

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENTAL MANAGEMENT PLAN
OF
EXTRACTION/COLLECTION OF SAND, STONE
AND BAJRI
FOR PUBLIC HEARING**

PROPOSAL NO	SIA/HP/MIN/464927/2024
TOR IDENTIFICATION NO	TO24B0107HP5496302N
FILE NO.	HPSEIAA/2024/1193
AREA	01-58-56 Hectares (Private Land, Riverbed)
PRODUCTION	23,625 MTPA
LOCATION	Khasra No. 740, Falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh

APPLICANT

**SH. ANDRESH SYAL, S/O SH. PRITAM CHAND,
V.P.O. ALAMPUR, SUB- TEH. ALAMPUR,
DISTRICT KANGRA, HIMACHAL PRADESH**



CONSULTANT
P&M Solution
C-88, Sector 65, Noida -201301 – U.P
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INDEX

Serial No.	CONTENTS	Page No.
INTRODUCTION		
1.0	PURPOSE OF THE REPORT	1/I
1.1	IDENTIFICATION OF PROJECT & PROJECT PROPONENT	3/I
1.2	SCOPE OF THE STUDY	7/I
PROJECT DESCRIPTION		
2.0	GENERAL	29/II
2.1	DESCRIPTION OF THE PROJECT	29/II
2.2	LEASE HOLD AREA	31/II
2.3	GEOLOGY	33II
2.4	RESERVES	40/II
2.5	MINING	43/II
2.6	GENERAL FEATURES	47/II
DESCRIPTION OF ENVIRONMENT		
3.0	INTRODUCTION	53/III
3.1	LAND ENVIRONMENT	54/III
3.2	WATER ENVIRONMENT	57/III
3.3	AIR ENVIRONMENT	63/III
3.4	SOIL ENVIRONMENT	67/III
3.5	NOISE ENVIRONMENT	69/III
3.6	BIOLOGICAL ENVIRONMENT	71III
3.7	SOCIAL IMPACT ASSESSMENT, REHABILITATION RESETTLEMENT (R&R) ACTION PLAN	75/III
ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES		
4.0	GENERAL	124/IV
4.1	LAND ENVIRONMENT	124/IV
4.2	WATER ENVIRONMENT	127/IV
4.3	AIR ENVIRONMENT	128/IV
4.4	NOISE ENVIRONMENT	131/IV
4.5	BIOLOGICAL ENVIRONMENT	133/IV
4.6	STATUATORY REQUIREMENTS	138IV

ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)		
5.0	GENERAL	139/V
ENVIRONMENTAL MONITORING PROGRAMME		
6.0	INTRODUCTION	140/VI
6.1	PROPOSED SET UP	140/VI
6.2	MONITORING SCHEDULE AND PARAMETERS	141/VI
ADDITIONAL STUDIES		
7.1	HAZARD IDENTIFICATION AND RISK ASSESSMENT METHODOLOGY	144/VII
7.2	POTENTIAL HAZARD & 'ALARP' CONDITION	148/VII
7.3	RISK PRIORITISATION BASED ON HAZARDS	149/VII
7.4	ADDITIONAL MITIGATION MAJORS TO BRING HAZARDS UNDER "ALARP" ZONE	152/VII
7.5	NATURAL RESOURCE CONSERVATION	153/VII
PROJECT BENEFITS		
8.0	GENERAL	154/VIII
8.1	BENEFIT OF MINING	154/VIII
8.2	EMPLOYMENT	154/VIII
8.3	IMPROVEMENTS IN PHYSICAL AND SOCIAL INFRASTRUCTURE	155/VIII
8.4	IMPROVEMENTS IN PHYSICAL INFRASTRUCTURE	155/VIII
8.5	IMPROVEMENTS IN SOCIAL INFRASTRUCTURE	156/VIII
8.6	PLANTATION	157/VIII
8.7	HEALTH	157/VIII
ENVIRONMENTAL MANAGEMENT PLAN		
9.0	INTRODUCTION	158/IX
9.1	ENVIRONMENTAL MANAGEMENT PLAN (BIOLOGICAL ENVIRONMENT)	158/IX
9.2	ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION	159/IX
9.3	PROPOSED SET UP	160/IX
9.4	GREENBELT DEVELOPMENT	161/IX
9.5	BUDGET ALLOCATION FOR EMP IMPLEMENTATION	162/IX

9.6	MONITORING SCHEDULE AND PARAMETERS	163/IX
EXECUTIVE SUMMARY		
10.0	INTRODUCTION OF PROJECT & PROPONENT	164/X
10.1	LOCATION	166/X
10.2	RESERVES	166/X
10.3	MINING	167/X
10.4	WATER SUPPLY	167/X
10.5	BASE LINE DATA	168/X
10.6	BIOLOGICAL ENVIRONMENT	169/X
10.7	LAND ENVIRONMENT	171/X
10.8	AIR ENVIRONMENT	171/X
10.9	WATER ENVIRONMENT	173/X
10.10	NOISE ENVIRONMENT	173/X
10.11	TRAFFIC ANALYSIS	174/X
10.12	ENVIRONMENTAL MANAGEMENT PLAN (EMP)	174/X
10.13	ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION	175/X
10.14	BUDGET ALLOCATION FOR EMP IMPLEMENTATION	176/X
10.15	MONITORING SCHEDULE AND PARAMETERS	178/X
10.16	BENEFIT OF MINING	178/X
DISCLOSURE OF CONSULTANTS ENGAGED		
11	DISCLOSURE OF CONSULTANTS ENGAGED	185/XI- 186/XI

LIST OF ANNEXURES

S. No.	TITLE OF ANNEXURE
I	Terms of reference (TOR)
II	Letter of Intent (LOI)
III	500m Cluster Certificate
IV	Mining plan approval letter and Mining plan
V	Revenue Record
VI	Joint Inspection Report
VII	Gram Panchayat NOC
VIII	Corporate Environmental Policy (CEP)
IX	Test report

1.0 Preamble

Environmental Impact Assessment (EIA) is a process that is used to identify the environmental, social, and economic impacts of a project prior to decision-making. It serves as a decision-making tool that guides decision-makers in making appropriate decisions for proposed projects. The objective of EIA is to predict environmental impacts at an early stage of project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment, and present the predictions and options to decision-makers. By utilizing EIA, both environmental and economic benefits can be achieved. By considering predictions and mitigating environmental effects early on in the project planning process, benefits can be obtained, such as the protection of the environment, optimum utilization of resources, and overall cost and time savings.

EIA systematically examines both beneficial and adverse impacts of the proposed project, above and beyond the prevailing conditions of environmental parameters. It ensures that these impacts are taken into account during the project designing stage itself, and that the values of the combined impacts remain within statutory norms. The Ministry of Environment and Forests has envisioned and set this process in motion for sustainable development. The final decision is arrived at only after those who matter have been made aware of the salient features of the project being envisaged close to them, and their opinions have been sought in a widely advertised Public Hearing Event under the chairmanship of the district authorities. This way, the public can express their opinions freely, without favor or fear."

1.0.1 Description of lease area

The proposed project is a River Bed mining project for the extracted River bed material will for open sale lease holder which will be used in construction industries/infrastructure industries depending upon the market demand. The project site is located at Khasra No.740 measuring an area 01-58-56 Hectares, (Private land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh. The letter of intent by the Department of Industries has been issued vide letter No. Udyog-Bhu (Khani-4) Laghu-316/2024 -12790 dated 14-02-2024. The approved mining plan has been issued vide letter No. Udyog-Bhu (Khani-4) Laghu-316/2024-13524 dated 26-02-2024 The estimated project cost is Rs 25 lakh. The proposed production is 23,625 MTPA

The proposed project is having area of 01-58-56 Hectares (under cluster approach of area 14-70-80 Hectares (Private Land, River Bed) and falls under Category- “B1” as per the 500 m cluster Certificate vide letter no. Udyog-Bhu (Khani-4) Laghu-316/2024-13591 Dated 27-02-2024 regarding details of other mines located within 500m of the lease area. According to the Distance Certificate from the Mining Officer, there are three other mining lease areas within a 500-meter radius, total cluster area is more than 5 hectares.

Cluster Details

Sr. No.	Name of Mining Lease	Khasra No.	Area in Hectares	Mohal & Mauza	Validity Period	Status of EC/Mining leases whether operating or not operating
1.	Sanjeev Sayal Alampur Tehsil Jaisninghpur Distt Kangra	801/747	3-89-75	Alampur	17.5.23-16.05.28	working
2.	SJVN Corporate Quarter Head Shakti Sadan Shimla Himachal Pradesh	744/1,748	4-83-07	Alampur	-	LOI issued
3.	Sh. Andresh Syal S/o Sh. Pritam Chand VPO Alampur Sub-Tehsil Alampur Distt Kangra	750 and 800/747	04-39-42	Alampur	-	LOI not used

1.1 Identification of Project & Project Proponent

Name of the project-Extraction of Stone, Sand and Bajri falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh by Sh. Andresh Syal, S/o Sh. Pritam Chand

Location of the project- Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh

Identification of Project proponent

Sh. Andresh Syal, S/o Sh. Pritam Chand, V.P.O. Alampur, Sub- Tehsil Alampur, Distt. Kangra, Himachal Pradesh.

Table 1.1(a): Brief Description of the project

S. No.	Particulars	Details																										
A.	Nature & Size of the Project	Sand, Stone and Bajri (Minor Mineral) (ML Area-01-58-56 Hectares) 23,625 MTPA																										
B.	Location																											
	Mauza & Mohal	Mauza Alampur, Mohal Bagh,																										
	Khasra no-	No.740																										
	Tehsil	Jaisinghpur																										
	District	Kangra																										
	State	Himachal Pradesh																										
	Coordinates	<table border="1"> <thead> <tr> <th>Pillars</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>31°50'33.10"N</td> <td>76°30'57.75"E</td> </tr> <tr> <td>B</td> <td>31°50'38.03"N</td> <td>76°31'1.01"E</td> </tr> <tr> <td>C</td> <td>31°50'40.55"N</td> <td>76°31'4.31"E</td> </tr> <tr> <td>D</td> <td>31°50'37.83"N</td> <td>76°31'3.60"E</td> </tr> <tr> <td>E</td> <td>31°50'37.78"N</td> <td>76°31'2.66"E</td> </tr> <tr> <td>F</td> <td>31°50'31.98"N</td> <td>76°31'0.89"E</td> </tr> <tr> <td>G</td> <td>31°50'31.20"N</td> <td>76°31'0.47"E</td> </tr> </tbody> </table>			Pillars	Latitude	Longitude	A	31°50'33.10"N	76°30'57.75"E	B	31°50'38.03"N	76°31'1.01"E	C	31°50'40.55"N	76°31'4.31"E	D	31°50'37.83"N	76°31'3.60"E	E	31°50'37.78"N	76°31'2.66"E	F	31°50'31.98"N	76°31'0.89"E	G	31°50'31.20"N	76°31'0.47"E
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	Toposheet No.	H43E9																										
C.	Mine Lease Area Details																											
	Lease Area	01-58-56 Hectares																										
	Type of Land	Private Land, River Bed																										
	Topography	River bed (Beas River)																										
	Elevation	Highest-545 mRL, Lowest -544 mRL																										
D.	Cost Details																											
	Cost of the project	Rs 25 Lacs																										
	Cost for EMP	Capital Cost: 5.65 lakhs, Recurring Cost: 9.7 lakhs																										
	Cost of CSR	8 Lakhs																										

E.	Details of Environmental Setting	
	Ecological Sensitive Areas (National Park, Wild Life Sanctuary, Biosphere Reserve, Reserve/ Protected Forest etc.) within 10 km distance	There are no national parks, wildlife sanctuary and other notified eco sensitive areas within 10 km from the periphery of the project site.
	Water Bodies Protected	The Project lies on Beas River
	Forest/ Reserve Forest	Open Forest 7.20 Km in NW Direction Open Forest-3.2 Km in NW Direction Open Forest-5.2 Km in NW Direction Open Forest-6.8 Km in NW Direction Dhardhur PF-6.5 Km in NW Direction Har Balakrupi PF-5.1 Km in NW Direction Bandaar PF-7.3 Km in SW Direction Jhin PF-9.0 Km in SW Direction Karot PF-8.5 Km in SW Direction Open Forest-5.1 Km in SE Direction Open Forest-6.5 Km in SE Direction Open Forest -5.8 Km in NE Direction Open Forest -9.6 Km in NE Direction Uttrapur PF-9.5 Km in NE Direction
	Nearest Town	Town Sujampur-Tihra \approx 1.54 Km in SW direction (Aerial distance)
	Nearest Railway Station	Railway Station Sulah \approx 25.29 Km in NW Direction (Aerial distance)
	Nearest National & State Highway	SH-39(Palampur-Hamirpur Road) \approx 0.4 Km in West Direction (Aerial distance)
	Nearest Airport	Gaggal Airport \approx 43 Km in NW Direction (Aerial distance)
	State National boundaries	NA
	Seismic Zone	Seismic Zone IV. (Severe Intensity Zone).

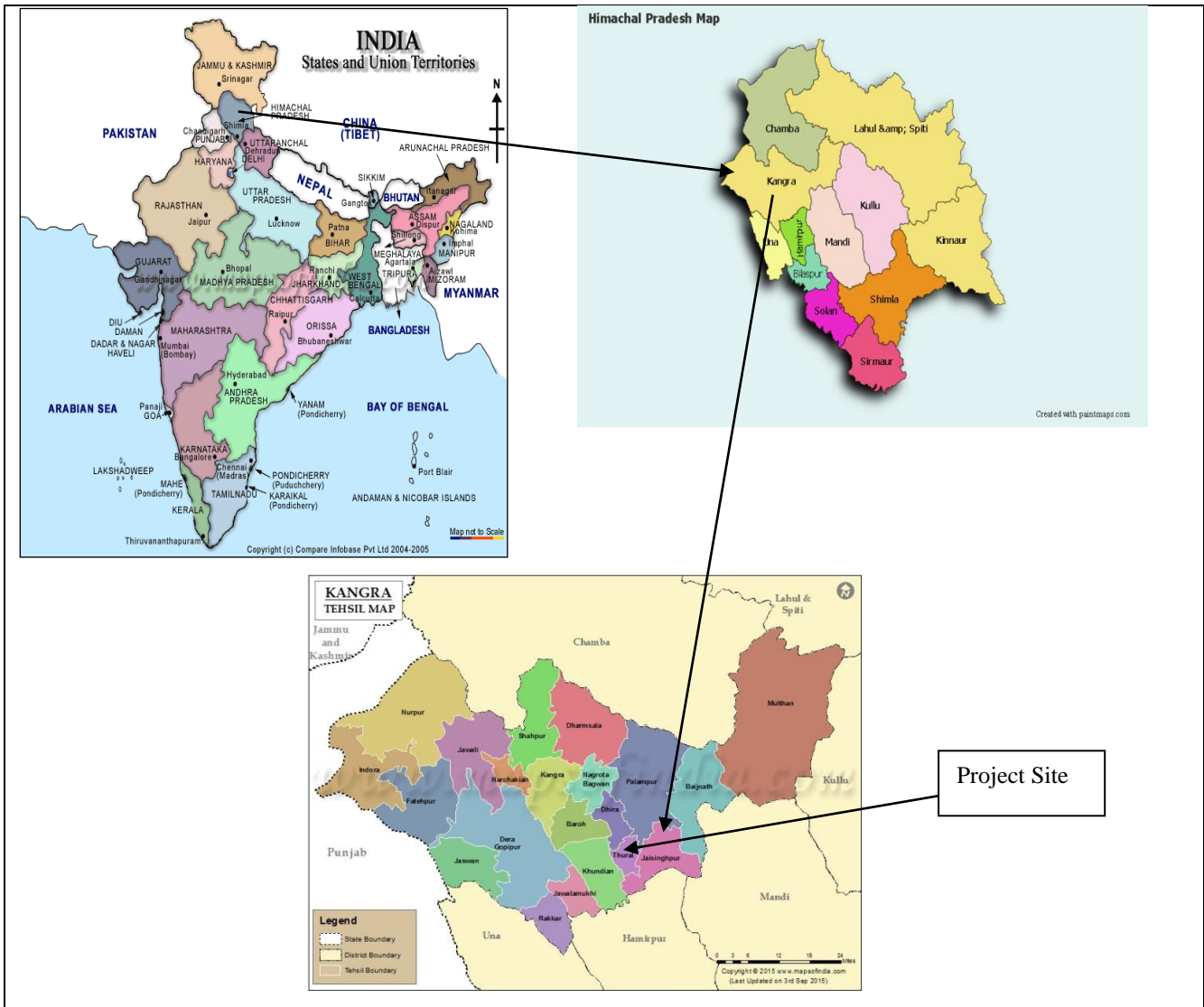


Figure-1.1 Location of the Project

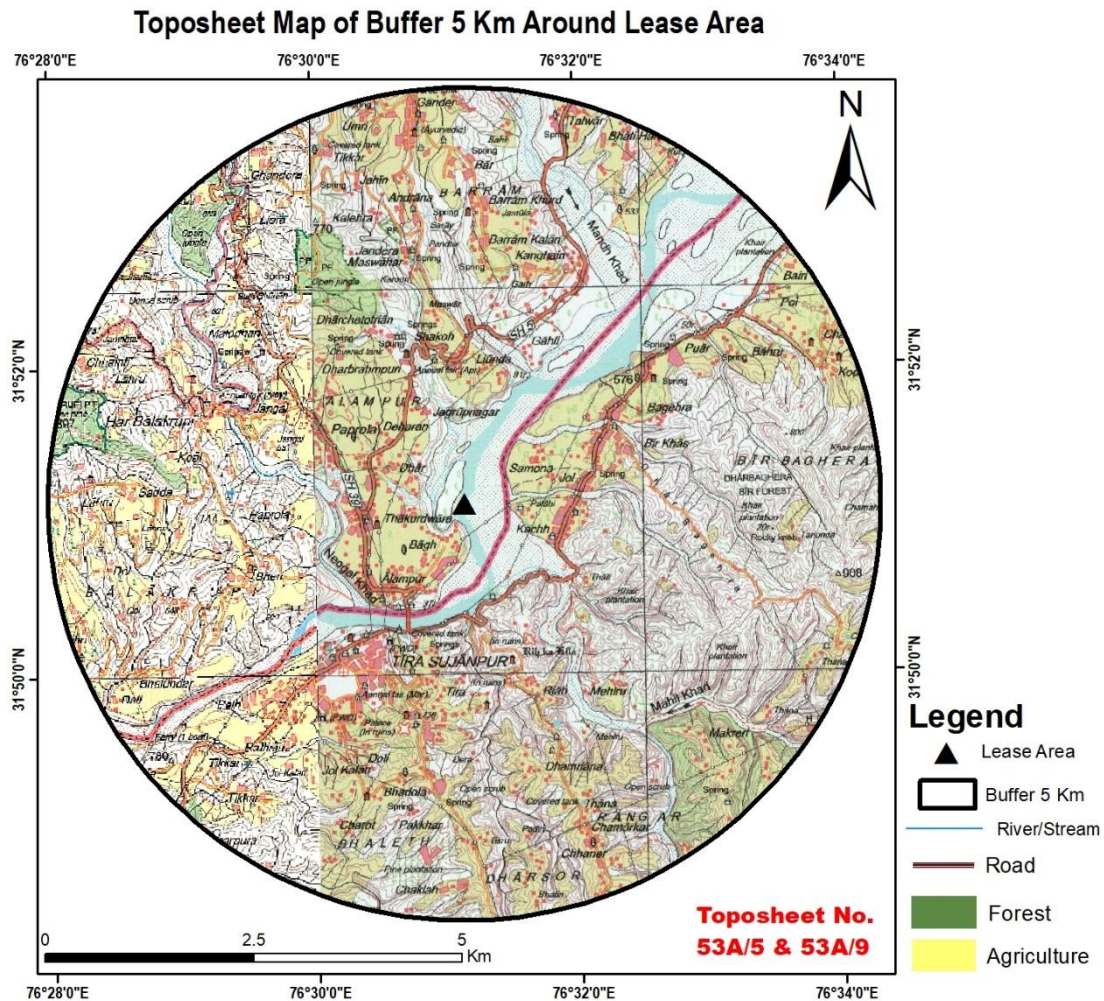


Figure 1.2 Buffer Map of the area

1.2 Scope of the Study

In line with the Terms of Reference (TOR) prescribed by SEIAA, Himachal Pradesh, the area comprising 10km radius around the proposed mine lease boundary is considered as the study area. The detailed studies have been conducted as per prescribed TOR. The study area map is shown in Figure-1.2.

The scope of study broadly covered:

- Literature review and collection of data relevant to the study area;
- Establish the baseline environmental aspects in and around the proposed project;
- Identify various existing pollution loads due to various mining activities;
- Predict incremental levels of pollutants in the study area due to the proposed operations.

- Evaluate the predicted impacts on various environmental attributes in the study area by using scientifically developed and widely accepted environmental impact assessment methodologies;
- Prepare an Environment Management Plan (EMP) outlining the measures for improving the environmental quality; and
- Identify critical environmental attributes that are required to be monitored in the post-project scenario.

Compliance of TOR

Term of Reference for Conducting Environment Impact Assessment Study has been granted by SEIAA, Himachal Pradesh vide letter no. HPSEIAA/2024/ 1193 dated 26/06/2024 is attached as **Annexure-I**

Table 1.2: Standard TOR points:

S.No	TOR	Compliance	Reference in the Report
1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	This is fresh LOI, Mine is yet to be opened. It will open only after getting environmental clearance.	--
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	State Govt. has given consent for mining vide letter No. Udyog-Bhu (Khani-4) Laghu-316/2024 - 12790 dated 14-02-2024 Proposed project has been allotted to the proponent Sh. Andresh Syal, S/o Sh. Pritam	Annexure II, LOI

		Chand	
3	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 documents including mine plan and EIA report submitted are compatible with one another w.r.t. to following information: Mining Lease Area- 01-58-56 Hectare. Lessee: Sh. Andresh Syal, S/o Sh. Pritam Chand Proposed Production- 23,625 MTPA.	Annexure- IV Mine plan All details have been complied in chapter-2
4	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	All Corner Coordinates of mining lease area superimposed on toposheet Map has been incorporated in EIA/EMP Report	Refer Chapter 2
5	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.	The land use map showing salient features of the area is given in the report. The geological map of the mine lease area is also given in the report showing geomorphology	Land-use of the study area Figure 3.1.
6	Details about the land proposed for	The Lease area is dry part of	Refer Chapter 2 & 3

	mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	River bed. As per revenue record the land is classified as Gair Mumkin Dariya, (Private land, Riverbed). The mining process will be done by land use policy of the State & no land diversion has been proposed.	
7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating processes /procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? The hierarchical system or administrative order of the company to deal with the environmental issues and for insuring compliances with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA	Yes, the proponent Company has a well laid down Environment Policy. The hierarchical system or administrative order of the company has been given in the Chapter-6.	Refer Chapter 6 Section 6.1 Corporate Environment Policy Annexure- VIII

	Report.		
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposal safeguard measures in each case should also be provided.	No underground mining is proposed.	
9	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA.	The 10 km zone from periphery of the lease has been considered as the study area. The Buffer map of the study area is attached with report. All the details in the EIA report are for the life of the mine period. The details of mining & production have been given in the report.	Refer Chapter I Figure 1.1
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted.	Land use pattern of 10 km from the periphery of the lease area has been prepared and incorporated with the report. There is no wildlife sanctuary or national park within the study area.	Refer Land-use of the study area Figure 3.1, Table 3.1 Shown in 10 km buffer map enclosed in Chapter I of EIA Report.

	Impact, if any, of change of land use should be given.		
11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from the mine lease, its land use, R&R issues, if any, should be given.	Detail has been given in chapter 2. No waste will be generated during the riverbed mining operations. Since a mixture of sand admixed with silt and clay is inseparable, it will be sold in the open market as per demand.	Section 2.5.3 of chapter 2.
12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	There is no forest land within the lease area.	DFO NOC is attached
13	Status of forestry clearance for the broken-up area and virgin forestland	No forest land is involved in the lease area; therefore,	

	involved in the Project including deposition of net present value (NPV) and Compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	deposition of net present value (NPV) and compensated Afforestation is not indicated.	
14	Implementation status of reorganization of forest rights under the schedule tribes and other traditional forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated"	There is no forest land involved in the leased-out area. Hence, this act is not applicable for this project.	
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given	There are RF/PF present within the 10 km radius of the lease area. Detail has been given in table 1.1 of chapter 1. The vegetation details of the study area are incorporated with the report.	Refer Chapter 3 Section 3.6 Biological Environment
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	The details Impacts & their mitigation measures are given in chapter 4 of EIA/EMP Report.	Refer Chapter 4
17	Location of National Parks, Sanctuaries, Biosphere Reserves,	There are no national parks, wildlife sanctuary and other	

	Wildlife Corridors, Ramsar site Tiger / Elephant Reserves / (existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.	notified eco sensitive areas within 10 km from the periphery of the project site.	
18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife	Detailed biological study of core zone and buffer zone within 10 km radius of the periphery of the mine lease has been carried out for the project. The same has been incorporated in the Chapter-3	Refer Chapter 3 Section 3.1.6 Biological Environment

	Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.		
19	Proximity to Areas declared as 'Critically Polluted' or the Project areas attracting court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.	Proposed project does not come under critically polluted area.	--
20	Similarly, for coastal projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Proposed Projects does not falling under CRZ.	--
21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation &	There is no R & R involved in this project.	

	<p>Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need-based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.</p>		
22	<p>One season (non-monsoon) [i.e., March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report" Site-specific meteorological data should also be collected. The</p>	<p>Base line study was carried out for summer season March, 2024 to May 2024 details area given in Chapter-3 The locations of the monitoring stations were decided on the basis of prevailing meteorological conditions (Wind direction & wind speed) of the study area. The wind rose has been</p>	Refer Chapter 3

	location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	given in chapter III of EIA/EMP Report. The location of the monitoring sites has been shown in map.	
23	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.	Fresh air, water, soil, ground water quality analysis has been done in the month of March to May, 2024. Air quality modelling (PM10, PM2.5, NO2 & SOX) has been given in Chapter 4.	Refer – Chapter -4
24	The water requirement for the Project, its availability and source should be furnished. A detailed water	The water requirement for the project is 4.4 KLD for drinking, dust suppression	Refer Chapter –2 Section 2.6.4.1

	balance should also be provided. Fresh water requirement for the Project should be indicated.	and green belt development. A detailed water balance is being provided in the report.	Table-2.8, Water Requirement
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Water will be supplied from water source (Beas River) supplied through water tanker. Permission from Gram Panchayat, Alampur will be obtained.	Permission from Gram Panchayat, Alampur will be obtained. Refer Chapter 2
26	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The project does not consume any process water except for drinking, dust suppression, and plantation. A plantation is proposed, which will increase water holding capacity and help in recharging groundwater. Although no artificial rainwater harvesting is proposed for the present project in the lease area, if any such project is proposed by the state government, PP will provide assistance	
27	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"	Mining activities will be conducted on the dry bed of the river to avoid any impact on surface water. The mining will be limited to a depth of 1 meter below ground level or above the groundwater	Refer Chapter 2

		table, whichever is shallower, to ensure that there is no interference with the groundwater table. Mining will be done as per Approved mining plan.	
28	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 ground water table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working belowground water and for pumping of ground water should also be obtained and copy furnished.	Mining activities will be conducted on the dry bed of the river to avoid any impact on surface water. The mining will be limited to a depth of 1 meter below ground level or above the groundwater table, whichever is shallower, to ensure that there is no interference with the groundwater table. Mining will be done as per Approved mining plan.	
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	The project site lies on Beas River. No diversion is proposed.	
30	Information on site elevation, working depth, groundwater table	The elevation of the applied area for the block is 545 m	

	etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.	AMSL to 544 m AMSL in the stretch. Mining will be up to 1 m below ground level or above the ground water table whichever comes first.	
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and Quantities coverage, plant species and time frame) and Submitted keeping in mind the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	Plantation/afforestation will be done as per program i.e., along the road sides and near civic amenities, as per mine plan. Post plantation, the area will be regularly monitored in every season for evaluation of success rate. List of Plant species selected for green belt is detailed in the EIA report. The plant species selected for green belt have a greater ecological value and are of good utility value to the local population. The plant species are selected by giving emphasis on local and native species and the species which are tolerant to pollution	Refer Chapter 9 Section 9.4.
32	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of	There will be about 6 trucks carrying the minerals per day. The projection has been done based on the mineral	Refer Chapter 2 Section 2.6.1 Traffic Analysis Fig 2.3, Table 2.7(i),

	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 incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.	transportation. The details of traffic analysis are discussed in the report.	2.7(ii) & 2.7(iii).
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report	A temporary rest shelter will be provided for the workers near to the site with provisions of water, first aid facility, protective equipment's, etc. Details are given in the EIA/EMP Report.	Refer Chapter 2 Section 2.6.4.4
34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	It is a deposit in the riverbed, and the mined-out area will be replenished each year during the monsoon period. Additionally, the depth of the quarry will be filled back with river sand and gravel each year.	
35	Occupational Health impacts of the Project should be anticipated and the	Occupational health impact mainly is expected due air	Refer Chapter 8 Section 8.5

	<p>proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.</p>	<p>pollution due to fugitive dust emission because of movement of vehicles. However appropriate mitigation measures for air pollution control have been given in the report, discussed in Chapter-4.</p> <p>Each labour will undergo pre-placement medical examination. There after periodical health checkup will be arranged as stated in the report. About 4.0 lakh has been earmarked for occupational health.</p>	<p>Table- 8.3, Budget for Occupational Health Safety</p>
36	<p>Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.</p>	<p>The proposed project being a small-scale manual/ semi-mechanized mining project, there will be hardly any process related health implication on the population of the nearby villages except fugitive dust emissions due to transportation. Budgetary allocation is given in Chapter-8</p>	<p>Refer Chapter 8</p>
37	<p>Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent</p>	<p>Socio-economic significance provided to the local community i.e., to the nearby villagers is given in the</p>	<p>Refer Chapter 8 Section 8.5</p>

	should be indicated. As far as possible, quantitative dimensions may be given with time to time for implementation.	EIA/EMP Report.	
38	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project	The detailed environmental management plan to mitigate the environmental impacts has been mentioned in of the EIA/EMP Report.	Refer chapter 9
39	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	This is a draft EIA/EMP report. Public hearing is yet to be conducted. Details will be incorporated in final EIA/EMP report	-
40	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 pending against the project.	
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	The capital cost of 5.65 lakh & 9.7 lakh as recurring cost has been earmarked for EMP. Chapter IX table no. 9.3	Refer Chapter 9 Table 9.3, Budget allotted for the Environmental Management Plan

42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report".	A Disaster management Plan has been given in EIA/EMP report.	Refer Chapter 7
43	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	About 8.0 lakh as Capital cost has been earmarked towards the Enterprise Social Commitment which will be used for the development of village.	Table no 8.2 of chapter 8.
44.	Besides the above, the below mentioned general points are also to be followed: -		
a.)	All documents to be properly referenced with index and continuous page numbering.	Complied.	-
b)	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	Complied.	
c)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.	Complied	
d)	Where the documents provided are in a language other than English, an English translation should be provided.	Agreed. Will be Complied.	

e)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Questionnaire is attached with the EIA/EMP Report.	
f)	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.	Complied.	
g)	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.	Agreed.	
h)	As per the circular no. J-11011/618/2010-IA. II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the	This is new case for Mining.	

	environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.		
i)	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	Compiled With EIA/EMP report.	

Table 1.3 Specific Terms of Reference

S.No	TOR	Compliance	Reference in the Report
1.	Air Modelling		
1.1	The project proponent shall include the detailed analysis of GLC-2.5 with air modeling and shall prepare the wind-rose diagram of the site to plan the installation of PCDs.	The Fresh Base line study was carried out for summer season March to May 2024. Details are given in Chapter-3 Air modelling is given in Chapter-4	Refer: Chapter-3 Refer: Chapter-4
2	Mining Technique		
2.1	The project proponent will be permitted to carry out mining activities manually only.	Mining will be done as per Approved Mining plan	Approved Mining plan attached As Annexure -IV
3	Site Restoration		

3.1	The project proponent will assess and erasure that, after ceasing mining operations, to undertake-re-grassing the mining area and any other area which may have been disturbed due to their mining activities and for restoration of the land to a condition which is fit for growth of fodder, flora, fauna etc.	NA This is a riverbed mining project	
4	DSR		
4.1	The project proponent shall submit a certificate from the Director (Industries) to the fact that the proposed mining site is recommended/approved on the basis of the District Survey Report prepared & approved by SEIAA authorities in conformity with the SO No. 141 (E), SO No. 3611(E) and as per Sustainable Sand Mining Management Guidelines, 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 published by MoEF&CC, GoI.	Agreed Will be complied	
Additional Terms of Reference			
1.	The project proponent shall include the detailed analysis of GLC-2.5 with air modelling and shall prepare the wind-rose diagram of the site to plan the installation of PCDs and ensure the samples of gaseous	The Fresh Base line study was carried out for summer season March to May 2024. Details are given in Chapter-3 Air modelling is given in Chapter-4	Refer: Chapter-3 Refer: Chapter-4

	parameters are collected under videography and analysed in 24 hrs with deterioration of lab conditions.		
2.	The project proponent will be permitted to carry out mining activities manually only.	Mining will be done as per Approved Mining plan	Approved Mining plan attached As Annexure -IV
3.	The project proponent will assess and erasure that, after ceasing mining operations, to undertake-re-grassing the mining area and any other area which may have been disturbed due to their mining activities and for restoration of the land to a condition which is fit for growth of fodder, flora, fauna etc.	NA This is a riverbed mining project	
5.	The project proponent shall submit a certificate from the Director (Industries) to the fact that the proposed mining site is recommended/approved on the basis of the District Survey Report prepared & approved by SEIAA authorities in conformity with the SO No. 141 (E), SO No. 3611(E) and as per Sustainable Sand Mining Management Guidelines, 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 published by MoEF&CC, GoI.	Agreed Will be complied	-
6	The project proponent shall submit a certificate from the Director	Agreed Will be complied	

	(Industries) to the fact that the proposed mining site is recommended/approved on the basis of the District Survey Report prepared & approved by SEIAA authorities in conformity with the SO No. 141 (E), SO No. 3611(E) and as per Sustainable Sand Mining Management Guidelines, 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 published by MoEF&CC, GoI.		
7	The project proponent while submitting the case for grant of Environment Clearance before SEAC, shall ensure to submit the Jamabandi (in original) mentioning his/her name as owner or lease holder in the Jamabandi.	Agreed Copy of Jamabandi. attached as Annexure V	Copy of Jamabandi. attached as Annexure V
	The project proponent shall ensure that the approved Mining Plans, Letter of Intents/ Mining Lease shall refer updated and recommended/ approved DSRs of the concerned district by SEIAA & SEAC, Himachal Pradesh	Agreed Will be complied	

2.0 General

The proposed project is located at Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh. The proposed production is 23,625 TPA of Sand, Stone and Bajri.

Identification of Project proponent

Sh. Andresh Syal, S/o Sh. Pritam Chand, V.P.O. Alampur, Sub- Tehsil Alampur, Distt. Kangra, Himachal Pradesh.

2.1 Description of project

The proposed project is for Extraction of Sand, Stone and Bajri from Khasra No.740, Measuring 01-58-56 Hectare (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh. The letter of Intent for the grant of mining lease issued in favours of Sh. Andresh Syal, S/o Sh. Pritam Chand, V.P.O. Alampur, Sub- Teh. Alampur, District Kangra, Himachal Pradesh. The letter of intent by the Department of Industries has been issued vide letter No. Udyog-Bhu (Khani-4) Laghu-316/2024 -12790 dated 14-02-2024.

The lease area lies in the river bed of Beas River which is a perennial Glacial fed stream. Beas is a Perennial River and it originates from Rohtang Pass at an elevation of 4350 meters above means sea level. Beas majorly drains the eastern part of district Kangra. This has a total length of 470 Kms from origin till confluence with Sutlej River in Punjab. Beas flows through moderately steep to low flood plains and cut its course all along its length through Shiwalik rocks comprising predominantly massive conglomerate, boulders, cobbles, river borne bajri, sand and clay deposits of channel alluvium. The river bed of Beas is occupied with recent deposits comprising predominantly of quartzite boulders, Sand and river borne bajri of Sandstone.

2.1.1 Location of the project

The proposed project is situated at Khasra No. 740 in in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh. The area falls in Survey of India Toposheet No. H43E9, the surface plan of the project is shown in **Figure-2.1**.

The proposed mining site is located beside village Bagh near to the right bank of River Beas.

The site is approachable through a village road originating from the Alampur Petrol Pump located on Palampur-Sujanpur-Hamirpur road. This unmetalled village road, located at a distance of approximately 500 kms from main road. The proposed mining site is located in the river bed of Beas River.

The nearest railway station is Sulah Railway Station is 25.29 km in towards NW direction. The Nearest airport is Gaggal Airport is 43 Km in towards NW Direction. The leased area is well-connected, with to the village road, then further connected to SH-39(Palampur-Hamirpur Road) about 4 km to the West Direction (Aerial distance)

Table-2.1: Pillar coordinate

Pillars	Latitude	Longitude
A	31°50'33.10"N	76°30'57.75"E
B	31°50'38.03"N	76°31'1.01"E
C	31°50'40.55"N	76°31'4.31"E
D	31°50'37.83"N	76°31'3.60"E
E	31°50'37.78"N	76°31'2.66"E
F	31°50'31.98"N	76°31'0.89"E
G	31°50'31.20"N	76°31'0.47"E



Figure 2.1 Pillar Co-ordinate Map

2.1.2 Need of the Project

The river carries a huge quantity of sediment consisting of stones and sand during every monsoon. This sediment takes the form of river bed material (RBM) which has been deposited over many years and has changed the shape of the river bed from a valley to raised land. As a result, heavy and devastating floods damage large tracts of land on both banks of the river every year during the monsoon season. Therefore, it is necessary to remove this material in order to channelize the river

2.1.3 Size/Magnitude of Operation

Proposed Extraction/Collection of Stone Boulder, Sand, & Bajri lease is presently spanning over an area of 01-58-56 ha Hectares. The proposed rate of production is 23,625 MTPA.

2.2 Lease hold area

The description of the lease hold area is as following.

Table-2.2: Description of the lease holds area

Khasra No	Area in Ha.	Name of the Owner	Kism	Mauza & Mohal	Name of the Panchyat
740	01-58-56	Pvt. Land	Gair Mumkin Dariya	Alampur & Bagh	Alampur
Total	01-58-56				

Table-2.3: Detail of lease hold area

Project Name	Extraction of Sand, Stone & Bajri falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Proposed by Sh. Andresh Syal, S/o Sh. Pritam Chand, Area 01-58-56 Hectares.	
Mining Lease area	01-58-56 Hectares. (Private Land, River Bed)	
Location of mine	Mauza & Mohal	Mauza Alampur & Mohal Bagh
	Tehsil	Jaisinghpur
	District	Kangra
	State	Himachal Pradesh

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-2 Project Description

Coordinates	Pillars	Latitude	Longitude
	A	31°50'33.10"N	76°30'57.75"E
	B	31°50'38.03"N	76°31'1.01"E
	C	31°50'40.55"N	76°31'4.31"E
	D	31°50'37.83"N	76°31'3.60"E
	E	31°50'37.78"N	76°31'2.66"E
	F	31°50'31.98"N	76°31'0.89"E
	G	31°50'31.20"N	76°31'0.47"E
Toposheet No.	H43E9		
Minerals of Mine	Minor Mineral: Stone, Sand and Bajri		
Proposed Production	23625 MT/year		
Method of mining	Open Cast, Manual Mining		
No. of working days	270 days		
Project cost	25 Lacs		
Elevation	Highest-545 mRL, Lowest -544 mRL		
Average Width of River	500-600 m		
Ultimate Depth of Mining	3 feet/1 meter from Surface level		
End use of Mineral	For Manufacturing of Grit		
Water demand	0.9 KLD (Domestic) + 3.0 KLD (Dust Suppression) + 0.5 KLD (Plantation) = 4.4 KLD		
Man Power	20		
Nearest Railway Station	Railway Station Sulah ≈ 25.29 Km in NW Direction (Aerial distance)		
Nearest State/ National Highway	SH-39 (Palampur-Hamirpur Road) ≈ 0.4 Km in West Direction (Aerial distance)		
Nearest Airport	Gaggal Airport ≈ 43 Km in NW Direction (Aerial distance)		

Environment Sensitivity Map of Buffer 10 Km for extraction of sand, stone & bajri for open sale over an area situated in Khasra No. 740, measuring 01-58-56 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh
By-Sh. Andresh Syal, S/o Sh. Pritam Chand

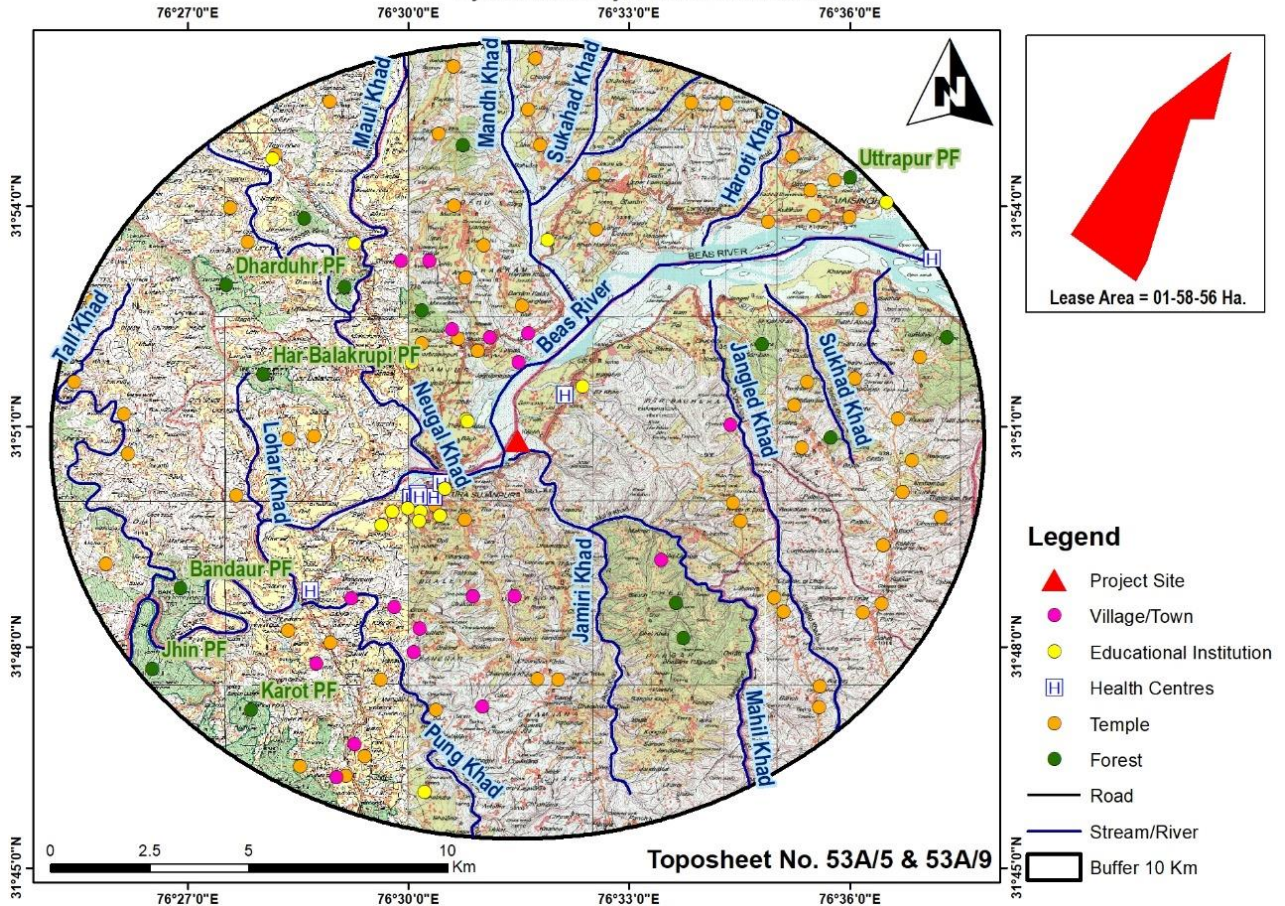


Figure 2.2 Environment Sensitivity Map

2.3 Geology

Geologically Himachal Pradesh can be broadly divided into two major geo-tectonic zones viz, the Lesser Himalayan tectogen in the south and the Tethys Himalayan Tectogen in the North. These two tectonic zones are juxtaposed with each other along a major tectonic break collectively designated as Main Central Thrust in the sense defined by Srikantia (1988). Kangra district lies in the Siwalik lesser Himalayan zone and its topography is well defined by a series of almost parallel hill ranges which rise in height towards North-East. The rocks of Shivalik group occur as several kilometers wide hill ranges with steeper scraps towards the north and can be studied around Ranital, Nurpur, Kotla, Kangra, Jawalamukhi and Dehra Gopipur. The valleys are filled with alluvial sand, slate and recent boulder material. Besides, the rock facies commonly seen in the district are green shales and fossils rich limestone of

Subathu formation, shale, clay and sandstone of Siwalik group, gneissic and granitic rock of Dhauladhar group, slate, phyllites, schist quartzites, basic lava flows and dolomites belonging to Jutogh group of rocks. The sediments of the Dharamshala Group unconformably overlie the Subathu group. These sediments consist of claystone, siltstones, calcareous shales and sandstones. The Dharamshala group is divisible into Lower and Upper Dharamshala. The Lower Dharamshala sediments were deposited under transitional brackish water environment and upper Dharamshala mainly represent fluvial system. The equivalent of Dharamshala group is known as Murree Group in Jammu and Kashmir. The Jutogh formation is one of the oldest groups of rocks and is seen in the north of Bandla and in a long stretch from the east of Bir to Dharamkot. The Sundar Nagar formation is well exposed between Luni and Sansal khad and north of Tundi khad in Chakki nallha. The basic lava flows known as Mandi-Darla volcanics occur in small patches in Bir khad, Sansal khad and Luni khad. The cement grade limestone and salt grits of Dharamkot belong to Shalli formation. The rocks of majir formation can be seen between Bara Banghal and Kakrani Jot along the pedestrian track. The Saluni formation is exposed at Thamsar pass near Palachak bridge at Jalta and in the east of Kakrani Jot. The rocks of Sabathu formation are observed between Majir and Manuni near Rakh, Bhanjeri and Karti.

TERTIARY ROCKS:

SIWALIK SYSTEM:

The Siwalik deposits are one of the most comprehensively studied fluvial sequences in the world. They comprise mudstones, sandstones, and coarsely bedded conglomerates laid down when the region was a vast basin during Middle Miocene, to Upper Pleistocene. Following this deposition, the sediments were uplifted through intense tectonic regimes (commencing in Upper Miocene times deposited by rivers flowing southwards from the Greater Himalayas, resulting in extensive), subsequently resulting in a unique topographical entity the Siwalik Hills.

The Siwaliks are divided stratigraphically into three major Subgroups - Lower, Middle, and Upper. These Subgroups are further divided into individual formations that are all laterally and vertically exposed today in varying linear and random patterns. Ongoing erosion and tectonic activity has greatly affected the topography of the Siwaliks. Their present-day morphology is comprised of hogback ridges, consequent, subsequent, obsequent, and

resquent valleys of various orders, gullies, choes (seasonal streams), and earth-pillars, filled earth buttresses of conglomerate formations, semicircular choe-divides, talus cones, colluvial cones, water-gaps, and choe terraces. Associated badlands features include the lack of vegetation, steep slopes, high drainage density, and rapid erosion rates. The Siwalik Group comprises conglomerates friable micaceous sandstone, siltstone and clay-stone. The conglomerates in general are poorly cemented but at places they are very hard. These consist mainly of pebbles and cobbles of quartzite. The stray pebbles of granite, limestone, sandstone, breccias and lumps of clay-stone are also observed at places. Often the size of pebbles is large enough to be called as Boulders. The conglomerates not only occur as regular band but also as lenticular bands alternative with micaceous sandstone and clay-beds.

The Siwalik Group is divisible into three sub-groups respectively the Lower, Middle and Upper on the basis of the lithostratigraphy as given in the table.

Lower Siwalik: -

The lower Siwalik consists essentially of a sandstone-clay alternation. In district Kangra the lower sequence of the lower Siwalik consists of medium grained sub gray wacke 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 consists of conglomerate with well-rounded clasts of grey quartzite possible derived from the Shale. The total thickness is about 1600 Meters.

Middle Siwalik: -

The Middle Siwalik Sub group comprises of large thickness of coarse micaceous sandstone along with some inter-beds 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. Clay beds are dull coloured and silty. The general thickness is 1400 to 2000 Meters

Upper Siwalik-

The upper Siwalik subgroup can be easily separated from the underlying Middle Siwalik on the basis of a distinct lithological change. In the Kangra district, where the Middle Siwalik is overlain by massive conglomerates of Upper Siwalik, the conglomerates contain clasts of basic volcanic rocks of the Mandi-Darla volcanic with a very transitional zone between them which may even suggest a local break between Middle and upper Siwalik. The Siwalik sediments were primarily derived from the rising Himalayan front. The stages of elevation in

the Himalayan provenance are reflected in the composition of the sediments and the size of the grains. Among the rock fragments in the Siwalik basin, sedimentary rock makes up the bulk. Lithological classification of the group is as follow.

Lithostratigraphy of Siwalik System in Kangra District.

Group		Lithology	Age
Newer Alluvium		Sand, silt, gravel and Pebbles	Quaternary
Siwalik Group	Upper Siwalik	B	Neogene
		A	
	Middle Siwalik	B	
		A	
	Lower Siwalik	B	
		A	

Pre-Tertiary Rocks:

Jutogh Group: This group of rock consists of black, carbonaceous, garnetiferous phyllites, slates, quartzites and dolomites intercalated with biotite schists and hornblende gneisse. The exposures are known from Lesser Himalayas.

stromatolitic limestone and occasional magnesite and quartzite. Rocks of Deoban Group and Bilaspur/ Bandla Limestone are considered equivalent to Shali Group. These rocks occur in tectonic windows under nappe of metamorphic rocks. At places thin Nummulitic outliers are

found on these rocks. These rocks are broadly considered to be homotaxial to Simla slates. Bandla limestone forms the basement of Subathu sediments mapped in Bilaspur unit.

Jaunsar Group: This group of rocks is exposed north of Main Boundary Thrust (MBT). It is composed of low grade metamorphic rocks such as slate, phyllites and quartzites.

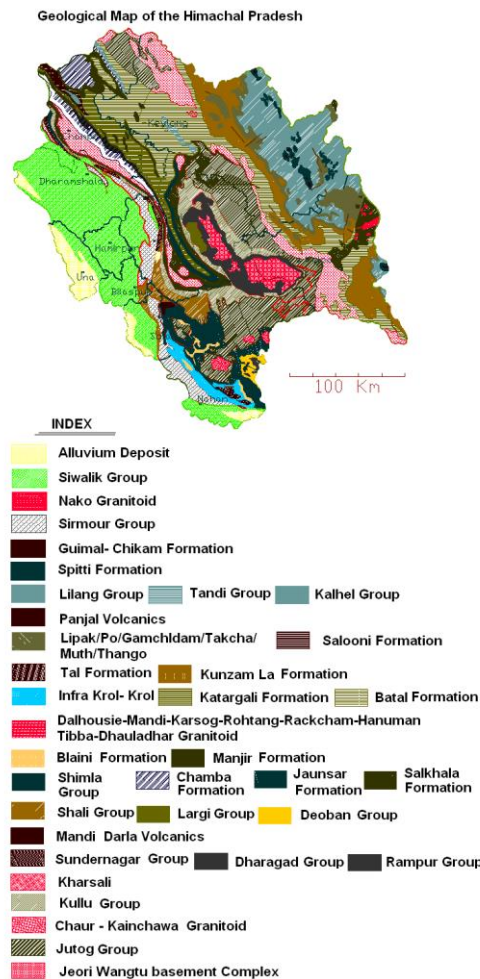
Mandhali Formation: This formation consists of quartzites, shales, crystalline limestone and marble interbedded with slates, phyllites, gritty quartzites and boulder beds

Nagthat Formation: This formation comprises sandstones, grits, quartzites, conglomerates, purple and green slates and phyllites. The top of the group represents a strong unconformity followed by a succession of rocks classified as Mussoorie Group.

Blaini Formation: It mainly consists of boulder beds, limestones and shale with characteristics of a glacial till. The boulder bed consists of dark grey to greenish grey clay matrix with pebbles of dark slate, greenish quartzite, grey sandstone and green siltstone. Limestones are characteristically pink, dolomitic and siliceous grade into pink and purple calcareous shale and slates. These rocks along with Infra-Krol and Krol are exposed north of MBT.

Krol Formation: Krol formation mainly consists of limestone, often stromatolitic, shale and sandstone. The limestone is grey to greyish white, dolomitic, cherty and at places microcrystalline. The shales are red, orange and dark gray in color. The sandstones are dirty white, poorly bedded with orange-stained quartz grains.

Tal Formation: These rocks are composed of calcareous greywacke, carbonaceous shale, micaceous shale, arkosic quartzite and grey limestone.



Topography

The Kangra district lies between Shiwalik and lesser Himalaya. The lesser Himalaya is located in north western India in the States of Himachal Pradesh and Uttar Pradesh, in north central India in the State of Sikkim range from 1500 meters to 5000 meters in height. The Kangra district covers an area of 5700 Sq. Kms in the west north western part of Himachal Himalaya, bordered by Punjab and Chamba, Kullu, Mandi, Hamirpur and Una in north, east, south respectively. The elevation of the district above mean sea level (MSL) varies from 500 meters to more than 6000 meters. In the district where the Siwalik rocks are exposed, the topography represents a series of parallel hill ranges separated by longitudinal valleys. These valleys are very fertile. The high peaks where altitude is more than 4000 meters above MSL remains covered with snow. Many streams exist in the district are snow fed and many get water from the rains. The Dhauladhar Mountains defines the northern limit of the district

separated from Chamba district. The peaks of these mountains experience heavy to very heavy snowfall and exhibits precipitation and rugged topography.

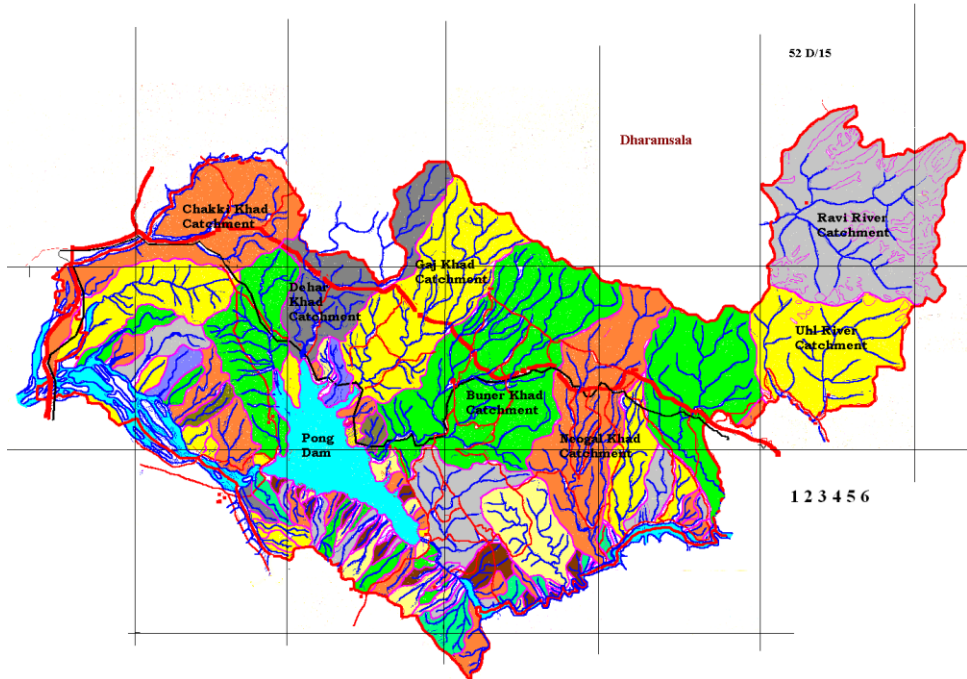
Kangra district presents an intricate mosaic of mountain ranges, hills and valleys. It is primarily a hilly district, with altitudes ranging from 350 m amsl to 4880 m amsl in the hills of Dauladhar. Physiographically, the district can be divided into six units-viz. (i) high hills, which cover almost 60% of the district (ii) Fluvio glacial outwash terraces, which is located in the north eastern part of the district (iii) structural terraces, in the central part (iv) valley fills (v) piedmont plain and (vi) flood plain.

Local Geology

The study of rocks in and around the lease out area show that there are sand stone formations of Upper Siwalik. The upper Siwalik Sub-Group comprises of large thickness of coarse micaceous sandstone, some interbeds of earthy clay. The stream is full of river borne sediments which has been generated by the erosional process of Siwalik hills. The river borne material consist of boulder, pebble, cobble, bajri, sand and silt. The area has gentle slope angle and is occupied with residual soil which is formed due to weathering of upper hill slopes. The thickness of this river borne material is 5.0 mts. depth as gathered in discussion with P.W.D. authorities as they have noticed in the past while digging for bridge abutments. The area granted submerges during monsoon therefore no permanent vegetation is possible in the river bed, however seasonal-grass grows in the stable lands of the river. For mineral one meter depth has been taken into consideration.

The lease area lies between the regular course of the Beas River gets flooded in the rainy season. All the deposits comprise of quartzite, sand and fraction of granite, limestone and breccias- fragments. The boulders are white, spotted white, greenish white, pink, purple and dark green in colour. Quartzite fragments are rounded, sub- rounded and discoidal in shape having smooth surface. Thickness of the deposit is more than five metres.

During the monsoon, the riverbed replenishes by the eroded rocks from the pre-tertiary formations. Due to sudden decrease in the carrying capacity and competency of the river after monsoon floods, the annual deposition of three to four cm is received.



Map Showing Beas river catchment in Kangra District.

Geometry of Beas River

Total Area of catchment =

Total Area of catchment Kangra =

Total Area of catchment	20303 Sq. Km.
Total Area of catchment Kangra	4994 Sq. KM
Perimeter of the catchment	940 Km
Highest Elevation	4350 Mts (MSL)
Highest Elevation (Dist. Kangra)	636 Mts (MSL)
Lowest Elevation (Pong Dam)	410 Mts (MSL)
Lowest Elevation (Kangra Border)	252 Mts (MSL)
Total length of stream	=344 Kms. (Upto Pong Dam)
Total length of stream (Kangra District)	63 Kms. (Upto Pong Dam)
Maximum Length of watershed	117 Kms:
Maximum Breadth of watershed	110 Kms
Total Area of catchment upto lease A	8590 Sq. Km
Length of the stream upto lease area	203 Kms
Width of the River at Lease Area	500-600m

2.4 Quality of reserve

2.4.1 Method of estimation of reserve

The various constituents of river-borne deposits, such as sand, stone, and bajri, were considered for reserve calculation based on their size classification. However, since it is not

feasible to delineate these units separately on the geological map, two pits measuring 1 x 1 x 1 meter were excavated at different locations within the mining lease area. The material extracted from these pits was then separated into different sizes, and their respective percentages were calculated. These percentages were subsequently taken into account during the calculation of reserves. The results of the test pits are presented in the following table.

An average specific gravity i.e., 2.25 is taken into consideration for the calculation of mineral potential in the mining lease area of **30419 sqm.** for mining purpose.

The average depth of sediments in the lease area is expected to be 5 meter as per formation gathered from public works department. The total lease area is 04-39-42 Hectares thus, following table show the geological reserves

Table-2.4 Summary of Geological reserves

Name of mineral	Boulders (50%) M.T	Bajri (30%) M.T	Sand & Silt/Clay Mixture (20%) M.T	Total M.T.
Sand, Stone & Bajri	89,190	53,514	35,676	1,78,380

It has been experienced that during monsoon, that in this type of river, the replenishment factor is generally high. Therefore, no rotational mining is proposed because the material excavated up to the one-meter depth would be replenished during the raining season (i.e., Non- working Season).

Table Showing Lease Area and the total mineable area available after leaving the no mining area

Total Lease Area	15856 sqm
No Mining Zone Area	5356 sqm
Area Availability After Leaving no Mining Zone (IN MT)	10500 sqm

Table Showing Reserve Estimation in the available Mineable Area

Working Area (IN SQM.)	10500 sqm
Depth (IN M)	1
Specific gravity	2.25

Availability of Mineral (IN MT)

23,625

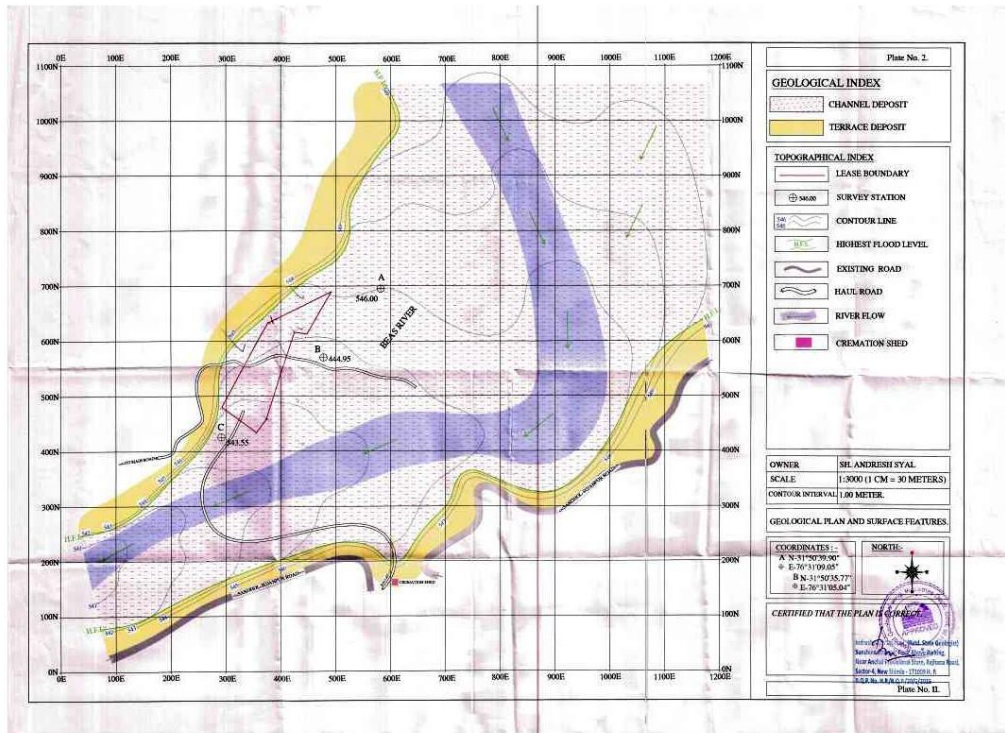


Figure 2.3 Surface Plan

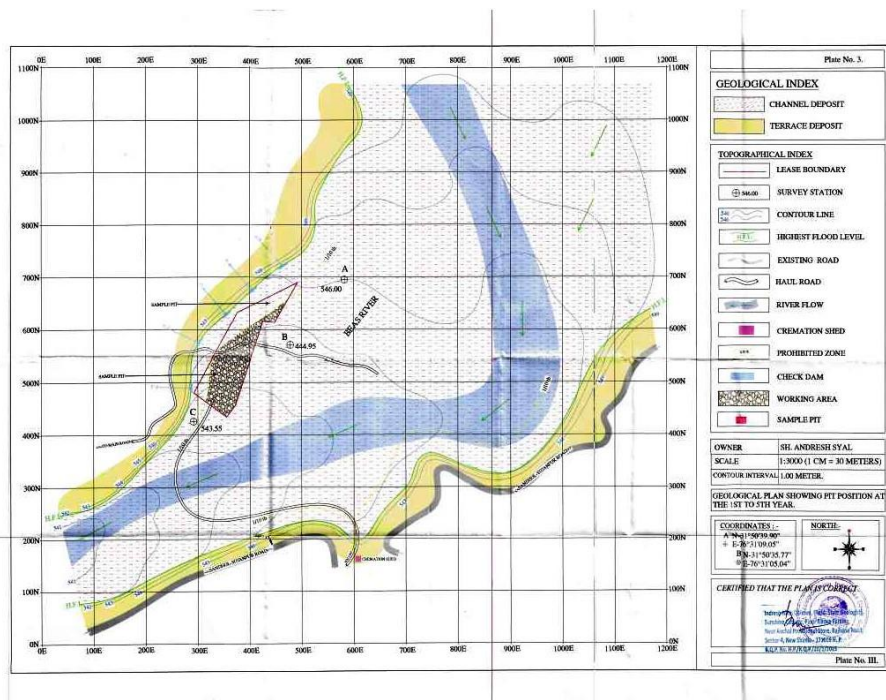


Figure 2.4- Five years mine planning

2.5 MINING

2.5.1 Proposed method of mining/extraction

The mining is confined to extraction of Stone, Sand and Bajri from the proposed mine site. The extracted minerals will be collected in their existing form and manually sorted based on size and market demand. Fine materials will be separated using a manual screener to sort various constituents before being loaded onto tractors/trucks for sale.

Mining operations will be carried out manually, and no blasting will be necessary as the mining will take place in the riverbed. The mining will be performed in a manner that ensures that pits are not made deeper than one meter from the surface. Additionally, the mining activity will only occur during the dry season.

Mine development and plan of progressive mining

The purpose of lease is to use the material in the proposed stone crusher as the source of raw material for manufacturing of grit. As such, the primary raw material required for stone crusher is stone and bajri. The river borne material contains sand, bajri and mixture of clay/silt. 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 following points are taken in to consideration.

1. A Geological map is prepared and main Litho-units were marked on the plan to know the surface spread of each unit.
2. The various components of river-borne deposits, such as boulders, bajri, sand, and silt/clay, were considered for reserve calculation based on their size classification. Although it is not possible to mark these units separately on the geological map, two pits were excavated in the mining lease area at different locations, each measuring 1 x 1 x 1 meter. The excavated material was then separated by size, and the percentage of each component was calculated. These percentages were taken into account during the calculation of reserves.
3. Keeping in view the replenishment factor, no rotation mining has been proposed whole block shall be explored in every year.
4. The mining shall be under taken manually.
5. The average specific activity of mix mineral is taken as 2.25 for computation of mineral reserve.

6. The Total available area 66%, after leaving part of mining lease fall in the active river channel. No part of the applied lease area lies within 1/10 of the HFL.
7. The highest point of lease area is 545 meters above MSL and the lowest point is 544 meters above MSL and the average width of river is 500 to 600 Mtrs.
8. The depth of the mining in the river bed shall not exceed one meter or water level whichever is less.

2.5.2 Production detail

The Beas River gets replenishment during monsoon and winter rains when the river gets heavy load for a short period. The river level is raised up to 5 meters for a shorter spell of time. The mining has been planned in a full block up to the depth of 1m to give a better chance for replenishment. The worked-out block shall get replenishment during monsoon and winter rains season for recharging the worked-out area and the worked-out area shall be fully replenished. 10,500 square meters shall be available for working every year. Proposed production expected as in table below:

Table 2.5, Year wise Production detail

Year	Total (M.T.)	Quantity of Sand Silt/ Clay (M.T.)	Quantity of Stone (M.T.)	Quantity of Bajri (M.T.)
1st year	23,625	4,725	11,813	7,087
2nd year	23,625	4,725	11,813	7,087
3rd Year	23,625	4,725	11,813	7,087
4th Year	23,625	4,725	11,813	7,087
5th Year	23,625	4,725	11,813	7,087
Total		23625	59,065	35,435

**Note: The proposed production is 23625 MTPA*

Detail of the major Rivers flowing in the Kangra District with potential of their Catchment in respect to Mineral wealth.

Beas River Catchment: The Beas is the principal river which receives almost the entire drainage of the district Kangra. The river rises from Pir –Panjal range near Rohtang pass at a height of about 13,050 feet (4,350metres) from the mean sea level. It has played a significant role in the development of peculiar hill culture which pervades the life of hill people living in the towns and surrounding villages since ages

Geological Conditions of Beas River

The Beas River flows through moderately steep to low flood plains and cut its course in Kangra district all along its length through Siwalik rocks comprising predominantly massive conglomerate, boulders, cobbles, river borne bajri, sand and clay deposits of channel alluvium. The river bed of Beas khad is occupied with recent deposits comprising predominantly of quartzite boulders, Sand and river borne bajri of Sand stone. The boulder beds are considered the prominent source of river borne deposits and during monsoon season the stream carries heavy sediment load and deposit it annually on the river bed.

This stream has developed a high flood plain at its confluence with Neugal Khad near Alampur and confluence of river Beas with Pong Dam. Total length of Beas River in District Kangra is approx. 123 Kmtr. out of which approx. 26 Kmtr of the channel lies within Pong Dam and approx. 34 Kmtr. of khad bed lies below the Pong Dam. The area of approx. 34 Kmtr. that lies below the Pong Dam is roughly known as Mand area

Total Potential of Beas River

The Beas River cut its course through the boulder beds of Siwalik rocks and this formation is the prominent source of annual deposition in the river beds. During flood season, the water carries heavy sediment load comprising gravels and sand which are deposited in the bed of stream. Due to the erosion by the heavy flow during the monsoon season, the bed of Beas khad is replenished to a large extent from the Siwalik formation rocks. The following quantity of mineral potential has been calculated, based on the percentage of each mineral constitute like boulder, river borne bazri and sand upto a depth of one metre.

The following minimum mineral potential have been calculated in Beas River, based on the percentage of each mineral constituent like boulder, river borne bajri, sand upto a depth of only one metre. The annual deposition of minor mineral in the river bed has been calculated by taking into consideration the average annual deposition of about 6 Cms. which however, may varies from, site to site and is calculated during the preparation of Mining Plan o the particular site. The total potential is given below in the table is given below.

