ENVIRONMENTAL IMPACT ASSESSMENT (REVISED EIA)



Coal Mining Lease (PL.KHB.COAL.501)

Near Lalumi District Khushab, Punjab Pakistan

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Glossary

Environmental Management System (EMS):

A set of management process and procedure that allows an organization to analyse and reduce the environmental impacts of its activities. Environmental Monitoring Systematic, geo-referenced observations of the environment essential to detecting changes in ecosystems over time. Environmental Protection Plan (EPP) a practical tool that describes the actions required to minimize environmental effects before, during and after project implementation. The plan may include details about the implementation of the mitigation measures identified in the environmental assessment, such as who is responsible for implementation, where the measures are intended to be implemented, and within what timeframe.

Habitat:

Land and water used by wildlife. This may include biotic and Abiotic aspects such as vegetation, exposed bedrock, water, and topography.

Impact:

Any aspect of a project that may cause an effect; for example, land clearing durin construction is an impact, while a possible effect is loss and fragmentation of wildli habitat.

Indirect Effect:

An effect in which the cause-effect relationship (e.g., between the project's impa and the ultimate effect on a Valued Ecosystem Component) has intermediary effects. an interaction with another effect is required to have a cumulative effect (hence, creat intermediary effects), cumulative effects may be considered as indirect. Industry Relati Corporation (IRC) The Corporation or organization that a First Nation has created manage the First Nation's relations, including Consultation with Alberta, Canada Industry.

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Mitigation:

The elimination, reduction or control of the adverse environmental effects of the project. Mitigation includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means.

Mining:

The process or industry of obtaining coal or other minerals from a mine.

Non-Renewable Resource:

Natural resources that are in fixed supply such as coal, oil and minerals.

Project:

The activity or group of activities proposed by the Proponent. The types of activities that could be subject to Alberta's environmental assessment process are listed in the Schedule of Activities in the Environmental Protection and Enhancement Act and in the Water Act. The Project includes all associated construction, operation, decommissioning and reclamation activities and all phases of development described by the Proponent. Project Area Project Footprint/Study Area The area includes all lands subject to direct disturbance from the project and associated infrastructure. Project Components The different physical entities and activities that together make up the Project.

Residual Effect:

An effect that remains after mitigation has been applied

Scoping:

An activity that focuses the assessment on relevant issues and concerns and establishes the boundaries of the environmental assessment. A consultative process for identifying and possibly reducing the number of items (e.g., issues, VECs) to be examined until only the most important items remain for detailed assessment. Scoping ensures that assessment effort will not be expended in the examination of trivial effects.

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Significance:

A measure of the magnitude, duration, frequency, timing, probability of occurrence, ecological and social context, geographic extent, and degree of reversibility of an effect on a Valued Ecosystem Component

Emission:

One or more substances released to the water, air or soil in the natural environment.

Environment:

Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelations. This definition extends the view from a company focus to the global system.

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EXECUTIVE SUMMARY

Title and Location of the Project

The proposed project is the extraction of Coal from mines (PL.KHB.COAL.501) leased to M/S Nighat Shaheen Shahwaar with total area of 375.46 Acres.

Name of the Proponent

Ms. Nighat Shaheen Shahwaar
Project Proponent
Extraction of Coal from Mines (PL.KHB.COAL.501)
R/O 134-AA, Phase-IV, DHA, Lahore

Name of the Organization Preparing the Report

Environmental Greentech Services Pvt. Ltd.
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A Brief Outline of the Proposal

The proposed project is the extraction of Coal from mines (PL.KHB.COAL.501) leased to M/S Nighat Shaheen Shahwaar with total area of 375.46 Acres. Project objective is to extract and provide Coal to cope with the growing market demand in Pakistan under the prevailing marketing conditions.

The proposed project is located at Lalumi, District Khushab. The coordinates of the site are LAT. 32.612615 N and LONG. 72.496776 E. The nature of land is reserved area for mining. The site is well connected to the other parts of the city through a metaled road.

