500 m is semi pucca and very less sprinkling is required. The water is available at tube well in operation at stone crusher site.

However, these are daily workers. The domestic water demand is @ 100 litre/day for drinking purpose. The stone crusher is situated immediate adjacent to mining lease area (Khasra 233) in plot 233/1. The haulage thus is minimal and does not sprinkling as the path is boulder laid.

2.8	<p>WASTE MATERIAL</p> <p>A total of 22350 metric tons of waste shall be generated that is silt and clay which do not have market value as below,</p> <table border="1" data-bbox="370 277 1409 583"> <thead> <tr> <th>Year</th> <th>Silt (in Metric Ton)</th> <th>Clay (MT)</th> </tr> </thead> <tbody> <tr> <td>1st year</td> <td>2900</td> <td>1450</td> </tr> <tr> <td>2nd year</td> <td>3000</td> <td>1500</td> </tr> <tr> <td>3rd year</td> <td>3000</td> <td>1500</td> </tr> <tr> <td>4th year</td> <td>3000</td> <td>1500</td> </tr> <tr> <td>5th year</td> <td>3000</td> <td>1500</td> </tr> <tr> <td>Total</td> <td>14900</td> <td>7450</td> </tr> </tbody> </table> <p>Part of this material will be used for plantation work, if required, majority of the material will be backfilled in the excavated pits.</p>	Year	Silt (in Metric Ton)	Clay (MT)	1st year	2900	1450	2 nd year	3000	1500	3 rd year	3000	1500	4 th year	3000	1500	5 th year	3000	1500	Total	14900	7450
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4 th year	3000	1500																				
5 th year	3000	1500																				
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2.9	<p><u>MITIGATION MEASURES</u></p> <p>The project involves in general following key mitigations measures to reduce environmental impacts as discussed above:</p> <ol style="list-style-type: none"> 1. Movement of material by covering the trolley. 2. Proper collection and disposal of waste material back in the pits. 3. Work as per mining plan. <p>The mitigation measures specific to project are discussed in detail in Chapter- 4.</p>																					
2.10	<p><u>ASSESSMENT OF NEW & UNTESTED TECHNOLOGY FOR THE RISK OF TECHNOLOGICAL FAILURE</u></p> <p>No new or untested technology is being used. It is simple manual mining in river bed upto one m (3 feet) only.</p>																					

3	Chapter 3: DESCRIPTION OF THE ENVIRONMENT
3.1	<p><u>STUDY AREA</u></p> <p>An area of 10 km around the project site is taken as study area. The study area drawing is marked in Drawing 1/Annexure-V. The impact area falls in Longitude: 76° 22' 30", 76° 42'30" Latitude: 31° 40' 31", 31° 41' 45".</p> <p>The study of environmental parameters was carried out during the season April-June 2011. The consultant's credentials are attached along in the last Annexure (Annexure-VII).</p>
3.2	<p><u>ESTABLISHMENT OF BASELINE</u></p> <p>The baseline data is based on primary monitoring, field visit as well as secondary data from secondary sources including website of HPSPCB; Technical EIA Guidance Manual for Mining of Minerals prepared by MoEF by ASCI; District Ground Water Booklet, by CGWB; website http://www.himachalpradesh.us/ and http://hpuna.nic.in/factfile.htm.</p>

3.3. Land use pattern

The general land use pattern of the district is as given below:

District Hamirpur was a part of erstwhile Kangra District till 1st September, 1972 and prior to November (1966), the area of this district was in composite Punjab. In those days the system of landlordism was in prevalence. After 1971, Land Ceiling Act and Village common land utilization Act came into force and further with the introduction of the Himachal Pradesh Tenancy and Land Reforms Act in 1972. Most of the occupant tenants have been given the ownership rights and the much prevalent tenancy system became the story of past.

Presently the whole land is under self cultivation. Agriculture is the most important sector wherein majority of the rural population of the district is engaged. Land available in district may be classified into three categories viz.,

- i. Land not available for cultivation which includes forest land and barren/ unculturable land
- ii. Other uncultivated land under which comes culturable waste, permanent pastures and grazing land and
- iii. Cultivated land is a land available for cultivation and current fallow.

Land use pattern of the District (in Hectare)

Area under Forest	20058
Barren and Unculturable Land	18699
Land put to non-agriculture uses	16195
Permanent Pasture and grazing land	969
Land under misc. Tree /crops and groves	2777
Culturable waste	7444
Other fallow land	1550
Cultivated area	42442
Total area	110134

3.4. Local Land Use Pattern:

The lease area is surrounded by following key villages with land use details as given:

S. No.	Name of villages	Total area (in Hect.)	Population	Forest (in Hect.)	Total irrigated land	Unirrigated land	Culturable waste (in Hect.)	Area not available for cultivation
1	2	3	4	5		6	7	8
1	Dudhun	52	83	-	-	106	17	37
2	Kuslar	104	293	-	-	24	6	20
3	Pansai	213	579	15	-	23	14	-
4	Saloh	666	275	-	-	106	17	37
5	Dhaneta	46	379	-	-	27	4	10

3.5. Physiographical aspect of the area:

Hamirpur district is bounded in the north by Beas river which separate it from Kangra district. In the east Bakkar and Seer Khads separate it from Mandi district. In the south it is bounded by Bilaspur district and on the west by Una district. The elevation varies from 450 meters above MSL (Near confluence of Mutard/Masoh Khad with river Beas) to 1235 meters above MSL (Near Wah Devi) having the configuration ranging from almost flat lands that border the portion of the river Beas to the lofty height of the Cliff slopes of the hill ranges. Most of the district lies within the range of 600 to 900 meters above MSL. In the eastern part of the district it varies from 900 to 1200 meters above MSL and in NW part of district it varies from 300 to 600 mts above MSL.