Name of River	Boulder	River borne Bajri	Sand	Minimum Mineral Potential (in Metric tonnes)
Beas River	1,17,85,500	1,57,14,000	1,17,85,500	3,92,85,000
Annual Replenishment				
	7,07,130	9,42,840	7,07,130	23,57,100

2.5.1 Conceptual mine development

The overall catchment area of the Beas River is 20303 Sq. Km. The catchment up to the lease area is 8590 Sq. Km. Further, the replenishment factor is dynamic as the grain size of annual deposition on river/stream bed is directly proportional to the velocity of the river. The lease area is located at the mature stage of the river with gentle slope. Apart from this, the width of the river is 500 m to 600 m in the lease area which further decreases the flow of water. The total deposition of Beas River is 3,92,85,000 metric tonnes and the annual replenishment is of 23,57,100 metric tonnes considering an annual deposition of annual deposition of about 6 Cms.

2.5.2 The Competency of River/ Stream at the Mining Site

The general competency at the mining area is eight to ten kg approx. The largest boulders vary 24 to 130 cm X 36 to 120 cm X 30 to 100 cm (length x Width x Height). However, the size Geologica of the boulders found in the river found in the river is more dependent upon the size available in the boulder conglomerate beds in the catchment area then the actual competency of the river flow

2.5.3 Meandering Pattern of the River near mining site

The highest flood level is 545 MRL It raises about 5.0 mts, from the bed level while in floods. Because of gradient, no fix bed level can be defined. The landform being depositional the meandering thread is constantly changing during the rains depending upon the water level.

2.5.4 Description of the Ground water table in the Mining Area, before and Post Monsoon.

The lease area is a part of the river course. Beas river is perennial river; therefore, the water flow remains throughout the year. However, the water level of surface water as well as ground water table vary from pre-monsoon to post-monsoon period. The ground water table

vary from surface to 1.5 meters BGL depending upon season elevation and distance from surface flowing water.

2.5.5 Life of mine

It is not practically forecast the anticipated life of mine as area shall be replenished each year.

2.5.6 Waste Management

No liquid effluent will be generated during this process, no waste will be generated during the riverbed mining operations. Since a mixture of sand admixed with silt and clay is inseparable, it will be sold in the open market as per demand.

2.5.7 Drilling and Blasting

Not required.

2.6 General Features

Larger parts of district Kangra fall within the drainage basin of Beas River with little area under river Ravi. The drainage system in the Northern and Eastern part includes Uhl, Binu (Binwa), Awa, Neugal, Buner and Khauli Khads all of which drain into river Beas. On the Western end, the drainage system includes Chakki, Dehari khads and again drains in to river Beas. On the extreme north eastern part Ravi River also drains limited areas.

Surface Drainage Pattern

It form dendrite type of drainage pattern.

The river rises 4350 metres above sea-level on the southern face of Rohtang Pass in Kullu. It traverses the Mandi District and enters the Kangra District at Sandhol, 590 metres (1,940 ft) above sea-level.

Environment Sensitivity Map of Buffer 10 Km for extraction of sand, stone & bajri for open sale over an area situated in Khasra No. 740, measuring 01-58-56 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh
By-Sh. Andresh Syal, S/o Sh. Pritam Chand

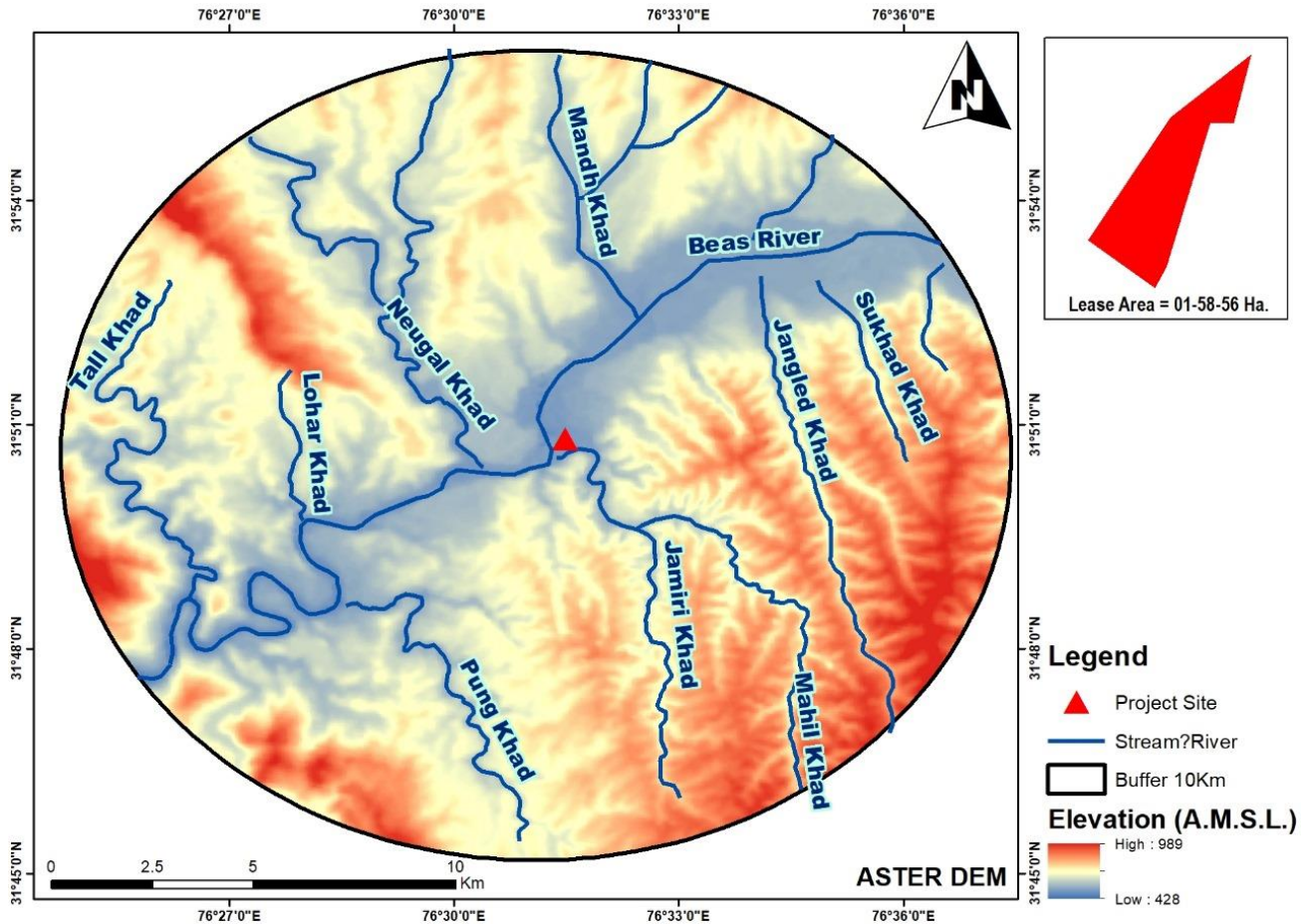


Figure 2.5- Drainage Pattern

2.6.1 Vehicular Traffic Density

Traffic study is carried out by understanding the existing carrying capacity of the road in the vicinity of site and flow towards Highway Road in the area. Then depending on the capacity of the mine, the number of trucks that will be added to the present scenario will be compared to the carrying capacity as recommended by Indian Road Congress (IRC). The existing volume of traffic and, the Level of Service are given in **Table-2.7 (i)** and shown in traffic density map as **Figure 2.7**.

Table 2.7 (i) Existing Traffic Scenario & LOS

Road	V	C	Existing V/C Ratio	LOS
SH-39 (Palampur-Hamirpur Road)	900	7000	0.012	A
Sujanpur-Sandole road	450	5200	0.086	A

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

The existing Level of Service near Village is "A" i.e., excellent and at highway is "A" i.e. excellent when compared with LOS recommended by IRC, as given in **Table-2.7 (ii)**.

Table 2.7 (ii) V/C Ratio & LOS

V/C	LOS	Performance
0.0 - 0.2	A	Excellent
0.2 - 0.4	B	Very Good
0.4 - 0.6	C	Good / Average / Fair
0.6 - 0.8	D	Poor
0.8 - 1.0	E	Very Poor

Note: Capacity as per IRC: 64-1990

During Mine operation

Total Capacity of mine : 23626 TPA
 No. of working days : 270 days
 Total Capacity of mine/day : 88 tonnes
 Truck Capacity : 15 tonnes
 No. of truck/day : 6 trucks
 PCU/day (6*3) : 18

The addition to traffic by the proposed project during its operation is given in

Table 2.7 (iii) Additional Traffic Scenario & LOS due to proposed project

Road	V	C	Existing V/C Ratio	LOS
SH-39(Palampur-Hamirpur Road)	900 + 18 = 918	7000	0.13	A
Sujanpur-Sandole road	450 +18=468	5200	0.09	A

From the above analysis it can be seen that the V/C ratio will be modified from 0.012 to 0.013 at SH-39 (Palampur-Hamirpur Road) with LOS being "A" and will be modified from

0.086 to 0.09 at Sujanpur-Sandole road connected with LOS remain A respectively. So, the additional load on the carrying capacity will be affected to a minimum level.

Transportation Map

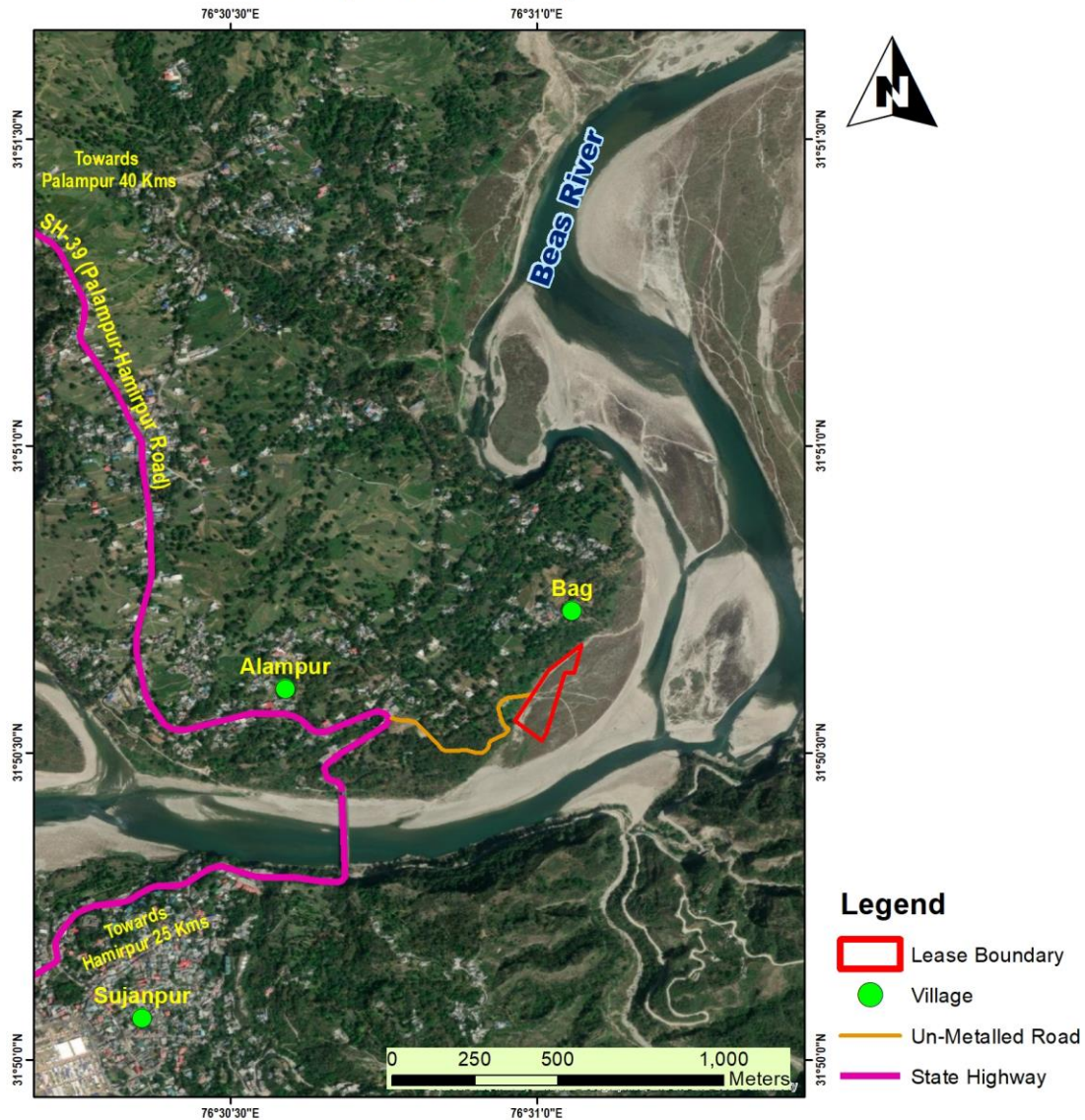


Figure 2.6 Traffic Route Map

2.6.2 Beneficiation/ Processing

No processing of mineral will be done in the mine.

2.6.4 Utilities

2.6.4.1 Water Requirement

Water consumption will be there mainly for dust suppression, green belt development, drinking and other domestic purpose during mining operations. About 3.0 KLD will be

required for dust suppression, 0.9 KLD for domestic purpose and 0.5 KLD for plantation. Total water requirement is about 4.4 KLD. Water will be supplied from water source (Beas River) supplied through water tanker. Permission from Gram Panchayat, Alampur will be obtained. The breakup of total water requirement of the mines is given in **Table-2.8**.

Table-2.8: Water Calculation

Activity	Calculation	Round off Figure in KLD
Drinking	@ 45 lpcd per labor $20 \times 45 / 1000 = 0.9$ KLD	0.9 KLD
Dust suppression	Total haulage road to be water sprinkled = $400 \text{ m} \times 2.5 \text{ m} \times 2 / 1000 = 3.0$ KLD	3.0 KLD
Plantation	200 plants @ 2.5 L/plant/Day = $1000 \times 2.5 \text{ L/day} =$ $1000 / 1000 = 0.5$ KLD	0.5 KLD
Total		4.4 KLD

2.6.4.2 Power Supply

Operations will not require any electrical power as mining will only take place during the daytime. The office will only require minimal power which will be obtained from the General Electric supply in the area.

2.6.4.3 Employment Generation

The employment of the mine is as below:

- General management and mines office.
- Time keeping, Personal welfare, Training and mines safety.
- Mining operations
- Stores, minor repairs and garage.

Management and Supervisory Personnel: The manpower requirement is given below:

Table 2.9, Manpower Requirement

SI. No	Qualification	No. of persons
1.	Mining Engineer	01
2	Geologist	01
3	Skilled workers	3
4	Unskilled workers	15

Total	20
--------------	-----------

2.6.4.4 Infrastructure:

The site services like rest room shelter, first aid box, drinking water & facilities will be provide to workers at the mine site.

Mining Equipment's

Mining shall be conducted through open cast manual/semi-mechanized methods without the use of drilling and blasting, as permitted by the government. Excavators shall be deployed on a hire basis as and when required for the removal of overburden.

3.0 INTRODUCTION

The main objective of describing the environment which may be potentially affected, are i) To assess present environmental quality and the environmental impacts and ii) to identify environmentally significant factors that could preclude mine development. Mining activities affect the existing status of environment at site. In order to maintain the existing environmental status at mining site it is essential study existing environmental status and assess the impact of upcoming project on various environmental components.

This Chapter gives idea of description of environment status of the study area and this will be helpful for assessment of impact on the environment due to proposed mining activities.

Baseline environmental status in and around proposed mining lease area describe the existing conditions of air, noise, water, soil, biological and socio-economic environment. The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring. The data was collected by P & M Solutions for various environmental attributes so as to compute the impacts that are likely to arise due to proposed development activity.

3.0.1 Study area & study period

The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring. The baseline environment quality was carried out over a radial distance of 10 km around the mining lease area during summer season of 2024 covering the months of March, 2024 to May, 2024.

3.0.2 METHODOLOGY

Base line attributes like ambient air, Water, Metrology, Noise, Soil, Ecology and Biodiversity & Socio Economy condition were collected as per approved term of reference. Secondary data was also collected from various government department as well as local people. Methodology adopted in this study is as follows.

- ✓ By setting up metrological station near project site
- ✓ Collection of site-specific meteorological data at the mine site
- ✓ Installation of respiratory dust samplers (for PM₁₀, PM_{2.5}) at different location in the study area for the collection of primary air pollutant and analyze the existing air conditions.
- ✓ Carrying out a detailed biological study for the Core and Buffer Zone
- ✓ Soil sample were collected from various location in the study area to analyze physical and chemical characteristics for assessment of impact on soil.

- ✓ Ground water samples were also collected from the various locations in the study area for analysing the existing water quality in the study area.
- ✓ Noise measurement has been done in core zone as well as buffer zone to analyze the existing situation in the study area.
- ✓ Literature review that includes identification of relevant data and articles from various publications, various government agencies and other sources for socio-economy, demography has been done with primary data collection in 10 km of the study area.
- ✓ Existing pollution load has been also identified in the buffer zone due to similar activities.

Accordingly, field studies were carried out during the study period (March, 2024 to May, 2024) to establish the existing baseline conditions.

3.1 Land Environment of the Study area

Land use

Study of Land Use pattern of project area

The study was taken upto prepare current landuse/land cover within 10 Km area around proposed River Bed mine located at Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh. Area statistics of landuse classes has also been generated for area within 10Km radius of lease mine lease area.

A) Data Used

The methodology applied for the study involved obtaining satellite images from open source, and then using a range of software to process the images and also by GPS coordinates (ground truthing) for drawing observations. The detailed methodology is explained as below:

1. **Software:** The following software were applied to extract indicators and maps:
 - **ERDAS Imagine:** The ERDAS imagine version 2016 is used to process Landsat-8 satellite data and to extract the required indicators through spatial & spectral analysis.
 - **ArcGIS:** The ArcGIS version 10.3 has been used to prepare the final Maps for indicators through the outcomes of ERDAS software.

Salient features of the adopted methodology for preparing land use maps of study area are given below:

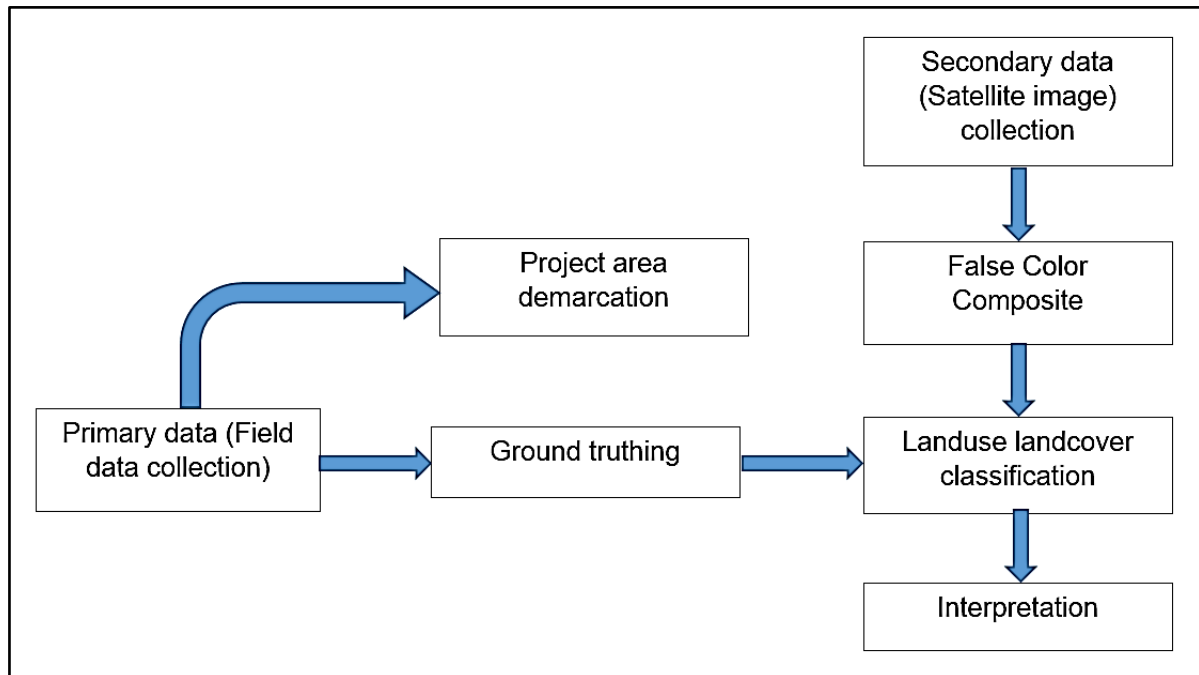


Figure 3.1 Methodology Use for Land use Classification & Mapping

- **Primary Data:** The coordinates along land features of project area is collected with the help of GPS device for ground truthing. This data is primary data. On the basis of this data, land-use, land-cover analysis is appropriate.
- **Secondary Data:** Satellite image (secondary data) is required to show the current land features of the project area and buffered area (10 km). **Landsat 8** Satellite image is used, which is collected from open source.

Landsat 8 Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS) images consist of nine spectral bands with a spatial resolution of 30 meters for Bands 1 to 7 and 9. The ultra-blue Band 1 is useful for coastal and aerosol studies. Band 9 is useful for cirrus cloud detection.

False Colour Composite (FCC): False colour (or false colour) refers to a group of colour rendering methods used to display images in colour which were recorded in the visible or non-visible parts of the electromagnetic spectrum. A false-colour image is an image that depicts an object in colours that differ from those a photograph (a true-colour image) would show. False-colour image sacrifices natural colour rendition in order to ease the detection of features. Land use pattern of the study area

The existing land use pattern of the study area based on the latest satellite imagery is given in Table 3.1 as follows and pie chart representation is shown in Figure 3.1.

Table: 3.1 Land Use details in the study area

Sr.No	Name	Area in Ha	Area in%
1	Scrub Land	9732.34	29.97
2	Forest	16470.17	50.76
3	River/Water Bodies	1004.92	3.09
4	Settlement	846.36	2.60
5	Vegetation	50.13	0.15
6	Sand	852.78	2.62
7	Agriculture	3510.09	10.81
	Total	32466.79	100.00

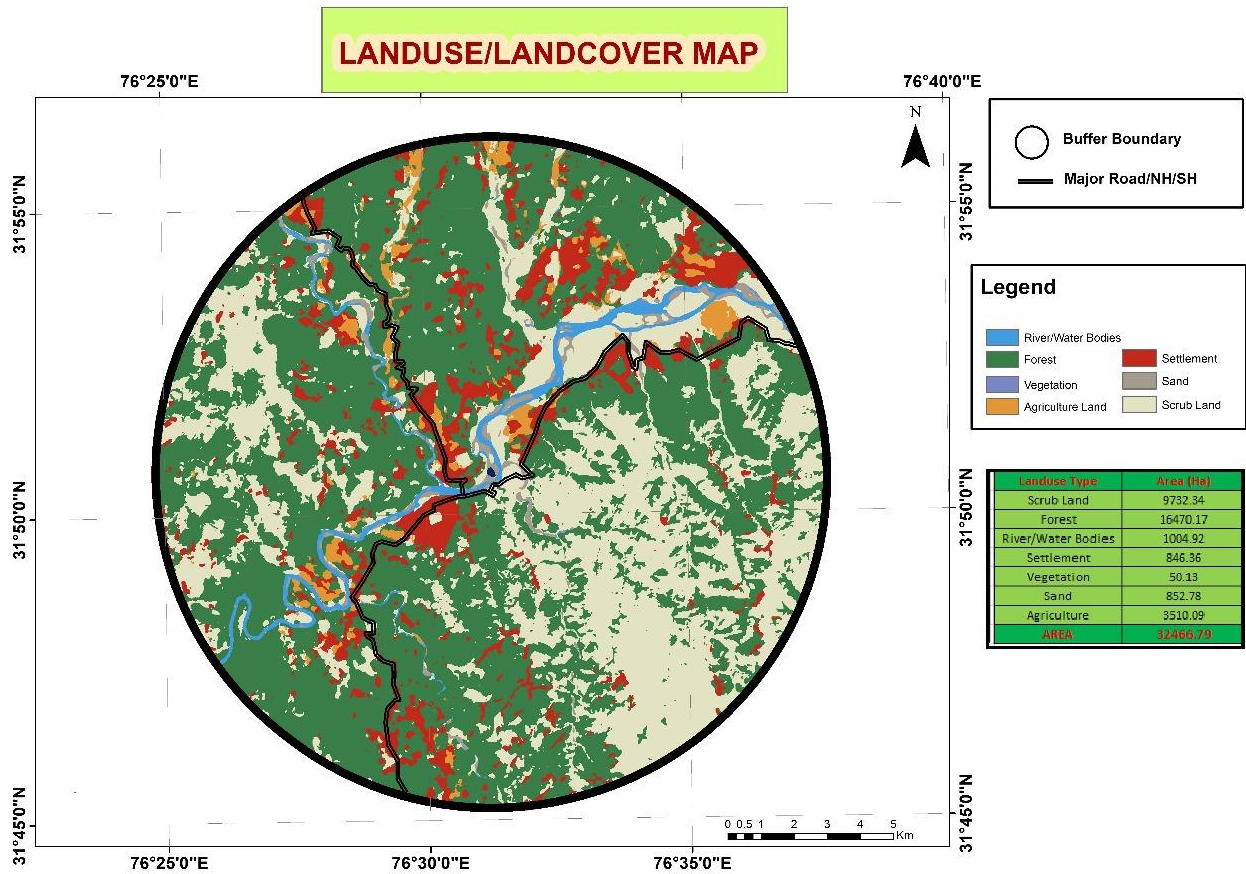


Figure 3.2 Land use/land cover of the study area

3.2 Water Environment

Water quality assessment is one of the essential components of EIA study. Such assessment helps in evaluating the existing health of water body and suggesting appropriate mitigation measures to minimize the potential impact from development projects. Water quality of ground water has been studied in order to assess proposed water-uses in construction, drinking, cooling and horticulture purpose.

a. Ground water

Three water samples were collected from the study area. The physico-chemical analysis of the water samples is given

The water quality within the 10 km impact zone was monitored during March, 2024. The water sampling locations marked within the study are presented in Table 3.2 and Figure 3.2 and the result of the monitoring and analysis are presented in the **Table 3.3 to Table 3.4** showing Water Quality Monitoring Locations marked within the Study Area.

Table 3.2 Ground water Location

S. No	Stations	Latitude	Longitude	Direction	Distance (km)
GW1	Sujanpur Tira	31°49'46.25"N	76°29'42.34"E	SW	1.5
GW2	Chowki	31°48'51.90"N	76°28'9.54"E	SW	5.5
GW3	Palahi	31°50'56.79"N	76°31'52.90"E	NE	1.4
GW4	Shakoh	31°51'56.20"N	76°31'18.50"E	North	2.5
GW5	Ukhli	31°53'2.36"N	76°31'24.71"E	South	5

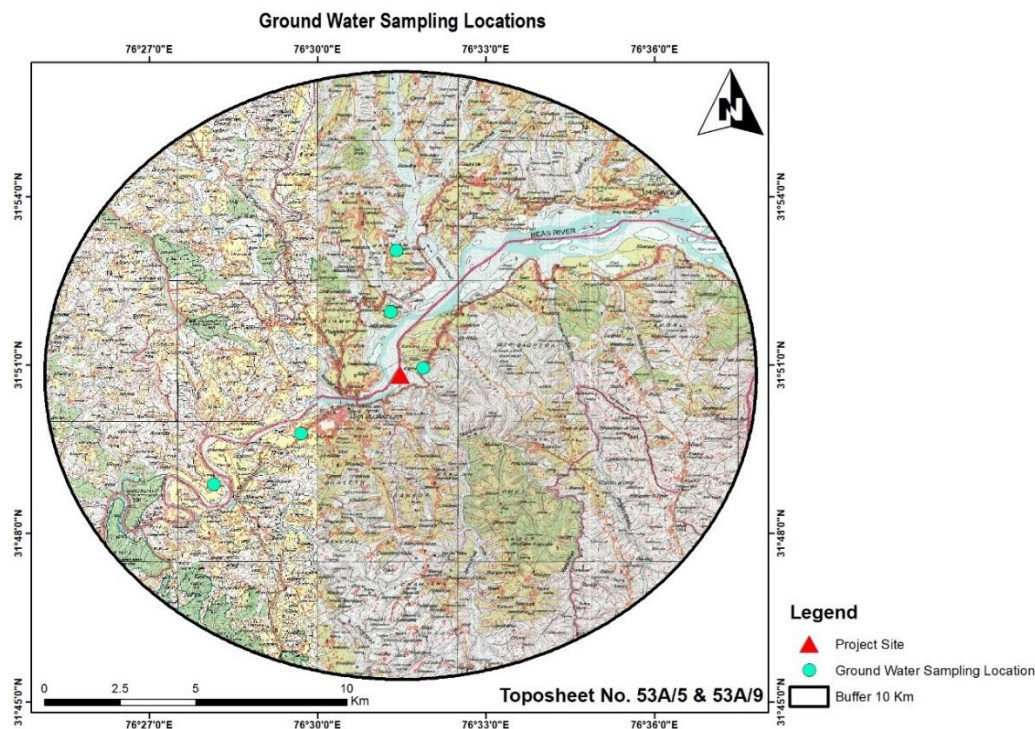


Figure 3.2(a) Ground Water sampling Locations

Table 3.3 Ground water Monitoring Result

Table 3.3 Physico-chemical properties of ground water Study Period, March, 2024

S. No.	Parameter	Unit	GW1 Sujanpur Tira	GW2 Chowki	GW3 Palahi	GW4 Shakoh	GW5 Ukhli	Limit (as per IS:10500)	
								Desirable	Permissible
1	Colour	Hazen	<1.0	<1.0	<1.0	<1.0	<1.0	5	15
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	-
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	-
4	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	1	5
5	pH	-	7.51	7.25	7.38	7.68	7.21	6.5-8.5	No Relaxation
6	Total Hardness (as CaCO ₃)	mg/l	178	152	180	189	165	200	600
7	Iron (as Fe)	mg/l	0.126	0.141	0.135	0.145	0.134	1.0	No Relaxation
8	Chlorides (as Cl)	mg/l	11.5	12.7	15.4	17.8	16.6	250	1000
9	Fluoride (as F)	mg/l	0.24	0.28	0.21	0.25	0.28	1	1.5
10	TDS	mg/l	337	320	345	374	381	500	2000
11	Calcium(as Ca ²⁺)	mg/l	65.2	62.8	60.8	67.1	64.5	75	200
12	Magnesium (as Mg ²⁺)	mg/l	12.6	15.2	11.5	9.80	10.2	30	100
13	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1.5
14	Manganese(as Mn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	0.3
15	Sulphate (as SO ₄)	mg/l	26.6	24.1	27.4	28.5	29.0	200	400

16	Nitrate(as NO ₃)	mg/l	2.60	2.42	2.76	2.80	2.53	45	No Relaxation
18	Mercury (as Hg)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	No Relaxation
19	Cadmium (as Cd)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	No Relaxation
20	Selenium (as Se)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No Relaxation
21	Arsenic (as As)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No Relaxation
22	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	No Relaxation
23	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No Relaxation
24	Zinc (as Zn)	mg/l	0.127	0.132	0.145	0.136	0.148	5	15
25	Anionic Detergent (as MBAS)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	0.2	1
26	Chromium (as Cr ⁶⁺)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	No Relaxation
27	Mineral oil	mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	0.5	No Relaxation
28	Alkalinity as CaCO ₃	mg/l	197	182	175	167	154	200	600
29	Aluminium (as Al)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.2
30	Boron (as B)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	0.5	2.4
31	Total Coliform	MPN /100ml	Absent	Absent	Absent	Absent	Absent	Absent/100ml	
32	<i>E. coli</i>	E.coli /100ml	Absent	Absent	Absent	Absent	Absent	Absent/100ml	

Observation:

Analysis results of ground water reveal the following: -

- pH varies from 7.21 to 7.68.
- Total hardness varies from 152 mg/l to 189 mg/l
- Total dissolved solids vary from 320 mg/l to 381 mg/l

The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS: 10500.

Fluorides and nitrates are within the permissible limits. Most of the parameter in ground water sources are well within the permissible limits as per IS – 10500, drinking water standards.

b. Surface water

Three water samples were collected from the study area. The physico-chemical analysis of the water samples is given in the Table 3.5:

Table 3.4 Surface water sampling locations

Station No.	Location	Direction	Distance (km)
SW1	Beas River (upstream,)	N	0.2
SW2	Beas River (downstream,	-S	0.3

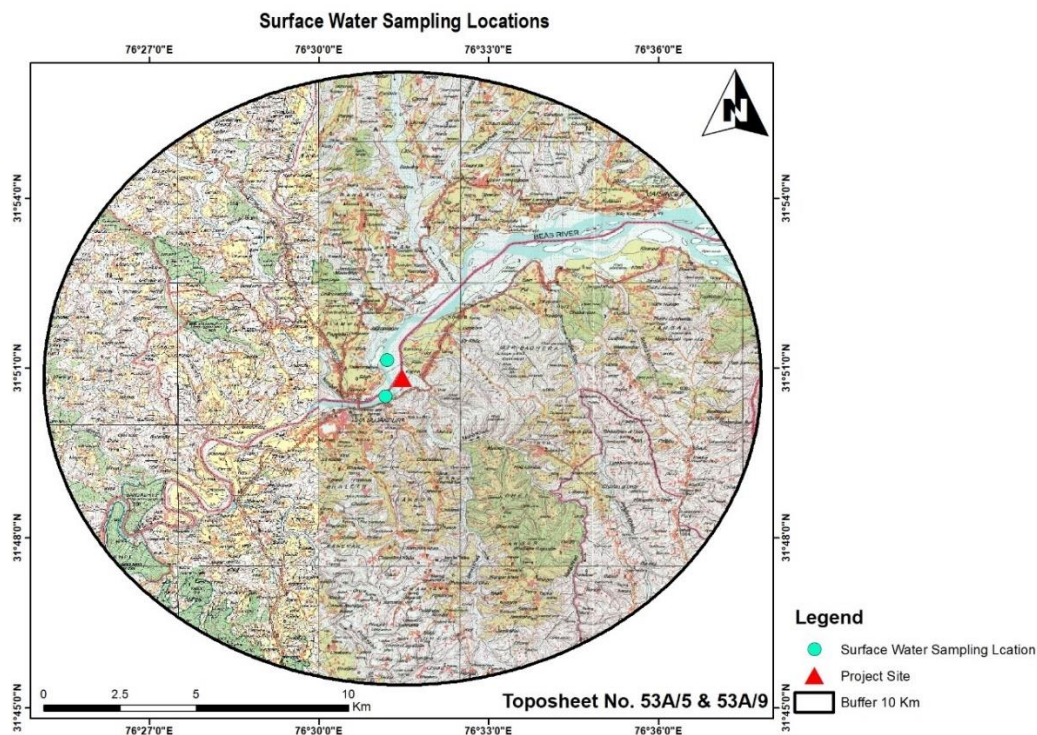


Figure 3.2(b) Surface Ground sampling Locations

Table 3.5 Physico-chemical properties of surface water

S. No	Parameter	Test Method	Units	Beas river (Upstream)	Beas river (Downstream)
1.	pH (at 25 ⁰ C)	IS:3025(Part-11)	---	7.35	7.50
2.	Temperature	IS:3025(Part-9)	⁰ C	18.0	20.0
3.	Turbidity	IS:3025(Part-10)	NTU	2.0	2.8
4.	Electric Conductivity @25 ⁰ C	IS:3025(Part-14)	μS/cm	225.0	254.0
5.	Sulphate (SO ₄)	IS:3025(Part-24)	mg/l	6.8	7.2
6.	Nitrate (NO ₃)	IS:3025(Part-34)	mg/l	1.46	1.54
7.	Total Hardness (as CaCO ₃)	IS:3025(Part-21)	mg/l	189.0	196.0
8.	Chloride (as Cl)	IS:3025(Part-32)	mg/l	10.0	14.0
9.	Fluoride (as F)	APHA 4500F	mg/l	BDL(DL<1.0)	BDL(DL<1.0)
10.	COD (as O ₂)	APHA-5220 B	mg/l	14.0	18.0
11.	Iron (as Fe)	IS:3025(Part-53)	mg/l	0.02	0.06
12.	Dissolve Oxygen	IS-3025(Part-38)	mg/l	7.8	7.2
13.	Total Dissolved Solid	IS:3025(Part-16)	mg/l	140.0	156.0
14.	BOD (3 days at 27 ⁰ C)	IS:3025 (P-44)	mg/l	BDL(<2.0)	BDL(<2.0)
15.	Calcium (as Ca)	IS:3025(Part-40)	mg/l	87.0	92.0
16.	Magnesium (as Mg)	IS:3025(Part-46)	mg/l	9.50	10.6
17.	Arsenic (as As)	IS:3025(Part-37)	mg/l	BDL(<0.01)	BDL (<0.01)

18.	Lead (as Pb)	IS:3025(Part-47)	mg/l	BDL(<0.01)	BDL (<0.01)
19.	Copper (as Cu)	IS:3025(Part-42)	mg/l	BDL(<0.010)	BDL (<0.05)
20.	Zinc (as Zn)	IS:3025(Part-49)	mg/l	0.08	0.10
21.	Manganese (as Mn)	IS:3025(Part-59)	mg/l	BDL(<0.010)	BDL (<0.10)
22.	Total Chromium (as Cr)	IS:3025(Part-52)	mg/l	BDL(<0.01)	BDL (<0.05)
23.	Sodium (as Na)	IS:3025(Part-45)	mg/l	BDL (<1.0)	BDL (<1.0)
24.	Potassium (as K)	IS:3025(Part-45)	mg/l	BDL (<1.0)	BDL (<1.0)
25.	Total Alkalinity (as CaCO ₃)	IS:3025(Part-23)	mg/l	167.0	172.0
26.	Phosphate (as P)	IS:3025(Part-31)	mg/l	BDL(<0.01)	BDL(<0.01)
27.	Nitrite (as NO ₂)	IS:3025(Part-34)	mg/l	BDL(<0.05)	BDL(<0.05)
28.	Total Suspended Solid	IS:3025(Part-17)	mg/l	6.5	6.8
29.	Faecal Coliform	IS-1622	MPN/100 ml	0.12 × 10 ³	0.18 × 10 ³
30.	Total Coliform	IS-1622	MPN/100 ml	0.46 × 10 ³	0.62 × 10 ³

3.2.1 Sampling frequency

Parameters for analysis of water quality were selected based on the utility of the particular source of water as per CPCB guidance. Surface water quality was monitored for parameters as per Methods of Monitoring & Analysis published by CPCB and it was rated according to the CPCB Water Quality Criteria against A, B, C, D & E class of water.

As per the standard practice, one sample from each station was taken each month in the study period. Sampling was done by standard sampling technique as per the Standard Methods. Necessary precautions were taken for preservation of samples.

The surface water quality is compared with CPCB water quality criteria mentioned in **Table 3.6** below:

Table 3.6: Water quality criteria as per Central Pollution Control Board

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6 mg/l or more Biochemical Oxygen Demand 5 days 20°C 2 mg/l or less
Outdoor bathing (Organized)	B	Total Coliforms Organism MPN/100ml shall be 500 or less; pH between 6.5 and 8.5;

		Dissolved Oxygen 5mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	Total Coliforms Organism MPN/100ml shall be 5000 or less; pH between 6 to 9; Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Propagation of Wild life and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH between 6.0 to 8.5 Electrical Conductivity at 25°C micro mhos/cm Max.2250 Sodium absorption Ratio Max. 26 Boron Max. 2mg/l
	Below-E	Not Meeting A, B, C, D & E Criteria

As per the standard practice, one sample from each station was taken each month in the study period. Sampling was done by standard sampling technique as per the Standard Methods. Necessary precautions were taken for preservation of samples.

Observation:

The analysis results indicate that the pH ranges between 7.18 and 7.60.

Dissolved Oxygen (DO) was observed in the range of 5.7 to 8.2 mg/l.

Chlorides were found to be in the range of 21-36 mg/l

Sulphates were found to be in the range of 11.0-47.6 mg/l respectively.

Based on the results it is evident that most of the parameters of the samples comply with 'Category 'A' standards of CPCB indicating their suitability for Drinking water source without conventional treatment but after disinfection.

3.3 Air Environment

Meteorology is the key to understand the air quality. The essential relationship between meteorology and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A meteorological station was set up at the proposed mine premises. Meteorological data was generated during the summer monitoring period and shown in **Table-3.7**

The following parameters were recorded at hourly intervals continuously during monitoring period, except rainfall which was recorded on daily basis.

- Wind speed
- Wind Direction
- Air Temperature

Table-3.7 Summarized Project site Meteorological Data

Month	Wind Speed (km/h)		Temperature (°C)			Rainfall (mm)	
	Max	Avg	Max	Min	Avg	Rain (mm)	No. of rainy Days
March 2024	18	9.9	36	18	24	45.2	3
April 2024	20	10.8	38	24	28	37.5	2
May 2024	24	12.2	44	26	32	109.6	4

a. **Wind rose diagram**

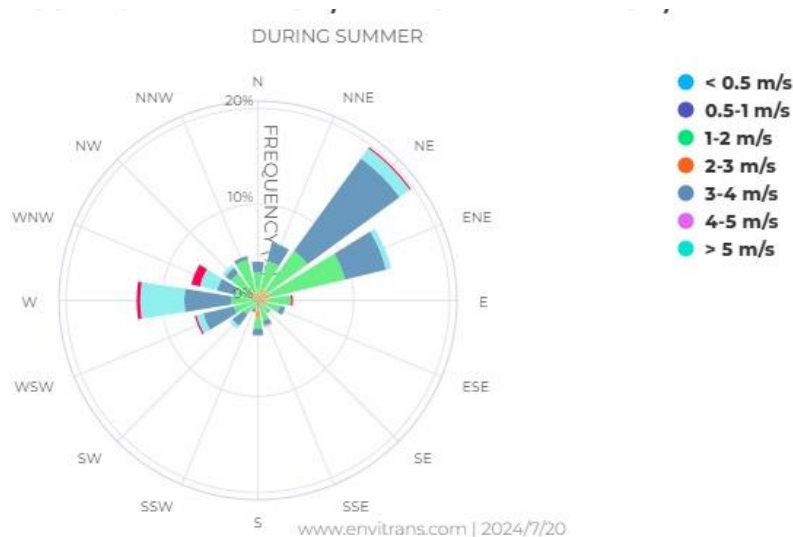


Figure 3.3 Wind rose diagram

Observations:

The prominent seasonal wind direction is from W & NE contributing more than / approximately 30 % of the total.

Method of monitoring

The Central Pollution Control Board (CPCB) has published a comprehensive document on emission testing regulations (“Emission Regulations Part-3, 985”). Those procedures relevant to the particulate monitoring are summarized below:

i. Particulate Matter (PM):-

The CPCB method and IS 5182 (Part-XXIII) adopt a very similar approach to particulate sampling. There are some differences in the expressions used, but they are generally of no practical significance. It is recommended that CPCB method is adapted.

ii. Equipment calculation:

For accurate testing of emission sources, the components of the sampling train is calibrated by outsource and supplier (Master Calibrator) standards and solutions are used, calibrated under certified reference material. The Ambient air quality monitoring locations are marked in **fig 3.4**.

3.3.4 Selection Criteria for Monitoring Location

The baseline status of the ambient air quality has been assessed through a scientifically designed ambient air quality network. The design of monitoring network in the air quality surveillance programme has been based on the following consideration.

- Meteorological parameters including wind direction
- Topography of the study area
- Representative of regional background air quality for obtaining baseline status
- Representative of likely impact areas.

Ambient air quality monitoring was carried out twice a week with a frequency of 24 hours for three months during the study period. The common air pollutant namely Particulate Matter-10 (PM₁₀) & PM_{2.5}, Sulphur-dioxide (SO₂) and Oxides of Nitrogen (NO₂) has been measured through a planned field monitoring.

The baseline values of the air pollutants of concern are presented in Tables below statistical parameters like minimum, maximum, average and 98th percentiles have been computed from the observed field data for all sampling stations and are given **Table-3.8**. These are compared with the standards prescribed by Central Pollution Control Board (CPCB) for industrial,

residential and rural zone.

Table-3.8 Ambient air quality monitoring stations

S. No	Stations	Latitude	Longitude	Direction	Distance (km)
AAQ1	Mine Site near bagh	31°50'35.61"N	76°31'5.54"E	-	0
AAQ2	Sujanpur Tira	31°49'46.25"N	76°29'42.34"E	SW	1.5
AAQ3	Chowki	31°48'51.90"N	76°28'9.54"E	SW	5.5
AAQ4	Palahi	31°50'56.79"N	76°31'52.90"E	NE	1.4
AAQ5	Shakoh	31°51'56.20"N	76°31'18.50"E	North	2.5
AAQ6	Ukhli	31°53'2.36"N	76°31'24.71"E	South	5
AAQ7	Har Balak Rupi	31°51'49.14"N	76°29'1.61"E	NW	3.7
AAQ8	Lambagaon	31°53'50.16"N	76°33'23.32"E	NE	7.25

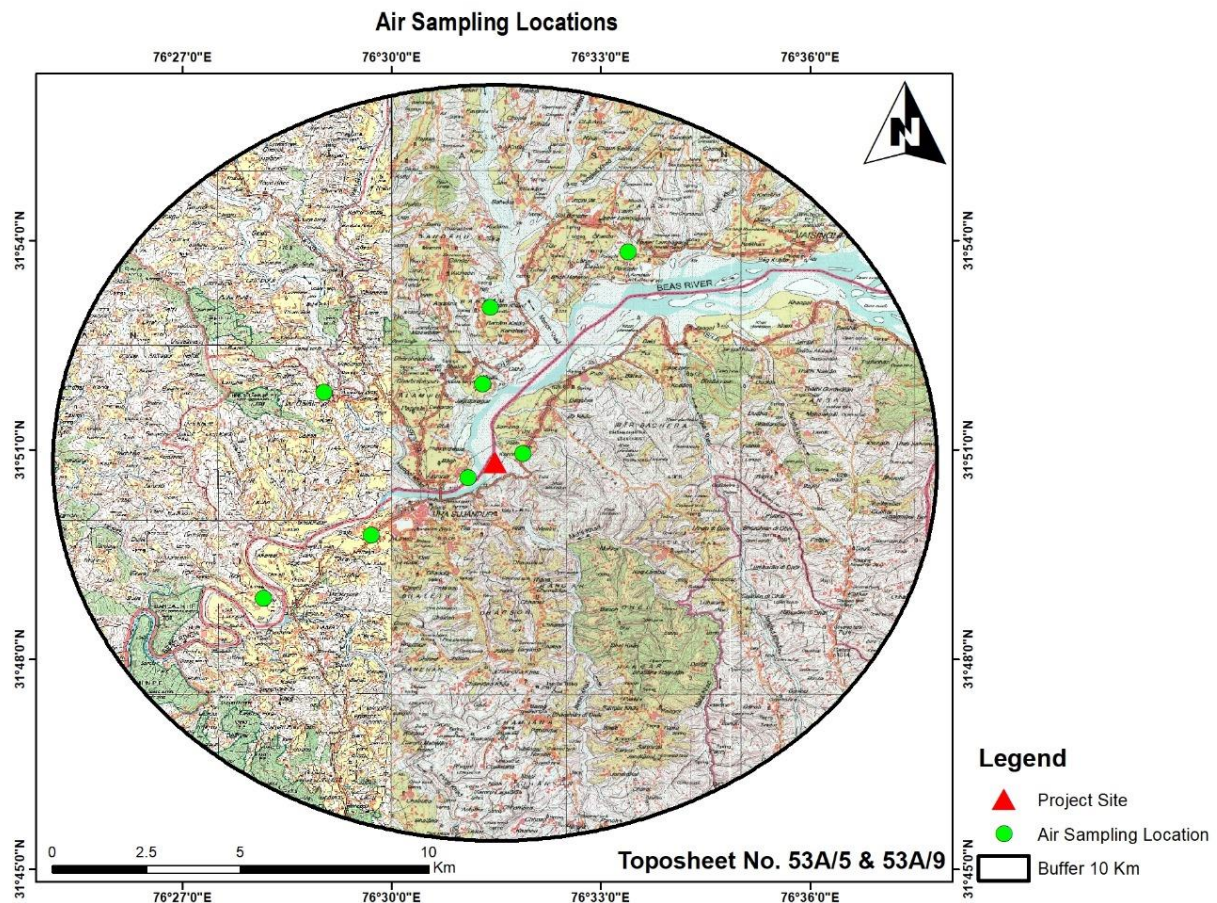


Figure 3.4 Ambient air quality monitoring stations

Table - 3.9 Ambient air quality monitoring result

S. No	Pollutant	Location	No. of observation	Minimum	Maximum	Average	98 th Percentile	CPCB Standards
1.	PM10 ($\mu\text{g}/\text{m}^3$)	AQ1	24	50.4	78.5	59.72	77.76	100
		AQ2		51.23	67.38	61.29	67.13	
		AQ3		46.42	60.29	53.67	60.21	
		AQ4		42.12	59.57	54.15	59.1	
		AQ5		48.41	74.66	64.72	74.48	
		AQ6		38.5	46.7	42.52	46.26	
		AQ7		40.02	52.97	48.08	52.94	
		AQ8		36.02	55.3	47.25	53.83	
2.	PM2.5 ($\mu\text{g}/\text{m}^3$)	AQ1	24	20.12	33.53	25.79	32.61	60.0
		AQ2		27.24	31.14	28.34	30.75	
		AQ3		18.43	20.56	19.22	20.1	
		AQ4		18.07	21.45	19.66	21.28	
		AQ5		28.85	38.74	34.44	38.49	
		AQ6		11.50	20.92	15.88	20.54	
		AQ7		20.96	32.97	27.97	32.09	
		AQ8		14.78	24.2	20.29	24.05	
3.	SO ₂ ($\mu\text{g}/\text{m}^3$)	AQ1	24	9.94	5.42	5.42	9.49	80.0
		AQ2		12.63	9.83	9.83	12.1	
		AQ3		14.45	12.04	12.04	14.44	
		AQ4		11.69	9.80	9.8	11.3	
		AQ5		9.48	7.82	7.82	9.44	
		AQ6		6.18	5.25	5.25	6.11	
		AQ7		8.20	6.88	6.88	8.19	
		AQ8		8.44	7.22	7.22	8.43	
4.	NO _x ($\mu\text{g}/\text{m}^3$)	AQ1	24	5.39	18.16	9.47	15.86	80.0
		AQ2		11.21	17.63	14.72	17.62	
		AQ3		12.32	20.55	15.31	19.93	
		AQ4		9.88	18.62	13.37	17.1	
		AQ5		13.36	15.27	14.35	15.16	
		AQ6		5.25	8.29	6.8	8.26	
		AQ7		8.60	13.20	10.41	12.89	
		AQ8		7.09	12.64	9.58	12.64	
5.	CO (mg/m^3)	AQ1	24	0.48	0.92	0.7	0.89	2.0
		AQ2		0.39	0.73	0.57	0.7	
		AQ3		0.37	0.68	0.54	0.66	

	AQ4	0.36	0.77	0.55	0.77
	AQ5	0.32	0.92	0.57	0.9
	AQ6	0.47	0.59	0.53	0.59
	AQ7	0.25	0.48	0.37	0.48
	AQ8	0.46	0.79	0.62	0.78

Observations:

Ambient Air Quality Monitoring reveals that the minimum & maximum concentrations of PM10 for all the 8 AQ monitoring stations were found to be 36.0 µg/m³ & 74.66 µg/m³, respectively and the minimum & maximum concentrations of PM 2.5 were found to be 11.50 µg/m³ and 38.74µg/m³ respectively.

As far as the gaseous pollutants SO₂ and NO_x are concerned, the prescribed CPCB limit of 80 µg/m³ for residential and rural areas has never surpassed at any station. The maximum & minimum concentrations of SO₂ were found to be 6.18 µg/m³ & 5.25 µg/m³ respectively. The maximum & minimum concentrations of NO_x were found to be in between 20.55 µg/m³ & 5.39 µg/m³. The maximum & minimum concentrations of CO were found to be in between & 0.92 µg/m³ & 0.25 µg/m³.

3.4. Soil Environment

Soil may be defined as a thin layer of earth's crust, medium for the growth of plants. The soil characteristics include both physical and chemical properties. The soil survey and soil sample were carried out / collected to assess the soil characteristics of the study area. Soil samples were collected from **05 locations** and analyzed as per CPCB norms.

The soil sampling locations are marked in **fig. 3.5**. The physico-chemical characteristic of these soil samples is given in Table No. 3.10.

Table-3.10, Soil sampling locations

S. No	Stations	Latitude	Longitude	Direction	Distance (km)
SQ1	Mine Site near	31°50'35.61"N	76°31'5.54"E	-	0
SQ2	Sujanpur Tira	31°49'46.25"N	76°29'42.34"E	SW	1.5
SQ3	Chowki	31°48'51.90"N	76°28'9.54"E	SW	5.5
SQ4	Palahi	31°50'56.79"N	76°31'52.90"E	NE	1.4
SQ5	Shakoh	31°51'56.20"N	76°31'18.50"E	North	2.5

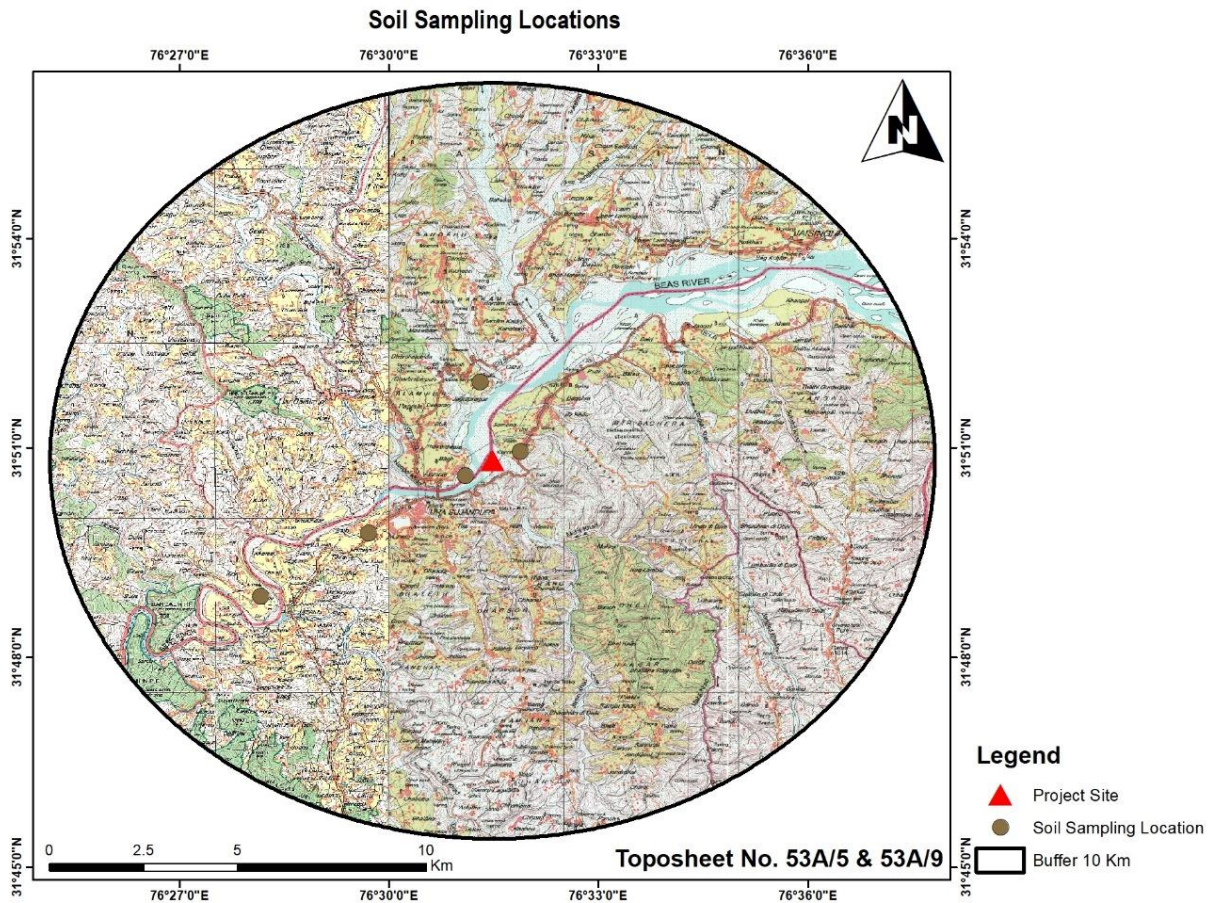


Figure 3.5 Soil sampling locations

Table 3.11, Physico-chemical properties of soil

		Location	Mine Site	Sujanpur Tira	Chowki	Palahi	Shakoh
Sr. No.	Parameters	Units	Results	Results	Results	Results	Results
1	pH	-	7.36	7.50	7.25	7.42	7.55
2	Conductivity	µmhos/cm	451.0	402.0	416.0	372.0	416.0
3	Sodium (as Na)	mg/kg	216.40	265.10	283.41	294.0	276.20
4	Water holding capacity	%	32.10	34.50	31.87	37.04	28.94
5	Potassium (as K)	mg/kg	78.50	77.40	84.69	96.02	70.16
6	Sand	%	65.00	66.00	68.00	64.00	64.00
7	Clay	%	18.00	18.00	19.00	19.00	22.0
8	Silt	%	17.00	16.00	13.00	17.00	14.0
9	Calcium (as Ca)	mg/kg	957.00	886.00	1012.00	992.04	1036.00
10	Magnesium (as Mg)	mg/kg	514.10	468.50	558.25	414.06	583.56
11	SAR	-	1.08	0.98	0.94	0.94	1.55
12	CEC	meq/100gm	2.26	2.20	2.23	2.14	2.34
13	Phosphorus (as P)	mg/kg	12.80	12.40	10.67	13.04	12.76
14	Organic carbon	%	0.49	0.46	0.41	0.36	0.58
15	Porosity	%	45.20	40.10	38.26	38.32	40.6
16	Permeability	cm/hr	1.96	1.84	1.74	1.92	1.88

17	Bulk Density	kg/cm ³	1.28	1.18	1.29	1.56	1.38
18	Total Kjeldahl Nitrogen (TKN)	%	0.041	0.026	0.032	0.019	0.036

Observations:

Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.25 to 7.55, which shows that the soil is alkaline in nature. Potassium is found to be from 70.16 mg/kg to 96.02 mg/kg. The water holding capacity is found in between 38.26 % to 45.20 %.

3.5 Noise environment

The noise levels within the study area were recorded using Sound Level Meter and noise monitoring results were compared with the Ambient Noise Quality Standard notified under Environment Protection Act, 1986. The levels recorded are as stated in Table 3.3 (x).

The noise level monitoring locations are marked in **Fig. no.3.6**.

Table 3.12 Noise quality monitoring stations

S. No	Stations	Latitude	Longitude	Direction	Distance (km)
NQ 1	Mine Site near bagh	31°50'35.61"N	76°31'5.54"E	-	0
NQ2	Sujanpur Tira	31°49'46.25"N	76°29'42.34"E	SW	1.5
NQ 3	Chowki	31°48'51.90"N	76°28'9.54"E	SW	5.5
NQ 4	Palahi	31°50'56.79"N	76°31'52.90"E	NE	1.4
NQ 5	Shakoh	31°51'56.20"N	76°31'18.50"E	North	2.5
NQ 6	Ukhli	31°53'2.36"N	76°31'24.71"E	South	5
NQ 7	Har Balak Rupi	31°51'49.14"N	76°29'1.61"E	NW	3.7
NQ8	Lambagaon	31°53'50.16"N	76°33'23.32"E	NE	7.25

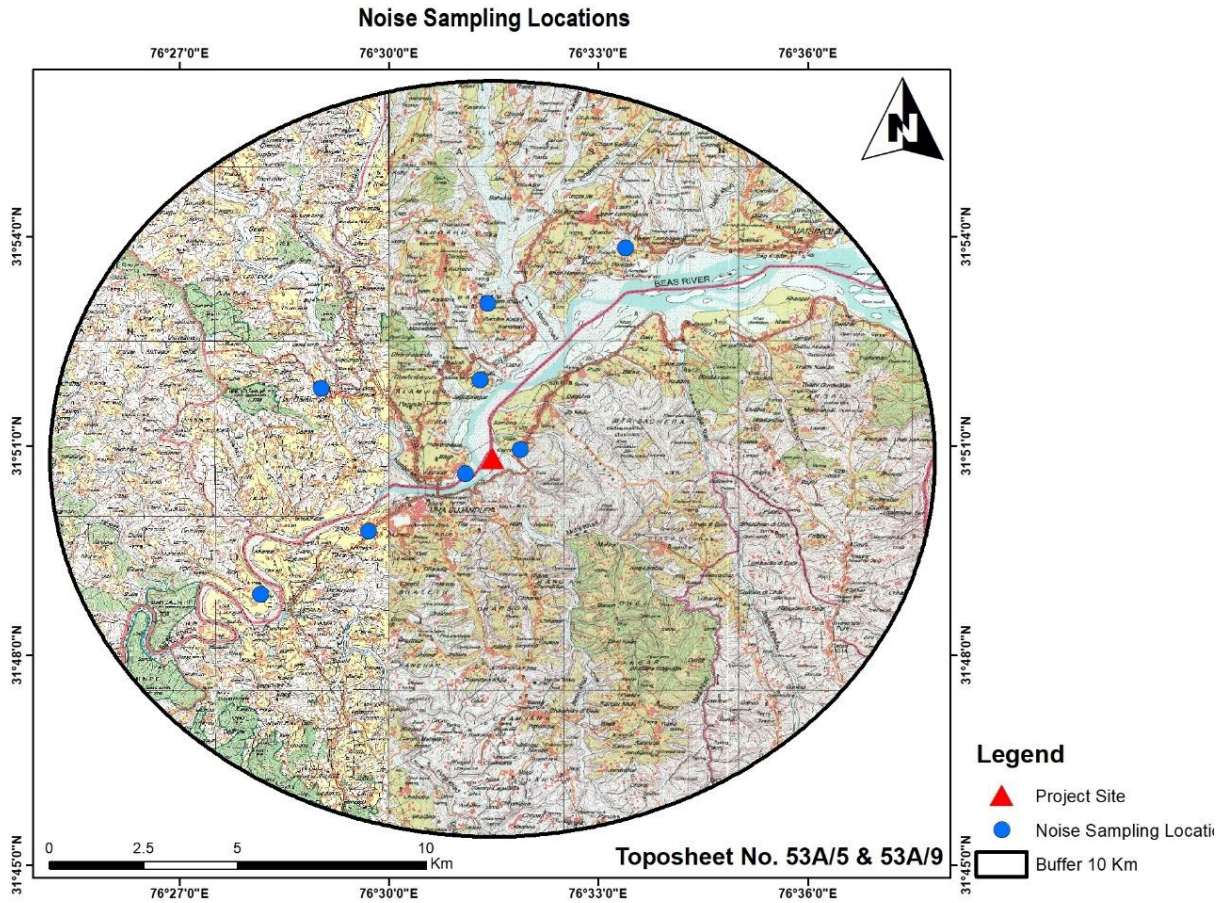


Fig.3.6- Noise quality monitoring stations

Table No. 3.13, Noise level status

S. No.	Project Site	Zone	Leq LIMIT (as per CPCB Guidelines), in dB(A)		Leq Value monitored, in dB(A)	
			DAY*	NIGHT*	DAY*	NIGHT*
1	NQ-1	Industrial Zone (Project Site)	75	70	58.4	45.1
2	NQ-2	Residential Zone	55	45	53.2	41.2
3	NQ-3	Residential Zone	55	45	51.1	42.3
4	NQ-4	Residential Zone	55	45	52.6	43.5
5	NQ-5	Residential Zone	55	45	54.0	40.8
6	NQ-6	Residential Zone	55	45	52.8	41.6
7	NQ-7	Residential Zone	55	45	51.2	40.0
8	NQ-8	Residential Zone	55	45	52.4	41.5

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

Night Time Leq in dB(A) (10.00PM TO 6.00AM)

Results

Noise monitoring reveals that the maximum & minimum noise levels at day time were recorded as 58.8 Leq. dB & 51.1 dB (A), respectively. The maximum & minimum noise levels at night time were found to be 45.1 dB (A) & 40.0 dB (A) respectively. There are several other sources in the 10 km radius of study area, which contributes to the local noise level of the area. Traffic activities as well as activities in nearby villages and agricultural fields add to the ambient noise level of the area.

3.6 BIOLOGICAL ENVIRONMENT

Biological diversity comprises the variability of genes, species and ecosystems and is very crucial for maintaining the basic processes on which the life depends. Broadly it can be divided into two types i.e. the floral diversity and faunal diversity. Conservation of the biodiversity is essential for the sustainable development as it not only provides the food, fodder and medicine but also contribute in improvement of essential environmental attributes like air, water, soil, etc.

Before starting any Environmental Impact Assessment study, it is necessary to identify the baseline of relevant environmental parameters which are likely to be affected as a result of operation of the proposed project. A similar approach has been adopted for conducting the study on Biological Environment for this Project. Both terrestrial and aquatic ecosystems have been studied to understand the biological environment.

General Vegetation Study of the area:

The study area comprise of Sub-Tropical Dry Deciduous Vegetation. Several tropical elements can be seen scattered in the area. Species of *Saccharum*, *Calotropis*, *Vitex*, *Zizyphus*, etc. are of common occurrence. Tree species viz. *Acacia catechu*, *Albizia lebbek*, *Dalbergia sissoo*, *Morus alba*, etc. are found planted along the boundary of the agricultural lands and along the road sides.

Ground vegetation mainly consists of grasses and small shrubs. Among the grasses, *Vetiveria Zizanioides*, *Cenchrus ciliaris* are very common in the area. Useful fodder grasses, *Cynodon dactylon*, *Eleusine indica*, *Trifolium alexandrinum*, etc. are present in the proposed project area. The large weeds which infest uncultivated tracts are *aak (Calotropis procera)*, *arind (Ricinus communis)*, *datura (Datura metel)* and *thor (Opuntia stricta)*. Other noxious weeds and those

which appear in crops are *pohlior thistle (Carthamus oxyacantha)*, *shialkanta (Argemone mexicana)*, *kandyari (Solanum virginianum)* and *bhanga (Cannabis sativa)*.

