

Environment Impact Assessment Report

For Public Hearing

Mining Lease for Dr.Lakhwinder Singh - M/s Lakhwinder Singh Stone Crusher: Sand, Stone and Bajri (Minor Minerals) situated in Khasra No. 724, 725, 726, 729, 730, 731, 734, 736, 1041, 1044, 1045, 1046, 1054, 1055/1, 1056, 1059, 1061, 1063, 1064, 1065, 1066, 1067, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1083, 1084, 1086, 1087, 1088, 1097, 1099, 1107, 1112, 1113, 1115, 1116, 1118, 1124, 1125, 1145, 1147, 1148/1, 1149, 1152, 1155, 1159, 1159/1, 1160, 1161, 1162, 1163, 1164, 1165, 1212, 1213, 1214 measuring 9-68-72 Ha (9.6872 Hectare), in village Mauza Kothar Beet, Tehsil Haroli, District Una, H.P

Submitted by



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

S.No	ToR	Cross Ref. in EIA Report
.1.	A copy of the document in support of the fact that the proponent is the rightful lessee of the mine should be given.	Lease application and Joint Inspection Report Papers A-I to A-III
2.	All documents including approved mine plan, EIA and public hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management and mining technology and should be in the name of the lessee. The mine plan should take into account the conditions of the mine lease, if any, in terms of distance to be left un-worked from the river flowing nearby.	Yes , See Chapter-1 It is not river mining, but surface mining from minor hillocks
3.	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.	Yes Chapter-3 and Chapter-7, Waste reclamation plan
4.	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 should be indicated	See Chapter-3
5	Land use plan of the mine lease area should be prepared to encompass pre-operational, operational and post operational phases and submitted.	Yes, Drawings 4-7
6	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, 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, if any, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above should be obtained from the State Wildlife Department/ Chief Wildlife Warden under the Wildlife (Protection) Act, 1972 and copy furnished.	There is no national park, sanctuaries, biosphere reserves, wildlife corridors within 10 KM; Inspection Report of Joint Inspection Team of Government of H.P A-II

7	A detailed biological study for the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out covering both terrestrial and aquatic flora and fauna. 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.	Chapter-3
8	Impact of change of land use should be given	Chapter-4
9	Impact of mining on the hydrology of the area including water flow in the river adjoining the mine lease. It should also take into account the inundation of mined out area due to flow of water from the river.	Chapter-4
10	R&R plan / compensation details for the project affected people should be furnished. While preparing the R&R plan, the National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs / STs and other weaker sections, need based sample survey, family-wise, should be undertaken to assess their requirement and action programmes prepared accordingly integrating the sectoral programme of line departments of the State Government.	Not Applicable, No land acquisition. Land only on lease
11	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 shall be collected and the AAQ data so collected presented date-wise in the EIA and EMP report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be justified. 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 PM ₁₀ particularly for free silica should be given.	Chapter-III and Annexure-V
12	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. The impact of stone crusher nearby should also be taken into account.	Wind Rose in Annexure-V; There is no define dsource of air pollution as boiler, furnace, DG sets. See Chapter-4

13	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-2; No water requirements in Mining Process
14	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the project should be provided.	Not Applicable
15	Details of water conservation measures proposed to be adopted in the project should be given.	No abstraction of water for mining purpose.
16	Impact of the project on the water quality both surface and groundwater should be assessed and necessary safeguard measures, if any required should be provided.	Test Reports at Annexure-V; Chapter-4
17	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. 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.	No working does not intersect groundwater
18	Details of first order stream, if any passing through lease area and modification/ diversion proposed, if any and the impact of the same on the hydrology should be brought out.	Not Applicable
19	Details of rainwater harvesting proposed, if any, in the project should be provided.	Not Applicable
20	Information on site elevation, working depth, groundwater table etc. should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	See Drawings 4-7
21	Quantity of solid waste generation to be estimated and details for its disposal and management should be provided. The quality, volumes and methodology planned for removal and utilisation (preferably concurrently) of top soil should be indicated. Details of backfilling proposed, if any, should also be given. It may be clearly indicated that out of the total waste generated during the mine life, how much quantity would be backfilled and how much quantity would be disposed off in the form of external dump (number of dumps, their height, terraces etc. to be brought out).	Chapter-2 and Chapter-4

22	The reclamation plan, post mine land use and progressive greenbelt development plan shall be prepared in tabular form (prescribed format) and submitted.	Chapter-4 and Chapter-7
23	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 the increased load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered.	Chapter-4
24	Details of the infrastructure facilities to be provided for the mine workers should be included in the EIA report.	Chapter-4
25	Conceptual post mining land use and Reclamation and Rehabilitation of mined out area (with plans and with adequate number of sections) should be given in the EIA report.	Chapter-4 and Drawings 5-7
26	Phase-wise plan of greenbelt development, 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.	Chapter-7 and Drawings 5-7
27	Occupational health impact of project should be anticipated and preventive measures initiated. Details in this regard should be provided. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. Special attention should be given in view of the stone crusher nearby.	Chapter-4
28	Measures of socio economic significance and influence to the local community proposed to be provided by project proponent should be indicated. As far as possible, quantitative dimensions may be given with time frame for implementation.	Chapter-9

29	Detailed environmental management plan to mitigate the environmental impacts which, should inter-alia also include the impact due to change of land use, due to loss of agricultural land and grazing land, if any, occupational health impacts besides other impacts of the projects. It should also take into account the impacts due to stone crusher nearby and also provide for preventing the silt from going into the river.	Chapter-4 and Chapter-7
30	Risk assessment and disaster management plan due to inundation of mine as a result of its location close to the river should also be examined and addressed.	Chapter-4
31	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.	Shall be incorporated in final report
32	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the project should be given.	Nil
33	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

1.0	Chapter-1: INTRODUCTION
1.1	<p><u>PURPOSE OF THE REPORT</u></p> <p>This report provides information on the environment impact assessment relevant to Mining Lease for Sand, Stone and Bajri situated in Khasra No. 724, 725, 726, 729, 730, 731, 734, 736, 1041, 1044, 1045, 1046, 1054, 1055/1, 1056, 1059, 1061, 1063, 1064, 1065, 1066, 1067, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1083, 1084, 1086, 1087, 1088, 1097, 1099, 1107, 1112, 1113, 1115, 1116, 1118, 1124, 1125, 1145, 1147, 1148/1, 1149, 1152, 1155, 1159, 1159/1, 1160, 1161, 1162, 1163, 1164, 1165, 1212, 1213, 1214 Measuring 9-68-72 Ha (9.6872 Hectare), Max. 306,600 MT /Annum in Mauza Kothar Beet, Tehsil Haroli, District Una, H.P</p> <p>The report follows the Generic structure of Environment Impact Assessment Document, given in Appendix III/IIIA of EIA Notification, 2006</p>
1.2	<p><u>IDENTIFICATION OF PROJECT & PROJECT PROPONENT</u></p> <p>PROJECT</p> <p>Mining Lease for Sand, Stone and Bajri situated in Khasra No. 724, 725, 726, 729, 730, 731, 734, 736, 1041, 1044, 1045, 1046, 1054, 1055/1, 1056, 1059, 1061, 1063, 1064, 1065, 1066, 1067, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1083, 1084, 1086, 1087, 1088, 1097, 1099, 1107, 1112, 1113, 1115, 1116, 1118, 1124, 1125, 1145, 1147, 1148/1, 1149, 1152, 1155, 1159, 1159/1, 1160, 1161, 1162, 1163, 1164, 1165, 1212, 1213, 1214 Measuring 9-68-72 Ha (9.6872 Hectare), Max. 3,06,600 MT /Annum in Mauza Kothar Beet, Tehsil Haroli, District Una, H.P</p> <p>PROJECT PROPONENT</p> <p>The project is by M/s Lakhwinder Singh Stone Crusher. The contact person for the purpose is-</p> <p>Dr.Lakhwinder Singh C/o M/s Lakhwinder Singh Stone Crusher Village Polian Beet, Tehsil Haroli, District Una, H.P</p>
1.3	<p><u>BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY, REGION</u></p> <p>Khasra No. 724, 725, 726, 729, 730, 731, 734, 736, 1041, 1044, 1045, 1046, 1054, 1055/1, 1056, 1059, 1061, 1063, 1064, 1065, 1066, 1067, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1083,</p>

