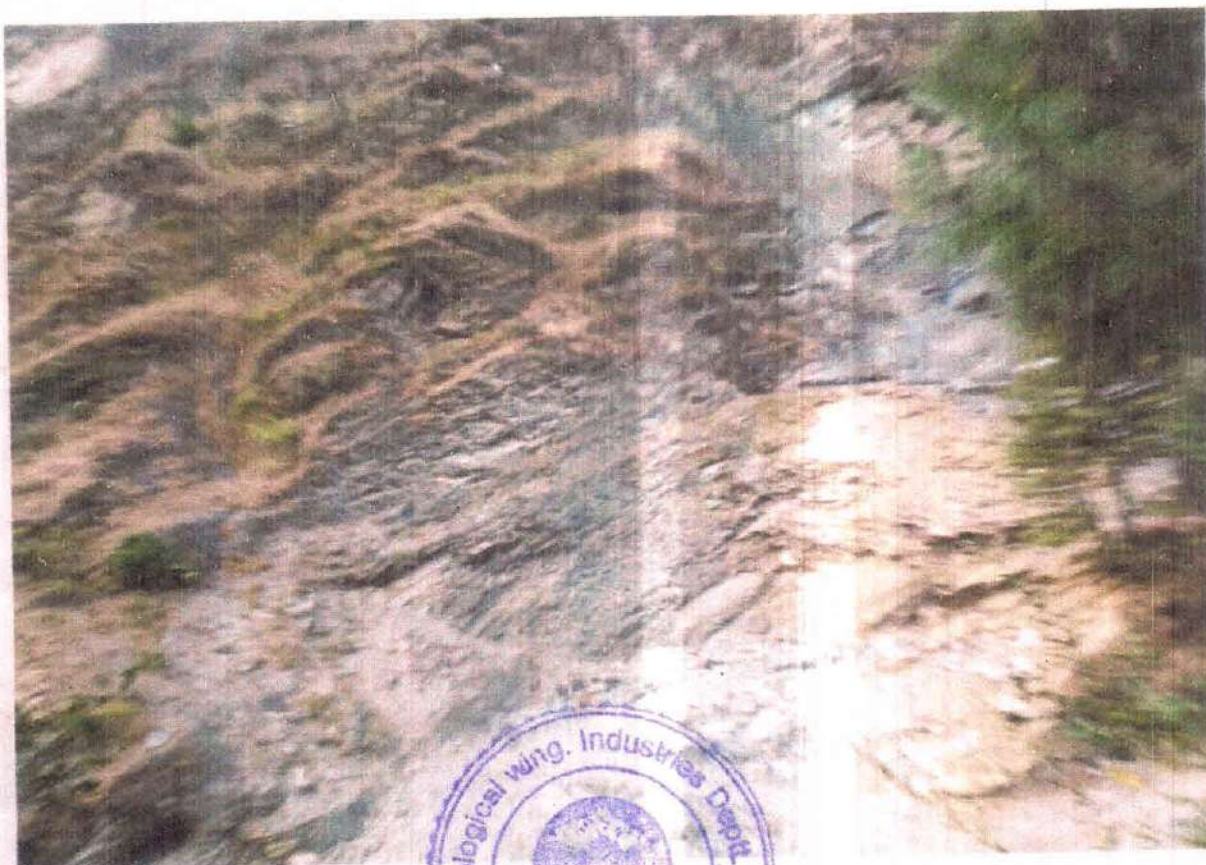


**MINING PLAN FOR EXTRACTION OF SLATE FROM THE AREA APPLIED FOR  
RENEWAL OF MINING LEASE FALLING OVER MAUZA KUNR TEHSIL &  
DISTRICT CHAMBA BEARING KHASRA NO. 3026/2939/1 MEASURING 05-01-00  
BIGHAS**

**APPLICANT:- SH. PRAKASH CHAND S/O SH. SORMA RAM, VILLAGE AND POST  
OFFICE KUNR, TEHSIL AND DISTRICT CHAMBA, HIMACHAL PRADESH.**



**Prepared by: -**

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**RQP No. H.P./R.Q.P./24/1/2019**

**Valid up to 11-6-2024**



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**MINING PLAN FOR EXTRACTION OF SLATE FROM THE AREA APPLIED FOR RENEWAL OF MINING LEASE FALLING OVER MAUZA KUNR TEHSIL & DISTRICT CHAMBA BEARING KHASRA NOS. 3026/2939/1 MEASURING 05-01-00 BIGHAS**

**APPLICANT: SH. PRAKASH CHAND S/O SH. SORMA RAM, VILLAGE AND POST OFFICE KUNR, TEHSIL AND DISTRICT CHAMBA, HIMACHAL PRADESH.**

**INTRODUCTION: -**

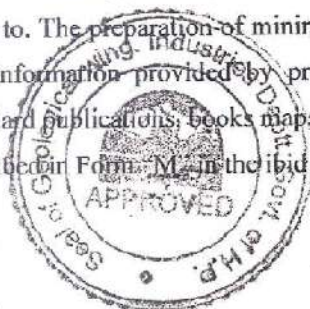
Sh. Prakash Chand, S/o Sh. Sorma Ram, Village and Post Office Kunr, Tehsil and District Chamba, Himachal Pradesh has applied for renewal of mining lease for extraction of mineral slate bearing Khasra No. 3026/2939/1 measuring 5-01-00 Bighas in Mauza Kunr, Tehsil and District Chamba, Himachal Pradesh under the provisions of Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of illegal Mining Transportation and Storage) Rules, 2015. The Joint Inspection Committee inspected the site and recommended for grant of mining lease over Khasra No. 3026/2939/1 measuring 5-01-00 Bighas in Mauza Kunr, Tehsil and District Chamba. Accordingly, the Letter of Intent has been issued by the Department vide letter No. Udyog-Bhu (Khani-4) Laghu-270/08 dated 13-10-2020 for renewal of mining lease over Khasra No. 3026/2939/1 measuring 5-01-00 Bighas falling in Mauza Kunr, Tehsil and District Chamba, Himachal Pradesh for extraction of slate. While granting Letter of Intent, the Department has imposed the following conditions:-

1. 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 area applied for mining lease, which was recommended by the Joint Inspection Committee the provisional granted area. A copy of the demarcation report shall also be submitted to the Mining Officer.
2. The party shall have to submit approved Mining Plan under Rule 35 (1) of Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of illegal Mining Transportation and Storage) Rules, 2015.
3. The party shall have to obtain Environment Clearance under Environment Protection Act, 1986, Environment Impact Assessment Notification, 2006 and Amendment/ notifications issued time to time in this regard and forest clearance in case of forest land from the Competent Authority.



The Chapter-III of Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of illegal Mining Transportation and Storage) Rules, 2015 deals with development and conservation of minerals and it is provided under Rule 35(1) that "No mining lease or contract shall be granted unless there is a mining plan approved from the Competent Authority. The said mining plan shall be prepared in accordance with Form "M" appended with the said Rules.

While preparing the mining plan, due consideration has been made to ensure that the relevant provisions under Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2015 and other guidelines issued from time to time in this regard are adhered to. The preparation of mining Plan is broadly based on data collected from field as well as information provided by project proponent during consultation, and also by taking help of standard publications, books maps etc. The mining plan is prepared in consonance to the Format prescribed in Form: M in the said Rules.



## 1. General

### 1.1 Name and address of the applicant

1.1. a Name of the Applicant :- Sh. Prakash Chand S/o Sh. Sorma Ram

1.1. b Address of the Applicant Sh. Prakash Chand S/o Sh. Sorma Ram  
Village and Post Office Kunr,  
Tehsil and District Chamba,

1.2 Status of the Applicant: - The applicant is the sole proprietor

### 1.3 Mineral which the Applicant intends to Mine: -

The mineral slate is occurring in the area applied for renewal of mining lease.

### 1.4 Period for which the mining lease is to be granted: -

The period of mining lease shall be specified in the grant order to be issued after completion of formalities.

### 1.5 Name and Address of H.P.R.Q.P. preparing the mining plan

Rajneesh Sharma (Retd. State Geologist)  
Strawberry Cottage, Strawberry Hill,  
Chhota Shimla (Himachal Pradesh)  
RQP No. H.P./RQP/24/1/2019



### 1.6 Name of Prospecting Agency

For carrying out prospecting of the mineral deposit, the preliminary information regarding Geological set up and occurrence of minerals in the area applied for mining lease and in its surroundings has been gathered from the previous work done by the Geological Survey of India and State Government agencies from time to time. The site was visited along with the project proponent for identification of the site based on the demarcation conducted by the revenue department in the presence of project proponent. The surface mapping of the area has been conducted by the Sr. surveyor Sh. C.P. Negi using survey instruments and occurrence of the mineral deposit suitable for manufacturing of grit in the study area and its adjoining have been established after conducting geological traversing. The data from the previous mining plan has also been incorporated in the present study.

### 2.0 Location and Approach of the Area:-

The location of mining lease area is shown on the following map: -

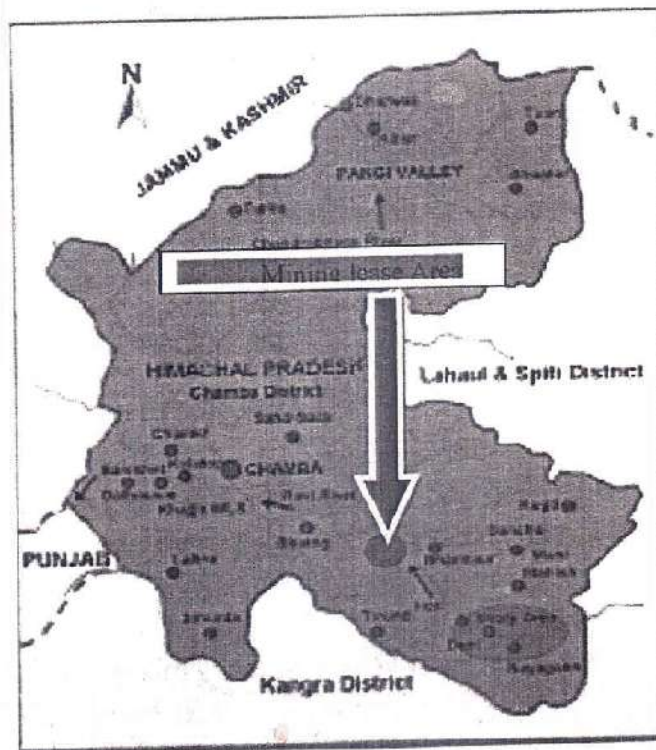


Figure No. 1: Location of Mining Lease Area on District map

2.1 The mining lease area is located on the right bank hill slope of Kunr nala. The mining lease area can be approached from Chamba on Chamba- Bharmour road. From Chamba on Chamba- Bharmour road at a distance of about 35 Kms, near Luna Pul, there is a bifurcation leading towards Chhatrari Jaintra road and mine is located about 14 Kms from Luna pul. The mine is not connected with this road and is approachable from Atharori village on mule track/span. The applied for area lies in the following Survey of India Topo-Sheet No. with following co-ordinates:

Topo-sheet No	52D/7	
Scale	1:50,000	
First Edition		
Point	Latitude	Longitude
Survey Station	32° 24' 47.00" N	76° 22' 26.0" E
Northwest point	32° 24' 49.17" N	76° 22' 26.15" E
Northeast point	32° 24' 45.00" N	76° 22' 25.0" E



Figure No.2: Google view of the Mining lease area





## 2.2 (a) Location detail of the area

Khasra Nos.	Name of the Owner	Kisam	Mauza & Mohal	Area in Bighas	Name of the Panchayat
3026/2939/1	H.P. Government	Makvuja Malik Ba Bartandaran	Kunr	5-01-00	Kunr
Total				5-01-00	

## (b) Address Details

1	Village	Kunr
2	Post Office	Kunr
3	Tehsil	Chamba
4	District	Chamba
5	Patwar Circle	Kunr
6	Panchayat	Kunr

## 2.3 Administrative set up of Joint Inspection Committee

1	Sub- Divisional Officer (Civil)	Chamba
2	Divisional Forest Officer	Bharmour
3	Sub-Division (IPH)	Bharmour
4	Sub-Division (PWD)	Chamba
5	Forest Range Officer	Sawai (Garola)

## 2.4 Distance from important places in Kilometers

The distance from mine to the important nearby places are as under:-

Name of place	Distance
Chhatrari	5 Kms
Kodla	10 Kms
Luna Pul	14 Kms
Chamba	50 Kms
Bharmour	42 Kms
Pathankot	175 Kms

## 2.5 Approach of the Area: -

The mining lease area is located on the right bank hill slope of Kunr nala. The mining lease area can be approached from Chamba on Chamba- Bharmour road. From Chamba on Chamba-Bharmour road at a distance of about 35 Kms, near Luna Pani, there is a bifurcation leading towards Chhatrari Jaintra road and mine is located about 14 Kms from Luna pani. The mine is not connected with this road and is approachable from Atharori village on mule track/span.

## 3.0 PHYSIOGRAPHIC ASPECTS OF THE AREA

### 3.1 General

The Chamba district in the present form came in to existence on 1<sup>st</sup> November, 1966 which is bounded on north-west by Jammu and Kashmir, on the north-east and east by Ladakh area of Jammu and Kashmir state and Lahaul and Bara- Bangal area of Himachal Pradesh, on the south-east and south by the District Kangra of Himachal Pradesh and Gurdaspur District of Punjab. The district is Situated between north latitude  $32^{\circ} 11' 30''$  and  $33^{\circ} 13' 06''$ , and east longitude  $75^{\circ} 49' 00''$  and  $77^{\circ} 03' 30''$ . The area of the district is 6,522 sq. km with Chamba as its Headquarters. There are 1591 villages in the district. The district has been divided into 7 Sub-divisions namely Chamba, Churah, Pangi, Bharmaur, Dalhousie, Salooni, Chowari.