FLORA OF THE STUDY AREA

Table No. 3.14 Flora of the study area

Sl. No	Species	Family	Habit
1	<i>Adhatoda vasica</i>	Acanthaceae	Shrub
2	<i>Ageratum conyzoides</i>	Asteraceae	Herb
3	<i>Albizia procera</i>	Mimosaceae	Tree
4	<i>Barleria cristata</i>	Acanthaceae	Herb
5	<i>Abutilon indicum</i>	Malvaceae	Herb
6	<i>Acacia catechu</i>	Fabaceae	Tree
7	<i>Acacia nilotica</i>	Fabaceae	Tree
8	<i>Achyranthes aspera</i>	Amaranthaceae	Herb
9	<i>Bauhinia variegata</i>	Fabaceae	Tree
10	<i>Boerhavia diffusa</i>	Nyctaginaceae	Herb
11	<i>Bombax ceiba</i>	Bombacaceae	Tree
12	<i>Carissa carandas</i>	Apocynaceae	Shrub
13	<i>Cassia fistula</i>	Fabaceae	Tree
14	<i>Cissampelos pareira</i>	Menispermaceae	Climber
15	<i>Cordia dichotoma</i>	Boraginaceae	Tree
16	<i>Cryptolepis buchanani</i>	Asclepiadaceae	Climber
17	<i>Dalbergia sissoo</i>	Fabaceae	Tree
18	<i>Datura stramonium</i>	Solanaceae	Shrub
19	<i>Dicliptera bupleuroides</i>	Acanthaceae	Herb
20	<i>Dodonaea viscosa</i>	Sapindaceae	Shrub
21	<i>Eucalyptus sp.</i>	Myrtaceae	Tree
22	<i>Eupatorium sp.</i>	Asteraceae	Herb
23	<i>Euphorbia royleana</i>	Euphorbiaceae	Shrub
24	<i>Ficus benghalensis</i>	Moraceae	Tree
25	<i>Ficus palmata</i>	Moraceae	Tree
26	<i>Ficus religiosa</i>	Moraceae	Tree
27	<i>Ficus rumphii</i>	Moraceae	Tree
28	<i>Jasminum dispersum</i>	Oleaceae	Shrub
29	<i>Lantana camara</i>	Verbenaceae	Shrub
30	<i>Mallotus philippensis</i>	Euphorbiaceae	Tree
31	<i>Mangifera indica</i>	Anacardiaceae	Tree
32	<i>Malva parviflora</i>	Malvaceae	Shrub
33	<i>Morus alba</i>	Moraceae	Tree
34	<i>Murraya koenigii</i>	Anacardiaceae	Shrub
35	<i>Phoenix sylvestris</i>	Arecaceae	Tree
36	<i>Populus deltoides</i>	Salicaceae	Tree
37	<i>Sida acuta</i>	Malvaceae	Herb
38	<i>Solanum nigrum</i>	Solanaceae	Herb
39	<i>Terminalia arjuna</i>	Combretaceae	Tree
40	<i>Terminalia bellirica</i>	Combretaceae	Tree

Sl. No	Species	Family	Habit
41	<i>Terminalia chebula</i>	Combretaceae	Tree
42	<i>Tinospora cordifolia</i>	Menispermaceae	Climber
43	<i>Urena lobata</i>	Malvaceae	Shrub
44	<i>Xanthium strumarium</i>	Asteraceae	Shrub
45	<i>Ziziphus mauritiana</i>	Rhamnaceae	Shrub

FAUNA OF THE STUDY AREA

Table No. 3.15, Fauna of the study area

Sl.No	Common Name	Scientific name	Wildlife Schedule	IUCN Red List Status
Mammals				
1	Indian Palm Squirrel	<i>Funambulus palmarum</i>	IV	LC
2	Indian Grey Mongoose	<i>Herpestes edwardsii</i>	II	LC
3	Rat	<i>Rattus rattus</i>	V	DD
4	Wild pig	<i>Sus scrofa</i>	III	LC
5	Field mouse	<i>Apodemus sylvaticus</i>	-	LC
6	Indian hare	<i>Lepus nigricollis</i>	IV	LC
7	Rhesus macaque	<i>Macaca mulatta</i>	II	LC
8	Fruits bat	<i>Pteropus conspicillatus</i>	V	LC
9	Golden Jackal	<i>Canis aureus</i>	II	LC
Domestic Animals:				
10	Cow	<i>Bos indicus</i>		NA
11	Buffalo	<i>Bos bubalis</i>		DD
12	Goat	<i>Capra aegagrushircus</i>		DD
Avian fauna (Birds)				
1	Peacock	<i>Pavo cristatus</i>	I	
2	Jungle Myna	<i>Acridotheres fuscus</i>	IV	LC
3	Common Myna	<i>Acridotheres tristis</i>	IV	LC
4	Spotted Owlet	<i>Athene brama</i>	IV	LC
5	Cattle Egret	<i>Bubulcus ibis</i>	IV	LC
6	Red-rumped Swallow	<i>Cecropis daurica</i>	-	DD
7	Pied kingfisher	<i>Ceryle rudis</i>	IV	DD

Sl.No	Common Name	Scientific name	Wildlife Schedule	IUCN Red List Status
8	Blue Rock Pigeon	<i>Columba livia</i>	-	LC
9	Oriental Magpie Robin	<i>Copsychus saularis</i>	IV	LC
10	Indian roller	<i>Coracias benghalensis</i>	IV	LC
11	House Crow	<i>Corvus splendens</i>	V	LC
12	Common Cuckoo	<i>Cuculus canorus</i>	IV	LC
13	Ashy Drongo	<i>Dicrurus leucophaeus</i>	IV	LC
14	Asian Koel	<i>Eudynamys scolopacea</i>	IV	NA
15	White-breasted King fisher	<i>Halcyon smyrnensis</i>	IV	LC
16	Small Green Bee Eater	<i>Merops orientalis</i>	-	LC
17	House Sparrow	<i>Passer domesticus</i>	IV	LC
18	Rose ringed Parakeet	<i>Psittacula krameri</i>	IV	LC
19	Red vented Bulbul	<i>Pycnonotus cafer</i>	IV	LC
20	Spotted Dove	<i>Streptopelia chinensis</i>	IV	NA
21	Pied Myna	<i>Sturnus contra</i>	IV	LC
22	Marsh Sandpiper	<i>Tringa stagnatilis</i>	IV	LC
23	Common Babbler	<i>Turdoides caudatus</i>	IV	NA
24	Hoopoe	<i>Upupa epops ceylonensis</i>	IV	NA
Reptiles				
1.	Common Toad	<i>Bufo melanostictus</i>	IV	LC
2.	Skipping frog	<i>Bufo stomaticus</i>	IV	LC
3.	Krait	<i>Bungarus caeruleus</i>	IV	NA
4.	Banded krait	<i>Bungarus multicinctus</i>	-	NA
5.	Kashmir Rock Agama	<i>Laudakia tuberculata</i>	-	NA
6.	Bronze Grass Skink	<i>Eutropis macularia</i>		NA
7.	Garden lizard	<i>Calotes versicolor</i>	-	NA
8.	House lizard	<i>Hemidactylus frenatus</i>	-	LC
9.	Cobra	<i>Naja naja</i>	II	LC

Sl.No	Common Name	Scientific name	Wildlife Schedule	IUCN Red List Status
10.0	Rat snakes	<i>Ptyas mucosus</i>	-	NA

LC: Least Concern, NA: Not Assessed, DD: Data deficient.

Table No. 3.16, List of endemic / Local flora & fauna authenticated by Range Forest Officer, Hamirpur

S.NO	Local Name	Botanical Name	Local Name	Botanical Name
	Flora		Fauna	
1	Kamal	<i>Mallotus philippensis</i>	Fox	<i>Vulpes bengalensis</i>
2	Bamboo	<i>Dendro calamus strictus</i>	Brown Sparrow	<i>Emberiza citrinella</i>
3	Congress grass	<i>Parthenium</i>	Goh	<i>Varanus komodoerisis</i>
4	Mango	<i>Mangi ferainolica</i>	Nevla	<i>Herpestes edwardsi</i>
5	Aakhe	<i>Rubus ellipticus</i>	Jungli Murga	<i>Gallus gullus</i>
6	Chil	<i>Pinus roxburghi</i>	Peacock	<i>Pavocristatus</i>
7	Kachnar	<i>Bauhina veriegata</i>	Kakar	<i>Muntiacus</i>
8	Gandela	<i>Murraya kaengii</i>	Suar	<i>Sus scrofa</i>
9	Garna	<i>Carissa opaca</i>	Khargose	<i>Oryctolagus cuniculus</i>

3.7 SOCIAL IMPACT ASSESSMENT, REHABILITATION & RESETTLEMENT (R&R) INTRODUCTION

The proposed project is for Extraction of Sand, Stone and Bajri from Govt. land falling in Kangra district of Himachal Pradesh. The Environmental Impact Assessment (EIA) study report is prepared for obtaining Environmental Clearance (EC) from SEIAA Himachal Pradesh for the proposed Extraction/Collection of Sand, Stone & Bajri Project.

The proposed project is having area of 01-58-56 Hectares (under cluster approach of area 14-70-80 Hectares (Private Land, River Bed) and falls under Category- "B1" as per the 500 m cluster Certificate vide letter no. Udyog-Bhu (Khani-4) Laghu-316/2024-13591 Dated 27-02-2024 regarding details of other mines located within 500m of the lease area which is attached as **Annexure-III**. According to the Distance Certificate from the Mining Officer, there are three other mining lease areas within a 500-meter radius, total cluster area is more than 5 hectares.

Demography

Demography is one of the important indicators of environmental health of an area. It includes population, sex ratio, number of households, literacy, population density, etc. In order to assess the Demographic & Socio-economic features of the area, Census data 2011, for the concerned District Hamirpur and Kangra of Himachal Pradesh state was compiled and placed in the form of tabulation and graphical representation.

Demography of the District Hamirpur, Himachal Pradesh

As per the census records 2011, the total population of Hamirpur district is 4,54,768 comprising of 2, 17,070 males and 2, 37,698 females. Out of the total population of the district 93.1% lives in rural areas while 6.9% lives in urban area

The decadal growth rate of district comes 10.2%. The growth rates for the rural and urban areas of the district are 10.7 & 4.1%, respectively. The density of population in Hamirpur district comes to 407 persons per sq.km against the state density of 123 persons.

There are 1,095 females for every thousand males in Hamirpur district. The sex ratios for rural and urban areas of the district are 1,109 and 926, respectively. It is observed that the sex ratio in the age group of 0-6 years is much lower in relation to the overall sex ratio figures of the district. It comes to 887 for total population in the age group of 0-6 years. In rural areas the sex ratio in this age group is 886 and in urban areas it is 907 only.

According to 2011 Census, the total workers including main and marginal workers constitute 53.2% of the total population of the district. In which males and females are 54.7 & 51.8%, respectively. Of the total workers the share of main workers is 27.7% and the marginal workers is 25.5%. The remaining 46.8% of population belongs to the category of non-workers.

As per Census 2011 Hamirpur district reported 3, 58,091 persons as literates constituting 88.2% of the total population. The proportion of male and female literates in the district is 94.4 & 82.6%, respectively. The total literacy rates of rural and urban areas are 87.8% & 92.5%, respectively.

Of the 4, 54,768 total population of the district, 24.0% belongs to Scheduled Castes and 0.7% to Scheduled Tribes.

Demography of the District Kangra, Himachal Pradesh

As per the census records 2011, the total population of Kangra district is 15, 10,075 comprising of 7, 50,591 males and 7, 59,484 females respectively. The decadal growth rate of district

comes to 12.8%. The growth rates for the rural and urban areas of the district are 12.4 & 19.4%, respectively.

The density of population in Kangra district is 263 persons per sq. km. against the state average of 123 persons. There are 1,012 females for every thousand males in Kangra district. The sex-ratio figures for rural and urban areas of the district are 1,019 and 908, respectively. It is also observed that, the proportion of females in rural areas is higher than that of urban areas.

As per Census 2011 in Kangra district 11, 52,640 persons were reported as literates constituting 85.7% of the total population excluding 0-6 age-group population. The proportion of male and female literates in the district is 91.5% & 80.0%, respectively. The literacy rate of males is much higher than that of females. Of the 15, 10,075 total population of the district, 21.2% of the total population belongs to the Scheduled Castes and 5.6% to Scheduled Tribes. The percentage of Scheduled Castes population constitutes 21.4% in rural population and 16.9% in urban population of the district.

Religion

During Census 2011 out of the total population of 4, 54,768 of the district, 4,49,412 (98.8%) have reported their religion as Hindu followed by 3,711 (0.8%) as Muslim. Remaining Sikhs, Buddhist, Christian, Jain and other religions have a negligible representation in the district.

Mother Tongue

During Census 2011 the district has reported as 98.0% population have reported their mother tongue as Hindi and remaining mother tongues are negligible.

Methodology

In order to assess the Demographic & Socio-economic features along with the 10km distance based on field surveys and public consultations undertaken during the baseline field study period and Census records 2011, for the concerned district namely Hamirpur and Kangra of Himachal Pradesh state was compiled and placed in the form of tabulation and graphical representation. Entire study area is observed predominantly rural.

Purpose of the Study

Socio-economic study was conducted to establish the baseline demographic features and impacts due to this Stone, Sand & Bajri mining project, as operation phase of any project invariably leads to Socio-economic changes. The proposed project could lead to unplanned and haphazard development of slums of various size and description with little or rudimentary.

Description of Social Environment

As per the Census Records 2011, the study area has a total of 246 revenue villages and 1 Town i.e. Tira Sujanpur (NP) under two Districts namely Hamirpur and Kangra of Himachal Pradesh state respectively.

Overall study area revenue villages are falling mainly under total twelve (12) tehsils namely Tira Sujanpur, Nadaun, Galore, Hamirpur & Bhoranj of Hamirpur district and Nurpur, Shahpur, Baroh, Dera Gopipur, & Khundian, Thural & Jaisinghpur of Kangra district respectively in Himachal Pradesh and Punjab State respectively.

Population Distribution within 10 km Study Zone

As per the Census Records 2011, the total population of 10 km study zone was recorded as 68723 persons of 247 revenue villages/towns of Himachal Pradesh state. Male-female wise total population was recorded as 32321 males (47.0%) and 36402 (53.0%) females respectively.

Total number of 'Households' was observed as 16481 in the 10 km radius study zone. Scheduled Caste ('SC') population was observed as 16524 persons consisting of 8098 males and 8426 females in the 10 km study zone. Scheduled Tribes ('ST') population was also observed as 381 persons consisting of 205 males and 176 females in the 10 km study zone. The child population of the study area is recorded as 7486 and comprising of 3930 (52.5%) males & 3556 (47.5%) females respectively.

Village wise details of population distribution are given below.

Table Error! No text of specified style in document.-1: Village-wise Population

Distribution (10km Study Zone)

Name of the Village / Town (Census code)	No of Households	Total Population			Child Population (0-6 Years)		
		Total	Male	Female	Total	Male	Female
1. District Hamirpur, Himachal Pradesh							
Bairi (63/24)	136	533	220	313	59	29	30
Bhatpura (63/18)	50	200	95	105	19	11	8
Chamarrahra (63/23)	19	100	53	47	18	11	7
Kodana (63/27)	124	490	210	280	63	29	34
Poi (63/20)	18	69	25	44	6	3	3
Chaptehr (63/22)	30	118	42	76	16	6	10

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Jhataur (63/21)	35	133	56	77	12	5	7
Bahru (63/19)	32	127	59	68	14	10	4
Poar (63/1)	75	291	119	172	27	13	14
Bagehrah Upperla (63/14)	110	456	211	245	56	30	26
Bagehrah Buhla (63/6)	199	772	340	432	81	44	37
Jol (63/4) – I	77	365	171	194	41	23	18
Samona (63/16)	60	258	116	142	30	11	19
Bagh (63/3)	30	146	68	78	25	15	10
Dera (55/6)	12	36	12	24	1	1	0
Pakkhar (55/27)	16	57	32	25	4	3	1
Tikru (55/4)	36	138	63	75	17	7	10
Chaklah (55/34)	15	82	39	43	12	7	5
Charot (55/44)	56	216	107	109	17	14	3
Ludiana (55/2)	8	23	13	10	0	0	0
Darla (55/19)	134	587	278	309	55	26	29
Meharpura (55/24)	96	415	204	211	41	23	18
Kharsal (55/17)	27	123	49	74	10	6	4
Deryal (55/23)	33	142	68	74	16	9	7
Gahlian (55/11)	14	64	29	35	7	3	4
Nihari Upperli (54/20)	5	22	13	9	0	0	0
Bhog (54/4)	16	82	43	39	8	4	4
Kajoti (55/5)	26	122	57	65	26	19	7
Karot Khas (54/10)	120	532	248	284	54	21	33
Dhaner (54/17)	19	79	39	40	10	10	0
Laungni (54/22)	60	278	141	137	20	11	9
Pairian (54/7)	20	97	43	54	16	8	8
Puneh Attru (54/8)	16	68	36	32	7	6	1
Khairru (54/16)	30	163	76	87	16	11	5
Paneh Sih (54/9)	20	88	47	41	10	6	4
Bari (54/3)	42	182	85	97	26	13	13
Salghun Hira (54/12)	20	85	40	45	8	3	5

Salghun-Lachho (54/14)	9	42	24	18	6	6	0
Garoru Ghuman (53/7)	15	60	25	35	8	3	5
Bandhar (53/13)	12	60	28	32	5	3	2
Rih (53/12)	199	796	374	422	110	57	53
Chabutra Khas (53/14)	237	1072	504	568	112	53	59
Baliana (54/5)	16	78	35	43	9	3	6
Chamarrabri (57/17)	39	168	74	94	23	12	11
Bhagol (57/4)	23	118	48	70	14	7	7
Chakariana (57/7)	27	124	54	70	15	7	8
Jehr (57/6)	26	127	64	63	9	2	7
Patlandar (57/5)	78	392	202	190	33	19	14
Kot (57/19)	4	11	6	5	1	0	1
Chail (57/20)	15	53	27	26	5	5	0
Nalahi (57/18)	79	330	144	186	41	22	19
Gahla (57/8)	6	26	11	15	3	0	3
Chamiana (57/10)	17	68	31	37	7	4	3
Lambri (60/4)	91	416	193	223	56	31	25
Duhak (61/9)	118	521	251	270	60	26	34
Rangar (58/15)	141	612	280	332	69	36	33
Bhati (58/1)	12	33	15	18	5	2	3
Drati (58/14)	5	15	6	9	2	2	0
Sanwin Kalan (58/7)	8	30	15	15	0	0	0
Sanwin Khurd (58/10)	3	13	6	7	0	0	0
Bhatiana Brahmana (58/2)	6	16	6	10	0	0	0
Pakhi (58/4)	6	19	7	12	0	0	0
Gadi (57/15)	59	266	115	151	18	8	10
Barog (57/2)	40	173	86	87	17	9	8
Jagarial (57/9)	15	69	30	39	4	2	2
Bharthun (56/2)	43	192	88	104	15	5	10
Ukhli (56/1)	20	66	30	36	6	2	4
Garoru Buhla (56/7)	18	77	40	37	7	4	3

Taryamli (60/13)	26	117	56	61	12	6	6
Jateru (60/14)	4	17	10	7	2	2	0
Garoru (60/7)	8	32	11	21	0	0	0
Dhel Khas (59/2)	40	163	76	87	17	9	8
Nag Lamber (59/3)	18	54	25	29	1	0	1
Thana (63/5)	19	89	37	52	14	7	7
Mehlaru (63/10)	30	129	58	71	15	10	5
Thathi (63/13)	18	74	29	45	11	5	6
Jandru (63/11)	48	191	81	110	29	17	12
Shukhani (63/9)	34	142	56	86	24	13	11
Than Tikkar (63/31)	45	196	83	113	23	9	14
Palbhu (64/14)	49	178	74	104	22	11	11
Bajrol (64/6)	151	625	244	381	72	40	32
Mahesh Kowal (64/7)	50	189	66	123	27	14	13
Thathi Gurdwalan (64/3)	49	211	102	109	14	7	7
Bhat Lamber (64/1)	42	170	70	100	26	21	5
Jangal Khas (64/16)	327	1291	583	708	140	74	66
Kheri (64/5)	228	953	418	535	117	58	59
Bajahar (64/9)	67	283	132	151	15	8	7
Kakkar (63/29)	168	692	308	384	75	40	35
Tira Sujampur (NP)	1769	7943	4262	3681	781	410	371
Jangal (24/4)	49	232	108	124	29	18	11
Andara (22/2)	33	142	66	76	14	8	6
Punjyal (23/6)	10	49	24	25	7	3	4
Bumbloo (23/17)	20	98	49	49	7	5	2
Salasi (23/3)	3	10	6	4	0	0	0
Kotlu (28/12) – I	47	195	82	113	25	15	10
Gahli (36/35)	105	493	248	245	58	31	27
Bharahian Di Dhar (62/22)	50	194	85	109	16	9	7
Lambran Di Dhar (62/25)	40	142	61	81	15	8	7
Bhatwara (37/9)	42	190	84	106	25	10	15

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Chapter-3 Baseline Environment Status

Duhak (43/27)	57	219	102	117	16	7	9
2. District Kangra, Himachal Pradesh							
Tikkar (361)	33	171	84	87	20	11	9
Garan (311)	261	1185	609	576	111	65	46
Tharu (64)	220	998	497	501	105	52	53
Sanani (585)	33	155	79	76	11	6	5
Garh (171)	327	1317	633	684	139	70	69
Badehr (818)	32	177	85	92	28	12	16
Sarohi (887)	50	276	143	133	34	16	18
Sialkar (884)	60	318	145	173	50	20	30
Mannu (880)	21	93	44	49	17	8	9
Kuri (885)	14	79	42	37	8	6	2
Balra (886)	15	53	25	28	3	2	1
Manera (899)	7	39	21	18	3	1	2
Marhana (898)	58	336	171	165	41	21	20
Harbah (889)	17	90	45	45	13	6	7
Dhakhar (890)	49	255	135	120	30	15	15
Bhadrun (864)	17	81	46	35	9	5	4
Kud (863)	9	41	19	22	7	3	4
Bhadrol (837)	23	92	45	47	5	3	2
Galoti (852)	35	145	63	82	15	6	9
Gahli (855)	27	122	64	58	16	10	6
Chihar (853)	36	137	71	66	20	10	10
Chanarri (851)	13	77	39	38	8	4	4
Phihar (839)	38	164	76	88	19	9	10
Pihri (838)	62	261	118	143	30	15	15
Uk Lahr (850)	14	68	45	23	7	6	1
Khaliyana (854)	31	127	57	70	11	3	8
Naloti (857)	39	179	89	90	23	12	11
Dhariatu (849)	3	14	5	9	0	0	0
Makar (848)	24	109	53	56	10	2	8

Khola (847)	10	44	22	22	5	3	2
Samehl (845)	17	76	39	37	9	6	3
Chaunki (846)	28	114	66	48	11	8	3
Tihri (861)	8	42	20	22	2	1	1
Jhaura (891)	33	137	71	66	12	9	3
Jarundi (892)	42	174	72	102	29	14	15
Kasar (897)	7	36	17	19	8	3	5
Dahd (896)	12	55	21	34	11	5	6
Tipri (904)	28	118	53	65	10	5	5
Kior (903)	39	186	93	93	23	16	7
Gharthoon (431)	69	273	124	149	33	17	16
Salghuni (430)	27	128	60	68	18	6	12
Tamber (433)	56	220	85	135	22	12	10
Kauna (432)	82	289	131	158	33	22	11
Duhak Khurd (461)	156	619	292	327	68	29	39
Dhaniara (460)	128	531	229	302	62	33	29
Bhuhli Pakhi (465)	27	117	56	61	11	5	6
Balh Bhurian (467)	65	268	120	148	31	17	14
Leora (466)	26	96	41	55	8	4	4
Ghandera (493)	55	249	117	132	26	13	13
Bairghatta (464)	70	305	160	145	46	23	23
Saidoon (463)	114	436	182	254	63	25	38
Chula Buhla (499)	3	15	8	7	0	0	0
Chula (498)	11	40	19	21	3	1	2
Chula Uparla (500)	81	345	166	179	50	26	24
Bhanuh (501)	34	127	57	70	16	8	8
Thural Khas (504)	91	395	191	204	40	26	14
Ghumarnu (505)	20	102	53	49	9	6	3
Bhanwar (506)	67	246	119	127	24	13	11
Thana (507)	67	247	105	142	35	24	11
Tikkri (508)	42	161	85	76	18	8	10

Nalehar (509)	94	363	173	190	21	19	2
Dridh (512)	53	231	102	129	19	13	6
Phagurta (517)	87	345	152	193	38	17	21
Saman (511)	34	137	54	83	10	4	6
Sanhoon (518)	108	415	184	231	44	21	23
Badarta (520)	22	87	43	44	13	10	3
Kelan (570)	47	205	91	114	28	15	13
Panjlehr (571)	64	259	100	159	40	24	16
Bansu (572)	24	78	33	45	7	4	3
Koru (573)	25	90	33	57	6	3	3
Chohla (605)	57	198	98	100	23	14	9
Kohala (606)	33	133	65	68	11	7	4
Barla (603)	39	151	56	95	18	10	8
Lahri (602)	68	257	102	155	35	19	16
Bhatwara (601)	83	297	131	166	32	17	15
Siara (576)	21	87	40	47	9	5	4
Kudana (575)	23	106	51	55	11	8	3
Kotlu (513) - II	89	368	173	195	34	17	17
Santal (515)	31	120	53	67	9	7	2
Ban Banjar (574)	13	48	23	25	3	1	2
Paplah (516)	84	303	137	166	29	16	13
Jol (519) -II	45	169	67	102	24	13	11
Rirkal (494)	27	95	37	58	11	7	4
Bandahu Khas (497)	57	239	107	132	33	10	23
Kalhun (514)	53	206	89	117	28	9	19
Odri (496)	55	194	89	105	14	9	5
Umri (489)	53	224	105	119	32	11	21
Marera (495)	151	595	293	302	65	34	31
Gandar (488)	119	466	208	258	48	26	22
Bar (487)	28	104	46	58	7	3	4
Barram Khurd (486)	100	384	155	229	45	18	27

Karonthi (478)	60	249	119	130	30	16	14
Jandera (477)	27	108	46	62	10	6	4
Kalhera (491)	17	64	23	41	9	5	4
Andrana (490)	86	379	177	202	34	18	16
Tikkar Jihan (492)	63	256	109	147	31	18	13
Tina Jamaitar (459)	29	112	56	56	6	4	2
Har Balak Rupi (458)	163	687	342	345	80	42	38
Koal (457)	54	198	93	105	19	7	12
Och Kalan (442)	84	352	161	191	53	31	22
Sadda (444)	62	243	104	139	19	9	10
Kuhn Khas (448)	93	364	145	219	50	26	24
Bir (470)	190	815	383	432	92	52	40
Jangal (469)	39	173	89	84	16	9	7
Malodhan (468)	44	164	66	98	25	10	15
Alampur (472)	406	1682	827	855	181	107	74
Bagh (473)	77	328	156	172	41	22	19
Jagrup Nagar (474)	141	554	277	277	45	26	19
Dehru (475)	59	221	88	133	25	11	14
Dhar Brahmपुरi (476)	95	346	139	207	34	18	16
Mashwar (479)	26	110	51	59	11	6	5
Shakoh (480)	44	163	74	89	18	8	10
Liunda (481)	88	353	167	186	35	20	15
Gahli (482)	42	167	77	90	15	8	7
Barram Kalan (483)	44	191	87	104	28	15	13
Garh (484)	136	645	286	359	90	43	47
Jamula (485)	42	160	57	103	25	13	12
Kutwalla (581)	33	138	58	80	16	6	10
Daslon (582)	48	165	63	102	7	3	4
Pandehr (588)	129	452	205	247	36	18	18
Lower Lamba Graon (589)	290	1171	585	586	102	62	40
Lahr (583)	153	573	275	298	58	32	26

Kaluhi (584)	37	150	71	79	19	10	9
Bhati (580)	31	130	58	72	13	8	5
Hardon (579)	72	282	139	143	34	16	18
Talwar (578)	142	514	239	275	56	27	29
Har (577)	124	489	209	280	50	24	26
Saul Banehr (585)	113	456	196	260	50	21	29
Maniar (595)	106	429	189	240	52	28	24
Jagni Jar (596)	32	123	58	65	16	8	8
Dandel (600)	53	191	80	111	22	10	12
Nihara (599)	35	118	49	69	11	5	6
Drup Kayara (617)	68	267	121	146	20	8	12
Chambe Da Lahr (593)	31	122	57	65	23	12	11
Ropri (594)	22	86	37	49	9	5	4
Julah Pat (624)	24	88	35	53	9	4	5
Jaleht (591)	27	105	45	60	11	6	5
Sandroa (592)	37	115	49	66	15	9	6
Bhati (623)	50	187	74	113	20	10	10
Kamand (628)	106	414	189	225	43	25	18
Gujrera (627)	30	139	65	74	17	8	9
Tikri (918)	87	363	170	193	47	21	26
Kotahan (920)	70	250	113	137	20	9	11
Bag Kuljan (921)	61	241	112	129	26	17	9
Kachhal Bhadarian (919)	104	467	224	243	44	24	20
Jaisinghpur (922)	390	1531	729	802	172	104	68
Buhara (924)	26	94	54	40	13	6	7
TOTAL (10km)	16481	6872	3232	3640	7486	3930	3556
<i>Source-Census of India, 2011</i>							

Table Error! No text of specified style in document.-2:Village-wise SC & STPopulation Distribution (10kmStudy Zone)

Name of the Village/Town	Scheduled Castes	Scheduled Tribes
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(Census code)	Persons	Males	Persons	Males	Persons	Males
1. District Hamirpur, Himachal Pradesh						
Bairi (63/24)	39	14	25	0	0	0
Bhatpura (63/18)	26	12	14	0	0	0
Chamarrahra (63/23)	16	8	8	0	0	0
Kodana (63/27)	187	83	104	0	0	0
Poi (63/20)	20	8	12	0	0	0
Chaptehr (63/22)	0	0	0	0	0	0
Jhataur (63/21)	5	2	3	0	0	0
Bahru (63/19)	0	0	0	0	0	0
Poar (63/1)	27	10	17	0	0	0
Bagehrah Upperla (63/14)	244	115	129	0	0	0
Bagehrah Buhla (63/6)	292	133	159	0	0	0
Jol (63/4) - I	285	141	144	0	0	0
Samona (63/16)	19	11	8	0	0	0
Bagh (63/3)	0	0	0	0	0	0
Dera (55/6)	0	0	0	0	0	0
Pakkhar (55/27)	19	11	8	0	0	0
Tikru (55/4)	128	58	70	0	0	0
Chaklah (55/34)	0	0	0	0	0	0
Charot (55/44)	60	29	31	7	3	4
Ludiana (55/2)	0	0	0	0	0	0
Darla (55/19)	159	79	80	0	0	0
Meharpura (55/24)	183	92	91	0	0	0
Kharsal (55/17)	0	0	0	0	0	0
Deryal (55/23)	0	0	0	0	0	0
Gahlian (55/11)	0	0	0	0	0	0
Nihari Upperli (54/20)	0	0	0	0	0	0
Bhog (54/4)	0	0	0	0	0	0
Kajoti (55/5)	42	24	18	0	0	0
Karot Khas (54/10)	125	54	71	0	0	0

Dhaner (54/17)	0	0	0	0	0	0
Laungni (54/22)	70	40	30	0	0	0
Pairian (54/7)	4	1	3	9	5	4
Puneh Attru (54/8)	25	14	11	0	0	0
Khairru (54/16)	0	0	0	0	0	0
Paneh Sih (54/9)	55	31	24	0	0	0
Bari (54/3)	37	20	17	1	1	0
Salghun Hira (54/12)	0	0	0	0	0	0
Salghun-Lachho (54/14)	7	4	3	0	0	0
Garoru Ghuman (53/7)	0	0	0	0	0	0
Bandhar (53/13)	19	9	10	0	0	0
Rih (53/12)	306	148	158	0	0	0
Chabutra Khas (53/14)	537	253	284	0	0	0
Baliana (54/5)	0	0	0	0	0	0
Chamarrabri (57/17)	5	3	2	0	0	0
Bhagol (57/4)	6	2	4	0	0	0
Chakariana (57/7)	0	0	0	0	0	0
Jehr (57/6)	92	48	44	0	0	0
Patlandar (57/5)	146	81	65	0	0	0
Kot (57/19)	0	0	0	0	0	0
Chail (57/20)	19	9	10	0	0	0
Nalahi (57/18)	136	68	68	0	0	0
Gahla (57/8)	0	0	0	0	0	0
Chamiana (57/10)	0	0	0	0	0	0
Lambri (60/4)	35	15	20	0	0	0
Duhak (61/9)	301	158	143	0	0	0
Rangar (58/15)	335	167	168	0	0	0
Bhati (58/1)	0	0	0	0	0	0
Drati (58/14)	0	0	0	0	0	0
Sanwin Kalan (58/7)	9	6	3	0	0	0
Sanwin Khurd (58/10)	0	0	0	0	0	0

Bhatiana Brahmana (58/2)	0	0	0	0	0	0
Pakhi (58/4)	0	0	0	0	0	0
Gadi (57/15)	27	14	13	0	0	0
Barog (57/2)	9	5	4	0	0	0
Jagarial (57/9)	0	0	0	0	0	0
Bharthun (56/2)	134	63	71	0	0	0
Ukhli (56/1)	24	11	13	0	0	0
Garoru Buhla (56/7)	36	21	15	0	0	0
Taryamli (60/13)	111	53	58	0	0	0
Jateru (60/14)	0	0	0	0	0	0
Garoru (60/7)	0	0	0	0	0	0
Dhel Khas (59/2)	0	0	0	0	0	0
Nag Lamber (59/3)	0	0	0	0	0	0
Thana (63/5)	26	12	14	0	0	0
Mehlaru (63/10)	5	3	2	0	0	0
Thathi (63/13)	0	0	0	0	0	0
Jandru (63/11)	0	0	0	0	0	0
Shukhani (63/9)	0	0	0	0	0	0
Than Tikkar (63/31)	18	6	12	0	0	0
Palbhu (64/14)	0	0	0	0	0	0
Bajrol (64/6)	16	7	9	0	0	0
Mahesh Kowal (64/7)	17	7	10	0	0	0
Thathi Gurdwalan (64/3)	0	0	0	0	0	0
Bhat Lamber (64/1)	0	0	0	0	0	0
Jangal Khas (64/16)	411	190	221	2	2	0
Kheri (64/5)	265	123	142	0	0	0
Bajahar (64/9)	61	32	29	0	0	0
Kakkar (63/29)	204	100	104	0	0	0
Tira Sujampur (NP)	1851	961	890	44	39	5
Jangal (24/4)	76	34	42	0	0	0
Andara (22/2)	0	0	0	0	0	0

Punjyal (23/6)	0	0	0	0	0	0
Bumbloo (23/17)	13	6	7	0	0	0
Salasi (23/3)	0	0	0	0	0	0
Kotlu (28/12) - I	0	0	0	0	0	0
Gahli (36/35)	98	48	50	0	0	0
Bharahian Di Dhar (62/22)	6	4	2	0	0	0
Lambran Di Dhar (62/25)	5	2	3	0	0	0
Bhatwara (37/9)	0	0	0	0	0	0
Duhak (43/27)	67	29	38	0	0	0
2. District Kangra, HP						
Tikkar (361)	0	0	0	0	0	0
Garan (311)	144	71	73	0	0	0
Tharu (64)	339	175	164	166	83	83
Sanani (585)	0	0	0	0	0	0
Garh (171)	263	138	125	7	3	4
Badehr (818)	0	0	0	0	0	0
Sarohi (887)	0	0	0	0	0	0
Sialkar (884)	0	0	0	0	0	0
Mannu (880)	0	0	0	0	0	0
Kuri (885)	0	0	0	0	0	0
Balra (886)	0	0	0	0	0	0
Manera (899)	8	4	4	0	0	0
Marhana (898)	48	29	19	0	0	0
Harbah (889)	0	0	0	0	0	0
Dhakhar (890)	0	0	0	0	0	0
Bhadrun (864)	0	0	0	0	0	0
Kud (863)	7	3	4	0	0	0
Bhadrol (837)	0	0	0	0	0	0
Galoti (852)	0	0	0	0	0	0
Gahli (855)	121	63	58	0	0	0
Chihar (853)	65	32	33	0	0	0

Chanarri (851)	76	38	38	0	0	0
Phihar (839)	0	0	0	0	0	0
Pihri (838)	1	0	1	0	0	0
Uk Lahr (850)	48	32	16	0	0	0
Khaliyana (854)	9	4	5	0	0	0
Naloti (857)	0	0	0	0	0	0
Dhariatu (849)	0	0	0	0	0	0
Makar (848)	0	0	0	0	0	0
Khola (847)	0	0	0	0	0	0
Samehl (845)	0	0	0	0	0	0
Chaunki (846)	36	21	15	0	0	0
Tihri (861)	0	0	0	0	0	0
Jhoola (891)	0	0	0	0	0	0
Jarundi (892)	0	0	0	0	0	0
Kasar (897)	0	0	0	0	0	0
Dahd (896)	0	0	0	0	0	0
Tipri (904)	73	37	36	0	0	0
Kior (903)	167	81	86	0	0	0
Gharthoon (431)	105	47	58	0	0	0
Salghuni (430)	0	0	0	0	0	0
Tamber (433)	8	4	4	0	0	0
Kauna (432)	45	22	23	0	0	0
Duhak Khurd (461)	178	85	93	0	0	0
Dhaniara (460)	106	58	48	0	0	0
Bhuhli Pakhi (465)	0	0	0	0	0	0
Balh Bhurian (467)	46	26	20	0	0	0
Leora (466)	47	24	23	0	0	0
Ghandera (493)	36	14	22	0	0	0
Bairghatta (464)	23	16	7	0	0	0
Saidoon (463)	41	20	21	0	0	0
Chula Buhla (499)	0	0	0	0	0	0

Chula (498)	5	3	2	0	0	0
Chula Uparla (500)	32	13	19	0	0	0
Bhanuh (501)	0	0	0	0	0	0
Thural Khas (504)	71	39	32	0	0	0
Ghumarnu (505)	87	44	43	0	0	0
Bhanwar (506)	22	9	13	0	0	0
Thana (507)	33	18	15	0	0	0
Tikkri (508)	9	5	4	0	0	0
Nalehar (509)	41	24	17	0	0	0
Dridh (512)	36	16	20	0	0	0
Phagurta (517)	31	12	19	0	0	0
Saman (511)	0	0	0	0	0	0
Sanhoon (518)	71	33	38	0	0	0
Badarta (520)	0	0	0	0	0	0
Kelan (570)	7	1	6	0	0	0
Panjlehr (571)	16	7	9	0	0	0
Bansu (572)	2	1	1	0	0	0
Koru (573)	20	8	12	0	0	0
Chohla (605)	36	18	18	6	2	4
Kohala (606)	2	1	1	0	0	0
Barla (603)	0	0	0	0	0	0
Lahri (602)	0	0	0	0	0	0
Bhatwara (601)	66	31	35	0	0	0
Siara (576)	0	0	0	0	0	0
Kudana (575)	5	2	3	0	0	0
Kotlu (513) - II	162	77	85	0	0	0
Santal (515)	70	31	39	0	0	0
Ban Banjar (574)	29	15	14	0	0	0
Paplah (516)	44	19	25	6	3	3
Jol (519) -II	5	3	2	0	0	0
Rirkal (494)	7	3	4	0	0	0

Bandahu Khas (497)	70	35	35	0	0	0
Kalhun (514)	7	3	4	0	0	0
Odri (496)	67	32	35	49	23	26
Umri (489)	80	35	45	0	0	0
Marera (495)	60	30	30	82	39	43
Gandar (488)	199	91	108	0	0	0
Bar (487)	0	0	0	0	0	0
Barram Khurd (486)	130	52	78	0	0	0
Karonthi (478)	191	96	95	0	0	0
Jandera (477)	49	22	27	0	0	0
Kalhera (491)	0	0	0	0	0	0
Andrana (490)	114	57	57	0	0	0
Tikkar Jihan (492)	105	52	53	0	0	0
Tina Jamaitar (459)	3	2	1	0	0	0
Har Balak Rupi (458)	258	132	126	0	0	0
Koal (457)	70	40	30	0	0	0
Och Kalan (442)	121	65	56	0	0	0
Sadda (444)	30	12	18	0	0	0
Kuhn Khas (448)	51	24	27	0	0	0
Bir (470)	177	86	91	0	0	0
Jangal (469)	40	20	20	0	0	0
Malodhan (468)	9	5	4	0	0	0
Alampur (472)	665	335	330	0	0	0
Bagh (473)	103	51	52	0	0	0
Jagrup Nagar (474)	125	68	57	0	0	0
Dehru (475)	12	4	8	0	0	0
Dhar Brahmपुरi (476)	33	12	21	0	0	0
Mashwar (479)	54	24	30	0	0	0
Shakoh (480)	36	14	22	0	0	0
Liunda (481)	185	91	94	0	0	0
Gahli (482)	57	29	28	0	0	0

Barram Kalan (483)	32	14	18	0	0	0
Garh (484)	109	46	63	0	0	0
Jamula (485)	0	0	0	0	0	0
Kutwalla (581)	20	7	13	0	0	0
Daslon (582)	22	6	16	0	0	0
Pandehr (588)	250	115	135	0	0	0
Lower Lamba Graon (589)	465	225	240	2	2	0
Lahr (583)	278	141	137	0	0	0
Kaluhi (584)	62	32	30	0	0	0
Bhati (580)	3	2	1	0	0	0
Hardon (579)	0	0	0	0	0	0
Talwar (578)	150	75	75	0	0	0
Har (577)	64	29	35	0	0	0
Saul Banehr (585)	7	2	5	0	0	0
Maniar (595)	90	40	50	0	0	0
Jagni Jar (596)	42	18	24	0	0	0
Dandel (600)	105	49	56	0	0	0
Nihara (599)	0	0	0	0	0	0
Drup Kayara (617)	125	57	68	0	0	0
Chambe Da Lahr (593)	122	57	65	0	0	0
Ropri (594)	8	3	5	0	0	0
Julah Pat (624)	73	28	45	0	0	0
Jaleht (591)	0	0	0	0	0	0
Sandroa (592)	12	5	7	0	0	0
Bhati (623)	38	17	21	0	0	0
Kamand (628)	83	41	42	0	0	0
Gujrera (627)	0	0	0	0	0	0
Tikri (918)	62	33	29	0	0	0
Kotahan (920)	68	30	38	0	0	0
Bag Kuljan (921)	29	18	11	0	0	0
Kachhal Bhadarian (919)	173	97	76	0	0	0

Jaisinghpur (922)	445	202	243	0	0	0
Buhara (924)	37	21	16	0	0	0
TOTAL (10km)	16524	8098	8426	381	205	176

Source-Census of India, 2011

Sex Ratio

The 'Sex Ratio' of the study area is a numeric relationship between females and males of an area and bears paramount importance in the presentday scenario where the un-ethnic pre-determination of sex and killing of female foetus during pregnancy is practiced by unscrupulous medical practitioners against the rule of the law of the country. It is evident that by contrast the practice of female foeticide is not prevalent in the study area.

The 'Sex Ratio' was observed as 1095 females per 1000 males in the District. The same was recorded as higher as 1126 females for every 1000 males in the study area. The child (0-6 year age) sex ratio of the study area was observed as 905 female children per 1000 male children. The village wise male-female population distribution for the study area is depicted and shown by graphical representation in **Figure 3-14**

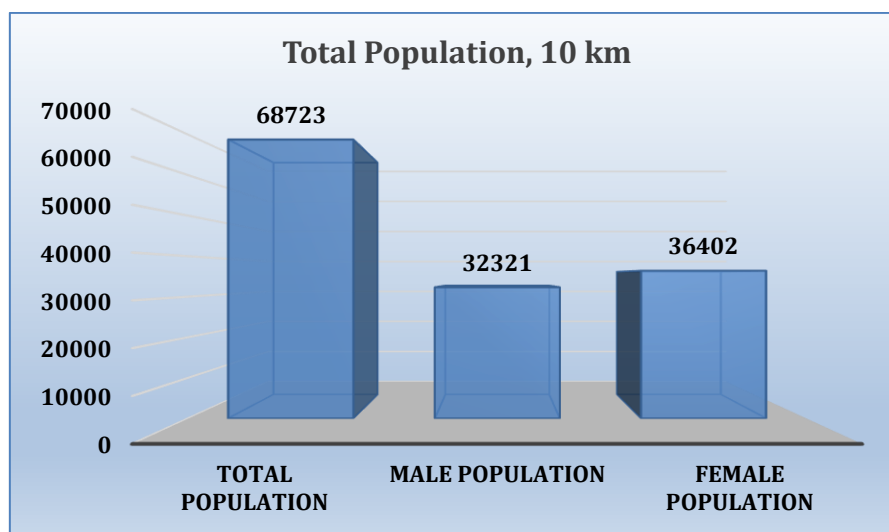


Figure Error! No text of specified style in document.-14:Male-Female wise Population Distribution

Scheduled Caste & Scheduled Tribe Population

On the basis of the village wise SC & ST population distribution of the study area during 2011, the 'Scheduled Castes' population was observed as 16524 persons consisting of 8098 males and 8426 females respectively in the study area which accounts as 24% to the total population (as

68723persons) of the study area. Scheduled Tribes (‘ST’) population was observed as 381person’saccounts as 0.6% to the total population of the study zone consisting of 205 males and 176 females in the 10 km study zone.It implies that the rest 75.4% of the total population belongs to the general category. Male-female wise distribution of ‘SC’ & ‘ST’population in the study area is graphically shown inFigure3-15& 3-18asfollows.

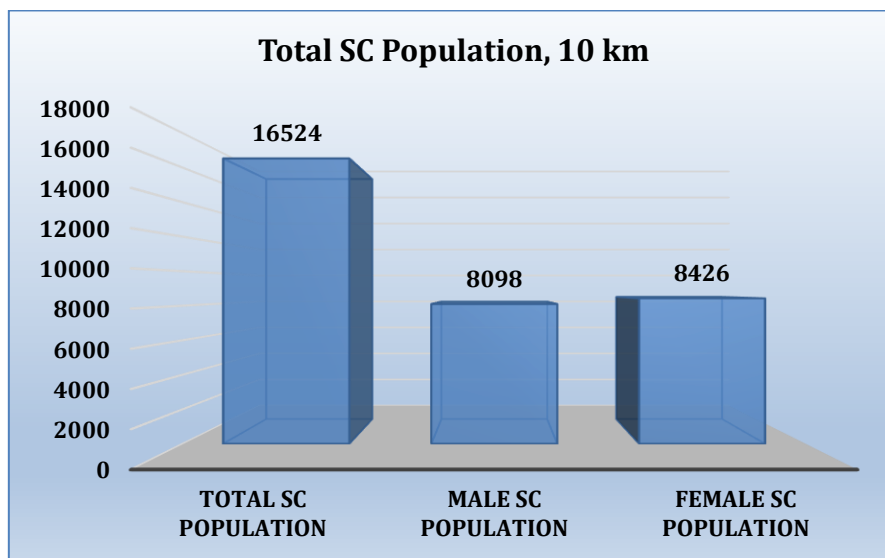
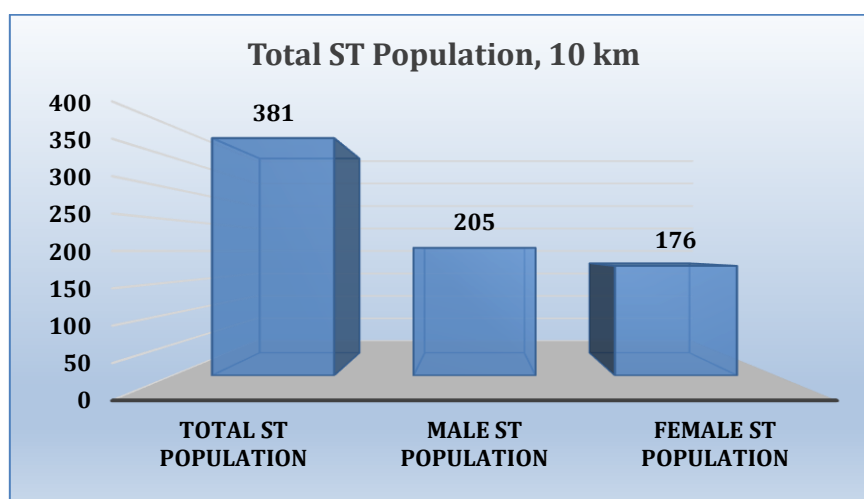


Figure Error! No text of specified style in document.-15:Scheduled Caste Population in the Study Area



FigureError! No text of specified style in document.-16:Scheduled Tribes Population in the Study Area

Literacy Rate

Literacy level is quantifiable indicator to assess the development status of an area or region. Male-Female wise literates and illiterates population is represented inTable 3.22.Total literates

population was recorded as 52676 persons (76.6%) in the study area. Table 3.22 reveals that Male-Female wise literates are observed as 26348 & 26328 persons respectively, implies that the 'Literacy Rate' is recorded as 76.6% with male-female wise percentages being 38.3% & 38.3% respectively.

The Male-Female wise graphical representation of literates & illiterates population in study area villages/town is shown in **Figure 3-20**

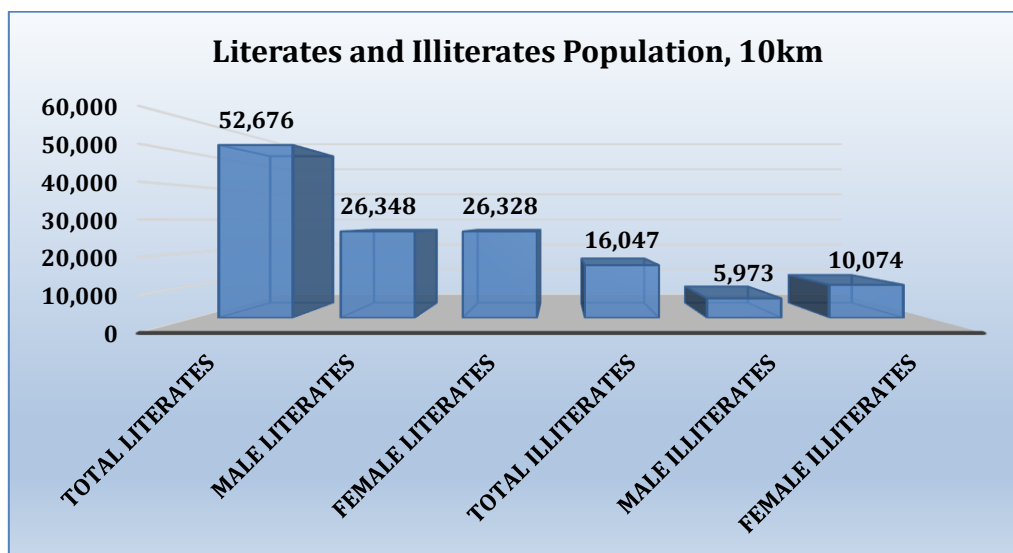


Figure Error! No text of specified style in document.-17: Male-Female wise Distribution of Literates & Illiterates

Table Error! No text of specified style in document.-3 : Male-Female wise Literates and Illiterates in 10km Study Zone

Name of the Village/Town (Census code)	Total Population	Literates			Illiterates		
		Persons	Males	Females	Persons	Males	Females
1. District Hamirpur, HP							
Bairi (63/24)	533	389	172	217	144	48	96
Bhatpura (63/18)	200	149	76	73	51	19	32
Chamarrakra (63/23)	100	55	27	28	45	26	19
Kodana (63/27)	490	359	174	185	131	36	95
Poi (63/20)	69	55	21	34	14	4	10
Chaptehr (63/22)	118	78	33	45	40	9	31
Jhataur (63/21)	133	101	48	53	32	8	24
Bahru (63/19)	127	97	47	50	30	12	18
Poar (63/1)	291	223	99	124	68	20	48

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Bagehrah Upperla (63/14)	456	334	165	169	122	46	76
Bagehrah Buhla (63/6)	772	609	285	324	163	55	108
Jol (63/4) - I	365	272	137	135	93	34	59
Samona (63/16)	258	203	100	103	55	16	39
Bagh (63/3)	146	108	50	58	38	18	20
Dera (55/6)	36	32	11	21	4	1	3
Pakhar (55/27)	57	44	27	17	13	5	8
Tikru (55/4)	138	107	55	52	31	8	23
Chaklah (55/34)	82	53	26	27	29	13	16
Charot (55/44)	216	172	87	85	44	20	24
Ludiana (55/2)	23	16	10	6	7	3	4
Darla (55/19)	587	477	243	234	110	35	75
Meharpura (55/24)	415	336	171	165	79	33	46
Kharsal (55/17)	123	102	42	60	21	7	14
Deryal (55/23)	142	114	58	56	28	10	18
Gahlian (55/11)	64	50	25	25	14	4	10
Nihari Upperli (54/20)	22	21	13	8	1	0	1
Bhog (54/4)	82	66	38	28	16	5	11
Kajoti (55/5)	122	82	36	46	40	21	19
Karot Khas (54/10)	532	420	216	204	112	32	80
Dhaner (54/17)	79	60	29	31	19	10	9
Laungni (54/22)	278	219	117	102	59	24	35
Pairian (54/7)	97	55	25	30	42	18	24
Puneh Attru (54/8)	68	51	28	23	17	8	9
Khairru (54/16)	163	118	56	62	45	20	25
Paneh Sih (54/9)	88	66	38	28	22	9	13
Bari (54/3)	182	137	69	68	45	16	29
Salghun Hira (54/12)	85	68	36	32	17	4	13
Salghun-Lachho (54/14)	42	31	17	14	11	7	4
Garoru Ghuman (53/7)	60	50	22	28	10	3	7
Bandhar (53/13)	60	49	23	26	11	5	6
Rih (53/12)	796	578	292	286	218	82	136
Chabutra Khas (53/14)	1072	845	422	423	227	82	145
Baliana (54/5)	78	57	30	27	21	5	16
Chamarrabri (57/17)	168	132	60	72	36	14	22
Bhagol (57/4)	118	90	39	51	28	9	19
Chakariana (57/7)	124	95	46	49	29	8	21
Jehr (57/6)	127	103	59	44	24	5	19
Patlandar (57/5)	392	321	176	145	71	26	45
Kot (57/19)	11	9	6	3	2	0	2
Chail (57/20)	53	44	22	22	9	5	4
Nalahi (57/18)	330	244	112	132	86	32	54
Gahla (57/8)	26	21	11	10	5	0	5
Chamiana (57/10)	68	57	26	31	11	5	6
Lambri (60/4)	416	308	147	161	108	46	62
Duhak (61/9)	521	383	202	181	138	49	89

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Rangar (58/15)	612	435	218	217	177	62	115
Bhati (58/1)	33	23	12	11	10	3	7
Drati (58/14)	15	9	4	5	6	2	4

Sanwin Kalan (58/7)	30	26	14	12	4	1	3
Sanwin Khurd (58/10)	13	11	6	5	2	0	2
Bhatiana Brahmana (58/2)	16	12	5	7	4	1	3
Pakhi (58/4)	19	18	7	11	1	0	1
Gadi (57/15)	266	213	100	113	53	15	38
Barog (57/2)	173	137	75	62	36	11	25
Jagarial (57/9)	69	51	25	26	18	5	13
Bharthun (56/2)	192	144	74	70	48	14	34
Ukhli (56/1)	66	51	27	24	15	3	12
Garoru Buhla (56/7)	77	61	34	27	16	6	10
Taryamli (60/13)	117	90	47	43	27	9	18
Jateru (60/14)	17	12	8	4	5	2	3
Garoru (60/7)	32	25	9	16	7	2	5
Dhel Khas (59/2)	163	131	64	67	32	12	20
Nag Lamber (59/3)	54	41	21	20	13	4	9
Thana (63/5)	89	54	27	27	35	10	25
Mehlaru (63/10)	129	92	44	48	37	14	23
Thathi (63/13)	74	52	24	28	22	5	17
Jandru (63/11)	191	124	55	69	67	26	41
Shukhani (63/9)	142	86	38	48	56	18	38
Than Tikkar (63/31)	196	143	69	74	53	14	39
Palbhu (64/14)	178	128	59	69	50	15	35
Bajrol (64/6)	625	449	195	254	176	49	127
Mahesh Kowal (64/7)	189	134	50	84	55	16	39
Thathi Gurdwalan (64/3)	211	169	90	79	42	12	30
Bhat Lamber (64/1)	170	121	45	76	49	25	24
Jangal Khas (64/16)	1291	961	468	493	330	115	215

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Chapter-3 Baseline Environment Status

Kheri (64/5)	953	703	339	364	250	79	171
Bajahar (64/9)	283	229	117	112	54	15	39
Kakkar (63/29)	692	524	250	274	168	58	110
Tira Sujampur (NP)	7943	6570	3664	2906	1373	598	775
Jangal (24/4)	232	180	85	95	52	23	29
Andara (22/2)	142	109	52	57	33	14	19
Punjyal (23/6)	49	39	20	19	10	4	6
Bumbloo (23/17)	98	76	36	40	22	13	9
Salasi (23/3)	10	9	5	4	1	1	0
Kotlu (28/12) - I	195	135	63	72	60	19	41
Gahli (36/35)	493	377	206	171	116	42	74
Bharahian Di Dhar (62/22)	194	137	65	72	57	20	37
Lambran Di Dhar (62/25)	142	101	48	53	41	13	28
Bhatwara (37/9)	190	149	74	75	41	10	31
Duhak (43/27)	219	172	87	85	47	15	32
2. District Kangra, HP							
Tikkar (361)	171	138	69	69	33	15	18
Garan (311)	1185	944	499	445	241	110	131
Tharu (64)	998	711	389	322	287	108	179
Sanani (585)	155	102	61	41	53	18	35
Garh (171)	1317	1045	520	525	272	113	159
Badehr (818)	177	104	57	47	73	28	45
Sarohi (887)	276	199	118	81	77	25	52
Sialkar (884)	318	218	116	102	100	29	71
Mannu (880)	93	66	34	32	27	10	17
Kuri (885)	79	53	30	23	26	12	14
Balra (886)	53	39	22	17	14	3	11
Manera (899)	39	29	17	12	10	4	6
Marhana (898)	336	258	138	120	78	33	45
Harbah (889)	90	64	37	27	26	8	18

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Dhakhar (890)	255	180	110	70	75	25	50
Bhadrun (864)	81	64	38	26	17	8	9
Kud (863)	41	25	13	12	16	6	10
Bhadrol (837)	92	74	41	33	18	4	14
Galoti (852)	145	120	57	63	25	6	19
Gahli (855)	122	90	46	44	32	18	14
Chihar (853)	137	95	53	42	42	18	24
Chanarri (851)	77	56	31	25	21	8	13
Phihar (839)	164	129	65	64	35	11	24
Pihri (838)	261	197	97	100	64	21	43
Uk Lahr (850)	68	55	36	19	13	9	4
Khaliyana (854)	127	99	48	51	28	9	19
Naloti (857)	179	146	75	71	33	14	19
Dhariatu (849)	14	12	5	7	2	0	2
Makar (848)	109	85	46	39	24	7	17
Khola (847)	44	33	18	15	11	4	7
Samehl (845)	76	59	32	27	17	7	10
Chaunki (846)	114	89	54	35	25	12	13
Tihri (861)	42	32	19	13	10	1	9
Jhaura (891)	137	91	50	41	46	21	25
Jarundi (892)	174	118	52	66	56	20	36
Kasar (897)	36	19	12	7	17	5	12
Dahd (896)	55	34	14	20	21	7	14
Tipri (904)	118	89	42	47	29	11	18
Kior (903)	186	130	65	65	56	28	28
Gharthoon (431)	273	209	97	112	64	27	37
Salghuni (430)	128	90	48	42	38	12	26
Tamber (433)	220	167	67	100	53	18	35
Kauna (432)	289	233	104	129	56	27	29
Duhak Khurd (461)	619	498	250	248	121	42	79
Dhaniara (460)	531	385	175	210	146	54	92

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Chapter-3 Baseline Environment Status

Bhuhli Pakhi (465)	117	91	49	42	26	7	19
Balh Bhurian (467)	268	210	100	110	58	20	38
Leora (466)	96	76	33	43	20	8	12
Ghandera (493)	249	181	87	94	68	30	38
Bairghatta (464)	305	189	105	84	116	55	61
Saidoon (463)	436	283	129	154	153	53	100
Chula Buhla (499)	15	12	7	5	3	1	2
Chula (498)	40	31	17	14	9	2	7
Chula Uparla (500)	345	218	111	107	127	55	72
Bhanuh (501)	127	88	42	46	39	15	24
Thural Khas (504)	395	299	145	154	96	46	50
Ghumarnu (505)	102	61	34	27	41	19	22
Bhanwar (506)	246	186	96	90	60	23	37
Thana (507)	247	177	75	102	70	30	40
Tikkri (508)	161	122	63	59	39	22	17
Nalehar (509)	363	300	151	149	63	22	41
Dridh (512)	231	183	81	102	48	21	27
Phagurta (517)	345	255	117	138	90	35	55
Saman (511)	137	110	49	61	27	5	22
Sanhoon (518)	415	305	145	160	110	39	71
Badarta (520)	87	61	28	33	26	15	11
Kelan (570)	205	147	71	76	58	20	38
Panjlehr (571)	259	185	69	116	74	31	43
Bansu (572)	78	57	27	30	21	6	15
Koru (573)	90	70	28	42	20	5	15
Chohla (605)	198	154	82	72	44	16	28
Kohala (606)	133	104	54	50	29	11	18
Barla (603)	151	117	45	72	34	11	23
Lahri (602)	257	197	81	116	60	21	39
Bhatwara (601)	297	230	106	124	67	25	42
Siara (576)	87	65	31	34	22	9	13

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Kudana (575)	106	76	39	37	30	12	18
Kotlu (513) - II	368	287	145	142	81	28	53
Santal (515)	120	94	43	51	26	10	16
Ban Banjar (574)	48	40	19	21	8	4	4
Paplah (516)	303	232	115	117	71	22	49
Jol (519) -II	169	126	54	72	43	13	30
Rirkal (494)	95	77	29	48	18	8	10
Bandahu Khas (497)	239	185	95	90	54	12	42
Kalhun (514)	206	156	77	79	50	12	38
Odri (496)	194	139	75	64	55	14	41
Umri (489)	224	176	94	82	48	11	37
Marera (495)	595	455	239	216	140	54	86
Gandar (488)	466	367	170	197	99	38	61
Bar (487)	104	82	42	40	22	4	18
Barram Khurd (486)	384	298	129	169	86	26	60
Karonthi (478)	249	187	96	91	62	23	39
Jandera (477)	108	88	39	49	20	7	13
Kalhera (491)	64	48	18	30	16	5	11
Andrana (490)	379	294	144	150	85	33	52
Tikkar Jihan (492)	256	184	80	104	72	29	43
Tina Jamaitar (459)	112	91	50	41	21	6	15
Har Balak Rupi (458)	687	526	285	241	161	57	104
Koal (457)	198	154	82	72	44	11	33
Och Kalan (442)	352	236	119	117	116	42	74
Sadda (444)	243	186	89	97	57	15	42
Kuhn Khas (448)	364	270	114	156	94	31	63
Bir (470)	815	665	319	346	150	64	86
Jangal (469)	173	134	73	61	39	16	23
Malodhan (468)	164	128	55	73	36	11	25
Alampur (472)	1682	1364	690	674	318	137	181
Bagh (473)	328	245	122	123	83	34	49

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Jagrup Nagar (474)	554	434	234	200	120	43	77
Dehru (475)	221	171	74	97	50	14	36
Dhar Brahmपुरi (476)	346	271	117	154	75	22	53
Mashwar (479)	110	89	43	46	21	8	13
Shakoh (480)	163	138	65	73	25	9	16
Liunda (481)	353	271	134	137	82	33	49
Gahli (482)	167	131	62	69	36	15	21
Barram Kalan (483)	191	138	67	71	53	20	33
Garh (484)	645	479	224	255	166	62	104
Jamula (485)	160	115	41	74	45	16	29
Kutwalla (581)	138	102	48	54	36	10	26
Daslon (582)	165	133	54	79	32	9	23
Pandehr (588)	452	357	168	189	95	37	58
Lower Lamba Graon (589)	1171	915	473	442	256	112	144
Lahr (583)	573	428	221	207	145	54	91
Kaluhi (584)	150	115	59	56	35	12	23
Bhati (580)	130	98	48	50	32	10	22
Hardon (579)	282	224	122	102	58	17	41
Talwar (578)	514	391	199	192	123	40	83
Har (577)	489	374	166	208	115	43	72
Saul Banehr (585)	456	359	171	188	97	25	72
Maniar (595)	429	336	154	182	93	35	58
Jagni Jar (596)	123	90	45	45	33	13	20
Dandel (600)	191	144	64	80	47	16	31
Nihara (599)	118	88	40	48	30	9	21
Drup Kayara (617)	267	202	103	99	65	18	47
Chambe Da Lahr (593)	122	84	44	40	38	13	25
Ropri (594)	86	62	28	34	24	9	15
Julah Pat (624)	88	64	28	36	24	7	17
Jaleht (591)	105	84	37	47	21	8	13
Sandroa (592)	115	89	40	49	26	9	17

Bhati (623)	187	143	59	84	44	15	29
Kamand (628)	414	319	150	169	95	39	56
Gujrera (627)	139	122	57	65	17	8	9
Tikri (918)	363	279	142	137	84	28	56
Kotahan (920)	250	188	91	97	62	22	40
Bag Kuljan (921)	241	191	89	102	50	23	27
Kachhal Bhadarian (919)	467	378	187	191	89	37	52
Jaisinghpur (922)	1531	1167	572	595	364	157	207
Bhuhara (924)	94	58	36	22	36	18	18
TOTAL (10km)	68723	52676	26348	26328	16047	5973	10074

Source-Census of India, 2011

Economic Resources in the District:

As per the Census records 2011, the economic resources are an important means of subsistence for the working people of the district. The details about economic resources of important sectors are given below in brief.

The economy of the district basically depends on agriculture hence majority of the workers are engaged in agricultural activities. Agriculture is the main Occupation of the people of Himachal Pradesh. It provides direct employment to 70% of the total workers of the state. It also is a premier source of state income (GSDP). About 17% of GSDP comes from agriculture and its allied sectors. Similarly agriculture is also the main occupation of the people of Hamirpur & Kangra district.

Workers Scenario:

‘Occupational Pattern’ was studied to assess the skills of people in the study area. Occupational pattern helps in identifying major economic activities of the area. In the study area the Main and Marginal Workers population was observed as 14480(21.0%) and 17843(26.0%) respectively of the total population (68723) while the remaining 36400(53.0%) persons were recorded as non-workers. Thus it implies that the semi-skilled and non-skilled work-force required in study area for the project is available in plenty. The village-wise main and marginal workers population with further classification as casual, agricultural, households and other workers is shown as follows in **Table 3-24**.