1084, 1086, 1087, 1088, 1097, 1099, 1107, 1112, 1113, 1115, 1116, 1118, 1124, 1125, 1145, 1147, 1148/1, 1149, 1152, 1155, 1159, 1159/1, 1160, 1161, 1162, 1163, 1164, 1165, 1212, 1213, 1214 Measuring 9-68-72 Ha (9.6872 Hectare), Max. 3,06,600 MT /Annum in Mauza Kothar Beet, Tehsil Haroli, District Una, H.P at Longitude: 76° 16' 50" Latitude: 31° 18' 15"

Maps attached:

Drawing-1: Topographic Sheet

Drawing-2: Google View

Drawing-3: Location Map

Drawing-4: Contour and Geological Map

Drawing-5: Cross-Sections, Pit Plan and Slice Plan Plate-4 to Plate-7

Drawing-6: Year wise working Map Plate-8 to Plate-12

Drawing-7: Post Reclamation Plan Plate-13

SIZE: 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 9.6872 Hectare **for maximum mining of 306600** MT/annum. Total material handling is (1) First year- 247300 MT (2) Second year- 239050 MT (3) Third year- 250600 MT (4) Fourth year- 306600 MT (5) Fifth year- 304500MT No blasting is done.

Importance of the Project:

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. The liberalization of the regulatory regime by permitting FDI in India offers foreign investors an opportunity to exploit the potential of this development

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

Expected investment in real estate only over the next 2 –3 years: US\$40 billion. Among the infrastructure **housing, roads is a major priority of government.** The Central Government initiatives in housing are listed below:

- National Housing & Habitat Policy
- Providing quality & cost effective housing options
- Treatment of housing as a priority sector
- Balanced urban and rural development
- National Shelter Fund to meet the requirement of low cost funds for housing needs of the poor
- 2 million housing program – 2 million additional houses every year in

	<p>urban & rural areas – INR 80 billion annual investment</p> <ul style="list-style-type: none"> ▪ Credit cum subsidy scheme for rural housing ▪ Network of rural building centers – cost effective building materials to enable affordable housing ▪ Repeal of the Urban Land Ceiling & Regulation Act ▪ FDI in the housing sector permitted ▪ Non-resident Indians permitted to repatriate earnings from housing projects ▪ Reduction of customs duty on cement & steel ▪ Fiscal benefits to individual house investors, housing finance companies ▪ Scheduled commercial banks lending target to housing sector increased <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, stone and bajri 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.</p>
<p>1.4</p>	<p><u>SCOPE OF THE STUDY</u></p> <p>The study is done in Season March-May 2011 and covers an area of 10 Km around the site taking into consideration ToR and that lease is over a small area of 9.6872 Ha only with mining of minor minerals sand, stone and bajri as per lease requirements of Govt. of H.P; 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.</p>

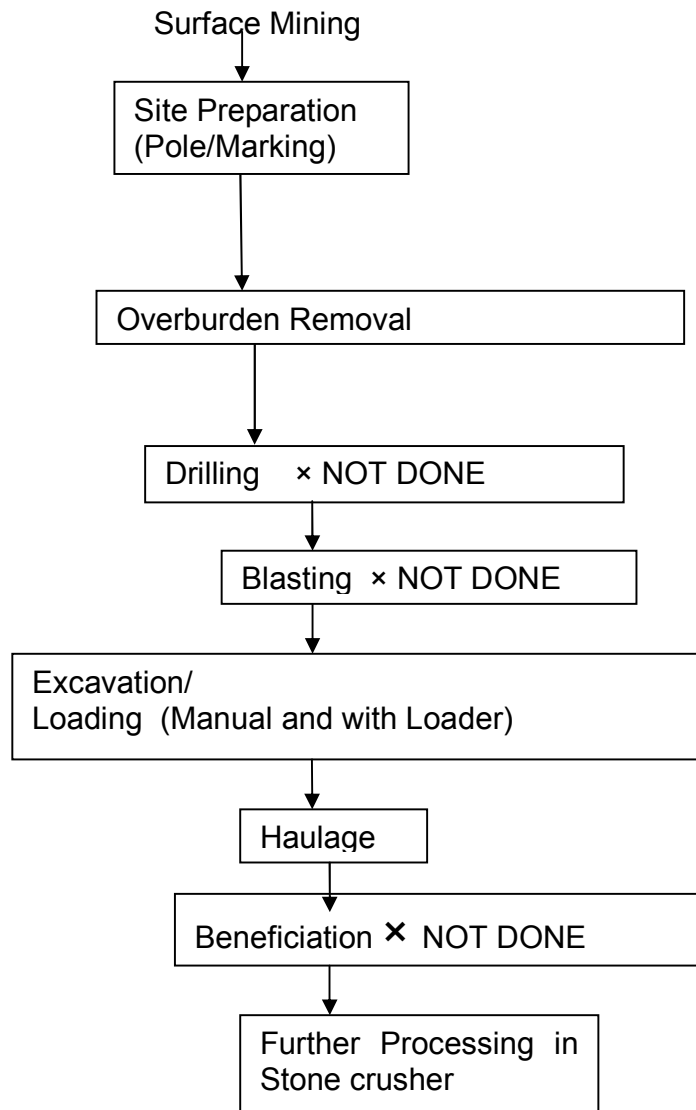
2.0	Chapter-2: PROJECT DISCRPTION
2.1	<p><u>INTRODUCTION TO CHAPTER</u></p> <p>This chapter provides details as per generic structure of EIA:</p> <ul style="list-style-type: none"> • Type of project • Need for the project • Location (maps showing general location, specific location, project boundary & 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 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 9.6872 Ha for maximum mining of 306600 MT/annum. Total material handling is (1) First year- 247300 MT (2) Second year- 239050 MT (3) Third year- 250600 MT (4) Fourth year- 306600 MT (5) Fifth year- 304500MT 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 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.</p>
2.3	<p><u>LOCATION</u></p> <p>The mine is at Khasra No. 724, 725, 726, 729, 730, 731, 734, 736, 1041,</p>