The District Chamba in general is a part of the Lesser Himalaya. The lesser Himalaya, located in north western India in the States of Himachal Pradesh and Uttar Pradesh, in north-central India in the State of Sikkim, and in north eastern India in the State of Arunachal Pradesh, ranges from 1,500 to 5,000 metres in height. Terrains of the area are rugged and there is number of steep sided valley and very narrow spurs and having thick forest cover mainly of the deodar and kail etc. Soil cover of the entire area is very thin and acidic with increase in altitude. The main rivers of the district are Ravi, Budhil, Siul, and Tundah and. Main glaciers of the district belongs to the Bara-Bhangal and Tantagiri-glacier area.

The Ravi is the main river of Chamba district and is the heart and soul of the Chambyals. With its tributaries, it drains the whole of Chamba valley proper between Dhauladhar and Pangi range and thus commands the largest and most important part of the district. The river originates from Bara Bangahal area of Dhauladhar. The Main tributaries of Ravi are Budhil, Tundah, Beljedi, Sal, Siul, Siowa. The river Chenab or Chandrabhaga rises from the mountains of Baralacha pass by two heads, the stream with its source on south-eastern side of the pass being called the Chandra and the other one which rises from north-western side is called the Bhaga. After the confluence of these



two sister streams at Tandi, the river is generally known as Chenab. There are number of large-sized lakes in Chamba district. However, a few water bodies namely Khajjiar Lake. The district with respect to revenue control has been divided into seven Tehsils and three sub-Tehsils. There are 283 Gram Panchayats.

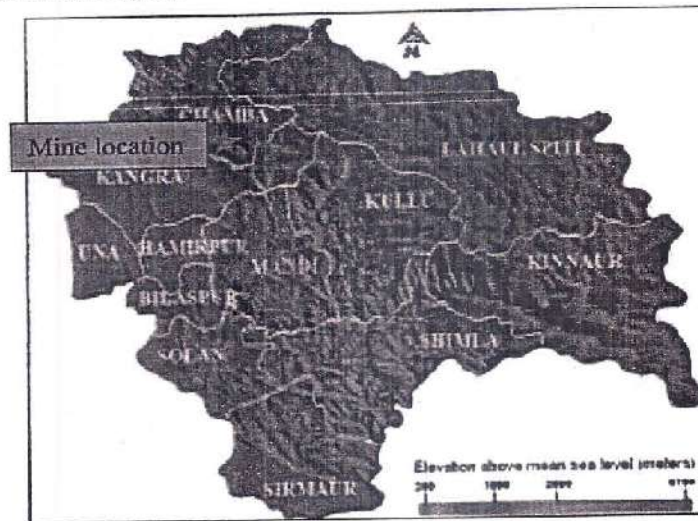


Figure No.3: Showing general elevation above Mean sea level of the State

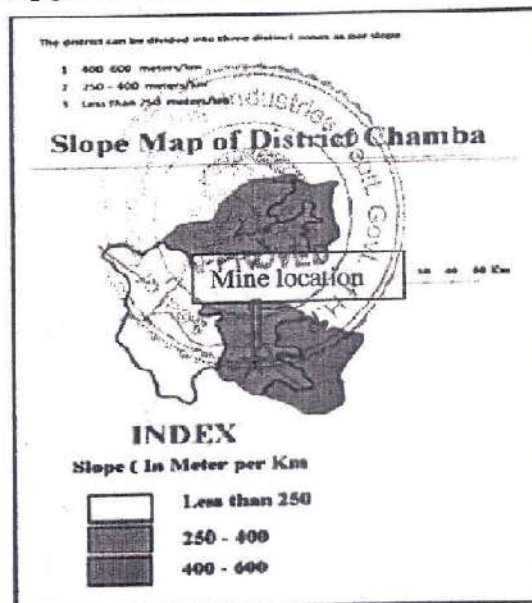


Figure No.4: Showing Slope Map of District Chamba

### 3.2 Altitude of the area:

The topography of the area is rugged and mountainous. The elevation of the mining lease ranges in between 1870m level to 1910m level. The Kunr nala originates from the height of 4336m and elevation drops to 1330m at the confluence point with Ravi river as measured on google earth.

### 3.3 Climate of the Area

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

The climate of the district is sub-tropical to temperate depending upon the elevation. Four major seasons that are the winter season extends from November to February; summer season from March to June followed by the monsoon period extending from July to September end. Maximum precipitation in the form of rain occurs during July to September. During the year 2018, the average annual rainfall recorded in the district was about 1214.1mm, out of which 90% occurs during monsoon season. In the non monsoon season precipitation as snowfall also occurs in the higher reaches above 1500 m above msl. 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 minimum and maximum temperature recorded are 2.9°C and 34°C during the year, 2018. The Chamba jot lies on 2372m above mean sea level. The climate here is mild, and generally warm and temperate. In winter there is much less rainfall in Chamba Jot than in summer. In Chamba Jot, the average annual temperature is 12.6°C.

#### CLIMATE OF THE AREA

<b>CLIMATE</b>	WINTER	SUMMER
<b>PERIOD</b>	NOV.-FEBRUARY	MARCH -JUNE
<b>Weather</b>	Cool	Hot



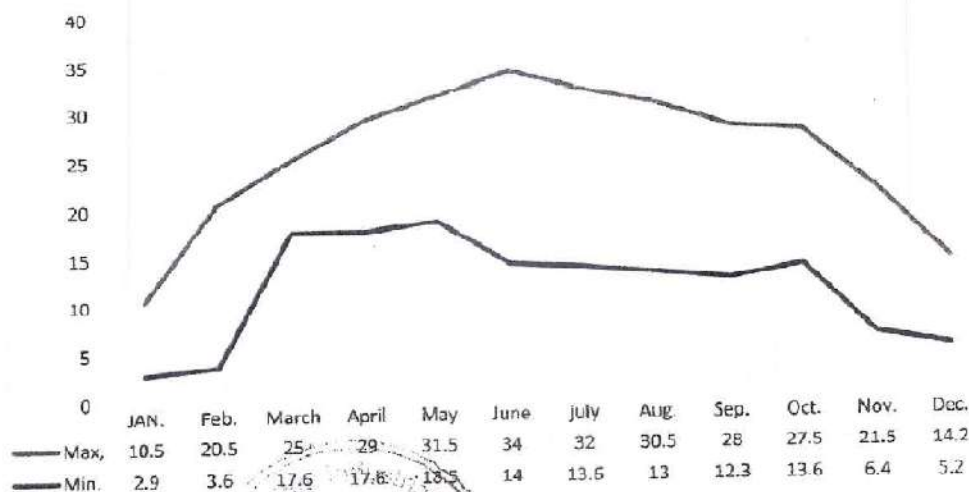
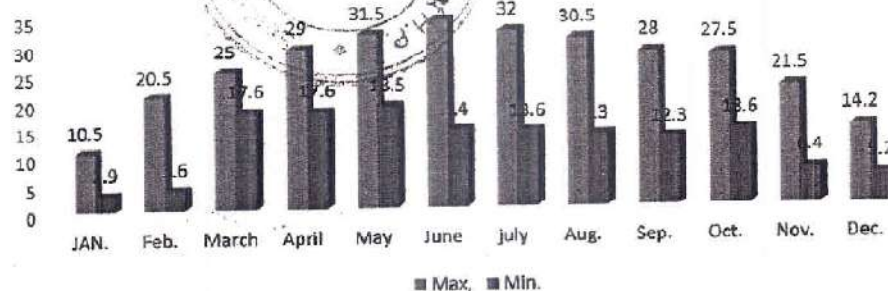
The temperature in Saluni area varies between maximum reaching to 31.5 to 34 degree Celsius in May – June and minimum being recorded 2.9 to 5.2 degree Celsius in December – January.



**Table No. 1: Maximum and Minimum Temperature Recorded at Saluni Chamba**

Month	JAN.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Max,	10.5	20.5	25.0	29.0	31.5	34.0	32.0	30.5	28.0	27.5	21.5	14.2
Min.	2.9	3.6	17.6	17.6	18.5	14.0	13.6	13.0	12.3	13.6	6.4	5.2

Source: Statistical Abstract of Himachal Pradesh 2018-19

**Maximum and Minimum Temperature Recorded in Saluni, Chamba****Maximum and Minimum Temperature Recorded in Saluni, Chamba****Graph No. 1: Maximum and Minimum Temperature Recorded at Saluni, District Chamba,**

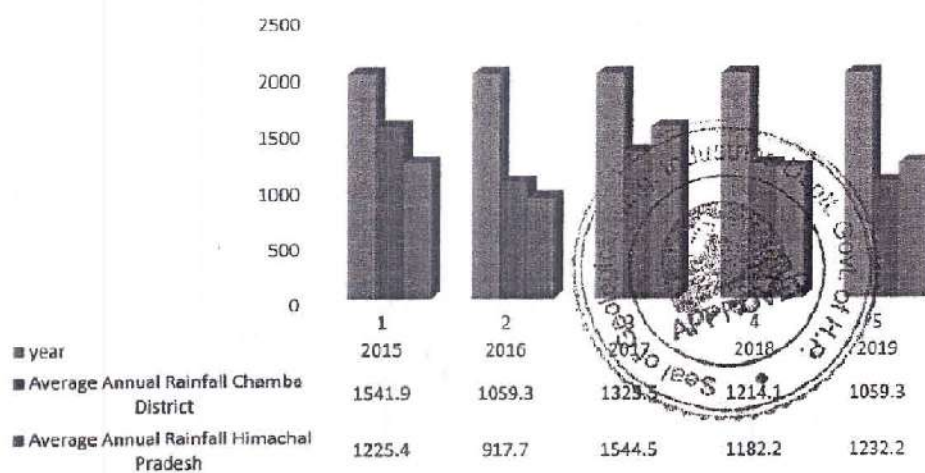
### 3.4 Rainfall

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 average annual rainfall is given below in the table:-

**Table No.2: Showing the quantum of Rainfall**

year	Average Annual Rainfall Chamba District	Average Annual Rainfall Himachal Pradesh
2015	1541.9	1225.4
2016	1059.3	917.7
2017	1325.5	1544.5
2018	1214.1	1182.2
2019	1059.3	1232.2

Source: Statistical Abstract of Himachal Pradesh 2019-20

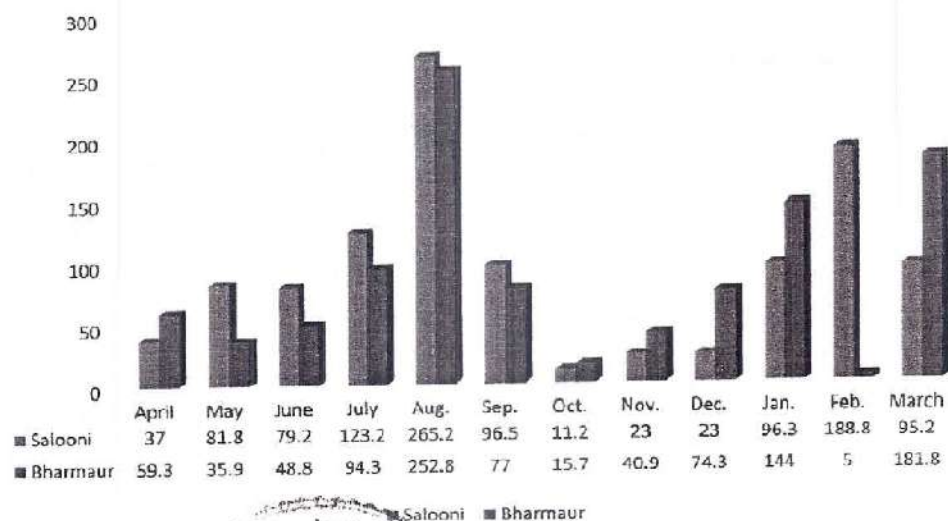


**Graph No.2: Average Annual Rainfall in mm**



Table No.3: Monthwise Rainfall from April, 2019 to March, 2020

Name of month	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	March
Salooni	37	81.8	79.2	123.2	265.2	96.5	11.2	23.0	23.0	96.3	188.8	95.2
Bharmaur	59.3	35.9	48.8	94.3	252.8	77.0	15.7	40.9	74.3	144.0	5.0	181.8



Graph No. 3: Monthwise Rainfall from April, 2019 to March, 2020

## PART-1

### 1. Description of the Area in which the Mine is Situated

#### 1.1 General

The Kunr nala rises from Bahi Rakhnot Dhar trending in roughly north south direction. The opposite side of the said dhar on west side is drained by Baiyani Nala a primary stream of Ravi river. The Kunr nala originates from the height of 4336m and elevation drops to 1330m at the confluence point with Ravi river as measured on google earth.

#### 1.2 Slope angle

Chamba district presents an intricate mosaic of high mountain ranges, hills and valleys with altitude ranging from 300 to 3000 m above msl. The altitude of the hill ranges is higher in northern parts, whereas south-western part of the district is represented by low denuded hill ranges of Siwalik. The mining lease area comprises of hills trending in NNE -SSW direction. The slope angle varies from 20 degree to 40 degree.

#### 1.3 Type of Drainage

The Ravi river in the area is flowing from east to west direction and Kunr nala joins with Ravi river near Luna Pani. The Ghator nala and Samara nala joins with Kunr nala near Kodla village. The drainage pattern is dendritic to sub-dendritic.