Geomorphologically, the district can be divided into following two categories:

- I. Moderately steep to low hill and intervening valley of Siwaliks.
- II. Fluvial valley

These can be classified as:

Fluvial terrace

Structural Valley

There are three principal ranges which nearly runs in SE-NW direction. The Jakh Dhar runs in continuation of Kail Dhar range in Kangra district. It enter in Hamirpur near Nadaun and traverse in the south east direction. The town of Hamirpur lies to the east range. The hills are bare, rugged and full of deep ravines. The Chbutra hills have the same dip and strike as in the Jakh Dhar and continue beyond the river Bea as a mass of rugged and broken hills. The Sola Singhi Dhar is the longest range of the tract and is known by various names such as Chintpurni and Jaswan Dhar in Una and SolaSinghi Dhar in Hamirpur.

The general slope of the district is less than 10 meters per Km but at places it is 10 to 20 meters per km.

3.5.1. Description of the Area in which the lease is situated

The mining lease area is situated in the river bed of Maan Khad a tributary of Beas River. The general flow of this river is from north to south in the area under question. The area of the mining lease area varies from 723m to 726m.

The Maan originates at height of 942 m.R.L. from Roppidhar and joins with Kunah Khad near village Bari Mehr where the R.L. falls to 650 meters. Width of river at the place of mining varies from 130 metres to 170 metres.

The annual deposition varies from 20-30 cm. in the leased out area. However, in some area, it is more than 30 cm annually where the conditions are conducive for deposition which shall inverse drastically if the bed is lowered by way of excavation and shall be fully replenished in the next Monsoon.

The competency of river as observed at the place of mining is high and it carry the size of boulder of more than 12-30 cm X 10 X 40 cm X 9 X 24 cm

During monsoon floods the water level rises to 1 to 2 metres for a short time.

3.6. GEOLOGY OF THE AREA

The Siwalik group is divisible into three subgroups respectively the Lower, Middle and Upper based on the lithostratigraphy.

Lower Siwalik: The lower Siwalik consists essentially of a sandstone-clay alternation. In district Una, the lower sequence of the lower Siwalik consists of medium-grained subgraywacke interbedded with thick red clay, but higher up in sequence, sandstones are coarser and clasts become more frequent while the clays are less developed. The uppermost horizon of conglomerate with well-rounded clasts of grey quartzite possibly derived from the Shali formations. The total thickness is 1600 meters.

Middle Siwalik: The Middle Siwalik Sub group comprises of large thickness of coarse micaceous sandstone along with some interbeds of earthy clay and conglomerate. It normally succeeds the lower Siwalik along a gradational contact. The sandstone is less sorted than those in lower Siwalik are. Clay beds are dull colored and silty. The general thickness is 1400 to 2000 meters.

Upper Siwalik: The upper Siwalik is mainly represented by sandstone inter-bedded with silt and conglomerate beds. The lower portion of the Upper Siwalik mainly consists of soft, massive, pebbly sandstone with intercalation is replaced by the clays intercalations. The general thickness in the district is 2300 meters.

Older Alluvium: The older Alluvium in Dun valley is designated as Dun Gravels while it is a multi-cyclic sequence of brown to grey silt, clay with kankar and reddish brown to grey micaceous sand with pebbles & cobbles.

Newer Alluvium: Newer Alluvium has been subdivided into Fan Alluvium composing brownish grey clay, sand and gravel, white to grey colored cobble and pebble sequence, and lies disconformably over older Alluvium within a narrow zone immediately to the south of Siwalik hill. Trace alluvium exposed as depositional terraces of Soan nadi, is composed of cyclic sequence

of grey, micaceous, fine to coarse grained sand, silt, clays and cobble and pebbles. Channel alluvium exposed as point bar/channel bars within the active channels is composed of grey, fine to coarse micaceous sand and silts along with cobbles and pebbles of the fan and terrace alluvium.

Table showing Lithostratigraphy of District Hamirpur

Group	Lithology		Age	Approx. Thickness
Upper Siwalik	B	Predominantly massive conglomerate with red and orange clay as matrix and minor sandstone and earthy buff and brown claystone		23 meters
	A	Sandstone, clay and conglomerate alternation		
Middle Siwalik	B	Massive sandstone with minor conglomerate and local variegated claystone.		1400 to 200 meters
	A	Predominantly medium to coarse-grained sandstone and red clay alternation, soft pebbly with subordinate claystone locally thick prism of conglomerate.		
Lower Siwalik	B	Alternation of fine to medium-grained sporadically pebbly sandstone, calcareous cement and prominent chocolate and medium maroon claystone in the middle part.		1600 meters
	A	Red and mauve claystone with thin intercalations of medium of fine grained sandstone.		

3.6.1. Geology of the Lease Area

The mining lease area is situated in the river course of Maan Khad. The stream course is occupied with river borne deposits which comprises of Boulders, Cobbles, Pebbles, Sands and Silt/Clay deposits forming channel deposits of annual deposition. The deposits above high flood level are terrace deposits which comprises of Boulders, Cobbles, Pebbles, Sands, Silt and Clay. The upper surface in terrace area is covered with sandy soil where agriculture fields are developed. In the catchment area rocks of Siwalik formation are exposed which comprises of alternate sequence of sand stone and clay/silt stone. In order to demarcate different litho units, geological plan on 1:2000 scale with 1 meters contour interval is enclosed. The following table shows the rock classification according to age.