	<p>1044, 1045, 1046, 1054, 1055/1, 1056, 1059, 1061, 1063, 1064, 1065, 1066, 1067, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1083, 1084, 1086, 1087, 1088, 1097, 1099, 1107, 1112, 1113, 1115, 1116, 1118, 1124, 1125, 1145, 1147, 1148/1, 1149, 1152, 1155, 1159, 1159/1, 1160, 1161, 1162, 1163, 1164, 1165, 1212, 1213, 1214 Measuring 9-68-72 Ha (9.6872 Hectare), Max. 4,70,000 MT /Annum in Mauza Kothar Beet, Tehsil Haroli, District Una, H.P Longitude: 76° 16' 50" Latitude: 31° 18' 15"</p> <p>There is no National Park, Sanctuary, Elephant/Tiger Reserve, eco-sensitive area, 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. The boundary of State of Punjab is within 10 Km. The mining lease area is situated on Una - Haroli- Janani-Kothar Beet road near Kothar village of tehsil Haroli of district Una. The mining lease area is about 14 Kms from Haroli.</p> <p><u>Maps attached:</u> Drawing-1: Topographic Sheet Drawing:2. Google View Drawing-3: Location Map Drawing-4: Contour and Geological Plan Drawing-5: Cross Section, Pit Plan and Slice Plan Drawing-6: Year-wise Working Map Drawing-7: Post Reclamation Plan</p>
2.4	<p><u>PROPOSED SCHEDULE FOR APPROVAL & IMPLEMENTATION</u></p> <p>Unit proposes to start by March 2012. Following approvals are in place</p> <p>A-I: Lease and land papers A-II: Joint Inspection report from SDM, Forest Department, Pollution Control Board, PWD and IPH Department A-III: NOC from Village Panchayat A-IV: Mining Plan Papers</p>
2.5	<p><u>MAGNITUDE OF OPERATION</u></p> <p>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 9.6872 Ha for maximum mining of 306600 MT/annum. Total material handling is (1) First year- 247300 MT (2) Second year- 239050 MT (3) Third year- 250600 MT (4) Fourth year- 306600 MT (5) Fifth year- 304500MT No blasting is done.</p>

2.6

TECHNOLOGY & PROCESS DESCRIPTION

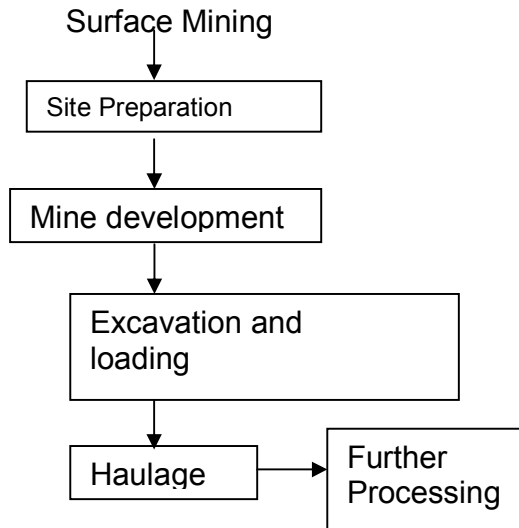
As per Environmental Impact Assessment Guidance Manual for -MINING OF MINERALS released by MoEF- the project is a surface mining. The typical operations involved in a surface mining are



The project does not involve any processes as drilling, blasting and beneficiation. The mining will involve collection of material by loaders from terraces on hill slope and loading into trucks/ tractor –trolley for transporting.

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 is semi pucca and very less sprinkling is required. The water is available at tube well in operation at Stone crusher site which is about 2 Km from the proposed site.

2.8 WASTE MATERIAL: The open cast mining has been proposed in view of the hilly nature of the site. During opening of benches, 5718500 Metric tonnes of total Silt/Clay will be generated. The bench wise Silt/Clay generated is as under. Part of this material will be marketable as filling material however the remaining material which is not marketable shall be spread over the benches for development of agriculture fields.

Sr. No	Bench level	Production of clay
1	326	12300
2	322	15750
3	318	29600
4	314	33900
5	314B	9600
6	310	89700
7	306	107400
8	302	131400
9	298	130500
Total		571850

	<p>This soil cover which is generated shall be spread on the exhausted area. Some loose soft stone is also likely to be generated during mining operation which shall be used for formation of parapet walls towards valley side. This waste shall be collected at the waste disposal site marked on the map. If market is available the clay can be sold for soling in the roads</p>
<p>2.9</p>	<p><u>MITIGATION MEASURES</u></p> <p>The project involves in general following key mitigations measures to reduce environmental impacts as discussed above:</p> <ul style="list-style-type: none"> • Sprinkling of Water on Haulage road to prevent dust emissions • Movement of material by covering the trolley/trucks • Proper collection and disposal of waste material as per mining plan • Work as per mining plan <p>The mitigation measures specific to project are discussed in detail in Chapter- 4.</p>
<p>2.10</p>	<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 normal mining of terrace deposit without blasting.</p>

3.0	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-2. The impact area falls in 31°-4'N - 31°-15'N to 76°-28'E - 76°-15'E, topographic sheet 53 A/3. The study of environmental parameters was carried out during the season March- May 2011. The consultant's credentials are attached along in the Annexure VII.</p>
3.2	<p><u>ESTABLISHMENT OF BASELINE</u></p> <p>The baseline data is based on primary monitoring 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/ http://hpuna.nic.in/factfile.htm</p>

3.3 Land use pattern

Una is a small foothill district located on South Western border of the State and is situated between 75°58'2" - 76°28'25"E longitude and 31°17'52" - 31°52'0" N latitude. It is bounded in the North by Kangra District, in North – East by Hamirpur District, in South- East by Bilaspur District and by Punjab in West and South.

The following table show the category wise land utilization of the whole of the area of Una district:

Sr. No.	Category of land	Area Occupied (in sq. Kms)
1	Forests	185
2	Cultivated	430
3	Barren & Unculturable	227
4	Land put to Non-Agricultural uses	294
5	Permanent Pastures & other Green lands	129
6	Land under Misc. Tree, Crops and Grooves	55
7	Irrigated Area	78.4
Total Geographical Area of Una		1549 Sq Kms

Local Land use pattern:

Sr. No.	Name of Villages	Total area (in Hect.) (In Hect)	Population	Forest (in Hect.)	Unirrigated Land	Culture able waste (In Hect)	Area Not available for cultivation (In Hect)
1	2	3	4	5	6	7	8
1	Polianbeat	1652	2163	0	357	593	702
2	Pubowal	1184	2892	0	414	367	403
3	Haroli	1068	3114	0	217	318	413
4	Dulera	1132	4507	0	645	129	358
5	Palkhwal	1562	4500	0	385	194	765

3.4 Physiographical aspect of the area:

Una district lies in the south-western of Himachal Pradesh. It is bounded by Kangra district in the north and north-east, Hamirpur district in the east, Bilaspur in the south-east and Punjab in the west and south. The district is stretched between 31 ° 17' 52" -31 ° 52' 0" north longitudes and 75 ° 58' 0" -76 ° 28' 25" east longitudes.