#### 1.4 Susceptibility of area to landslide

The rocks of the hill slope are comprised of mainly metamorphosed argillaceous rocks belonging to Chamba formation which are jointed but the bedding is dipping into the hill. There is no apprehension of landsliding if mining is undertaken in a systematic and scientific manner.

#### 1.5 Springs in the Area, if an

There is no natural water spring or any natural water source in the mining lease area





### 1.6 Other details

The detail contour map of the area on 1:500 scale is annexed as plate No. 1 showing detail feature of mining lease area.

## 2. Geology

### 2.1 The Regional Geology of the Area

The rock formations occupying the district range from pre-Cambrian to Pleistocene Age. The generalized geological succession in the district is given below.

Age	Formation	Lithology
Pleistocene	Upper Siwaliks	Boulder conglomerate, Sandstone
Pliocene	Middle Siwaliks	Sandstone, gravel beds, clays etc.
Miocene	Lower Siwaliks	Shales, Hard Sandstone etc.
Triassic	Kalhel formation	Light and dark grey limestone with banks of phyllite and slate
Permian	Salooni formation	Inter bedded phyllite, light and dark grey limestone, phyllite, black carbonaceous slate with schistose quartzite and chert band
Carboniferous	Manjir formation	Pebbly phyllite, grey green slate with limestone
Lower to Middle Paleozoic	Dalhousie Dhauladhar formation	Granite and granite gneiss
Lower Paleozoic	Chamba formation	Meta siltstones, greywackes, slates and phyllites.

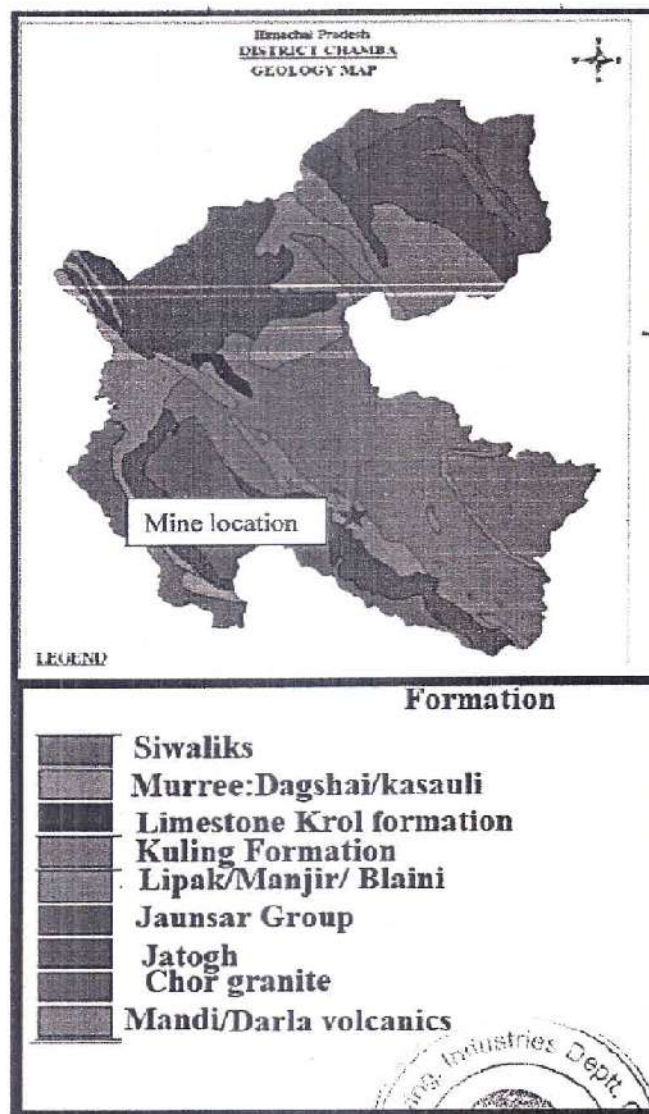


Figure 5: Geological Map of Chamba District.

## 2.2 The Geology of the Mining Area:

The mining lease area is situated on the right bank hill slope of Kinnor nala. The Geological Survey of India has carried out systematic mapping of the area and as per Geological map prepared by the said agency; the rocks mainly belong to Bharmour Formation comprising schistose quartzite, slate, phyllites, limestone, and magnesite. The Manjir Formation comprises of conglomeratic quartzite,



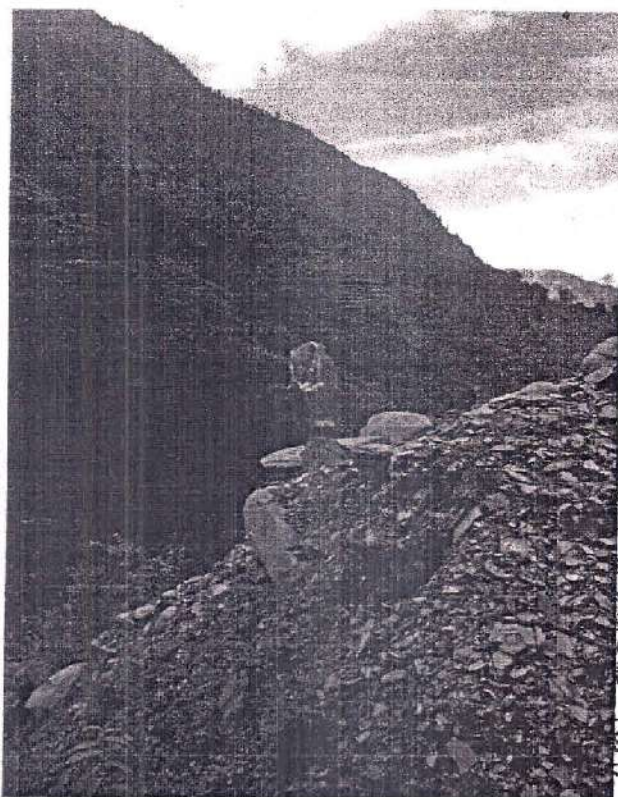
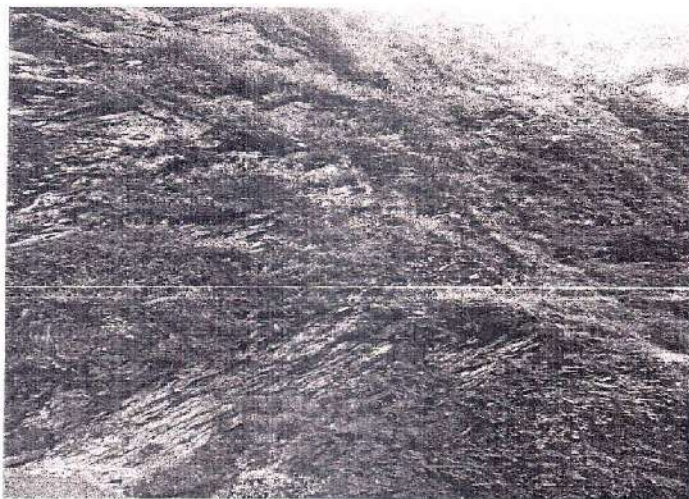
slate and phyllite. The Chamba Formation consists of slate, phyllite, quartzite and Greywacke. The rocks show well developed bedding joints and other two sets of joints. The three directional joints are; Bedding Joints, Vertical Joints and Horizontal Joints showing structural discontinuities at places in the study area. The thickness of soil cover is thin in nature.

The slate bearing horizon in the area belong to Chamba Formation. The Carbonaceous black slate is the mineral and quartzite and phyllite are the waste. The slate and phyllite bear ferruginous encrustation. The chlorite as irregular flakes define the planer fabric of the rock.

Slate in geology is the fine grained argillaceous or clayey metamorphic rock which cleaves or splits readily into thin slabs having great tensile strength and durability. True slates don't, as a rule split along the bedding but along planes of cleavage which may intersect at the bedding plane at any angle usually, in case of good roofing slates at high angles.

In colour, the slates of the area are black, grey and green. The dark slates usually owe their colour to carbonaceous material or finely divided sulphide of iron and the green varieties to the presence of chlorite.

The slates are split from quarried blocks of about ten centimetres thick. A chisel placed in position against the edge of the block is lightly tapped with a mallet, a crack appears in the direction of cleavage, and slight leverage with chisel serves to split the block into two pieces with smooth and even surface. This is repeated until the original block is converted into 16 to 20 separate slates, the thickness of which depends upon the many circumstances such as quality of rock, size required, purpose for which it is to be used and skill of the worker. The average thickness of roofing slate is half a centimetre. The slates are then trimmed to size required either by hand or by means of rotating machine-driven rotating cutters. The slate is then sold as dimension slate which is mainly used as roofing slates flooring, blackboards and table tops, crushed slate can be used as filler or on composition roofing.



Photograph 1&2: Mining lease area



### 2.3 Details of Prospecting work Undertaken in the Mining Area

The leased quarry is old being worked for last many years. Slate bands suitable of commercial value are exposed and the area needs no further exploration.

### 2.4 The Nature of Rocks and their Attitude

The proposed mining lease area comprises predominantly of thick beds of sand stone with siltstone rock which is hard and compact in nature. The attitude of rocks observed in the area are as under:

Strike N 25°E to S 25°W, Dip S65°E, Dip Angle 35° to 40°

## 3.0 Reserves

### 3.1 Estimates of Geological Reserves

#### (a) Geological Plan

The contours within the leasehold area have been plotted on surface plan on 1:500 scale having 2.0 metres contour interval. Thereafter, the geology of the deposit as evidenced from field visits has been marked on the surface plan shown in plate no. 1

#### (b) Sections

Across the geological plan, two section lines have been drawn to study the continuity of the deposit below ground surface for mineral reserve calculation. These section lines run almost in north-south direction represented by A-A' & B-B', from east to west from mine boundary. With the help of these sections the geological reserves are estimated.

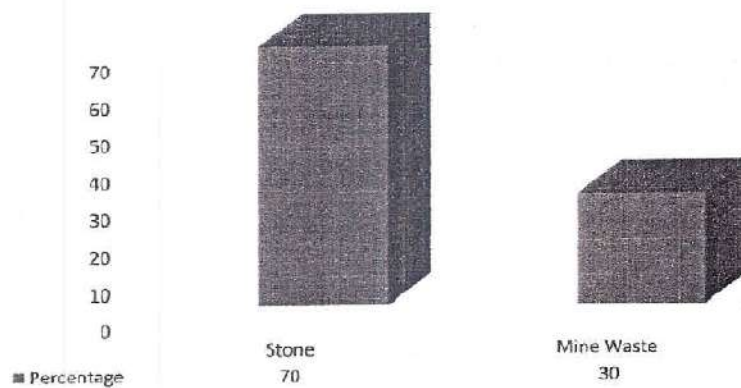
#### (c) Points for consideration

- The following points have been considered while calculating the reserves of stone.
- The reserves of mineral have been estimated by using the method of preparation of sections and applying the influence of such section to limited distance and multiplying it by width.
- Based on the geological mapping and cross sections preparation, the Geological reserve has been calculated.
- The specific gravity of mineral quartzite has been taken as 2.5 i.e. one cubic meter of mineral insitu measures 2.5 tonnes of stone.

The Geological Reserves are calculated on the basis of Section lines and considering the entire area as mineral bearing with mine waste component of five percent. The datum level has been kept at 1865m RL. The bulk density of stone is taken as 2.5.

**Table 4: The Percentage wise Distribution of Mineral is given below**

Mineral	Percentage
Stone	70
Mine Waste	30

**Graph 4: Percentage wise Distribution of Mineral and Mine Waste**

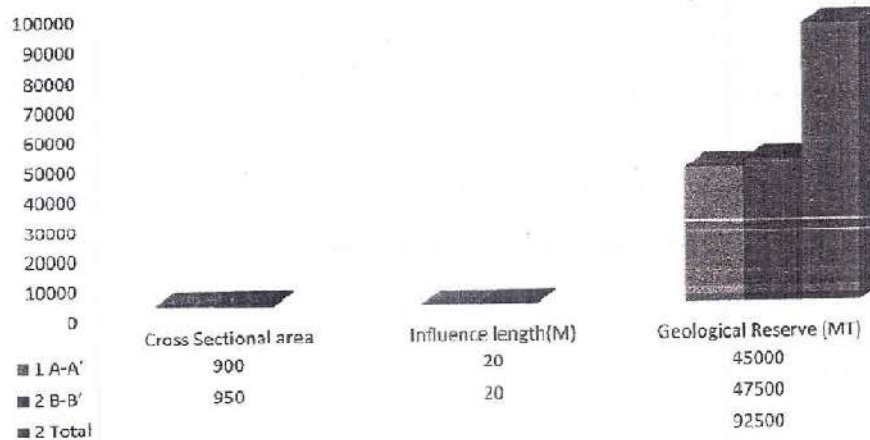
3.2 The Section wise geological reserves of mineral are summarized in the following table: -

**Table 5: Geological Reserves in Metric Tonnes**

Sr No.	Section Line	Cross Sectional area	Influence length(M)	Geological Reserve (MT)
1	A-A'	900	20	45000
2	B-B'	950	20	47500
	Total			92500







**Graph 5: Geological Reserves in Metric Tonnes**

### 3.3 Constraining Considerations for Mineable Reserves

For mine able reserve, following are important considerations:

- The mining area is a very small area measuring 5-01-00 bighas of Govt/Forest land forming hill slope.
- The buffer zone of 5.0 metres has been kept around the boundary of the proposed mine for safety point of view.
- There is no point of public utility in and around the immediate vicinity of the mine area.
- For undertaking systematic and scientific mining, the open cast mining is proposed by forming 6m×6m benches and maintaining 45-degree general angle of repose to ensure stability of hill slope.
- The mining has been proposed between 1906 m level to 1876 m level by forming 5 nos. of benches. The first bench is proposed at 1900mRL.
- The land is a Govt./Forest land and after mining it will *be* restored for making afforestation purposes hence five numbers 6m×6m benches are designed in such a way so that desired end use is attained.
- 300 working days per annum have been taken for the purpose of calculation.
- In total five benches are suggested at following level.
  - 1) 1900m R.L.
  - 2) 1894m RL

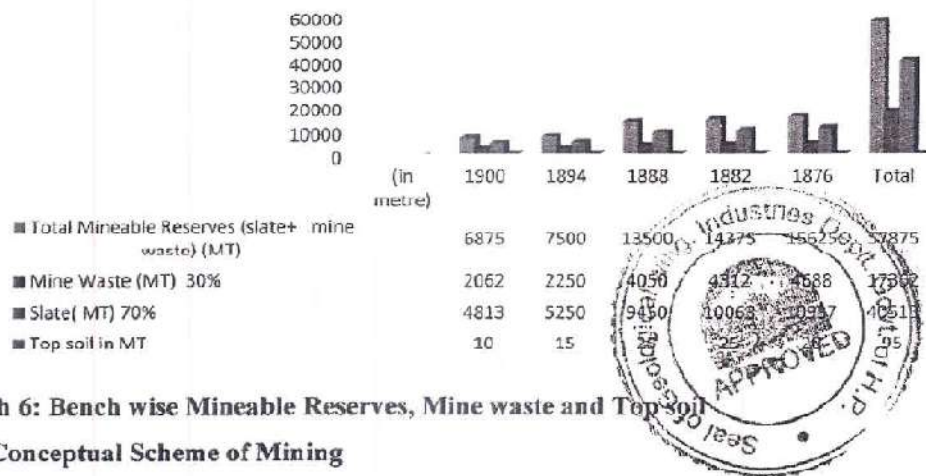
- 3) 1888m RL
- 4) 1882m RL
- 5) 1876m RL

### 3.4 Estimated Mineable deposits of the Mine Area

The bench wise mineable deposits are estimated as under: -

**Table 6: Bench wise Mineable Reserves of the Mining Area.**

Bench Level (in metre)	Total Mineable Reserves (slate+ mine waste) (MT)	Mine Waste (MT) 30%	Slate( MT) 70%	Cumulative Reserve of slate in MT	Top soil in MT
1900	6875	2062	4813	4813	10
1894	7500	2250	5250	10063	15
1888	13500	4050	9450	19513	25
1882	14375	4312	10063	29576	25
1876	15625	4688	10937	40513	20
Total	57875	17362	40513		95



**Graph 6: Bench wise Mineable Reserves, Mine waste and Top soil**

### 3.5 Conceptual Scheme of Mining

The mining has been proposed from 1906 m level to 1876 m level by formation of 5 Nos of benches by conceptualizing five numbers 6mx6m configuration of benches in the entire area; however, for



the first five years planning, the excavation (partly) has been proposed up to 1894 mrl to achieve the requisite production level. The plan showing ultimate pit plan is shown on Plate No 3. The extracted slate blocks after cutting, Chiselling and dressing will be sold in the open market. The total mineable reserves of the area are estimated to the tune of 57875 MT including the mine waste.

#### 4. Mine Development and Plan of progressive mining:

##### 4.1 Working of Deposit

The mining area is forming a part of hill slope and mineral suitable for the purpose is exposed in whole of the area with a cover of thin soil. The area is a compact block of mineral proposed for fresh mining. The mining is proposed open cast with formation of five numbers of 6 m X 6 m. benches from top to bottom to undertake systematic and scientific mining for excavation of mineral during the lease period.

Since the area is forming part of hill slope it is proposed to adopt semi-mechanised opencast mining method for exploitation of the mineral. JCB is required to dislodge the mineral block from insitu bed rock, making of haulage road and further loading in the vehicle for transportation to crusher site.

##### 4.2 Year-Wise/ bench wise Production of Mineral

Table 7: Year wise Mineral Production

Year	Bench Level in m	Slate Reserves (in MT)	Mine Reserves (in MT)	Slate Production in MT	Mine Waste production (in MT)	Top Soil (in MT)
First Year	1900	4813	2062	1900	800	4
<b>Total</b>		<b>4813</b>	<b>2062</b>	<b>1900</b>	<b>800</b>	<b>4</b>
Second Year	1900	2913	1262	1900	800	4
<b>Total</b>		<b>2913</b>	<b>1262</b>	<b>1900</b>	<b>800</b>	<b>4</b>
Third Year	1900	1013	462	1013	462	2
Year	1894	5250	2250	887	338	2
<b>Total</b>		<b>6263</b>	<b>2712</b>	<b>1900</b>	<b>800</b>	<b>4</b>

<b>Fourth Year</b>	1894	4363	1912	1900	800	4
<b>Total</b>		<b>4363</b>	<b>1912</b>	<b>1900</b>	<b>800</b>	<b>4</b>
<b>Fifth Year</b>	1894	2463	1112	1900	800	4
<b>Total</b>		<b>2463</b>	<b>1112</b>	<b>1900</b>	<b>800</b>	<b>4</b>

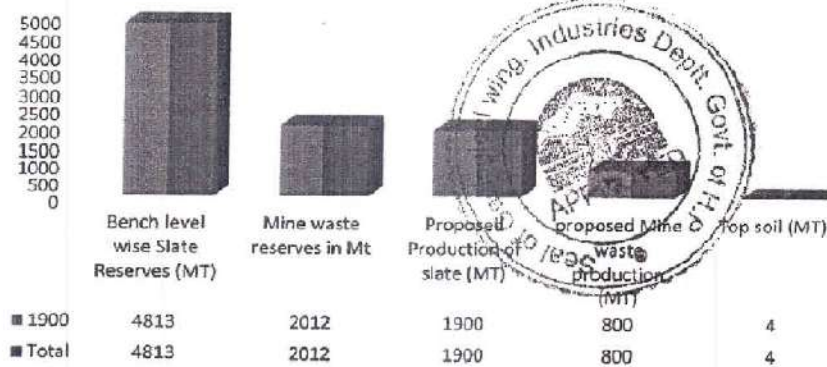
#### 4.3 Year wise Mine Development and Production of Mineral

##### 4.3.1 Mine Development and Production of Mineral during First Year

- Development of Bench at 1900 M level
- 1900 MT slate mineral will be excavated during the development of this bench.
- 800 MT mine waste will be generated during development of this bench.
- 4 MT of mine top soil will be generated.

**Table 8: Proposed Production of Slate, Mine waste and Top soil**

<b>Bench Level (M)</b>	<b>Bench level wise Slate Reserves (MT)</b>	<b>Mine waste reserves in Mt</b>	<b>Proposed Production of slate (MT)</b>	<b>Mine waste production (MT)</b>	<b>Top soil (MT)</b>
1900	4813	2012	1900	800	4
<b>Total</b>	<b>4813</b>	<b>2012</b>	<b>1900</b>	<b>800</b>	<b>4</b>



**Graph 7: Proposed Production of slate, Mine Waste and Top soil**

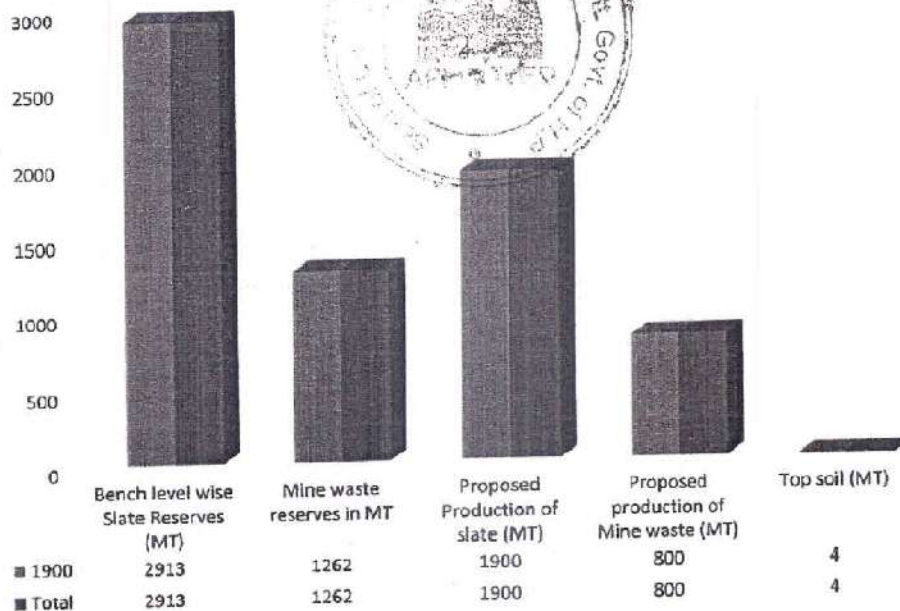


#### 4.3.2 Mine Development and Production of Mineral during Second Year

- Development of Bench at 1900 M level
- 1900 MT slate mineral will be excavated during the development of this bench.
- 800 MT mine waste will be generated during development of this bench.
- 4 MT of mine top soil will be generated.

Table 9: Proposed Production of slate, Mine waste and Top soil

Bench Level (M)	Bench level wise Slate Reserves (MT)	Mine waste reserves in MT	Proposed Production of slate (MT)	Proposed production of Mine waste (MT)	Top soil (MT)
1900	2913	1262	1900	800	4
Total	2913	1262	1900	800	4



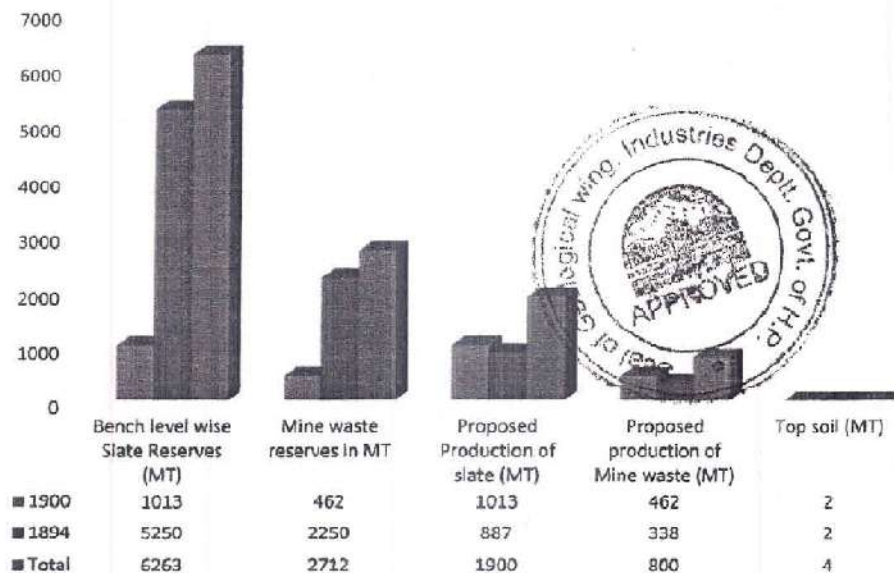
Graph 8: Proposed Production of Slate, Mine waste and Top soil

### 4.3.3 Mine Development and Production of Mineral during Third Year

- Development of Benches at 1900 M level and 1894m level.
- 1900 MT slate will be excavated during the development of these benches.
- 800 MT mine waste will be generated during development of these benches.
- 4 MT of mine top soil will be generated

Table 10: Proposed Production of Slate, Mine waste and Top soil

Bench Level (M)	Bench level wise Slate Reserves (MT)	Mine waste reserves in MT	Proposed Production of slate (MT)	Proposed production of Mine waste (MT)	Top soil (MT)
1900	1013	462	1013	462	2
1894	5250	2250	887	338	2
Total	6263	2712	1900	800	4



Graph 9: Proposed Production of Slate, Mine waste and Top soil

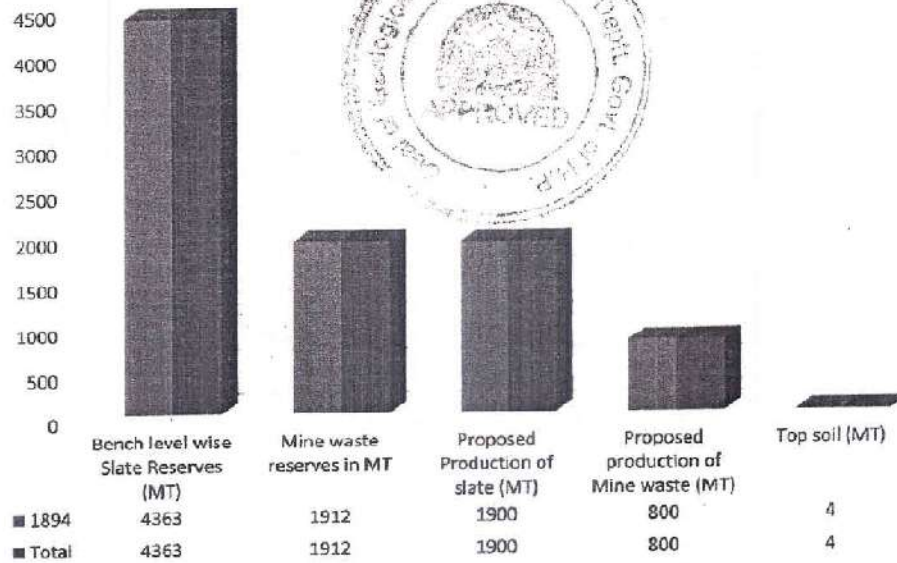


#### 4.3.4 Mine Development and Production of Mineral during Fourth Year

- Development of Bench at 1894 M level
- 1900 MT slate will be excavated during the development of this bench.
- 800 MT mine waste will be generated during development of this bench.
- 4 MT of mine top soil will be generated