Channel Deposits

Boulders, Cobbles, Pebbles, Sand, Silt and Clay

Terrace Deposits

Boulders, Cobbles, Pebbles, Sand, Silt and Clay

3.7. Flora and Fauna of the Area

Flora

The field visit was made to core zone (2 km area) and buffer zone (10 km area) as well as secondary literature was also studied. It can be concluded that the core zone is pre-dominated by tree species viz., *Acacia* (Khair), *Albezia* (Keekar) and *Bombax* (Semal); shrub species viz., *lantana* (Kuri), *Parthenium* (Gajar ghash), *Murraya* (Kari patta). Similarly, the buffer zone is pre-dominated by tree species viz., *Bombax* (Semal), *Ficus* spp. (Timla, Bedu, Fig), *Bauhinia* (Malu); shrub species viz., *lantana* (Kuri), *Parthenium* (Gajar ghash), *Murraya* (Kari patta).

Following fruit trees were also observed in the area.

1. *Carica papaya* (Papaya/Papita)
2. *Citrus maxima* (Pomelo/Chakotra)
3. *Citrus medica* (Malta)
4. *Embelica officinalis* (Amla)
5. *Mangifera indica* (Mango)
6. *Musa acuminata* (Banana)
7. *Psidium guajava* (Guava/Amrood)
8. *Pyrus pyrifolia* (Naspati)
9. *Syzygium nervosum* (Wild Jamun)

Main undergrowth/shrubs/grass species of the project area are,

1. *Cannabis sativa* (Bhang grass)
2. *Lantana indica* (Kuri)
3. *Murraya koenzii* (Karri patta)
4. *Nerium indicum* (Peeli Kaner)
5. *Parthenium hysterophorus* (Gajar ghash)

Fauna:

No Schedule -1 animals are present in the project area. The Maan Khad is a seasonal rivulet and does not support fish life.

The species of animals commonly found in the area are: -

S. No.	Wild animals	Local Name
1	<i>Lepus europaeus</i>	Hare
2	<i>Macaca radiata</i>	Monkey
3	<i>Bubulcus ibis</i>	Bagula (White)
4	<i>Mesophoyx intermedia</i>	Saras (Black)
5	<i>Rusa unicolor</i>	Sambar
6	Honey bees	
7	Butterflies	
8	Yellow	Dominant
9	Lemon	Average
10	Red and Black	Average

Birds:

S. No.	Birds	Local name
1	<i>Alectoris rufa</i>	Chakor
2	<i>Corvus brachyrhynchos</i>	Crow
3	<i>Gallus lafayetii</i>	Red Jungle Fowl
4	<i>Melanoperdix niger</i>	Black Partridge
5	<i>Perdix perdix</i>	Grey Partridge
6	<i>Melanerpes formicivorus</i>	Woodpecker
7	<i>Eclectus parrot</i>	Parrot

Agriculture:

The land holding in the district are small and scattered. The major agricultural crops of the area are *Triticum aestivum* (Wheat) and *Zea mays* (Makki/Maize). Besides, *Curcuma longa* (Haldi/Turmeric), *Pennisetum glaucum* (Bajra), *Saccharum officinarum* (Sugarcane/Ganna), gram, Paddy, Barley, Ragi, Mustered and Seasmum are also grown in the district. Peas, Carrot, Cabbage, Ladyfinger, Tomato, Brinjal, Capsicum, Cauliflower, Cucumber, Pumpkin etc. Vegetables are also grown.

Animal Husbandry:-

S. No.	Domestic animals	Local Name
1	<i>Bos primigenius</i>	Ox
2	<i>Ovis aries</i>	Sheep
3	<i>Equus caballus</i>	Mule
4	<i>Capra aegagrus hircus</i>	Goat
5	<i>Bos Taurus</i>	Cow
6	<i>Bubalus arnee</i>	Buffalo

3.8. Ambient Air Quality and Noise Levels

The Ambient air quality samples were collected during study period and analyzed for different parameters as per guidelines given in EIA Guidance Manual on Mining of Minerals by MoEF and as laid down in ToR. The results are given in Annexure-VI. The monitoring stations location is enclosed along.

Table: Location of Air Quality Monitoring Stations

S.No	Location	Approximate Distance from the site Km	Direction with respect to plant
A0	Project Site	-	-
A1	Project site	500m d/s	
A2	Near Badharan	4 Km u/s	NW
A3	Near Mansai	2Km d/s	SW
A4	Near Bhadrin	4.5 d/s	SW
A5	Near Badhera	4 Km u/s	NE

In addition monitoring is also at the stone crusher site as per EPA Standards for Stone Crushers and the results are enclosed along.

Prominent wind direction is NW in afternoon whole year & NE in forenoon. For the region, windrose diagram for project site is enclosed.

Noise Environment

The noise level was measured at different sites in the study area. The noise levels were measured with the help of noise level meter. The noise levels are reported in Annexure-VI

3.9. Water Quality

The water quality of ground water samples was measured and results are reported in Annexure-VI. The soil samples were also taken and results are reported in Annexure-VI.