Una district covers an area of 1,550 sq. km. Himalayan foothill zone bounded by plains of Punjab in the west and Solasinghi Dhar in the east. In the western part also there is hill range whose maximum height is about 600 mts. The ranges trend in a general NW-SE direction and the area between these forms longitudinal valley of the Soan river. The altitudes of the area vary from 350 mts to 1,200 mts on the Salasinghi Dhar. Shivalik range experience heavy rainfall. The Soan river is itself a tributary of Satluj river and the confluence is just south of Santokhgarh. The hill ranges covered by scanty vegetation comprising mostly shrubs. The breadth of Jaswan Dun valley ranges from 7 kms. to 14 kms. and the town of Una which is not in the middle of the Dun is on the elevation of 427 above the sea level.

The Sub-Himalayan hills commonly known as Solasinghi. or Jaswan Dhar range commences near Talwara on the Beas where the river touches the district running south-east. Its culminating ridge forms the borders between this district and Kangra. Passing southwards, it increases steadily in width and elevation until its highest point reach at Bharwain which is 1182 mts. above sea level Here, the regular formations, central range slopping in the series of undulating valley to the Beas on the one side and the Soan on the other side and changes its character. The range still runs toward, Satluj, its north side submerging gradually into Beas valley, but on the south it has an abrupt fall of 61 mts. and 91 mts. and between the main range and the plains Jaswan Dun is a wide table land thickly wooded apparently reveal to divided into natural blocks by numerous deep ravines. This area.is some 24 kms. in length and 21 kms. in width is

thickly forested. At the short distance south to Amb, the Solasinghi ranges, Jaswan Dhar range recedes eastward ceasing to form the boundary of the district and the plains at this point form of kind of bay in the hills which is shut in by Solasinghi, to the northeast and on the south by another range commencing a few kilometres north of Una. The latter runs southwards in a series of undulating hills, of low in height, with an even front towards Jaswan Dun. Across the Satluj, the range breaks into a series of parallel ranges of no more height, but rocky and precipitous, through their slopes are well covered with grass and brush wood. This range is separated from Solasinghi Dhar by Satluj which for more than 48 Kms runs northwards until it turns westwards into Jaswan Dun.

While Una is bounded by the river Beas on the north and river Satluj in the east, the Soan river which is basically a seasonal river, flows right across the Jaswan valley towards south and submerges in the Satluj near Anandpur. The Soan river indeed is the life belt of Jaswan Dun Valley which on its course receives innumerable tributaries both from left and right thereby abounds quick sands and is risky to cross when in spade.

3.4.1 Description of the Area in which the lease is situated

The altitude of Kothar village is at 326 to 298 m. R.L. The Mining lease area are the alluvial deposit of lower shiwalik formation. The area is in the form of terraces sloping towards western side and the water of the rain joins Jaijon Khad which is near to the site through small nalla.

It forms a part of Satluj Drainage system. It exhibits sub-dendrite to dendritic type of drainage pattern. This deposits are the alluvium deposits consisting of boulders, bajri of lower Siwaliks admixed with red clays. The highest point of the lease area is 326 Mts. and the lowest is 298 above mean sea level.

3.5 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 dis-conformably 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.

The study of rocks in and around the leased out area show that it is covered with old river deposits. The river deposits comprises of boulders, pebbles and reddish clay. The insitu bed rock is not exposed in the area. The area with gentle slope angle is in the shape of terraces occupied with residual soil which is formed due to weathering of upper mantle of rocks. The thickness of this soil is shallow and it varies from few centimeters to 50cms. The soil is sandy in nature and only growth of grass is sustainable.

3.5.1 Geology of the Lease Area

The hill slope where the mining lease is applied is covered with old deposits of river. It comprises of cobbles, pebbles and boulders mixed with reddish clay. No hard rock is available in the leased out area. The area with gentle slope angle is in the shape of terraces occupied with residual soil which is formed due to weathering of upper mantle of rocks. The thickness of this soil is shallow and it varies from few centimeters to 50cms . The soil is sandy in nature and only growth of grass is sustainable. To know the mineral potential two exploratory pits were made to know the percentage of different component of minerals. The mining lease area comprises of boulders, cobbles, pebbles and with insignificant amount of reddish clay. The average percentage of boulder:bajri:clay is 5:2:3 respectively as is observed in the exploratory pits.

Estimate of Geological Reserves

The mining lease area comprises of 8 number of benches. The Geological reserves have been estimated by the cross-sectional area method for each block. The cross section area of rock was measured separately and to obtain the volume it was multiplied by strike influence of each section. The volume thus obtained was multiplied by the specific gravity to obtain the reserves. Specific gravity of 2.25 has been taken

for calculation of recent alluvium deposit of geological reserves. The reserves in first five metres depth have been categorized as proved and at subsequent 5 metres depth under provable category. The details of geological reserves are given below:

Geological reserves in metric tonnes

Section Line	Surface area in Sq. mtrs.		Section interval in Mts.	Reserves of rock	
	Proved	Probable		Proved (in M.T.)	Probable (in M.T.)
A-Aϕ	1050	1050	50	117000	117000
B-Bϕ	1650	1650	50	184000	184000
C-Cϕ	1325	1325	50	148000	148000
D-D'	1225	1225	50	137000	137000
Under proved category				586000	M.T..
Under possible category				586000	M.T..

3.6: Flora and Fauna of the Area

The varieties of trees, shrubs and grasses found in the area are Simbal, Mango, Tun, species of acacia and albizia, Salambra, Terminalia, Jamun, Behul, Shisham, Bamboo; ber, munjh.

The species of animals and birds found in the study area are- hare, monkey, Jungle cat, squirrel. The domesticated animals as goat, dogs, cattle are also found. Economy of the district is predominantly agrarian thus animal husbandry is equally important and farmers keep the cattle for the purpose of ploughing and to obtain manure for maintaining fertility of the fields and to meet daily need of milk of their family. The birds include crow, partridge, jungle fowl There is no Schedule-I animal found in the area.

The near by khad has no water except in monsoon and mining lease area is terrace deposit. There is no fishery activity in the area.

Agriculture

Most of the Una area consists of foot hills and Soan valley up to elevation of 600 meters above mean sea level with sub tropical climate. The soils are mostly sandy loam in texture with scattered loamy patches. The area is highly prone to erosion due to weak geological formations and scanty vegetation. The moisture retention capacity is poor. The crops usually face moisture stress during the remaining period of the year due to inadequate and irregular rainfall. The irrigation facilities are provided by lifting water from streams, shallow dug wells and medium to deep tube wells in the valley area. The main crops grown in the area are Wheat, Maize, Gram, paddy, Mustard, Sugarcane, Potato, Vegetables, and Citrus etc.

3.7: Climate and Rainfall

The general temperature, rainfall and humidity corresponding to each type are given in the following table.