**Table 11: Proposed Production of Slate, Mine waste and Top soil**

Bench Level (M)	Bench level wise Slate Reserves (MT)	Mine waste reserves in MT	Proposed Production of slate (MT)	Proposed production of Mine waste (MT)	Top soil (MT)
1894	4363	1912	1900	800	4
<b>Total</b>	<b>4363</b>	<b>1912</b>	<b>1900</b>	<b>800</b>	<b>4</b>



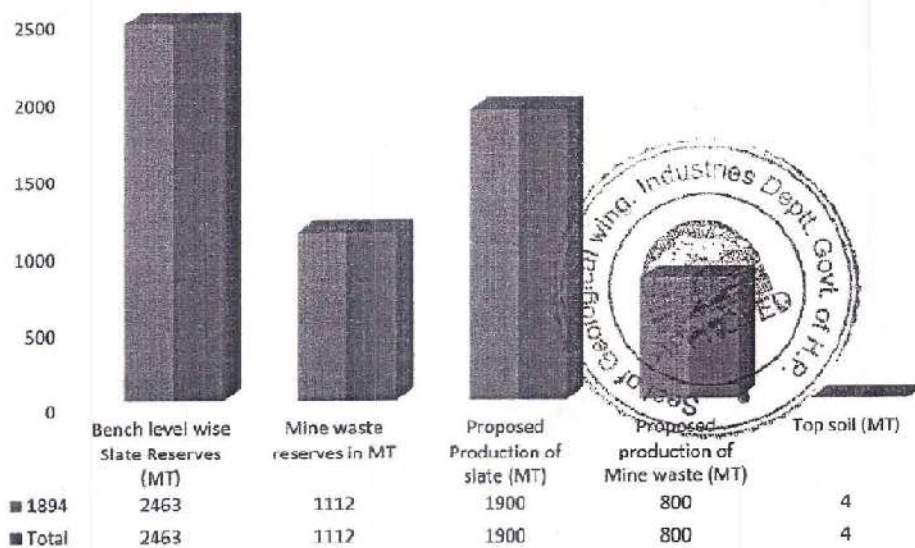
**Graph 10: Proposed Production of Slate, Mine waste and Top soil**

#### 4.3.5 Mine Development and Production of Mineral during Fifth Year

- Development of Bench at 1894 M level
- 2000 MT slate will be excavated during the development of this bench.
- 500 MT mine waste will be generated during development of this bench.
- 4 MT of mine top soil will be generated

**Table 12: Proposed Production of Slate, Mine waste and Top soil**

Bench Level (M)	Bench level wise Slate Reserves (MT)	Mine waste reserves in MT	Proposed Production of slate (MT)	Proposed production of Mine waste (MT)	Top soil (MT)
1894	2463	1112	1900	800	4
<b>Total</b>	<b>2463</b>	<b>1112</b>	<b>1900</b>	<b>800</b>	<b>4</b>



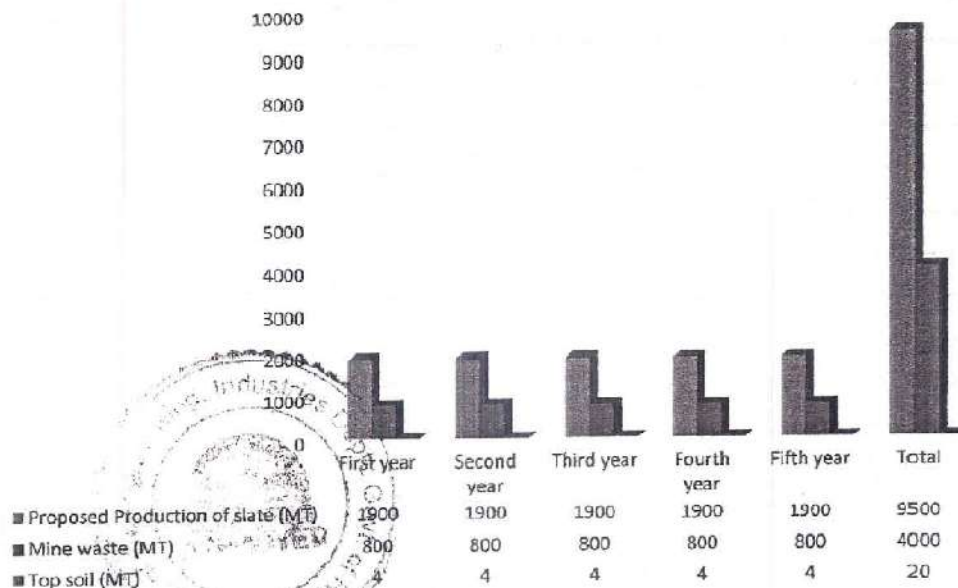
**Graph 11: Proposed Production of Slate, Mine waste and Top soil during Fifth Year**



#### 4.4 Production of Mineral during Five Years Working

Year	Proposed Production of slate (MT)	Mine waste (MT)	Top soil (MT)
First year	1900	800	4
Second year	1900	800	4
Third year	1900	800	4
Fourth year	1900	800	4
Fifth year	1900	800	4
Total	9500	4000	20

Table 13: Production of Minerals during five years working



Graph 12: Proposed Production of Slate, Mine Waste and Top Soil during Five Years Working

#### 4.5 Proposed Rate of Production and Life of Mine

The total deposits have been estimated to the tune of 57875 MT and usable mineral slate has been estimated to the tune of 40513 MT. The proposed average rate of production of slate is 1900 MT per year. Considering the average production rate, it will take more than ten years to exhaust the mineral potential in this mine.

#### 4.6 Mode of Working

The mining lease area is located on the part of hill slope and system of working in such topography will be performed by formation of benches as per provisions made under Metalliferous Mines Regulation, 1961. The J.C.B. will be used for dislodging of mineral block from the bed rock and construction of haulage road. The mining is proposed open cast manual using hand Shovel, Trowel, scrapping tools, pruning and digging tools

#### 4.7 Extent of Mechanization Used

The J.C.B. will be used for dislodging of mineral blocks from the in-situ bed rock and further for loading purposes.

#### 4.8 Blasting

No blasting is required.

#### 4.9 Mine Drainage

The mining lease area is a part of hill slope. Thus, to drain the rain water during rainy season small pits at suitable locations be constructed to prevent any surface flow of water through mine area. The collected water in the pits will slowly ingress into the sub-surface through joints and fractures thus adding to ground water.

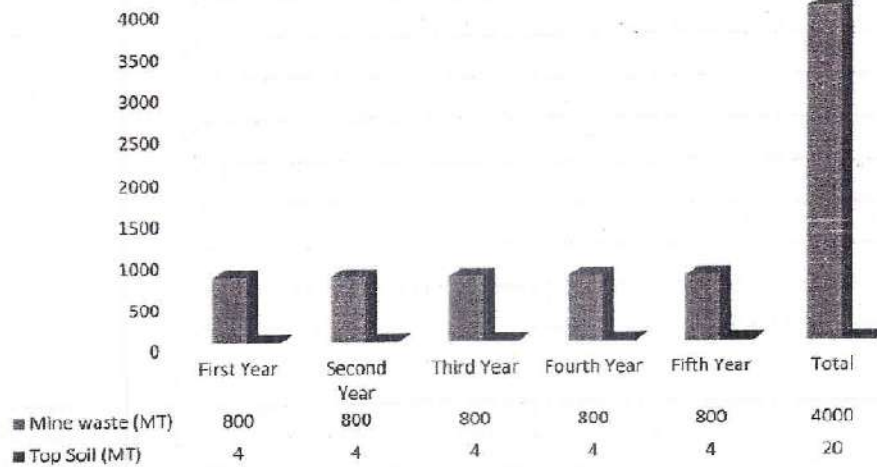
#### 4.10 Waste Management

The year wise muck waste likely to be generated has been calculated and will be dumped at suitable location marked in the plan for future use. This material will be spread over non mineralized and exhausted benches for plantation purposes. The year wise generation of mine waste and top soil is shown below.:

**Table 14: Generation of Mine Waste and Top soil**

Year	Mine waste (MT)	Top Soil (MT)
First Year	800	
Second Year	800	
Third Year	800	
Fourth Year	800	4
Fifth Year	800	4
Total	4000	20





**Graph 13: Graph : Generation of Mine Waste and Top Soil during Five Years Working**

#### **4.11 End use of Mineral**

The extracted mineral slate after cutting, chiesling and dressing to different sizes will be sold in the open market.

#### **4.12 Detail of Road Transportation Density**

The mining lease area has been granted for extraction of slates. As per development and production programme of five years, around 9500 MT of slate production is envisaged. Taking into consideration 300 working days in the mine, and 1900MT of slate per annum, about 6.33 MT slate will be produced per day. The slates will be transported to the road head by mules or through span. Thus, to transport the proposed quantity of slate per day i.e. about 7.0MT only one tipper will be required. Hence this will lead to a very negligible load on the transport density of road.



## Part-II

### Environment Management

#### 1.0 Base Line Data

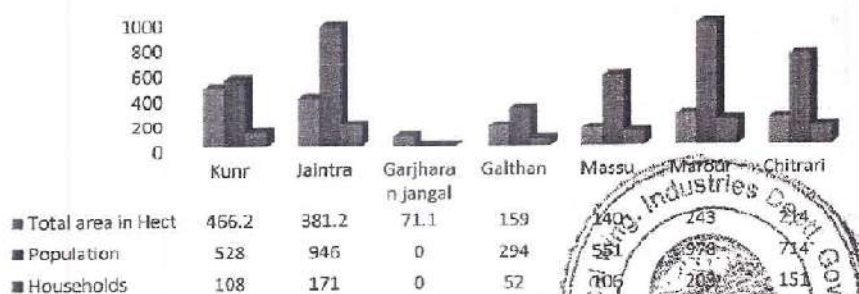
#### 1.1 Detail of population distribution

The detail of the population village wise surrounding to the mining area is tabulated below: -

**Table NO. 15: Detail of Population distribution of Surrounding Villages**

Name of village	Total area in Hect	Population	Households
Kunr	466.2	528	108
Jaintra	381.2	946	171
Garjharan jangal	71.1	0	0
Galthan	159	294	52
Massu	140	551	106
Marour	243	978	203
Chitrari	214	714	151

Source: Census handbook Chamba District-2011



**Graph No.14: Total area of Surrounding Villages and Population**

#### 1.2 Socio- economy of the villages/population

The economy of the villages surrounding to the mining lease area is mainly agriculture based and cattle rearing. There is hardly any job when there is no agriculture work. People are poor and always in search of work at village level. In recent years with the development of infrastructural activities in the area, the transport facilities have improved to a greater extent and villagers have started growing vegetables and transporting it to the nearest market for upliftment

of their socio-economic conditions. The proposed mining activities in the area will benefit to the local inhabitants by providing direct or indirect additional employment.

### 1.3 Land use detail with 5.0 km radius

The land use pattern showing area under forest, under non-agricultural use, barren and uncultivable land, permanent pastures and grazing lands, and other categories of land is tabulated below: -

## LAND USE AND LAND COVER MAP SURROUNDING TO MINING LEASE AREA

(Part of Topo-Sheet No. 52D/7)