3.10. General Baseline Data

The baseline data on population, climate, infrastructure and facilities, industrial area, social infrastructure, administrative facts is given below:

Hamirpur District is situated between 76⁰ 18' to 76⁰ 44' East longitude and 31⁰ 25' to 31⁰ 52' North latitude. The tract is hilly covered by Shiwalik range. The elevation varies from 400 meters to 1100 meters having the configuration ranging from the almost flat-lands that border the portion of rivers Beas to the lofty heights of cliffs and precipitous slopes of hill-ranges. There are three principal ranges which run in a South-Easterly direction. It is situated at lower elevation and comparatively warmer but has some hilly ranges covered with Pine forests. This district was made in 1972 by carving it out from the Kangra district. It is well connected by roads from all sides. At present the known tourist attractions are Deot-Sidh, Temples of Sujampur Tira and Nadaun. Hamirpur town is the Headquarter of this District, which lies on Shimla Dharamshala road. Majority of the population here comprise of Hindus. Bulk of the people speak Pahari. Hamirpur is the most Literate district in Himachal Pradesh. The majority of its population fluently speaks Hindi. Beas river flows through the northern part of and Satluj river flows through the southern part of district Hamirpur. Both of these two rivers namely Beas and Satluj are the famous rivers in Himachal Pradesh.

Total Population	4,12,009	As per 2001 Census
Male	1,95,971	
Female	2,16,038	
Rural	3,81,836	
Urban	30,173	
Sex Ratio	1000 : 1102	Female : Male
Density of Population	369	Per Square KM
People & Culture		
Major Religions	Hinduism	
Languages Spoken	Hindi, Punjabi, Pahari	
Culture	Pahari	
Traditions	Pahari	
Economy	Agriculture Based	

Literacy Rate Aggregate	83.16	As per 2001 Census
Male Literacy	90.86	
Female Literacy	76.41	
Geographical Area		As per 1999-2000
Forest Area	19,278 Hectares	
Cultivated Area	36,118 Hectares	
Unusable Area	13,993 Hectares	
Altitude	400 meters to 1232 meters	
Longitude	76°18. to 76°44. (East)	
Latitude	31°52. to 31°58. (North)	
Major Rivers	Beas River	
Climate	Cold in winter & Hot in summer	Rainy from July to Sept.
Temperature	At Hqrs.	Max: 37-39 Min: 3-5 deg
Distances (Hamirpur)	From State Capital Shimla	170 Kms.
Nearest Railway Station	Una	84 Kms
Nearest Airport	Gaggal (Kangra)	83 Kms
Administrative Setup		
Parliamentary Const.	1 (Hamirpur)	
Assembly Segments	5 (Hamirpur, Nadaun, Mewa, Bamsan, Nadaunta)	
No. of Sub-Divisions	4 (Hamirpur, Nadaun, Barsar, Bhoranj)	
No. of Tehsils	5 (Hamirpur, Nadaun, Barsar, Sujanpur, Bhoranj)	
No. of Sub-Tehsils	2 (Bijhari, Galore)	
No. of Kanungo Circles	19	
No. of Patwar Circles	198	
Development Blocks	6(Hamirpur,Nadaun,Bhoranj,Bijhari,Sujanpur,Taunidevi)	
Panchayats	229	
Villages	1694	

4	Chapter 4: ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES														
4.1	<p><u>INTRODUCTION TO CHAPTER</u></p> <p>This chapter covers the mitigation measures that are being adopted to minimize the negative impacts of the project. The project being in operation is operating with mining lease from department and after approval of mining plan by the department.</p>														
4.2	<u>MEASURES TO MINIMIZE IMPACTS</u>														
4.2.1	<p><u>Mining is done as per approved Mining Plan</u></p> <p>One of the key steps in mitigating the impacts of mining is that mining be done as per mining plan- laid out in a scientific manner and approved by the mining department. The mining plan is approved by the department (Annexure-IV):</p> <p><u>Mining Lease Area</u></p> <p>The mining lease area is situated in the river course of Maan Khad. The stream course is occupied with river borne deposits which comprises of Boulders, Cobbles, Pebbles, Sands and Silt/clay deposits forming channel deposits of annual deposition. The deposits above high Flood Level are terrace deposits which comprises of Boulders, Cobbles, Pebbles, Sand, Silt and clay. The upper surface in terrace area is covered with sandy soil where agriculture fields are developed. In the catchment area rocks of Siwalik formation are exposed which comprises of alternate sequence of sand stone and clay/silt stone. In order to demarcate different litho units, Geological plan on 1:2000 scale with 1 metres contour interval is enclosed. The following table shows the rock classification according to age.</p> <table border="0"> <tr> <td>Channel Deposits</td> <td>Boulders, Cobbles, Pebbles, Sand silt and clay</td> </tr> <tr> <td>Terrace Deposits</td> <td>Boulders, Cobbles, Pebbles, Sand silt and clay</td> </tr> </table> <p>Table showing percentagewise Mineral Constituent is as below,</p> <table border="1"> <tr> <td>Boulder</td> <td>35%</td> </tr> <tr> <td>Bajri</td> <td>25%</td> </tr> <tr> <td>Sand</td> <td>25%</td> </tr> <tr> <td>Siltstone</td> <td>10%</td> </tr> <tr> <td>clay</td> <td>5%</td> </tr> </table> <p>The mining lease area is covered with river borne deposits which are deposited in Maan Khad during flood season. The Maan Khad receives its sediment load from the disintegration/erosion of the rocks forming catchment area. The deposits contain sediments of quartzite, Granite sand stone, with fine nature of sand, silt and clay. The colour of the coarse aggregates varies from white, off-white to greyish in colour. The boulders are sub-angular to sub-rounded in shape but the surface is smooth.</p> <p>The Banks comprises of terrace deposits and exposures of bed rocks belonging Siwalik formation age exposed in the mining lease area with alternate bands of sand stone and clays.</p>	Channel Deposits	Boulders, Cobbles, Pebbles, Sand silt and clay	Terrace Deposits	Boulders, Cobbles, Pebbles, Sand silt and clay	Boulder	35%	Bajri	25%	Sand	25%	Siltstone	10%	clay	5%
Channel Deposits	Boulders, Cobbles, Pebbles, Sand silt and clay														
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Boulder	35%														
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Sand	25%														
Siltstone	10%														
clay	5%														

Mineable area

To select the mineable area from the total area granted on mining lease, the provisions made in the Himachal Pradesh Minor Mineral (Concession) Revised Rules, 1971 and guidelines contained in the River/Stream Bed Mining Policy and land form studies were taken in to consideration. There is no point of Public Utilities/Feature is available in an around to the mining lease area.