Table Error! No text of specified style in document.-4:Village-wise Occupational Pattern in the Study Area (10km Study Zone)

Name of the Village/Town (Census Code)	MAIN WORK_P	MAIN_CL_P	MAIN_AL_P	MAIN_H_H_P	MAIN_OT_P	MARG WORK_P	MARG_C_L_P	MARG_A_L_P	MARG_H_H_P	MARG_O_T_P
1. District Hamirpur, HP										
Bairi (63/24)	34	3	0	3	28	284	269	2	7	6
Bhatpura (63/18)	44	0	0	0	44	62	57	0	0	5
Chamarrakra (63/23)	17	0	0	0	17	28	18	7	0	3
Kodana (63/27)	47	4	0	0	43	176	123	28	3	22
Poi (63/20)	7	1	0	0	6	30	28	0	0	2
Chaptehr (63/22)	10	0	0	0	10	64	63	0	0	1
Jhataur (63/21)	17	0	0	0	17	73	72	0	0	1
Bahru (63/19)	18	0	0	0	18	68	65	1	0	2
Poar (63/1)	43	6	2	2	33	87	74	4	0	9
Bagehrah Upperla (63/14)	42	3	0	0	39	36	22	1	0	13
Bagehrah Buhla (63/6)	288	91	77	4	116	54	15	11	1	27
Jol (63/4) - I	66	4	0	2	60	102	93	0	0	9
Samona (63/16)	42	2	0	1	39	80	69	0	0	11
Bagh (63/3)	20	0	0	0	20	49	23	0	0	26
Dera (55/6)	26	1	1	1	23	2	0	2	0	0
Pakkhar (55/27)	19	5	1	1	12	10	2	3	0	5
Tikru (55/4)	102	13	20	5	64	3	2	0	0	1
Chaklah (55/34)	48	22	1	0	25	18	1	3	0	14
Charot (55/44)	109	17	18	5	69	47	5	19	3	20
Ludiana (55/2)	19	15	0	0	4	3	2	0	0	1
Darla (55/19)	252	156	0	0	96	159	131	0	0	28
Meharpura (55/24)	153	32	5	2	114	4	2	0	0	2
Kharsal (55/17)	15	1	0	0	14	41	38	0	0	3

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Deryal (55/23)	27	0	1	0	26	40	34	0	0	6
Gahlian (55/11)	10	0	0	0	10	41	33	0	0	8
Nihari Upperli (54/20)	2	0	0	0	2	20	18	0	0	2
Bhog (54/4)	15	8	0	0	7	48	45	0	0	3
Kajoti (55/5)	22	2	0	2	18	46	45	0	0	1
Karot Khas (54/10)	120	5	0	18	97	219	213	3	1	2
Dhaner (54/17)	11	6	2	0	3	43	40	3	0	0
Laungni (54/22)	64	35	13	0	16	154	139	15	0	0
Pairian (54/7)	50	29	0	0	21	24	24	0	0	0
Puneh Attru (54/8)	34	23	0	0	11	22	21	0	0	1
Khairru (54/16)	73	36	0	0	37	61	61	0	0	0
Paneh Sih (54/9)	39	23	0	0	16	31	30	0	0	1
Bari (54/3)	45	26	1	0	18	98	96	1	0	1
Salghun Hira (54/12)	48	30	0	0	18	25	24	0	0	1
Salghun-Lachho (54/14)	16	10	0	0	6	16	16	0	0	0
Garoru Ghuman (53/7)	2	2	0	0	0	40	40	0	0	0
Bandhar (53/13)	12	5	0	0	7	38	34	0	0	4
Rih (53/12)	98	0	0	0	98	437	346	0	2	89
Chabutra Khas (53/14)	347	112	2	1	232	269	238	1	2	28
Baliana (54/5)	3	0	0	0	3	46	38	5	0	3
Chamarrabri (57/17)	81	48	0	0	33	53	51	0	0	2
Bhagol (57/4)	76	52	0	0	24	22	22	0	0	0
Chakariana (57/7)	76	60	0	0	16	22	20	0	0	2
Jehr (57/6)	75	51	0	0	24	40	39	0	0	1
Patlandar (57/5)	242	137	0	0	105	108	106	0	0	2
Kot (57/19)	7	5	0	0	2	3	2	0	0	1
Chail (57/20)	28	16	0	0	12	14	14	0	0	0

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Nalahi (57/18)	173	121	0	0	52	79	69	0	0	10
Gahla (57/8)	12	10	0	0	2	6	5	0	0	1
Chamiana (57/10)	39	32	0	0	7	15	14	0	0	1
Lambri (60/4)	259	201	0	3	55	68	65	0	0	3
Duhak (61/9)	77	0	0	0	77	210	16	1	1	192
Rangar (58/15)	269	152	2	6	109	139	123	1	1	14
Bhati (58/1)	0	0	0	0	0	26	24	0	0	2
Drati (58/14)	0	0	0	0	0	11	10	0	0	1
Sanwin Kalan (58/7)	2	0	0	0	2	22	17	0	0	5
Sanwin Khurd (58/10)	0	0	0	0	0	10	9	0	0	1
Bhatiana Brahmana (58/2)	1	0	0	0	1	9	6	0	0	3
Pakhi (58/4)	0	0	0	0	0	11	9	0	0	2
Gadi (57/15)	39	1	0	0	38	121	116	0	0	5
Barog (57/2)	37	0	0	0	37	79	79	0	0	0
Jagarial (57/9)	11	0	1	0	10	30	30	0	0	0
Bharthun (56/2)	110	71	0	3	36	0	0	0	0	0
Ukhli (56/1)	45	31	0	1	13	0	0	0	0	0
Garoru Buhla (56/7)	67	55	0	1	11	1	1	0	0	0
Taryamli (60/13)	6	0	0	0	6	24	5	2	0	17
Jateru (60/14)	1	0	0	0	1	11	8	0	1	2
Garoru (60/7)	4	1	0	0	3	15	8	1	0	6
Dhel Khas (59/2)	0	0	0	0	0	106	105	0	0	1
Nag Lamber (59/3)	0	0	0	0	0	35	31	3	0	1
Thana (63/5)	20	2	0	0	18	2	0	0	0	2
Mehlaru (63/10)	15	0	0	0	15	15	0	0	0	15
Thathi (63/13)	8	0	0	0	8	12	0	0	0	12
Jandru (63/11)	16	0	0	0	16	41	0	0	0	41
Shukhani (63/9)	21	0	0	0	21	7	0	0	0	7
Than Tikkar (63/31)	16	0	0	0	16	37	0	0	0	37
Palbhu (64/14)	13	0	0	0	13	116	110	1	1	4

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Bajrol (64/6)	34	3	0	8	23	339	329	0	4	6
Mahesh Kowal (64/7)	17	0	0	0	17	3	0	0	0	3
Thathi Gurdwalan (64/3)	34	4	5	0	25	45	38	4	2	1
Bhat Lamber (64/1)	5	0	0	0	5	8	1	0	0	7
Jangal Khas (64/16)	204	85	0	1	118	557	522	31	1	3
Kheri (64/5)	165	31	3	4	127	232	178	2	2	50
Bajahar (64/9)	39	0	0	0	39	104	63	1	1	39
Kakkar (63/29)	294	2	0	0	292	50	19	1	6	24
Tira Sujampur (NP)	1811	20	2	25	1764	741	292	11	8	430
Jangal (24/4)	121	82	0	1	38	4	0	0	1	3
Andara (22/2)	73	60	1	1	11	52	48	1	0	3
Punjyal (23/6)	9	0	0	0	9	19	16	0	0	3
Bumbloo (23/17)	52	41	0	0	11	18	16	1	0	1
Salasi (23/3)	5	3	0	0	2	3	3	0	0	0
Kotlu (28/12) - I	69	44	6	0	19	80	80	0	0	0
Gahli (36/35)	272	256	0	1	15	4	3	0	0	1
Bharahian Di Dhar (62/22)	57	6	2	4	45	45	35	2	0	8
Lambran Di Dhar (62/25)	50	9	0	0	41	13	13	0	0	0
Bhatwara (37/9)	13	0	0	0	13	0	0	0	0	0
Duhak (43/27)	21	1	0	0	20	25	12	0	0	13
2. District Kangra, HP										
Tikkar (361)	36	2	0	2	32	52	11	4	10	27
Garan (311)	195	83	7	5	100	213	69	77	11	56
Tharu (64)	95	1	0	1	93	220	71	9	0	140
Sanani (585)	18	0	0	2	16	82	78	0	0	4
Garh (171)	357	48	3	5	301	551	441	39	0	71
Badehr (818)	35	26	0	0	9	92	91	1	0	0
Sarohi (887)	108	86	0	2	20	67	57	0	0	10

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Sialkar (884)	67	25	0	0	42	87	85	1	1	0
Mannu (880)	13	1	0	0	12	26	26	0	0	0
Kuri (885)	16	4	0	0	12	14	14	0	0	0
Balra (886)	5	0	0	0	5	29	29	0	0	0
Manera (899)	1	0	0	0	1	21	21	0	0	0
Marhana (898)	15	4	0	0	11	171	169	2	0	0
Harbah (889)	4	1	0	0	3	58	57	0	0	1
Dhakar (890)	45	19	0	0	26	56	32	0	5	19
Bhadrun (864)	18	0	0	0	18	25	24	1	0	0
Kud (863)	3	0	0	0	3	20	19	0	0	1
Bhadrol (837)	7	1	0	0	6	47	39	6	0	2
Galoti (852)	22	1	1	1	19	7	0	3	1	3
Gahli (855)	11	5	0	0	6	52	16	0	3	33
Chihar (853)	24	0	0	0	24	60	49	0	0	11
Chanarri (851)	10	5	1	0	4	21	6	6	2	7
Phihar (839)	36	1	0	0	35	1	0	1	0	0
Pihri (838)	36	1	1	0	34	22	1	12	3	6
Uk Lahr (850)	2	1	0	0	1	32	11	0	0	21
Khaliyana (854)	7	0	0	0	7	74	50	2	0	22
Naloti (857)	26	0	0	0	26	85	70	0	0	15
Dhariatu (849)	1	0	0	0	1	7	7	0	0	0
Makar (848)	17	1	0	0	16	47	47	0	0	0
Khola (847)	5	0	0	0	5	18	18	0	0	0
Samehl (845)	8	0	0	0	8	36	0	36	0	0
Chaunki (846)	20	0	0	0	20	55	2	53	0	0
Tihri (861)	8	1	0	0	7	0	0	0	0	0
Jhuala (891)	75	56	13	1	5	45	45	0	0	0
Jarundi (892)	67	41	7	1	18	74	73	0	1	0
Kasar (897)	10	6	4	0	0	17	17	0	0	0
Dahd (896)	1	0	0	0	1	27	27	0	0	0
Tipri (904)	15	2	0	0	13	50	50	0	0	0
Kior (903)	45	3	0	0	42	55	50	0	0	5

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Gharthoon (431)	38	0	0	0	38	45	15	0	0	30
Salghuni (430)	11	7	0	0	4	68	68	0	0	0
Tamber (433)	12	0	0	0	12	187	183	2	0	2
Kauna (432)	36	0	0	1	35	45	32	0	0	13
Duhak Khurd (461)	100	16	0	1	83	119	58	0	0	61
Dhaniara (460)	66	0	0	0	66	165	130	3	0	32
Bhuhli Pakhi (465)	10	0	0	0	10	60	49	0	0	11
Balh Bhurian (467)	20	0	0	1	19	22	3	0	2	17
Leora (466)	2	0	0	0	2	21	1	0	0	20
Ghandera (493)	13	0	0	0	13	51	3	1	0	47
Bairghatta (464)	72	3	0	0	69	88	60	0	0	28
Saidoon (463)	93	21	1	1	70	168	145	1	0	22
Chula Buhla (499)	2	0	0	0	2	8	8	0	0	0
Chula (498)	8	0	0	0	8	7	7	0	0	0
Chula Uparla (500)	13	0	0	0	13	80	0	0	0	80
Bhanuh (501)	22	11	0	0	11	62	46	0	0	16
Thural Khas (504)	57	3	0	0	54	41	6	11	0	24
Ghumarnu (505)	19	2	0	0	17	9	0	0	2	7
Bhanwar (506)	40	2	1	0	37	65	56	2	0	7
Thana (507)	32	3	1	1	27	59	53	0	0	6
Tikkri (508)	98	0	2	0	96	2	0	0	1	1
Nalehar (509)	233	74	9	0	150	2	0	0	0	2
Dridh (512)	22	1	0	0	21	97	86	2	2	7
Phagurta (517)	24	1	3	0	20	130	111	2	1	16
Saman (511)	9	0	0	0	9	9	1	0	0	8
Sanhoon (518)	57	3	1	1	52	155	121	1	2	31
Badarta (520)	7	1	0	0	6	40	36	0	1	3
Kelan (570)	29	0	0	1	28	82	74	7	0	1
Panjlehr (571)	28	0	0	1	27	101	101	0	0	0
Bansu (572)	9	0	0	0	9	30	30	0	0	0
Koru (573)	12	2	0	0	10	6	3	1	0	2
Chohla (605)	38	0	0	1	37	77	67	8	0	2

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Kohala (606)	24	0	0	0	24	15	11	0	0	4
Barla (603)	6	0	1	0	5	14	1	9	1	3
Lahri (602)	22	0	6	0	16	40	1	38	0	1
Bhatwara (601)	37	0	13	0	24	14	0	9	1	4
Siara (576)	8	2	0	1	5	30	23	5	0	2
Kudana (575)	8	2	0	2	4	17	13	4	0	0
Kotlu (513) - II	31	12	3	4	12	131	128	1	2	0
Santal (515)	7	0	0	0	7	21	2	5	1	13
Ban Banjar (574)	7	0	0	0	7	7	0	1	0	6
Paplah (516)	42	0	0	0	42	31	12	5	0	14
Jol (519) -II	29	8	0	0	21	38	24	0	0	14
Rirkal (494)	17	9	0	1	7	21	14	0	0	7
Bandahu Khas (497)	46	9	0	1	36	90	77	7	0	6
Kalhun (514)	36	7	1	0	28	81	78	1	0	2
Odri (496)	26	1	0	1	24	68	28	33	0	7
Umri (489)	50	7	3	3	37	24	17	3	0	4
Marera (495)	95	6	1	2	86	90	2	2	2	84
Gandar (488)	109	2	0	0	107	34	0	0	1	33
Bar (487)	17	9	0	0	8	19	18	0	0	1
Barram Khurd (486)	38	1	0	0	37	110	77	0	0	33
Karonthi (478)	16	0	0	0	16	93	41	0	0	52
Jandera (477)	11	0	0	0	11	23	18	0	0	5
Kalhera (491)	7	1	0	0	6	1	0	0	0	1
Andrana (490)	101	36	0	0	65	21	0	1	0	20
Tikkar Jihan (492)	37	3	0	0	34	10	2	0	0	8
Tina Jamaitar (459)	32	15	2	2	13	27	12	0	3	12
Har Balak Rupri (458)	96	20	0	1	75	93	58	21	0	14
Koal (457)	25	4	0	1	20	80	31	0	0	49
Och Kalan (442)	82	13	0	1	68	103	101	0	0	2
Sadda (444)	8	0	1	0	7	133	129	1	0	3
Kuhn Khas (448)	15	0	0	0	15	186	184	0	0	2

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Bir (470)	167	38	4	2	123	264	245	7	3	9
Jangal (469)	17	0	0	0	17	22	13	4	0	5
Malodhan (468)	20	0	0	0	20	21	14	0	0	7
Alampur (472)	301	24	2	5	270	768	569	53	16	130
Bagh (473)	31	1	0	6	24	187	160	3	7	17
Jagrup Nagar (474)	84	1	1	3	79	225	200	0	4	21
Dehru (475)	34	11	0	0	23	60	56	0	0	4
Dhar Brahmपुरi (476)	59	15	0	1	43	61	49	2	0	10
Mashwar (479)	20	12	0	0	8	20	20	0	0	0
Shakoh (480)	46	0	0	0	46	5	0	0	0	5
Liunda (481)	106	7	0	0	99	52	0	0	1	51
Gahli (482)	62	0	0	0	62	5	0	0	0	5
Barram Kalan (483)	28	1	0	5	22	67	47	0	0	20
Garh (484)	85	2	9	2	72	212	207	2	0	3
Jamula (485)	12	0	1	0	11	64	53	0	0	11
Kutwalla (581)	28	0	0	0	28	50	32	0	3	15
Daslon (582)	87	68	2	5	12	3	2	0	0	1
Pandehr (588)	223	192	3	1	27	22	15	0	1	6
Lower Lamba Graon (589)	293	7	3	70	213	73	34	0	3	36
Lahr (583)	52	1	0	1	50	78	5	0	0	73
Kaluhi (584)	7	1	0	1	5	21	6	0	2	13
Bhati (580)	15	0	0	0	15	7	0	0	0	7
Hardon (579)	34	0	0	0	34	110	89	7	0	14
Talwar (578)	79	0	0	2	77	119	77	3	2	37
Har (577)	53	9	1	6	37	51	12	9	10	20
Saul Banehr (585)	110	57	0	0	53	8	0	0	0	8
Maniar (595)	29	0	0	0	29	193	174	2	1	16
Jagni Jar (596)	10	0	0	0	10	76	68	1	0	7
Dandel (600)	24	0	0	0	24	94	60	0	4	30
Nihara (599)	13	0	0	0	13	64	56	1	0	7

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Drup Kayara (617)	21	0	0	0	21	167	133	1	1	32
Chambe Da Lahr (593)	41	18	0	0	23	27	26	0	0	1
Ropri (594)	19	8	0	0	11	26	24	0	0	2
Julah Pat (624)	20	3	0	1	16	38	35	0	0	3
Jaleht (591)	23	7	0	0	16	38	35	0	0	3
Sandroa (592)	14	0	0	0	14	67	67	0	0	0
Bhati (623)	26	5	0	3	18	100	87	0	12	1
Kamand (628)	54	0	0	2	52	32	0	0	1	31
Gujrera (627)	24	2	0	0	22	54	47	0	0	7
Tikri (918)	44	2	0	3	39	217	216	1	0	0
Kotahan (920)	38	0	0	0	38	122	120	0	0	2
Bag Kuljan (921)	28	0	0	4	24	124	124	0	0	0
Kachhal Bhadarian (919)	58	2	0	18	38	270	263	5	0	2
Jaisinghpur (922)	436	4	0	5	427	105	35	5	1	64
Bhuhara (924)	37	0	0	0	37	12	0	2	0	10
TOTAL (10km)	14480	3661	278	301	10240	17843	13493	720	179	3451

Source-Census of India, 2011

ABBREVIATIONS:

MAIN WORKERS POPULATION: **MAIN_WORK_P** : Main workers total population, **MAIN_CL_P** : Main cultivated labour population, **MAIN_AL_P** : Main agricultural labour population, **MAIN_HH_P** : Main workers population involved in household industries, **MAIN_OT_P** : Main other workers population

MARGINAL WORKERS POPULATION:

MARG_WORK_P : Marginal workers total population, **MARG_CL_P** : Marginal cultivated labors total population, **MARG_AL_P** : Marginal agricultural labors population, **MARG_HH_P** : Marginal workers involved in household industries, **MARG_OT_P** : Marginal other workers Population

Distribution of work participation rate of the study area population is shown in **Table 3-25** as follows;

Table Error! No text of specified style in document.-5:Distribution of Work Participation Rate in 10km Study Area

Occupation Class	Year , 2011
Main Workers	14480 (21.0%)
Male	9884(68.3%)
Female	4596(31.7%)
Marginal Workers	17843(26.0%)
Male	6582(36.9%)
Female	11261 (63.1%)
Non-Workers	36400 (53.0%)
Male	15855 (43.6%)
Female	20545(56.4%)
Total Population (10km)	68723
<i>Source: Census of India Records, 2011</i>	

Graphical representation of Workers Scenario is given below as **Figure 3.18**

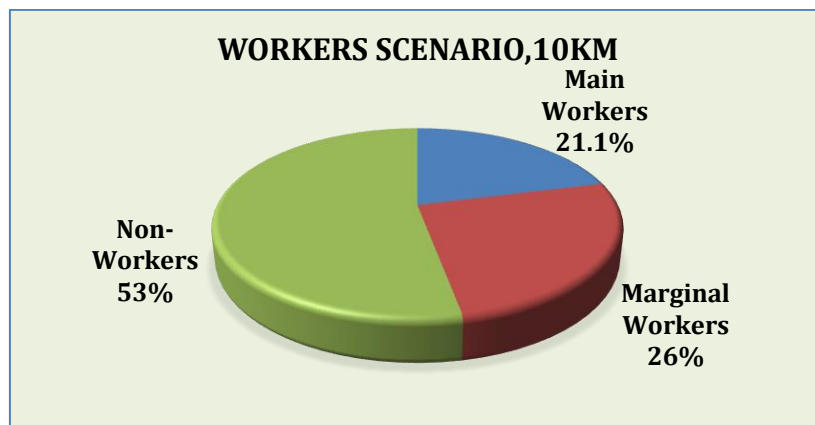


Figure Error! No text of specified style in document.-18:Workers Scenario of Study Area

Composition of Main Workers:

The ‘Main Workers’ were observed as 14480 persons (21.0%) to the total population (68723) of the study area and its composition is made-up of Casual laborers as 3661 (25.3%),

Agricultural laborers as 278(2.0%), Household workers 301(2.0%) and other workers as 10240 (70.7%) respectively. Composition of Main workers is shown below as **Figure 3.19**.

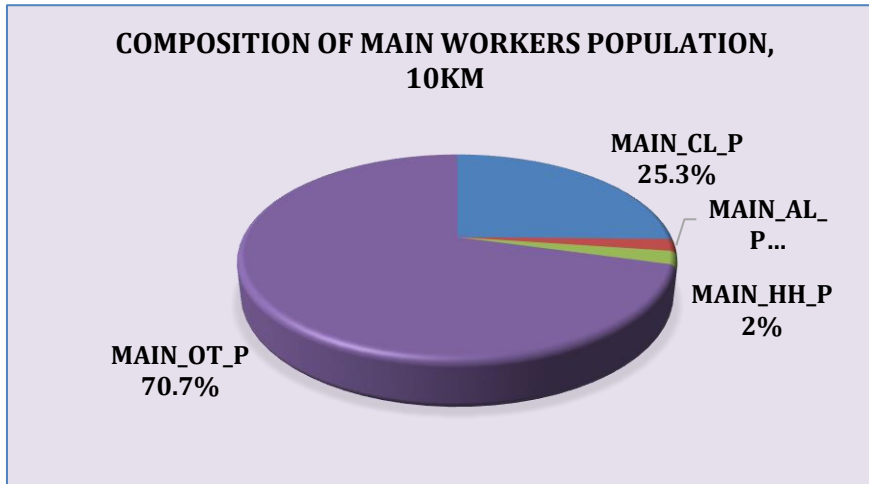


Figure Error! No text of specified style in document.-19: Composition of Main Workers Population

Composition of Marginal Workers:

The total marginal workers are observed as 17843 which constitute 26.0% of the total population (68723) comprise of Marginal Casual Laborers as 13493 (75.6%), Marginal Agricultural Laborers as 720(4.0%), Marginal Household laborers as 179 (1.0%) and marginal other workers were also observed as 3451 (19.4%) of the total marginal workers respectively. Details about marginal workers in the study area are tabulated in Table Composition of Marginal workers is shown in **Figure 3.22** as follows.

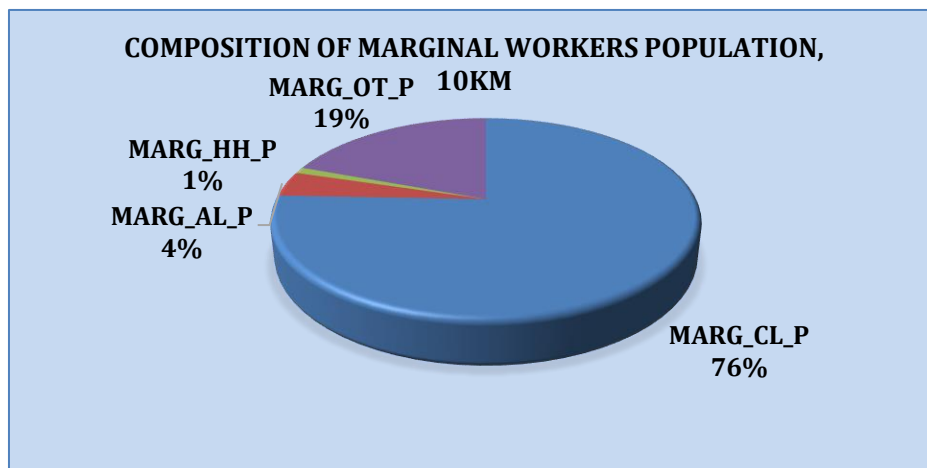


Figure Error! No text of specified style in document.-20: Composition of Marginal Workers

Composition of Non-Workers:

The total Non-workers population was observed as 36400 which constitute 53.0% to the total population (68723) of the study area. Male-female wise Non-workers population was recorded as 15855 Males (43.6%) and 20545 Females (56.4%) respectively. Details about Total Non-workers in the study area are compiled in Table 3.26. Graphical representation of Non-workers population is shown as follows in **Figure 3.21**

Table Error! No text of specified style in document.-6:Composition of Non-Workers

Non-Workers Population		
Persons	Males	Females
36400	15855 (43.6%)	41298 (56.4%)

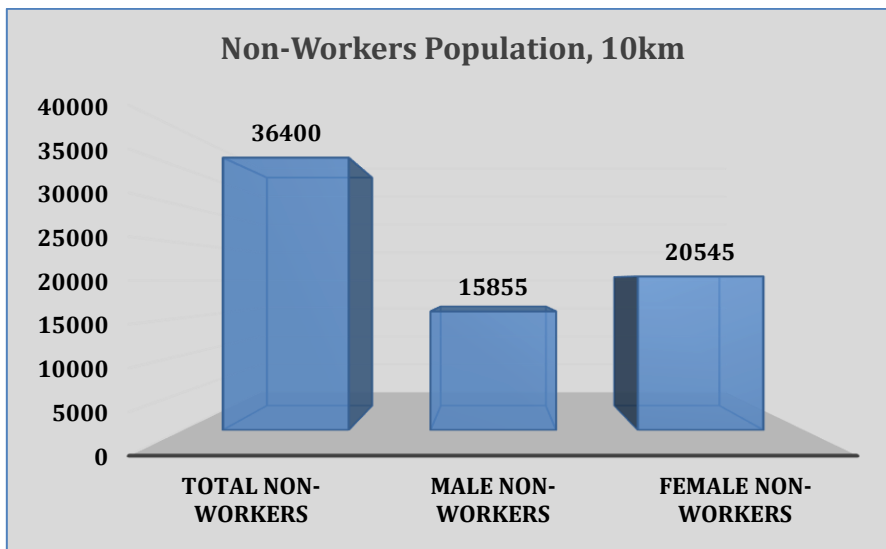


Figure Error! No text of specified style in document.-21: Composition of Non-Workers

Basic Infrastructure Facilities Availability (as per the census records of 2011)

A review of basic infrastructure facilities (Amenities) available in the study area has been done on the basis of the field survey and Census records, 2011 for the study area inhabited revenue villages of Hamirpur District in H.P. The study area has average level of basic infrastructure

facilities like educational, medical, potable water, power supply, and transport & communication network.

As per the Census Records 2011, the study area has a total of 246 revenue villages and 1 Town i.e. Tira Sujanpur (NP) under two Districts namely Hamirpur and Kangra of Himachal Pradesh state respectively.

Overall study area revenue villages are falling mainly under total twelve (12) tehsils namely Tira Sujanpur, Nadaun, Galore, Hamirpur & Bhoranj of Hamirpur district and Nurpur, Shahpur, Baroh, Dera Gopipur, & Khundian, Thural & Jaisinghpur of Kangra district respectively in Himachal Pradesh and Punjab State respectively.

Educational Facilities

There is a total no. of 125 Primary schools existing in the radius study area. Fifty eight (58) Middle schools are recorded in the study area. Thirty one (31) no's of Higher Secondary Schools (SS) are available in the study area. Only nineteen (19) Senior Secondary School (SSS) facility is available in the revenue villages of the study area. The educational facilities have been further strengthening now and a number of private public schools and colleges are also functioning in the surroundings of the study area. Besides, there are Engineering and Medical colleges available in Towns and District headquarters only. Higher education facilities are available in Towns of the district. There is a considerable improvement in educational facility. The villages of the study area have no such facilities can reach within 5.0 to 10.0km range. There are mainly eleven (11) towns i.e. Tira Sujanpur (NP), Nadaun, Hamirpur, Sarkaghat, Nurpur, Dharmsala, Kangra, Dera Gopipur, Jawalamukhi, Palampur available in the range of 2 to 66kms from the villages of 10 km radial study zone.

Availability of University Education

Palampur Agriculture University is located in Kangra district which not only caters to the needs of this area but also other parts of the state. Besides this University, R.P. Medical College at Tanda and Ayurvedic Medical College at Paprola are important institutions imparting medical education to the students of the state. Govt. Degree College of education at Dharmsala provides education in teaching. In addition to these professional colleges, district has 20 other degree colleges both in private and public sectors. This district has, therefore, sufficient number of degree colleges in both rural and urban areas providing education of degree and above level.

Mother Tongue

During Census 2011 the district recorded as 98.0% people have reported their mother tongue as Hindi and remaining mother tongues are negligible.

Religion

During Census 2011 out of the total population of 4, 54,768 of Hamirpur district, 4, 49,412 (98.8%) have reported their religion as Hindu followed by 3,711 (0.8%) as Muslim. Remaining Sikhs, Buddhist, Christian, Jain and other religions have a negligible representation in the district.

Medical Facilities

The medical facilities are provided by different agencies like Govt. & Private individuals and voluntary organizations in the study area. As per the district census handbook information of 2011, Six (6) no's of primary health centers are available in the study area; most of the study area villages depend upon the towns / district HQ of the study area having such facility. Only 09 no's of Primary Health Sub-centers are exists in the rural part of the study area. Mother & Child Welfare Centers are available in 3 villages of the study area. Allopathic Hospital exists only in two villages of the study area and two-Family Welfare Center found in the study area. Dispensary facility was observed in 71 villages (29.0%) of the study area. Overall villages of the study area are served by medium level medical facilities. Specialized medical facilities are available only in towns and District Headquarter (HQ) only.

Potable Water Facilities

Potable water facility is available in most of the villages/towns of the study area. The entire study area has poor level of potable water facilities. Hand Pump (HP) water facility is commonly observed in the study area as potable water facility. Out of total 247 revenue villages/towns, only 28 (11.3%) villages are served with River/Canal water in the study area. As per the census records of 2011, only 9 villages being served with Tank/Pond/Lake in the study area.

Communication, Road & Transport Facilities

Apart from Post & Telegraph (P & T) services, transport is the main communication linkage in the study area. Only 40 villages (16.2%) were found serving with Post Office facilities in the

study area, remaining villages are depending upon towns of the study area. The study area has average rail and road network, passes from the area. Only one (01) village named Bhat Lamber of Tira Sujampur tehsil of Hamirpur District in Himachal Pradesh state falling in the 10 km radius study area was observed with railway station facility in the study area. Nearest town is Tira Sujampur (NP) at about 2.3km of the mine lease area. Dharmsala airport is located at 42.6km from the lease area. No Forest land is involved.

Road transport is the main stay of economic activity in Himachal Pradesh as other means of transport mainly Railways and Airways are negligible. The district fully depends upon road transport. Though private buses also ply in the state but the passenger transport services to the people of Himachal Pradesh within and outside state are being mainly provided by Himachal Road Transport Corporation.

Banking Facility

The banking services have a great role in economic growth. The study area has almost all the schedule commercial banks with ATM facility at urban areas and the district HQ. The district Hamirpur has adequate banking facilities, most of the banks are situated at district, sub-district and block HQ.

Power Supply

It is revealed from the compiled information on Amenities availability as per the census record of 2011; most of the villages and towns are electrified for Domestic, Agriculture, and Commercial & for all purposes. Almost all (about 100%) villages and towns of the study area are electrified.

Village/town wise Basic Infrastructure and Amenities availabilities data for the entire study area is compiled and presented in **Table 3-36** as follows;

Table Error! No text of specified style in document.-7: Village wise Basic Amenities Availability

Name of Village/Town (Census Code)	Educational				Medical							Drinking Water					C T	Communication & Transport				Approach to the Village				Power Supply				Nearest Town & Distance, km
	P	M	S	S	C	P	P	M	H	D	F	W	H	TW	R	T		k	P	P	B	R	P	K	N	F	ED	E	EC	
			S	S	H	H	H	C			W	P					O	&	S	S	R	R	W	P		A		A		
1. District Hamirpur, HP																														
Bairi (63/24)	1	1	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	1	1	Tira Sujanpur,10km	
Bhatpura (63/18)	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	1	1	Tira Sujanpur,11km	
Chamarrahra (63/23)	1	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	2	1	2	1	1	2	1	1	Tira Sujanpur,13km	
Kodana (63/27)	0	0	0	0	0	0	0	0	1	0	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	1	1	Tira Sujanpur,12km	
Poi (63/20)	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	1	2	1	1	2	1	1	Tira Sujanpur,10km	
Chaptehr (63/22)	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	1	1	Tira Sujanpur,10km	
Jhataur (63/21)	1	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	1	1	Tira Sujanpur,9km	
Bahru (63/19)	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	1	2	1	1	2	1	1	Tira Sujanpur,8km	
Poar (63/1)	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	1	2	2	2	2	1	2	2	1	1	1	1	1	Tira Sujanpur,6km	
Bagehrah Upperla (63/14)	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	2	2	2	1	1	1	1	1	Tira Sujanpur,6km	
Bagehrah Buhla (63/6)	1	1	1	1	0	0	0	0	1	0	1	1	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	1	Tira Sujanpur,6km	
Jol (63/4) - I	1	0	0	0	0	0	0	0	0	0	2	1	2	2	2	1	2	2	1	2	1	1	2	1	1	1	1	1	Tira Sujanpur,5km	
Samona (63/16)	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Tira Sujanpur,6km	
Bagh (63/3)	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	1	2	2	1	2	1	1	2	1	1	1	1	1	Tira Sujanpur,5km	
Dera (55/6)	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	1	2	1	2	1	2	2	1	1	2	1	2	Tira Sujanpur,3km	
Pakkhar (55/27)	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	2	2	2	1	2	2	2	Tira Sujanpur,2km	
Tikru (55/4)	1	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Tira Sujanpur,4km	
Chaklah (55/34)	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Tira Sujanpur,5km	
Charot (55/44)	1	0	0	0	0	0	0	0	1	0	2	2	2	2	2	1	1	2	1	2	1	2	2	1	1	2	2	2	Tira Sujanpur,2km	
Ludiana (55/2)	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Tira Sujanpur,4km	
Darla (55/19)	1	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Tira Sujanpur,4km	
Meharpura (55/24)	1	1	1	0	0	0	0	0	0	0	1	1	2	2	2	2	1	1	1	2	1	2	2	1	1	2	2	2	Tira Sujanpur,4km	

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-3 Baseline Environment Status

Kharsal (55/17)	1	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2	2	2	Tira Sujanpur,5km
Deryal (55/23)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2	2	2	Tira Sujanpur,5km	
Gahlian (55/11)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	2	2	2	1	2	2	2	Tira Sujanpur,7km	
Nihari Upperli (54/20)	0	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Tira Sujanpur,10km	
Bhog (54/4)	1	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Tira Sujanpur,9km	
Kajoti (55/5)	0	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	2	1	2	2	1	1	1	1	1	1	Tira Sujanpur,8km	
Karot Khas (54/10)	1	1	1	1	0	0	1	0	0	0	0	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	2	Tira Sujanpur,8km	
Dhaner (54/17)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Tira Sujanpur,7km	
Laungni (54/22)	1	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	2	1	2	2	1	1	2	2	2	Tira Sujanpur,10km		
Pairian (54/7)	0	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	2	2	Tira Sujanpur,11km	
Puneh Attru (54/8)	1	1	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Tira Sujanpur,11km	
Khairru (54/16)	0	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Tira Sujanpur,12km	
Paneh Sih (54/9)	0	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Tira Sujanpur,10km	
Bari (54/3)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	Tira Sujanpur,9km
Salghun Hira (54/12)	0	0	0	0	0	0	0	0	0	1	0	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	Tira Sujanpur,11km	
Salghun-Lachho (54/14)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	Tira Sujanpur,12km	
Garoru Ghuman (53/7)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Tira Sujanpur,17km	
Bandhar (53/13)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	2	2	2	1	1	2	2	2	Tira Sujanpur,16km	
Rih (53/12)	1	1	0	0	0	0	0	0	0	1	0	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	2	Tira Sujanpur,12km	
Chabutra Khas (53/14)	1	1	1	1	0	0	0	0	0	1	0	2	1	2	2	2	1	1	1	1	2	1	1	2	1	1	2	2	2	Tira Sujanpur,12km	
Baliana (54/5)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2	2	2	Tira Sujanpur,12km	
Chamarrabri (57/17)	1	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Tira Sujanpur,14km	
Bhagol (57/4)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Tira Sujanpur,16km	
Chakariana (57/7)	1	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	2	2	2	1	1	1	1	1	Tira Sujanpur,13km	
Jehr (57/6)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Tira Sujanpur,10km	
Patlandar (57/5)	0	0	0	0	0	1	0	0	0	1	0	2	2	2	2	2	2	1	1	1	2	1	1	2	1	1	1	1	1	Tira Sujanpur,10km	
Kot (57/19)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Tira Sujanpur,14km	
Chail (57/20)	1	1	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Tira Sujanpur,10km	
Nalahi (57/18)	1	1	0	0	0	0	0	0	0	1	0	2	2	2	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	Tira Sujanpur,14km	
Gahla (57/8)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	1	2	2	1	2	2	2	2	1	1	1	1	Tira Sujanpur,17km	
Chamiana (57/10)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	1	2	2	2	2	2	2	2	1	1	1	1	1	Tira Sujanpur,16km	

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Chapter-3 Baseline Environment Status

Bhati (623) - II	1	0	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	1	Palampur,40km	
Kamand (628)	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	1	Palampur,42km	
Gujrera (627)	0	0	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	1	Palampur,42km	
Tikri (918) - II	0	0	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	1	Palampur,43km	
Kotahan (920)	0	0	0	0	0	0	0	0	0	0	0	0	2	1	2	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	1	Palampur,44km	
Bag Kuljan (921)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	1	Palampur,44km	
Kachhal Bhadarian (919)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	1	Palampur,45km	
Jaisinghpur (922)	1	1	1	1	1	1	0	0	0	0	1	1	2	1	2	1	1	2	1	1	1	2	1	2	2	2	1	1	1	1	1	1	Palampur,45km	
Buhara (924)	1	0	0	0	0	0	0	0	0	0	0	0	2	1	1	1	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	1	Palampur,45km	
TOTAL (10km)	1	2	5	3	1							7	2	1	2	<i>Status for Availability and Non-Availability is shown as A (1) & NA (2) respectively</i>																		
	5	8	1	9	1	6	9	3	2	1	2																							

Source-<http://www.censusindia.gov.in/2011census/dchb/DCHB.html>

Abbreviations:

Educational Facilities:P-Primary School, M-Middle School, SS-Higher Secondary Schools, SSS- Senior Secondary School

Medical Facilities:CHC- Community Health Centre, PHC-Primary Health Centre, PHSC-Primary Health Sub-Centre, MCWC-Maternity and Child Welfare Centre, H-Hospital, D- Dispensary, FWC-Family Welfare Centre

Drinking Water Facilities:T-Tap Water, W-Well Water, HP-Hand Pump, TW-Tube Well Water, R-River Water, Tk-Tank Water, O-Other Drinking Water Facility, CT-Community Toilet

Communication and Transport Facilities: PO-Post Office, SPO-Sub-Post Office, PTO- Post & Telegraph Office, Tel. - Telephone Connection, Mob.- Mobile Phone Coverage, BS-Bus Services, RS-Railways Services

Approach to Village:PR- Paved Roads, KR-Kuchha Road, FP-Foot Path

Power Supply:ED-Power Supply for Domestic use, E Ag.- Power Supply for Agricultural use, EC- Power supply for Commercial use, EA-Electricity for All Purposes

Nearest Town & Distance, km :a for < 5 Kms, b for 5-10 Kms and c for 10+ kms of nearest place where facility is available is given.

Brief Description of Places of Religious, Historical or Archaeological Importance and Tourist interest in Villages and Towns of the District:

Place of Historical and Tourist Importance

There are not many places of historical and archaeological importance in the district except tira sujanpur and to some extent nadaun both of which are the headquarters of the respective tehsils;

Tira sujanpur - tira sujanpur has been the picturesque town on the left bank of river beas 26 km away from the district headquarters hamirpur. It was founded by raja abhey chand the king of ruling katoch dynasty of kangra in 1748 a.d.

Nadaun - nadaun is another town situated on the left bank of river beas on hamirpur-kangra road. In the princely days, it used to be the headquarters of the nadaun jagir. Maharaja sansar chand of kangra used to hold his court here during the summer for a number of years during his reign.

Hamirpur -hamirpur town situated on dharmsala-bilaspur road is the headquarters of district administration. It was said to have been founded by raja hamir chand of kangra who built a fort here.

Temple of Deothsidh Baba Balak Nath - Deoth- sidh Baba Balak Nath temple is located bordering Bilaspur district in Bhoranj tehsil of the district. It is a very ancient temple and almost round the year hundreds of people as far as from other states of the country to offer their prayers at this famous temple of Baba Balak Nath.

State Government has taken the management of this temple for its proper development and for providing adequate facilities to the devotees. Besides, more bus services have been introduced for the visitors and devotees from Hamirpur and other parts of the state.

Major Social and Cultural events, Natural and Administrative developments and significant activities during the decade.

Social and Cultural Events

Fairs and Festivals:

The people of Hamirpur district celebrate a good number of fairs and festivals round the year which have, by and large, religious sanctity. Some of the important fairs and festivals held in the district are as follows;

- ❖ Gasota Mahadev Fair
- ❖ Holi Fair

- ❖ Baba Deothsidh Fair
- ❖ Gashian Fair
- ❖ Awah Devi Fair
- ❖ Chaniari Devi Fair
- ❖ Tauni Devi Fair, Markanda Fair, Dei-ka-Naon

Rehabilitation & Resettlement (R & R)

Policy to be adopted (central/state) in respect of the project affected persons including home/land oustees and landless labours. Hence, any planning with respect to rehabilitation & resettlement is not applicable.

4.0 GENERAL

All development projects have an impact on the natural set up of the environment. This impact may be beneficial or adverse, depending on the improvement or the deterioration it brings about in the status of air, water, land, ecology, natural systems, socio-cultural life styles and economics of the population. Depending on the nature of activities and baseline environment status, the impacts are assessed for their importance. On the basis of the impact analysis, the mitigating action and future monitoring requirement are focused in the Environmental Management plan for countering or minimizing the impacts.

Keeping in mind, the environmental baseline scenario as detailed in chapter III and the proposed extraction activity described in chapter II, it is attempted to assess the likely impact and its extent on various environmental parameters and likely mitigation measures to be adopted.

4.1 LAND ENVIRONMENT

The lease area lies in the river bed of Beas River which is a perennial Glacial fed stream. Beas is a Perennial River and it originates from Rohtang Pass at an elevation of 4350 meters above means sea level. Beas majorly drains the eastern part of district Kaogra. This has a total length of 470 Kms from origin till confluence with Sutlej River in Punjab. The proposed mining site is located beside village Bagh near to the right bank of River Beas. The site is approachable through a village road originating from the Alampur Petrol Pump located on Palampur-Sujanpur-Hamirpur road. This unmetalled village road, located at a distance of approximately 500 kms from main road. The proposed mining site is located in the river bed of Beas River. The highest point of auctioned area is meters above 545 MSL and the lowest point is 544 meters above MSL and the average width is 500 to 600 Mtrs.

Impact on Land Environment

The mining and allied activities involved in river bed mining are creation of roads/ transportation track and formation of mine pits inside river, etc. Impacts of these activities are given below:

a. Top Soil:

The mining activities (not involve top soil) involves the extraction of Stone Boulder, Sand, & Bajri from the river bed. The RBM activity will be limited up to 1 m water table whichever

will be less. Unsystematic removal of Stone Boulder, Sand, & Bajri cause bed degradation and will make it unfit for aquatic environment.

Mitigation measures

Since the project is mainly Stone Boulder, Sand, & Bajri deposit extraction (soil deficient) so no loss of top soil is anticipated.

b. Excavation:

Excavation of pits will be done in the mine lease area.

Mitigation measure

The extraction activity will be manual/semi- mechanized, most of the work will be done manually to mitigate harm associated with heavy machinery / equipments / their functioning, except work include human risk.

c. Waste dumps:

No waste will be generated during the riverbed mining operations. Since a mixture of sand admixed with silt and clay is inseparable, it will be sold in the open market as per demand.

Mitigation measure

Not applicable.

IMPACT OF SAND MINING

Impacts of sand mining can be broadly classified as given below:

Physical

The large-scale extraction of streambed materials, mining below the existing stream bed and the alteration of channel-bed form and shape lead to several impacts such as erosion of channel bed and banks, increase in channel slope, and change in channel morphology. These impacts may cause: (1) the undercutting and collapse of river banks, (2) the loss of adjacent land and/or structures, (3) upstream erosion as a result of an increase in channel slope and changes in flow velocity, and (4) downstream erosion due to increased carrying capacity of the stream, downstream changes in patterns of deposition, and changes in channel bed and habitat type.

Mitigation measures

- The mining will be restricted up to 3 m below river bed / water table whichever less.
- The RBM will be done in unsaturated zone. Thus, minimum loss to habitat.
- Dredging will not be allowed.

Budget

To determine the budget for Stone, Sand, & Bajri for a particular stream reach, site-specific topographic, hydrologic, and hydraulic information is necessary. This information is used to calculate the amount of Stone Boulder, Sand, & Bajri that can be safely removed from the area without causing undue erosion or degradation, either at the site or at a nearby location, upstream or downstream.

Mining of stone, sand, and bajri in-channel or near-channel can alter the sediment budget and significantly impact channel hydraulics. The effects on aquatic habitat may vary depending on the magnitude and frequency of disturbance, mining techniques, sediment particle size, riparian vegetation characteristics, and the magnitude and frequency of hydrologic events following the disturbance.

Temporal and spatial responses of alluvial river systems are a function of geomorphic thresholds, feedbacks, lags, upstream or downstream transmission of disturbances, and geologic/physiographic controls. Minimization of the negative effects of Stone, Sand, & Bajri mining requires a detailed understanding of the response of the channel to mining disturbances.

Decisions on where to mine, how much and how often require the definition of a reference state, i.e., a minimally acceptable or agreed-upon physical and biological condition of the channel. Present understanding of alluvial systems is generally not sufficient to enable the prediction of channel responses quantitatively and with confidence; therefore, reference states are difficult to determine. Still, a general knowledge of fluvial processes can provide guidelines to minimize the detrimental effects of mining. Well-documented cases and related field data are required to properly assess physical, biological, and economic tradeoffs.

Mitigation measures

Quantities will be strictly limited so that Stone Boulder, Sand, & Bajri recruitment and accumulation rates are sufficient to avoid extended impacts on channel morphology and in

stream habitat. Although conceptually simple, annual Stone Boulder, Sand, & Bajri recruitment to a particular site is highly variable and not well understood.

- Flow and sediment transport in most rivers and streams are highly variable from year to year, so an annual average rate may be meaningless.
- An "annual average deposition rate" may bear little relation to the sediment transport regimes in a river in any given year.
- The site selection was based on several factors, including minor mineral reserves, site-specific problems such as flooding and submergence of crop lands/fields, excavation needs, and the rate of sediment deposition.
- RBM will be done in a responsible manner.
- Stone Boulder, Sand, and Bajri mining will be restricted to a maximum of 3 m below the bed/water table, whichever is less.
- The RBM will be done in the unsaturated zone.
- No mining will be done near important structures such as bridges, dams, and others to prevent bar skimming.
- Mining will not exceed a certain magnitude.
- Mining will not be carried out in close proximity to dams and other important structures to prevent "hungry water" problems.

4.2 WATER ENVIRONMENT

Damage in the water body, depends on its assimilative capacity. To find out assimilative capacity of receiving water body, water samples were collected from different groundwater and surface water sources. The study indicates that assimilative capacity of the river water bodies still exists, but effective measures shall be taken to check water pollution. To find out the effect on ground water an extensive hydro-geological study has been conducted and from the study it can be safely concluded that there is no noticeable effect on surrounding ground water resource due to mining. The mining activity does not require water. The collection of Stone, Sand, & Bajri is done on the river bed where excessive sedimentation has been noticed.

Mining of stone, sand, and bajri from within or near a streambed has a direct impact on the physical habitat characteristics of the stream. These characteristics include geometry, bed

evaluation, substrate composition and stability, in-stream roughness elements, depth, velocity, turbidity, sediment transport, stream discharge, and temperature. Altering these habitat characteristics can have deleterious impacts on both in-stream biota and associated riparian habitat.

The detrimental effects to biota resulting from bed material mining are caused by three main processes:

- i. alteration of flow patterns resulting from modification of the river bed
- ii. an excess of suspended sediment
- iii. damage to riparian vegetation and in stream habitat

As the project activity will be carried out in the meandering part of the riverbed, none of the project activities will affect the water environment or riparian habitats. Furthermore, no stream will be diverted or truncated, and no water will be pumped from the river or ground. During the lean months, the proposed Stone, Sand, & Bajri mining will not expose the base flow of the river, which will prevent any adverse impact on surface hydrology or ground water regime. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the ordinary sand. As a result, the project activities will not have any adverse effect on the physical components of the environment and, therefore, will not have any effect on the recharge of groundwater or water quality.

4.3 AIR ENVIRONMENT

Anticipated impacts and evaluation

Studies were conducted to evaluate the impact of mining activity on air quality using various modeling techniques. The results showed that the mining operation is unlikely to have a significant impact on air quality. While loading, transportation, and unloading of dry materials in mining operations can contribute to air pollution, the handling of only wet materials in this case eliminates the problem of fugitive dust. Moreover, minerals will be collected and lifted manually, without any blasting, resulting in negligible dust generation. As a result, the amount of dust generated is insignificant compared to the mining process of other hard minerals that involve drilling, blasting, and mechanized loading."

Air Modeling

In general, mining operations generate substantial quantities of airborne respirable dust, which leads to the development of respirable diseases in mine workers. The increasing trend of mining leads to release of huge amount of dust. This air borne dust particles, generally below 100 micron in size, are nuisance particulates and cause health hazards as an ill effect of mining activities. Extraction activities like drilling, blasting, material handling and transport are a potential source of air pollution. Therefore, a detailed study on emission sources and quantification of pollutant concentration by means of dispersion modeling is required to access the environmental impact of a mine. On the basis of the predicted increments to air pollutant concentrations, an effective mitigation and environmental plan can be devised for sensitive areas. In case of river bed Stone, Sand, & Bajri mining, as there is no blasting and drilling activities, the impacts are caused by material handling and transportation activities.

FUGITIVE DUST- MODELING

In the present study Stone Boulder, Sand, & Bajri extraction site in Bhangani, Tehsil Paonta Sahib, District Sirmaur of Himachal Pradesh State was selected. Air quality modeling was done using line source model as published by USEPA for transportation through roads and the empirical emission factor equations from article, Jyothi Prabha, Gurdeep Singh and I.N.Sinha, 2003 “Emission Factor Equations for Haul roads: The Indian Perspective”, Indian Journal of Air Pollution Control Vol. VI No. I March pp 37-43. Emission factors to be used in Line source Dispersion equation is adopted from formula as given below:

$$E = [\{ (100-m)/m \}^{0.8} \{ s / (100-s) \}^{0.1} u^{0.3} \{ 2663 + 0.1 (v+fc) \} 10^{-6}] \text{----- (1)}$$

Where

E = Emission Rate (g/sec/m)

m = Moisture Content of the road = 10%

s = Silt Content of the Road = 10%

u = Wind Speed = 2.57 m/s

v = Average Vehicle Speed = 4.5 m/sec

f = frequency of Vehicle movement in no per hour = 2 vehicles / hour

c = Capacity of the dumper in tons = 20 ton

Thus using equation (1)

$$E = 0.005 \text{ g/sec/ m}$$

Concentration of the fugitive dust was calculated using the empirical equations for unpaved roads published by USEPA- AP42. The Concentration of the fugitive Dust is given below:

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

Where

C = Concentration in microgram/ m³

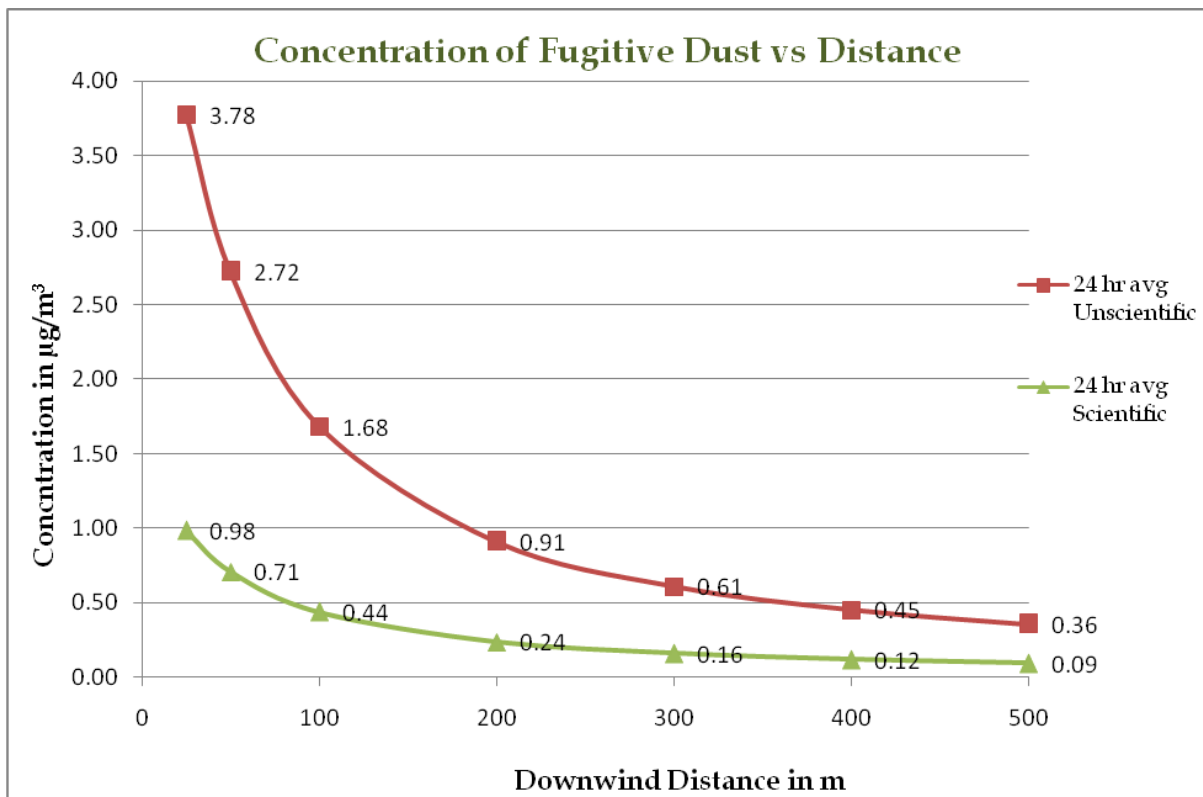
E = Emission Rate = 0.0052 g/sec/m

v = Wind Speed = 2.57 m/s

h = 1m

Modeling was done for an infinite line source assuming unpaved road. For conservative calculation wind was assumed to blow at a velocity of 2.57 m/s perpendicular to the road.

The results are given in the graph:



It is observed that the ground level concentration (GLC) decreases from 3.75 µg/m³ at 50 m from the centre line of the road to 0.38 µg/m³ at 500 m from the centre line of the road. These values have been predicted for a dry unpaved road.

Mitigation measures

The only source of air pollution is the road transport network of trucks. Dust suppression measures, such as water spraying, will be implemented on the roads to reduce dust emissions by 75%. Utmost care will be taken to prevent spillage from the trucks, and overloading will be prevented. Plantation activities along the roads will also help to reduce the impact of dust on nearby villages.

4.4 NOISE ENVIRONMENT

The methodology adopted for sand, stone, and bajri extraction projects involves an open-cast manual mining approach that is primarily non-noisy due to its predominantly manual nature.

Impact on environment

At mines, noise is created by movement of machinery & transportation vehicles, etc. The noise level in the working environment is compared with the standards prescribed by Occupational Safety and Health Administration (OSHA-USA) which has been adopted and enforced by the Govt. of India through model rules framed under Factories Act, 1980 and CPCB 2000 norms. The summary of the permissible exposures in cases of continuous noise as per above rules is given below:

Table 4.1, Noise impact

Total time of exposure per day in hour	Sound pressure dB(A)	Remarks
1	2	3
8.0	90	No exposure in excess of 115 dB(A) is permissible
6.0	92	--
4.0	95	For any period of exposure falling in between any figure and lower figure as indicated in column (1), the permissible sound is to be determined by extrapolation or proportionate scale.
3.0	97	
2.0	100	
1 ½	102	
1	105	
¾	107	
½	110	
¼	115	

Noise at lower levels (sound pressure) is quite acceptable and does not have any bad effect on human beings, but when it is abnormally high- it incurs some maleficent effects.

a. Mitigation measures

i. On-site

As mining will be done manually, no machinery will be used. Therefore, no hearing protection is necessary for the miners. Furthermore, well-maintained vehicles will be utilized to minimize noise during vehicle movement.

ii. Off-site

The off-site receptors are not significantly affected as noise generated by mines is insignificant but some disturbances due to vehicle movement cannot be avoided. Plantation will be done along the roadsides, civic amenities, etc. which will more or less dampen the off-site noise level.

4.5 BIOLOGICAL ENVIRONMENT

Table 4.2 Anticipated impact and mitigation measures for biological environment:

Impact Predicted	Mitigation measure
Disturbance to free movement / living of wild fauna viz. Birds, Reptiles etc.	<ul style="list-style-type: none"> • Noise produced due to vehicular movement for carrying sand materials will be in permissible noise level. Higher noise level in the area may lead to restlessness and failure in detection of calls of mates and young ones; • Care will be taken not to hunt animals /birds by labors; • If wild animals/birds are noticed crossing the core zone, they will not be disturbed at all; • Labors will not be allowed to discards food, plastic etc., which can attract animals/birds near the core site; • Only low polluting vehicles will be allowed for carrying mining materials. All vehicles allowed in the project site area will have to provide valid pollution under control certificate;

	<ul style="list-style-type: none"> Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per noise pollution (regulation and control), rules, 2000, CPCB norms
Disturbance of riparian ecosystem/ wetlands	<ul style="list-style-type: none"> The mine owners will not be allowed to destruct or modify the riparian ecosystem or the wetlands by the side of the river.
Monitoring of upstream and downstream water quality	<ul style="list-style-type: none"> Water quality will be monitored from upstream and downstream area to assess the impact on water quality. Mining activity will be controlled to maintain the clean water conditions.

Impact on Ecology of the Area

Mining, which involves the removal of channel substrate, resuspension of streambed sediment, clearance of vegetation, and stockpiling on the streambed, will have ecological impacts. These impacts may result in the direct loss of stream reserve habitat, disturbances of species attached to streambed deposits, reduced light penetration, reduced primary production, and reduced feeding opportunities.

Stone, sand, and bajri have been widely used in the construction of roads and buildings. Today, the demand for these materials continues to increase. Mining operators, in collaboration with cognizant resource agencies, must ensure that mining activities are carried out in a responsible manner.

Excessive and unscientific riverbed stone boulder, sand, and bajri mining cause river degradation. This can lead to bank erosion, depletion of sand in the streambed causing deepening of rivers and enlargement of river mouths. Any volume of sand exported from streambeds represents a loss to the system.

Excessive and unscientific riverbed material mining is a threat to bridges, river banks, and nearby structures. Stone boulder, sand, and bajri mining also affect the adjoining groundwater system and the local people who use the river.

Uncontrolled mining of riverbed stone boulder, sand, and bajri leads to the destruction of aquatic and riparian habitats through significant changes in channel morphology. These changes include bed degradation, bed coarsening, lowered water tables near the streambed, and channel instability. Such physical impacts can cause the degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also result in the entire streambed degrading to the depth of excavation

Stone, Sand, and Bajri mining generates additional vehicle traffic that has a negative impact on the environment. Moreover, when access roads cross riparian areas, it can cause adverse effects on the local environment.

Mitigation measures

As the present mining will be done in a scientific manner as mentioned before, not much significant impact is predicted, however, the following mitigation measure will be taken to further minimize it.

- Re-suspension, turbulence, stream flow, channel substrate and associated species will be disturbed and lost due to proposed mining will disturb existing pattern but in respect to river area is very minimum / less. The activity will mainly be carried out manually to minimize associated loss, as stated earlier that the settling pit will be created to minimize the adverse impact downstream.
- No mining will be done near to important structure like bridges, dam and others.
- No mining will be carried out during the rainy season to minimize impact on aquatic life.
- As the mining site has no vegetation, thus clearance of vegetation not required.
- The mining activity will employ many heavy vehicles to transport the excavated material outside the mine to desired destination that cause the loss to riparian habitat. Safe site / site having less impact will be selected for transportation, all the vehicles will be employed for transportation purpose will be PUC certified. On closure / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts.

Flora and Fauna of Riparian Habitat

If sand mining is done in an unscientific way, i.e., beyond the replenishment capacity, riverbed mining can have adverse effects at the mine sites. The fertile streamside land will be

lost gradually and the wildlife in the riparian areas may start vanishing. Degraded stream habitats will result in loss of fisheries productivity, biodiversity, and recreational potential. Thus, the severely degraded channels may lower the aesthetic value too.

All species require specific habitat conditions to ensure long-term survival. Native species in streams are uniquely adapted to the habitat conditions that existed before humans began alterations. These have caused major habitat disruptions that favored some species over others and caused overall declines in biological diversity and productivity. In most streams and rivers, habitat quality is strongly linked to the stability of channel bed and banks. Unstable stream channels are inhospitable to most aquatic species. Factors that increase or decrease sediment supplies often destabilize bed and banks and result in dramatic channel readjustments. For example, human activities that accelerate stream bank erosion, such as riparian forest clearing / Riverbed mining cause stream banks to become net sources of sediment that often have severe consequences for aquatic species. Anthropogenic activities that artificially lower stream bed elevation cause bed instabilities that result in a net release of sediment in the local vicinity. Unstable sediments simplify and, therefore, degrade stream habitats for many aquatic species.

The most important effects of excessive and unscientific Riverbed sand mining on aquatic habitats are bed degradation and sedimentation, which can have substantial negative effects on aquatic life. The stability of sand-bed streams depends on a delicate balance between stream flow, sediment supplied from the watershed, and channel form. Mining-induced changes in sediment supply and channel form disrupt channel and habitat development processes. Furthermore, movement of unstable substrates results in downstream sedimentation of habitats. The affected distance depends on the intensity of mining, particles sizes, stream flows, and channel morphology. Channel widening causes swallowing of the streambed, producing braided flow or subsurface intergrades flow in riffle areas, hindering movement of fishes between pools. Channel reaches become more uniformly shallow as deep pools fill with gravel and other sediments, reducing habitat complexity, riffle-pool structure, and numbers of large predatory fishes.

All such impacts can be reduced by following scientific mining practices and mitigation measures as restricted.

Mitigation measures

Sand extraction operations will be managed to avoid or minimize damage to stream/river banks and riparian habitats

- Sand extraction in vegetated riparian areas will be avoided.
- Undercut and incised vegetated banks will not be altered.
- Large woody debris in the riparian zone will be left undisturbed or replaced when moved and not be burnt.
- Sand stockpiles, overburden and/or vegetative debris will not be stored within the riparian zone.
- It is essential that overburden is evenly redistributed over exposed areas as soon as possible after the operation has been completed for faster revegetation.
- Operation and storage of heavy equipment within riparian habitat will be restricted.
- Access roads will not encroach into the riparian zones

No exotic species will be introduced by the RBM project activity & associated persons at all.

As the mining will not be done beyond the stipulated limit, so the chances of river mouth widening, bank widening will be negligible.

The river channel will be filled with sediment deposition, leading to the widening of the channel and eventually causing submergence of nearby areas. Therefore, scientific and systematic mining can help mitigate these potential effects.

Thus, there is a requirement to establish a stable ecosystem with both ecological and economic returns. Minimization of soil erosion and dust pollution enhances the aesthetic value of the core and the buffer zone. To achieve this, it is advised to have planned increase in the area of green cover of plantation and green belts activities. The basic objectives of plantations are as follows:

- Improvement of Soil quality,
- Quick vegetative cover to check soil erosion,
- Improvement in mining site stability,
- Conservation of biological diversity of plants, birds and animals,
- As dust receptor and dust filter, this is likely to be produced during mining.

4.6 STATUTORY REQUIREMENTS

Effective resource management cannot be achieved in isolation; it is widely accepted that coordination and integration are necessary. Accordingly, the Department has pursued approaches to achieve coordination and integration wherever possible, resulting in the development of coordinated regulatory systems.

A regulatory system consists of both statutory and non-statutory components. In the Sectoral-specific strategy for prospecting and mining, the Department participates within an integrated environmental management system which is administered in terms of the Acts and Rules. Other Acts dealing with matters relating to the conservation and protection of the environment and which a holder of a mining authorization must also take cognizance of, include *inter alia*, the following:

- The Mines Act, 1952
- The Mines and Mineral (Development and Regulation) Act, 1957
- Mines Rules, 1955
- Mineral Concession Rules, 1960
- Mineral Conservation and Development Rules, 1988
- State Minor Mineral Concession Rules, 1963
- The Water (Prevention and Control of Pollution) Act, 1974
- The Air (Prevention and Control of Pollution) Act, 1981
- The Environment (Protection) Act, 1986
- The Forest (Conservation) Act, 1980
- The Wildlife (Protection) Act, 1972

5.0 GENERAL

The examination of technology and site alternatives is an extremely important aspect of ensuring long-term sustainability for a project, particularly for large-scale ones that involve significant investments in terms of financial resources, labor, safety, environmental considerations, mineral value, and hazards. River bank mining is a relatively straightforward operation that involves extracting sand, stone, and bajri from river banks with minimal mechanization.

The proposed project is specific to the chosen site, which is determined by the geological setup and the mineable area of the river. As the project is located within the meandering course of the river, there is no disturbance to any objects of economic importance. Therefore, there is limited scope for alternative sites.

Alternative technologies can be utilized for the mining operation, although none have been implemented. This approach also offers a high potential for local employment, contributing to the socio-economic development of the region. Consequently, we have decided to adopt the open-cast manually extraction of sand, stone, and bajri at the selected site."

Therefore, the opencast manually extraction of Sand, Stone & Bajri at the selected site is adopted.

6.0 INTRODUCTION

The success of any post-project environmental monitoring program depends on the efficiency of the organizational setup responsible for implementing the program. Regular monitoring of various environmental parameters is also necessary to evaluate the effectiveness of the management program so that necessary corrective measures can be taken if there are any drawbacks in the proposed program. Environmental quality parameters in the work zone and surrounding areas are important for maintaining sound operating practices of the project in line with conformity with environmental regulations. Therefore, the post-project monitoring work is an essential part of EMP.

6.1 PROPOSED SET UP

Keeping the utility of monitoring results in the implementation of the environmental management program in view, an organizational chart has been proposed, headed by General Manager as shown in Fig. 6.1

The said team will be responsible for:

- i. Collecting water and air samples from surrounding area and work zone monitoring for pollutants.
- ii. Analyzing the water and air samples.
- iii. Implementing the control and protective measures.
- iv. Co-coordinating the environment related activities within the project as well as with outside agencies.
- v. Collecting statistics of health of workers and population of surrounding villages.
- vi. Monitoring the progress of implementation of environmental management program.

The laboratory will be suitably equipped for sampling/testing for various environmental pollutants.

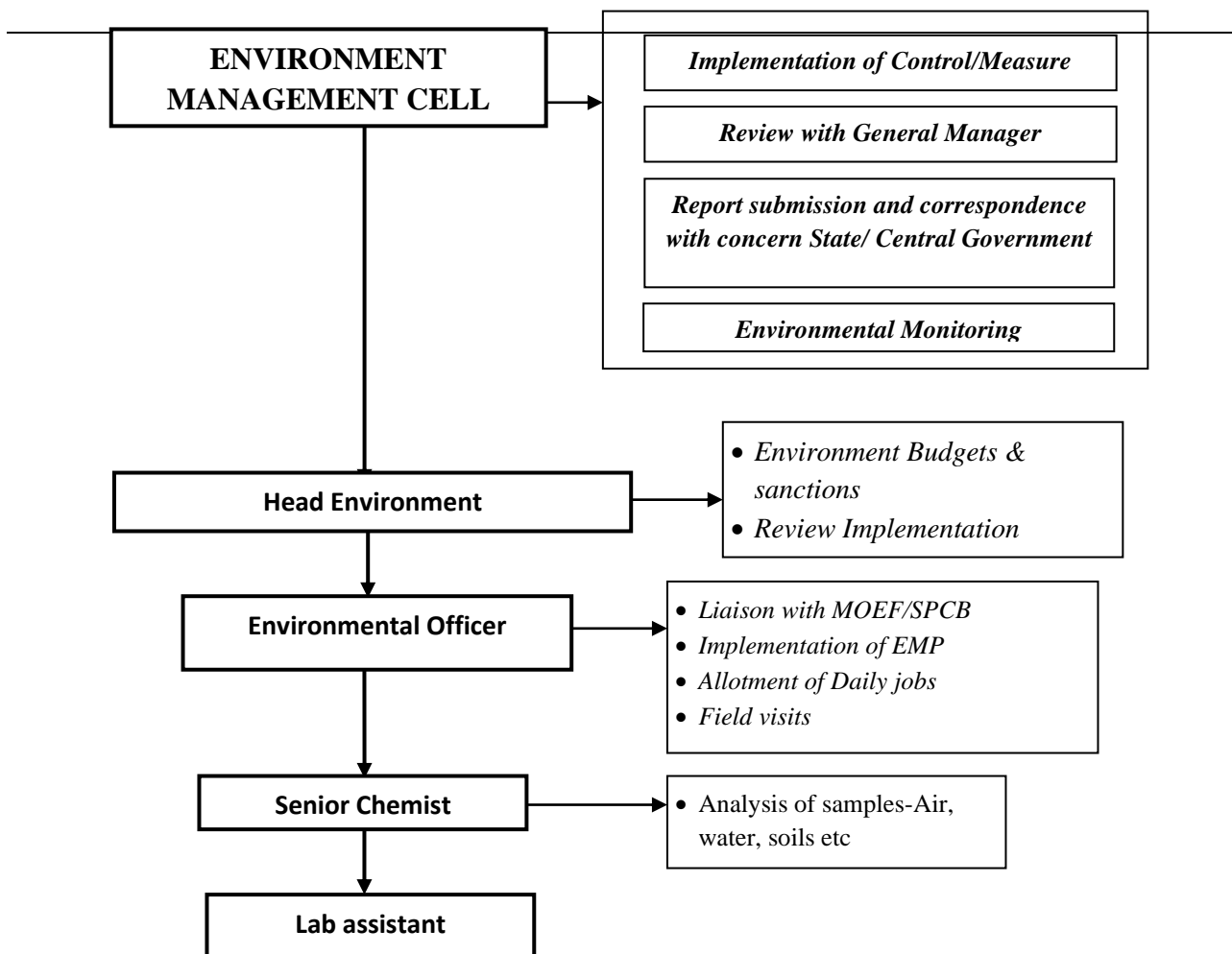


Fig. 6.1 Function of Environmental Management Cell

6.2 MONITORING SCHEDULE AND PARAMETERS

Air Quality Monitoring

Monitoring air quality is essential to evaluate the effectiveness of abatement programs and develop appropriate control measures. The project proponent will monitor ambient air quality in and around the proposed ordinary sand mining projects at a frequency of once every fortnight, or at any other frequency as stipulated by the MoEF, and take appropriate air pollution control measures to ensure that the concentration of PM2.5, PM10, SO2, and NOX remain within acceptable limits.

Water Quality monitoring

Water quality monitoring involves periodic assessment of the quality of surface water and groundwater near the mining project. Surface water samples will be analysed for all parameters according to EPA 1986 standards, while groundwater samples will be analysed for all parameters per IS-10500.

Phreatic surface levels will be continuously monitored throughout the project's lifespan to assess the impact of mining operations on the groundwater regime. A network of observation wells will be located in the villages surrounding the project area for monitoring phreatic surface levels. The water levels will be monitored four times a year during the pre-monsoon and post-monsoon seasons

Noise Level Monitoring

Noise level monitoring will be done for achieving the following objectives:

- a) To compare sound levels with the values specified in noise regulations
- b) To determine the need and extent of noises control of various noise generating sources
- c) Correlation of noise levels with community response to noise levels

To assess occupational noise exposure levels, noise level monitoring will be conducted at the work zone. Additionally, noise levels at noise-generating sources such as mineral handling arrangements and vehicle movements, as well as nearby villages, will be monitored to study the impact of higher noise levels. This will enable the implementation of necessary control measures at the source.

Table 6.1: Monitoring Schedule and Parameters

S. No.	Description of Parameters	Schedule and Duration of Monitoring
1	Air Quality a) In the vicinity of the mine b) In the vicinity of the transportation network	24 hourly samples twice a week for one month in each season except monsoon.

2	Water Quality a) Water quality of surface and groundwater around the site b) Drinking water must conform to drinking water standards	Once in a season for 4 season in a year
3	Ambient Noise Level	Twice in a year for couple of years & then once in a year
4	Soil Quality	Once in two years on project monitoring area
5	Inventory of Flora (tree plantation, survival etc)	Once in two years on project monitoring area
6	Socio-economic condition of local, population, physical survey	Once in 3 or 4 years

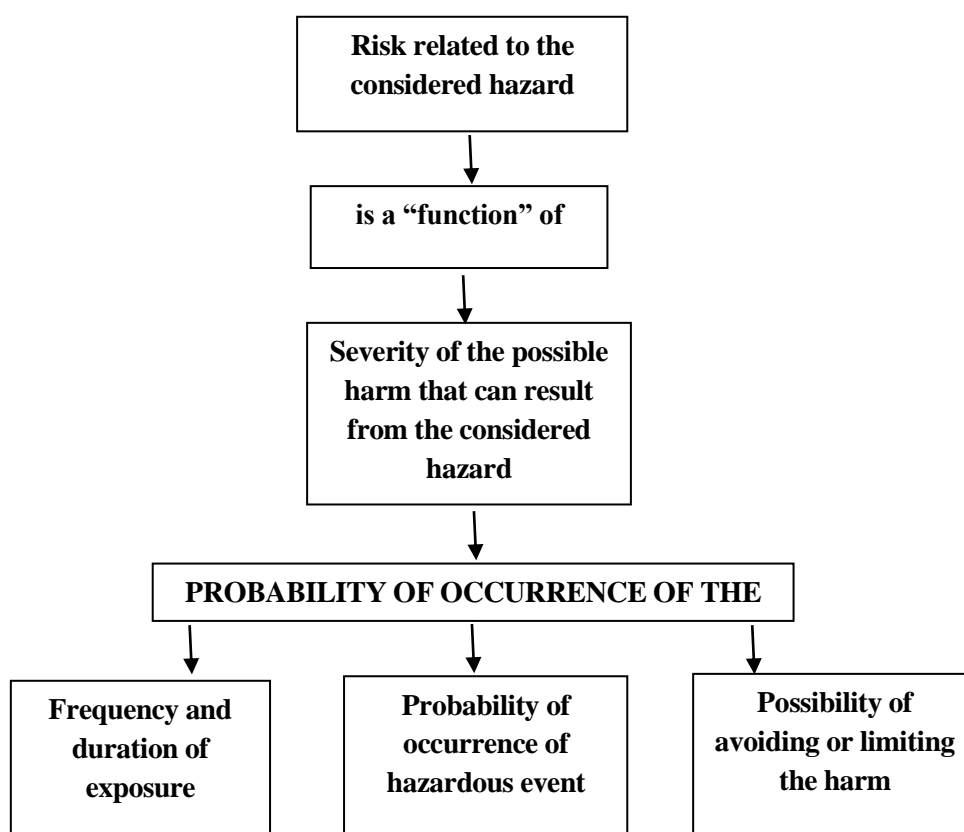
7.0 PUBLIC CONSULTATION

Details of Public hearing will be added in the Final EIA/EMP report.