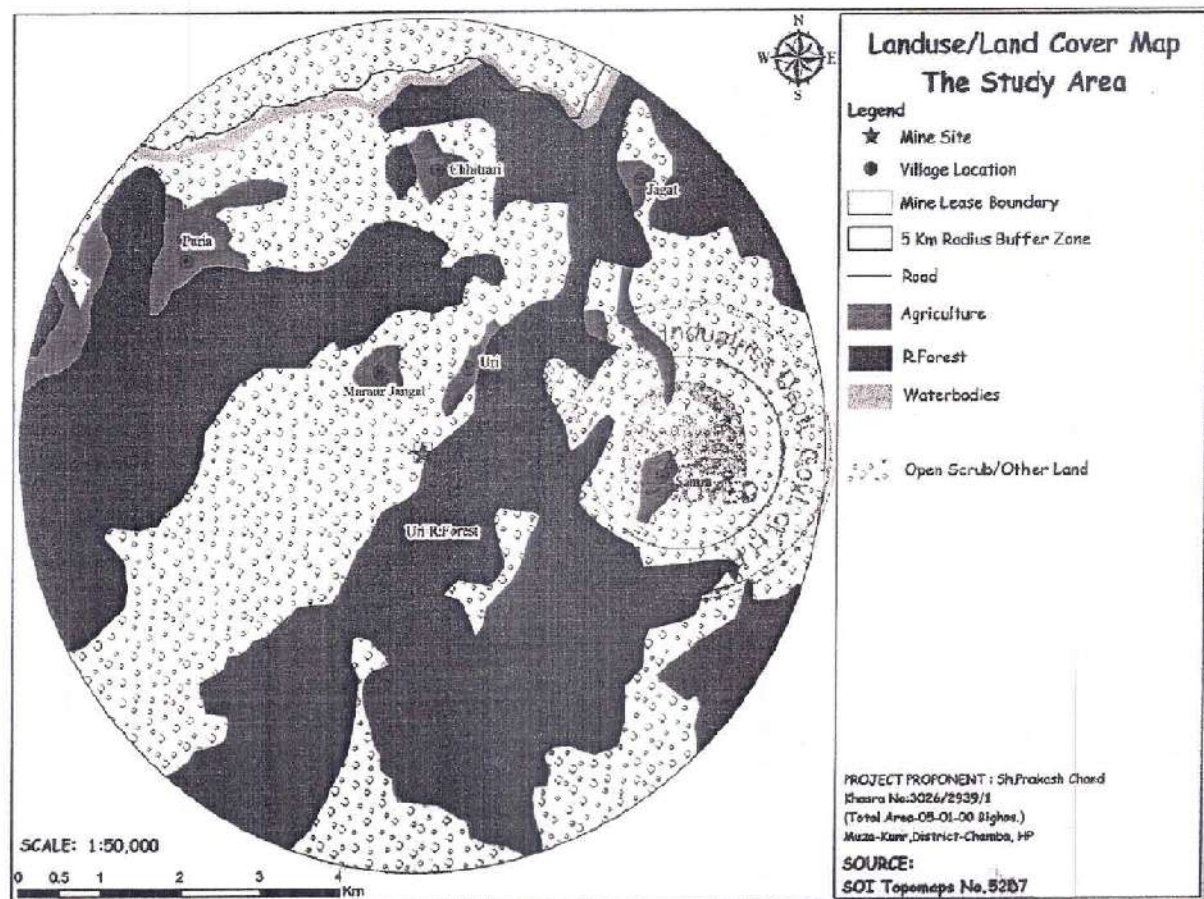


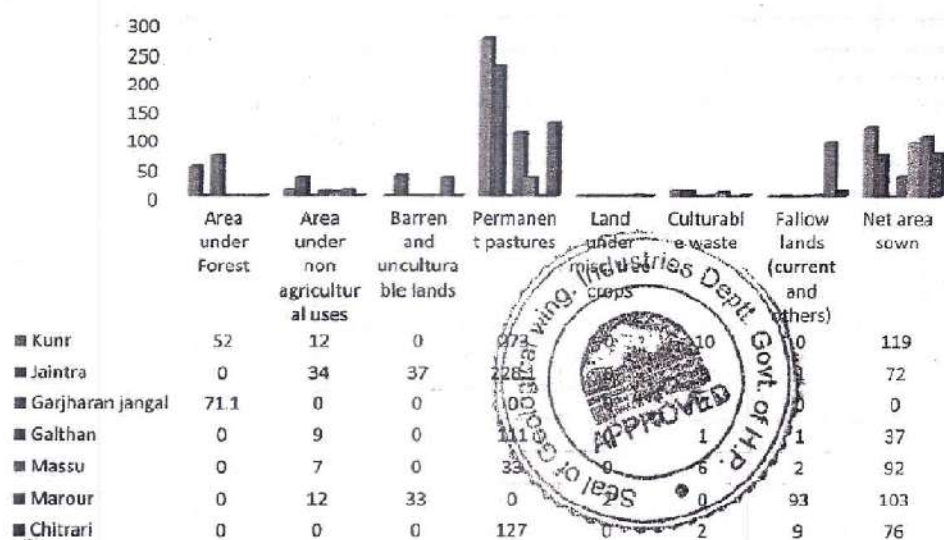
Figure No. 6: Land use and land cover map surrounding to lease area



Table No. 16: Showing Land Use of Villages surrounding to the Mining Lease Area (in hecets)

Name of village	Area under Forest	Area under non agricultural uses	Barren and unculturable lands	Permanent pastures	Land under misc. tree crops	Culturable waste	Fallow lands (current and others)	Net area sown
Kunr	52	12	0	273	0	10	0	119
Jaintra	0	34	37	228.1	0	9	1	72
Garjharan jangal	71.1	0	0	0	0	0	0	0
Galthan	0	9	0	111	0	1	1	37
Massu	0	7	0	33	0	6	2	92
Marour	0	12	33	0	2	0	93	103
Chitrari	0	0	0	127	0	2	9	76

Source: Census handbook Chamba District-2011



Graph No.15: Land use 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, and Millet. Besides these, potato and a variety of vegetables 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 livelihood. The most of the land is un-irrigated and depends upon the rainy season.

The water flows throughout the year in the streams/khads. 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-Wheat
- 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, Mustard and Sesamum are also grown in the district. Vegetables like Peas, Carrot, Cabbage, Ladyfinger, Tomato, Brinjal, Capsicum, Cauliflower, Cucumber, Pumpkin etc. 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. The crop pattern surrounding to lease area and area under high yielding variety crops is given below.

Table No.17: Showing Crop Pattern Surrounding Lease Area

Table No.17: Showing Crop Pattern											
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				

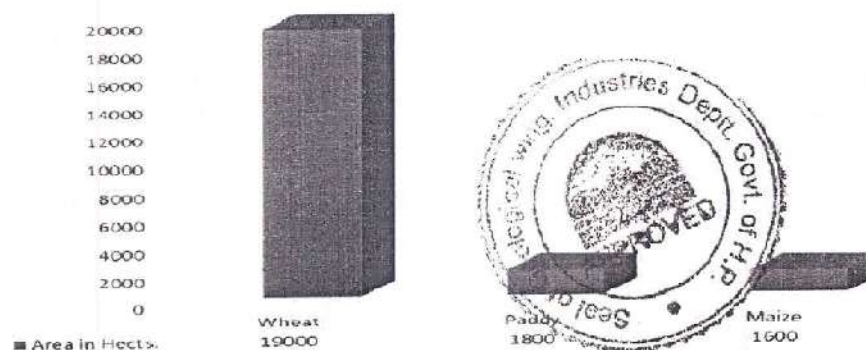
Table No. 18: Showing Area under high yielding variety crops in district Chamba

Year 2019-20

Name Crops	Area in Hects.
Wheat	19000
Paddy	1800
Maize	1600

Source: Statistical Abstract of Himachal Pradesh 2019-20

## Area in Hects.



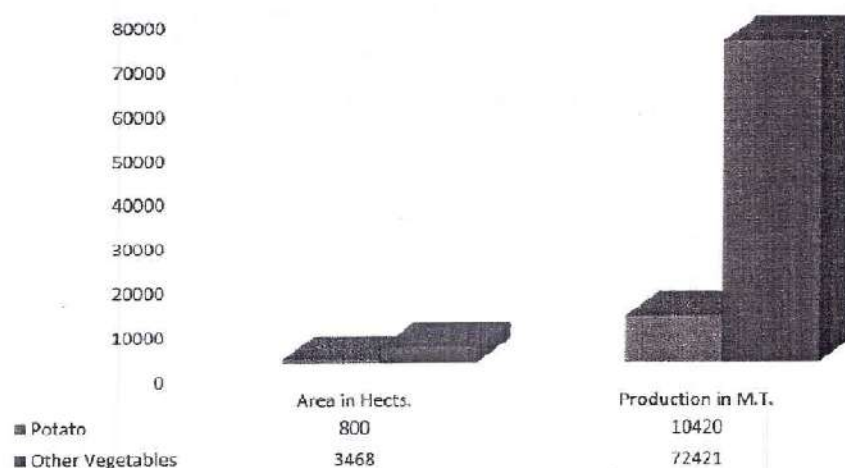
Graph No 16: Showing Area under High Yielding Variety Crops in Chamba District

Adjoining to the mining lease areas, the terraces formed above flood plains of Ravi river and Siul Nadi and other streams support agriculture crops. The water flows throughout the year in these Rivers/Streams. Production of potato and other vegetables in Chamba District is as under: -

**Table No.19: Showing Production of Potato and other Vegetables in District Chamba**

Name Vegetables	Area in Hects.	Production in M.T.
Potato	800	10420
Other Vegetables	3468	72421

Source: Statistical Year Book of Himachal Pradesh 2019-20

**Graph No. 17: Showing Production of Potato and other Vegetables in District Chamba**

The net irrigated area of the State and District Chamba is given below.

**Table No.20: Showing Net Irrigated Area of the State and District Chamba**

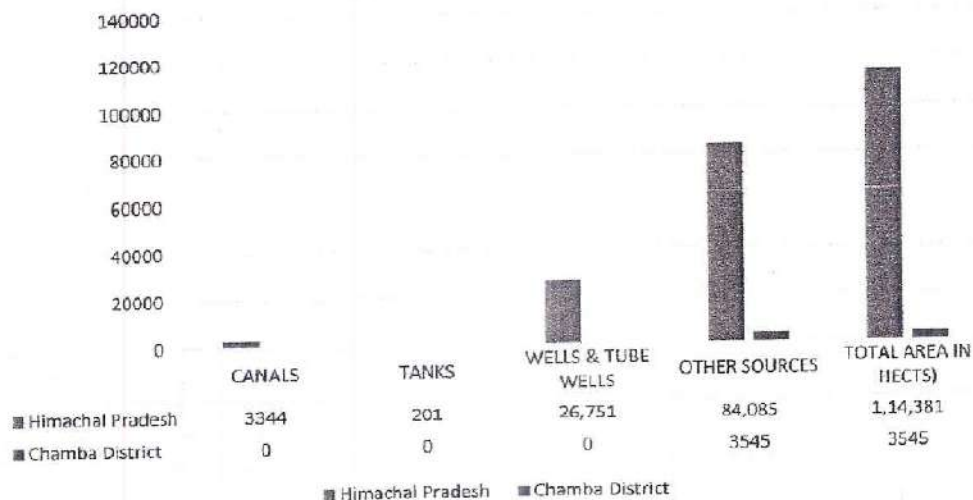
Table Showing Net Irrigated area by source in the State and district (in hecst)

NAME OF SOURCE	CANALS	TANKS	WELLS & TUBE WELLS	OTHER SOURCES	TOTAL AREA IN HECTS)
Himachal Pradesh	3344	201	26,751	84,085	1,14,381
<b>Chamba District</b>	0	0	0	3545	3545

Source: Statistical Abstract of Himachal Pradesh 2019-20



### Net Irrigated by Source in Hects



Graph No.18: Showing Net Irrigated Area by Source (in Hects)

#### 1.5 Horticulture

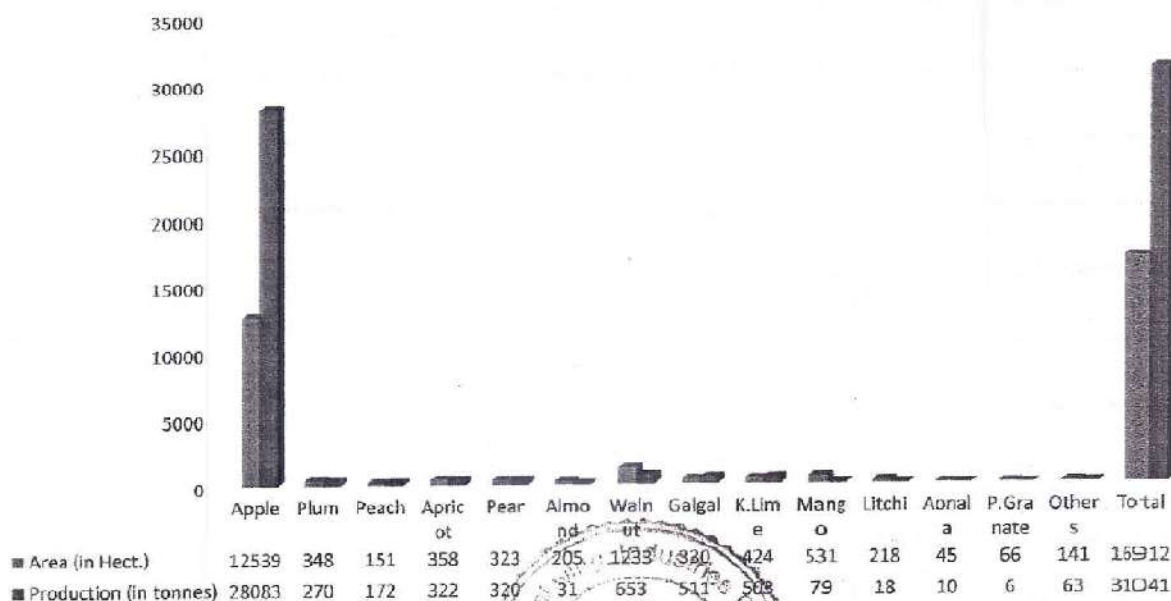
The topography and agro-climatic conditions of the district are quite suitable for the productions of various fruits. The topography of the district can be grouped into three categories namely High hill areas located at the higher elevation, mid hill areas and low-lying valley areas. Fruits of various kinds depending upon the terrain, climatic conditions, and soil are grown in the district. The Main horticulture produce and area in district Chamba is given below: -

Table No.21: Showing Area under Each Category of Fruits in Chamba District

Name of Fruit	Area (in Hect.)	Production (in tonnes)
Apple	12539	28083
Plum	348	270
Peach	151	172
Apricot	358	322
Pear	323	320
Almond	205	31
Walnut	1233	653
Galgol	330	511
K.Lime	424	503
Mango	531	79

Litchi	218	18
Aonala	45	10
P.Granate	66	6
Others	141	63
Total	16912	31041

Source: Statistical Abstract of Himachal Pradesh 2019-20



Graph No.19: Showing Area under Each Category of Fruits in Chamba District

### 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 are also the need of the people. The people keep the following kind of animals: -