After leaving the 1/5 area from the banks of the Khad according to the width i.e. 11 metres to 24 metres as no mining area from each bank. The left out area is divided into two parts to carry mining operation in rotation manner, so that the excavation carried out in the particular year gets replenished in the next year. The area towards upstream side is proposed for mining to be carried out for 1st, 3rd and 5 year, whereas the area towards d/Stream side, as shown in drawings enclosed. The year wise area proposed for mining in one block is calculated based on the production pattern. The following table suggests the year wise area proposed for mining.

1 st Year	13000 Sq. mtrs
2 nd Year	13600 Sq. mtrs
3 rd Year	13600 Sq. mtrs
4 th Year	13600 Sq. mtrs
5 th Year	13600 Sq. mtrs

Mineable Reserves calculations

The purpose of lease defined in the lease deed is that lease holder shall sell mineral in open market. As such, the primary raw material required for stone crusher is boulders/ Stone of more than 40 mm. size. The river borne material contains boulders, sand, bajri and mixture of clay/ silt. According to the river stream Bed policy 2004, the lessee can also sell the other minor mineral constituents such as sand and bajri in the open market if there is a demand of such material. The clay/silt does not have any market value and this material will be used for rehabilitation work.

In order to calculate the mineable reserves, the followi.ag points are taken in to consideration.

1. A Geological map on 1:2000 scales is prepared and main Litho-units were marked on the plan to know the surface spread of each unit.
2. The different constituents of river borne deposits such as boulder, bajri, sand and silt/ clay based on size c1assification were considered for reserve calculation. Although it not possible to mark these units separately on the geological map as such a pit of l x l x l metres was got dug in the mining lease area and material so excavated was separated into different sizes and their percentage was worked out and this percentage was taken in to account during calculation of reserves. The results of the test pit dug are given in the following table.

1	Boulder	35%
2	Bajri	25%
3	Sand	25%
4	Silt	10%
5	Clay	5%

The average specific gravity of 2.25 is taken for calculation of reserves and one metre depth is taken for calculation of reserve, and exploration of deposit. The boulder size of more than 60 cm is not included in the calculation of reserves.

Replenishment

The annual replenishment of the material depends up on the discharge, grade of river and geology of catchment area. Based on field studies it is expected that excavated area will be fully replenished as during monsoon season, the carrying capacity of Maan Khad increases appreciably and excavated area in single season is filed up. Moreover, the mining is planned in a rotation manner so that excavated area in a single season gets at least one year for replenishment. The following rotation plan is proposed.

1 st Year	Upstream Block
2 nd Year	Downstream
3 rd Year	Upstream Block
4 th Year	Downstream
5 th Year	Upstream Block

Since the passage to the working could not be done during monsoon when river has high discharge, therefore, working shall be restricted to ten months only.

Table showing Mineral Production during Five Years

Year	Area proposed for mining (in sq. mtr)	Production of Mineral (in MT)					
		Boulders	Bajri	Sand	Silt	Clay	Total
1 st Year	13000	10150	7250	7250	2900	1450	29000
2 nd Year	13600	10500	7500	7500	3000	1500	30000
3 rd Year	13600	10500	7500	7500	3000	1500	30000
4 th Year	13600	10500	7500	7500	3000	1500	30000
5 th Year	13600	10500	7500	7500	3000	1500	30000
	Total	52150	37250	37250	14900	7450	149000

4.2.2	<p>WATER CONSUMPTION & RECYCLING</p> <p>There is no water consumption in the mining process as it involves only manual uplifting</p> <p>The domestic water demand is @ 100 litre/day for drinking purpose. The stone crusher is situated immediate adjacent to mining lease area (Khasra 233) in plot 233/1. The haulage thus is minimal and does not sprinkling as the path is boulder laid.</p>																					
4.2.3	<p>AIR POLLUTION</p> <p>SOURCES OF AIR POLLUTION</p> <p>There is no source of air pollution as no boiler, DG Set or furnace is there. Only source of air pollution is re-suspension dust from the movement of tractor trolley from mining site to stone crusher site.</p> <p>But stone crusher here being adjacent to mining lease area the distance is minimal and path being boulder laid, no such problem is witnessed.</p>																					
4.2.4	<p>WASTE</p> <p>A total of 22350 metric tons of waste shall be generated that is silt and clay which do not have market value as below</p> <table border="1" data-bbox="388 890 966 1194"> <thead> <tr> <th>Year</th> <th>Silt (in Metric Tons)</th> <th>Clay</th> </tr> </thead> <tbody> <tr> <td>1st year</td> <td>2900</td> <td>1450</td> </tr> <tr> <td>2nd year</td> <td>3000</td> <td>1500</td> </tr> <tr> <td>3rd year</td> <td>3000</td> <td>1500</td> </tr> <tr> <td>4th year</td> <td>3000</td> <td>1500</td> </tr> <tr> <td>5th year</td> <td>3000</td> <td>1500</td> </tr> <tr> <td>Total</td> <td>14900</td> <td>7450</td> </tr> </tbody> </table> <p>The waste is taken back and laid down in the pits.</p>	Year	Silt (in Metric Tons)	Clay	1st year	2900	1450	2 nd year	3000	1500	3 rd year	3000	1500	4 th year	3000	1500	5 th year	3000	1500	Total	14900	7450
Year	Silt (in Metric Tons)	Clay																				
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3 rd year	3000	1500																				
4 th year	3000	1500																				
5 th year	3000	1500																				
Total	14900	7450																				
4.2.5	<p>EMPLOYMENT: The unit is employing about 8-10 workers.</p>																					

Table: ANTICIPATED ADVERSE ENVIRONMENTAL IMPACTS AND MITIGATION

(A) **CONSTRUCTIONAL IMPACTS:** No construction to be done
The work does not involve any construction.