7.1 HAZARD IDENTIFICATION AND RISK ASSESSMENT METHODOLOGY

A) RISK

Risk concerns the deviation of one or more results of one or more future events from their expected value.



Tolerable risk: Risk which is accepted in a given context based on the current values of society

Protective measure: The combination of risk reduction strategies taken to achieve at least the tolerable risk. Protective measures include risk reduction by inherent safety, protective devices, and personal protective equipment, information for use and installation and training.

Severity: Severity is used for the degree of something undesirable.

Risk Analysis: A systematic use of available information to determine how often specified events may occur and the magnitude of their likely consequences.

The different steps of risk assessment procedure are as given below:

Step I: Hazard Identification

The purpose of hazard identification is to identify and develop a list of hazards for each job in the organization that are reasonably likely to expose people to injury, illness or disease if not effectively controlled. Workers can then be informed of these hazards and controls put in place to protect workers prior to them being exposed to the actual hazard.

Step II: Risk Assessment

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

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

Step III: Risk Control

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

Step IV: Implementation of risk controls

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

The most effective methods of control are:

- i. Elimination of hazards
- ii. Substitute something safer
- iii. Use engineering/design controls
- iv. Use administrative controls such as safe work procedures
- v. Protect the workers i.e. By ensuring competence through supervision and training, etc.

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

Step V: Monitor and Review

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

B) RISK ANALYSIS

The risk assessment portion of the process involves three levels of site evaluation:

- a) Initial Site Evaluation,
- b) Detailed Site Evaluation,
- c) Priority Site Investigations and Recommendations.

The risk assessment criteria used for all levels of site evaluation take into account two basic factors:

The existing site conditions

The level of the travelling public's exposure to those conditions.

The Initial Site Evaluation and Detailed Site Evaluation both apply weighted criteria to the existing information and information obtained from one site visit. The Initial Site Evaluation subdivides the initial inventory listing of sites into 5 risk assessment site groups. The Detailed Site Evaluation risk assessment is then performed on each of the three highest risk site groups in order of the group priority level of risk. The result of the Detailed Site Evaluation process is a prioritized listing of the sites within each of the three highest risk site groups.

Risk analysis is done for:

- Forecasting any unwanted situation
- Estimating damage potential of such situation
- Decision making to control such situation
- Evaluating effectiveness of control measures

C) ACCEPTABLE RISK

Risk that is acceptable to regulatory agency and also to the public is called acceptable risk. There are no formally recognized regulatory criteria for risk to personnel in the mining industry. Individual organizations have developed criteria for employee risk and the concepts originally arising from chemical process industries and oil and gas industries. Because of the uncertainties linked with probabilistic risk analysis used for quantification of the risk levels the general guiding principle is that the risk be reduced to a level considered

As Low as Reasonably Practicable (ALARP). The risk acceptability criteria are given in following Table. It can be seen that there are three tiers:

- a. A tolerable region where risk has been shown to be negligible and comparable with everyday risks such as travel to work.
- b. A middle level where it is shown the risk has been reduced to As Low As Reasonably Practicable level and that further risk reduction is either impracticable or the cost is grossly disproportionate to the improvement gained. This is referred as the ALARP region.
- c. An intolerable region where risk cannot be justified on any grounds. The ALARP region is kept sufficiently extensive to allow for flexibility in decision making and allow for the positive management initiatives which may not be quantifiable in terms of risk reduction.

Table 7.1: The risk acceptability criteria are given in following table:

1	Risk un acceptance and must be reduced. The actions may include equipment's and people or procedural measures. If risk cannot be reduced to ALARP level, operating philosophy must be fundamentally reviewed by the management.	Intolerable Region
2	Efforts must be made to reduce risk further and to as low as reasonably practicable, without expenditure that is grossly disproportionate to the benefit gained	ALARP Region (As Low as Reasonably Practicable)
3	Risk level is so low as to not require actions to reduce its magnitude further.	Tolerable Region

Table 7.2: Risk Likelihood Table for Guidance

Step 1: Assess the Likelihood			Step 2: Assess the Consequences				
L1	Happens every time we operate	Almost Certain	Common repeating occurrence	or	C1	Fatality	Catastrophic
L2	Happens regularly (often)	Likely	Known to have occurred "has happened"		C2	Permanent disability	Major
L3	Has happened (occasionally)	Possible	Could occur or "heard of it happening"		C3	Medical/hospital or lost time	Moderate
L4	Happens irregularly (almost never)	Unlikely	Not likely to occur		C4	First aid or no lost time	Minor
L5	Improbable (never)	Rare	Practically impossible		C5	No injury	Insignificant

A logical systematic process is usually followed during a qualitative risk assessment to identify the key risk events and to assess the consequences of the events occurring and the likelihood of their occurrence

Table 7.3: Risk rank likelihood Consequence

Risk Rank Likelihood x Consequence	L1 Almost certain	L2 Likely	L3 Possible	L4 Unlikely	L5 Rare
C1 Catastrophic	1	2	4	7	11
C2 Major	3	5	8	12	16
C3 Moderate	6	9	13	17	20
C4 Minor	10	14	18	21	23
C5 Insignificant	15	19	22	24	25

RISK RATING:

- **HIGH RISK 1-6**

- **MEDIUM RISK 7-15**
- **LOW RISK 16-25**

7.2 POTENTIAL HAZARDS & 'ALARP' CONDITION

Mining and allied activities are associated with several potential hazards and risk to both the employees and the public at large. A worker in a mine should be able to work under "ALARP" conditions (as stated above), which are adequately safe and healthy. At the same time the environmental conditions should be such as not to be impair his working efficiency. This is possible only when there is adequate safety in mines.

7.3 RISK PRIORITISATION BASED ON HAZARDS

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

The key risk (hazard x probability) event rating associated with sand bed mining and to assess its consequences of such events occurring and the likelihood based on above Table-7.3 are as: -

The Risk rating of such hazards is as follows:

- a) Inundation / Flooding (C1 xL3=4)
- b) Quick Sand Condition (C2 x L3=8)
- c) Drowning (C5 xL5=25)
- d) Accident due to vehicular movement (C3 xL3=13)
- e) Accident during sand loading, transporting and dumping=14.

(i.e., C4 xL2=14)

7.3.1 Accident during sand/mineral loading, transportation and dumping

The risk rating assigned to this activity is assigned as "14 i.e., it is likely event with minor consequences", as frequency of this operation is more but the predicted/assumed intensity (Based on experience) is less like minor cuts, abbration, fall due to river bank collapse & falling of cattles, if not under proper supervision to bring under ALARP ZONE.

- a. The minerals are loaded in the trucks using hand shovels. There is possibility of injury in the hands during loading with shovels.

- b. There is possibility that the workers standing on the other side of loading may get injury due to over thrown sand with pebbles.
- c. There is possibility of workers getting injured during opening of side covers to facilitate loading.
- d. There is possibility of riverbank collapse.
- e. There are chances of falling of cattle/children into pits in river bed by overlooking of fenced area near worksite or improper supervision.

7.3.2 Accident due to vehicular movement

The risk rating assigned to this activity is assigned as 13 i.e., it is possible event with moderate consequences as frequency of this operation is more but the predicted/assumed intensity (Based on experience) is less like minor cuts, bodily injury due to reckless or untrained driver. However, a strict control to be exercised to deploy trained drivers with valid driving license with a helper. A strict supervision/control to be exercised to avoid drunken driving or driving by unauthorized person to bring under ALARP ZONE.

The minerals loaded in 15 T trucks are being sent to through public roads.

- a. All possibilities of road accidents are possible due to rash driving.
- b. Accident may also occur during movement in the mine, in case pathway is not compacted suitably or movement is at the embankment.
- c. There are possibilities that due to overloading. Some pebbles or big boulder may injure the passerby public. In case Traffic & vehicle load bearing licensed capacity is neglected.

7.3.3 Inundation/Flooding

The risk rating assigned to this activity is assigned as 4(C1 xL3=4) i.e., it is only possible, if warnings are neglected and work started without assessment of the river bed condition specially during monsoon season the event will be catastrophic with major consequences as frequency of this operation is possible. However, the event has to be brought under 'ALARP' Zone by strict supervision based on river water and other metrological data.

- a. The possibility of inundation/flooding of the mines are very high during monsoon or during heavy rains as the mine area lies in the riverbed.
- b. There is danger to the trucks and other machineries due to flooding.
- c. There is danger to the workers working in the mines.

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

7.3.4 Quick Sand Condition

The risk rating assigned to this activity is assigned as 8 (C2 x L3 =5) i.e., it is likely event with major consequences as frequency of this operation is likely but the predicted/assumed intensity (Based on experience) is major.

Hence data of water table must be collected and the mining work must be above the water table (about 1.5 m above to bring under ALARP ZONE.) to avoid dangerous condition to vehicles playing over sand dunes.

This condition occurs when the working crosses the water table at a certain depth and the permeability of the strata is very high. This condition occurs when the effective stress in the sand becomes zero due to influx of water i.e.

$$i = i_{cr} = y'/y_w;$$

Where, i = Hydraulic gradient,

i_{cr} = Critical Hydraulic gradient,

y' = submerged unit weight,

y_w = unit weight of water.

This creates danger condition to the trucks and other machineries plying over the sand dunes on the river banks.

7.3.5 Drowning

The risk rating assigned to this activity is assigned as 25 i.e., it is insignificant due to dry season mining.

There are no possibilities of drowning in the river, since mining operations are carried out only in the dry seasons. All mining activities will be stopped during the monsoon season.

7.4 ADDITIONAL MITIGATION MAJORS TO BRING HAZARDS UNDER “ALARP” ZONE

7.4.1 Measures to Prevent Accidents during Loading

1. The truck should be brought to a lower level so that the loading operation suits to the ergonomic condition of the workers.
2. The loading should be done from one side of the truck only.
3. The workers should be provided with gloves and safety shoes during loading.
4. Opening of the side covers (pattas) should be done carefully and with warning to prevent injury to the loaders.
5. Operations during daylight only.
6. No foreign material should be allowed to remain/spill in river bed and catchment area, or no pits/pockets are allowed to be filled with such material.
7. Stockpiling of harvested material on the river bank should be avoided.

7.4.2 Measures to Prevent Accidents during Transportation

1. All transportation within the main working should be carried out directly under the supervision and control of the management.
2. The Vehicles must be maintained in good repairs and checked thoroughly at least once a week by the competent person authorized for the purpose by the Management.
3. To avoid danger while reversing the trackless vehicles especially at the embankment and tipping points, all areas for reversing of lorries should as far as possible be made man free, and.
4. A statutory provision of the fences, constant education, training etc. will go a long way in reducing the incidents of such accidents.
5. Generally, overloading should not be permitted.
6. The truck should be covered and maintained to prevent any spillage.
7. The maximum permissible speed limit should be ensured.
8. The truck drivers should have proper driving license.

7.4.3 Measures to prevent Dangerous Incidents during Inundation/Flooding

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

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

7.4.4 Measures to Prevent Quick Sand Condition

1. The only way to avoid quick sand condition is by avoiding mineral lifting below water table.
2. The critical hydraulic gradient (i_{cr}) should be maintained at less than 1 to prevent high artesian pressure in a coarse sand area.
3. At least 0.5 m sand bed should be left in-situ while harvesting sand from riverbed.

7.4.5 Measure to Prevent Drowning

1. The mining should be done under strict supervision and only during the dry season.
2. Deep water areas must be identified.
3. No go zones should be clearly marked and made aware to the mine workers.

7.5 NATURAL RESOURCE CONSERVATION

Mineral extraction at the concave side of the river channel should be avoided to prevent bank erosion. Similarly meandering segment of a river should be selected for mining in such a way as to avoid natural eroding banks and to promote mining on naturally building (aggrading) meander components.

8.0 GENERAL

The project's operation will prevent the widening of the river channel and the flooding of surrounding areas caused by sediment buildup. It will also bring overall improvements to the locality, neighborhood, and state by introducing new industries, roads, water supply, electricity, employment opportunities, better living standards, and increased economic growth.

8.1 BENEFIT OF MINING

- Protecting banks
- Reducing submergence of adjoining agricultural lands due to flooding.
- Reducing aggradations of river level.
- Generating useful economic resource for construction.
- Generating employment and improvement of socio-economic conditions of nearby habitats.

8.2 EMPLOYMENT

The socio-economic conditions in the surrounding villages indicate that employment generation is seasonal, with agricultural and cattle rearing activities being the main sources of income. Additionally, many people work in local mines, but only on a daily wage basis. The proposed mining activity has the potential to provide stable employment opportunities for the local community, which would significantly increase their socio-economic status.

The total direct manpower requirement for the mining operation is expected to be around 20 people, with an additional significant number of indirect employments created through associated activities. This project operation will provide livelihoods to some of the poorest members of society. Depending on the general shifts worked, the proposed manpower for the project is as follows.

Table- 8.1, Employment detail

SI. No	Qualification	No. of persons
1.	Mining Engineer	01
2	Geologist	01

3	Skilled workers	3
4	Unskilled workers	15
Total		20

8.3 IMPROVEMENTS IN PHYSICAL AND SOCIAL INFRASTRUCTURE

The opening of the proposed project will enhance the socio-economic activities in the adjoining areas. This will result in following benefits: -

- Improvements in physical infrastructure.
- Improvements in Social Infrastructure.
- Increase in Employment Potential
- Contribution to the Exchequer.
- Prevention of illegal mining.
- During and post-mining enhancement of green cover.

8.4 IMPROVEMENTS IN PHYSICAL INFRASTRUCTURE

The opening of the proposed project will improve the physical infrastructure of the adjoining areas. This will include the following: -

- Improved road communication due to opening of the proposed project.
- Strengthening of existing community facilities through the Community Development Programme.
- Creation of community assets (infrastructure) like provision for drinking water, construction of school buildings, village roads/ linked roads, dispensary & health centre, community centre, market place etc.
- Skill development & capacity building like vocational training, income generation programs and entrepreneurship development program.
- Literacy program, adult education, assists formation of Village Working Group (VWG), Mahila Mandal etc.
- Awareness program and community activities, like health camps, medical aids, family welfare programs, immunization camp sports & cultural activities, plantation etc.

8.5 IMPROVEMENTS IN SOCIAL INFRASTRUCTURE

There will be some obvious changes in various environmental parameters due to mining activity. Increase socio-economic activities, creation of new employment opportunities, infra-structural development, better educational and health facilities.

Following are the specific impacts: -

Socio-Economic: - There will be positive impact in socio-economic area due to increased economic activities, creation of new employment opportunities, infrastructural development and better educational and health facilities.

Table- 8.2, Budget for Corporate Environmental Responsibility (CER)

CER Activity	Capital cost (Rs. in lakhs)
Deposit Demand Draft (@ Rs. 4.00 lacs per S ha.) under CER, shall be deposited in the form of Demand Drat to the office of Director (DEST), GOHP for which the Director (DEST) will devise a plan in consultation with project proponent	Rs 4 lakhs @ 1.5856 Ha. = 8.0 Lakhs

Table- 8.3, Budget for Occupational Health

Particulars	Recurring Cost per year (Rs.)
For routine checkup	25,000
Medical aid as per ESI Scheme	25,000
Training	50,000
Total	1,00,000

Population dynamics: - Due to the direct and indirect employment potential, there is a scope of migration of people into project area and in the peripheral regions; from nearby areas.

Health Care facilities: - Lessee will undertake awareness program and community activities like health, camps, medical aids, family welfare camps, AIDS awareness program etc.

Employment Potential: - There is a possibility of creation of direct and indirect employment opportunities due to working of this mine.

The mine will also contribute to the Exchequer of State and Central Government.

8.6 PLANTATION

The management will provide free saplings of fruit and other trees to local residents during rainy season for plantation, which will increase awareness among workers and nearby villagers about the importance of greenery. Fruit trees can also contribute to their financial gains.

8.7 HEALTH

Periodic medical checkups, as required by the Mines Act/Rules, and other social development and promotional activities will be undertaken, which will improve the overall health status of the residents in the mines' vicinity.

9.0 INTRODUCTION

To mitigate the adverse impact that may be caused by mining operations and overall scientific development of the local habitat, an environmental management plan (EMP) has been formulated and integrated with the mine planning. Chapter IV of this report discusses the anticipated impacts and mitigative measures based on the results of the present environmental conditions and environmental impact assessment. The EMP considers the implementation and monitoring of environmental protection measures during and after mining operations.

Earlier in this report, the mitigation measures that reduce the impact have already been identified. To further minimize the adverse impact, additional EMPs are enumerated below for implementation.

9.1 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Proper environmental management plan is proposed for “Sand/stone/bajri” extraction project to mitigate the impact during the mining operation.

- Care will be taken that no labour camps will be allowed on river bed.
- Care will be taken that no cooking, or burning of woods will be allowed in the adjoining area.
- Prior to extraction process, short awareness program will be conducted for labours to make them aware to way of working.
- If some causality or injury to animal occurs, it will be informed to forest department and proper treatment will be given.
- No tree cutting, chopping, lumbering, uprooting of shrubs and herbs will be allowed.
- Corridor movement of wild mammals (If exists) will be avoided.
- Care will be taken that noise produced during vehicles movement for carrying sand are within the permissible noise level.
- No pilling of material will be in adjoining area.

9.2 ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION

An Environmental Management Plan serves no purpose if it is not implemented in true spirit. Some loopholes in the EMP can also be detected after it has been implemented and monitored. Therefore, an implementation and monitoring program must be prepared.

The major attributes of the environment are not confined to the mining site alone. The implementation of proposed control measures and monitoring programs have implications for the surrounding area and the region as a whole. As such, mine management should strengthen the existing control measures, as elaborated earlier in this report, and monitor the effectiveness of the control measures implemented within the mining area. This should relate to the following specific areas for an eco-friendly mining plan.

- a) Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
- b) Collection of soil samples at strategic locations once in every year and analysis thereof with regard to deleterious constituents, if any.
- c) The effectiveness of drainage system depends upon proper cleaning of all drains provided in the surrounding of lease area. Any blockage due to siltation or loose material will be checked at least once in a month.
- d) Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells.
- e) Regular visual examination will be carried out to look for erosion of river banks. Any abnormal condition, if observed will be taken care of.
- f) Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done in every quarter of the year.
- g) Plantation and afforestation should be carried out as per the program, which involves planting trees along the road sides and near civic amenities. These areas will be allotted

by government bodies as it is not feasible to plant trees near the mine lease area. Following the plantation, the area will be regularly monitored in every season to evaluate the success rate. Local people should also be involved in the selection of plant species.

Mine management will maintain regular communication with the surrounding villages to update them on the various developmental schemes implemented. They will also consider any immediate requirements that can be taken care of in the near future.

An Environmental Management Cell (EMC) will be responsible for monitoring the Environmental Management Plan (EMP) and its implementation. EMC members should meet once a month to assess the progress and analyze the data collected during the month. The EMC will function according to Figure 6.1 (Section VI)."

EMC will maintain regular communication with both the State Pollution Control Board and the Indian Bureau of Mines, and will send them an annual progress report. Any new industry regulations proposed by the State/Central Pollution Control Board will be duly addressed by EMC.

9.3 PROPOSED SET UP

Keeping the utility of monitoring results in the implementation of the environmental management program in view, an organizational chart has been proposed, headed by General Manager as shown in Fig. 6.1(chapter VI).

The said team will be responsible for:

- (i) Collecting water and air samples from surrounding area and work zone monitoring for pollutants.
- (ii) Analyzing the water and air samples.
- (iii) Implementing the control and protective measures.
- (iv) Co-coordinating the environment related activities within the project as well as with outside agencies.
- (v) Collecting statistics of health of workers and population of surrounding villages.
- (vi) Monitoring the progress of implementation of environmental management program.

(vii) Greenbelt development, etc.

The laboratory will be suitably equipped for sampling/testing for various environmental pollutants.

9.4 GREENBELT DEVELOPMENT PLAN

Green belt is plantation of trees for reducing the pollution as they absorb both gaseous and particulate pollutant, thus removing them from atmosphere. Green plants form a surface capable of absorbing air pollutants and forming sinks for pollutants. It improves the aesthetic value of local environment. Under present project, green belt has been planned with emphasis on creating biodiversity; enhance natural surroundings and mitigating pollution.

These plantations will be carried out around mining zone. Most of the area recommended for mining will be used for afforestation/greenbelt as per the “Forest (Conservation) Amendment Rule, 2004”. About 200 trees (as per SSMG guideline) will be planted in five years along both sides of roads and civic amenities in consultation with the local authorities. Variety of wild fruit plants like Shisham, Siris, Khair, Jamun, Orange, Bamboo will be used for plantation.

Table 9.1: Details of Greenbelt Scheme

Year	No. of Plants	Plants Covered Area (Sq m)
1 st	40	400
2 nd	40	400
3 rd	40	400
4 th	40	400
5 th	40	400
Total	200	2000

Table 9.2: Proposed species for plantation

Scientific Name	Common Name	Family	Habitat
<i>Dalbergia Sissoo</i>	Shisham	Fabaceae	Tree
<i>Albizia Lebbeck</i>	Siris	Fabaceae	Tree
<i>Senegalia Catechu</i>	Khair	Fabaceae	Tree
<i>Syzygium Cumini</i>	Jamun	Myrtaceae	Plant
<i>Citrus X sinensis</i>	Orange	Rutaceae	Tree

<i>Chamaedorea Seifrizii</i>	Bamboo	Poaceae	Plant
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9.5 BUDGET ALLOCATION FOR EMP IMPLEMENTATION

An annual budget for EMP is essential for the successful implementation of EMP. Since there are currently no pollution control systems in place, no capital cost for a pollution control system has been planned. Instead, the costs will consist of annual operating costs as outlined below. The allocated funds will not be diverted for any other purposes, and top management will be held responsible for ensuring this. The budget will consider both capital and operating expenses.

1. Field cost for monitoring of parameters.
2. Cost of any defined outsourcing
3. Cost of chemicals, consumables and transport for data generation
4. Man power cost for environmental cell
5. Any other cost as per EC condition

Table 9.3 Budget allotted for the Environmental Management Plan

S.NO	TITLE	CAPITAL COST RS IN LAKHS	RECURRING COST/YR RS IN LAKHS	RECURRING COST FOR 5 YRS	TIMELINE
1.	Monitoring of Air, Water, Soil, etc. twice a year.	--	0.8	4.0	Once in a six month (As per CPCB guideline)
2.	Air Pollution Control- Management of Haulage Roads & mine road of 1500 meters including Sprinkling. Tractor trolley with sprinkler (*Depreciate cost of tanker & Sprinkler)	3.0	0.54	2.7	Twice a day & as per requirement
3.	Green Belt Development Area for Plantation= 0.50 Ha No. of plants = 200 Plants Cost and No. of plants are as per the *No.Ft.1790-/71(D)2011-12/Vol-VIII(Norms), Himachal Pradesh Forest Department, Shimla Dated	0.35	0.2	1.0	As per norms recurring cost for next three years

07 June 2019					
4.	Retaining wall structure/Check Dam 5 Nos. of check dam. 30 Cu.m. each Total = 150 Cu.m. @ Rs 1200 per Cu.m.	1.80	0.1	YEAR I - 0 YEAR II - 0.1 YEAR III - 0.2 YEAR IV - 0.3 YEAR V - 0.4 Total - 1.0	Retaining Wall have been proposed for protect the water to flow out of HFL.
5.	Occupational Health Measures Provision of PPE, First Aid and other, miscellaneous expenditure.	0.50	---	0.50	As per requirement
Total		5.65	1.64	9.70	-----

- *Plants (@Rs. 35,000 @ 200 Plant i.e., Rs.175/ plant*
- *Maintenance of haul road @ Rs. 2.0 lakh/km*
- *Salary of Labour for haul road maintenance 2 labor*Rs. 200* 300 days= Rs. 1,20,000/- for one year (Rs. 6.0 lakh for 5 years)*

9.6 MONITORING SCHEDULE AND PARAMETERS

To evaluate the effectiveness of environmental management program regular monitoring of the important environmental parameters to be monitored are shown in Table. 6.1. (Chapter 6).

10.0 INTRODUCTION

The proposed project is a river bed mining project. The extracted river bed material will be for open sale by the leaseholder and will be used in construction industries/infrastructure industries depending upon market demand. The project site is located at Khasra No.740 measuring an area of 01-58-56 hectares (private land, river bed) in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh. The letter of intent for the grant of a mining lease has been issued in favor of Sh. Andresh Syal, S/o Sh. Pritam Chand, V.P.O. Alampur, Sub-Teh. Alampur, District Kangra, Himachal Pradesh. The letter of intent by the Department of Industries has been issued vide letter No. Udyog-Bhu (Khani-4) Laghu-316/2024 -12790 dated 14-02-2024. The approved mining plan has been issued vide letter No. Udyog-Bhu (Khani-4) Laghu-316/2024-13524 dated 26-02-2024 The estimated project cost is Rs 25 lakh. The proposed production is 23,625 MTPA

The proposed project is having area of 01-58-56 Hectares (under cluster approach of area 14-70-80 Hectares (Private Land, River Bed) and falls under Category- “B1” as per the 500 m cluster Certificate vide letter no. 316/2024-13591 Dated 27-02-2024 regarding details of other mines located within 500m of the lease area. According to the Distance Certificate from the Mining Officer, there are three other mining lease areas within a 500-meter radius, total cluster area is more than 5 hectares.

Cluster Details

Sr. No.	Name of Mining Lease	Khasra No.	Area in Hectares	Mohal & Mauza	Validity Period	Status of EC/Mining leases whether operating or not operating
1.	Sanjeev Sayal Alampur Tehsil Jaisninghpur Distt Kangra	801/747	3-89-75	Alampur	17.5.23-16.05.28	working

2.	SJVN Corporate Quarter Head Shakti Sadan Shimla Himachal Pradesh	744/1,748	4-83-07	Alampur	-	LOI issued
3.	Sh. Andresh Syal S/o Sh. Pritam Chand VPO Alampur Sub-Tehsil Alampur Distt Kangra	750 and 800/747	04-39-42	Alampur	-	LOI not used

10.1 PROJECT DESCRIPTION

10.1.1 LOCATION

The proposed project is for Extraction of Sand, Stone and Bajri from Khasra No. 740 Measuring an area 01-58-56 Hectares (Private Land, River Bed) Falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh.

Pillars	Latitude	Longitude
A	31°50'33.10"N	76°30'57.75"E
B	31°50'38.03"N	76°31'1.01"E
C	31°50'40.55"N	76°31'4.31"E
D	31°50'37.83"N	76°31'3.60"E
E	31°50'37.78"N	76°31'2.66"E
F	31°50'31.98"N	76°31'0.89"E
G	31°50'31.20"N	76°31'0.47"E

Connectivity

Nearest Railway Station	Railway Station Sulah ≈ 25.29 Km in NW Direction (Aerial distance)
Nearest National & State Highway	SH-39(Palampur-Hamirpur Road) ≈ 0.4 Km in West Direction (Aerial distance)
Nearest Airport	Gaggal Airport ≈ 43 Km in NW Direction (Aerial distance)
Nearest Town	Town Sujanpur-Tihra ≈ 1.54 Km in SW direction (Aerial distance)

Salient Features of Project

Name of the applicant	Sh. Andresh Syal, S/o Sh. Pritam Chand,
Address of Lessee	V.P.O. Alampur, Sub- Tehsil Alampur, Distt. Kangra, Himachal Pradesh
Name of Mine	Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos. 740, Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand
Village	Mauza Alampur, Mohal Bagh
Tehsil	Jaisinghpur
District & State	District Kangra, Himachal Pradesh
Mineral	Sand, Bajri & Stone
Area (ha)	01-58-56 Hectares (Private Land, River Bed)

10.2 MINING/ EXTRACTION

Extraction will be carried out by opencast manual/ semi-mechanized method without adoption of drilling & blasting. The extraction will be confined to excavation of sand, stone bajri from the river bed (Beas River) Excavation of minerals will be carried out only up to a depth of 1m. No waste will be generated during the riverbed mining operations. Since a mixture of sand admixed with silt and clay is inseparable, it will be sold in the open market as per demand. The sand shall be exploited upto depth of 1.0m bgl or above the groundwater whichever is comes first.

10.3 RESERVE AND PRODUCTION

Summary of Geological reserves

Name of mineral	Boulders (50%) M.T	Bajri (30%) M.T	Sand & Silt/Clay Mixture (20%) M.T	Total M.T.
Sand, Stone & Bajri	89,190	53,514	35,676	1,78,380

Table Showing Reserve Estimation in the available Mineable Area:

Area in sqm.	Specific Gravity	Depth in metres	Availability of Mineral (IN MT)
10,500 sqm	2.25	1	23625

Year wise Production detail

Year	Total (M.T.)	Quantity of Sand Silt/ Clay (M.T.)	Quantity of Stone (M.T.)	Quantity of Bajri (M.T.)
1 st year	23,625	4,725	11,813	7,087
2 nd year	23,625	4,725	11,813	7,087
3 rd Year	23,625	4,725	11,813	7,087
4 th Year	23,625	4,725	11,813	7,087
5 th Year	23,625	4,725	11,813	7,087
Total		23625	59,065	35,435

Note: The proposed production is 23625 MTPA.

10.4 SITE FACILITIES AND UTILITIES

Water Supply

Water will be provided to workers for drinking & domestic purpose. Water will also be required for dust suppression. The number of working people is 20. Total water requirement is about 4.4 KLD. Water will be supplied from water source (Beas River) supplied through water tanker. Fresh water will be only used for drinking purpose.

Temporary Rest Shelter

A temporary rest shelter will be provided for the workers near to the site for rest. In addition, first aid box along with anti-venoms to counteract poison produced by certain species of small insects, if any and sanitation facility i.e. septic tank or community toilet facility will be provided for the workers.

10.5 BASELINE ENVIRONMENTAL STATUS

Environmental data has been collected in relation to proposed mining for Air, Noise, Water, Soil, and Flora & Fauna. The baseline environment study was carried out over an area with radial distance of 10 km around the mining lease area during summer season from March 2024 to May 2024

Table Baseline Environmental Status

Attribute	Baseline status
<p>Ambient Air Quality</p> <p>Ambient air quality was monitored at 8 locations within a 5 km radius of</p>	<p>Ambient Air Quality Monitoring reveals that the minimum & maximum concentrations of PM10 for all the 8 AQ monitoring stations were found to be 36.0 µg/m³ & 74.66 µg/m³, respectively and the minimum & maximum concentrations of PM 2.5 were found to be 11.50 µg/m³ and 38.74µg/m³ respectively.</p> <p>As far as the gaseous pollutants SO₂ and NO_x are concerned, the prescribed CPCB limit of 80 µg/m³ for residential and rural areas has never surpassed at any station. The maximum & minimum concentrations of SO₂ were found to be 6.18 µg/m³ & 5.25 µg/m³ respectively. The maximum & minimum concentrations of NO_x were found to be in between 20.55 µg/m³ & 5.39 µg/m³. The maximum & minimum concentrations of CO were found to be in between & 0.92 µg/m³ & 0.25 µg/m³.</p>
<p>Noise Levels</p>	<p>Noise monitoring was carried out at 08 locations. The results of the monitoring program indicated that both the daytime and night time levels of noise were well within the prescribed limits of NAAQS, at all the four locations monitored.</p>
<p>Water Quality</p>	<p>05 Groundwater samples and 02 surface water samples were analyzed and concluded that:</p> <p>The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS: 10500.</p>

	From the Surface water analysis, it is evident that most of the parameters of the samples comply with 'Category 'B' standards of CPCB indicating their suitability for Drinking water source after conventional treatment and disinfection.
Soil Quality	Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.25 to 7.55, which shows that the soil is alkaline in nature. Potassium is found to be from 70.16 mg/kg to 96.02 mg/kg. The water holding capacity is found in between 38.26 % to 45.20 %
Ecology and Biodiversity	There are no Ecologically Sensitive Areas present in the study area, but many reserved forests regions surround the project area
Socio-economy	The implementation of the Sand, Stone & Bajri extraction project on river Beas River will throw opportunities to local people for both direct and indirect employment. The study area is still lacking in education, health, housing, water, electricity etc. It is expected that same will improve to a great extent due to proposed mining project and associated industrial and business activities.

10.6 LAND ENVIRONMENT

Mining Activity: Harvesting of river bed minerals and other associated activities are the main sources of environmental degradations and most serious ones are detailed hereunder:

- Damage of river bank due to access ramps to river bed, causing damage to vegetation, soil erosion, micro disturbance to ground water, possible inducement of changed river course.
- Loss of riparian vegetation standing along the bank due to making roads connecting successive access to river bed.
- Contamination of aquifer water due to ponding, due to uneven rocky bed of river, bed thickness vary considerably and digging more mineral from a pocket where thickness of sand is more may cause ponding. In this stagnant water bio-degradable materials especially

flora waste gets accumulated causing contamination and inducing an unhealthy environment

- Surface degradation due to stockpiling and road network.

Mitigation measures

- Minimum number of access roads to river bed for which cutting of river banks will be avoided and ramps are to be maintained.
- Access points to the river bed will be decided basing on least steepness of river bank and least human activity.
- Mining is avoided during the monsoon season and at the time of floods.
- Mining schedule is synchronized with the river flow direction and the gradient of the land.
- Haulage roads parallel to the river bank and roads connecting access to river bed will be made away from the bank
- Care will be taken to ensure that ponds are not formed in the river bed
- Access roads from public roads and up to river bank will be aligned in such a way that it would cause least environmental damage.
- Vegetation development is proposed along the road sides of the approach roads, to arrest soil erosion. While selecting the plant species, preference will be given for planting native species of the area.

10.7 AIR ENVIRONMENT

Anticipated impacts and evaluation

Information on air quality was studied and various modelling techniques predicted that the mining activity will not affect the air quality in a significant manner. In mining operations, loading, transportation and unloading operations may cause deterioration in air quality due to handling dry materials. In the present case, only wet materials will be handled, thus eliminating problems of fugitive dust. Also, the collection and lifting of minerals will be done manually without any blasting. Therefore, the dust generated is insignificant as compared to mining process of other hard minerals like the process of drilling, blasting, mechanized loading etc.

Mitigation measures

The only air pollution sources are the road transport network of the trucks. The dust suppression measures like water spraying will be done on the roads. Utmost care will be taken to prevent spillage from the trucks. Overloading will be prevented. Plantation activities along the roads will also reduce the impact of dust in the nearby villages.

10.8 WATER ENVIRONMENT

Extraction of Sand, Stone & Bajri from within or near a streambed has a direct impact on the stream's physical habitat characteristics. These characteristics include geometry, bed evaluation, substrate composition and stability, in stream roughness elements, depth, velocity, turbidity, sediment transport, stream discharge and temperature. Altering these habitat characteristics can have deleterious impacts on both in stream biota and associated riparian habitat.

The detrimental effects to biota resulting from bed material mining are caused by three main processes:

- alteration of flow patterns resulting from modification of the river bed
- an excess of suspended sediment
- Damage to riparian vegetation and in stream habitat.

10.9 NOISE ENVIRONMENT

Anticipated impacts and evaluation

As there will be no heavy earth moving machinery there will not be any major impact on noise level due to the mining and other association activities a detailed noise survey has been carried out and results are discussed in chapter III. Blasting technique is not used for mineral lifting, hence no possibility of land vibration. It was found that the mining activity will not have any significant impact on the noise environment of the region. The only impact will be due to transportation of materials by trucks.

Mitigation measures

As the only impact is due to transportation of extracted Stone Boulder, Sand, & Bajri to the construction though village roads, emphasis will be given on the following points.

- Minimum use of Horns at the village area.
- Timely maintenance of vehicles and their silencers to minimize vibration and sound.
- Phasing out of old and worn-out trucks.

- Provision of green belts along the road networks.
- Care will be taken to produce minimum sound during loading.

It was found that the extraction activity will not have any significant impact on the biological environment of the region. Since mining activity is carried out only during the day time, the movement of animals during the night will not be hindered. Proper mitigative measure will be taken by the contractor, in consultation with local NGOs working in the study area.

10.10 TRAFFIC ANALYSIS

From the above analysis it can be seen that the V/C ratio will be modified from 0.012 to 0.013 at SH-39 (Palampur-Hamirpur Road) with LOS being “A” and will be modified from 0.086 to 0.09 at Sujampur-Sandole road connected with LOS remain A respectively. So, the additional load on the carrying capacity will be affected to a minimum level.

10.11 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Proper environmental management plan is proposed for “Stone Boulder, Sand, & Bajri” extraction project to mitigate the impact during the mining operation.

- Care will be taken that no labour camps will be allowed on river bed.
- Care will be taken that no cooking, or burning of woods will be allowed in the adjoining area.
- Prior to mining, short awareness program will be conducted for labours to make them aware to way of working.
- If some causality or injury to animal occurs, it will be informed to forest department and proper treatment will be given.
- No tree cutting, chopping, lumbering, uprooting of shrubs and herbs will be allowed.
- Corridor movement of wild mammals (If exists) will be avoided
- Care will be taken that noise produced during vehicles movement for carrying sand/stone/ bajri are within the permissible noise level.
- No pilling of material will be in adjoining area.
- If wild animals are noticed crossing the river bed, it will not be disturbed or chased away, instead the labours will move away from their path.

10.12 ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION

Environmental Management Plan serves no purpose if it is not implemented with true spirit. Some loopholes in the EMP can also be detected afterwards when it is implanted and monitored. Thus, an implementation and monitoring programme has to be prepared.

The major attributes of environment are not confined to the mining site alone. Implementation of proposed control measures and monitoring programme has an implication on the surrounding area as well as for the region. Therefore, mine management will strengthen the existing control measures as elaborated earlier in this report and monitor the efficacy of the control measures implemented within the mining area relating to the following specific areas for eco-friendly mining:

- a. Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
- b. Collection of soil samples at strategic locations once in every year and analysis thereof with regard to deleterious constituents, if any.
- c. The effectiveness of drainage system depends upon proper cleaning of all drains provided in the surrounding of lease area. Any blockage due to siltation or loose material will be checked at least once in a month.
- d. Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells.
- e. Regular visual examination will be carried out to look for erosion of river banks. Any abnormal condition, if observed will be taken care of.
- f. Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done in every quarter of the year.
- g. Plantation and afforestation should be carried out as per the program, which involves planting trees along the road sides and near civic amenities. These areas will be allotted by government bodies as it is not feasible to plant trees near the mine lease area. Following the plantation, the area will be regularly monitored in every season to evaluate the success rate. Local people should also be involved in the selection of plant species.

10.13 CORPORATE ENVIRONMENTAL RESPONSIBILITY

Corporate environmental Responsibility for activities related to education, social causes, healthcare & environmental.

Budget for Corporate Environmental Responsibility (CER)

CER Activity	Capital cost Rs. in lakhs
Deposit Demand Draft (@ Rs. 4.00 lacs per S ha.) under CER, shall be deposited in the form of Demand Drat to the office of Director (DEST), GOHP for which the Director (DEST) will devise a plan in consultation with project proponent	Rs 4 lakhs @ 01.5856 Ha. = 8 Lakhs

10.14 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

- Extraction will be done from the bed leaving safety zone from bank.
- The maximum working depth will remain above ground water table of the area.
- Provide health facilities to the workers & surrounding people in the impact area to reduce the health impacts.
- Ensuring wildlife protection & arranging awareness campaigns for the same.
- Minimize activities that release fine sediment to the *river*.
- Effective mitigation measures will be adopted to minimize disturbance during transportation & handling of minerals
- Establishment of reclamation program with plantation of local/native & fast-growing species
- Establishment of restoration plan during the closure of mine at the onset of monsoon season.
- Establishment of effective Disaster Management Plan to take timely precautionary measures to avoid effects of impending disasters.
- Establishment of effective Monitoring Program monitored by Environment Management Cell.

Budget allotted for the Environmental Management Plan

S.NO	TITLE	CAPITAL COST	RECURRING COST/YR	RECURRING COST FOR 5 YRS	TIMELINE

		RS IN LAKHS	RS IN LAKHS		
1.	Monitoring of Air, Water, Soil, etc. twice a year.	--	0.8	4.0	Once in a six month (As per CPCB guideline)
2.	Air Pollution Control- Management of Haulage Roads & mine road of 1500 meters including Sprinkling. Tractor trolley with sprinkler (*Depreciate cost of tanker & Sprinkler)	3.0	0.54	2.7	Twice a day & as per requirement
3.	Green Belt Development Area for Plantation= 0.50 Ha No. of plants = 200 Plants Cost and No. of plants are as per the *No.Ft.1790-/71(D)2011-12/Vol-VIII(Norms), Himachal Pradesh Forest Department, Shimla Dated 07 June 2019	0.35	0.2	1.0	As per norms recurring cost for next three years
4.	Retaining wall structure/Check Dam 5 Nos. of check dam. 30 Cu.m. each Total = 150 Cu.m. @ Rs 1200 per Cu.m.	1.80	0.1	YEAR I - 0 YEAR II - 0.1 YEAR III - 0.2 YEAR IV – 0.3 YEAR V – 0.4 Total – 1.0	Retaining Wall have been proposed for protect the water to flow out of HFL.
5.	Occupational Health Measures Provision of PPE, First Aid and other, miscellaneous expenditure.	0.50	---	0.50	As per requirement
Total		5.65	1.64	9.70	-----

- **Plants (@Rs. 35,000 @ 200 Plant i.e., Rs.175/ plant**
- **Maintenance of haul road @ Rs. 1.0 lakh/km**
- **Salary of Labour for haul road maintenance 2 labor*Rs. 200* 300 days= Rs. 1,20,000/- for one year (Rs. 6.0 lakh for 5 years)**

10.15 CONCLUSION

Based on the EIA study it is observed that there will be an increase in the dust pollution, which will be controlled by sprinkling of water and plantation. There will be an insignificant impact

on ambient environment and ecology due to the mining activities moreover the mining operation will lead to direct and indirect employment generation in the area. Green belt development around the area will also be taken up as an effective pollution mitigative technique, as well as to control the pollutants released from the premises of the Mine. Monitoring program will be followed till the mining operations continue. Hence, it can be summarized that the development of the mine will have a positive impact on the socio-economic environment of the area and lead to sustainable development of the region.

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-11 Disclosure of Consultant

CONSULTANTS ENGAGED

Consultant Contact Details:

P & M Solution

Address –C-88, Sector 65, Noida

Mobile no. - +91 8377871554, 8826287364, 0120-4321723

Consultant accreditation details are given below:



QUALITY COUNCIL OF INDIA
Creating an Ecosystem for Quality



**National Accreditation Board
for Education and Training**



Certificate of Accreditation

P and M Solution, Noida

C-88, Sector-65, Noida, Uttar Pradesh- 201301

The organization is accredited as **Category-B** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S.No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including opencast & underground	1	1 (a) (i)	A
2	River Valley projects	3	1 (c)	B
3	Coal washeries	6	2 (a)	B
4	Cement plants	9	3 (b)	A
5	Highways	34	7 (f)	A
6	Building and construction projects	38	8 (a)	B
7	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated July 18, 2023 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/23/2846 dated August 09, 2023. The accreditation needs to be renewed before the expiry date by P and M Solution, Noida following due process of assessment.



Sr. Director, NABET
Dated: August 09, 2023

Certificate No.
NABET/EIA/2326/RA 0298

Valid up to
May 07, 2026

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

Draft EIA/EMP for the Riverbed Mining Project on the Beas River for the Extraction of Sand, Stone, and Bajri on Private Land at Khasra Nos.740 Measuring an Area of 01-58-56 Hectares, Located in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, Applicant: Sh. Andresh Syal, S/o Sh. Pritam Chand

Chapter-11 Disclosure of Consultant

S No	Name	EC/FAE	DETAILS
1	Subhash Kumar	EC	EC
2	Rahul Kumar	FAE	AQ
3	TapanMajumdar	FAE	GEO, HG
4	Jatin Kumar Srivastava	FAE	SC
5	Manoj Kumar Pandey	FAE	EB
6	Dr R K Tewari	FAE	RH, AP
7	Neha Singh	FAE	NV
8	AbhayNath Mishra	FAE	SE
9	HussainZiauddin	FAE	WP
10	PoonamKumariMangalam	FAE	LU

Laboratory Details:

Noida Testing Laboratory

GT-20 Sector 117 Noida

ANNEXURE



सत्यमेव जयते

File No: HPSEIAA/2024/ 1193

Government of India

Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), HIMACHAL PRADESH)



Dated 26/06/2024



To,

SH. ANDRESH SYAL
S/o Sh. Pritam Chand, V.P.O. Alampur, Sub-Tehsil Alampur, , Village Alampur, KANGRA,
HIMACHAL PRADESH, 176082
ssandreshsyal@gmail.com

Subject: Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding.

Sir/Madam,

This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding in respect of project Extraction of Stone, Sand and Bajri falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh. Proposed by Sh. Andresh Syal, S/o Sh. Pritam Chand. submitted to Ministry vide proposal number SIA/HP/MIN/464927/2024 dated 26/04/2024.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0107HP5496302N
(ii) File No.	HPSEIAA/2024/ 1193
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	Extraction of Stone, Sand and Bajri falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh. Proposed by Sh. Andresh Syal, S/o Sh. Pritam Chand.
(viii) Name of Company/Organization	ANDRESH SYAL
(ix) Location of Project (District, State)	KANGRA, HIMACHAL PRADESH
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were

submitted to the Ministry for an appraisal by the State Environment Impact Assessment Authority (SEIAA) Appraisal Committee (SEIAA) in the Ministry under the provision of EIA notification 2006 and its subsequent amendments.

4. The above-mentioned proposal has been considered by State Environment Impact Assessment Authority (SEIAA) Appraisal Committee of SEIAA in the meeting held on 18/06/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B, Part C EIA, EMP)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
5. The brief about configuration of plant/equipment, products and byproducts and salient features of the project along with environment settings, as submitted by the Project proponent in Form-1 (Part A, B and C)/EIA & EMP Reports/presented during SEIAA are annexed to this EC as Annexure (1).
6. The SEIAA, in its meeting held on 18/06/2024, based on information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of Terms of Reference under the provision of EIA Notification, 2006 and as amended thereof subject to stipulation of specific and general conditions as detailed in Annexure (2).
7. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the State Environment Impact Assessment Authority (SEIAA) Appraisal Committee hereby decided to grant Terms of Reference for instant proposal of M/s. ANDRESH SYAL under the provisions of EIA Notification, 2006 and as amended thereof.
8. The Ministry reserves the right to stipulate additional conditions, if found necessary.
9. The Terms of Reference to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
10. This issues with the approval of the Competent Authority.

Copy To

N/A

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Air Modeling

S. No	Terms of Reference
1.1	The project proponent shall include the detailed analysis of GLC-2.5 with air modeling and shall prepare the wind-rose diagram of the site to plan the installation of PCDs.

2. Mining Technique

S. No	Terms of Reference
2.1	The project proponent will be permitted to carry out mining activities manually only.

3. Site Restoration

S. No	Terms of Reference
3.1	The project proponent will assess and erasure that, after ceasing mining operations, to undertake-re-grassing the mining area and any other area which may have been disturbed due to their mining activities and for restoration of the land to a condition which is fit for growth of fodder, flora, fauna etc.

4. Dsr

S. No	Terms of Reference
4.1	The project proponent shall submit a certificate from the Director (Industries) to the fact that the proposed mining site is recommended/approved on the basis of the District Survey Report prepared & approved by SEIAA authorities in conformity with the SO No. 141 (E), SO No. 3611(E) and as per Sustainable Sand Mining Management Guidelines, 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 published by MoEF&CC, GoI.

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	An EIA-EMP Report shall be prepared for peak capacity operation in an ML/project area based on the generic structure specified in Appendix III of the EIA Notification, 2006.
1.2	If the washery is located within the mine lease or near to the mine lease its location should be cited separately also, providing pillar coordinates and site layout plan. In such cases cumulative impact of mine operation with washery to be assessed and EMP measure to be drawn to the worst scenario
1.3	Plan of mechanized transportation of coal to coal washery also for rejects and washed coal to be drawn
1.4	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided
1.5	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines, coal washery and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also
1.6	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
1.7	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.

1(A): Standard Terms of Reference for Conducting Environment Impact Assessment Study for Non-Coal Mining Projects and Information to be Included in EIA/EMP Report

1. Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
2. A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
3. 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, mining technology etc. and should be in the name of the lessee.
4. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
5. Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
6. Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
7. It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
8. Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
9. The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.

10. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
11. Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
12. A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
13. Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
14. Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
15. The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
16. A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
17. Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
18. A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled- I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should

be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.

19. Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
20. Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
21. R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
22. One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM₁₀, particularly for free silica, should be given.
23. 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.

24. The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
25. Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
26. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
27. 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.
28. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
29. Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
30. 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.
31. A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
32. 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 incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.

33. Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
34. Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
35. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
36. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
37. Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
38. Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
39. Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
40. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
41. The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
42. A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
43. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
44. Besides the above, the below mentioned general points are also to be followed:-
 - a. Executive Summary of the EIA/EMP Report
 - b. All documents to be properly referenced with index and continuous page numbering.
 - c. Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d. Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.

- e. Where the documents provided are in a language other than English, an English translation should be provided.
- f. The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
- g. While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
- h. Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- i. As per the circular no. J-11011/618/2010-IA.II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j. The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

No. Udyog-Bhu (Khai-4)Laghu-316/2024
Government of Himachal Pradesh,
Department of Industries,
"Geological Wing"

Dated; Shimla -171001, the

2024

LETTER OF INTENT

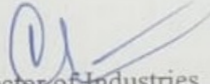
Sh. Andresh Syal, S/o Sh. Pritam Chand, Village & P. O. Alampur, Sub-Tehsil Alampur, District Kangra, H.P. has applied for grant of mining lease from Khasra No. 740 measuring 1-58-56 Hect. (Pvt. land, River bed) falling in Mauza Alampur, Mohal Bagh of Tehsil Jaisinghpur, Distt. Kangra, H.P. for collection/extraction of sand, stone & bajri for open sale under the provisions of Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining Transportation and Storage) Rules, 2015. The joint inspection committee has recommended the applied area for the grant of mining lease. On the basis of recommendations of the Joint Inspection Committee the "Letter of Intent" for an area measuring 1-58-56 Hect. (Pvt. land, River bed) bearing Kh. No. 740 situated at Mauza Alampur, Mohal Bagh of Tehsil Jaisinghpur, Distt. Kangra, H. P. is hereby issued subject to the following conditions:-

- 1- The Party shall have to submit approved Mining Plan under Rule 35 of Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining Transportation and Storage) Rules, 2015.
- 2- The Party shall have to obtain Environment clearance under the provision of Environment Impact Assessment Notification, 2006 from the Competent Authority and forest clearance in case of forest land.
- 3- The Party shall get the area demarcated from the revenue authorities and shall erect permanent boundary pillars to the satisfaction of the Mining Officer, so as to clearly depict the provisional granted area. A copy of the demarcation report shall also be submitted to the Mining Officer.
- 4- The party shall submit a certifacte from the revenue authority to the effect that Khasra No. 740 are free from all encumbrance and all the co-sharers of above said land have given their consent.
- 5- The party shall submit an affidavit in respect that if any dispute arises with the co-sharer of land or with the authorities of Dhaula Sidh Hydro Electric Project, the party shall settle the dispute at his own level.

The "Letter of Intent" is subject to any orders passed by the Hon'ble Supreme Court of India/High Court of Himachal Pradesh or other concerned departments from time to time in this regard. This letter of intent is valid only for obtaining Environment Impact Assessment Clearance from the Competent Authority and the applicant shall not resort any mining activities till final grant order in this behalf.

The grant order imposing all the conditions and stipulations relevant as per the rules shall be issued only after submission of documents as mentioned at serial Nos. 1 to 5 above and after completing codal formalities. This "Letter of Intent" shall be valid for a period of one year. Thereafter, extension of provisional period shall be granted only after reviewing of the progress made for fulfillment of the above said documents. The party shall not resort to any mining activity till getting the final grant order.

✓
Sh. Andresh Syal,
S/o Sh. Pritam Chand,
Village & P. O. Alampur,
Sub-Tehsil Alampur, District Kangra, H.P.



Director of Industries
Himachal Pradesh

Dated: 14-2-2024

Endst. No. As above. -12790

Copy to the following for information and necessary action:-

1. The Mining Officer, Kangra at Dharamshala, Distt. Kangra, H. P.
2. Guard file.


Director of Industries
Himachal Pradesh

REGISTERED

No. Udyog Bhu (Khani-4.)Laghu-316/2024
Government of Himachal Pradesh,
Department of Industries,
"Geological Wing"

- 12891

To Dated Shimla-171001,

27/7 2024

✓ Sh. Andresh Syal,
S/o Sh. Pritam Chand,
Village & P. O. Alampur,
Sub-Tehsil Alampur, District Kangra, H. P.

Subject:- Regarding issuance of Distance Certificate.

Sir,

Please find enclosed herewith countersigned distance certificate by the undersigned issued by the Mining Officer, Kangra at Dharamshala, District Kangra, H. P. on the report of Halqa Patwari in favour of Sh. Andresh Syal, S/o Sh. Pritam Chand, Village & P. O. Alampur, Sub-Tehsil Alampur, Distt. Kangra, H. P. for information.

Enclosed:- As above.

Yours Faithfully,

Geologist (Zone-II)
Geological Wing
Department of Industries,
Himachal Pradesh

Dated; 2024

Endst. No. As above.

Copy to:-The Mining Officer, Kangra at Dharmshala, Distt. Kangra, H. P. w.r.t. his letter No. Udyog (Bhu) KGR-(JSP)-Distance Certificate-2639 dated 19.2.2024 for information and further necessary action.

Geologist (Zone-II)
Geological Wing
Department of Industries,
Himachal Pradesh


CERTIFICATE

As per certificate issued by the concerned Halqa Patwari, one mining lease has been granted and one LOI has been issued from the periphery of the area applied for grant of mining lease in favour of Sh. Andresh Syal S/o Sh. Pritam Chand VPO Alampur Sub-Tehsil Alampur Distt Kangra (HP) over an area comprising of Kh. No. 740 measuring to 1-58-56 Hect.falling in Mauza Alampur Teh. Jaisinghpur District Kangra H.P

The status of mining leases is as under:-

Sr. No.	Name of Lessee	Kh. No.	Area (in Hect)	Mohal and Mauja	Validity of period	Status of EC / Mining lease whether operating or not operating
1	Sh. Sanjeev Syal VPO Alampur Tehsil Jaisinghpur Distt Kangra	801/747	3-89-75	Alampur	17.5.23 to 16.5.2028	Working
2	SJVN Corporate Head Quarter , Shakti Sadan , Shimla , Himachal Pradesh	744/1, 748	4-83-07	Alampur	-	LOI issued
3	Sh. Andresh Syal S/o Sh. Pritam Chand VPO Alampur Sub-Tehsil Alampur Distt Kangra	750, 800/747	4-39-42	Alampur	-	LOI not issued


Mining Officer
Distt Kangra at Dharamshala


Geologist (Zone-II)
Shimla (H.P.)
Geologist (Zone-II)
Geological Wing
Deptt. of Industries Shimla-1

श्रीमान जी, रिपोर्ट

प्रमाणित किया जाता है की अ-प्रेश कुमार पुत्र प्रीतम चक पुत्र बीरवल निवासी महाल बाग जीजा व उप तह 0 आलमपुर जिला कांगड़ा हिं.पु.का स्थान निवासी है। प्रार्थी ग्राम खसरा नं० 740 खसरा ताफकी 01-58-56 है। किसम जमीन गे.मु. परिया स्थित महाल बाग उप तह 0 आलमपुर जिला कांगड़ा हिं.पु.0 जमावकी वर्ष 2019-20 में खसरा करना चाहते है। इस खसरा के 500 मी० के पाथर में एक (1) माइनिंग लीज है।

1. रंजीव कुमार पुत्र अमी चक का माइनिंग क्षेत्र नम्बर खसरा 80/741 खसरा ताफकी 03-89-75 है।

अतः रिपोर्ट सेवा में प्रेषित है।

श.पि.नं.7
19.9.24

Nitesh
पटवारी
पटवारी पुत्र
उप तहसील कांगड़ा

REGISTERED

No. Udyog-Bhu(Khani-4)Laghu-316/2024
 Government of Himachal Pradesh
 Department of Industries
 "Geological Wing"
 Dated; Shimla- 171001,

- 13524

26/2/2024

To

✓ Sh. Andresh Syal,
 S/o Sh. Pritam Chand,
 Village & P. O. Alampur,
 Sub-Tehsil Alampur, District Kangra, H. P.

Subject:-

Approval of Mining Plan of area applied for grant of mining lease for collection/extraction of sand, stone & bajri for open sale from Khasra No. 740 measuring 1-58-56 Hect.(Pvt. land, River bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, H. P. for which Letter of Intent has been issued on 14.2.2024.

Dear Sir,


In exercise of powers conferred by Rule 36 of Himachal Pradesh Minor Mineral (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules 2015, I hereby approve the above said Mining Plan for the purpose of obtaining Environment Clearance of the area applied for grant of mining lease for which the letter of intent has been issued on 14.2.2024. The mining plan is approved for a period of five years from the date of execution of mining lease deed. This approval is subject to the following conditions:--

1. That the Mining Plan is approved without prejudice to any other laws applicable to the mine/area from time to time whether made by the Central/State govt. or any other authority.
2. That this approval of the Mining Plan does not in any way imply the approval of Govt. in terms of any other provisions of the H. P. Minor Minerals (Concession) Revised Rules, 1971 now repealed as Himachal Pradesh Minor Mineral (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules 2015 or any other laws including Forest (Conservation) Act, 1980, Environment Protection Act, 1986 and the rules made there under and other relevant statutes, orders and guidelines as may be applicable to lease area from time to time.
3. That the Mining Plan is approved without prejudice to any orders or directions from any Court of competent jurisdiction.
4. That in case State Geologist, Geologist, any other inspecting officer/official of Geological Wing Department of Industries, after field inspection notices that proposals made and workings shown in the mining lease by the RQP need certain corrections/ amendments due to change in conditions either natural or man made, the inspecting officer can recommend necessary amendments in the Mining Plan at any point of time in the interest of environment and mineral conservation.
5. That the lease holder shall procure Environment clearance from the competent authority as per Environmental Impact Assessment notification, 2006 and amendments/notifications issued time to time in this regard.
6. That the approval of proposed mining operations is restricted to the mining lease area only.

7. That in case additional conditions are imposed by the Ministry of Environment & Forests Govt. of India while according clearance under EIA notification dated 14.9.2006 and any condition imposed by the State Govt. while granting mining lease the same shall have to be incorporated by making necessary amendments in the Mining Plan by the lessee through R. Q. P.
8. That in case Mining lease is not renewed or is terminated or working is suspended before the expiry of the lease period due to any reason, the approval of Mining Plan shall stand automatically cancelled.
9. That the lease holder shall carry out production of mineral in accordance to the production shown in Mining Plan and Environmental Clearance which ever is less.
10. That no person shall undertake mining operations in any mining lease area, except in accordance with a Mining Plan approved under sub rule (2) of Rule 39 of Himachal Pradesh Minor Mineral (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules 2015.
11. That the lease holder shall carry out working in the mining lease area as per Mining Plan only after obtaining permission to work in the mining lease area from the competent authority.
12. That if the mining operations are not carried out in accordance with the approved Mining Plan the State Geologist, Geologist, Assistant Geologist and the Mining Officer, may order suspension of all or any of the mining operations and permit continuation of only such operations as may be necessary to restore the conditions in the mine as envisaged under the said Mining Plan.
13. That if any thing is found to be concealed as required under various Rules and guidelines pertaining to mining in the context of the Mining Plan and the proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.
14. That in case of any violation of terms and conditions of the approved Mining Plan, the financial assurance deposited by the said lessee shall be liable to forfeited.

Enclosed:- Copy of approved Mining Plan.

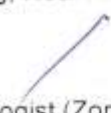
Yours faithfully,


Geologist (Zone-II)
Geological Wing
Department of Industries,
Himachal Pradesh
Dated, 2024

Endst. No. As above.

Copy for kind information to:-

1. The Mining Officer, Kangra at Dharamshala, Distt. Kangra, H. P. alongwith a copy of Mining Plan for further necessary action.
2. Sh. Indresh Nath Dhiman, R.Q. P. Sun-Shine Cottage, Floor above parking, Near Anchal Provisional Store, Rajhana Road, Sector-4, New Shimla-171009.


Geologist (Zone-II)
Geological Wing
Department of Industries,
Himachal Pradesh

MINING PLAN



**MINING PLAN FOR EXTRACTION OF SAND, STONE AND
BAJRI FROM KHASRA NO. 740 MEASURING 01-58-56
HECT. (PRIVATE LAND, RIVER BED), FALLING IN
MAUZA ALAMPUR, MOHAL BAGH, TEHSIL
JAISINGHPUR, DISTT. KANGRA, HIMACHAL PRADESH**

FOR

**SH. ANDRESH SYAL, S/O SH. PRITAM CHAND,
V.P.O. ALAMPUR, SUB-TEHSIL ALAMPUR,
DISTT. KANGRA, HIMACHAL PRADESH**



Prepared By: -

Indresh Nath Dhiman,
Sun-Shine Cottage, Floor above the parking,
Near Anchal provisional store, Ranjhana
Road, Sector-4, New Shimla-171009

गामकीय शाखा,
उद्योग विभाग शिमला
Geological wing
Dept. of Industries
Shimla

APPROVED

With Conditions

तर्जों के साथ अनुमति

के साथ अनुमति

दिनांक

26/1/24

Udyog. Bd. (Kdani-4) Kagori - 3/6/2024 - 13524

Geol. 
Geological Wing
Deptt. of Industries Shimla-1

Contents

1. INTRODUCTION:	5
1. GENERAL	6
1.1.1 Name and address of the applicant	6
1.1.2 Name of the Applicant	6
1.1.3 Address of the Applicant	6
1.2 Status of the Applicant	6
1.3 Mineral which the Applicant intends to mine	6
1.4 Period for which the lease area is granted	6
1.5 Name and Address of H.P.R.Q.P. preparing the Mining Plan	6
1.6 Name of Prospecting Agency	6
2. Location and Approach of the area (Location Map)	6
2.1 Toposheet details	6
2.2 Location Detail of the area	8
2.3 Sub- Divisional Officer (Civil)	9
2.4 Distance from important places in Kilometres	9
2.5 Approach of the Area: -	9
3. PHYSIOGRAPHIC ASPECTS OF THE AREA	10
3.1 General	10
3.2 Altitude, General Terrain Description, with map and Contours Encompassing the Mine area: -	12
3.3 Climate of the Area	12
3.4 Rainfall	13
3.5 Any Other Important Feature: -	14
PART- I	15
DESCRIPTION OF GEOMORPHOLOGY AND MINE DEVELOPMENT	15
1. DESCRIPTION OF THE AREA IN WHICH THE MINE IS SITUATED	15
1.1 General	15
1.2 Name of the River/Stream Bed on which the lease is situated	15
1.3 Drainage System	15
1.4 Type of Drainage	15
It forms dendritic type of drainage pattern.	15
1.5 Origin of river/stream	15
1.6 Altitude at the origin:	15
1.7 Geometry of the Catchment of the River impacting the Replenishment of Deposits	16
1.8 Annual Deposition of River Bed	17
1.9 The Competency of River/ Stream at the Mining Site	17
1.10 Meandering Pattern of the River near mining site	18
1.11 Altitude of the Mining area	18
1.12 Description of the Ground water table in the Mining Area, before and Post Monsoon. ..	18
2.1 Geology of the Catchment Area	18
2.2 Geology of the Lease Area	23
2.3 The Nature of boulders, cobbles, sand etc.	24
2.4 The nature of Boulder/Cobble/Sand	24
2.5 The description of Annual Deposition with Respect to Geology of Catchment Area. ..	25

3. RESERVES ESTIMATE.....	26
3.1 Percentage wise Distribution of stone, gravel sand etc.....	26
3.2 Estimate of Geological Reserves of Each Mineral	26
3.3 & 3.4 Estimated Mineable Reserves of sand, stone and bajri (gravels) & estimated deposition of different constituents of Mineral.....	27
(4) MINE DEVELOPMENT AND PLAN OF PROGRESSIVE MINING.....	27
4.1 Development and production Programme for First Five years	27
4.2 Year Wise Production Detail:	29
4.2 (a) Development and Production in the First Year (Plate No.-3)	29
4.2 (b) Development and Production in the Second Year (Plate No.-3).....	30
4.2 (c) Development and Production in the Third Year (Plate No.-3).....	31
4.2 (d) Development and Production in the Fourth Year (Plate No.-3).....	32
4.2 (e) Development and Production in the Fifth Year (Plate No.-3).....	33
4.3 End use of mineral	34
4.4 Detail of Road transport: -	34
PART -II.....	35
ENVIRONMENT MANAGEMENT PLAN.....	35
1. BASE LINE DATA	35
1.1 Detail of Population Distribution.....	35
1.2 Socio Economy of the Village	35
1.3 Land Use Details of Surrounding Villages near the lease area.....	36
1.4 AGRICULTURE.....	37
1.6 Animal Husbandry	43
1.7 Fisheries	44
1.8 Flora	46
1.9 Climate of the Area	50
(2) ENVIRONMENT MANAGEMENT PLAN.....	52
2.1 Impact on Air	52
2.2 Impact on Water.....	52
2.3 Impact on Noise Level	52
2.4 Waste Disposal Arrangement, if Any	52
2.5 Socio Economic benefits.....	52
2.6 Transport of Mineral	53
PART-III.....	54
PROGRESSIVE MINE CLOSURE PLAN/ RECLAMATION PLAN	54
1.1 MINE WASTE DISPOSAL	54
1.2 Top Soil Arrangement.....	54
1.3 Preventive Retaining Structures.....	54
1. Strategy for protection of point of public utility Etc.: -	55
2. Man power development: -	55
3. Use of Mineral: -	55
4. Disaster Management & Risk Assessment: -	55
5. Any other relevant information: -	56

List of Tables

Table 1: Showing Latitude Longitude of the Area	7
Table 2: Showing Details of the Area	8
Table 3: Climate of Kangra District, Himachal Pradesh	13
Table 4: Lithostratigraphy of the Kangra District.....	19
Table 5: Showing % age of minor mineral constituents	26
Table 6: Estimate of Geological Reserves	27
Table 7: Table Showing Lease Area and the total mineable area available after leaving the no mining area.....	28
Table 8: Table Showing Reserve Estimation in the available Mineable Area	28
Table 9: Showing Geological Reserve in Metric Tonnes	28
Table 10: Showing Production of Each Mineral in First Year	29
Table 11: Showing Production of Each Mineral in Second Year	30
Table 12: Showing Production of Each Mineral in Third Year	31
Table 13: Showing Production of Each Mineral in Fourth Year	32
Table 14: Showing Production of Each Mineral in Fifth Year	33
Table 15: Showing Details of Population Distribution.....	35
Table 16: Land Use Details off the lease Area in Hectares	36
Table 17: Table Showing Crop Pattern Surrounding lease Area	38
Table 18: Table Showing Agriculture Area Under Major Crops, District, Kangra.....	38
Table 19: Table Showing Agriculture Area Under Major Crops, District, Kangra (2017-18)	39
Table 20: Table Showing Production of Each Crop In District Kangra (2017-18).....	39
Table 21: Table Showing Area in Hects Under & Production In Tonnes Of Vegetables	40
Table 22: Table Showing Net Irrigated Area of The State During 2009-10 To 2015-16.....	41
Table 23: Table Showing Production (In MT) Under Each Category of Fruits in Dist. Kangra (Year 2014 to 2019).....	42
Table 24: Showing Animal Husbandry Population Kangra District-2017-18.....	43
Table 25: Showing Animal Husbandry Population Kangra District-2017-18.....	44
Table 26: Table showing Annual Production of Fisheries at Kangra District.....	45
Table 27: Classification of Forest Area of Dist. Kangra Year (2012-2018).....	48
Table 28: Showing Monthly Mean Maximum and Minimum Temperature Data for Dharamshla Year 2013.....	51
Table 29: Proposed Plantation and Re-grassing	54



List of Figures

Figure 1: Google Earth Image Showing the Lease Area and Boundary Pillars.....	7
Figure 2: Toposheet of buffer 5 km showing the Lease Area and surroundings.....	8
Figure 3: Satellite Image showing topography around Lease area and approach road for transportation of mineral.....	10
Figure 4: Geomorphology Map of Dist. Kangra Showing Applied Lease Area	11
Figure 6: Elevation Map of Dist. Kangra Showing Applied Lease Area	11
Figure 7: Chart Showing Maximum & Minimum Temperature (°C) from Jun, 2010 to Jun, 2022	13
Figure 8: Graph showing annual rainfall of Distt. Kangra from year 2018 to 2022.....	14
Figure 9: Elevation Profile of Beas River from its origin to its confluence with Pong Dam	16
Figure 10: Catchment Map of Beas River Showing Lease Area	17
Figure 11: Geology Map of Dist. Kangra Showing Applied Lease Area	23
Figure 12: Photograph showing Mineral Potential in the lease Area	24
Figure 13: Raw material at lease Area	25
Figure 14: View of the lease Area	25
Figure 15: Pie Chart showing Availability of Mineral	26
Figure 16: Graph Showing production in five years.....	28
Figure 17: Graph Showing Production of Each Mineral in First Year.....	29
Figure 18: Graph Showing Production of Each Mineral in Second Year.....	30
Figure 19: Graph Showing Production of Each Mineral in Third Year	31
Figure 20: Graph Showing Production of Each Mineral in Fourth Year.....	32
Figure 21: Graph Showing Production of Each Mineral in Fifth Year.....	33
Figure 22: Graph Showing Details of Population Distribution	35
Figure 23: Graph Showing General Land Use Pattern of Surrounding Villages.....	36
Figure 24: Graph Showing area under Major crops in Kangra District (2017-18)	38
Figure 25: Graph Showing area and production under Major crops in Kangra District (2017-18)	39
Figure 26: Graph Showing Production of Each Crop In District, Kangra (2017-18).....	40
Figure 27: Graph Showing Percentage production and Percentage Area Of Produce Of Each Crop in District, Kangra (2017-18).....	40
Figure 28: Graph Showing Area in Ha Under & Production in Tonnes Of Vegetables in District Kangra (2017-18).....	41
Figure 29: Graph Showing Net Irrigated Area of The State During 2009-10 To 2015-16	41
Figure 30: Graph Showing Production (In MT) Under Each Category of Fruits in Dist. Kangra (Year 2014 to 2019).....	43
Figure 31: Graph Showing Animal Husbandry Population Kangra District-2017-18	44
Figure 32: Graph Showing Animal Husbandry Population, Kangra District-2017-18	44
Figure 33: Graph Showing Annual Production of Fisheries at Kangra District	46
Figure 34: Graph Showing Total Forest Cover in Himachal Pradesh	48
Figure 35: Monthly Mean Maximum and Minimum Temperature Data for Dharamshla Year 2013.....	51

***MINING PLAN FOR EXTRACTION/ COLLECTION OF SAND, STONE AND BAJRI
FROM KHASRA NO. 740 (PRIVATE LAND, RIVER BED), MEASURING 01-58-56
HECTARES, FALLING IN MAUZA ALAMPUR, MOHAL BAG, TEHSIL JAISINGHPUR,
DISTRICT KANGRA, HIMACHAL PRADESH GRANTED IN FAVOUR
OF SH. ANDRESH SYAL, S/O SH. PRITAM CHAND, V.P.O. ALAMPUR, SUB-TEHSIL
ALAMPUR, DISTRICT KANGRA, HIMACHAL PRADESH***

1. INTRODUCTION:

Sh. Andresh Syal, S/o Sh. Pritam Chand, V.P.O. Alampur, Sub-Tehsil Alampur, Distt. Kangra, Himachal Pradesh has been granted the Letter of Intent (LoI) for extraction of sand, stone & bajri for open sale over an area situated in Khasra No. 740 measuring 01-58-56 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh vide order no. Udyog-Bhu(Khani-4) Laghu-316/2024-12790 dated 14-02-2024.