1	Cow	6	Horse
2	Sheep	7	Ponies
3	Bulls	8	Pigs
4	Goat	9	Mules
5	Dogs	10	Poultry

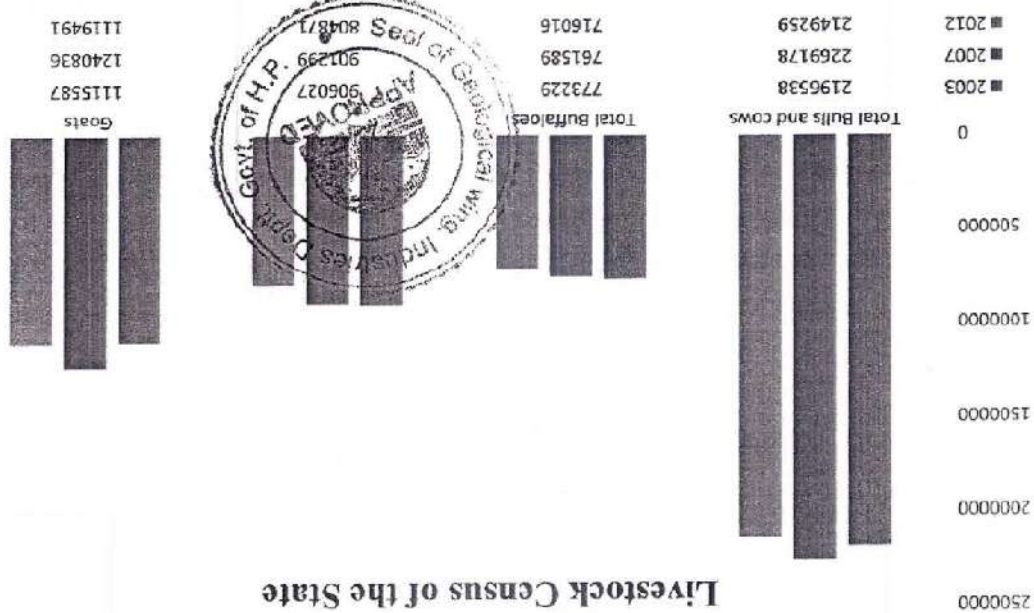
The livestock census of the State is given below: -

Table No.22: Showing Livestock Census of the State

Years	Total Bulls and cows	Total Buffalo	Sheeps	Goats	Horses and Ponies	Mules and Donkeys	Camels	Pigs	Yaks	Others
2003	2196538	773229	906027	1115587	17144	32797	137	2798	1590	200
2007	2269178	761589	901299	1240836	13153	26361	56	2493	1705	14
2012	2149259	716016	804871	1119491	15081	30664	177	5033	2921	918

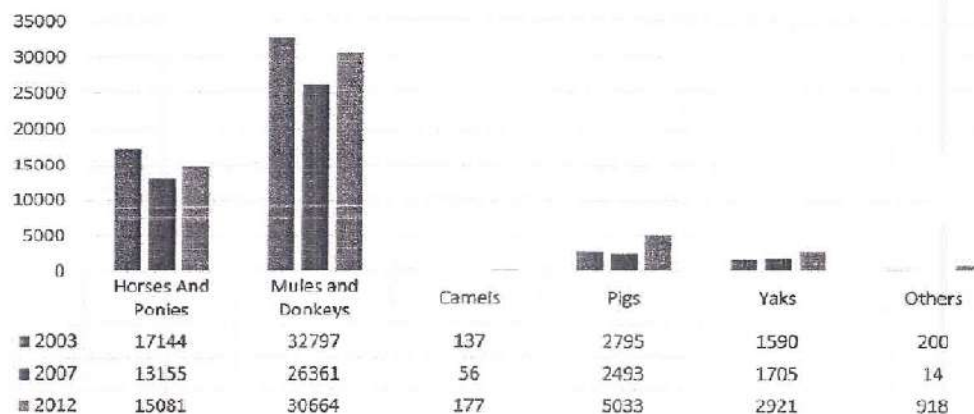
Source-Statistical abstract of Himachal Pradesh 2019-2020

## Livestock Census of the State





### Livestock Census of the State



Graph No.20: Showing Livestock census of the State

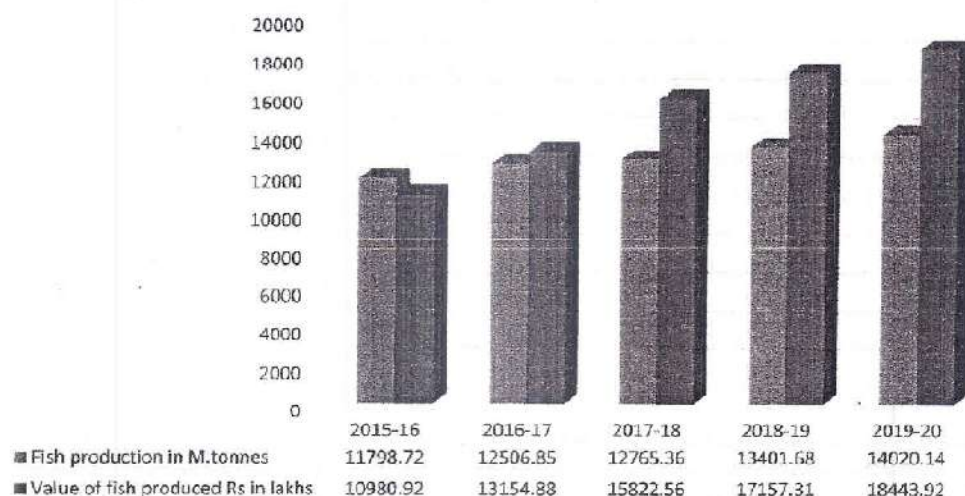
#### 1.7 Fisheries

Fisheries play an important role in the rural economy by augmenting food supply, generating employment and raising nutritional contents of food. There is abundance of fishes in rivers and perennial streams. The important species are Mahasheer, Rohu, Singhara, Baranguli, KaliMacchi, Kala banas, Bhareli, Mrigal, and Bhunga. Presently 554 licensed fishermen are engaged in fishery profession catching approximately 1359 metric tonnes of fish annually. Culture of fish in ponds is called aquaculture. Although pisciculture is a non- traditional activity, yet depletion of fish in rivers and increasing market demands have forced the Government as well as farmers to think on these lines. There is a vast scope of fishery development in the district. However, as per information gathered from Statistical Abstract of Himachal Pradesh, 2018-19, there is no production of fish catch is reported in Chamba District. The State wise information regarding fish production and value of fish catch in the State is given below:-

Table No. 23: Fish Production and Value of Fish Produce in the State

Year	Fish production in M.tonnes	Value of fish produced Rs. in lakhs
2015-16	11798.72	10980.92
2016-17	12506.85	13154.88
2017-18	12765.36	13822.56
2018-19	13401.68	17157.31
2019-20	14020.14	18443.92

Source-Statistical abstract of Himachal Pradesh 2019-2020



Graph No.21: Fish Production of State

### 1.8 Flora

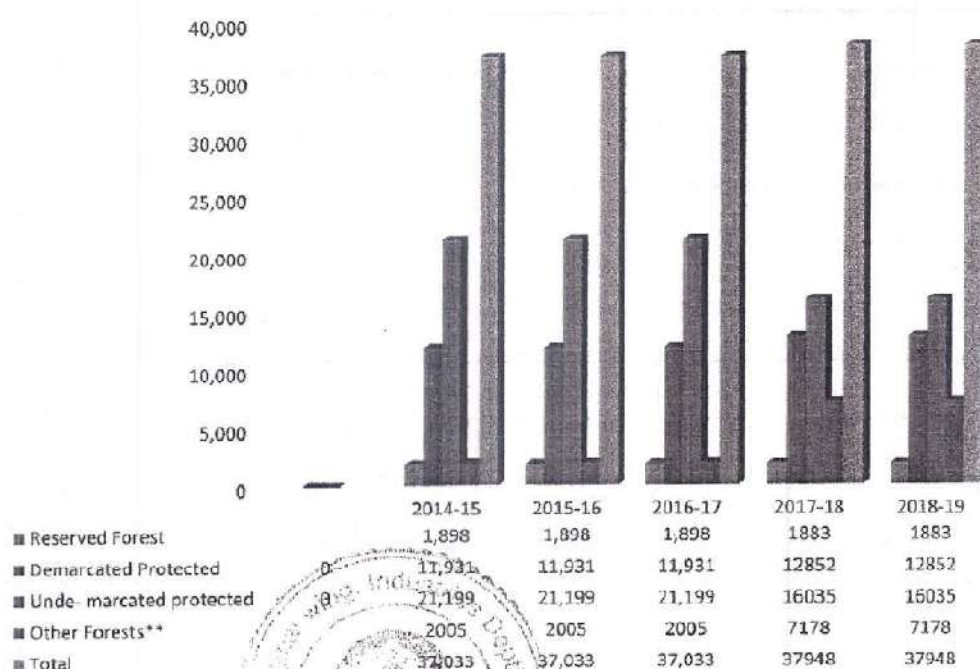
The topography climate and nature of soil is mainly responsible for the growth of various types of trees and shrubs which are important for making the environment of the area most suitable for the survival of living beings. The forests play a vital role in shaping the characteristic conditions of an area. Besides also influence the economic and social life of the people considerably. The forest provides valuable timber, medicinal, herbs and raw material for industries and also provides employment and play a vital role in conserving the soil and ensure timely rains. The forests of Chamba 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 conifers (Kail, Spruce, Fir) and Kharsu, Oak Forests. Chamba district have a large number of aromatic and medicinal plants which can be utilized for the pharmaceutical and Ayurvedic medicines like Dhoop, karu/Kaur, Brahmi, Kuth, Bankani etc. The following most prominent varieties of trees are found in the different elevation.

Table No. 24: Classification of Forest area in the State by Legal Status (in SqKm)

Year	Reserved Forest	Demarcated Protected Forests	Undemarcated protected Forests	Other Forests**	Total
------	-----------------	------------------------------	--------------------------------	-----------------	-------

2014-15	1,898	11,931	21,199	2005	37,033
2015-16	1,898	11,931	21,199	2005	37,033
2016-17	1,898	11,931	21,199	2005	37,033
2017-18	1883	12852	16035	7178	37948
2018-19	1883	12852	16035	7178	37948

Source-Statistical abstract of Himachal Pradesh 2019-2020



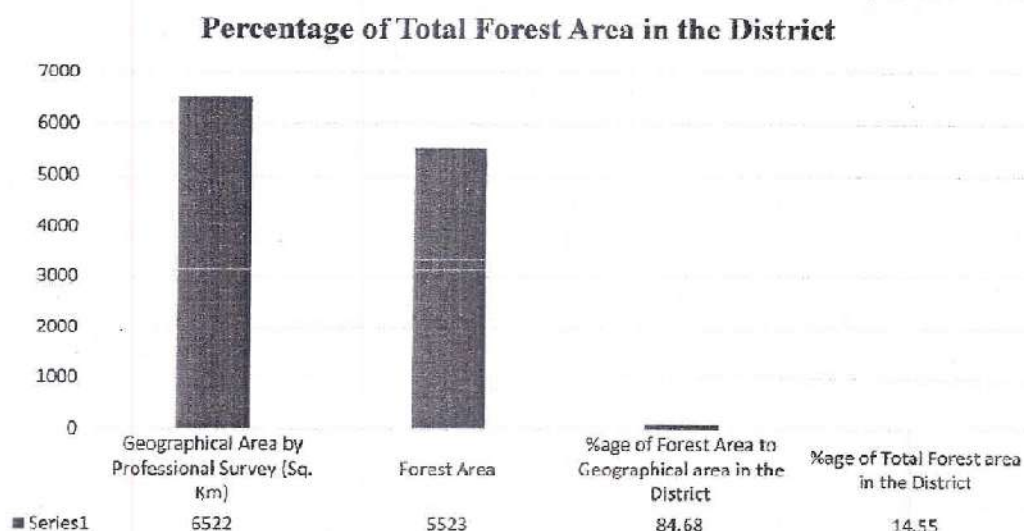
Graph No.22: Classification of Forest Area by Legal status in Sqm

Table No.25: Percentage of Total Forest Area in the District

Geographical Area by Professional Survey (Sq. Km)	Forest Area (Sq. Km)	% age of Forest Area to Geographical area in the District	% age of Total Forest area in the District
6522	5523	84.68	14.55

Source-Statistical abstract of Himachal Pradesh 2019-2020





**Graph No.23: Percentage of Total Forest Area in the District**

### 1.9 Fauna

Common mammals found in the area are Fox, Hare, Jungle cat & common avi fauna are crow, common pigeon, Hawk etc. Details of common mammals are given below: -

1	Black bear	(Selenarctos thebatanus)
2	Samber	(Cervus unicolor)
3	Leopard	(Felis bengalensis)
4	Musk deer	(moschus moschiferus)
5	Hare	(Lepus nigricornis)
6	Fox	(Vulpes bengalensis)
7	Langoor	(Pseudoryx entellus)
8	Flying squirrel	(Hylopetes tigris)
9	Bat	(Hippodamia armiger)
10	Snow leopard	(Panthera uncia)
11	Monkey	(Macaca mulatta)
12	Barking deer	(Muntiacus muntjak)

13	Pigeon	(Columbia livia)
14	Mor	(Payocrisslatus)
15	Crow	(Crovussplendes)
16	Parrot	(Prottaculakarneri)
17	House sparrow	(Parser domcrticus)
18	Cranes	(Grurs species)
19	Himalayan fly catcher	(Terpsibhousparadisi)
20	Wood pecker	(PicoidesMacer)

#### 1.10 Climate of the Area

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

The climate of the district is sub-tropical to temperate depending upon the elevation. Four major seasons that are the winter season extends from November to February; summer season from March to June followed by the monsoon period extending from July to September end. Maximum precipitation in the form of rain occurs during July to September. During the year 2018, the average annual rainfall recorded in the district was about 1214.1mm, out of which 90% occurs during monsoon season. In the non monsoon season precipitation as snowfall also occurs in the higher reaches above 1500 m above msl. 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 minimum and maximum temperature recorded are 2.9°C and 34°C during the year, 2018. The Chamba Jot lies on 2372m above mean sea level. The climate here is mild, and generally warm and temperate. In winter there is much less rainfall in Chamba Jot than in summer. In Chamba Jot, the average annual temperature is 12.6°C.