(B) OPERATIONAL IMPACT

Discipline	Potential negative impacts	Probable source	Mitigation measures	Remarks
Water quality	Ground water extraction & Ground water quality deterioration	Extraction to meet water demand and discharge of wastewater	<p>The water demand for the project is very minimal- Drinking water for @ 10 persons. The workers are daily goers. However, a toilet is provided at stone crusher side. No sewage is discharged in open.</p> <p>The other water requirement is for use on sprinkling on haulage road. In this case crusher is adjacent to mining lease area in Khasra 233/1. The haulage is minimal and no sprinkling is required.</p>	<p>The water use is very minimal only for daily needs of about 10 persons. The mining process is only dry lifting of material manually. No measurable impact.</p>
Air quality	Detrioration in ambient air quality	<p>Emissions from stacks attached to boilers, DG sets or furnaces</p> <p>Fugitive emission from process</p> <p>Fugitive emission from transport</p>	<p>The project does not use any boiler, DG set or furnace.</p> <p>There are no process emissions as process involves just manual lifting of material and loading into tractor-trolley.</p> <p>The vehicles-tractor trolley about two to three in number move around @ 10 times to pick and drop the material to stone crusher site, which is</p>	<p>No source of stack emissions or fugitive emissions. Only emissions from the movement of tractor trolley only 2-3 in number @ 10 trips a day may generate some re-suspension dust- the same being heavy in nature settles down- whereas in this case the haulage road is</p>

			adjacent to mining lease area.	minimal with stone crusher adjacent to lease area. No measurable impact.
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Discipline	Potential negative impacts	Probable source	Mitigation measures	Remarks
Waste	Disposal and related pollution	No Generation of Hazardous Waste. Only solid waste	Only solid waste that is silt and clay from crushing which is sent back to the mining area and laid down in the pit	No additional impact.
Noise	Increase in noise levels in the mining area.	Equipment in mining area, blasting.	In This project- The mining involves collection of material by simple hand tool, sorting, manual picking, stacking and loading into trucks/ tractor –trolley for transporting. No blasting is done. There is thus no noise pollution from the activities.	The impact is minimal as no blasting is done nor any machine is used.
Land use	Permanent or temporary change in land use	From new activities proposed	This is only a river bed mining on private land lease agreement for a period of five years. The mining involved is only for a one meter depth that gets replenished every year during monsoon.	No permanent impact. Details of mining area are given below.
Demography and socio-economics	Strain on existing amenities like housing, water sources and sanitation, medical and infrastructure facilities.	Influx of employees as well as contractor's employee/ laborers.	Only 8-10 persons are involved in mining. No strain on any infrastructure.	No additional impact.

Occupational Health	Injuries to workers	From mining work	This is only surface mining (maximum one meter deep) and only manual excavation and loading to tractor trolley. The use of boots and helmets and gloves by workers suffice any injury is not there. A first aid box is available at the site.	Minimal impact-number of persons involved and activities are non-hazardous in nature.
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Detail of the area

Table: Showing Detail of Mining Lease Area

Khasra No.	Name of the owner	Kisam	Mauza/Mohal	Area in Hect.	Name of the Panchayat
233	Private land	Gairmumkin khd	Hathol Dhdhoon	3-52-82	Pansai
64	-do-	-do-	-do-	1-93-30	-do-
317	-do-	-do-	-do-	0-83-22	-do-
Total 6-29-34					

As per revenue record, the area is situated in the Gairmumkin Khad. (Pvt. Land)

5	ANALYSIS OF ALTERNATIVES
5.1	Technology: NOT APPLICABLE This is manual river bed mining for one meter depth only as per lease guidelines given by H.P Government.
5.2	Land use: NOT APPLICABLE There is no land acquisition.

6	ENVIRONMENTAL MONITORING PROGRAM
6.1	<p>INTRODUCTION</p> <p>The mining area/activities are not covered under Pollution Control acts. The permission from pollution Control Board is taken for the stone crusher which is a separate project but linked. The unit has in place an environmental monitoring programme as laid down by HPSPCB for stone crusher. Sampling is also done at stone crusher. The samples are also taken by HPSPCB.</p>
6.2	<p>METHODOLOGY</p> <p>The unit shall follow the standard methods for monitoring various environmental parameters. In addition the samples are regularly taken at intervals by independent laboratories.</p> <p>FREQUENCY</p> <p>The frequency as laid down by HPSPCB or to be imposed by MoEF shall be followed. The cost of EMP is given in Table.</p>

Table-X: Expenditure on typical Environmental Measures at Stone Crusher and mining

S. No.	Title	Capital Cost Rs. Lacs	Recurring Cost Rs. Lacs/ Annum
1	Air and Noise Pollution Control at Stone Crusher (Dust Suppression System, Wind Breaking walls, Construction of metalled road within premises	15 lac	1.5 lac
2.	Water Pollution Control- Septic Tank (10-20 workers) at stone crusher site	1 lac	-
3.	Plantation and check dams as per mining plan	2 lac	0.3 lac
4.	Environment Monitoring and Management at Stone crusher site	0.30 lac	0.10 lac
		18.70 lac	1.9 lac