The lease holder approached the undersigned having R.Q.P. No. H.P./R.Q.P./20/1/2015 for preparation of the Mining Plan of the site to fulfil one of the conditions of the Letter of Intent as per the provisions contained in the Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2015. The Mining Plan of the area has been prepared as per the format circulated (Form-M) by the State Geologist Himachal Pradesh and in accordance with the various provisions made in the Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2015.

On the request of the applicant (LoI holder) to prepare the Mining Plan, the mapping of the lease area was carried out encompassing topographical, lithological and other features. The Mining Plan includes the systematic and scientific planning for extraction of useful minor minerals and other wastage components from the lease area coupled with a phased programme for afforestation and protection of point of public utility.

1. GENERAL

1.1.1 Name and address of the applicant

1.1.2 Name of the Applicant

Sh. Andresh Syal

1.1.3 Address of the Applicant

S/o Sh. Pritam Chand, V.P.O. Alampur, Sub-Tehsil Alampur, District Kangra, Himachal Pradesh

1.2 Status of the Applicant

Private Individual

1.3 Mineral which the Applicant intends to mine

The applicant intends to mine sand, stone & bajri from the lease area. The extracted river bed material will be used for open sale lease holder which will be used in construction industries/ infrastructure industries depending upon the market demand.

1.4 Period for which the lease area is granted

As per the grant order under the provisions of the Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules 2015.

1.5 Name and Address of H.P.R.Q.P. preparing the Mining Plan

Indresh Nath Dhiman
Sun-Shine Cottage, Floor above the
parking, Near Anchal provisional store,
Ranjhana Road, Sector-4,
New Shimla-171009

1.6 Name of Prospecting Agency

The area has been discovered by the lessee and further investigated by the R.Q.P. as he has a vast experience in mineral exploration.

2. Location and Approach of the area (Location Map)

Please see Plate no.-1.

2.1 Toposheet details

Surveyed by

Survey of India

Toposheet Number

H43E9

Scale

1:50000

Table 1: Showing Latitude Longitude of the Area

Boundary Pillar	Latitude	Longitude
A	31°50'33.10"N	76°30'57.75"E
B	31°50'38.03"N	76°31'1.01"E
C	31°50'40.55"N	76°31'4.31"E
D	31°50'37.83"N	76°31'3.60"E
E	31°50'37.78"N	76°31'2.66"E
F	31°50'31.98"N	76°31'0.89"E
G	31°50'31.20"N	76°31'0.47"E



Figure 1: Google Earth Image Showing the Lease Area and Boundary Pillars

Toposheet Map of Buffer 5 Km Around Lease Area

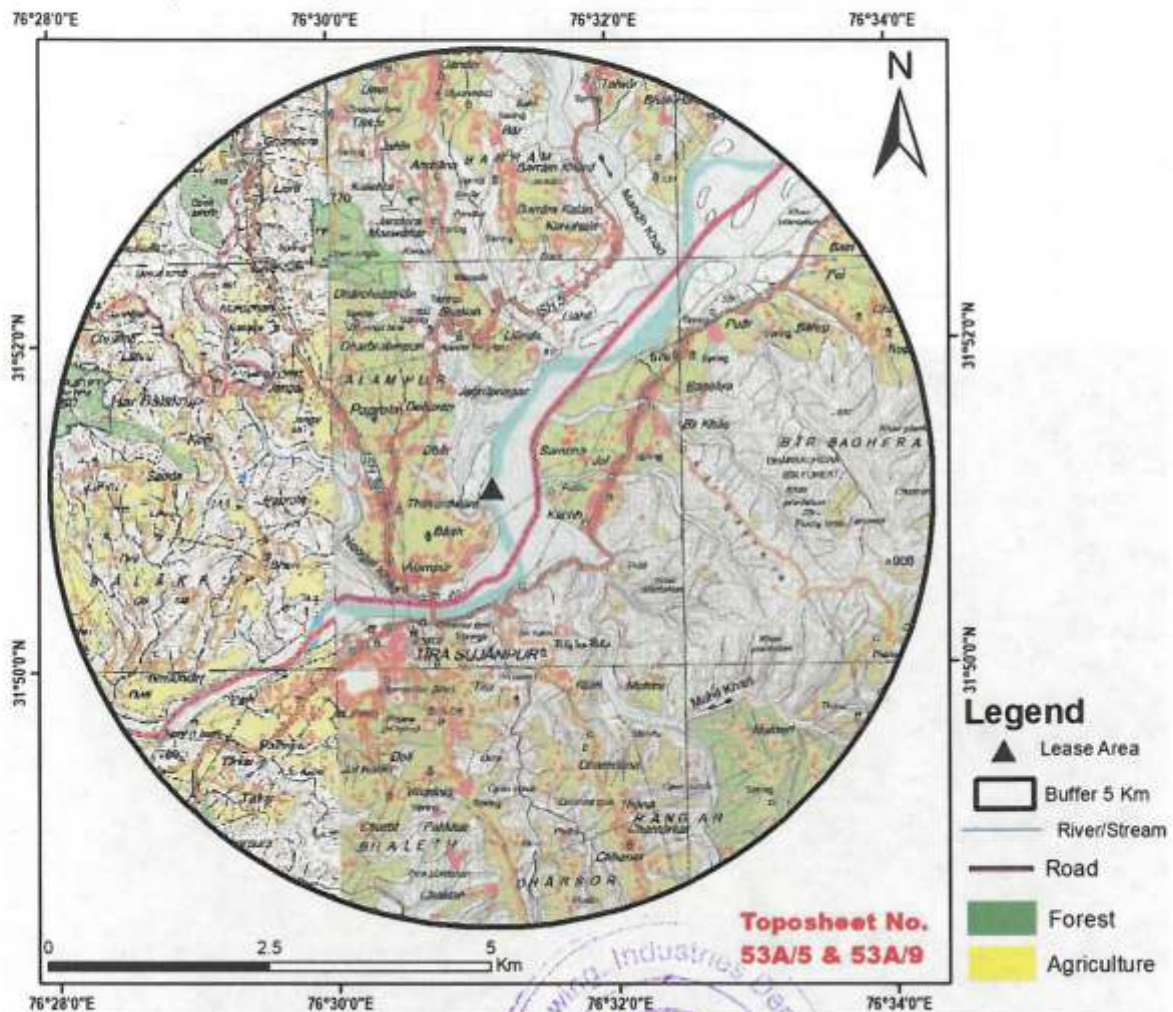


Figure 2: Toposheet of buffer 5 km showing the Lease Area and surroundings

2.2 Location Detail of the area

Table 2: Showing Details of the Area

SR. NO.	KHASRA NOS.	AREA IN HECT STATUS	OWNER OF LAND	KISM	MAUZA	MOHAL
1	740	01-58-56	Private Land	Gair Mumkin Dariya	Alampur	Bagh
TOTAL		01-58-56 Hectares				

Address Details

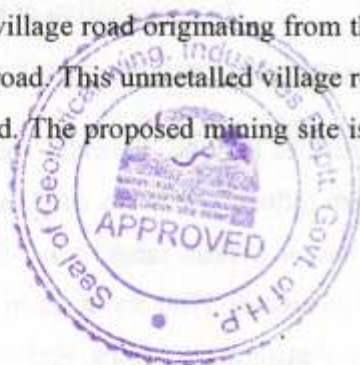
Village	Alampur
Panchayat	Alampur
Patwar Circle	Alampur
Post Office	Alampur
Tehsil	Jaisinghpur
District	Kangra
2.3 Sub- Divisional Officer (Civil)	Jaisinghpur
Divisional Forest Officer	Palampur
Sub-Division (IPH)	Lambagaon
Sub-Division (PWD)	Bheri

2.4 Distance from important places in Kilometres

1.	Jaisinghpur	20 Kms.
2.	Sujanpur Tihra	02 Kms.
3.	Hamirpur	26 Kms.
4.	Palampur	40 Kms.
5.	Shimla	160 Kms.

2.5 Approach of the Area: -

The proposed mining site is located beside village Bagh near to the right bank of River Beas. The site is approachable through a village road originating from the Alampur Petrol Pump located on Palampur-Sujanpur-Hamirpur road. This unmetalled village road, located at a distance of approximately 500 kms from main road. The proposed mining site is located in the river bed of Beas River.



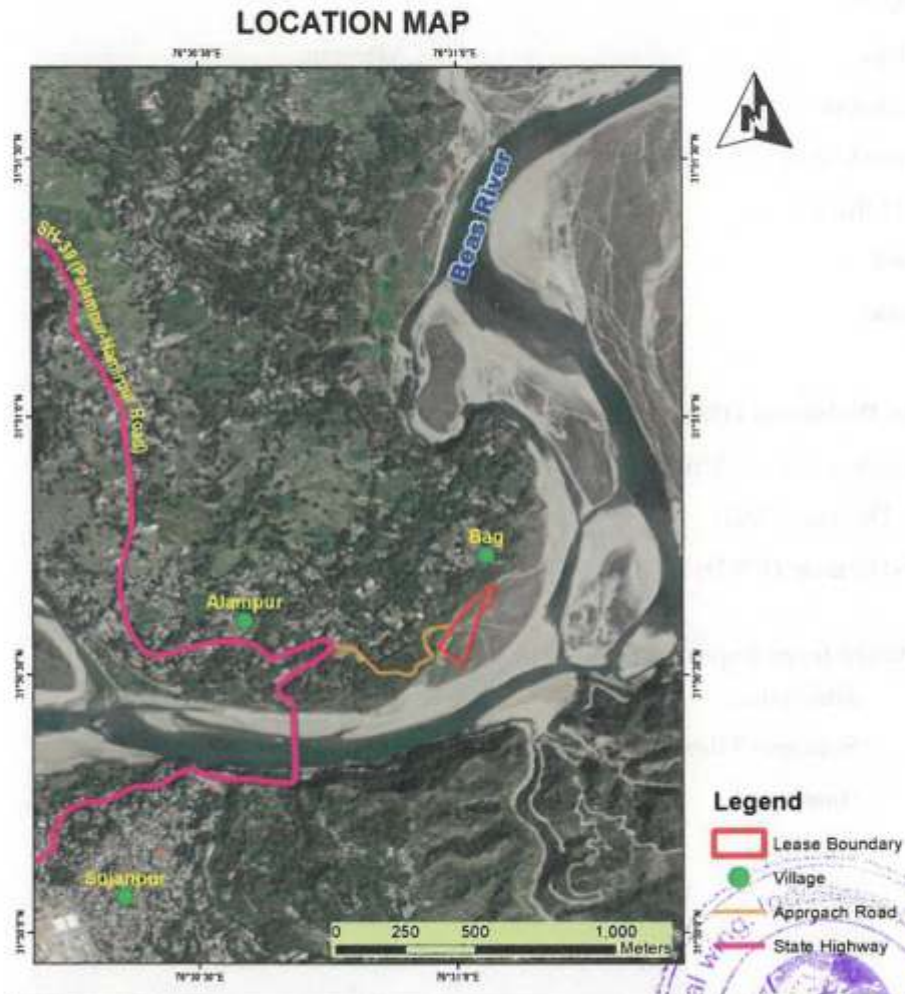


Figure 3: Satellite Image showing topography around Lease area and approach road for transportation of mineral

3. PHYSIOGRAPHIC ASPECTS OF THE AREA

3.1 General

The Kangra district lies between Shiwalik and lesser Himalaya. The lesser Himalaya is located in north western India in the States of Himachal Pradesh and Uttar Pradesh, in north central India in the State of Sikkim range from 1500 meters to 5000 meters in height. The Kangra district covers an area of 5700 Sq. Kms in the west north western part of Himachal Himalaya, bordered by Punjab and Chamba, Kullu, Mandi, Hamirpur and Una in north, east, south respectively. The elevation of the district above mean sea level (MSL) varies from 500 meters to more than 6000 meters. In the district where the Siwalik rocks are exposed, the topography represents a series of parallel hill ranges separated by longitudinal valleys. These

valleys are very fertile. The high peaks where altitude is more than 4000 meters above MSL remains covered with snow. Many streams exist in the district are snow fed and many get water from the rains. The Dhauladhar Mountains defines the northern limit of the district separated from Chamba district. The peaks of these mountains experience heavy to very heavy snowfall and exhibits precipitation and rugged topography.

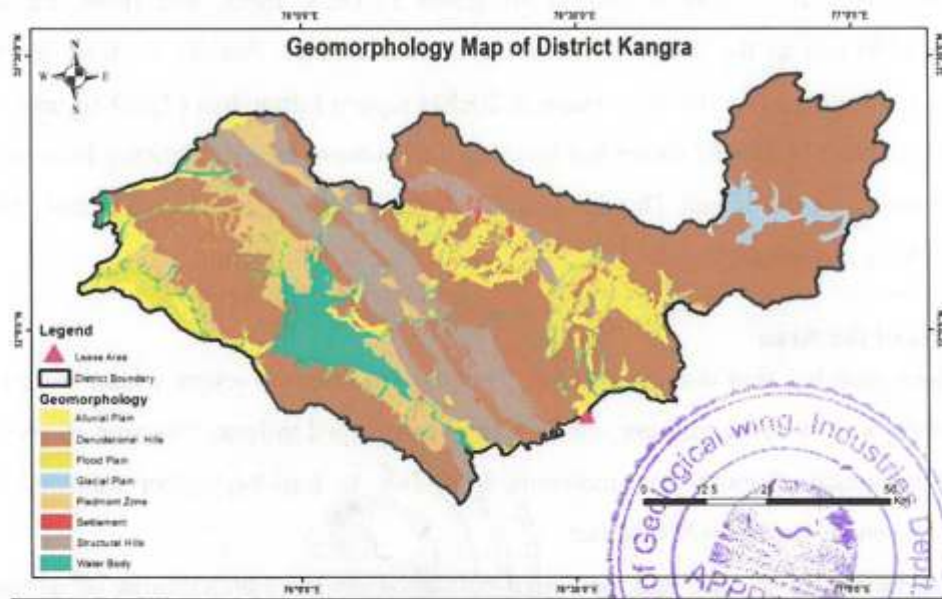


Figure 4: Geomorphology Map of Dist. Kangra Showing Applied Lease Area

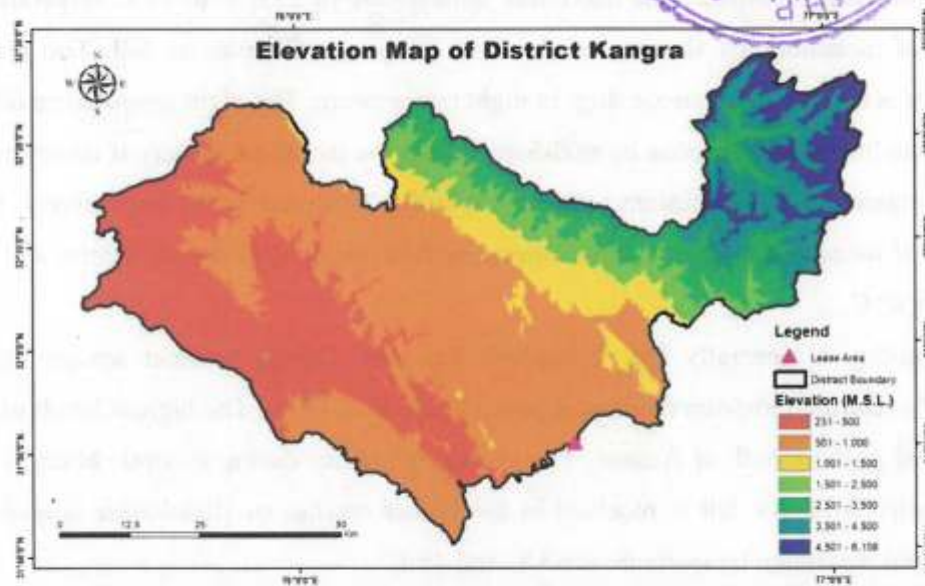


Figure 5: Elevation Map of Dist. Kangra Showing Applied Lease Area

3.2 Altitude, General Terrain Description, with map and Contours Encompassing the Mine area: -

The map of the lease area on 1:3000 scale with one-meter contour interval is plate no. - II. The highest point of the applied area is 546 meters above MSL and the lowest point is 544 meters above MSL and the average width of river in the mining lease is 500-700 Mtrs. The Beas River rises in the Himalayas in central Himachal Pradesh, India, and flows for some 470 kilometres (290 mi) to the Sutlej River in the Indian state of Punjab. Its total length is 470 kilometres (290 mi) and its drainage basin is 20,303 square kilometres (7,839 sq. mi). The river rises 4,361 metres (14,308 ft) above sea level on the southern face of Rohtang Pass in the Kullu district. It traverses the Mandi District and enters the Kangra District at Sandhol, 590 metres (1,940 ft) above sea level.

3.3 Climate of the Area

The region has four distinct seasons. The area experiences severe winter from December to March followed by sever summer season lasting from April to June. The area receives rain fall under the influence of south-west monsoon from July to mid-September followed by post - monsoon season lasting up to November.

The terrain in general has profound influence on the temperatures of a region. The temperature generally rises from the beginning of March till June, which is the hottest month of the year with mean minimum and maximum temperature of 25.6°C to 44°C respectively. With the onset of monsoons by the end of the June temperature begins to fall. The drop in day temperature is much more than the drop in night temperature. The night temperature falls rapidly after the withdrawal of monsoons by mid-September. The month of January is cooler month with the mean maximum and minimum temperature being 24°C and 1.7°C respectively. Under the influences of western disturbance, the temperature falls appreciably during winters and it may go even below 0° C.

Humidity is generally low throughout the year. During summer season, humidity is lowest 36 %. During monsoon months, it goes as high as 80-90%. The highest levels of humidity are observed in the month of August. The average humidity during synoptic hours is 53% and 62% respectively. Snow fall is received in the higher reaches of Dhauladhar ranges. Average minimum and maximum temperature are 3°C and 45°C

The general temperature, rainfall and humidity corresponding to each type is given below in table 10 and month wise detail of temperature is shown in graph:

Table 3: Climate of Kangra District, Himachal Pradesh

Climate	Winter	Summer	Rainy
Period	Oct.-Mid March	Mid. March-June	July-September
Weather	Cool	Hot	Humid

Temperature

Mean monthly maximum and minimum temperature of last five years recorded at Kangra is given in figure 7. Temperature varies from 9°C in winter to maximum of from 39°C in summer.

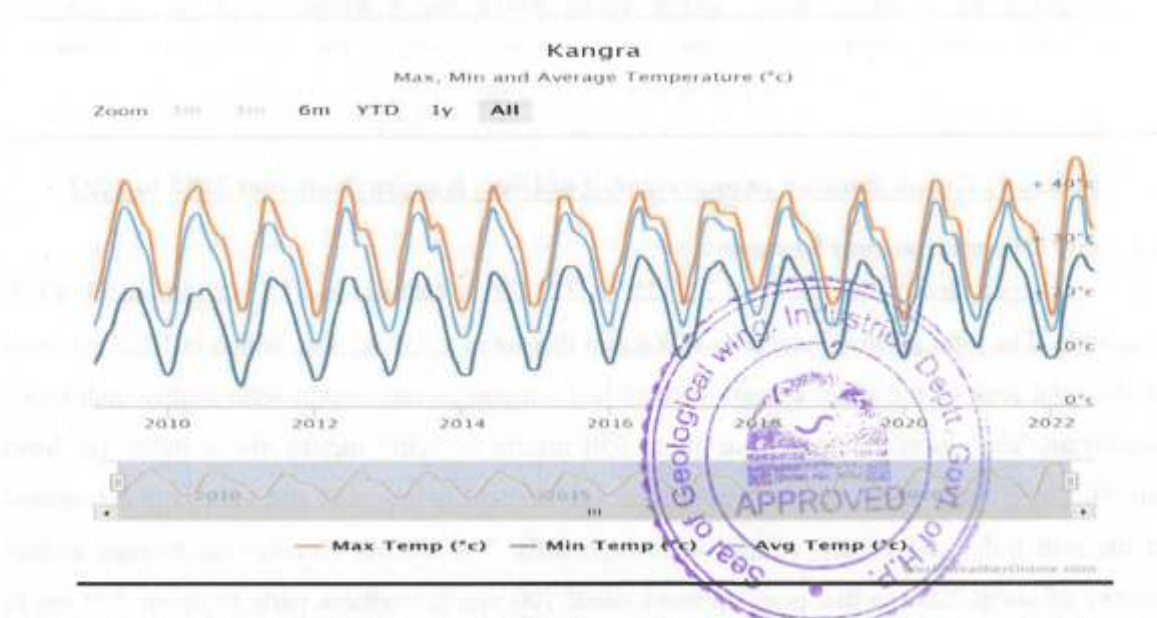


Figure 6: Chart Showing Maximum & Minimum Temperature (°C) from Jun, 2010 to Jun, 2022

3.4 Rainfall

Rainfall varies significantly with altitude of the area. The catchment area receives rainfall due to western disturbances that pass over the north - western part of the country during winter months. Significant precipitation in form of snow is received at higher altitude and rainfall in valleys is received during the winter month. Rainy season generally starts from mid-July and extends up to mid-September. During winter the rains are scarce and extend in between 15th December to 15th February. The following table shows the quantum of rainfall in district Kangra during the years 2018, 2019, 2020, 2021& 2022 as per IMD.

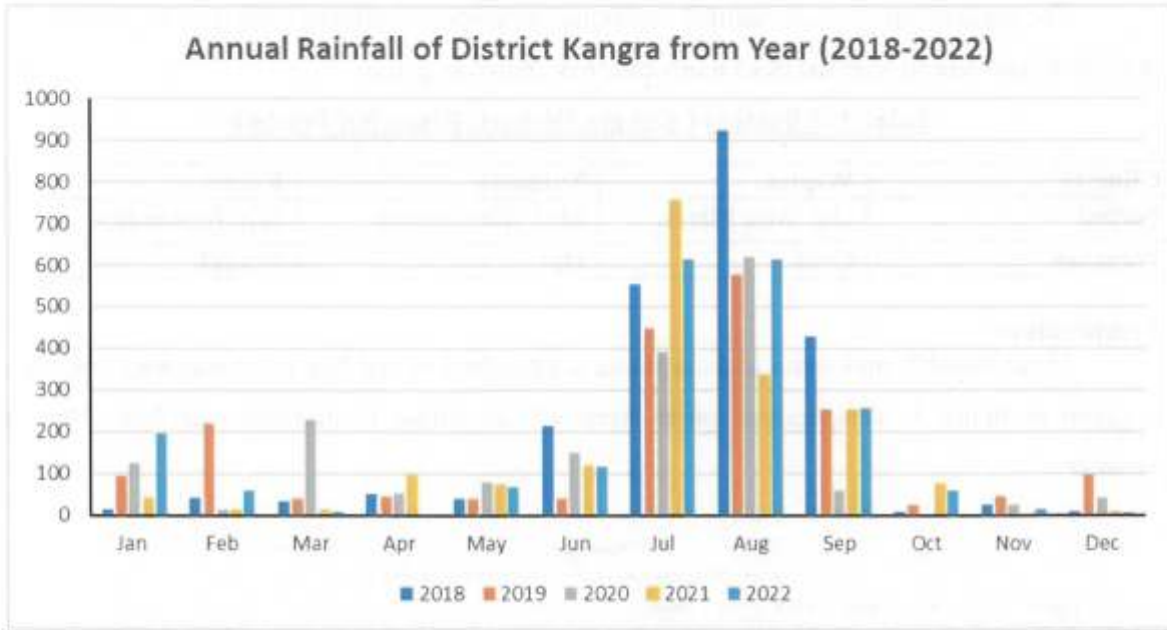


Figure 7: Graph showing annual rainfall of Distt. Kangra from year 2018 to 2022

3.5 Any Other Important Feature: -

Kangra district lies between 31° 21' to 32° 59' N latitude and 75° 47' 55" to 76° 45' E longitude. The total geographical area of Kangra district is 5,739 sq. km, which is 10.31 per cent of the total area of the state. Kangra district has a mountainous terrain with highly undulating landforms. The altitude ranges from about 550 metres to 5,500 metres above mean sea level (amsl). The climate of the district varies from sub-tropical in low hills and valleys to sub-humid in the mid hills, and getting temperate in high hills. The district receives an average annual rainfall of about 205 cm that goes up from about 100 cm in southern parts to about 250 cm in north-eastern areas. River Beas and its tributaries constitute the main drainage system in Kangra district except for the extreme north-eastern part in Bara Bhangal area where it forms a part of the Ravi River.

3.6. Description of the Area in which the lease area is situated: -

The Mining lease area is situated in the Beas riverbed. The Beas River is perennial in nature and experiences heavy water flows (flood) during the monsoon/rainy season. At the Mining site, it flows in the east to west direction and then it meanders towards the south direction.

PART- I

DESCRIPTION OF GEOMORPHOLOGY AND MINE DEVELOPMENT

1. DESCRIPTION OF THE AREA IN WHICH THE MINE IS SITUATED

1.1 General

The lease area lies in the river bed of Beas River which is a perennial Glacial fed stream. Beas is a Perennial River and it originates from Rohtang Pass at an elevation of 4350 meters above means sea level. Beas majorly drains the eastern part of district Kangra. This has a total length of 470 Kms from origin till confluence with Sutlej River in Punjab. Beas flows through moderately steep to low flood plains and cut its course all along its length through Shiwalik rocks comprising predominantly massive conglomerate, boulders, cobbles, river borne bajri, sand and clay deposits of channel alluvium. The river bed of Beas is occupied with recent deposits comprising predominantly of quartzite boulders, Sand and river borne bajri of Sandstone. The boulder beds are considered the prominent source of river borne deposits and during monsoon season the stream carries heavy sediment load and deposit it annually on the river bed.

1.2 Name of the River/Stream Bed on which the lease is situated

The lease area lies in Beas River.

1.3 Drainage System

It forms part of Beas Drainage system.

1.4 Type of Drainage

It forms dendritic type of drainage pattern.

1.5 Origin of river/stream

The river rises 4350 metres above sea-level on the southern face of Rohtang Pass in Kullu. It traverses the Mandi District and enters the Kangra District at Sandhol, 590 metres (1,940 ft) above sea-level.

1.6 Altitude at the origin:

The river rises 4350 metres above sea-level on the southern face of Rohtang Pass in Kullu. It traverses the Mandi District and enters the Kangra District at Sandhol, 590 metres (1,940 ft) above sea-level.



1.7 Geometry of the Catchment of the River impacting the Replenishment of Deposits

Geometry of Beas River

Total Area of Catchment	= 20303 Sq. Km.
Total Area of Catchment (Dist. Kangra)	= 4994 Sq. Km.
Perimeter of the catchment	= 940 Kms.
Highest Elevation	= 4350 Mts. (M.S.L.)
Highest Elevation (Dist. Kangra)	= 636 Mts. (M.S.L.)
Lowest Elevation (Pong Dam)	= 410 Mts. (M.S.L.)
Lowest Elevation (Kangra Border)	= 252 Mts. (M.S.L.)
Total length of stream	= 344 Kms. (Upto Pong Dam)
Total length of stream (Kangra District)	= 63 Kms. (Upto Pong Dam)
Maximum Length of watershed	= 117 Kms.
Maximum Breadth of watershed	= 110 Kms
Total Area of catchment upto lease Area	= 8590 Sq. Km
Length of the stream upto lease area	= 203 Kms.
Width of the River at Lease Area	= 500-600 meters

Profile of Beas River

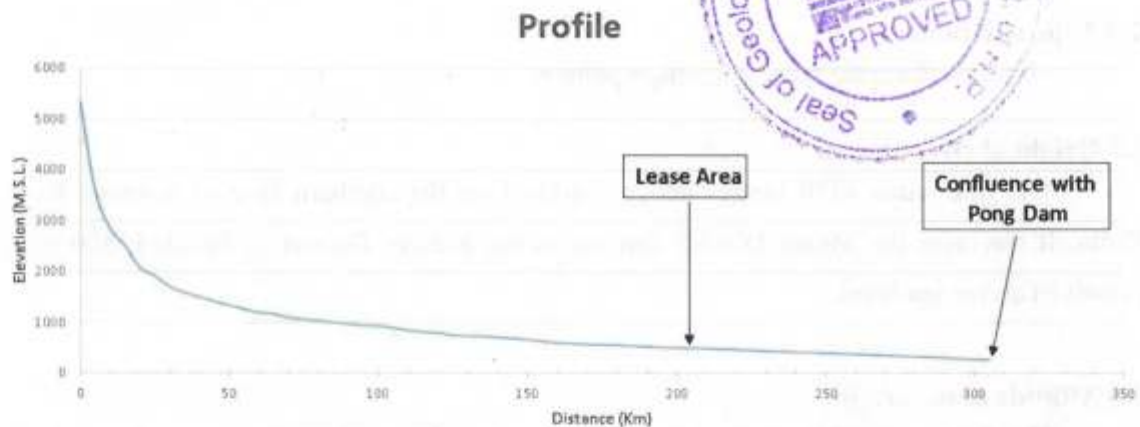


Figure 8: Elevation Profile of Beas River from its origin to its confluence with Pong Dam

Relief Map of River Beas Catchment

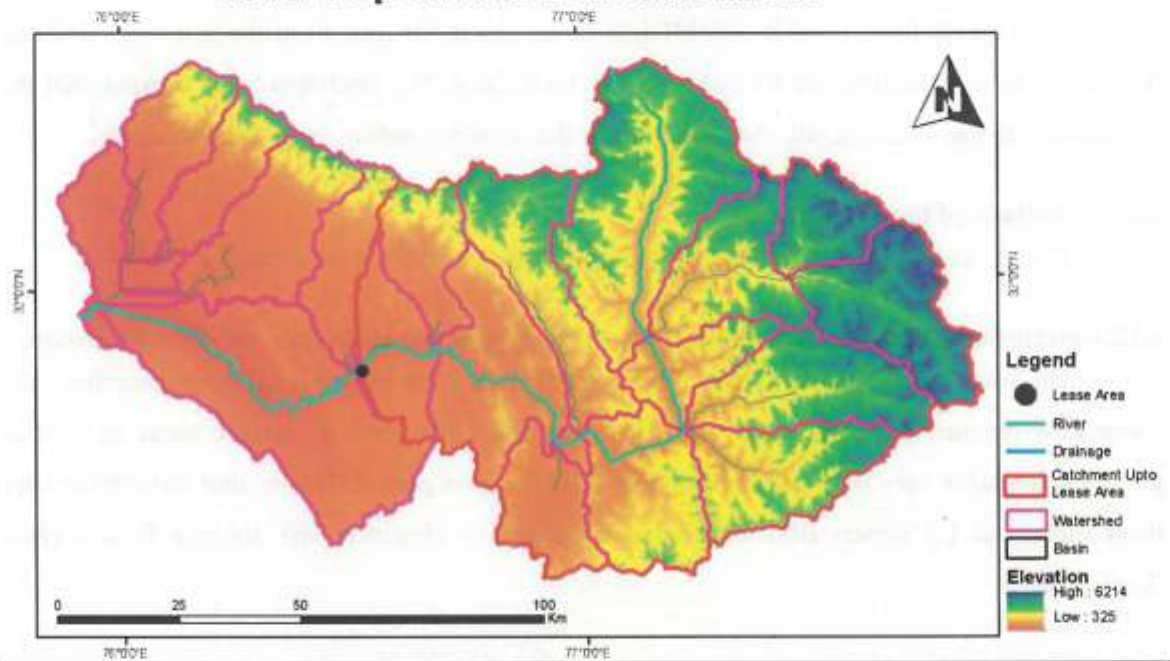


Figure 9: Catchment Map of Beas River Showing Lease Area

1.8 Annual Deposition of River Bed.

The overall catchment area of the Beas River is 20303 Sq. Km. The catchment up to the lease area is 8590 Sq. Km. Further, the replenishment factor is dynamic as the grain size of annual deposition on river/stream bed is directly proportional to the velocity of the river. The lease area is located at the mature stage of the river with gentle slope. Apart from this, the width of the river is 500 m to 600 m in the lease area which further decreases the flow of water. The total deposition of Beas River is 3,92,85,000 metric tonnes and the annual replenishment is of 23,57,100 metric tonnes considering an annual deposition of annual deposition of about 6 Cms.

1.9 The Competency of River/ Stream at the Mining Site

The general competency at the mining area is eight to ten kg approx. The largest boulders vary 24 to 130 cm X 36 to 120 cm X 30 to 100 cm (length X Width X Height). However, the size of the boulders found in the river found in the river is more dependent upon the size available in the boulder conglomerate beds in the catchment area then the actual competency of the river flow.

1.10 Meandering Pattern of the River near mining site

The highest flood level is 546 MRL. It raises about 5.0 mts. from the bed level while in floods. Because of gradient, no fix bed level can be defined. The landform being depositional the meandering thread is constantly changing during the rains depending upon the water level.

1.11 Altitude of the Mining area

The highest contour in the lease area is 546 Mts. and the lowest contour is 544 Mts.

1.12 Description of the Ground water table in the Mining Area, before and Post Monsoon.

The lease area is a part of the river course. Beas river is perennial river; therefore, the water flow remains throughout the year. However, the water level of surface water as well as ground water table vary from pre-monsoon to post-monsoon period. The ground water table vary from surface to 1.5 meters BGL depending upon season elevation and distance from surface flowing water.

2. GEOLOGY

2.1 Geology of the Catchment Area

In Himachal Pradesh Geological history goes back to the archaean proterozoic transition although the actual Himalayan Mountain building took place only during Cenozoic era. The Himalaya is a classic example of continent and continent collision due to convergent movement of Indian plate toward the Eurasian plate. It comprises two contrasting tectogens with their own distinctive geological history. The dividing line between these two tectogens, represent a major tectonic discontinuity and is designated by several local name. However, it can be collectively refer to as a Main Central thrust and on either side of this thrust the tectogens display contrasting stratigraphic and tectonics features indicating convergence of two alien blocks. These are the lesser Himalayan tectogens and the tethys Himalayan tectogen.

Siwalik Group

The Siwalik Group in the Himachal Himalaya forms a parallel foot – hill belt in the Sub-Himalayan zone, extending along the southern margin of the Palaeogene Sirmur Group belt from the Ravi to the Yamuna and forms part of the larger Sub-Himalayan mega belt extending from Potwar basin in NW to the Arunachal foot-hill in SE. In the Himachal Himalaya it has maximum width between Hoshiarpur and Jogindernagar.

The Siwalik sediments, though occurring as an independent structural belt, are also seen to overlie the Muree in the Jammu sector of the Kashmir Himalaya and the Kasauli in the Himachal Himalaya. Pilgrim (1910) recorded a gradual transition from Muree beds to Lower Siwalik in the Rawalpindi and Jhelum districts of Pakistan and from Kasauli to Lower siwalik (Nahan) in the Himachal Himalaya. This fact assumes importance because there is a tendency to ignore this normal relationship between the Siwalik and Sirmour Groups at Dharamsala, Sarkaghat and Nalagarh.

At Haritalyangar near Bilaspur, the Lower Siwalik is seen resting on the Dagshai with an unconformity, which is described as the most striking discordance in the whole sequence of freshwater deposits and evidently representing a period of considerable earth movements (Pascoe, 1964).

The Siwalik Group is divisible into three subgroups respectively the Lower, Middle and Upper on the basis of lithostratigraphy (Table—Karunakaran and Ranga Rao, 1979).

Lower Siwalik Subgroup

The Lower Siwalik subgroup consists essentially of sandstone-clay alternation. The lower boundary of the Lower Siwalik does not crop out at surface in the Jawalamukhi sector. In a deep well drilled in the over thrust block of the Jawalamukhi Thrust, however, the Lower Siwalik is found conformably is also marked by an increase in the percentage of heavy minerals giving a dark appearance to the rock and incoming of less rounded heavy minerals like staurolite and unstable types like zosite and epidote.

Table 4: Lithostratigraphy of the Kangra District

Sub Group	Lithology	Thickness (approx.)
Upper Siwalik	B) predominantly massive conglomerate with red and orange clay as matrix and minor sandstone and earth, buff and brown clay stone A) Sandstone, clay and conglomerate alternation.	2300 m
Middle Siwalik	B) Massive sandstone with minor conglomerate and local variegated clay stone. A) Predominantly medium to coarse-grained sand stone and red	1400 m. to 2000 m

	clays alternation, soft pebbly with subordinate clay stone, locally thick prism of conglomerate	
Lower Siwalik	B) Alternation of fine to medium-grained sporadically pebbly sandstone, calcareous cement and prominent chocolate and maroon clays tone in the middle part. A) Red and mauve clay stone with thin intercalations of medium to fine-grained sandstone	1600 m

The Lower Siwalik at Jawalamukhi is 1600 m in thickness. Several subdivisions are possible on the basis of sandstone-shale ratio. Clasts are present only locally especially towards the top of the formation, usually consisting of well-rounded, grey coloured quartzite, Kasauli sandstone and Shali dolomite in 1 or 2 cm size. Clasts are present locally in the sand stone especially towards the top and these usually consist of grey and pink coloured quartzarenite possibly belonging to either the Sundernagar Group or the Khairi Formation of the Shali Group.

Further east of Jawalamukhi at the inner edge of the foot-hills, the Lower Siwalik shows a different facies. Immediately overlying the Kausauli, there is an unit of coarse feldspathic sandstone and orange coloured clays. Higher up, angular clasts of quartzarenite and chert are found in the sandstone. The main Lower Siwalik sequence consists of conglomerate ending with boulder bed containing clasts

In the Paror-Sarkaghat area, lying between the inner edge of the foot-hills and Jawalamukhi, the lithology of the Siwalik is intermediate in character. The lower part of the sequence consists of medium grained sub greywacke inter bedded with thick red clays, but higher up in the sequence, sandstones are coarser and clasts become more frequent while clays are less developed. The uppermost horizon consists of conglomerate with well rounded clasts of grey quartzite possibly derived from the Shali Group. The total thickness of the Lower Siwalik in the western flank of the Sarkaghat anticline is 1900 m.

Middle Siwalik Subgroup

The middle Siwalik Subgroup comprises of large thickness of coarse micaceous sandstone, some inter beds of earthy clay. It normally succeeds the Lower Siwalik consists of sub greywacke to arkose inter bedded with clay stone and calcareous matter occurring in segregations rather than disseminated throughout the sandstones. The sandstones are less well-sorted than those in Lower Siwalik. Clays are dull coloured and silty. Clasts are common in

coarser clastics, especially towards top and consist of fragments of metamorphic rocks occurring in the Dhauladhar range and Mandi Volcanics. The thickness of Middle Siwalik 1390 in the gorge of Banganga river, SW of Kangra. Petrologically the Lower boundary of the Middle Siwalik coincides with the influx of kyanite in the heavy mineral assemblage (Karunakaran and Ranga Rao, 1979).

Lateral facies changes are common. In the Jawalamukhi area, a thick prism of conglomerate occurs in the Middle Siwalik, which within 15 km on either side changes to typical Middle Siwalik sandy facies. The thickness near the Beas river is 1890 m. In the Jawalamukhi sector, the middle Siwaliks, which are of nature of channel and flood plain deposits in both NW. At the outer margins these areas, Middle Siwalik is transitional to flood plain facies, especially in the lower part of the sequence. Higher up massive arkosic sandstones occur. In the Bhakra gorge section, Middle Siwalik sequence is about 1400 in thickness, divisible into two lithostratigraphic units. The lower litho-association is 750 m thick with alternations of moderately hard, well-bedded, medium to coarse-grained sandstone and red sandy clays. The overlying unit consists mainly of thick, soft to moderately hard, massive, coarse to medium-grained sandstones with thin intercalations of red and gray clays.

Along the northern edge of the foot hills, the Middle Siwalik becomes predominantly conglomeratic with pebbles derived from Sirmour Group and the Sunder Nagar -Shali Groups. The lack of roundness of the clasts suggests a short distance transport. The conglomerates are generally very thick (2000 m in Mandi area). Such conglomerates, representing piedmont deposits are found at Bilaspur, Sarkaghat, Palampur, Bakloh and other areas, and they indicate that the Himalayan uplift had already begun with antecedent erosion.

In the Sirmour areas, on the other hand, the middle Siwalik which is nearly 2000 m thick, consists of alternations of clay and sandstones in the lower part and massive sandstones in the upper part. It contains a moderately rich assemblage of opaques, garnet, tourmaline, epidote, staurolite, zoisite, zircon, rutile, chlorite and kyanite marker. Lithological changes in the Siwalik points to a major change in depositional pattern, accompanied by earth movements resulting in the area north of the Siwalik basin.

Upper Siwalik Subgroup

The upper Siwalik Subgroup can be easily separated from the under lying Middle Siwalik on the basis of distinct Lithological change. In Kangra area where the middle Siwalik, the

conglomerates contains clasts of basic volcanic rocks of the Mandi – Darla Volcanic with a very thin (10 m) transitional zone between them which may even suggest a local break between Middle and Upper Siwalik. The upper Siwalik conglomerates contain red and orange coloured clay as matrix. NE of Jawalamukhi, in the Lambagaon syncline only 600 to 900 m. of upper Siwalik are exposed as the upper part is overlapped by the post-Upper Siwalik, Neugal conglomerates and red clays. In these, the clasts are smaller and well-rounded than those of the Upper Siwalik. They probably belong to the first interglacial period of the Pleistocene and therefore, the top of the Upper Siwalik extends into the Lower Pleistocene. The time interval between the two represents the last phase of the Himalayan orogeny.

The conglomeratic facies of the Upper Siwalik is found in the main Mandi Reentrant mainly in the Lambagaon syncline and in the area immediately to the SE of the main tectonic divide between the Siwalik belt and the Sirmaur belt. South wards, the conglomeratic facies comes progressively higher in the sequence, underlain by grits and arkoses sandstone. SW of Jawalamukhi, for example, 1500 m Upper Siwalik area exposed consisting of 1040 m lower pebbly sand stone sequence, often with grey and brown clay bands and 460 m of conglomerate overlying them. This situation continues along the Nadaun dun. At Bhakra gorge, the Upper Siwalik is 2350 mtrs thick, divisible into a lower member of 1730 mtrs thickness, and an Upper Member 620 mtrs thick. The Lower Member mainly consists of soft, massive, pebbly, sand stone with thin intercalation of conglomerates, and grey sandy clays become prominent enough at the top of the formation to be identified separately as a Sub-Member, 215 m thick at Bhakra. North west wards, the clays are replaced by massive sand stone and conglomerates which pass once more into a clay, sand stone succession near Pathankot.

In the outer foot-hills belt, in Janauri, the Upper Siwalik is mainly a sand stone interbedded with silts. Conglomerates occur only at the North western part of the structure. The Upper Siwalik is 2300 m thick. Further south-west wards, in the planes, the sandy facies of the Upper Siwalik extends all the way up to the Delhi-Lahore arch which separates the Punjab platform from the Rajasthan Platform. The thickness of the Upper Siwalik decreases steadily from 1610 m at Hoshiarpur to 445 m at Zira near the top of the arch in Punjab. In the planes there is to be no discordance between the post- Siwalik alluvium and the Upper Siwalik.

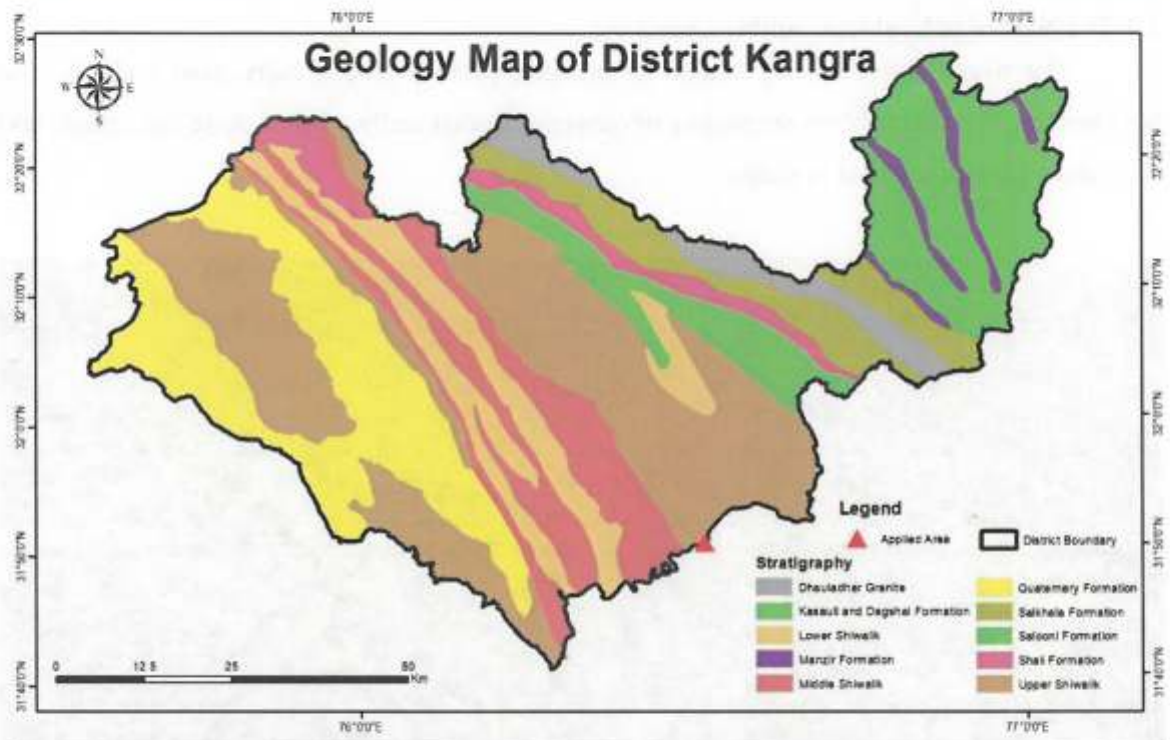


Figure 10: Geology Map of Dist. Kangra Showing Applied Lease Area

2. 2 Geology of the Lease Area

The study of rocks in and around the lease out area show that there are sand stone formations of Upper Siwalik. The upper Siwalik Sub-Group comprises of large thickness of coarse micaceous sandstone, some interbeds of earthy clay. The stream is full of river borne sediments which has been generated by the erosional process of Siwalik hills. The river borne material consist of boulder, pebble, cobble, bajri, sand and silt. The area has gentle slope angle and is occupied with residual soil which is formed due to weathering of upper hill slopes. The thickness of this river borne material is 5.0 mts. depth as gathered in discussion with P.W.D. authorities as they have noticed in the past while digging for bridge abutments. The area granted submerges during monsoon therefore no permanent vegetation is possible in the river bed, however seasonal grass grows in the stable lands of the river. For calculation of quantity of mineral one meter depth has been taken into consideration.

2.3 The Nature of boulders, cobbles, sand etc.

The river borne material, consist of boulder, pebble, cobble, bajri, sand and silt. The boulders, cobbles and pebbles are mainly of quartzite, occasionally of sand stone and granite and are rounded to sub rounded in shape.



Figure 11: Photograph showing Mineral Potential in the lease Area

2.4 The nature of Boulder/Cobble/Sand

The lease area lies between the regular course of the Beas River gets flooded in the rainy season. All the deposits comprise of quartzite, sand and fraction of granite, limestone and breccias- fragments. The boulders are white, spotted white, greenish white, pink, purple and dark green in colour. Quartzite fragments are rounded, sub- rounded and discoidal in shape having smooth surface. Thickness of the deposit is more than five metres.

During the monsoon, the riverbed replenishes by the eroded rocks from the pre-tertiary formations. Due to sudden decrease in the carrying capacity and competency of the river after monsoon floods, the annual deposition of three to four cm is received.



Figure 12: Raw material at lease Area



Figure 13: View of the lease Area

2.5 The description of Annual Deposition with Respect to Geology of Catchment Area.

The overall catchment area of the Beas River is 20303 Sq Km. The catchment up to the lease area is 8590 Sq. Km. The above area is occupied by sand stone formations of Upper Siwalik and from the weathered-out rocks of the above said area. The replenishment factor is very dynamic as it depends on the variety of the environment factors. The total deposition of Beas River is 3,92,85,000 metric tonnes and the annual replenishment is of 23,57,100 metric tonnes considering an annual deposition of annual deposition of about 6 Cms.

3. RESERVES ESTIMATE

3.1 Percentage wise Distribution of stone, gravel sand etc.

The different constituents of river borne deposits such as boulder, bajri, sand and silt/clay based on size classification were considered for reserve calculation. Two sample pits with dimension of 1x1x1 meter were dug in the lease area and material so excavated was separated into different size and their percentage was worked out and this percentage was taken in to account during calculation of reserves. The average specific gravity of the minor mineral has been taken as 2.25. The results of the test pit dug are given in the following table:

Table 5: Showing % age of minor mineral constituents

S. No.	Mineral	Percentage	Size
1.	Boulder	50%	(More than 64 mm to 12 mm)
2.	Bajri	30%	(64 mm to 12 mm)
3.	Sand & Silt/Clay Mixture	20%	(12 mm to less than 1/256 mm)

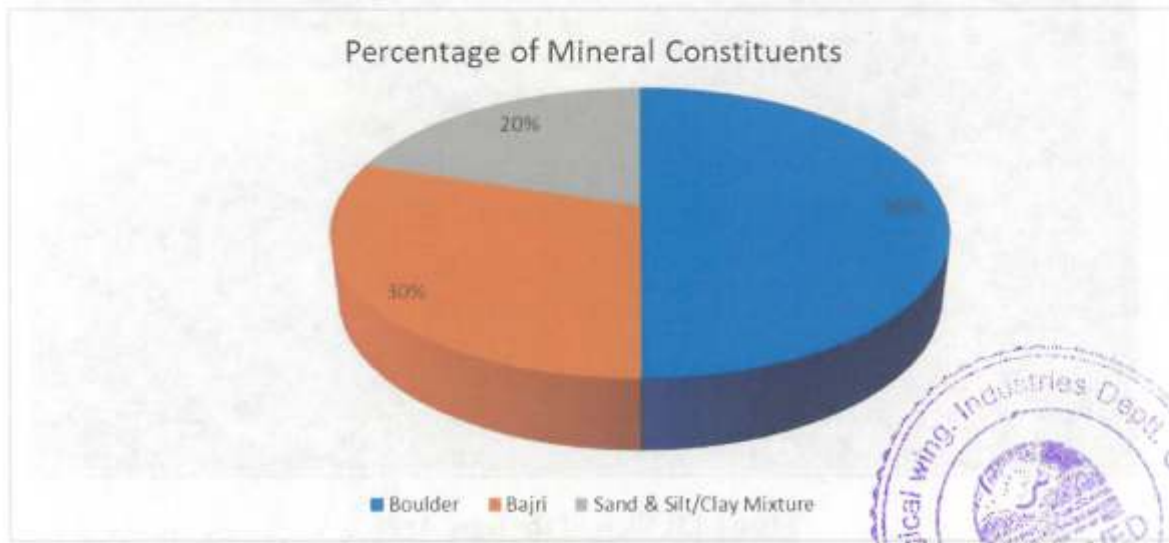


Figure 14: Pie Chart showing Availability of Mineral

3.2 Estimate of Geological Reserves of Each Mineral

The average depth of sediments in the lease area is expected to be 5 meters as per information gathered from public works department. The total lease area is 01-58-56 Hectares thus, following table shows the geological reserves: -

Table 6: Estimate of Geological Reserves

Name of Mineral	Boulder (50%) M.T.	Bajri (30%) M.T.	Sand & Silt/Clay Mixture (20%) M.T.	Total M.T.
Quantity	89,190	53,514	35,676	1,78,380

3.3 & 3.4 Estimated Mineable Reserves of sand, stone and bajri (gravels) & estimated deposition of different constituents of Mineral

It has been experienced that during monsoon, that in this type of river, the replenishment factor is generally high. Therefore, no rotational mining is proposed because the material excavated up to the one-meter depth would be replenished during the raining season (i.e., Non-working Season).

(4) MINE DEVELOPMENT AND PLAN OF PROGRESSIVE MINING

4.1 Development and production Programme for First Five years

The basic requirement of the lease holder is stone and bajri for open sale in market. Hence, the lease holder intends to mine sand, stone, & bajri. As the lease area contains prominently mineral of river bed, the constituent does not require washing as this will increase the production cost as a result the day or silt which is integral part of the sand will be sold as such without washing. In order to calculate the mineable reserves, the following points are taken in to consideration;

1. A Geological map 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 classification were considered for reserve calculation. One sample pit with dimension of 1x1x1 meter were dug in the lease area and material so excavated was separated into different size and their percentage was worked out and this percentage was taken in to account during calculation of reserves.
3. Keeping in view of the replenishment factor, no rotational mining has been proposed. whole block shall be explored in every year
4. The mining shall be under taken manually and mechanical mining may be under taken if allowed by the Government.
5. The total available area is 66 %, after leaving part of the mining lease area falls in the 1/10 of the HFL.

Table 7: Table Showing Lease Area and the total mineable area available after leaving the no mining area

Total Lease Area	15856 sqm
No Mining Zone Area	5356 sqm
Area Availability After Leaving no Mining Zone (IN MT)	10500 sqm

Table 8: Table Showing Reserve Estimation in the available Mineable Area

Working Area (IN SQM.)	10,500
Depth (IN M)	1
Specific gravity	2.25
Availability of Mineral (IN MT)	23,625

Table 9: Showing Geological Reserve in Metric Tonnes

Year	Total Potential M.T.	Boulder (50%) M.T.	Bajri (30%) M.T.	Sand/Silt/Clay Mixture (20%) M.T.
1st Year	23,625	11,813	7,087	4,725
2nd Year	23,625	11,813	7,087	4,725
3rd Year	23,625	11,813	7,087	4,725
4th Year	23,625	11,813	7,087	4,725
5th Year	23,625	11,813	7,087	4,725
Total	59,065	59,065	35,435	23,625

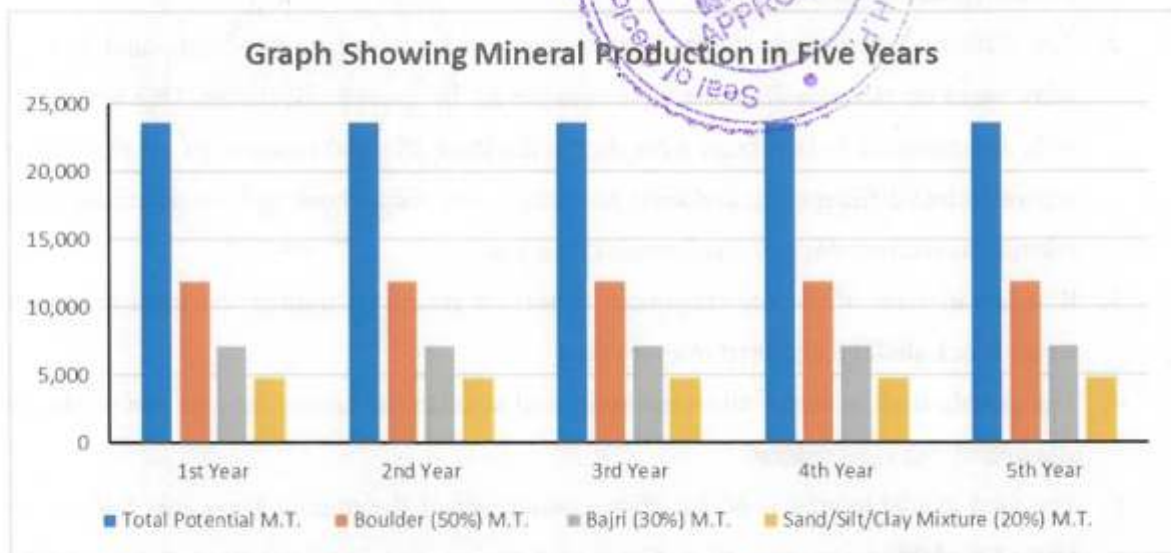


Figure 15: Graph Showing production in five years

1. The average specific gravity of boulders has been taken for calculation of reserves has been taken 2.25 and one-meter depth is taken for calculation of reserves.
2. The mineable reserves calculated as per the production's requirement has been calculated in the mineable area.

4.2 Year Wise Production Detail:

The Beas River gets replenishment during monsoon and winter rains when the river gets heavy load for a short period. The river level is raised up to 5 meters for a shorter spell of time. The mining has been planned in a full block up to the depth of 1m to give a better chance for replenishment. The worked-out block shall get replenishment during monsoon and winter rains season for recharging the worked-out area and the worked-out area shall be fully replenished. 10,500 square meters shall be available for working every year.

4.2 (a) Development and Production in the First Year (Plate No.-3)

During 1st Year of development and production Programme, mining is proposed in the 10,500 square meters only. The production of each mineral Constituent will be as under: -

Table 10: Showing Production of Each Mineral in First Year

Production of Each Mineral in First Year (In M.T.)	
Boulder (50%) M.T.	11,813
Bajri (30%) M.T.	7,087
Sand & Silt/Clay Mixture (20%) M.T.	4,725
TOTAL	23,625

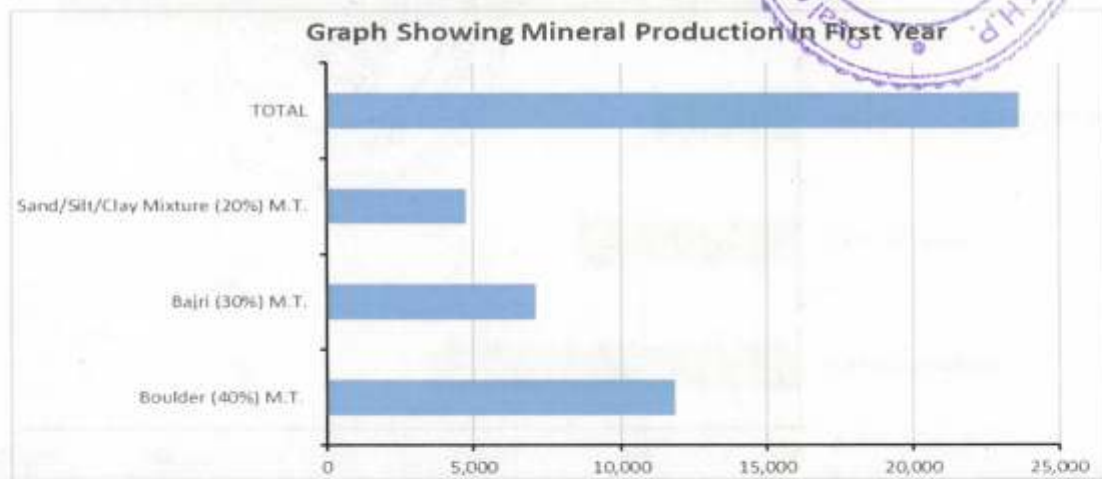


Figure 16: Graph Showing Production of Each Mineral in First Year

- i. A total of 23,625 metric tonnes of net useful material will be produced, this comprises of 11,813 metric tonnes of boulder 7,087 metric tonnes of bajri.
- ii. 4,725 metric tonnes of inseparable mixture of sand & silt/clay will be produced.
- iii. A check dam C-1 with dimensions of LXBXH = 20mX1mX2m is proposed can be seen in plate no. 4.

Afforestation – Plantation is proposed in the area outside the H.F.L. of the river bed i.e., the zone where no mining activities will be carried out. The plantation will do the plantation in consultation with the concerned department.

4.2 (b) Development and Production in the Second Year (Plate No.-3)

During 2nd Year of development and production Programme, mining is proposed in the 10,500 square meters only. The production of each mineral Constituent will be as under: -

Table 11: Showing Production of Each Mineral in Second Year

Production of Each Mineral in Second Year (In M.T.)	
Boulder (50%) M.T.	11,813
Bajri (30%) M.T.	7,087
Sand & Silt/Clay Mixture (20%) M.T.	4,725
TOTAL	23,625



Figure 17: Graph Showing Production of Each Mineral in Second Year

- i. A total of 23,625 metric tonnes of net useful material will be produced, this comprises of 11,813 metric tonnes of boulder 7,087 metric tonnes of bajri.
- ii. 4,725 metric tonnes of inseparable mixture of sand & silt/clay will be produced.
- iii. A check dam C-2 with dimensions of LXBXH = 20mX1mX2m is proposed can be seen in plate no. 4.

Afforestation – Plantation is proposed in the area outside the H.F.L. of the river bed i.e., the zone where no mining activities will be carried out. The plantation will do the plantation in consultation with the concerned department.

4.2 (c) Development and Production in the Third Year (Plate No.-3)

During 3rd Year of development and production Programme, mining is proposed in the 10,500 square meters only. The production of each mineral Constituent will be as under: -

Table 12: Showing Production of Each Mineral in Third Year

Production of Each Mineral in Third Year (In M.T.)	
Boulder (50%) M.T.	11,813
Bajri (30%) M.T.	7,087
Sand & Silt/Clay Mixture (20%) M.T.	4,725
TOTAL	23,625

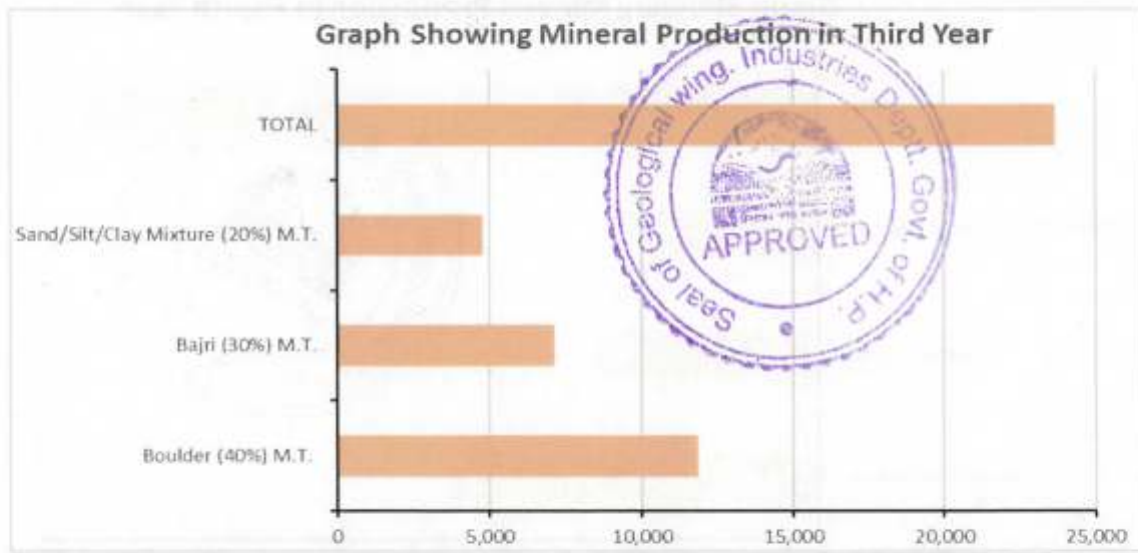


Figure 18: Graph Showing Production of Each Mineral in Third Year

- i. A total of 23,625 metric tonnes of net useful material will be produced, this comprises of 11,813 metric tonnes of boulder 7,087 metric tonnes of bajri.
- ii. 4,725 metric tonnes of inseparable mixture of sand & silt/clay will be produced.
- iii. A check dam C-3 with dimensions of LXBXH = 20mX1mX2m is proposed can be seen in plate no. 4.

Afforestation – Plantation is proposed in the area outside the H.F.L. of the river bed i.e., the zone where no mining activities will be carried out. The plantation will do the plantation in consultation with the concerned department.

4.2 (d) Development and Production in the Fourth Year (Plate No.-3)

During 4th Year of development and production Programme, mining is proposed in the 10,500 square meters only. The production of each mineral Constituent will be as under: -

Table 13: Showing Production of Each Mineral in Fourth Year

Production of Each Mineral in Fourth Year (In M.T.)	
Boulder (50%) M.T.	11,813
Bajri (30%) M.T.	7,087
Sand & Silt/Clay Mixture (20%) M.T.	4,725
TOTAL	23,625

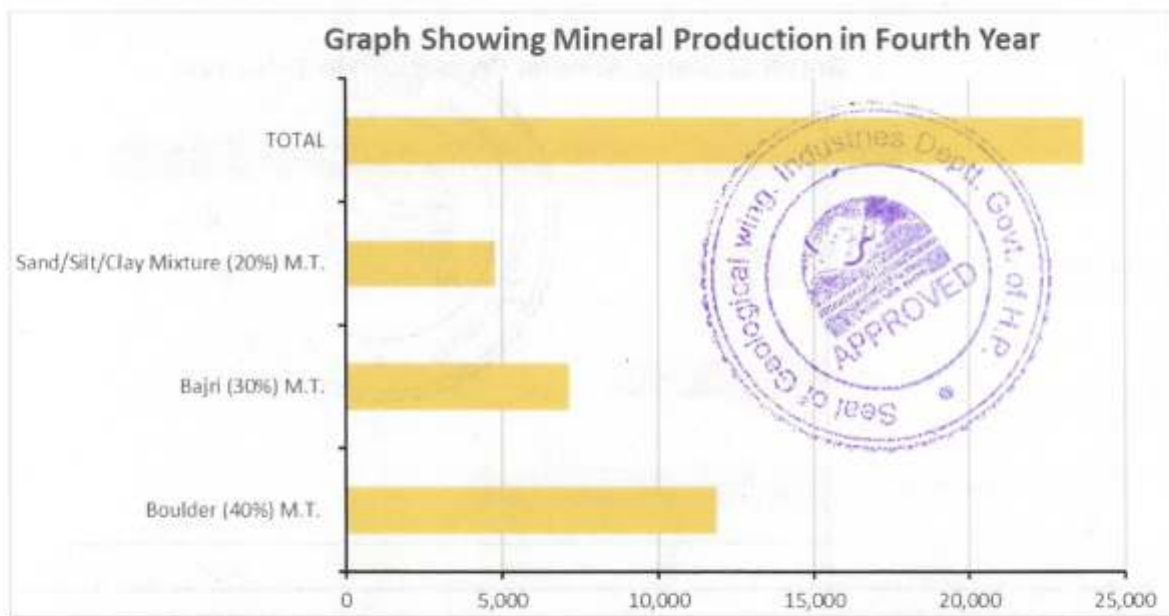


Figure 19: Graph Showing Production of Each Mineral in Fourth Year

- i. A total of 23,625 metric tonnes of net useful material will be produced, this comprises of 11,813 metric tonnes of boulder 7,087 metric tonnes of bajri.
- ii. 4,725 metric tonnes of inseparable mixture of sand & silt/clay will be produced.
- iii. A check dam C-4 with dimensions of LXBXH = 20mX1mX2m is proposed can be seen in plate no. 4.

Afforestation – Plantation is proposed in the area outside the H.F.L. of the river bed i.e., the zone where no mining activities will be carried out. The plantation will do the plantation in consultation with the concerned department.