Salient Features:

The proponent of the project Ms. Nighat Shaheen Shahwaar has engaged Environmental Greentech Services Pvt. Ltd. to carry out the Environmental Impact Assessment (EIA) for the establishment of aforesaid project in accordance with Punjab-EPA guidelines. The salientfeatures of the proposed project are given below:

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Table I: Salient Features of Project

Sr #	Salient Features	
1.	Project Title	Extraction of Coal from mines (PL.KHB.COAL.501) by M/ Nighat Shaheen Shahwaar
2.	Project Location	At Lalumi, District khushab.
3.	Co-ordinates	LAT. 32.612615 N and LONG. 72.496776 E
4.	Proponent	M/S Nighat Shaheen Shahwaar, R/O 134-AA, Phase-IV, DHA, Lahore
5.	Consultant	Environmental Greentech Services Pvt. Ltd.
6.	Cost of Project	12 Million
7.	Tree Plantation	At designated green spaces
8.	Water Source	Groundwater from the depth of 90ft
9.	Total Area	375.46 Acres
10.	Nature of Area	Reserved for Mining
11.	Source of Power	WAPDA
12.	Method of mining	Manual
13.	Topsoil thickness	0.75 m
14.	Commencement of Mining	After Getting approval from EPA-Punjab
15.	Number of working days	6 Days

WAPDA= Water and Power Development Authority;

1. Impact and Mitigation Measures

Environmental impacts have been identified and mitigation measures ar

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recommended within the project area of influence. The major impacts on physical, biological and social environments are described as under:

Table II: Impacts Summary

Environmental Parameters	Impact Assessment	
	During Construction	Operation
1. Location	+2p	+1p
2. Design	+1p	+1p
A: Physical		
Land Resources		
1. Solid Waste	-1t	-2p
2. Land Use	-1p	-1p
Air Resources		
1. Air Emission	-1t	-2p
2. Noise	-1t	-1t
Water Resources and Wastewater Management		
1. Water Resource	-1p	-1p
B : Ecological		
Flora		
1. Vegetation	0	+2p
Fauna		
1. Wildlife	NA	NA
C: Socio-Economic		
1. Transportation	0	+2p
2. Employment	+1p	+1p
3. Food Availability	NA	+1t

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Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible

- ***All adverse environmental impacts except natural calamities are manageable easily by implementing EMMP***

2. Environmental Management and Monitoring Plan

A comprehensive Environmental Management and Monitoring Plan (EMMP) have been prepared to effectively manage and monitor the environmental and social impacts for the establishment of project. The salient features of EMMP are as under:

2.1 Environmental Mitigation Plan

To manage the environmental and social impacts of the project, significant negative impacts and their mitigations have been covered in this section. For the ease to understand and identify the impacts and to implement their mitigations, a mitigation plan has been developed as a ready reference for the Proponent and Contractor to minimize the negative impacts or to manage activities in such a manner to avoid any adverse negative impact.

2.2 Environmental and Social Monitoring Plan

Mitigations for physical, biological and socio-economic parameters will b measured to determine compliance with standards established in EMMP. The Monitorin Plan will record the inputs provided by various participants in the environmental an social management process. During the operational phase solid waste managemer practices and wastewater disposal practices will be monitored by the concerned authorit on the regular basis. Moreover, fire-fighting equipment will be available at the project sit and maintained and monitored on the regular basis.

The total estimated cost for the implementation of EMMP in proposed project area approximately **PKR 0.1 Million** which will be used for tree plantation, monitoring environmental parameters and the implementation of EMMP as suggested in this EI

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Report.