CLIMATE OF THE AREA			
CLIMATE	WINTER	SUMMER	RAINY SEASON
PERIOD	NOV.-FEBRUARY	MARCH -JUNE	JULY-OCTOBER
Weather	Cool	Hot	Humid

The temperature in Saluni area varies between maximum reaching to 31.5 to 34 degree Celsius in May – June and minimum being recorded 2.9 to 5.2 degree Celsius in December – January.

## 2.0 ENVIRONMENT MANAGEMENT PLAN

Like any developmental activity, the mining also affects different environmental attributes. The extent and nature of damage caused by mining and associated activity depends upon the scale of activity and carrying capacity of the area. The environment management plan covers important tasks include impact description, prediction, evaluation and formulation of plan to mitigate adverse effects on environment and ecology. The important likely impact of mining on the ecology and environment of the area in hilly terrain can be listed as under:

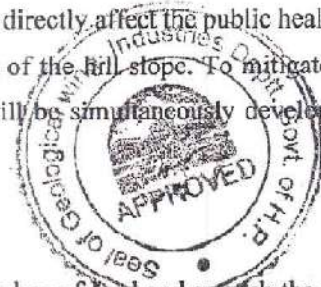
- Land degradation and visual impact
- Impact on air
- Impact on water
- Impact on Noise Level
- Waste Disposal Arrangement, if Any
- Soil erosion and siltation
- Socio Economic benefits

### 2.1 Land degradation and visual impact

The mining is proposed in barren area and shall involve open cast of mining. The mineral will be extracted from the mine by creating terraced topography causing alteration of the landscape. Although this landscape alteration does not directly affect the public health, but causes visual nuisance due to change in contrast and texture of the hill slope. To mitigate this impact, during mining operation, mined out pits at the top will be simultaneously developed for doing plantation/agriculture use.

### 2.2 Impact on Air

The mining is proposed in 05-01-00 Bighas of land and as such the magnitude of mining is not very high and restricted to the limited area. There is no habitation or point of impotent





public utility nearby the mine area. Moreover, the mining will be conducted manually, as such no dust emission is expected.

### 2.3 Impact on Water

The Kunr Nala is flowing downhill side of lease area. To mitigate any impact on water flowing in the nala, check dams will be constructed at suitable locations to arrest flow of debris etc. There is no water source such as well or spring in and around the mine area.

### 2.4 Impact on Noise Level

The area is far away from the habitation. The magnitude of mining is small and sound pollution in such mines is negligible during mining operation. The process is only to extract the material manually/mechanically with the help of excavator without any blasting. Hence, the noise level will not exceed the permissible level.

### 2.5 Waste Disposal Arrangement, if Any

The waste disposal arrangement is being discussed in the next chapter reclamation plan.

### 2.6 Erosion and siltation

The site under question comprises of hard rock material and surface is covered with thin soil cover. About 20 MT of soil will be generated during five years mining as shown in the table supra. In order to prevent the erosion of soil and siltation of the water bodies, it will be ensured that prior to mining operation; the soil shall be properly removed from the surface and stacked at the locations marked on the plates. This soil will be back filled in the abandoned pits for reclamation work to grow plantation and agriculture use.

### 2.7 Socio Economic benefits

The socio-economic benefits arising due to mining are as under: -

- Generation of employment in the rural area.
- Improvement in the living standards of the rural people
- Creating of infrastructural facilities like road electricity, shops etc.
- Development of transport facilities

- Helping to improve literacy in the area
- Exploiting natural mineral resources
- Improving the greenery of the area
- Contribution to the charitable activities

## 2.8 Transport of Mineral

As per development and production programme of five years, around 9500 MT of slate production is envisaged. Taking into consideration 300 working days in the mine, about 7 MT slate will be produced per day. The slates will be transported to the road head by mules or through span. Thus, to transport the proposed quantity of slate per day i.e. about 7.0MT only one truck/tipper will be required. Hence this will lead to a very negligible load on the transport density of road



### PART-III

#### 1.0 PROGRESSIVE MINE CLOSURE PLAN/ RECLAMATION PLAN

The mine area is a barren piece of land without any cultivation as the bed rock is comprising of hard rock with thin soil cover at places. The mining lease has been applied in 05-01-00 bighas of land, however, the actual mining will be conducted in less area by leaving buffer zone and non-working area. After extraction of stone from the hill slope, the configuration of the hill slope topography will change to terraced topography.

#### 1.1 Mine Waste Disposal

##### a) Year wise generation of mine waste and top soil.

During mining operation, mine waste is likely to be generated. In addition to above mine waste, there is a thin layer of top soil covering the hill slope surface. The year wise generation of mine waste along with top soil is shown in the following table.

**Table 26: Generation of Mine waste and top Soil during five Years Working**

Year	Mine Waste (MT)	Top soil (MT)
First Year	800	4
Second Year	800	4
Third Year	800	4
Fourth Year	800	4
Fifth Year	800	4
<b>Total</b>	<b>4000</b>	<b>20</b>

##### b) Year wise disposal of mine waste

The mine waste likely to be generated has been calculated and shown in the table supra will be stacked on the location shown in the plates from Plate No. 5 to Plate No. 9. The waste material will be generated around 800 MT annually and will be lifted in a phased manner for spreading on the mined benches for plantation purposes. Thus around 200 sqm of space will be required for stacking the mine waste annually by keeping the height of dump yard to around 2.0m as the same will be lifted annually for plantation purpose. The area available on the aforesaid benches of lease will be



sufficient as the mine waste will be lifted from the place in a phased manner annually for spreading over the exhausted benches beneath top soil for growing vegetation.

### c) Cost of Mine Waste Disposal

As shown in the table, 4000 MT of mine waste will be generated during five years and on an average 800 MT will be generated annually. The mine waste generated shall be stacked on the site shown in the Plates. No transportation of mine waste outside lease area is involved. Hence no budget for transportation is required. However, for its transportation for plantation etc. Rs. 50/- per tonne will be sufficient. As such a fund of about Rs. 40000 per annum will be sufficient for disposal of mine waste.

### 1.2 Top Soil Arrangement

During five years working, 20 metric tonnes of soil will be generated. The project proponent will stack the top soil at the location marked in the plates. The top soil generated as explained in the above para will be lifted in a phased manner and shall be filled up in the pits/ abandoned benches for growing green belt and putting the land for agriculture use. The year wise generation of top soil is given in the following table: -

Table 27: Generation of top soil during five years working

Year	Top Soil (MT)
First year	4
Second Year	4
Third Year	4
Fourth Year	
Fifth Year	
Total	



### 1.3 Preventive check dam Structures

The elevation of the mine varies from 1900 m to 1894 m and during mining operation 2 nos. of benches will be formed giving the look of terraced type configuration of hill slope. The check

dams will be constructed at suitable locations to arrest flow of debris and silt during rainy season. While carrying out the construction of these structures, it shall be ensured that these structures are laid on hard foundation having height of around 1.5 mtrs. The following table shows the location of check dams, their dimensions and tentative cost of construction.

**Table 28: Location of preventive structures**

year	Location	Length (inm)	Height (in m)	Tentative cost in Rs
First year	C-1	2.0	1.5	5000
Second Year	C-2	3.0	1.5	7000
Third Year	C-3	4.0	1.5	9000
Fourth Year	C-4	3.0	1.5	7000
Fifth Year	C-5	3.0	1.5	7000
Total				35000

#### 1.4 Plantation Work

The afforestation programme is the most important programme to improve the environment and ecological balance of the area. Grasses and bushes which have fibrous roots and give the binding property to the soil will be grown on the exhausted area in the first instance. After growing grasses and bushes, other tree species in consultation with the experts will be raised in the mined area, based on the characteristics of soil, topography and climatic conditions. The part of the area will be used for cultivation purpose as per the requirement of the project proponent. The year wise area proposed for plantation is as under: -

**Table No. 29: Area Proposed for Plantation**

Year	Area proposed for Plantation (in Sq Mts.)	No of Plants to be Planted
First Year	50	5
Second Year	50	5
Third Year	50	5

Fourth Year	50	5
Fifth Year	50	5
<b>Total</b>	<b>250</b>	<b>25</b>

**a) Year wise Cost of Plantation**

The cost of plantation will include cost of plants, cost of manure and other labour activities like spreading of top soil on the abandoned benches, plantation work and regular watering and looking after the growth of plants. Thus, by engaging a part time Gardner shall cost around Rs 10,000 per year and in five years, the expenditure shall amount to Rs 50,000.

**b) Year Wise survival rate**

The abandoned benches /mine area will exhibit consolidated and hard nature of strata after mining operation. The top soil stacked on the identified site will be back filled on the abandoned benches/pit for growing plantation. Thus, in view of above, the survival rate of plantation is expected around 40 percent. However continuous monitoring will be conducted to replant the dead plants to achieve at least 60 percent survival rate after five years.

**1.5 Re-grassing of Mined Lands**

In addition to afforestation programme planned in the mined out areas, the grasses in consultation with the expert agencies will be grown on the vacant lands to provide fodder for the herbivorous animals. This activity will also improve the aesthetic value of the land. For growing grasses in such lands budget of Rs 10,000 shall be made per annum to meet out the grass seeds and other expenditure

**2.0 Strategy for protection of point of public utility etc.**

There is no point of public utilities present in and around the mining lease area.

**3.0 Manpower development; -**

The proposed mining area is located on hill slope involving open cast mining. The workers will be required for extraction of mineral from the quarry site, Cutting of blocks, chiselling and dressing to different sizes. There is requirement of one supervisory staff for overall super vision of working and five Nos of skilled worker will be required





Thus, around 6-persons will be employed to carry on the mining operation and associated activities. The preference shall be given to employ 100% local people.

**4.0 Use of Mineral:** -The mineral will be sold in the open market as per demand.

## **5.0 Disaster Management and Risk Assessment**

Disasters are possible in any industry like mining. To meet with any kind of emergency on or off, site risks are assessed in advance and risk assessment plan is prepared. Assessing the possible hazards and planning, the procedures to be followed in case of emergency will reduce the intensity of impact, Proper bench design in mine and observing all kinds of safety measures, usage of proper Personal Protective Equipment (PPE) on the site, attentiveness of the work force on site, following pre-defined traffic rules by all the people on site are some of the measures to be followed to reduce accidents on site. Proper communication is the key factor in maintaining the accidents on site. The mining activities in the hilly area may involve any high-risk accidents due to landslide, rock falls/collapse, flying stones due to blasting etc. and floods, inundation etc. in case of river bed mining. To prevent any disaster in the mining area, effective safety measures are required anticipating the hazard risk assessment.

- The complete mining operation will be carried out under the Management and control of experienced and qualified Miners.
- All the provisions of Mines Act 1952, Metalliferous Mines Regulations, 1961, Mineral Conservation and Development Rules, and other laws applicable to mine will be strictly complied with.
- During heavy rainfall the mining activities will be suspended, the working will be for 300 days for a year excluding the rainy season and local and national holidays.
- Safety of all the working personnel will be the utmost priority of the lease holder. Lease holder will provide all the site personnel with necessary PPE like hard hats, safety goggles, earplugs, dust masks etc.
- To meet any kind of emergency, readiness to shift the injured to the nearest hospital is necessary. All mining personnel should be aware of the nearest health centres and hospitals. All managing personnel will take the responsibility of taking the injured

immediately to the nearest hospital in case of any accident.

- All persons in supervisory capacity will be provided with proper communication facilities. Competent persons will be provided first aid kits which they will always carry.
- During benching and soil dump the angle of repose will be maintained to prevent any land slide hazard in the area.



**CERTIFICATE**

Certified that the provisions of the Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2015, Metalliferous Mines Regulation Act 1961 and other guidelines issued from time to time in this regard have been complied for the preparation of Mining Plan including Progressive Mine Closure Plan of mine of Slate mineral over an area situated in Mauza Kunr, Tehsil and District Chamba falling in Khasra number 3026/2939/1 measuring 5-01-00 Bighas applied by Sh. Prakash Chand, S/o Sh. Sorma Ram, Village and Post Office Kunr, Tehsil and District Chamba, Himachal Pradesh.

While preparing the Mining Plan including Progressive Mine Closure 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.



Rajneesh Sharma

RQP No. H.P./R.Q.P./24/1/2019

State Geologist (Retd.),

Strawberry Cottage

Strawberry Hill

Chhota, Shimla 171002



### DECLARATION

This is to declare that the Mining Plan including Progressive Mine Closure Plan of mine of Slate mineral over an area situated in Mauza Kunr, Tehsil and District Chamba falling in Khasra Number 3026/2939/1 measuring 5-01-00 Bighas has been prepared with my consent and approval and that 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.

I, undertake to implement all the measures proposed in this Mining Plan and Progressive Mine Closure Plan' in a time bound manner.

I, have deposited a sum of Rs.....N.A..... 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.



Parkash Chand, S/o Sh. Sorma Ram  
Village and Post Office, Kunr  
Tehsil and District Chamba  
Himachal Pradesh