4.2 (e) Development and Production in the Fifth Year (Plate No.-3)

During 5th Year of development and production Programme, mining is proposed in the 10,500 square meters only. The production of each mineral Constituent will be as under: -

Table 14: Showing Production of Each Mineral in Fifth Year

Production of Each Mineral in Fifth Year (In M.T.)	
Boulder (50%) M.T.	11,813
Bajri (30%) M.T.	7,087
Sand & Silt/Clay Mixture (20%) M.T.	4,725
TOTAL	23,625

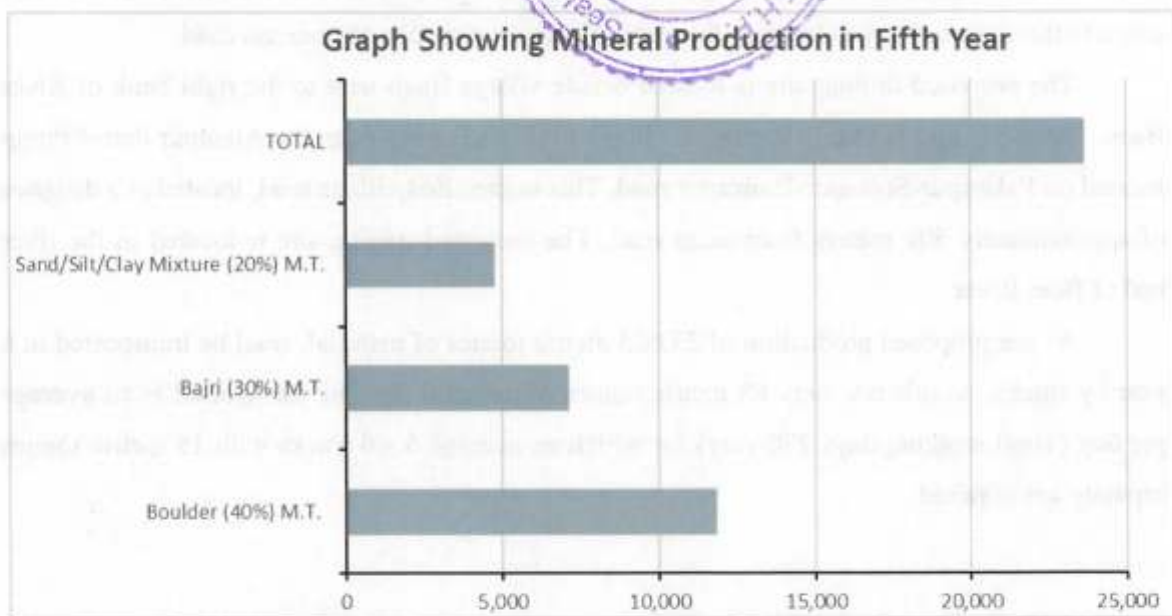


Figure 20: Graph Showing Production of Each Mineral in Fifth Year

- i. A total of 23,625 metric tonnes of net useful material will be produced, this comprises of 11,813 metric tonnes of boulder 7,087 metric tonnes of bajri.
- ii. 4,725 metric tonnes of inseparable mixture of sand & silt/clay will be produced.
- iii. A check dam C-5 with dimensions of LXBXH = 20mX1mX2m is proposed can be seen in plate no. 4.

Afforestation – Plantation is proposed in the area outside the H.F.L. of the river bed i.e., the zone where no mining activities will be carried out. The plantation will do the plantation in consultation with the concerned department.

4.3 End use of mineral

The extracted/collected minerals (Boulder, Bajri and Sand & Silt/Clay) will be sold as such in the open market.

4.4 Detail of Road transport: -

The lease area is in the river bed and there is very low to no traffic from the lease area till the approach road. However, for the transportation of the loaded vehicles to the nearest approach road, the vehicles may pass through private as well as Govt. Land. The project proponent shall made necessary arrangements between land owners (Pvt. & Govt.) and will take care of other issues if any at his own for material transportation to the nearest road.

The proposed mining site is located beside village Bagh near to the right bank of River Beas. The site is approachable through a village road originating from the Alampur Petrol Pump located on Palampur-Sujanpur-Hamirpur road. This unmetalled village road, located at a distance of approximately 500 meters from main road. The proposed mining site is located in the river bed of Beas River.

As per proposed production of 23,625 metric tonnes of material, shall be transported in a year by trucks. At this rate only 88 metric tonnes of material shall be transported at an average per day (Total working days 270/year) for which an average 5 - 6 trucks with 15 metric tonnes capacity are required.

PART –II

ENVIRONMENT MANAGEMENT PLAN

1. BASE LINE DATA

1.1 Detail of Population Distribution

Table 15: Showing Details of Population Distribution

Sr. No.	Name of Villages	Total Population	Male Population	Female Population
1	Alampur	1682	827	855
2	Bagh	328	156	172
3	Jagroop Nagar	554	277	277
4	Sai	841	398	443
5	Shakoh	163	74	89
6	Jangal	173	89	84

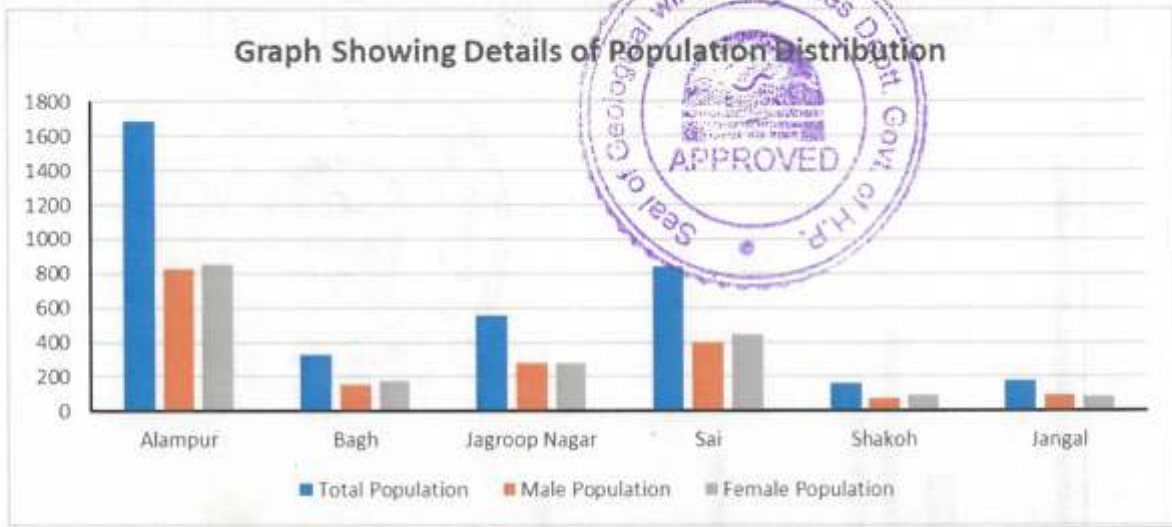


Figure 21: Graph Showing Details of Population Distribution

1.2 Socio Economy of the Village

The general economy of the village is agriculture and animal husbandry based and people go to find out job opportunities in for flung industrial area outside the state of Himachal as there is no industry in the nearby area. Therefore, any job opportunity created by any entrepreneur may be of small magnitude shall add to the economy of the people. The people who

are offered job in the mining as well in transportation of mineral, shall be a local employment at the door and such worker in the off hours, shall be able to look after their retinue agriculture and livestock.

1.3 Land Use Details of Surrounding Villages near the lease area

Table 16: Land Use Details off the lease Area in Hectares

Sr. No.	Name of Villages	Total area (in Hect.)	Forest	Non-agricultural use	Barren Land	Grazing Lands	Miscellaneous Tree Crops	Waste Land	Fallow lands	Current Fallows
1	Alampur	158	20	35	0	1	1	8	47	46
2	Bagh	100	0	76	0	7	1	7	0	9
3	Jagroop Nagar	54	8	0	14	21	0	8	2	1
4	Sai	36	5	10	0	1	1	1	0	18
5	Shakoh	26	5	0	4	12	0	1	0	4
6	Jangal	24	6	10	0	5	0	2	0	1

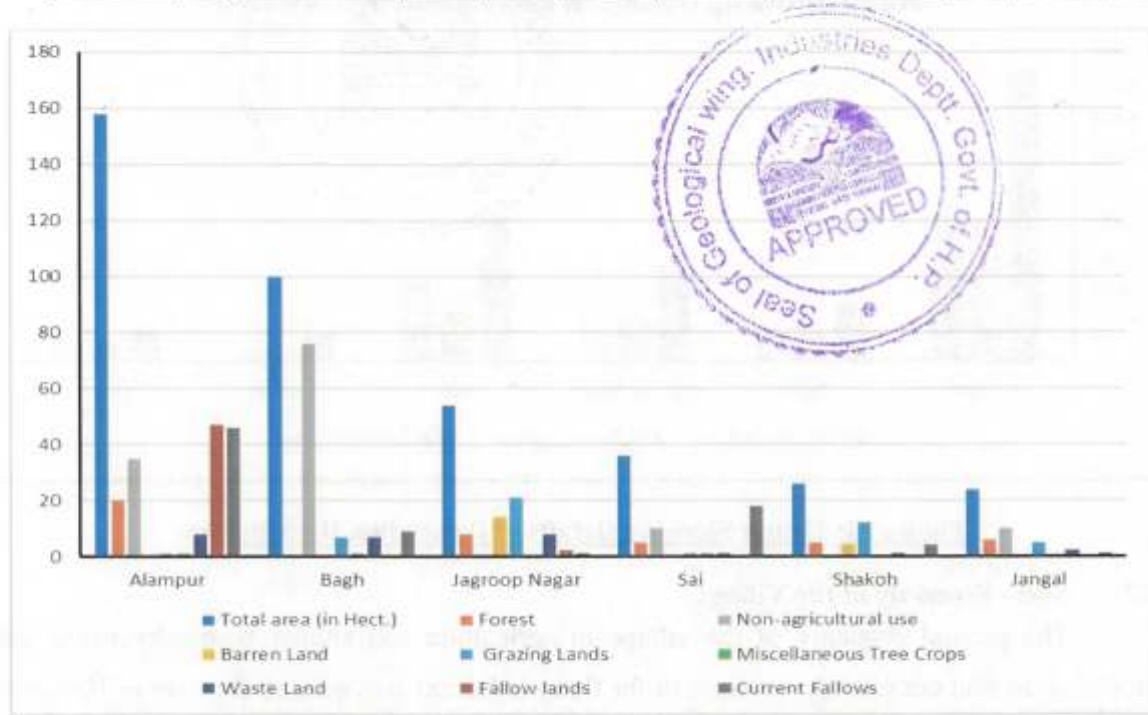


Figure 22: Graph Showing General Land Use Pattern of Surrounding Villages

1.4 AGRICULTURE

Agriculture is the main occupation of the people in the District, having different types of soil and agro-climate conditions which are quite suitable for the growing of various types of cereals vegetables, temperate and stone fruits and other crops. The major crops grown in the district are wheat, Paddy, Maize, Barley, Millet. Besides these, potato and a variety of vegetable like green-peas, cauliflower, cabbage, spinach tomatoes, etc. are also grown in the district. The economy is mostly agrarian and majority of population depend on agriculture and activities allied to it for earning their lively hood. The most of the land is un-irrigated and depends upon the rainy season. The part of the lands are irrigated and the irrigation facilities are provided by lifting water from streams, shallow Dug wells and medium to deep tubs wells in the valley area. The source of water type of irrigation can be classified in to following five classes.

- 1 Lift irrigation scheme
- 2 Well used for irrigation
- 3 Well use for domestic purpose
- 4 Kuhls
- 5 Tube wells

The water flows throughout the year in this khad. The land holding in the district are small and scattered. The farmers grow more than two crops in a year so as to get maximum production from the land. The crop rotation followed in the district is:

- I. Maize- Toria-Wheat
- II. Maize-Potato-Potato
- III. Maize- Toria-Wheat-Baisakhi Moong
- IV Paddy Wheat
- V Maize-Wheat

Wheat and Maize are major crops of the district. These are followed by gram, Paddy and other pulses. Besides these, Barley, Ragi, Mustered, Seasmum and Sugarcane are also grown in the district. Peas, Carrot, Cabbage, Ladyfinger, Tomato, Brinjal, Capsicum, Cauliflower, Cucumber, Pumpkin etc. Vegetables are also grown. About 95% of the total cultivable area in the district is rain fed. Hence production of the district mainly depends upon rain.



Table 17: Table Showing Crop Pattern Surrounding lease Area

June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Maize				Wheat				Maize			
Maize			Toria		Wheat				Maize		
Maize			Patato		Wheat				Maize		
Maize			Potato		Potato				Maize		
Bhindi				Cauliflower				French Bean/Tomato/brinjal/CapsicumCucubits			
			Sesame					Sarson/Raya/G.Sarson			
Ginger/Caucasia/Turmeric			Potato		Wheat				Ginger		
Paddy					Wheat						
Paddy					Barseem						
Paddy					Potato						
Kulthi Mash					B. Sarson/Raya/G. Sarson/Taramira(Eruca Sativa)						
Mash					Wheat						
Maize+ Mash					Wheat						
Arhar											

Table 18: Table Showing Agriculture Area Under Major Crops, District, Kangra

(2017-18)

In Hectares	Wheat	Maize	Rice	Barley	Pulses	Chillies	Ginger	Oil Seed
Production	86828	56610	36511	2566	4170	2	23	2383
Percentage Area	45.92	29.94	19.31	1.36	2.21	0.00	0.01	1.26

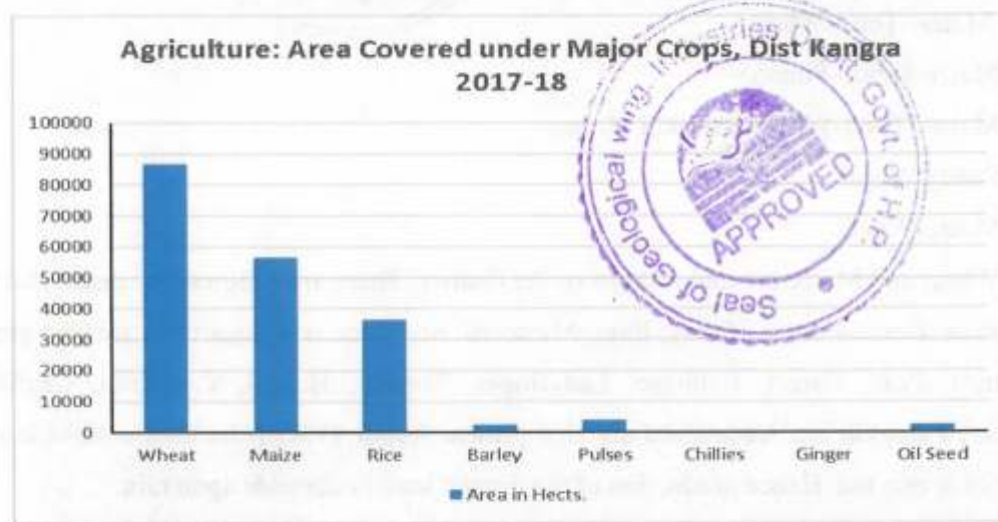


Figure 23: Graph Showing area under Major crops in Kangra District (2017-18)

Table 19: Table Showing Agriculture Area Under Major Crops, District, Kangra (2017-18)

In Hectares	Wheat	Maize	Rice	Barley	Pulses	Chillies	Ginger	Oil Seed
Production	86828	56610	36511	2566	4170	2	23	2383
Percentage Area	45.92	29.94	19.31	1.36	2.21	0.00	0.01	1.26

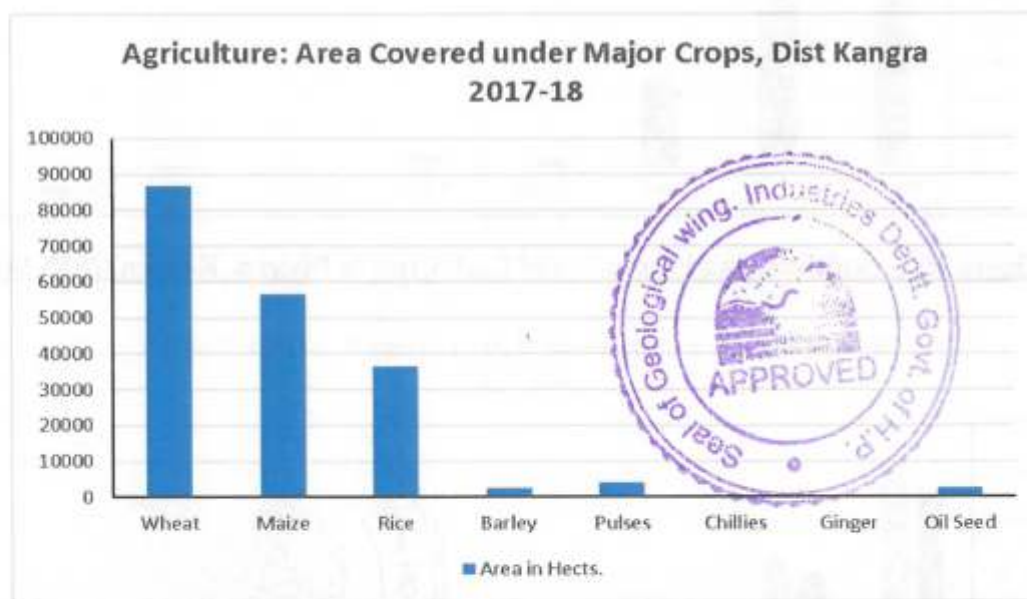


Figure 24: Graph Showing area and production under Major crops in Kangra District (2017-18)

Table 20: Table Showing Production of Each Crop In District Kangra (2017-18)

In Hectares	Wheat	Maize	Rice	Barley	Pulses	Chillies	Ginger	Oil Seed
Production M.T.	190985	125815	50512	4958	8038	1	162	1377
Percentage Area	50.02	32.95	13.23	1.30	2.11	0.00	0.04	0.36

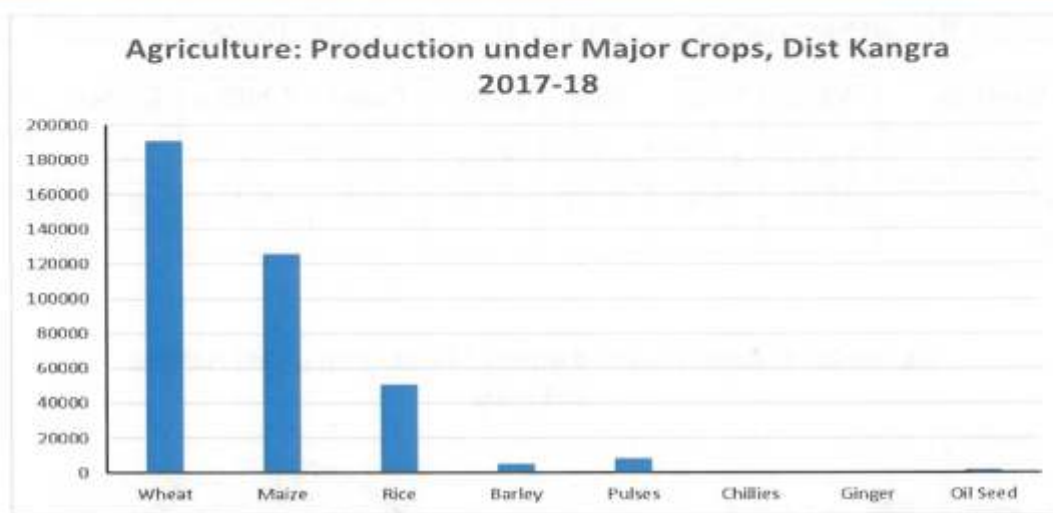


Figure 25: Graph Showing Production of Each Crop In District, Kangra (2017-18)

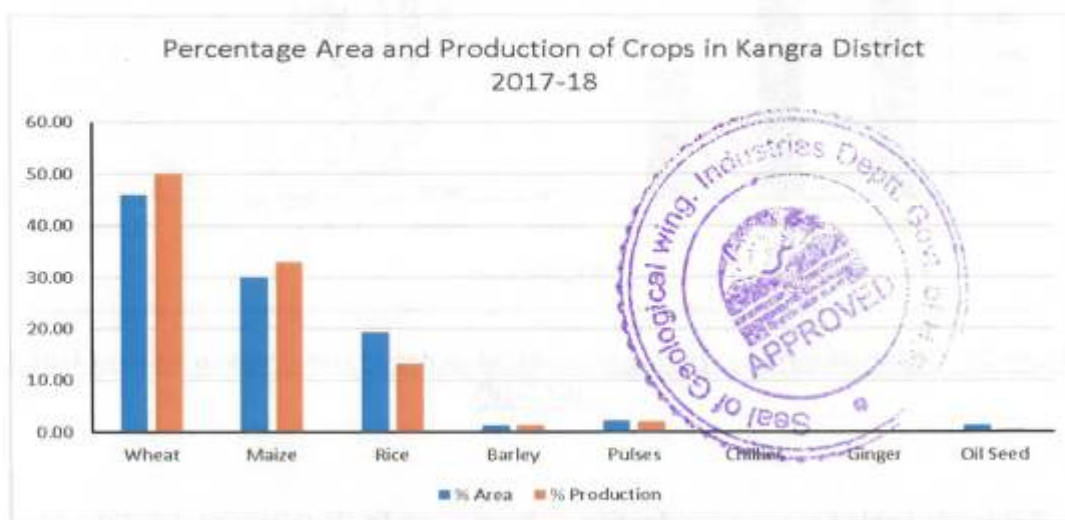


Figure 26: Graph Showing Percentage production and Percentage Area Of Produce Of Each Crop in District, Kangra (2017-18)

Table 21: Table Showing Area in Hects Under & Production In Tonnes Of Vegetables

Name of vegetable	Potato	Other vegetables
Area under crop in Hects	1400	17920
Production in tonnes	8283	181537

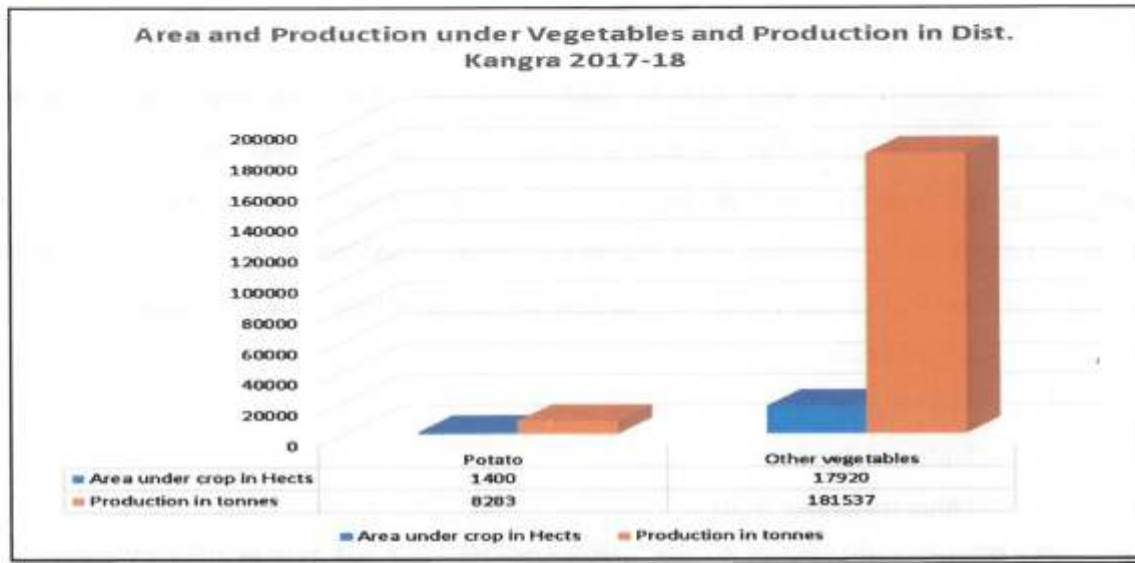


Figure 27: Graph Showing Area in Ha Under & Production in Tonnes Of Vegetables in District Kangra (2017-18)

Table 22: Table Showing Net Irrigated Area of The State During 2009-10 To 2015-16

Year	Canals	Tanks	Wells & Tube Wells	Other Sources	Total Area in Ha.
2009-10	4107	701	15744	86997	107549
2011-12	4390	236	15752	73172	93550
2013-14	4046	283	17432	86091	107852
2015-16	4104	149	19357	81966	105576



Figure 28: Graph Showing Net Irrigated Area of The State During 2009-10 To 2015-16

1.5 Horticulture

The topography and agro-climatic conditions of the district are quite suitable for the productions of various fruits. The topography of the district can be grouped into three categories namely High hill areas located at the higher elevation mid hill areas and low lying valley areas. Fruits of various kinds depending upon the terrain climatic condition and soil are grown in the district. The Main horticulture produce of the area can be classified into four categories

- 1 Citrus Fruits
- 2 Sub-tropical Fruits
- 3 Nuts and dry fruits
- 4 Other temperate fruits

The following table shows the area under cultivations of each fruit in district Kangra.

The area under each fruit and percentage area to total district area as well as the percentage of the area under fruit in each category is given in the table below. The table also shows the production of each fruit in district Solan. Also, the tables below show the area covered under each category and the total production as per survey.

Table 23: Table Showing Production (In MT) Under Each Category of Fruits in Dist. Kangra (Year 2014 to 2019)

Year	Other Tropical Fruits	Nuts & Dry	Citrus	Other Sub Tropical Fruits	Total Production
2014-15	2953	275	12720	28218	44166
2015-16	3067	289	16224	32606	52186
2016-17	2424	214	16057	27494	46189
2017-18	2010	238	14676	19153	36077
2018-19	1877	215	15951	23386	41429

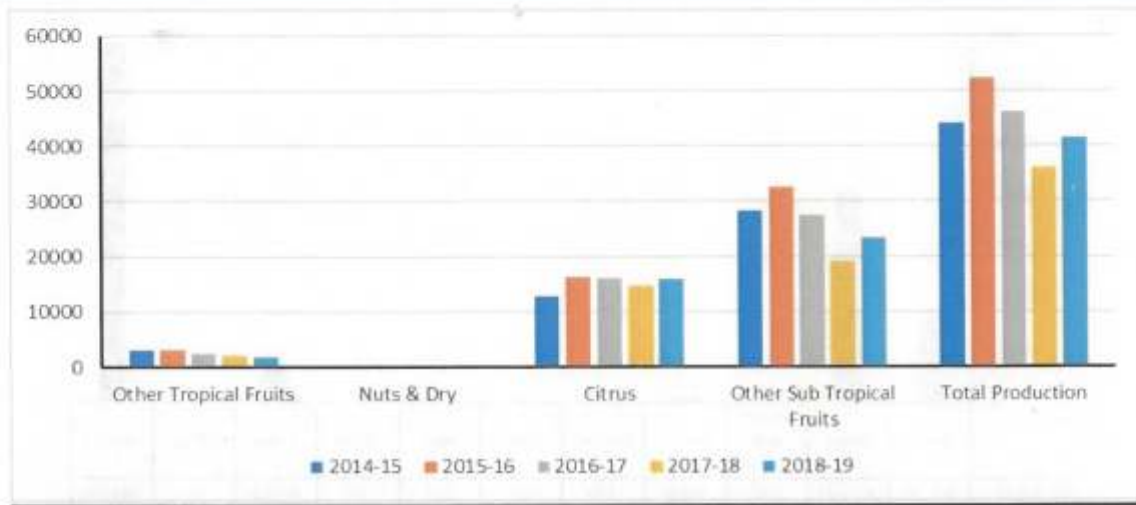


Figure 29: Graph Showing Production (In MT) Under Each Category of Fruits in Dist. Kangra (Year 2014 to 2019)

1.6 Animal Husbandry

Livestock is the main wealth next to agriculture of the predominant population of the district. The entire terrain in the district is mountainous with high slopes and deep valleys. The development of agriculture, therefore, broadly depends upon the development of animal husbandry. Animal husbandry has several direct and indirect uses for a farmer and so it is an almost integral part of agriculture. To improve the fertility of the soil and to plough the fields, they need animals. Besides this milk and wool is also the need of the people. The people keep the following kind of animals: -

- | | | | |
|---|-------|----|------------------|
| 1 | Cow | 2 | Buffalo |
| 3 | Sheep | 4 | Horse and Ponies |
| 5 | Mules | 6 | Donkey |
| 7 | Camel | 8 | Pigs |
| 9 | Dogs | 10 | Poultry |

Table 24: Showing Animal Husbandry Population Kangra District-2017-18

Name of animal	Sheep	Goats	Horse and pony	Mule	Donkey	Camels	Pigs	Yaks	Dogs	Others	Poultry
Numbers	84628	202694	3781	4068	390	16	637	84	40965	4	344296

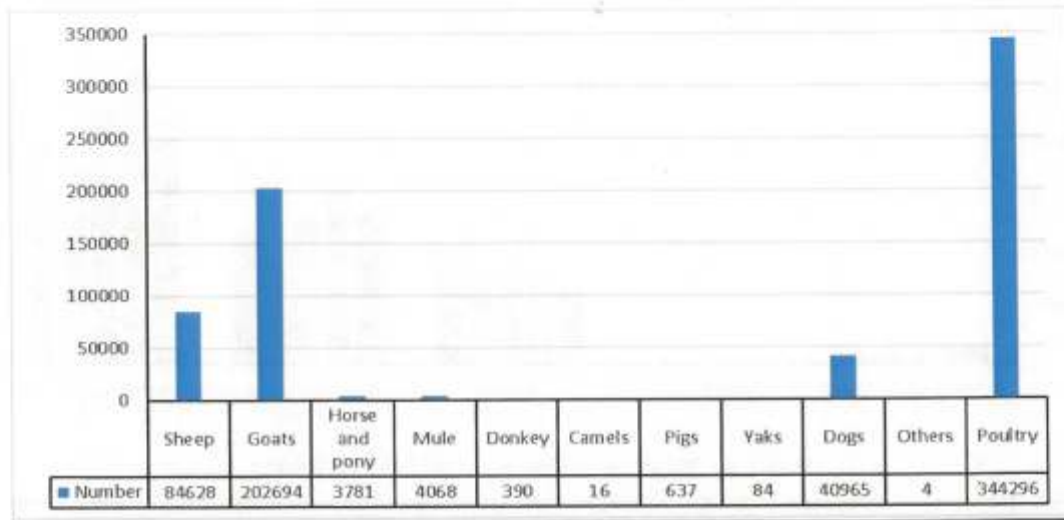


Figure 30: Graph Showing Animal Husbandry Population Kangra District-2017-18

Table 25: Showing Animal Husbandry Population Kangra District-2017-18

Bulls	Cows	Bulls	Cows	Total Cattle	Male	Female	Total
Cross Breed		Indigenous			Buffaloes		
39896	1822351	91316	45566	359129	12648	137071	149719

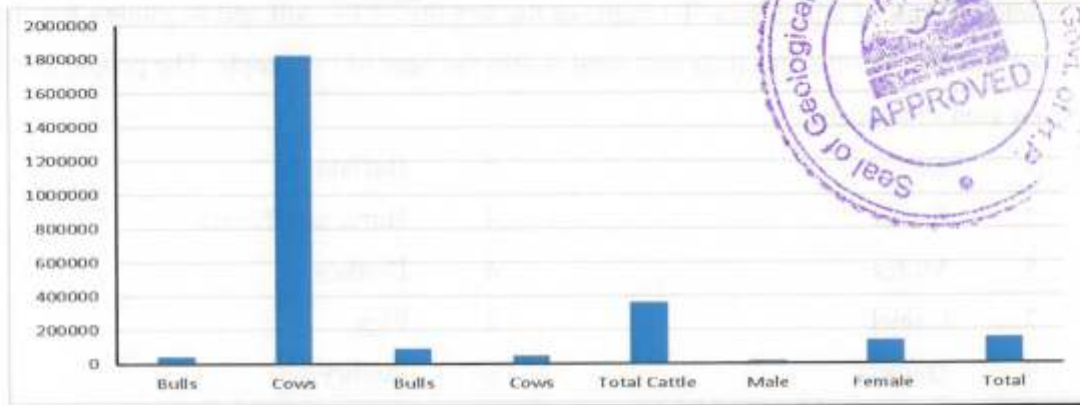


Figure 31: Graph Showing Animal Husbandry Population, Kangra District-2017-18

1.7 Fisheries

Kangra District is blessed with vast and variegated fisheries resources in the vast network of perennial rivers, streams, Khads and fast flowing cold waters, harboring wide variety of tropical species of fish. River system in the District constitutes river Beas and its tributaries

namely Gaj Neugal, Manjhi, Benera and many other perennial small Khads. The following prominent varieties of fish family are found in the river and streams of Kangra District.

Mahaseer

Gid

Trout

Mirror carp

The main source of fishery cultivation is in the Pong Dam reservoir. Fishing in these water is regulated by fisheries legislation under the Himachal Pradesh Fisheries Act, 1976. Fisheries development in Pong reservoir has helped in rehabilitation of the families displaced due to inundation. Small fishes are spotted on the Beas river where the water is deep and stagnant.

Tor putitora (Mahaseer)

- II. Schizothorax plagiostomus (Gulguli)
- III. Lebeo dero (Gid)
- IV. Labeo Calbasu (Kalbans)

Channa punctatus (Sal)

- VI. Mystus seenghala (Singhara)
- VII. Labeo dicheilus (Kunh)



Table 26: Table showing Annual Production of Fisheries at Kangra District

Year	Total Production (M.T.)	Value of Fish Produced (Lakhs)
2014-15	3579.71	3287.37
2015-16	3752.58	3338.57
2016-17	3873.04	3498.25
2017-18	3916.15	5750.18
2018-19	4107.04	5567.72

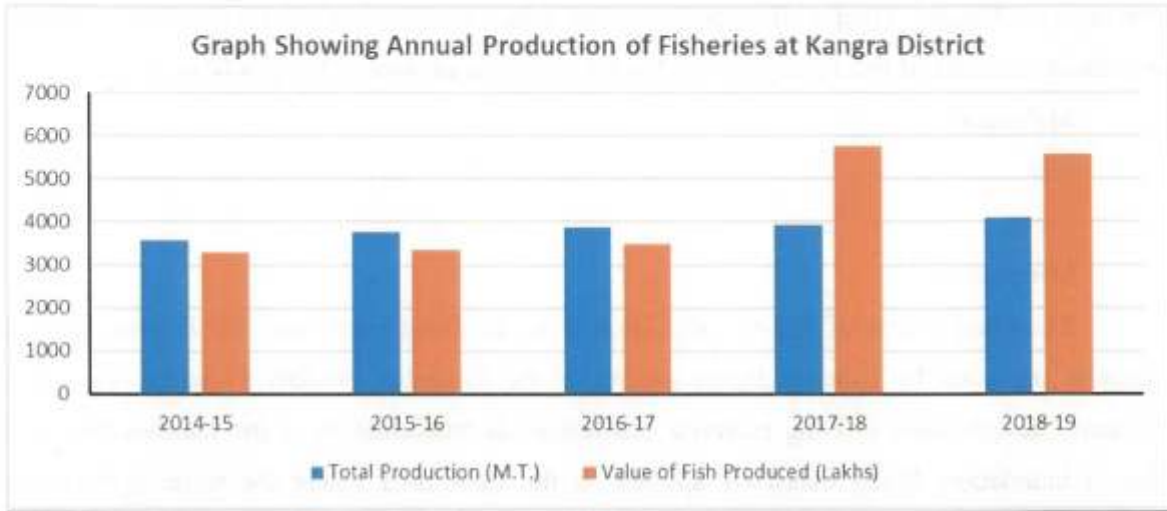


Figure 32: Graph Showing Annual Production of Fisheries at Kangra District

1.8 Flora

Majority of the Kangra district consist of Chil forest. Under the second category of the forest the Khair is predominant species. The third category consists of broad leaf species but have got lot of bushy growth as well.

The forests in the district have been divided in to three categories.

1. Lower Siwalik Chil Pine forest
2. Northern dry mixed deciduous scrub forest.
3. Broad leaved forest.

The most prominent varieties of trees found in the area are

Simbal (Bombex malabaricum)	Mango (Magniferaindica)
Tun (Cedrela toana)	Several species of acasia and albizia
Salambra (Odina wodier)	Termnalia
Jamun (Enginia jambolana)	Larger tour
Bamboo	Shrubs
Vitex	Munj
Ber	Ipomea
Dodenea	

Forests:

The forests play a vital role in shaping the characteristic conditions of an area. Besides, these also influence the economic and social life of the people considerably. The forests provide valuable timber, medicinal herbs, and raw material for industries and also provide employment and play a vital role in conserving the soil and ensure timely rains. The forests of Kangra district have a great variety of vegetation due to variations in altitude, geological formations and climatic factors. The vegetation varies from dry scrub forests at lower elevation to alpine pasture at higher altitude. In between two extremities occur distinctive vegetation zones of chil, ban-oak, mixed coniferous (kail, spruce, fir) and kharsu, oak forests. Kangra forests have a large number of aromatic and medicinal plants which can be utilized for the pharmaceutical and ayurvedic medicines like dhoop, karu/kour, brahmi, kuth/khuth, bankakni etc. The forests of Kangra can be classified into seven main groups.

(i) Ban-Oak Forests:

These forests occur at elevation from 1,600 meters to 2,300 meters. There are, however, a few exceptions like the oak forests of Dhalun near Yol Cantonment, Shahpur, Manjgran and Khaniara where these forests have gone down to about 800 meters elevation.

(ii) Chil Forests:

The chil forests occur between elevations of 800 meters to 1,700 meters. The best growth is, however, between 1,200 meters to 1,700 meters.

(iii) Deodar Forests:

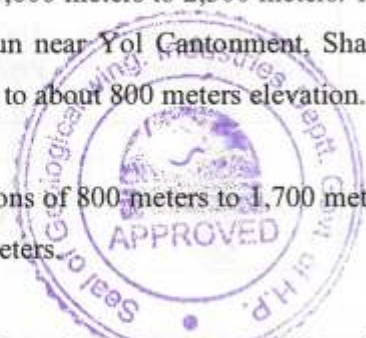
Deodar forests are only found in Dharamkot forests near Mcleodgang town and are exclusively of artificial origin.

(iv) Kharsu Oak Forests:

These forests are found between the altitudinal zone of 2,300 meters to 3,800 meters, the upper most limit of tree growth. This oak generally occurs as a pure crop spruce and fir is found scattered individually or in small groups of sites suitable for these species.

(v) Mixed Coniferous (Kail, Spruce and Fir):

These forests are only patchy between 2,100 meters to 3,000 meters elevation. Kail forests are practically absent. Towards the upper most extremities Kharsu Oak is found



intimately mixed with fir and spruce. The common associates are walnuts, horse chestnut, dun, afar species, alums species etc.

(vi) Alpine Scrub and Alpine Pastures:

This type extends in this division above 3,800 meters elevation and is represented by extensive alpine meadows with a few scattered patches of ever green branchy scrub of junipers acurva and rhododendron. The meadows are mostly composed of perennial herbs and grasses.

(vii) Miscellaneous Scrub Forests:

These forests are mainly found between 600 and 1,200-meters elevation and are composed mainly of tree/scrubs of khâir, kachnar, sins, kakrain, thingan, bil, etc. The under-growth consists of garna, mander. basuti, gandla etc. The forests are generally open, degraded due to over grazing and excessive exercise of various rights.

Table 27: Classification of Forest Area of Dist. Kangra Year (2012-2018)

Classification of Forest Area of Dist. Kangra in Sq. Km						
Year	Reserved Forest	Demarcated Protected Forests	Un Demarcated Protected Forest	Unclassified Forest	Other Forests Total	
2012-13	76	630	1646	414	76	2842
2013-14	76	630	1646	414	76	2842
2014-15	76	630	1646	414	76	2842
2016-17	76	630	1646	414	76	2842
2017-18	70	580	1573	414	908	3131

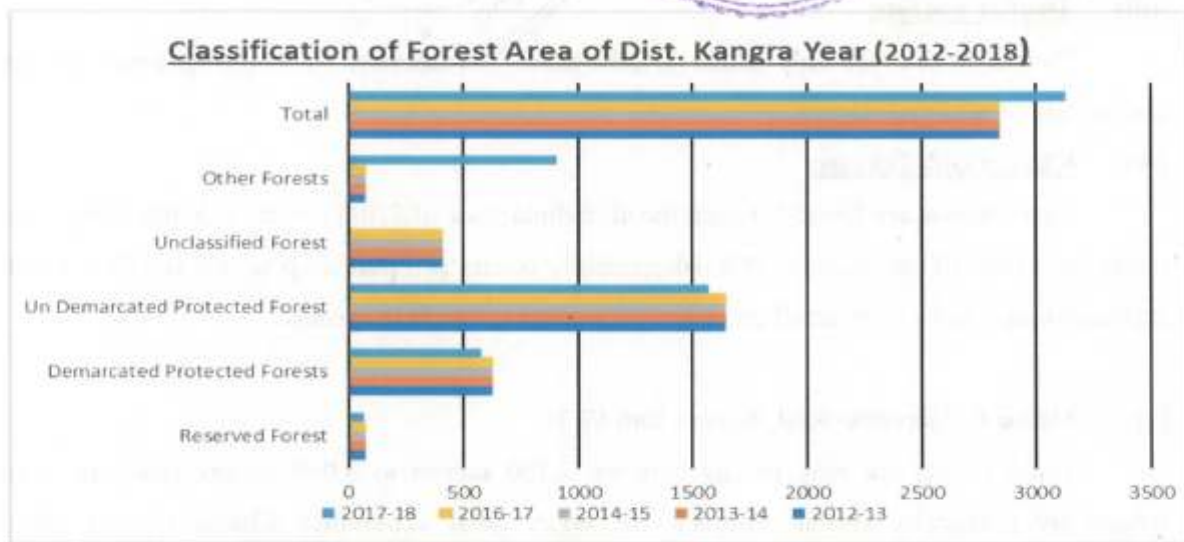


Figure 33: Graph Showing Total Forest Cover in Himachal Pradesh

Fauna

Mammals in Kangra

Zoological Name	English Name	Common Name
Felis bengalensis	Leopard cat	Mirag Bagh
Felis Chane	Jungle Cat	Jangli Billi
Muntucus muntisk	Barking Sear	Kakkar
Vaulpes bengalnsis	Fox	Lomari,Fohiki
Comis aureus	Jackal	Giddar
Macaca mulatta	Ressus monkey	Lal Bandar
Preshytes entellus	Langour	Langour
Hystrix indica	Porcupine	Sehal
Lepus nigricoilis	Hare	Khargosh,Sehru,Farru
Axis axis	Spotted Dear	Chital
Cervus unicolor	Samber	Samber
Hylopetes fimbriatus	Flying Squirrel	
Panthera pardus	Leopard	Cheeta
Paradoxurus hermaphroditus	Indian civet	Sakralu
Felis chaus	Jungle cat	
Hipposiderous armiger	The great Himalyan leafnosed Bat	Chamgadar
Paguma lavarta	Himalyan Palm civet	
BIRDS		
Zoological Name	English Name	Common Name
Milvus migrants	Vulture	Cheel, gidh Eell
Endynamys scolopacca	Koel	Koel
Colombia livia	Pigeon	Kabuttar
Coracias benglalenses	Blue jay	Nilkantha
Colums livia	Hawk	Baj
Francolius francolinus	Black partridge	Kala Tittar
Francolinus pondicerians	Grey partridge	Safed Tittar
Payo crisslatus	Pea cock	Mor

Coturnix columnix	Common quail	Bater
Alectoris graeca	Chakor	Chakor
Crovis splendens	Crow	Kanwa
Protopacula karneri	Parrot	Totta
Picoises macei	Fulvourbreasted pied woodpecker	Kathfoura
Strptopalia decaocto	Ring dove	Ghugi
Strptopalia chinesis	Spotted dove	
Accipiter badius	Shikra	
Aquila rapex vindhian	Tawny eagle	
Dacula bicolor	Green pigeon	
Parus rufomuchalis	Titus	
Picus camus	Black napped woodpecker	Wood pecker
Drycocopus javensis	Woodpecker	
Acidotheres tristis	Common Myna	Ghatari
Terpsiphone paradise	Pradise flycatcher	Choti pinja
Passer domesticus	House sparrow	
Arduelis spinoides	Himalayan green finch	Chiria

Around leased out area and surrounding hills following are the common animals and birds

ANIMALS

Hare	Wild Bore
Jackal	Barking Deer(kakkar)
Monkey	Sambar
Pig	

BIRDS

Chakor	Crow
Red Jungle Fowl	Black Partridge (Kala Tittar)
Grey Partridge (safed Tittar)	Wood pecker

1.9 Climate of the Area

The region has four distinct seasons. The area experiences severe winter from December to March followed by severe summer season lasting from April to June. The area receives rain

fall under the influence of south -west monsoon from July to mid-September followed by post - monsoon season lasting up to November.

The terrain in general has profound influence on the temperatures of a region. The temperature generally rises from the beginning of March till June, which is the hottest month of the year with mean minimum and maximum temperature of 25.6°C to 44°C respectively. With the onset of monsoons by the end of the June temperature begins to fall. The drop in day temperature is much more than the drop in night temperature. The night temperature falls rapidly after the withdrawal of monsoons by mid-September. The month of January is cooler month with the mean maximum and minimum temperature being 24°C and 1.7°C respectively. Under the influences of western disturbance, the temperature falls appreciably during winters and it may go even below 0° C.

Humidity is generally low throughout the year. During summer season, humidity is lowest 36 %. During monsoon months, it goes as high as 80-90%. The highest levels of humidity are observed in the month of August. The average humidity during synoptic hours is 53% and 62% respectively.

Table 28: Showing Monthly Mean Maximum and Minimum Temperature Data for Dharamshla Year 2013

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max. Temp.	16.8	17.7	22.4	25	31.6	28.8	27.6	26.8	27.4	25.7	21.3	16.5
Min. Temp.	6	7.2	11.7	14.1	20	21.2	21.4	20.6	19.9	18	10	6.8

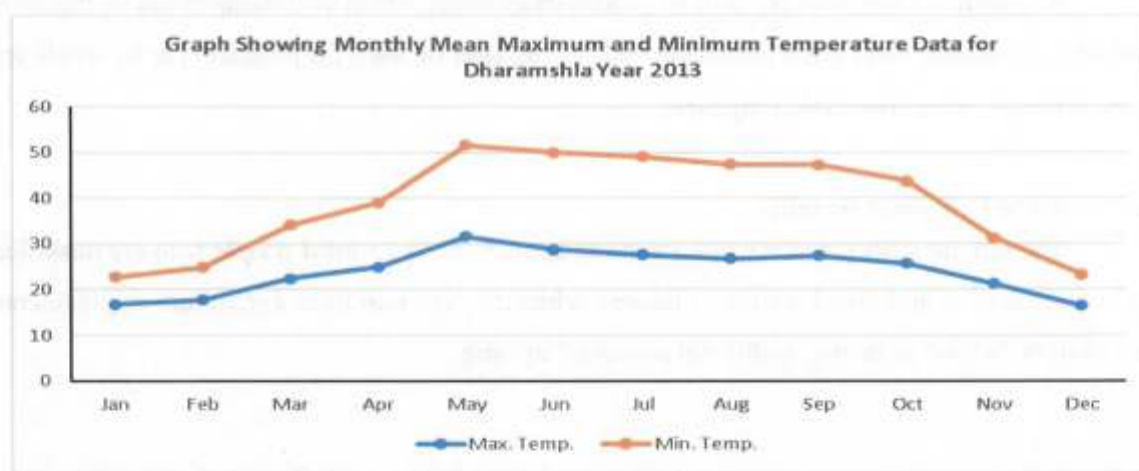


Figure 34: Monthly Mean Maximum and Minimum Temperature Data for Dharamshla Year 2013

(2) ENVIRONMENT MANAGEMENT PLAN

2.1 Impact on Air

The magnitude of mining is not very high and restricted to the limited area as such there is hardly any impact other than dust emission to smaller extent which can be controlled by sprinkling water on the working face so that the dust be suppressed.

2.2 Impact on Water

There is no water source such as well or spring near the lease area. The Beas River is perennial. Therefore, it has no adverse impact on the flow of the river; neither there is any intake of Kuhl within the lease area or below the lease which could be affected.

2.3 Impact on Noise Level

The area is away from the habitation and the noise shall be caused only by plying tractors/tippers/trucks, which shall be kept under control by proper lubrication and the working would only be done during day time to keep noise level below the permissible limit prescribed. No blasting operations are involved as the process is only to lift the material manually and to load in tractors/tippers/trucks hence, the noise level will not exceed the required level.

2.4 Waste Disposal Arrangement, if Any

A mixture of silt and clay will be produced as waste which will be dumped out of the river bed after consulting local gram panchayat and will be later on used for plantation or by locals for agricultural or other household purposes.

2.5 Socio Economic benefits

The mining shall provide employment to approx. 20 to 25 local people who are unskilled and are in need of additional source of income when they are free from agriculture engagements and shall be helpful in raising additional source of income.

2.6 Transport of Mineral

The lease area is in the river bed and there is very low to no traffic from the lease area till the approach road. However, for the transportation of the loaded vehicles to the nearest approach road, the vehicles may pass through private as well as Govt. Land. The project proponent shall made necessary arrangements between land owners (Pvt. & Govt.) and will take care of other issues if any at his own for material transportation to the nearest road.

The proposed mining site is located beside village Bagh near to the right bank of River Beas. The site is approachable through a village road originating from the Alampur Petrol Pump located on Palampur-Sujanpur-Hamirpur road. This unmetalled village road, located at a distance of approximately 500 meters from main road. The proposed mining site is located in the river bed of Beas River.

As per proposed production of 23,625 metric tonnes of material, shall be transported in a year by trucks. At this rate only 88 metric tonnes of material shall be transported at an average per day (Total working days 270/year) for which an average 5 - 6 trucks with 15 metric tonnes capacity are required.



PART-III PROGRESSIVE MINE CLOSURE PLAN/ RECLAMATION PLAN

1.1 MINE WASTE DISPOSAL

a) Year wise generation of mine waste

As explained earlier the following category of the mineral is generated during river bed mining

- Sand & Silt/Clay mixture

Mixture of sand admixed with silt/clay is inseparable thus will be sold in the open market as per the demand.

b) Cost of Mine Waste Disposal

The silt and clay are generally being inseparable from sand and sold as it is in the open market as per the demand.

1.2 Top Soil Arrangement

There is no top soil available in the river bed.

1.3 Preventive Retaining Structures.

As whole lease area lies in the river bed and no part of the lease area is touches the HFL thus no check dam is proposed.

1.4. Plantation & Re-grassing work

The afforestation programme is the foremost important to improve the environment and ecological balance of the area. Grasses and bushes which have fibrous roots must be grown as these helps in binding of soil and moreover, it provides fodder for the local animals. Furthermore, indigenous trees and plant species will be grown with consultation with the experts, based on the characteristics of soil, topography and climatic conditions. The site for year wise plantation is shown in plate no. 3. The year wise area proposed for plantation is as under:

Table 29: Proposed Plantation and Re-grassing

S. No.	Year	Area in Sq. Mts.	No of Plants
1	1 st Year	1000	Local Grass Seeding and 100 plants
2	2 nd year	1000	Local Grass Seeding and 100 plants
3	3 rd year	1000	Local Grass Seeding and 100 plants

4	4 th Year	1000	Local Grass Seeding and 100 plants
5	5 th Year	1000	Local Grass Seeding and 100 plants
	Total	5000	500

The total cost of plantation and its protection by engaging a part time Gardner shall cost 30,000 per year and in five years; the expenditure shall amount to Rs 1, 50,000. The estimated survival rate proposed to be achieved shall be 80% for plants.

1. Strategy for protection of point of public utility Etc.: -

There is no point of public utility or of interest which need to be protected while under taking mining operations.

2. Man power development: -

Around 20 to 25 unskilled people shall be employed to carry on the mining and associated activities and preference shall be given to employ 100% local people.

3. Use of Mineral: -

The extracted/collected minerals (Boulder, Bajri and Sand) will be sold as such in the open market.

4. Disaster Management & Risk Assessment: -

The mining lease area is the part of a river bed which is prone to some risk hazards but there will not be any major risk hazards associated with the entire extraction process.

The possible risk hazards selected for this project are: -

- Flooding
- Drowning
- Accidents damage caused during mineral extraction, loading, transportation and waste disposal
- Earthquakes

Risk Reduction Recommendations: -

- Mining operation should be stopped during rainy days or monsoon.
- Digging of deep pits should not be allowed.
- Workers should be moved to safer place at the time of flood alert.
- Operations carried out during day time only in good visibility.

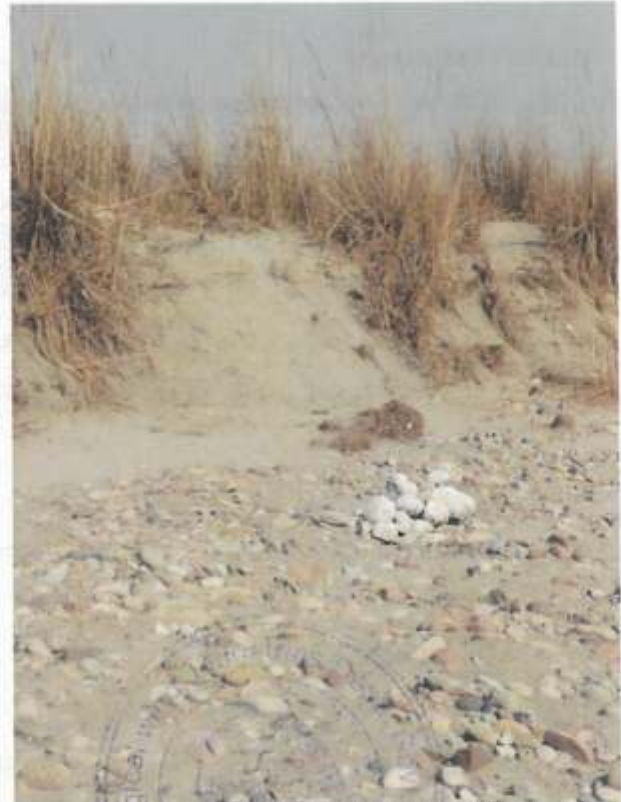
- Overloading never be allowed.
- To assure safe transportation truck drivers with proper driving license should be employed, and maximum permissible speed limit should be ensured and after loading truck should be covered properly to prevent spillage.

5. Any other relevant information: -

The lease area is situated in the river bed of Beas River and the river gets sufficiently replenished during the monsoon /rainy season. Further, a lot of construction activities are going on in the Private and Government sector. Grit and sand are the basic requirement for the constructions and there is necessity of such activity to flourish so that the requirement of material could be met locally.



Coordinates: 31°50'33.10"N, 76°30'57.75"E



Coordinates: 31°50'40.55"N, 76°31'4.31"E

Photographs of the Boundary Pillars



PART-IV
CERTIFICATE

&

DECLARATION



CERTIFICATE

Certified that the provisions of the Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2015 Matliferous Mines Regulation 1961 and other guidelines issued from time to time, in this regard have been complied for the preparation of Mining Plan for extraction of sand, stone & bajri for open sale over an area situated in Khasra No. 740, measuring 01-58-56 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh, of Sh. Andresh Syal, S/o Sh. Pritam Chand, V.P.O. Alampur, Sub-Tehsil Alampur, Distt. Kangra, Himachal Pradesh.

While preparing the mining plan including progressive mine closer plan all statutory rules, regulation, orders made by competent authorities of the State or Central Government or orders passed by Courts have been taken into consideration.

The information provided and the data furnished in this Mining Plan is correct to the best of my knowledge.

Date

Place



Indresh Nath Dhiman,
Sun-Shine Cottage, Floor above the
parking, Near Anchal provisional
store, Ranjhana Road, Sector-4,
New Shimla-171009

Declaration

This is to declare that the Mining Plan including Progressive Mine Closure Plan of mine extraction of Sand, Stone and Bajri over an area situated in Khasra No. 740 measuring 01-58-56 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh, has been prepared with my consent and approval and that we/I shall abide by all commitment there under.

"The Mining Plan" and 'Progressive Mine Closure Plan' complies all statutory rules, regulations, orders made by competent authorities of State or Central Government or orders passed by courts have been taken into consideration' and wherever specific permission is required, shall be obtained.

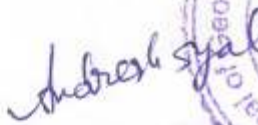
We undertake to implement all the measures proposed in this Mining Plan and Progressive Mine Closure Plan' in a time bound manner.


We have deposited a sum of Rs. Nil with the competent authority of the State Government in form of Fixed Deposit Receipt as financial assurance of the same.

In case of default on my/our part, the approval of Mining Plan may be withdrawn and the aforesaid sum assured may be forfeited.

Date: -

Place: -


Sh. Andresh Syal,
S/o Sh. Pritam Chand, V.P.O. Alampur,
Sub-Tehsil Alampur, Distt. Kangra,
Himachal Pradesh



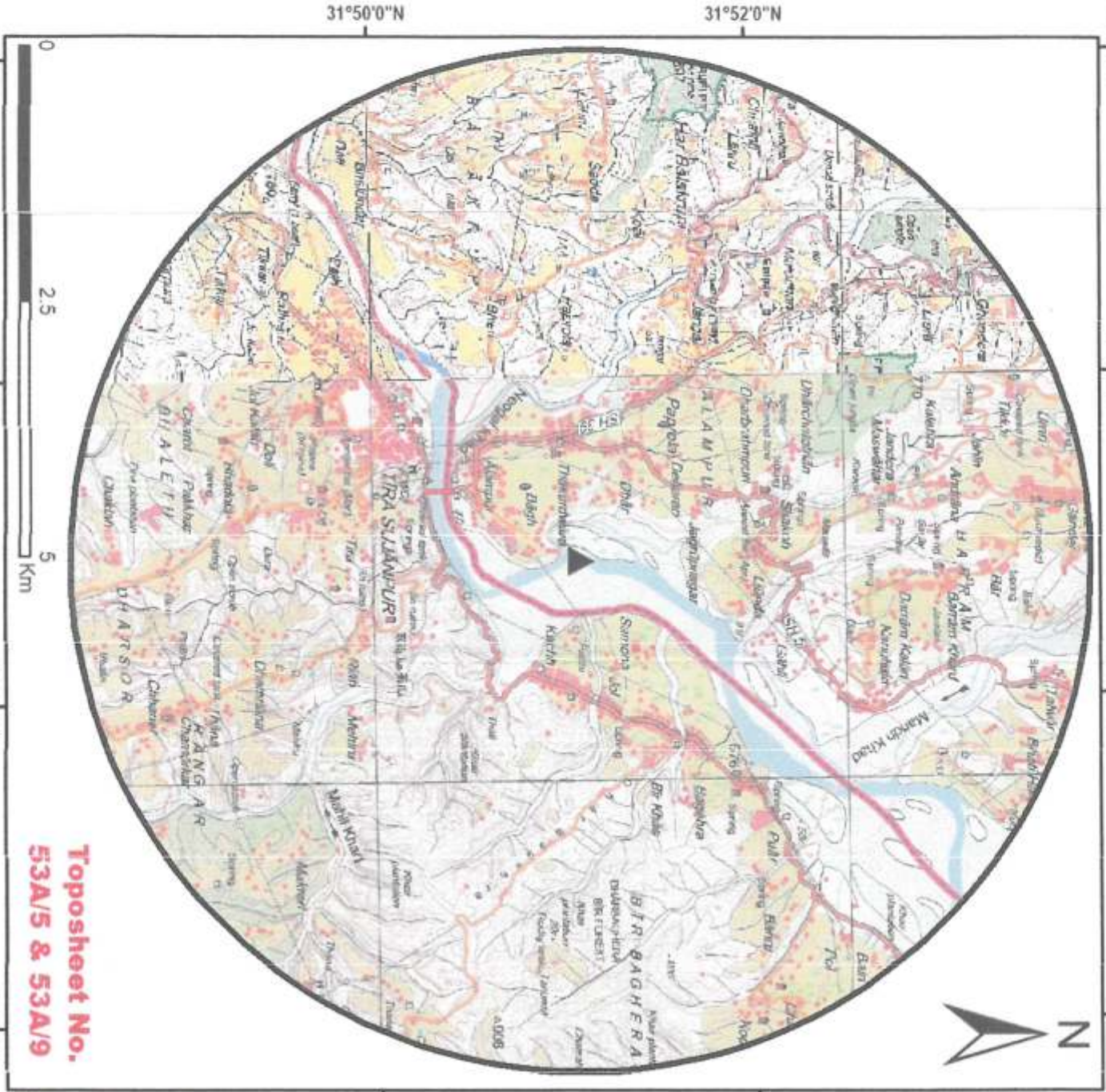
Toposheet Map of Buffer 5 Km Around Lease Area

76°28'0"E







76°30'0"E

76°32'0"E

76°34'0"E



Toposheet No.
53A/5 & 53A/9

- Legend**
-  Lease Area
 -  Buffer 5 Km
 -  River/Stream
 -  Road
 -  Forest
 -  Agriculture

Indresh Nair, Director, (Geol. Services) Faridkot,
Sunshine Cell, Sector-4, New Shimla - 171009 H.P.
Near Anchal Province, Rajhana Road,
R.Q.P. No. H.P./R.Q.P./20/1/2015

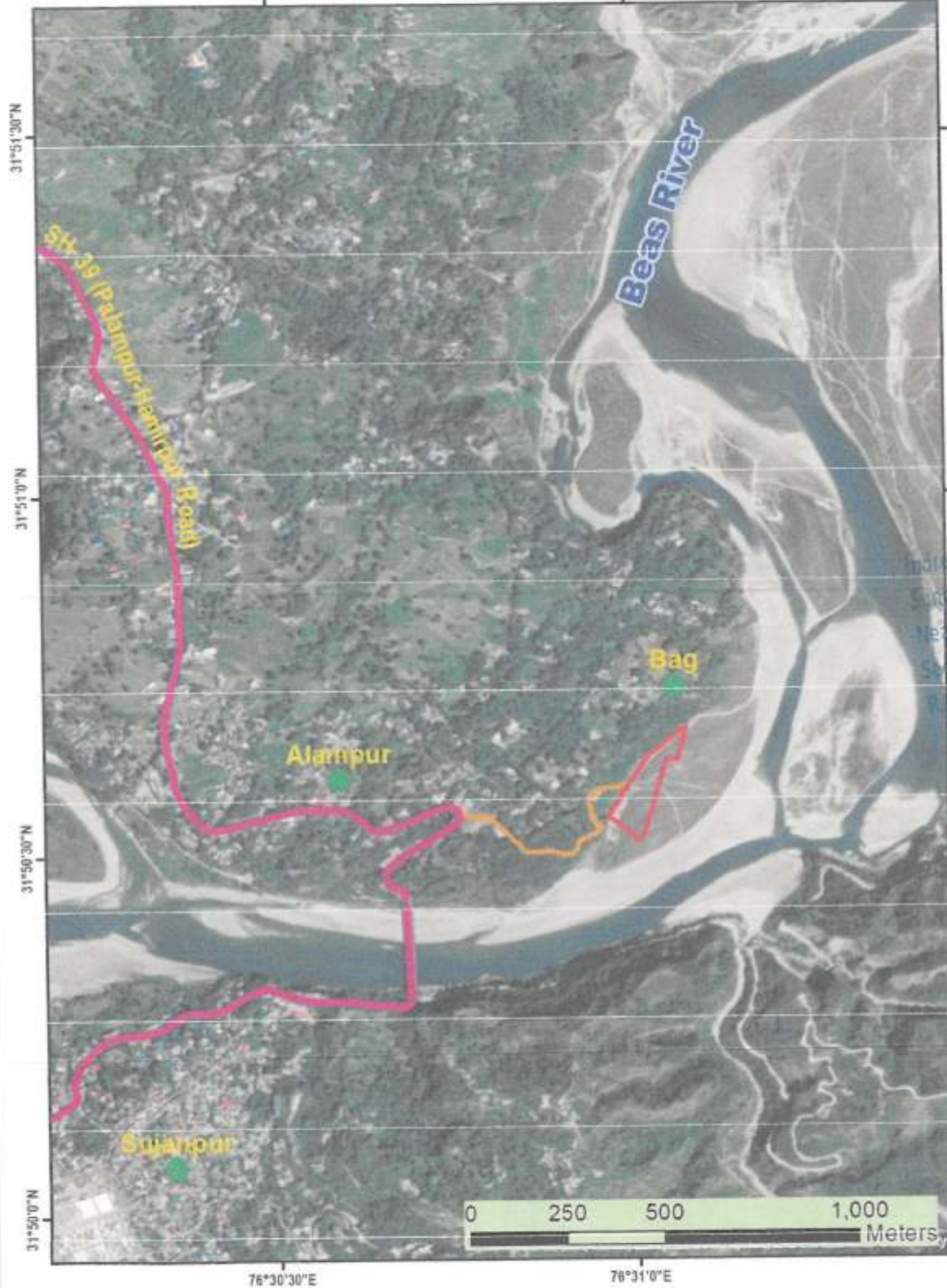
APPROVED

Geological Wing, Industries Deptt. Govt. of Rajasthan

PLATE No. 4.

LOCATION MAP

76°30'30"E 76°31'0"E



Indresh Nath Chittora (Retd.) State Geologist
Sunshine Cottage, 2nd Floor Above Parking,
Near Anchal Provisional Store, Rajhana Road,
Sector-4, New Shimla - 171009 H. P.
R.Q.P. No. H.P./R.Q.P./20/1/2015

Legend

- Lease Boundary
- Village
- Approach Road
- State Highway

GEOLOGICAL INDEX

-  CHANNEL DEPOSIT
-  TERRACE DEPOSIT

TOPOGRAPHICAL INDEX

-  LEASE BOUNDARY
-  SURVEY STATION
-  CONTOUR LINE
-  HIGHEST FLOOD LEVEL
-  EXISTING ROAD
-  HAUL ROAD
-  RIVER FLOW
-  CREMATION SHED
-  PROHIBITED ZONE
-  CHECK DAM
-  WORKING AREA
-  SAMPLE PIT

OWNER: SH. ANDRESH SYAL
 SCALE: 1:3000 (1 CM = 30 METERS)
 CONTOUR INTERVAL: 1.00 METER.

GEOLOGICAL PLAN SHOWING PIT POSITION AT THE 1ST TO 5TH YEAR.

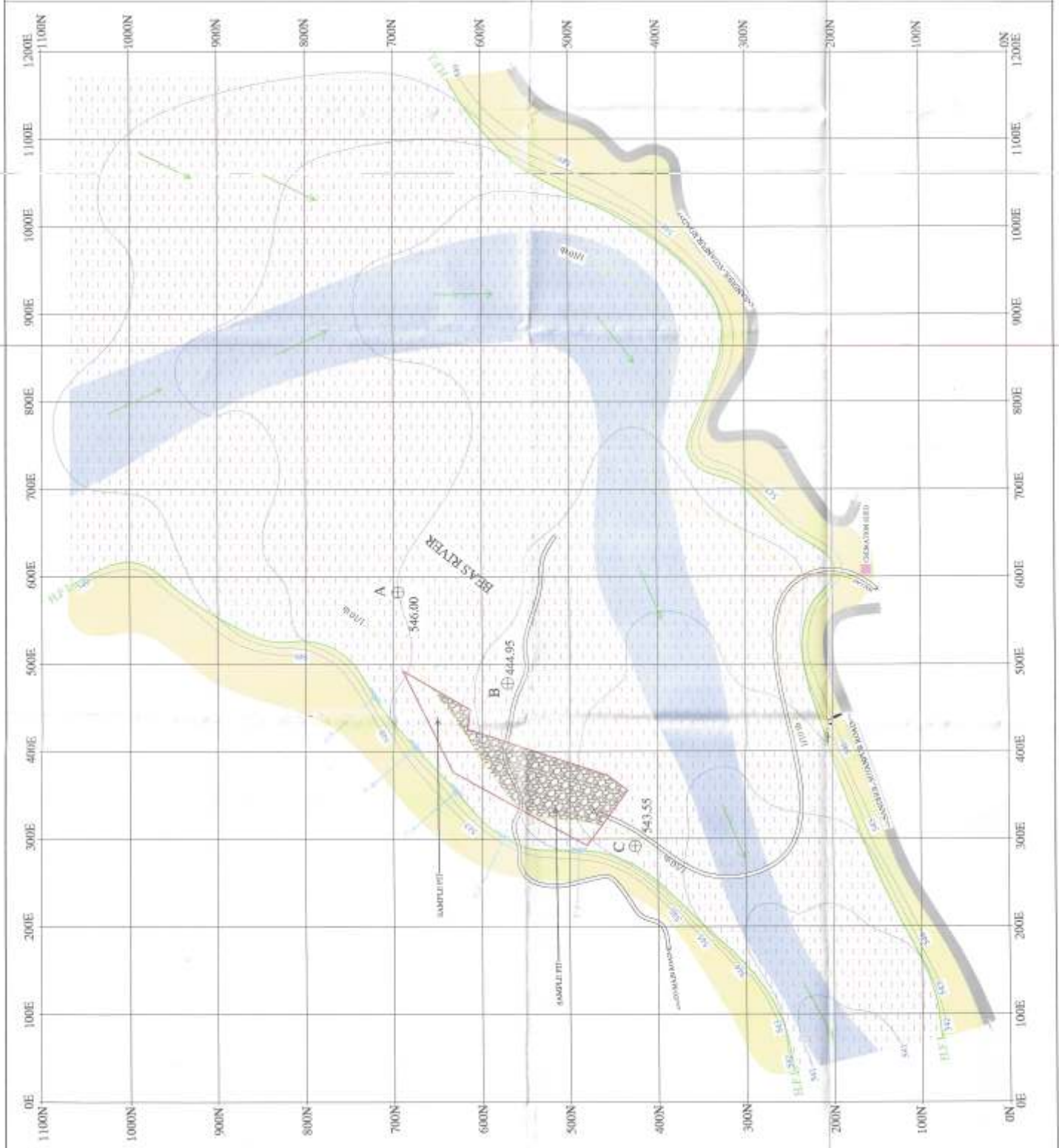
COORDINATES :-
 A = N=41°50'35.90"
 + E=76°31'09.05"
 B = N=31°50'35.77"
 + E=76°31'05.04"



CERTIFIED THAT THE PLAN IS CORRECT



Dr. J. P. SINGH, P.E.
 No. 100, Sector 4, New Friends Colony, New Delhi-110025



GEOLOGICAL INDEX

- CHANNEL DEPOSIT
- TERRACE DEPOSIT

TOPOGRAPHICAL INDEX

- LEASE BOUNDARY
- SURVEY STATION
- CONTOUR LINE
- HIGHEST FLOOD LEVEL
- EXISTING ROAD
- HAUL ROAD
- RIVER FLOW
- CREMATION SHED

OWNER: SH. ANDRESH SYAL
 SCALE: 1:3000 (1 CM = 30 METERS)
 CONTOUR INTERVAL: 1.00 METER.