3. Conclusions and Recommendations

In general, potential adverse environmental effects resulting from the proposed project will be temporary, short-term and of low magnitude. Through application of standards, recommended mitigation measures, adherence to applicable permit conditions and regulations, any adverse effects can be effectively minimized for all phases The project is not likely to have significant adverse environmental impacts. Negligible negative impacts that are likely occur during project implementation includes; air pollution due to movements of vehicles, removal of trees from the project area, potential impact to the local water resources and social impacts may affect the locals residing in the nearby community can be foreseen. Mitigation measures will be implemented to minimize environmental impacts though they are still negligible. There are certain mitigations suggested to cater for the aforesaid issues. The mitigation measures will require constant information flow and consultation with the stakeholders to ensure the least adverse social-economic impact to outweigh the "no-development" scenario.

- The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMMP effectively
- Tree plantation plan should be carried out at the designated green spaces and along the boundaries in order to keep the environment healthy
- It is recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further into construction activities.

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INTRODUCTION

The natural resources of a nation, particularly its mineral resources, play a very important part in its prosperity and progress. Here is a look at the numerous natural mineral resources Pakistan is blessed with and which are very useful for its industrial development

Mineral oil

Mineral oil is found in raw form and is purified in oil refineries. Only 15 per cent of the total mineral oil requirements of the country are produced in Pakistan, while the rest is imported. In Pakistan, the oil reserves are situated in Dhullian, Kot Mayyal, Attock, Chakwal, Dhodhak, Badin, Hyderabad, Dadu and Potwar Plateau.

Coal

Pakistan's coal reserves meet only 11 per cent of its total requirement. In Punjab, coal mines are located at Dandot and Makkarwal. The country's biggest coal mines are present at Mianwali and Makkarwal. In Balochistan, coal mines are present at Sharag, Khost, Harnai and Mach, while in Sindh coal is found at Thatta and Larkana.

Natural gas

Natural gas is an essential element for industrial production, household purposes and vehicles. In Pakistan, natural gas was discovered in 1952 at Sui, Balochistan. In Sindh, it was found at Khairpur, Mazrani, Hundi, Kandhkot and Seri, while in Punjab natural gas is found at Dhodhak, Pir Koh, Mayyal and Dhullian. It is brought from main reserves to places of need through a network of pipelines.

Iron ore

Iron ore is used for the manufacturing of steel and iron. The largest deposits of iron ore are found in Kala Bagh. They are also found at Hazara district, Chitral, Khuzdar and Muslim Bagh.

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Chromite

Chromite is a white-coloured metal used in the making of steel, dyes, photography items and airplanes. Pakistan has the world's largest reserves of chromite and this natural resource is found in Muslim Bagh, Chaghi, Kharan, Malakand and North Waziristan.

Copper

Copper is needed for the manufacturing of electrical goods. Rich reserves of copper are found in Saindak and Chaghi district in Balochistan.

Salt

World's largest mineral salt reserves are found in Pakistan. This range is located at Potwar Plateau and the biggest salt mine is at Khewra. Salt is also obtained from Warchha in Khushab district, Kala Bagh and Bahadur Khel and also from Mauripur, near Karachi.

Limestone

This is used for making cement and is also used in paper, soap and glass industries. Limestone deposits are found in Jhelum, Dera Ghazi Khan, Moghul Kot, Hyderabad, Manghopir, Kot Diji and Ranipur.

Marble

Marble is found in abundance in our country and is present in vast variety and colours. Its reserves are found in Chaghi, Mardan, Swat and Khyber Agency. The marble found in Pakistan is of highest quality because of its beauty, softness and colour. Black and white marble is found in the Kala Chitta Hills in Attock.