7	Chapter-7: ENVIRONMENT MANAGEMENT PLAN
7.1	<p>Introduction</p> <p>Environmental Management Plan (EMP) is aimed at mitigating the possible adverse impact of a project and for ensuring to maintain the existing environmental quality. The EMP converses all aspects of planning, construction and operation of the project, which are relevant to environment. It is essential to implement the EMP right from the planning stage and then continuing it throughout the construction and operation stage. Therefore the main objective of the EMP is to identify the project specific activities that would have to be considered for investigation of the significant adverse impacts and the mitigation measures required. The specific measures that shall be put to practice to minimize the impact on the environment are discussed below:</p> <p>This is a river bed surface mining only and as such no construction phase are applicable. The minor construction work involves only fixing up boundary points of mine.</p>
7.2	<p>Environment Management Plan to Mitigate Impacts on Air Environment during Operational Phase</p> <p>About 2-3 trolley-tractor movement is there daily in 10 trips. The haulage road in this case is minimal as stone crusher is adjacent to mining lease area therefore re-suspension dust is minimized. There is no other source of air pollution generation for the mining purpose.</p> <p>The mining is further done as per mining plan approved, which includes plantation as per mining plan.</p> <p>PPE are provided to the workers in mining area that includes boots and helmets.</p>
7.3	<p>Environment Management Plan to Mitigate Impacts on Water Environment during Operational Phase</p> <p>There is no wastewater generated in the mining- only river bed surface mining upto one meter depth.</p>
7.4	<p>Environment Management Plan to Mitigate Impacts on Land Environment during Operational Phase</p> <p>There is no acquisition of land, nor any additional construction. The mining is done only on private land in lease agreement with government upto one meter depth only. The conditions of the mining lease are strictly followed as below:</p>

Compliance Report on Mining Lease Conditions

S. No.	Conditions	Reply
1.	The lessee shall at his own expense erect and at all times maintain and keep in good repair boundary marks and pillars necessary to indicate the demarcation shown in the revenue record annexed to the lease deed. Mining operation shall only be allowed after getting a certificate from concerned Mining Officer that demarcation of the area has been done as per the plan and that concrete boundary pillars of at least 3 feet height have been raised.	Yes, the same is done. The lease area is identified by marking painted poles. In addition, the exact dug out area is marked with stone erect outs.
2.	The lessee shall do mining in a scientific and systematic manner, and to ensure the same.	
A	Dumping sites for mine waste and top soil shall be provided in such a way so that there is no damage to the adjoining land and the same does not roll down on the slope. Topsoil shall be used for afforestation purpose in the barren/exhausted pits.	The dumping of waste as per mining plan (silt and clay from stone crushing that is not saleable)- the material is spread in mined area uniformly. The area for plantation is clearly marked in the mining plan and plantation is done accordingly.
B	Diversion dams and other engineering structures as advised by the Department from time to time different suitable sites, shall be got erected to arrest and channelize the flow of water and also to avoid erosion of the land, causing siltation of nearby natural water bodies.	The five check dams as provided in the mining plan shall be provided.
C	The loading/unloading points in the mine areas shall be developed In such a way that no hindrance is caused to the traffic and no material is stacked within the acquired width of P.W.D. road.	There is no PWD road in the project area- See report of Joint Inspection Committee
D	All precaution shall be taken to check air pollution, water pollution and noise pollution, as per standards of H.P. State Environment Protection & Pollution Control Board. Further the lessee shall obtain the consent of H.P. Stats Environment Protection and Pollution Control Board under water Act. 1974 and Air Act. 1981.	The permission from HPSPCB for the linked project of Stone Crusher is obtained. No clearance for mining is required.
F	Laborers shall be provided with safety equipment's like boots. Helmets, ropes, ear plug and even nose filters, site services like rest shelter, drinking water- and first aid facilities shall also be provided at the mining site.	Yes, the laborer's are provided with boots and helmets in mine area. At the stone crusher site they are provided with filters and ear plugs also.

3.	The surface collection of sand, stone and bajri from river/ khud/ Nalla shall be done in such a way, so as not to cause environmental and ecological imbalance. To ensure this,	
A	The lessee shall not carry any collection/mining operation at any point within a distance of .75 mtrs. upstream and downstream from any railway line or bridge, 60 mtrs. from National Highway or 50 mtrs. from any reservoir, tank, canal, road except under and In accordance with previous permissions of concerned authorities in writing or as per conditions of the Joint Inspection Report.	There is no such road, railway line bridge within a distance of 75 mtrs. upstream and downstream from any railway line or bridge, 60 mtrs. from National Highway or 50 mtrs. from any reservoir, tank, canal, road
B	Excavations, below the natural surface level of the bed shall not exceed 3 feet and these shall be filled up of suitability fenced to the satisfaction of Mining Officer.	The excavations are undertaken only upto 3 feet depth.
C	The lessee shall not carry on surface operations in any area prohibited by any authority without obtaining prior permission in writing from the concerned authority.	No such activity is undertaken.
4.	No River/Stream bed mining shall be allowed within 75 meters from the periphery of soil conservation works, nursery plantation, check dams or within the distance as recommended by Sub-Divisional Committee, whichever is more.	There is no such soil conservation works, nursery plantation within 75 meters. See report of Joint Inspection committee
5.	No River/ Stream' bed mining shall be allowed within 1/5th of its span or 5 meters from the bank or as specified by the Sub-Divisional Committee whichever is more.	The mining plan ensures that there is no mining within within 1/5th of its span or 5 meters from the bank
6.	No River/ Stream bed mining shall be allowed within 200 meters upstream and downstream of Water Supply Scheme or as suggested by the Joint Inspection Committee.	There is no Water Supply Scheme within 200 meters upstream and downstream. See report of Joint Inspection committee
7.	No River/Stream bed mining shall be allowed within 200 meters upstream and 200 to 500 meters downstream of bridges depending upon the site specific conditions.	There is no bridge within 200 meters upstream and 200 to 500 meters downstream. See report of Joint Inspection committee
9.	No mechanical excavators are allowed in the River/Stream bed for the extraction of minerals without prior permission of the Director of Industries H.P. in writing.	Only manual mining is done