Climate (period)	Winter (Oct–Mid March)	Summer (Mid March- june)	Rainy (July-September)
Weather	Cool	Hot	Humid
Humidity	84%	55%	98%
Temp. Max	33.0 C	45.5 C	35.0 C
Temp. Min	-3.5 C	8.0 C	14.0 C
Rainfall Max	82.0mm	69.0mm	175.0mm
Rainfall Min	1.0mm	1.0mm	1.0mm

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 ToR. The results are given in **Annexure-V**. 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	0 Km	
A1	Panjoa Kalan	4.5 Km	NE
A2	Tathera	3 Km	NW
A3	Loharli	3 Km	S, SW
A4	Takki	8 Km	SE
A5	Bhera	6 Km	SE
A6	0.5 Km downstream from Project site	@ 0.5 Km d/s	

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

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-V

3.9 Water Quality

The water quality of ground water samples (W1-Panjoa Kalan; W2 Tathera, W-3 Loharli, W4- Takki and W5- Bhera) was measured and results are reported in Annexure-V. The ground water is fit for drinking purpose.

3.10 General Baseline Data

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

Una is a district of Himachal Pradesh which lies in its south western part. On the 1st September, 1972 the Himachal Pradesh Govt. reorganised the then Kangra district into three districts namely Una, Hamirpur and Kangra. Una district is well developed in the industrial sector due to close proximity to Punjab. Mehatpur, Gagret, Tahliwal & Amb are main industrial centers of Una. On 11th January 1991, Una has been provided with railway line by laying 14 Kms broad gauge track from Nangal(Punjab) to Una. Punjabi, Hindi, Pahari are common languages spoken.

General Parameters		
Population	4,47,967	As per 2001 Census
Male	2,24,299	
Female	2,23,668	
Rural	4,08,545	
Urban	39,422	
Sex Ratio	997/1000	Female/Male
Density of Population	291	Persons/Sq.Kilometers
People & Culture		
Major Religions	Hindu & Sikh	
Languages Spoken	Pahari(Unnabi), Panjabi, Hindi	
Culture	Mixed(Panjabi & Pahari)	
Economy	Agriculture based	
Literacy Rate	81.09%	
Male Literacy	88.49%	
Female Literacy	73.85%	
Geographical Area	1549 Sq.Kms	As per 1999-00 Report
Forest Area	185 Sq.Kms.	
Cultivated Area	430 Sq.Kms.	
Barren&Unculturable Lands	226.7 Sq.Kms.	
Land put to Non-Agri. Uses	294 Sq.Kms.	
Permanent Pastures & Other Grass Lands	129.4 Sq.Kms.	
Land Under Misc. Tree, Crops	55.4 Sq.Kms.	
Irrigated Area	78.4 Sq.Kms.	
Altitude	350 meters to 1200 meters	
Longitude	75°58'2" - 76°28'25"(East)	
Latitude	31°17'52" - 31°52'0"(North)	

Major Rivers	Swan River	A seasonal river
Sources of Water & Irrigation		As per 1999-00 Report
Tubewells	1131	
Wells used for Irrigation	185	
Well used for Domestic Purposes	1062	
Kuhls in Use	129	
Lift Irrigation Schemes	29	
Crops	Area (Sq.Kms)	As per 1999-00 Report
Food Crops	651.6	
1. Rice	26.8	
2. Maize	295.2	
3. Wheat	321	
4. Gram	2	
5. Green Gram(Moong)	0.05	
6. Black Gram or Urd(Mash)	6.20	
7. Peas	0.03	
8. Horse Gram(Kulth)	0.25	
9. Masur	0.11	
Sugarcane	6.02	
Vegetables	9.77	
1. Potatoes	6.13	
2. Peas	0.23	
3. Onion	0.70	
4. Tomatoes	0.07	
5. Cabbage & Cauli Flower	0.74	
6. Turnip	0.03	
7. Radish	0.06	
8. Carrot	0.04	
9. Brinjal	0.21	
Condiments & Spices	0.51	
1. Chillies	0.09	
2. Ginger	0.13	
3. Turmeric	0.07	
4. Garlic	0.16	
Non-Food Crops	40.51	
Fibre	0.17	
1. Hemp	0.17	
Oil Seeds	21.92	
1. Groundnut	0.10	
2. Taramira	4.66	
3. Sesamum	7.09	
5. Mustard	10.01	
Fodder Crops	18.42	
1. Barseem & Lucrene	5.42	

2. Chari	10.98			
3. Bazra	2.02			
Climate		Winter	Summer	Rainy
	Period	Oct.-Mid March	Mid March-June	July-Sept.
	Weather	Cool	Hot	Humid
	Humidity	84%	55%	98%
Temperature	Max.	33.0c	45.5c	35.0c
	Min.	-3.5c	8.0c	14.0c
Rainfall	Max.	82.0mm	69.0mm	175.0mm
	Min.	1.0mm	1.0mm	1.0mm
Distances		From State Capital Shimla		
	Nearest Railway Station	Una		240 Kms
	Nearest Airport	Chandigarh		120 Kms
Administrative Setup				
	No. of Sub-Divisions	2 [Una & Amb]		
	No. of Tehsils	4 [Una, Amb, Bangana, Haroli]		
	No. of Sub-Tehsils	1 [Bharwain]		
	Development Blocks	5 [Una, Amb, Gagret, Dhundla(Bangana) & Haroli]		
	Panchayats	235		
	Backward Panchayats	3 [Ambehra Dheeraj,Plahata,Sihana]-All under Bangana Block		
	Villages	866		
	Panchayat Samiti	5 [Una, Amb, Gagret Dhundla(Bangana) & Haroli]		
	Zila Parishad	1		
	Local Urban Bodies	5 [Municipal Committee Una, Nagar Panchyat(NP) Mehatpur, NP Santoshgarh, NP Daultpur Chowk]		
	Assembly Segments	5 [Una, Haroli, Gagret, Kutlehar, Chintpurni]		
	Parliamentary Constituency	1 [Hamirpur]		
	BPL Families	15,429		