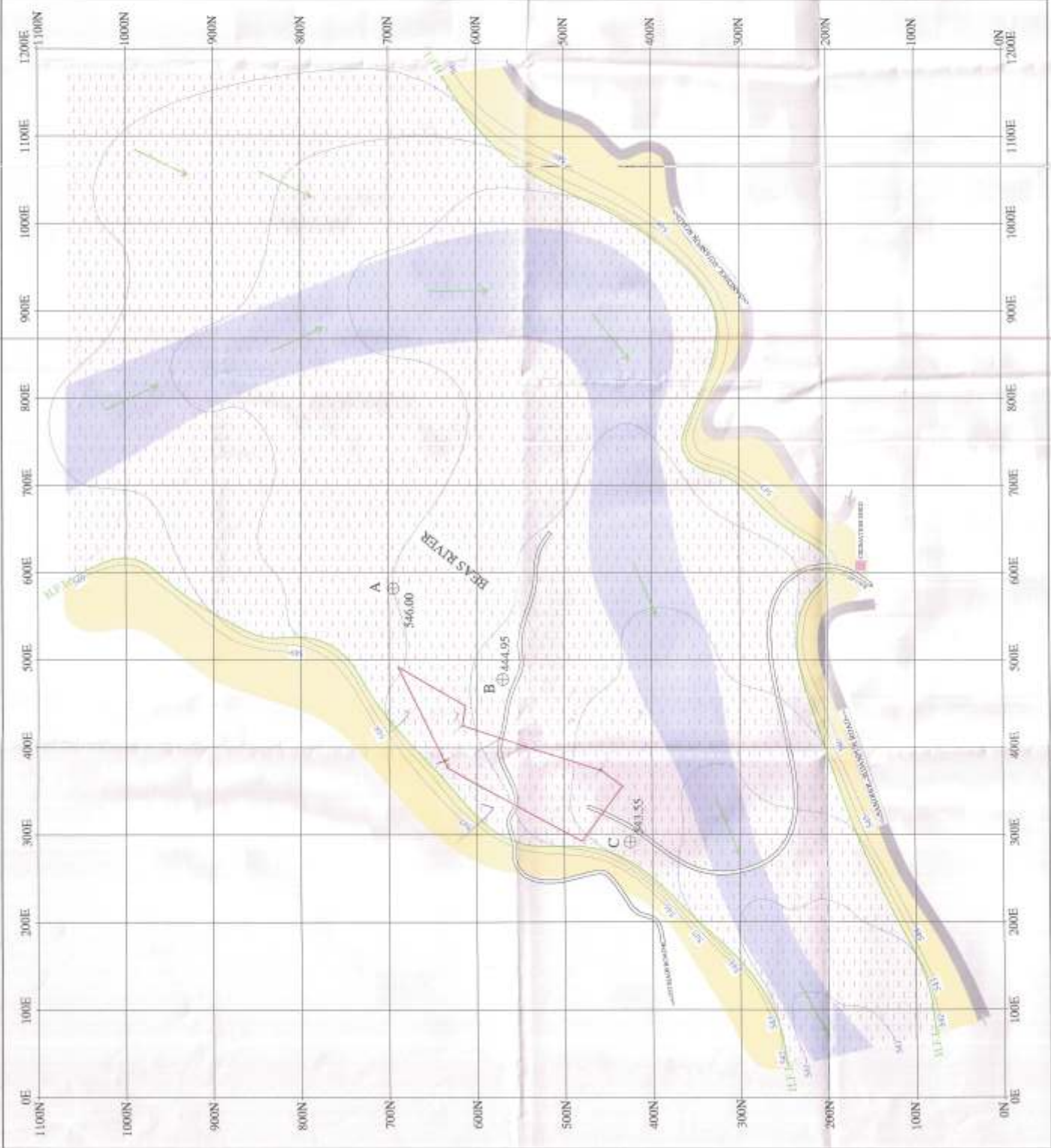
GEOLOGICAL PLAN AND SURFACE FEATURES

COORDINATES :-
 A N-31°50'39.00"
 E-76°31'09.05"
 B N-31°50'35.77"
 E-76°31'05.04"

NORTH



CERTIFIED THAT THE PLAN IS CORRECT



Annexure-V

राजस्व विभाग, हिमाचल प्रदेश - नकल जमाबंदी

एस.सी.ए रसीद संख्या: 4051134920879791

जिला : कांगडा
 तहसील : उप तहसील आलमपुर
 कानूनगोवृत : आलमपुर
 पटवार वृत : आलमपुर
 हदबस्त न. : 473

मोहाल : बाग

साल : 2020-2021

रकबा ईकाई: है-आ-सै

नाम : 00
 पिता/पति : 00

नकल शुल्क : 1.00
 सेवा शुल्क : 30
 कुल शुल्क : 31

खेवट नं.	खतौनी नं.	नाम मालिक व एहवाल	नाम काश्तकार व एहवाल	नाम चाह व दीगर वसायल आबपाशी	नम्बर खसरा हाल	रकबा हर खेत व मिजान खाता मय किस्म अराजी	हिस्सा या पैमाना हकीयत व तरीका बाछ	कैफियत
1	2	3	4	5	6	7	8	9
54	113	अन्देश कुमार, अंशुमन	काश्त स्वयं		798/487	00-21-45	कब्जा व पड़ता	नोट वरुये रपट
46	111	पुत्र प्रीतम चन्द पुत्र वीरवल भाग बराबर स्थानिय वासी			740	गै.मु.खडैकल 01-58-56	बशरह खेवट न. (1)	नम्बर 7 दिनाक 5-09-2003 के अनुसार मिन जानिव प्रीतम चन्द पुत्र वीरवल का रकबा मन्दर्जा खाता हजा के नम्बरान खसरा 487/1-740-743-747/1-750 किता 5 रकबा तदादी 6-34-13 है0 सालम वदले मुवलिग 206808 रुपये मे वहक
					743	गै.मु.दरिया 00-14-70		पुत्र वीरवल का रकबा मन्दर्जा खाता हजा के नम्बरान खसरा 487/1-740-743-747/1-750 किता 5 रकबा तदादी 6-34-13 है0 सालम वदले मुवलिग 206808 रुपये मे वहक
					800/747	गै.मु.दरिया 02-71-95		पुत्र वीरवल का रकबा मन्दर्जा खाता हजा के नम्बरान खसरा 487/1-740-743-747/1-750 किता 5 रकबा तदादी 6-34-13 है0 सालम वदले मुवलिग 206808 रुपये मे वहक
					750	गै.मु.दरिया 01-67-47		पुत्र वीरवल का रकबा मन्दर्जा खाता हजा के नम्बरान खसरा 487/1-740-743-747/1-750 किता 5 रकबा तदादी 6-34-13 है0 सालम वदले मुवलिग 206808 रुपये मे वहक
						गै.मु.खडैकल 06-34-13		पुत्र वीरवल का रकबा मन्दर्जा खाता हजा के नम्बरान खसरा 487/1-740-743-747/1-750 किता 5 रकबा तदादी 6-34-13 है0 सालम वदले मुवलिग 206808 रुपये मे वहक
					5			पुत्र वीरवल का रकबा मन्दर्जा खाता हजा के नम्बरान खसरा 487/1-740-743-747/1-750 किता 5 रकबा तदादी 6-34-13 है0 सालम वदले मुवलिग 206808 रुपये मे वहक
					बटा	2		पुत्र वीरवल का रकबा मन्दर्जा खाता हजा के नम्बरान खसरा 487/1-740-743-747/1-750 किता 5 रकबा तदादी 6-34-13 है0 सालम वदले मुवलिग 206808 रुपये मे वहक
						अकृष्ट गैर मुमकिन। 06-34-13		पुत्र वीरवल का रकबा मन्दर्जा खाता हजा के नम्बरान खसरा 487/1-740-743-747/1-750 किता 5 रकबा तदादी 6-34-13 है0 सालम वदले मुवलिग 206808 रुपये मे वहक

20/02/24
 11/02/24
 20/02/24

1	2	3	4	5	6	7	8	9
								कुल जुमला अराजी 7-08-94 है0 मिन जानिव अन्द्रेश कुमार अशुमन पुत्र प्रीतम चन्द पुत्र वीरवल वहक समारहता कांगड़ा स्थित धर्मशाला वदले मुवलिंग 74475 रु0 टोकन टैक्स कुर्क हो चुकी है नोट वरुये रपट नम्बर 613 दिनांक 29-07-2009 के अनुसार खाता हजा का नम्बर खसरा 684 रकवा तादादी 0-04-38 है0 सालम मय अराजी खाता नम्बर 39- 39/1 कुल जुमला अराजी 7-08-94 है0 मिन जानिव अन्द्रेश कुमार अशुमन पुत्र प्रीतम चन्द पुत्र वीरवल वहक समारहता कांगड़ा स्थित धर्मशाला वदले मुवलिंग 74475 रु0 टोकन टैक्स कुर्क हो चुकी है नोट- वरुये रपट रोजनामचा वाक्यती न0 312 दिनांक 18-04-2012 द्वारा अराजी मन्दर्जा

1	2	3	4	5	6	7	8	9
								खेवट नम्बर 40 मय अराजी खेवटानम्बर 39 नम्बरान खसरा 447- 456-487-497-738- 740-743-747-750 किता 9 रक्वा तादादी 12-86-17 है0 का 1/ 20भाग रक्वा वक्दर 06-34-08 है0 स्थित महाल बाग मिन जानिव अन्देश कुमार, अंशुमन कुमार पुत्रान प्रीतम चन्द जोकि सहायक आवकारी ऐवं कराधान आयुक्त हमीरपुर के पास वदले मुवलिग 206808 /रु0 में वंधक थी, अव वाद अदायगी सालम कर्जा भारामुक्त हो चुकी है।

Certified that this copy has been generated from the database of Revenue Department at
Central Server- HP as accessed by the Lok Mitra Kendra 211375250014 on
20-February-2024

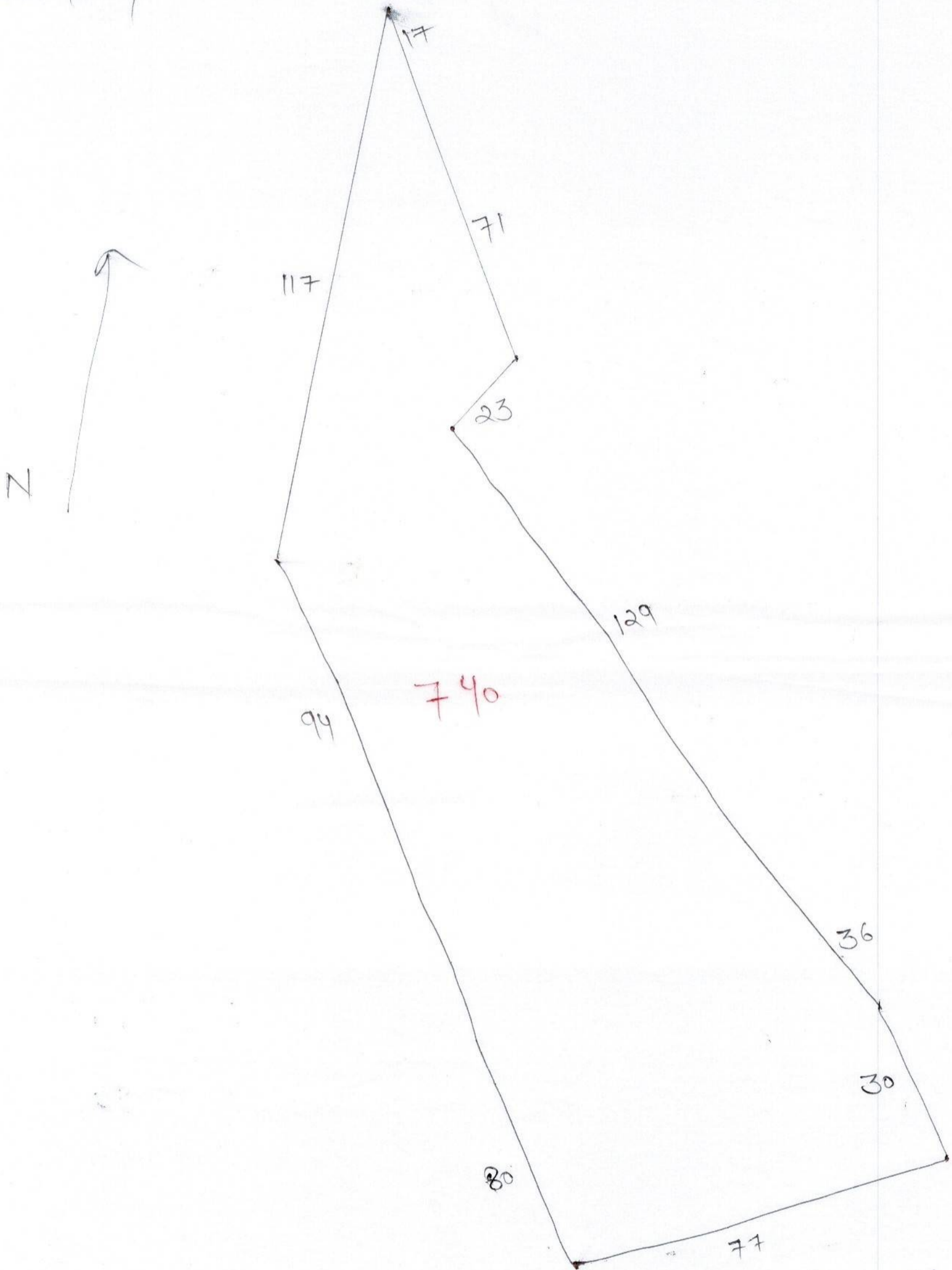
To Verify; enter the Copy No above Bar Code at
<https://himbhoomilmk.nic.in>
For Validity Refer : Notific. No:Rev-C(F)/10-1/2009 Dated 14-Feb-2011

Jam0229231852



मल अकस राजरा किरणार वरीपरत जरीक हकन नर 873 मराल
बाडा जिला काजडा हिरपु

Scale 1cm/cm



Nitish
16/02/2024

No.: Udyog (Bhu) KGR-Andresh-Syal-
Office of the Mining Officer, Dharamshala
Distt Kangra (H.P.)

2443-44

Dharamshala

Dated 19-1-24

To

✓ The Geologist (Zone-II),
Himachal Pradesh,
Shimla-1

Subject:

Regarding Joint Inspection of the area applied for grant of Mining Lease.

Sir,

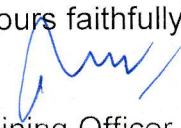
On the subject cited above, it is informed that the Joint Inspection of the area applied for grant of mining lease by Sh. Andresh Syal S/o Sh. Pritam Chand VPO Alampur Sub-Tehsil Alampur Distt Kangra, for collection of Stone Boulder, Bajri and Sand comprising of Kh. No. 740 measuring to 1-58-56 Hect.falling in Mauza Alampur Teh. Jaisinghpur District Kangra was conducted by the Sub Divisional Committee constituted under the chairmanship of representative of SDO (Civil) Jaisinghpur.

Please find enclosed here with Joint Inspection Report prepared along with relevant documents for your kind perusal and further necessary action at your end please.

1. Copy of Joint Inspection Report of the area applied for grant of mining lease (10 Pages) along with annexures.

Encl: As above

Yours faithfully,



Mining Officer
Distt Kangra at Dharamshala

Endst: As above _____

Dated _____

Copy to:

Sh. Andresh Syal S/o Sh. Pritam Chand VPO Alampur Sub-Tehsil Alampur Distt Kangra for information please.


Mining Officer,
Distt Kangra at Dharamshala

PERFORMA FOR THE JOINT INSPECTION OF THE AREA APPLIED FOR GRANT OF MINING LEASE FOR OPEN SALE

1. General

1.1 Name of the applicant		<i>Sh. Andresh Syal</i>
1.2 Address of the applicant	Father's Name	<i>Sh. Pritam Chand</i>
	Village	<i>Bagh</i>
	P.O	<i>Alampur</i>
	Tehsil	<i>Jaisinghpur</i>
	District	<i>Kangra</i>
Pin No		
1.3 Approach and location of the area	<i>The area is located at a distance of approximately 15 Km. from Jaisinghpur and can be approached by Jaisinghpur – Lambagaon-Alampur road up to Alampur and thereafter it can be approached through an unmetteld road.</i>	
1.4 Purpose for which lease is applied e.g. For setting up of stone crusher, Hollow block, Screening unit, free sale etc	<i>Free / Open Sale</i>	
1.5 Date of Joint Inspection	<i>04-12-2023</i>	
1.6 Members present during joint inspection		
Sr. No	Name and Designation	Particulars
1	<i>Sh. Sanjeev Thakur S.D.O (Civil) Jaisinghpur</i>	<i>Chairman</i>
2	<i>Sh. Narender Ranaut Asstt Engineer HPPWD, Balakrupi</i>	<i>Member</i>
3	<i>Sh. Baldev Singh Asstt Engineer IPH, Lambagaon</i>	<i>Member</i>
4	<i>Sh. Duni Chand RO, Jaisinghpur</i>	<i>Member</i>
5	<i>Er. Anshul Kumar Jr.. Environmental Engineer, H.P.S.P.C.B., Dari</i>	<i>Member</i>
6	<i>Shri Rajeev Kalia Mining Officer, Distt Kangra at Dharamshala</i>	<i>Member Secretary</i>



2.Revenue Department

2.1 Status w.r.t. Demarcation of Applied for area

2.2 Detail of area applied

Kh. No	Area (In Hect)	Owner Govt/ private	Kism	Mohal	Mauza	Panchayat	Any other
740	1-58-56	Pvt. Land	Gair Mumkin Daryia	Bagh	Alampur	Alampur	
	1-58-56						

Point of public utility in the area/near by (Village footpath, road, school, residential house, hospital, cattle shed, charitable building, water channel, cemetery/creme nation ground, place of worship etc.

The area applied for grant of mining lease was shown physically by concerned revenue staff. The area under reference exists in the form of bed of Beas river. Since the area applied for grant of mining lease forms bed of Beas river as such no above mentioned structures of community interest observed in or within the prohibited distance norms mentioned under Rules by the committee during the course of inspection.

2.3 Consent of Gram Panchayat

The Gram Panchayat Alampur vide its resolution no. 7 dated 24.7.2023 has issued its consent for proposed mining activities in the area under reference, the photocopy of the same as well as "Karyawahi Register" (proceeding book).

2.4 Whether marked on location plan attached with application If not then please mark

Yes

Any special recommendation with respect to above points]

No

2.5 Any other observation/condition

No

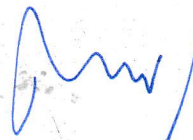
3. Forest Department		
3.1 Types of land i.e Reserve Forest/Protected Forest/ Demarcated Forest/ Non Forest Government Land/ Private Land etc.	<i>Pvt.. Land</i>	
3.2 Whether attract FCA,1980	Yes	<input checked="" type="checkbox"/> No
If yes, then specify Kh. Nos, which attract FCA	<i>N.A.</i>	
<p>3. 3 Whether there is any activity of the forest department in the area such as soil conservation works, nursery plantation, check dams, taming of nallas/stream etc ,if yes please specify and mark on location plan and what precautions are required</p> <p><i>No activity of the forest department in or within the prohibited distance norms such as soil conservation works, nursery plantation, check dams, taming of nallas/stream etc exists / noticed in the area applied for grant of mining lease by the committee during the course of inspection.</i></p>		
<p>3.4 Whether there is any property of Forest Department nearby which may have direct effect if mining is allowed</p>		
<p>3.5 Any other observation/condition</p> <p><i>Since the area under reference is a Pvt. Land, moreover neither any Forest land is situated nearby nor, above said activities of Forest department were noticed in the area hence the representative of Forest Department have no objection w.r.t. proposed mining activities in the area applied for grant of mining lease.</i></p>		

Contd.....4

4. PWD Department						
4.1 Whether any road exist near area					No	✓ Yes
If Yes then	Type of road	Distance from area	Marked on location plan as	Minimum distance required for mining	safe distance required for	
	NH	NA		100 m		
	State highway	300 mtrs		25 m		
	Major Distt Road	-		Not specified		
	Link road	NA		10 m		
	Village road	NA		10 m		
4.2 Whether any road exist within area					Yes	✓ No
	Type of road	Distance from area	Marked on location plan as	Minimum safe distance required for mining		
	NH		N.A.			
	State highway		N.A.			
	Link road		N.A.			
	Village road		N.A.			
4.3 Whether there exist any bridge, culvert etc within area/near area					✓ No	Yes
If yes, then No. of bridges etc.				N.A.		
Whether marked on location plan			yes	If not, please mark		
	Bridge	Minimum distance required		Any special precaution required		
		U/S	D/S			
	Bridge No.1	200 mtr	300 - 500 mtrs			
	Bridge No.2					
4.4 Any other structure of PWD importance, if yes (Please mark on location plan) then specify any special precaution						
No						
4.5 Any other observation/condition						
Since no structure of PWD i.e. road bridge, road, building etc. exists in or within the prohibited distance norms of the area applied for grant of mining lease hence the representative of PWD has no objection w.r.t. proposed mining activities in the area applied for grant of mining lease.						
4.6 Is there any objection if intake point from PWD road to the leased area is used in case lease is grant. If not, whether to allow with conditions						
NA						

5. IPH Department				
5.1 Whether there exist any water supply scheme within/near the area			✓ No	Yes
Type of Scheme	Scheme	Minimum safe distance required		
		U/S		D/S
	Water supply tank	200 mtrs	200 Mtrs	200 mtrs.
	Water supply bore well			
	Lift Irrigation Scheme			
Hand Pump				
Whether marked on location plan		N/A	If not please mark	
Any special recommendation with respect to above schemes NA				
5.2 Any other important point with respect to IPH department, if yes. Please mark on location plan. Whether any special precaution is required , please specify NA				
5.3 Any other observation/condition <i>Since no Gravity / Lift irrigation scheme (LIS) / Water supply scheme (WSS) exists in or within the prohibited distance norms of the area applied for grant of mining lease, hence the representative of I&PH has no objection w.r.t. proposed mining activities in the area applied for grant of mining lease.</i>				

Contd.....6



6. Industries Department		
6.1 Location of applied for area (nearest village/important features)		<i>Alampur</i>
6.2 Purpose of Mining Lease.		<i>Open sale</i>
6.3 Overlapping of areas with any other lease/contract	Yes	<input checked="" type="checkbox"/> No
If yes please give detail		
<i>NA</i>		
6.4 Location of the nearest mining area/quarry		
<i>One mining lease area over an area comprising of Khasra No. 801/747 measuring to 3-89-75 Hects. exists in the name of Sh. Sanjeev Syal for open sale</i>		
6.5 Average daily production anticipated in Metric Tonns		<i>As per approved mining plan</i>
If Yes, please mark on location plan and suggest precaution		<i>N.A.</i>
6.6 Suitability of mineral as per the purpose given above(Give detail)		<i>The minor mineral is suitable for purpose applied for</i>



6.7 Feasibility of Mining

(i) Name of Mineral : *Stone/bajri/sand*

(ii) Type of mining Hill slope/River Bed: *River Bed*

(A) Hill Slope

(i) Average angle of slope: *N/A*

(ii) Nature of rock:

(iii) Scientific mineability considering the orientation of revenue record:

(iv) Availability of mineral w.r.t anticipated production:

(v) Availability of area for disposal of waste:

(vi) Approach to the Mine area:

(vii) Whether areas is prone to land slide if yes then the protection measures needed thereof:

(B) River Bed

(i) Name of river/ stream: *Beas River*

(ii) Width of river bed: *Approx. 1500 Mtrs.*

(iii) Approximate avg. length & Width of the area applied for : *280 x 70*

(iv) Availability of mineral w.r.t anticipated Production:

As per physical observations made during the course of inspection and perusal of Survey Document of Distt Kangra sufficient quantum of minor mineral is available for full term of mining lease. The mineral shall also replenished due to flash floods in rainy season every year.

(v) Availability of area for disposal of waste:

No waste is likely to be generated during process of mining

(vi) Approach to Mining Area

The area can be approached mentioned in the 1.3 of the JIR

(vii) Location of

(i) Habitation along the banks *Approx. 200 mtrs.*

(ii) Agriculture field along the banks: *Approx. 300 Mtrs.*

Any other structure like Transmission Lines, Telephone Lines etc:

No

(viii) Disposal of waste:

Since the mining activities shall involve only collection of minor mineral on the river bed as such no waste is likely to generate during process of mining.

(ix) Area proposed for Plantation:

As per approved mining plan

(c) Additional information in case of renewal of Mining Lease

(i) Report under Rule 18(2) of Himachal Pradesh Minor Mineral rule:

(i) Investment for developing the area *NA*

(ii) Investment on machinery & equipment *NA*

(iii) Labourer Employed *NA*

(ii) Production of mineral for the last tenure: *NA*

(iii) Violation of condition mining noticed in the tenure *NA*

(iv) Detailed note on scientific mining w.r.t working cum *NA*

Environment Management Plan in the last tenure:

6.8 Whether mining can pose threat to existing object of Public Utility or private property? If any, Give detail and precaution required

If the mining activities are confined towards depositional side and the central portion of the khad bed it shall not pose any threat to private/public property

If no, the reason thereof:

NA.

6.9 Any other special point pertaining to Industries Department

Geology

The Beas River flows through moderately steep to low flood plains and cut its course in Kangra district all along its length through Siwalik rocks comprising predominantly massive conglomerate, boulders, cobbles, river borne bajri, sand and clay deposits of channel alluvium. The river bed of Beas khad is occupied with recent deposits comprising predominantly of quartzite boulders, Sand and river borne bajri of Sand stone. The boulder beds are considered the prominent source of river borne deposits and during monsoon season the stream carries heavy sediment load and deposit it annually on the river bed.

This stream has developed a high flood plain near the confluence with Neugal Khad near Alampur and confluence of river Beas with Pong Dam. During flood season the velocity of this stream is checked by the water of Pong dam near Dehra Gopipur and most of sediment load is deposited near the confluence point.

- 1. The area applied for grant of mining lease is bed of Beas river having deposits of loose quartzite boulders transported as a result of flash floods during rainy season.*
- 2. The area applied for grant of mining lease is found suitable for mining activities of minor minerals stone/bajri/sand by the committee and the area holds sufficient deposits of minor minerals in the form of mixed gravel.*
- 3. The quantum of stone / boulders of varying size available in the area can readily cater the raw material demand.*
- 4. As on date one mining lease granted within the radius of 1 Km*
- 5. As per Distt Survey Document the total potential of minor minerals in Beas River is recorded as 3,92,85,000 MT and the annual replenishment is envisaged as 23,57,100 MT, which shows that the sufficient quantum of minor minerals is available in the area to cater the demand of raw material and keeping in view the annual replenishment of river, it is inferred that the minor minerals removed during a particular of time shall be readily replenished during the rainy season. However, the mineral replenishes every years as a result of flash floods during rainy season, as such the reserves are always renewable and shall not exhaust in the area under reference, forming part of bed of river Beas.*

It is further informed that the area applied for grant of mining lease fulfills the conditions and the distance criteria mentioned under Rule 19 (8) of Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2015.

7. H.P. State Pollution Control Board**Summary of method for environmental protection**

The State Pollution Control Board do not have any objection for the grant of the said mining lease subject to the following conditions:

- 1. The unit shall apply for grant of Consent to Establish, Operate & Grant there off as the case may be with the competent authority of HPSPCB.*
- 2. The unit shall adopt all requisite pollution control measures/arrangements to minimize the pollution levels and maintain the specified Environmental Standards/norms as per the Acts, particularly w.r.t. the Air, Water & Noise Pollution and shall carry out all the mining activities scientifically as per the norms.*
- 3. The unit shall obtain Environmental clearance from the competent authority as the case may be.*

c/s Varun Gupta
12/12/23

Arshdeep
JEE, HPSPCB

8. Recommendations

8.1 Whether whole of the area is being recommended for mining

No	✓ Yes
----	-------

If no, please specify the Kh. Nos. being recommended

NA

Any other recommendation in addition to recommendations given at to

It is submitted that an objection has been submitted by the SJVN Ltd. that "the project is under construction and shall be completed in May 2025. On the completion river bed from the village Bandhor to Vill Baag Layanda, Sakoh & Jagroopnagar Distt Kangra in river Beas and up to Paprola & Jangal Distt Kangra in Neugal Khad" (copy enclosed) It is further submitted that the area applied for grant of mining lease comprising of Kh. No.- 740 measuring to 1-58-56 Hect. falling in Mauza Alampur Teh. Jaisinghpur District Kangra has not been acquired by the SJVN Ltd. and a mining lease has also been applied by the SJVN Ltd. adjoining the said applied area and therefore, the objection raised cannot be considered.

Final recommendation of the Committee

Keeping the facts given above, the area applied for grant of mining lease comprising of Khasra No. 740 measuring to 1-58-56 Hects. was found suitable by the Joint Inspection Committee and is being recommended for grant of mining lease subject to stipulations made above

Signatures

SDO(C)

Sub Divisional Officer (C)
Jaisinghpur, Distt. Kangra (HP)

ACF/R.O.

Range Forest Officer
Forest Range Office
Jaisinghpur

Representative of P.W.D.

Assistant Engineer
Balakrupi Sub. Division
HPPWD Balakrupi

Representative of
IPH

Assistant Engineer
Jal Shakti Sub Division
Lambagaon

Representative of
H.P.S.P.C.B.

Asst. Environmental Engineer
HP State Pollution Control Board
Him Parivesh Bhawan, Dari
Dharamshala, Distt. Kangra (H.P.)

Mining Officer

MINING OFFICER
KANGRAAT DHARAMSHALA



हिमाचल प्रदेश
ग्रामीण विकास एवं पंचायती राज विभाग

कार्यालय ग्राम पंचायत-आलमपुर

विकास खण्ड लम्बागांव तहसील जयसिंहपुर, जिला कांगड़ा (हि0प्र0)

क्रमांक.....

उपस्थिति..... 200

दिनांक..... 24/07/2023

अध्यक्षता.....

श्रीमती शकुन्तला देवी

प्रस्ताव संख्या..... 111

विषय :-

सर्व समीत से ग्राम सभा की वेड में प्रस्ताव पास हुआ कि अन्देश खाल सपुत्र श्री प्रीतम-चन्द गांव बडा आलमपुर तहसील जयसिंहपुर जिला कांगड़ा हि0प्र0 अपनी निजी भूमि खसरा क्र 740, 750, 800/747 से रेत, बजरी इत्यादि निकलवाना चाहते हैं, ग्राम सभा आलमपुर को इसमें कोई आपत्ती नहीं है, अतः विरोध प्रस्ताव का ग्राम सभा आलमपुर सर्व समीत से अनुमोदन करती है।

अतः प्रस्ताव की प्रति सेवामे डी.वत डेव आवश्यक कार्रवाई हेतु प्रेषित है।

प्रमाणित प्रोत

सचिव
ग्राम पंचायत आलमपुर
विकास खण्ड लम्बागांव
जिला कांगड़ा (हि0प्र0)

कार्यवाही रजिस्टर (PROCEEDING BOOK)

(नियम 10 और 34 देखें)

ग्राम पंचायत विकास खण्ड जिला

दिनांक
मास
और वर्ष

उपस्थित सदस्यों
का नाम

निष्पादित कार्य का विवरण

प्रस्ताव पास हुआ है केट खान खाना पर
कच्ची सरकारी भूमि के केट बनाना
चाहती है, इस ग्राम सभा को इसमें कोई
भी आपत्ती नहीं है अतः ग्राम सभा
सर्व समीत से विशेष प्रस्ताव का अनुमोदन
करती है।

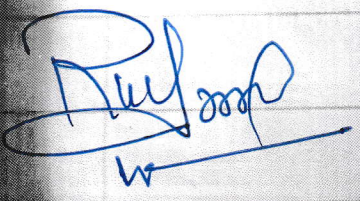
प्रस्ताव सखा ! - पी. न. ओ. सी. वारे।
सर्व समीत से ग्राम सभा आलमपुर की वक
में प्रस्ताव पास हुआ है हमारी ग्राम पंचायत में
जीवन ज्योत मल्टीस्पेशलिटी अस्पताल खोलना
चाहती है इस ग्राम सभा आलमपुर को इसमें
कोई भी आपत्ती नहीं है अतः ग्राम सभा
सर्व समीत से विशेष प्रस्ताव का अनुमोदन
करती है।

प्रस्ताव सखा ! - पी. विषम N.O.C. वारे।
सर्व समीत से ग्राम सभा आलमपुर
की वक में प्रस्ताव पास हुआ है
श्री अन्वेषण स्थल खुला श्री शीलम वक

कार्यवाही रजिस्टर (PROCEEDING BOOK)

(नियम 10 और 34 देखें)

दिनांक	ग्राम पंचायत का नाम	विकास खण्ड	निष्पादित कार्य का विवरण	Signature of the Panchayt President
			<p>गांव वाग डा0 आलमपुर तह0 जैसिदपुर जिला कांगड़ा हि0 पू0 अपनी निधि ग्राम खसरा नं० 140, 150, 200/743 से रेत इत्यादि हेतु निकलवाना चाहते हैं ग्राम सभा आलमपुर को इसमें कोई भी आपत्ती नहीं है अतः डिप्टी मजिस्ट्रेट का ग्राम सभा आलमपुर से सम्मत से अनुमोदन करता है अतः मजिस्ट्रेट की प्राव सेवा से उचित एवं आवश्यक कार्यवाही हेतु प्रेषित है।</p>	जैसिदपुर प्रताप



सचिव
 ग्राम पंचायत - आलमपुर
 वि०ख० लम्बागांव
 जिला कांगड़ा (हि०प्र०) 176108

Date:17.07.2024

Environmental Policy

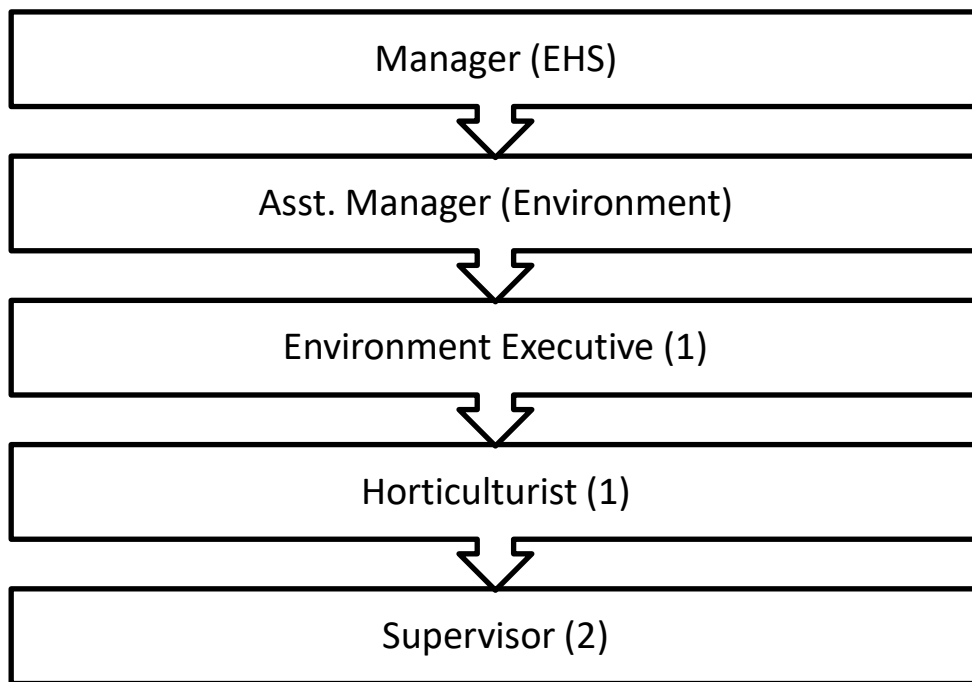
Sh. Andresh Syal, S/o Sh. Pritam Chand, V.P.O. Alampur, Sub- Teh. Alampur, Distt. Kangra, Himachal Pradesh, acknowledges our responsibility to manage the environmental effects associated with the extraction of minor minerals such as sand, stone, and bajri at Khasra No. 740, measuring an area 01-58-56 Hectares, (Private land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, District Kangra, Himachal Pradesh, as we pursue our goal of generating value for our employees and our local communities.

Implementation:

- Comply with applicable environmental laws and regulations at all time; at all locations and at all stages of exploration, development, operations and reclamation.
- Establish and maintain standards, procedures and management controls to ensure that environmental considerations are balanced equally with competing priorities and other key business activities.
- Ensure that all employees and contractors are trained to understand their environmental responsibilities and create an environment that adheres to the Company's Policies, procedures and applicable regulations.
- Hold leadership accountable for good environment performance of our operations and projects. Inherent in that accountability will be the commitment of senior management to provide resources and successfully create an appropriate environment.
- Reward and recognize behavior that supports environmental stewardship.
- Implement procedures to measure environmental performance, including regular inspection by our consultancy to verify compliance with all the applicable regulations.
- Communicate openly with employees, regulatory agencies, the public and shareholders on environmental issues.
- Work proactively with other mining companies, policy makers and the public to define environmental priorities and to contribute to the development of responsible laws and regulations to protect the environment.

- Actively engage with credible third parties to develop continuous improvement in our environmental policies and practices.
- Continuously review environmental achievements and technologies to share and promote implementation of best practices.
- The system of reporting of Non-conformances/ violation of any Environmental Law/Policy will be as per quality management system. The internal audit will be conducted on periodic basis and any Non-conformances/ violation to Environmental Law/Policy will be closed and discussed during Management Review Meetings of board of directors/partners.

Hierarchy of Environment for dealing



(Authorized Signatory)

Sh. Andresh Syal, S/o Sh. Pritam Chand,
V.P.O. Alampur, Sub- Teh. Alampur,
District Kangra, Himachal Pradesh



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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Ambient Air Quality Analysis	AAQ-010324-01	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect.
(Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

Sampling & Analysis Data

Sample Drawn By : NTL Laboratory : Monitoring Period : March 2024 - May 2024
 Sampling Location : Mine Site : Protocol Used : CPCB Guidelines
 Sampling Plan & Procedure : SOP-AAQ/08 : Sampling Instrument Used : Respirable Dust Sampler (PM₁₀), Fine Particulate (PM_{2.5}) Sampler

S. No.	Monitoring Date	PM10	PM2.5	SO ₂	NO ₂	CO
		IS:5182(Part-23)	IS:5182(Part-24)	IS:5182(Part-2)	IS:5182(Part-6)	IS:5182(Part-10)
1	01.03.2024	62.30	26.17	3.80	6.08	0.81
2	04.03.2024	68.50	30.14	4.00	8.75	0.78
3	09.03.2024	58.30	24.49	3.89	9.56	0.65
4	11.03.2024	59.60	25.74	4.88	7.45	0.56
5	16.03.2024	57.40	20.63	3.88	10.23	0.71
6	18.03.2024	62.30	23.65	8.20	12.05	0.74
7	23.03.2024	68.50	28.60	7.94	13.16	0.69
8	26.03.2024	60.58	27.40	6.93	18.16	0.55
9	01.04.2024	78.50	26.50	5.95	10.07	0.83
10	02.04.2024	75.40	31.52	8.96	10.50	0.85
11	06.04.2024	76.89	33.53	9.94	12.31	0.81
12	11.04.2024	52.60	28.40	3.95	6.25	0.76
13	15.04.2024	56.40	22.56	4.83	5.39	0.62
14	18.04.2024	54.10	20.41	4.85	8.43	0.85
15	22.04.2024	58.20	25.60	4.35	9.25	0.76
16	27.04.2024	52.10	20.56	4.83	7.51	0.69
17	02.05.2024	54.30	24.53	3.92	6.58	0.71
18	04.05.2024	56.20	26.50	4.82	10.56	0.62
19	09.05.2024	54.10	27.45	4.83	10.42	0.92
20	13.05.2024	50.40	25.60	4.96	11.35	0.81
21	20.05.2024	54.30	28.45	4.57	6.86	0.48
22	23.05.2024	52.60	20.12	4.85	9.45	0.61
23	27.05.2024	52.50	26.30	6.54	6.32	0.52
24	30.05.2024	57.20	24.10	4.52	10.52	0.48
Min		50.4	20.12	3.8	5.39	0.48
Max		78.5	33.53	9.94	18.16	0.92
Avg.		59.72	25.79	5.42	9.47	0.70
98 percentile		77.76	32.61	9.49	15.86	0.89
NAAQS, For 24 hourly monitoring (except CO for Eight hour)		100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	2 mg/m ³

CHECKED BY: *[Signature]*

AUTHORIZED SIGNATORY

Laboratory : GT-20, Sector-117, NOIDA, Gautam Budh Nagar - 201301

Branch Office :

HARIDWAR | RUDRAPUR | CHANDIGARH | DEHRADUN | PUNE

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Ambient Air Quality Analysis	AAQ-010324-02	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

Sampling & Analysis Data

Sample Drawn By	NTL Laboratory	Monitoring Period	March 2024 - May 2024
Sampling Location	Sujanpur Tira	Protocol Used	CPCB Guidelines
Sampling Plan & Procedure	SOP-AAQ/08	Sampling Instrument Used	Respirable Dust Sampler (PM ₁₀), Fine Particulate (PM _{2.5}) Sampler

S. No.	Monitoring Date	PM10	PM2.5	SO ₂	NO ₂	CO
		IS:5182(Part-23)	IS:5182(Part-24)	IS:5182(Part-2)	IS:5182(Part-6)	IS:5182(Part-10)
1	01.03.2024	63.25	31.14	9.87	11.36	0.56
2	04.03.2024	60.58	27.26	10.34	16.5	0.5
3	09.03.2024	60.88	27.4	11.47	17.61	0.64
4	11.03.2024	61.31	27.59	9.12	15.18	0.73
5	16.03.2024	61.01	27.45	8.56	17.32	0.65
6	18.03.2024	60.87	27.39	10.35	14.12	0.63
7	23.03.2024	60.92	27.41	9.39	12.57	0.5
8	26.03.2024	61.06	27.48	8.35	11.21	0.55
9	01.04.2024	61.12	27.5	11.36	17.63	0.5
10	02.04.2024	60.98	27.44	9.95	16.87	0.64
11	06.04.2024	61.35	27.61	10.21	13.96	0.39
12	11.04.2024	54.89	29.7	8.64	14.71	0.56
13	15.04.2024	51.23	29.25	12.63	15.35	0.5
14	18.04.2024	56.58	29.93	9.99	12.47	0.49
15	22.04.2024	67.38	30.29	8.69	14.85	0.48
16	27.04.2024	65.81	29.61	9.41	11.63	0.56
17	02.05.2024	66.84	30.06	8.25	12.29	0.58
18	04.05.2024	64.95	29.16	11.26	13.17	0.5
19	09.05.2024	65.37	29.48	9.16	16.38	0.65
20	13.05.2024	60.75	27.34	10.39	17.09	0.67
21	20.05.2024	61.31	27.59	9.81	15.61	0.64
22	23.05.2024	60.81	27.36	9.1	12.78	0.64
23	27.05.2024	61.12	27.5	9.59	15.63	0.65
24	30.05.2024	60.53	27.24	10.04	17.09	0.57
Min		51.23	27.24	8.25	11.21	0.39
Max		67.38	31.14	12.63	17.63	0.73
Avg.		61.29	28.34	9.83	14.72	0.57
98 percentile		67.13	30.75	12.10	17.62	0.70
NAAQS, For 24 hourly monitoring (except CO for Eight hour)		100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	2 mg/m ³

CHECKED BY

AUTHORIZED SIGNATORY

Laboratory : GT-20, Sector-117, NOIDA, Gautam Budh Nagar - 201301

Branch Office :

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Ambient Air Quality Analysis	AAQ-010324-03	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect.
(Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

Sampling & Analysis Data

Sample Drawn By : NTL Laboratory : Monitoring Period : March 2024 - May 2024
 Sampling Location : Chowki : Protocol Used : CPCB Guidelines
 Sampling Plan & Procedure : SOP-AAQ/08 : Sampling Instrument Used : Respirable Dust Sampler (PM₁₀), Fine Particulate (PM_{2.5}) Sampler

S. No.	Monitoring Date	PM10	PM2.5	SO ₂	NO ₂	CO
		IS:5182(Part-23)	IS:5182(Part-24)	IS:5182(Part-2)	IS:5182(Part-6)	IS:5182(Part-10)
1	01.03.2024	53.36	19.21	13.64	12.32	0.52
2	04.03.2024	53.26	19.17	14.42	13.82	0.47
3	09.03.2024	53.3	19.19	13.79	14.98	0.6
4	11.03.2024	52.45	18.88	14.45	17.63	0.68
5	16.03.2024	60.12	19.18	10.71	15.78	0.6
6	18.03.2024	54.31	19.55	12.78	12.48	0.59
7	23.03.2024	53.38	19.22	10.99	13.6	0.47
8	26.03.2024	53.37	19.21	10.66	12.53	0.52
9	01.04.2024	53.42	19.23	11.62	12.97	0.47
10	02.04.2024	54.11	19.48	11.26	17.66	0.6
11	06.04.2024	53.45	19.24	10.87	16.28	0.37
12	11.04.2024	52.62	18.94	13.58	13.63	0.52
13	15.04.2024	60.29	19.54	10.82	15.57	0.47
14	18.04.2024	49.84	18.47	12.51	14.08	0.46
15	22.04.2024	54.37	19.57	11.48	12.61	0.45
16	27.04.2024	46.42	18.43	10.46	17.5	0.53
17	02.05.2024	52.31	18.83	13.13	18.55	0.54
18	04.05.2024	53.46	19.25	14.21	17.52	0.47
19	09.05.2024	53.63	19.19	13.37	20.55	0.61
20	13.05.2024	52.38	18.83	11.22	19.21	0.63
21	20.05.2024	53.66	19.32	11.03	15.69	0.59
22	23.05.2024	54.23	19.52	10.45	13.63	0.6
23	27.05.2024	57.12	20.56	11.21	12.64	0.61
24	30.05.2024	53.25	19.17	10.36	16.15	0.53
Min		46.42	18.43	10.36	12.32	0.37
Max		60.29	20.56	14.45	20.55	0.68
Avg.		53.67	19.22	12.04	15.31	0.54
98 percentile		60.21	20.10	14.44	19.93	0.66
NAAQS, For 24 hourly monitoring (except CO for Eight hour)		100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	2 mg/m ³

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AUTHORIZED SIGNATORY

Laboratory : GT-20, Sector-117, NOIDA, Gautam Budh Nagar - 201301

Branch Office :

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Ambient Air Quality Analysis	AAQ-010324-04	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

Sampling & Analysis Data

Sample Drawn By : NTL Laboratory : Monitoring Period : March 2024 - May 2024
 Sampling Location : Palahi : Protocol Used : CPCB Guidelines
 Sampling Plan & Procedure : SOP-AAQ/08 : Sampling Instrument Used : Respirable Dust Sampler (PM₁₀), Fine Particulate (PM_{2.5}) Sampler

S. No.	Monitoring Date	PM10	PM2.5	SO ₂	NO ₂	CO
		IS:5182(Part-23)	IS:5182(Part-24)	IS:5182(Part-2)	IS:5182(Part-6)	IS:5182(Part-10)
1	01.03.2024	53.36	19.21	8.98	9.88	0.48
2	04.03.2024	58.42	21.03	10.21	11.65	0.48
3	09.03.2024	55.3	19.91	9.18	13.38	0.77
4	11.03.2024	55.72	20.06	9.14	12.62	0.59
5	16.03.2024	58.55	21.08	10.56	14.54	0.59
6	18.03.2024	56.67	20.38	9.61	11.52	0.45
7	23.03.2024	54.22	19.51	8.98	15.31	0.65
8	26.03.2024	55.67	20.02	9.14	14.97	0.49
9	01.04.2024	57.62	20.74	10.51	14.47	0.41
10	02.04.2024	42.12	19.51	9.57	18.62	0.47
11	06.04.2024	50.39	18.11	10.56	14.58	0.47
12	11.04.2024	50.24	18.07	10.21	11.62	0.49
13	15.04.2024	55.23	19.88	11.69	10.17	0.5
14	18.04.2024	51.88	18.68	10.85	15.3	0.36
15	22.04.2024	56.33	20.27	9.61	13.82	0.55
16	27.04.2024	51.89	18.68	10.11	12.01	0.48
17	02.05.2024	52.24	18.81	9.54	10.32	0.57
18	04.05.2024	51.76	18.63	9.21	11.64	0.53
19	09.05.2024	51.41	18.51	9.24	15.25	0.73
20	13.05.2024	58.55	21.08	10.16	14.49	0.59
21	20.05.2024	53.22	19.15	9.35	12.62	0.68
22	23.05.2024	54.82	19.51	10.24	15.23	0.5
23	27.05.2024	59.57	21.45	9.64	12.7	0.77
24	30.05.2024	54.32	19.56	8.99	14.22	0.59
Min		42.12	18.07	8.98	9.88	0.36
Max		59.57	21.45	11.69	18.62	0.77
Avg.		54.15	19.66	9.80	13.37	0.55
98 percentile		59.10	21.28	11.30	17.10	0.77
NAAQS, For 24 hourly monitoring (except CO for Eight hour)		100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	2 mg/m ³

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AUTHORIZED SIGNATORY

Laboratory : GT-20, Sector-117, NOIDA, Gautam Budh Nagar - 201301

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Ambient Air Quality Analysis	AAQ-010324-05	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

Sampling & Analysis Data

Sample Drawn By	NTL Laboratory	Monitoring Period	March 2024 - May 2024
Sampling Location	Shakoh	Protocol Used	CPCB Guidelines
Sampling Plan & Procedure	SOP-AAQ/08	Sampling Instrument Used	Respirable Dust Sampler (PM ₁₀), Fine Particulate (PM _{2.5}) Sampler

S. No.	Monitoring Date	PM10	PM2.5	SO ₂	NO ₂	CO
		IS:5182(Part-23)	IS:5182(Part-24)	IS:5182(Part-2)	IS:5182(Part-6)	IS:5182(Part-10)
1	02.03.2024	59.21	32.72	7.75	13.94	0.36
2	05.03.2024	57.79	34.22	7.83	13.76	0.65
3	10.03.2024	64.75	33.18	6.95	14.06	0.32
4	12.03.2024	64.38	34.80	8.15	14.88	0.42
5	15.03.2024	61.63	37.42	7.61	13.81	0.52
6	19.03.2024	61.19	36.44	8.14	14.97	0.62
7	24.03.2024	55.36	37.58	8.43	14.03	0.42
8	25.03.2024	55.94	38.20	7.00	15.27	0.62
9	04.04.2024	53.75	33.95	8.15	14.46	0.47
10	08.04.2024	50.08	36.98	8.31	14.88	0.52
11	12.04.2024	48.41	35.04	8.42	14.79	0.42
12	14.04.2024	72.13	37.25	7.57	15.03	0.62
13	19.04.2024	69.10	36.65	6.82	13.80	0.52
14	20.04.2024	66.98	35.54	7.02	14.51	0.56
15	23.04.2024	70.72	33.36	6.61	13.89	0.62
16	25.04.2024	72.46	33.55	6.86	14.47	0.7
17	03.05.2024	68.33	31.71	7.79	14.88	0.72
18	03.05.2024	74.66	31.19	8.02	13.36	0.52
19	10.05.2024	72.69	31.52	7.42	14.15	0.62
20	11.05.2024	70.76	28.85	9.40	14.78	0.88
21	18.05.2024	71.45	30.65	7.85	13.49	0.92
22	19.05.2024	71.28	32.48	9.48	14.25	0.62
23	25.05.2024	74.28	35.76	8.38	14.46	0.66
24	26.05.2024	72.37	38.74	7.38	14.55	0.42
Min		48.41	28.85	6.61	13.36	0.32
Max		74.66	38.74	9.48	15.27	0.92
Avg.		64.72	34.44	7.82	14.35	0.57
98 percentile		74.48	38.49	9.44	15.16	0.90
NAAQS, For 24 hourly monitoring (except CO for Eight hour)		100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	2 mg/m ³

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Laboratory : GT-20, Sector-117, NOIDA, Gautam Budh Nagar- 201301

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Ambient Air Quality Analysis	AAQ-010324-06	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

Sampling & Analysis Data

Sample Drawn By : NTL Laboratory
 Sampling Location : Ukhli
 Sampling Plan & Procedure : SOP-AAQ/08
 Monitoring Period : March 2024 - May 2024
 Protocol Used : CPCB Guidelines
 Sampling Instrument Used : Respirable Dust Sampler (PM₁₀), Fine Particulate (PM_{2.5}) Sampler

S. No.	Monitoring Date	PM10	PM2.5	SO ₂	NO ₂	CO
		IS:5182(Part-23)	IS:5182(Part-24)	IS:5182(Part-2)	IS:5182(Part-6)	IS:5182(Part-10)
1	02.03.2024	40.6	13.78	5.82	6.18	0.57
2	05.03.2024	45.74	12.69	5.89	7.26	0.52
3	10.03.2024	40.8	14.73	4.91	6.38	0.51
4	12.03.2024	46.7	13.76	3.93	8.29	0.49
5	15.03.2024	45.75	16.82	4.97	6.64	0.54
6	19.03.2024	42.63	13.84	6.02	7.83	0.57
7	24.03.2024	43.52	17.92	3.97	6.28	0.51
8	25.03.2024	44.14	15.69	4.88	6.32	0.58
9	04.04.2024	43.25	20.1	4.89	7.34	0.5
10	08.04.2024	45.14	11.5	5.86	6.52	0.53
11	12.04.2024	41.36	14.11	4.92	7.39	0.48
12	14.04.2024	40.29	13.88	5.93	7.46	0.51
13	19.04.2024	38.5	18.83	5.01	6.46	0.54
14	20.04.2024	38.69	19.86	4.96	7.48	0.54
15	23.04.2024	38.77	14.02	5.85	6.43	0.55
16	25.04.2024	41.25	18.98	5.86	5.31	0.51
17	03.05.2024	42.63	14.09	4.83	6.29	0.47
18	03.05.2024	42.25	13.86	6.02	7.39	0.55
19	10.05.2024	45.75	14.72	4.82	8.22	0.52
20	11.05.2024	45.21	15.28	4.83	6.33	0.52
21	18.05.2024	44.15	13.68	4.87	6.35	0.52
22	19.05.2024	41.24	18.13	6.18	5.25	0.59
23	25.05.2024	41.63	19.84	4.86	7.39	0.49
24	26.05.2024	40.38	20.92	5.97	6.42	0.54
Min		38.5	11.5	3.93	5.25	0.47
Max		46.7	20.92	6.18	8.29	0.59
Avg.		42.52	15.88	5.25	6.80	0.53
98 percentile		46.26	20.54	6.11	8.26	0.59
NAAQS, For 24 hourly monitoring (except CO for Eight hour)		100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	2 mg/m ³

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Laboratory : GT-20, Sector-117, NOIDA, Gautam Budh Nagar - 201301

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Ambient Air Quality Analysis	AAQ-010324-07	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect.
(Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

Sampling & Analysis Data

Sample Drawn By	NTL Laboratory	Monitoring Period	March 2024 - May 2024
Sampling Location	Har Balak Rupri	Protocol Used	CPCB Guidelines
Sampling Plan & Procedure	SOP-AAQ/08	Sampling Instrument Used	Respirable Dust Sampler (PM ₁₀), Fine Particulate (PM _{2.5}) Sampler

S. No.	Monitoring Date	PM10	PM2.5	SO ₂	NO ₂	CO
		IS:5182(Part-23)	IS:5182(Part-24)	IS:5182(Part-2)	IS:5182(Part-6)	IS:5182(Part-10)
1	02.03.2024	40.5	23.9	6.93	9.26	0.38
2	05.03.2024	44.1	25.96	6.22	10.75	0.39
3	10.03.2024	45.33	21.94	7.43	9.37	0.42
4	12.03.2024	47.16	20.96	6.45	8.6	0.34
5	15.03.2024	52.97	25.93	5.89	9.48	0.42
6	19.03.2024	50.25	32.97	6.31	9.63	0.35
7	24.03.2024	49.03	28.94	7.75	10.36	0.36
8	25.03.2024	48.97	29.97	5.78	9.47	0.45
9	04.04.2024	45.05	30.91	7.06	11.52	0.28
10	08.04.2024	42.21	28.95	6.85	10.96	0.36
11	12.04.2024	45.06	27.94	7.68	9.58	0.34
12	14.04.2024	47.1	28.91	6.38	10.99	0.45
13	19.04.2024	49.99	26.95	7.54	9.63	0.38
14	20.04.2024	47.13	28.96	5.84	12.48	0.27
15	23.04.2024	52.06	25.99	7.58	9.48	0.45
16	25.04.2024	49.96	28.97	6.44	11.36	0.36
17	03.05.2024	51.31	31.06	5.89	9.85	0.31
18	03.05.2024	50.46	29.07	8.18	12.53	0.38
19	10.05.2024	52.01	30.1	6.89	11.45	0.26
20	11.05.2024	40.02	28.98	6.82	9.63	0.48
21	18.05.2024	49.11	27.95	6.45	10.56	0.47
22	19.05.2024	50.23	29.03	7.06	13.2	0.39
23	25.05.2024	51.02	28.1	8.2	9.63	0.4
24	26.05.2024	52.9	28.9	7.56	10.14	0.25
Min		40.02	20.96	5.78	8.6	0.25
Max		52.97	32.97	8.2	13.2	0.48
Avg.		48.08	27.97	6.88	10.41	0.37
98 percentile		52.94	32.09	8.19	12.89	0.48
NAAQS, For 24 hourly monitoring (except CO for Eight hour)		100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	2 mg/m ³

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Laboratory : GT-20, Sector-117, NOIDA, Gautam Budh Nagar - 201301

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Ambient Air Quality Analysis	AAQ-010324-08	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

Sampling & Analysis Data

Sample Drawn By	NTL Laboratory	Monitoring Period	March 2024 - May 2024
Sampling Location	Lambagan	Protocol Used	CPCB Guidelines
Sampling Plan & Procedure	SOP-AAQ/08	Sampling Instrument Used	Respirable Dust Sampler (PM ₁₀), Fine Particulate (PM _{2.5}) Sampler

S. No.	Monitoring Date	PM10	PM2.5	SO ₂	NO ₂	CO
		IS:5182(Part-23)	IS:5182(Part-24)	IS:5182(Part-2)	IS:5182(Part-6)	IS:5182(Part-10)
1	02.03.2024	48.63	16.52	5.21	8.53	0.55
2	05.03.2024	42.58	14.78	4.93	7.48	0.46
3	10.03.2024	36.02	22.4	6.5	7.09	0.49
4	12.03.2024	55.3	24.2	7.6	10.2	0.51
5	15.03.2024	38.21	19.75	6.22	9.65	0.79
6	19.03.2024	47.68	19.72	8.26	11.62	0.68
7	24.03.2024	48.66	22.74	8.3	8.63	0.63
8	25.03.2024	50.45	19.7	8.36	9.64	0.62
9	04.04.2024	47.62	20.78	5.31	9.63	0.59
10	08.04.2024	47.6	19.8	4.33	10.69	0.72
11	12.04.2024	47.69	21.85	6.34	9.74	0.75
12	14.04.2024	47.63	19.82	7.4	7.64	0.63
13	19.04.2024	51.65	23.88	8.32	7.66	0.56
14	20.04.2024	50.12	19.84	7.2	12.02	0.67
15	23.04.2024	48.24	23.76	7.38	9.64	0.53
16	25.04.2024	42.68	19.85	8.4	8.66	0.56
17	03.05.2024	39.73	16.88	8.39	11.85	0.75
18	03.05.2024	47.68	18.84	8.42	7.69	0.65
19	10.05.2024	48.35	19.76	7.46	12.63	0.54
20	11.05.2024	49.15	17.73	7.58	8.66	0.62
21	18.05.2024	47.71	21.84	8.44	12.64	0.59
22	19.05.2024	50.74	19.88	7.28	7.62	0.76
23	25.05.2024	47.71	23.84	7.33	8.67	0.52
24	26.05.2024	52.11	18.83	8.29	11.61	0.62
Min		36.02	14.78	4.33	7.09	0.46
Max		55.3	24.2	8.44	12.64	0.79
Avg.		47.25	20.29	7.22	9.58	0.62
98 percentile		53.83	24.05	8.43	12.64	0.78
NAAQS, For 24 hourly monitoring (except CO for Eight hour)		100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	2 mg/m ³

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Water	W-120524-015	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

SAMPLING & ANALYSIS DATA

Sample Drawn By : NTL Representative
 Sample Received on : 11/05/2024
 Sample Quantity : 3.0 Lt.
 Analysis Duration : 12/05/2024 to 18/05/2024
 Sample Description : Ground Water

S. No.	Parameter	Unit	GW1 Sujanpur Tira	GW2 Chowki	GW3 Palahi	GW4 Shakoh	GW5 Ukhli	Limit (as per IS:10500)	
								Desirable	Permissible
1	Colour	Hazen	<1.0	<1.0	<1.0	<1.0	<1.0	5	15
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	-
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	-
4	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	1	5
5	pH	-	7.51	7.25	7.38	7.68	7.21	6.5-8.5	No Relaxation
6	Total Hardness (as CaCO ₃)	mg/l	178	152	180	189	165	200	600
7	Iron (as Fe)	mg/l	0.126	0.141	0.135	0.145	0.134	1.0	No Relaxation
8	Chlorides (as Cl)	mg/l	11.5	12.7	15.4	17.8	16.6	250	1000
9	Fluoride (as F)	mg/l	0.24	0.28	0.21	0.25	0.28	1	1.5
10	TDS	mg/l	337	320	345	374	381	500	2000
11	Calcium(as Ca ²⁺)	mg/l	65.2	62.8	60.8	67.1	64.5	75	200
12	Magnesium (as Mg ²⁺)	mg/l	12.6	15.2	11.5	9.80	10.2	30	100
13	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1.5
14	Manganese(as Mn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	0.3
15	Sulphate (as SO ₄)	mg/l	26.6	24.1	27.4	28.5	29.0	200	400
16	Nitrate(as NO ₃)	mg/l	2.60	2.42	2.76	2.80	2.53	45	No Relaxation

Laboratory : GT-20, Sector-117, NOIDA, Gautam Budh Nagar - 201301

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18	Mercury (as Hg)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	No Relaxation
19	Cadmium (as Cd)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	No Relaxation
20	Selenium (as Se)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No Relaxation
21	Arsenic (as As)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No Relaxation
22	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	No Relaxation
23	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No Relaxation
24	Zinc (as Zn)	mg/l	0.127	0.132	0.145	0.136	0.148	5	15
25	Anionic Detergent (as MBAS)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	0.2	1
26	Chromium (as Cr6+)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	No Relaxation
27	Mineral oil	mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	0.5	No Relaxation
28	Alkalinity as CaCO3	mg/l	197	182	175	167	154	200	600
29	Aluminium (as Al)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.2
30	Boron (as B)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	0.5	2.4
31	Total Coliform	MPN /100ml	Absent	Absent	Absent	Absent	Absent	Absent/100ml	
32	E. coli	E.coli /100ml	Absent	Absent	Absent	Absent	Absent	Absent/100ml	

BDL- Below Detection Limit

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Ambient Noise	AN-120524-018	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

SAMPLING & ANALYSIS DATA

Sample Drawn By : Laboratory (N.T.L.)
 Sample description : Ambient Noise
 Sampling Time : 24 hrs
 Sampling Instrument Used : Digital Noise Meter
 Monitoring Period : March 2024 to May 2024
 Weather Condition : Normal

S. No.	Locations	Date of Monitoring	Results		Units
			Day	Night	
1.	Mine Site	02.03.2024	58.4	45.1	dB(A)
2.	Sujanpur Tira	18.03.2024	53.2	41.2	dB(A)
3.	Chowki	26.03.2024	51.1	42.3	dB(A)
4.	Palahi	08.04.2024	52.6	43.5	dB(A)
5.	Shakoh	15.04.2024	54.0	40.8	dB(A)
6.	Ukhli	02.05.2024	52.8	41.6	dB(A)
7.	Har Balak Rupi	14.05.2024	51.2	40.0	dB(A)
8.	Lambagaon	18.05.2024	52.4	41.5	dB(A)

Requirement (as per CPCB Guidelines Limits in dB (A) Leq

Category of Area/ Zone	Day Time	Night Time
Industrial Area	75	70
Residential Area	55	45
Commercial Area	65	55
Silence Zone	50	40

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Soil Quality	SQ-120524-016	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

Sampling & Analysis Data

Sample Received On : 11/05/2024
 Sample Description : Soil Sample
 Sample Quantity : 2.0 Kg
 Sample Drawn By : NTL Representative
 Analysis Duration : 12/05/2024 to 18/05/2024

		Location	Mine Site	Sujanpur Tira	Chowki	Palahi	Shakoh
Sr. No.	Parameters	Units	Results	Results	Results	Results	Results
1	pH	-	7.36	7.50	7.25	7.42	7.55
2	Conductivity	µmhos/cm	451.0	402.0	416.0	372.0	416.0
3	Sodium (as Na)	mg/kg	216.40	265.10	283.41	294.0	276.20
4	Water holding capacity	%	32.10	34.50	31.87	37.04	28.94
5	Potassium (as K)	mg/kg	78.50	77.40	84.69	96.02	70.16
6	Sand	%	65.00	66.00	68.00	64.00	64.00
7	Clay	%	18.00	18.00	19.00	19.00	22.0
8	Silt	%	17.00	16.00	13.00	17.00	14.0
9	Calcium (as Ca)	mg/kg	957.00	886.00	1012.00	992.04	1036.00
10	Magnesium (as Mg)	mg/kg	514.10	468.50	558.25	414.06	583.56
11	SAR	-	1.08	0.98	0.94	0.94	1.55
12	CEC	meq/100gm	2.26	2.20	2.23	2.14	2.34
13	Phosphorus (as P)	mg/kg	12.80	12.40	10.67	13.04	12.76
14	Organic carbon	%	0.49	0.46	0.41	0.36	0.58
15	Porosity	%	45.20	40.10	38.26	38.32	40.6
16	Permeability	cm/hr	1.96	1.84	1.74	1.92	1.88
17	Bulk Density	kg/cm ³	1.28	1.18	1.29	1.56	1.38
18	Total Kjeldahl Nitrogen (TKN)	%	0.041	0.026	0.032	0.019	0.036

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Surface Water	SW-120524-017	06/06/2024

Issued To : M/s Sh. Andresh Syal, S/o Sh. Pritam Chand

Project Name: Extraction of sand, stone & bajri

Location: Khasra No. 740 measuring 01-58-56 Hect. & Khasra No's. 750 & 800/747 measuring 04-39-42 Hect. (Private Land, River Bed) falling in Mauza Alampur, Mohal Bagh, Tehsil Jaisinghpur, Distt. Kangra, Himachal Pradesh

SAMPLING & ANALYSIS DATA

Sample Received On : 11/05/2024
 Sample Drawn By : NTL Representative
 Sample Description : Surface Water
 Sample Quantity : 2.0 Litre
 Analysis Duration : 12/05/2024 to 18/05/2024

S. No	Parameter	Test Method	Units	Beas river (Upstream)	Beas river (Downstream)
1.	pH (at 25°C)	IS:3025(Part-11)	---	7.35	7.50
2.	Temperature	IS:3025(Part-9)	°C	18.0	20.0
3.	Turbidity	IS:3025(Part-10)	NTU	2.0	2.8
4.	Electric Conductivity @25°C	IS:3025(Part-14)	µS/cm	225.0	254.0
5.	Sulphate (SO ₄)	IS:3025(Part-24)	mg/l	6.8	7.2
6.	Nitrate (NO ₃)	IS:3025(Part-34)	mg/l	1.46	1.54
7.	Total Hardness (as CaCO ₃)	IS:3025(Part-21)	mg/l	189.0	196.0
8.	Chloride (as Cl)	IS:3025(Part-32)	mg/l	10.0	14.0
9.	Fluoride (as F)	APHA 4500F	mg/l	BDL(DL<1.0)	BDL(DL<1.0)
10.	COD (as O ₂)	APHA-5220 B	mg/l	14.0	18.0
11.	Iron (as Fe)	IS:3025(Part-53)	mg/l	0.02	0.06
12.	Dissolve Oxygen	IS-3025(Part-38)	mg/l	7.8	7.2
13.	Total Dissolved Solid	IS:3025(Part-16)	mg/l	140.0	156.0
14.	BOD (3 days at 27°C)	IS:3025 (P-44)	mg/l	BDL(<2.0)	BDL(<2.0)
15.	Calcium (as Ca)	IS:3025(Part-40)	mg/l	87.0	92.0
16.	Magnesium (as Mg)	IS:3025(Part-46)	mg/l	9.50	10.6
17.	Arsenic (as As)	IS:3025(Part-37)	mg/l	BDL(<0.01)	BDL (<0.01)
18.	Lead (as Pb)	IS:3025(Part-47)	mg/l	BDL(<0.01)	BDL (<0.01)
19.	Copper (as Cu)	IS:3025(Part-42)	mg/l	BDL(<0.010)	BDL (<0.05)
20.	Zinc (as Zn)	IS:3025(Part-49)	mg/l	0.08	0.10
21.	Manganese (as Mn)	IS:3025(Part-59)	mg/l	BDL(<0.010)	BDL (<0.10)
22.	Total Chromium (as Cr)	IS:3025(Part-52)	mg/l	BDL(<0.01)	BDL (<0.05)

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23.	Sodium (as Na)	IS:3025(Part-45)	mg/l	BDL (<1.0)	BDL (<1.0)
24.	Potassium (as K)	IS:3025(Part-45)	mg/l	BDL (<1.0)	BDL (<1.0)
25.	Total Alkalinity (as CaCO ₃)	IS:3025(Part-23)	mg/l	167.0	172.0
26.	Phosphate (as P)	IS:3025(Part-31)	mg/l	BDL(<0.01)	BDL(<0.01)
27.	Nitrite (as NO ₂)	IS:3025(Part-34)	mg/l	BDL(<0.05)	BDL(<0.05)
28.	Total Suspended Solid	IS:3025(Part-17)	mg/l	6.5	6.8
29.	Faecal Coliform	IS-1622	MPN/100 ml	0.12 × 10 ³	0.18 × 10 ³
30.	Total Coliform	IS-1622	MPN/100 ml	0.46 × 10 ³	0.62 × 10 ³

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