10.	No digging of more than 3 feet shall be allowed In the River Stream bed.	Digging only up-to 3 feet is done
11.	The lessee/contractor shall ensure that his labor does not involve in fish poaching.	There is a seasonal rivulet. No fishing life is sustained.
12.	No blasting shall be allowed in River Stream bed. Only surface material shall be picked up manually	Only manual mining is done. No blasting is done.
13.	Natural course of river shall not be disturbed and steps shall be taken to control soil erosion. Free flow conditions have to be maintained in rainy season so that no blockage of flow is caused in river stream bed.	The mining is done strictly as per mining plan.
14.	Sufficient plantation has to be raised along the boundary and plain patches in the area.	The plantation as proposed in the mining plan is raised.

Reclamation Plan:

The reclamation plan includes local suitable shrubs, grasses as given in mining plan but outside the channel deposits as-

Ist Year:	P-1	200 sq.m
2 nd Year	P-2	300 sq.m
3 rd Year	P-3	300 sq.m
4 th Year	P-4	300 sq.m
5 th year	P-5	300 sq.m
Total Area		1400 sq.m

In addition five number of check dams are proposed to control the flow direction and to facilitate the annual deposition.

7.5	<p>Environment Monitoring Programme</p> <p>Regular monitoring of all significant environmental parameters is essential to check the compliance status vis-à-vis the environmental laws and regulation. The objectives of the monitoring will be as follows:</p> <ul style="list-style-type: none"> • To verify the results of the impact assessment study with respect to the proposed projects. • To study the trend of concentrated values of the parameters, which have been identified as critical and then planning the mitigating measures. • To check and assess the efficacy of pollution control equipment. • To ensure that any additional parameters, other than those identified in the impact, do not turn critical after the commissioning of proposed project. <p>To implement the EMP, a structured Environment Management Cell (EMC) which includes plant manager and representative of consultants interwoven with the existing management system is there. A comprehensive environmental monitoring program as laid down by State Pollution Control Board is followed.</p>
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	<p>All the above observations will be complied and documented by the EMC to serve the following purposes.</p> <ul style="list-style-type: none"> • Identification of any environmental problems that are occurring in the area. • Initiating or providing solution to those problems through designed channels and verification of the implementation status. • Controlling activities inside the project, until the environmental problem has been corrected. • Suitably responding to emergency situations. <p>Environmental monitoring once a year around mining site for ambient air quality and noise levels during mining operation is proposed. The environmental monitoring at the stone crusher site is done as per HPPCB requirements. Any other condition as imposed by SEIAA/MoEF shall be followed.</p>
<p>7.6</p>	<p>Green Belt</p> <p>The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. The green belt helps to capture the fugitive emission and to attenuate the noise generated apart from improving the aesthetics. Development of green belt and other forms of greenery shall also prevent soil erosion and washing away of topsoil besides helping in stabilizing the functional ecosystem and further to make the climate more conducive and to restore water balance. While making choice of plant species for cultivation in green belts, weight age has to be given priority to the natural factor of bio-climate. It is also presumed that the selected plants will be grown as per normal horticultural (or forestry) practice and authorities responsible for plantation will also make sure that adequate provision for watering and protection of the saplings exists at site. For effective removal of pollutants, it is necessary that</p> <ul style="list-style-type: none"> • Plants grow under conditions of adequate nutritional supply (for health and vigor of growth), • Absence of water stress (to maintain openness of stomata apertures and form of epidermal structures), • Plants are well exposed to atmospheric conditions of light and breeze to maintain free interaction with gases. <p>Unit has proposed phyto-remediation of particulate matter from Ambient environment through dust capturing plant species in landscape as given in mining plan.</p>

8	Chapter 8: Additional Studies and Project Benefits
8.1	<p data-bbox="367 180 1443 222">Additional Studies</p> <p data-bbox="367 222 1443 264">No additional studies are relevant with the nature of the project.</p> <p data-bbox="367 306 1443 390">The project is a category 'B' project at S. No. 1(a) <50 ha ≥ 5 ha .of mining lease area in respect of non coal mine lease.</p> <p data-bbox="367 432 1443 600">It is a mine of only 6-29-34 Hectares for maximum mining of 30000 MT/annum. Total material handling is (1) First year- 29000 MT (2) Second year- 30000 MT (3) Third year- 30000 MT (4) Forth year- 30000 MT (5) Fifth year- 30000 MT.</p> <p data-bbox="367 642 1443 684">Only manual mining is there.</p>

9	Chapter 9: CORPORATE SOCIAL RESPONSIBILITY
	The mining activity itself has a cost in terms of royalty. The project proponent agrees to put aside rupees one lac towards social cost in terms of - Provision of boulders, bazri and sand for social projects as Panchayat ghar, schools in the area. It is undertaking such measures already in area as per details enclosed.