Source: <http://hpuna.nic.in/factfile.htm>

4.0	Chapter-4: ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES				
4.1	<p><u>INTRODUCTION TO CHAPTER</u> 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:</p> <p><u>Mining Lease Area</u> The mining lease area is situated in the form of terraces sloping towards western side and the water of the rain joins Jaijon Khad which is just near to the site through small nalla. The mining lease area is situated near village Kothar which is near to the interstate boundary. The nearest town is Jaijon which is in Punjab. The highest point of the lease area is 326 Mts. and the lowest is 298 above mean sea level.</p> <p>The following table shows the rock classification according to age.</p> <table data-bbox="292 1305 1228 1366"> <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><u>The nature of rocks and their attitude</u> The hill slope where the the mining lease is applied is covered with old deposits of river. It comprises of cobbles, pebbles and boulders mixed with reddish clay. No hard rock is available in the leased out area. The surface of the lease area is covered with soil therefore to know the mineral potential two exploratory pits were made to know the percentage of different component of minerals. The mining lease area comprises of boulders, cobbles, pebbles and with insignificant amount of reddish clay. The average percentage of boulder, bajri, clay is 5:2:3 respectively as is observed in the exploratory pits.</p> <p><u>Mineable area</u> All of the geological reserves occupying the leasehold area are not mineable during practical course of mining because there are constraints like height and width of benches, angle of repose and physical obstructions like escarpments, slope angle etc. In order to carry out scientific mining, bench formation of 6 x 4</p>	Channel Deposits:	Boulders, Cobbles, Pebbles, Sand, silt and clay	Terrace Deposits:	Boulders, Cobbles, Pebbles, Sand, silt and clay
Channel Deposits:	Boulders, Cobbles, Pebbles, Sand, silt and clay				
Terrace Deposits:	Boulders, Cobbles, Pebbles, Sand, silt and clay				

metres is done and for individual benches reserves are calculated by multiplying the surface area of the bench with height of the bench taken as 4 metres and then multiplied with 2.25, the average specific gravity of the rock. The mining lease area comprises of number of blocks and does not form a compact block. The mining is proposed in 8 benches as shown in the plan. . Therefore, in order to arrive at mineable reserves, benches were plotted and bench wise/slice wise reserves were calculated and the detail is as given below at table.

TABLE SHOWING BENCHWISE MINEABLE RESERVES

Sr.No.	M. R.L. of Bench	Boulders	Bajri	Silt	Total Reserves
1	326	20500	8200	12300	41000
2	322	26250	10500	15750	52500
3	318	74000	29600	44400	148000
4	314	56500	22600	33900	113000
5	314B	16000	4400	9600	32000
6	310	149500	59800	89700	299000
7	306	179000	71600	107400	358000
8	302	219000	87600	131400	438000
9	298	217500	87000	130500	435000
	TOTAL	953150	381300	571850	1906300

The above said mineable reserves are calculated by making 6 × 4 metres benches in the terrace deposit. However keeping in view the gentle topography of the area bearing mining lease, Pit Mining is also possible. If the Pit Mining is resorted to up to six meters depth, the mineable reserves will become roughly double in quantity to the reserves calculated on the basis of bench formation and will be sufficient for more than ten years.

Estimate of Geological Reserves

The mining lease area comprises of 8 number of benches. The Geological reserves have been estimated by the cross-sectional area method for each block. The cross section area of rock was measured separately and to obtain the volume it was multiplied by strike influence of each section. The volume thus obtained was multiplied by the specific gravity to obtain the reserves. Although, the specific gravity of the river deposit is 2.25 and the nature of material available in the river course is also similar hence specific gravity of 2.25 has been taken for calculation of recent alluvium deposit of geological reserves. As no exploration by way of boring has been done, but it is implied from the field observations that same type of strata is available at depth as visible on the surface. In view of above, the reserves in first five metres depth have been categorized as proved and at subsequent 5 metres depth under provable category. The details of geological reserves of the rock are given below table.

(Geological reserves in metric tonnes)

Section Line	Surface area in Sq. mtrs.		Section interval in Mts.	Reserves of rock	
	Proved	Probable		Proved (in M.T.)	Probable (in M.T.)
A-Aϕ	1050	1050	50	117000	117000
B-Bϕ	1650	1650	50	184000	184000
C-Cϕ	1325	1325	50	148000	148000
D-D'	1225	1225	50	137000	137000
Under proved category			586000	M.T..	
Under possible category			586000	M.T..	

Mining lease area is located as a terrace deposit and suitable material for stone crusher is available in whole of mining lease area. Keeping in view the suitability of material and working area, mining is proposed in 8 number of benches. Within the lease area, open cast method of mining by bench formation 6x4 metres from top to bottom shall be followed. This method is adopted on the basis of the concept of changing hill slope within the proposed limits of mining that the Ultimate pit limit and restoring the area by making benches and terracing the hill slopes there by affecting least disturbance of the area due to mining. Working in the area shall mostly be manual. **Following conditions have been taken in to consideration while preparing this Plan.**

- 1 Demarcation of the area as shown in the field by Revenue authorities has been taken in the preparation of contour cum Geological plan.
- 2 280 working days have been taken for the purpose of calculation.
- 3 Angle of repose has been kept as 45°
- 4 Transportation of minerals shall be done thorough chute.
- 5 In-situ parapet walls shall always be maintained towards valley side of working benches, so that no stone rolls down.

Year wise production programme is as given below:

Period	Level of Bench	Opening reserves of bench (MT)		Annual production from bench (MT)		Closing reserve of bench (MT) Period	
		Boulder	Bajri	Boulder	Bajri	Boulder	Bajri
1 st Year	326	20500	8200	20500	8200	nil	nil
	322	26250	10500	26250	10500	nil	nil
	318	74000	29600	74000	29600	nil	nil
	314	65500	22600	49250	20000	7250	2600
	Total	186250	70900	170000	68300	7250	2600
2 nd year	314	7250	2600	7250	2600	nil	nil
	314B	16000	4400	16000	4400	nil	nil
	310	149000	59800	149000	59800	nil	nil
	Total	172250	66800	172250	66800	nil	nil
3 rd year	306	179000	71600	179000	71600	nil	nil
	Total	179000	71600	179000	71600	nil	nil
4 th year	302	219000	87600	219000	87600	nil	nil
	Total	219000	87600	219000	87600	nil	nil
5 th year	298	217500	87000	217500	87000	nil	nil
	Total	217500	87000	217500	87000	nil	nil

4.2.2	WATER CONSUMPTION & RECYCLING There is no water consumption in the mining process as it involves only uplifting of the material from benches. The only use of water if any is for drinking of 10 persons in mining process or for sprinkling in haulage road. In this case the Haulage road is a semi-pucca road with boulders and much sprinkling as such is not required. During the work at mining area, the water is kept in an earthen pot at the site and made available for drinking.
4.2.3	AIR POLLUTION SOURCES OF AIR POLLUTION 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/truck from mining site to stone crusher site. But this distance is small and a semi-pucca road is provided.
4.2.4	WASTE The open cast mining has been proposed in view of the hilly nature of the site. During opening of benches, 5718500 Metric tonnes of total Silt/Clay will be

generated. The bench wise Silt/Clay generated is as under. Part of this material will be marketable as filling material however the remaining material which is not marketable shall be spread over the benches for plantation or for development of agriculture fields.

Table Showing bench wise top soil generated during mine development

Sr. No	Bench level	Production of clay
1	326	12300
2	322	15750
3	318	29600
4	314	33900
5	314B	9600
6	310	89700
7	306	107400
8	302	131400
9	298	130500
Total		571850

This soil cover which is generated shall be spread on the exhausted area. Some loose soft stone is also likely to be generated during mining operation which shall be used for formation of parapet walls towards valley side. This waste shall be collected at the waste disposal site marked. If market is available the clay can be sold for soling in the roads

4.2.5 EMPLOYMENT : The unit is employing about 8-10 workers.

Table-: ANTICIPATED ADVERSE ENVIRONMENTAL IMPACTS AND MITIGATION

(A) CONSTRUCTIONAL IMPACTS: No construction to be done

The work does not involve any construction.

(A) OPERATIONAL IMPACT

Area	Projects Requirements	Mitigation measures	Remarks
Water quality	<p>Being manual surface mining only no water is required in the process.</p> <p>The water demand for the project is very minimal- Drinking water for @ 10 persons say @ 45 lpcd = 450 litres.</p> <p>The other water requirement is for use on sprinkling on haulage road. The distance of crusher from mining area is small and semi pucca thus the requirements are minimal.</p>	<p>No person reside at the mining site.</p> <p>The haulage road is done semi pucca with boulders. Further the distance of crusher from mining area being only @ 2000 m, there is minimum use of water for this purpose</p>	<p>The water use is very minimal only for daily needs of about 10 persons.</p> <p>The mining process is only dry lifting of material manually. No measurable impact</p>
Air quality	<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- truck-trolley about 10 in number move around @ 5 times to pick and drop the material to stone crusher site.</p>	<p>No source of stack emissions or fugitive emissions. Only emissions from the movement of trucks-trolley @ 10 in number @ 5 trips a day each may generate some re-suspension dust- the same being heavy in nature settles down- whereas in this case the haulage road is only 2000 m in length and is semi pucca in nature. It will be ensured that these vehicles have PUC certificate</p>	<p>No measurable impact</p>
Waste	<p>Solid waste silt and clay is generated @ 571850 metric ton in five years</p> <p>No hazardous or biomedical waste is generated.</p>	<p>The solid waste is sent back to the mining area and used to reclaim the site. Some of it is also sold if market is available. More details are given in EMP</p>	<p>No measurable impact</p>

Area	Projects Requirements	Mitigation measures	Remarks
Noise	The mining is only manual No blasting is done No machinery is involved, except 10 truck-trolley and two loaders to take the mined material to crusher.	There is minimum noise pollution from the activities	No measurable impact
Land use	This is open cast terrace mining on land taken on lease as per details given below.	Mining is done as per approved mining plan in the designated area	Positive impacts as the small hillocks shall be made cultivable land and given back to private land owner

Detail of the area

Table: Showing Detail of Mining Lease Area

Khasra Nos	Name of owner	Kisam	Mohal & Mauja	Area	Panchayat
724	Private Individual	Banjar Kadim	Kothar Beet	0-01-88	Kothar Beet
725	Private Individual	Banjar Kadim	Kothar Beet	0-11-52	Kothar Beet
726	Private Individual	Banjar Kadim	Kothar Beet	0-05-92	Kothar Beet
729	Private Individual	Banjar Kadim	Kothar Beet	0-07-37	Kothar Beet
730	Private Individual	Banjar Kadim	Kothar Beet	0-07-32	Kothar Beet
71	Private Individual	Banjar Kadim	Kothar Beet	0-21-93	Kothar Beet
734	Private Individual	Banjar Kadim	Kothar Beet	0-10-68	Kothar Beet
736	Private Individual	Banjar Kadim	Kothar Beet	0-38-89	Kothar Beet
1041	Private Individual	Banjar Kadim	Kothar Beet	0-01-64	Kothar Beet
1046	Private Individual	Banjar Kadim	Kothar Beet	0-09-67	Kothar Beet
1054	Private Individual	Banjar Kadim	Kothar Beet	0-06-30	Kothar Beet
1055/1	Private Individual	Banjar Kadim	Kothar Beet	0-02-21	Kothar Beet
1056	Private Individual	Banjar Kadim	Kothar Beet	0-15-13	Kothar Beet
1059	Private Individual	Banjar Kadim	Kothar Beet	0-07-99	Kothar Beet
1061	Private	Banjar Kadim	Kothar Beet	0-05-85	Kothar Beet

	Individual				
1063	Private Individual	Banjar Kadim	Kothar Beet	0-03-70	Kothar Beet
1064	Private Individual	Banjar Kadim	Kothar Beet	0-04-75	Kothar Beet
1065	Private Individual	Banjar Kadim	Kothar Beet	0-17-82	Kothar Beet
1066	Private Individual	Banjar Kadim	Kothar Beet	0-02-77	Kothar Beet
1067	Private Individual	Banjar Kadim	Kothar Beet	0-04-57	Kothar Beet
1069	Private Individual	Banjar Kadim	Kothar Beet	0-01-55	Kothar Beet
1070	Private Individual	Banjar Kadim	Kothar Beet	0-34-24	Kothar Beet
1071	Banjar Kadim	Kothar Beet		0-00-52	Kothar Beet
1072	Private Individual	Banjar Kadim	Kothar Beet	0-28-25	Kothar Beet
1073	Private Individual	Banjar Kadim	Kothar Beet	0-01-68	Kothar Beet
1074	Private Individual	Banjar Kadim	Kothar Beet	0-00-84	Kothar Beet
1075	Private Individual	Banjar Kadim	Kothar Beet	0-02-32	Kothar Beet
1076	Private Individual	Banjar Kadim	Kothar Beet	0-02-50	Kothar Beet
1077	Private Individual	Banjar Kadim	Kothar Beet	0-00-93	Kothar Beet
1078	Private Individual	Banjar Kadim	Kothar Beet	0-00-76	Kothar Beet
1079	Private Individual	Banjar Kadim	Kothar Beet	0-16-39	Kothar Beet
1080	Private Individual	Banjar Kadim	Kothar Beet	0-02-82	Kothar Beet
1081	Private Individual	Banjar Kadim	Kothar Beet	0-12-63	Kothar Beet
1083	Private Individual	Banjar Kadim	Kothar Beet	0-05-60	Kothar Beet
1084	Private Individual	Banjar Kadim	Kothar Beet	0-24-90	Kothar Beet
1086	Private Individual	Banjar Kadim	Kothar Beet	0-2062	Kothar Beet
1087	Private Individual	Banjar Kadim	Kothar Beet	0-07-32	Kothar Beet
1088	Private Individual	Banjar Kadim	Kothar Beet	0-64-10	Kothar Beet
1097	Private Individual	Banjar Kadim	Kothar Beet	0-26-32	Kothar Beet
1099	Private Individual	Banjar Kadim	Kothar Beet	0-05-97	Kothar Beet
1107	Private Individual	Banjar Kadim	Kothar Beet	0-35-40	Kothar Beet
1112	Private	Banjar Kadim	Kothar Beet	0-08-74	Kothar Beet

	Individual				
1113	Private Individual	Banjar Kadim	Kothar Beet	0-50-28	Kothar Beet
1115	Private Individual	Banjar Kadim	Kothar Beet	0-12-08	Kothar Beet
1116	Private Individual	Banjar Kadim	Kothar Beet	0-02-90	Kothar Beet
1118	Private Individual	Banjar Kadim	Kothar Beet	0-26-70	Kothar Beet
1124	Private Individual	Banjar Kadim	Kothar Beet	0-04-00	Kothar Beet
1125	Private Individual	Banjar Kadim	Kothar Beet	0-20-68	Kothar Beet
1145	Private Individual	Banjar Kadim	Kothar Beet	0-81-72	Kothar Beet
1147	Private Individual	Banjar Kadim	Kothar Beet	0-24-93	Kothar Beet
1148/1	Private Individual	Banjar Kadim	Kothar Beet	0-17-60	Kothar Beet
1149	Private Individual	Banjar Kadim	Kothar Beet	0-29-05	Kothar Beet
1152	Private Individual	Banjar Kadim	Kothar Beet	0-54-04	Kothar Beet
1155	Private Individual	Banjar Kadim	Kothar Beet	0-04-73	Kothar Beet
1159	Private Individual	Banjar Kadim	Kothar Beet	0-02-95	Kothar Beet
1159/1	Private Individual	Banjar Kadim	Kothar Beet	0-03-37	Kothar Beet
1160	Private Individual	Banjar Kadim	Kothar Beet	0-01-26	Kothar Beet
1161	Private Individual	Banjar Kadim	Kothar Beet	0-03-46	Kothar Beet
1162	Private Individual	Banjar Kadim	Kothar Beet	0-29-53	Kothar Beet
1163	Private Individual	Banjar Kadim	Kothar Beet	0-17-56	Kothar Beet
1164	Private Individual	Banjar Kadim	Kothar Beet	0-02-73	Kothar Beet
1165	Private Individual	Banjar Kadim	Kothar Beet	0-40-10	Kothar Beet
1212	Private Individual	Banjar Kadim	Kothar Beet	0-41-10	Kothar Beet
1213	Private Individual	Banjar Kadim	Kothar Beet	0-08-76	Kothar Beet
1214	Private Individual	Banjar Kadim	Kothar Beet	0-15-59	Kothar Beet
TOTAL				9-68-72	

Area	Projects Requirements	Mitigation measures	Remarks
Demography and socio-economics	Only 8-10 persons are involved in mining. No strain on any infrastructure	-	No impact
Occupational Health	This is only surface mining using only two loaders for loading to truck-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.	Boots, helmets and gloves are provided to workers. A first aid box is provided at site. Number of persons involved are few and activities are non-hazardous in nature.	Minimal impact-

5.0	ANALYSIS OF ALTERNATIVES
5.1	Technology (See also Section-2.6): NOT APPLICABLE This is open cast mining of small hillocks where the material will be lifted by two loaders into truck-trolley. No new technology is involved. The mining shall be done as per laid down procedures and given in mining plan
5.2	Land use: NOT APPLICABLE There is no land acquisition.

6.0	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 is followed. The cost of EMP is given in Table</p>

Table: Expenditure on typical Environmental Measures as per Mining Plan

S.No.	Title	Capital Cost Rs. Lacs	Recurring Cost Rs. Lacs/ Annum
1.	Air Pollution Control- Management of Haulage Roads including sprinkling	Expenditure on laying stone/crushed material-	10 lac
2.	Plantation and check dams as per Mining plan	5 lac	0.1 lac
3.	Disposal and spreading of Silt/clay as per Mining Plan	10 lac	1 lac
4.	Occupational Health Measures and other Miscellaneous expenditure	1 lac	0.1 lac
5.	Contribution to the area	In terms of provision of free building material to schools, religious buildings or other activities in consultation with Panchayat.	
5.	TOTAL	16 lac	11.2 lac

In addition air pollution control measures at the stone crusher site are taken as per requirements of HPSPCB.

7.0	Chapter-7: ENVIRONMENT MANAGEMENT PLAN
7.1	<p data-bbox="360 371 580 409">Introduction</p> <p data-bbox="360 450 1404 837">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 data-bbox="360 878 1404 983">This is a 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 data-bbox="360 1039 1366 1122">Environment Management Plan to Mitigate Impacts on Air Environment during Operational Phase</p> <p data-bbox="360 1167 1404 1308">About 10 truck-trolley movement is there daily @ 5 trips each. The haulage road in this case is semi-pucca road and thus re-suspension dust is minimized. There is no other source of air pollution generation for the mining purpose.</p> <p data-bbox="360 1346 1404 1413">The mining is further done as per mining plan approved, which includes tree plantation on Khasra numbers as given</p> <p data-bbox="360 1451 1404 1518">PPE are provided to the workers in mining area that includes boots and helmets.</p>
7.3	<p data-bbox="360 1559 1305 1641">Environment Management Plan to Mitigate Impacts on Water Environment during Operational Phase</p> <p data-bbox="360 1682 1404 1749">There is no water used in the mining process nor any wastewater is generated in the mining.</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 land leased from private person as per mining plan and conditions as imposed in lease shall be followed.</p>
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Reclamation Plan:

After completion of extraction benches and subsequent top soil stacked at the defined location will be taken out and will be spread over the exhausted benches This top soil will be used to grow plantation of bushes and local trees as shown in drawings in a systematic way. The afforestation programme is the most important programme to improve the environment and ecological balance of the area. Grasses and bushes which have fibrous roots are at the first instance grown, which give the binding property to the soil. After growing grasses and bushes, other tree species in consultation with the experts will be raised, based on the characteristics of soil, topography and climatic conditions. The year wise area proposed for plantation is as under:-

1	1 st Year	1000	Square metres
2	2 nd year	1200	Square metres
3	3 rd year	1400	Square metres
4	4 th year	1600	Square metres
5	5 th year	1800	Square metres
Total area		7000	Square metres

Five No's of check dams will be raised at five different locations to check the flow of debris. The location and dimension of check dams is shown in the drawings

Soil Erosion and Land Environment

The mining lease area is totally barren stable compact consisting mixture of boulders, bajri, and silt with very thin cover of soil. The soil erosion and impacts shall be tackled as below:

1. The hill slope mining will cause change in the slope angle. After completion of mining activity in the area it would present a terraced look in stead of natural slope. The formation of benches would not only reduce the speed of water during rains but would also shall help in improving the infiltration process.

2. The mining will cause scrapping of top soil from the excavated area. The soil erosion will increase if systematic approach is not adopted to stack the top soil at proper Place. Hence carefully stacking of the top soil at locations marked at the plan and systematic way will control its natural erosion to larger extent.

3. The check dams are also proposed at different locations marked on drawing which will not allow any debris to move downwards.

4. During course of mining, parapet walls towards outer boundary of benches shall always be maintained to check any flow of material towards downhill side.

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> <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.
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	<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.</p>
7.6	<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 vigour 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>The plantation shall be undertaken as given in mining plan</p>

8.0	Chapter-8: Additional Studies and Project Benefits
8.1	<p>Additional Studies</p> <p>No additional studies are relevant with the nature of the project.</p> <p>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 9.6872 Hectare for maximum mining of 306600 MT/annum. Total material handling is (1) First year- 247300 MT (2) Second year- 239050 MT (3) Third year- 250600 MT (4) Fourth year- 306600 MT (5) Fifth year- 304500MT No blasting is done.</p>

9.0	Chapter-9: CORPORATE SOCIAL RESPONSIBILITY
	<p>The project proponent agrees to provide free of cost boulders, bazri and sand for social projects as Panchayat ghar, schools in the area. It is already undertaking such activities in the area and documentary evidence is enclosed along.</p>