Pakistan has a best potential of minerals. The minerals along with other natural resources like petroleum, solar, forest, wind, water, land, agriculture, vertebrate fossils like dinosaurs-the largest land animals, walking whales-the largest sea animal and Baluchithere-the largest land mammals, etc, tourism, etc can play significant role for the

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development of Pakistan because population is increasing rapidly. Pakistan is spending a lot of earnings for importing glass, glass wares, pottery, iron raw materials and product, copper, aluminium, lead, zinc, manganese, gold, nickel, sulphur, tools, clay, coal, etc. Pakistan has these resources but not exploiting. As Griffiths (1987) Pakistan may be prince or pauper with reference to its mineral and natural resources. Try should be made to cease the imports and use own country raw materials and commodities. This capital can be saved and spent on developing minerals, science and technology. In short Pakistan is rich in mineral, energy and natural resources but poor in development and consolidated and aligned with latest economic system, strategy for exploitation does not exist. A number of works in pieces exist on different individual mineral, its small reflection may be domestic demand centred or local production etc. There is a dire need to analyse the mineral sector potential, its analysis in domestic and international perspective, future trends.

During the last 4 decades, the world has changed its focus from imported energy resources to cheap resources either renewable or non-renewable for economic and social development. Currently, coal is the cheapest source of energy in Pakistan that can be used to fulfil the energy demands. Pakistan holds 3,377 million tons (MMst) of proven coal reserves as of 2016, ranking 20th in the world and accounting for about 0% of the world total coal reserves of 1,139,471 million tons. Pakistan has proven reserves equivalent to 331.1 times its annual consumption. This means it has about 331 years of Coal left (at current consumption levels and excluding unproven reserves). Pakistan produced 4,506,243.28 tons (short tons, "st") of Coal per year (as of 2016) ranking 34th in the world. While Pakistan imports 70% of its Coal consumption (7,107,638 tons in 2016).

Table III: Pakistan's Coal Summary Table

	Tons	Global Rank
Coal Reserves	3,377,477,840	20th

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Coal Production	4,506,243	34th
Coal Consumption	10,199,674	38th
Yearly Deficit -5,693,431	Yearly Deficit -5,693,431	
Coal Imports 7,107,758	Coal Imports 7,107,758	
Coal Exports 120	Coal Exports 120	
Net Imports 7,107,638	Net Imports 7,107,638	

Coal Consumption in Pakistan:

- Pakistan consumes 10,199,674 Tons (short tons, "st") of Coal per year as of the y 2016.
- Pakistan ranks 38th in the world for Coal consumption, accounting for about 0 of the world's total consumption of 1,139,471,430 tons.
- Pakistan consumes 50,089 cubic feet of Coal per capita every year (based on 2016 population of 203,631,353 people), or 137 cubic feet per capita per day.

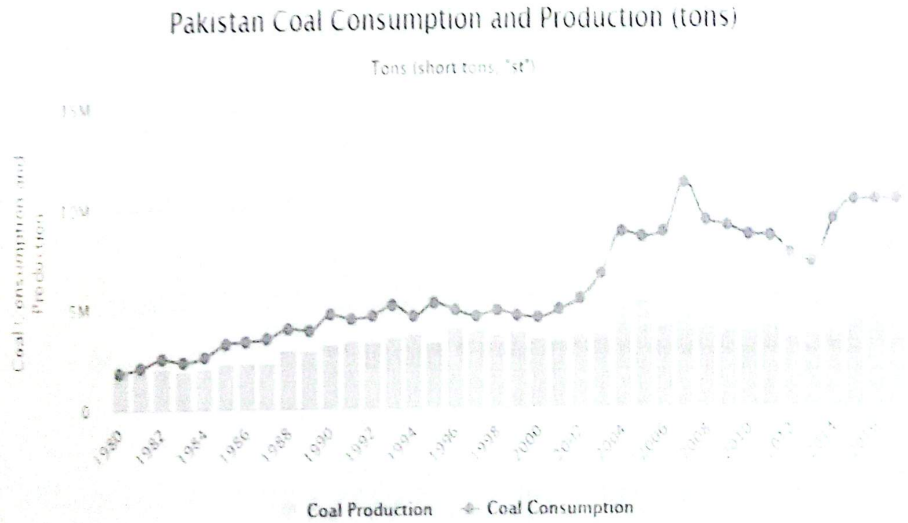

Figure 1: Pakistan Coal Production and Consumption

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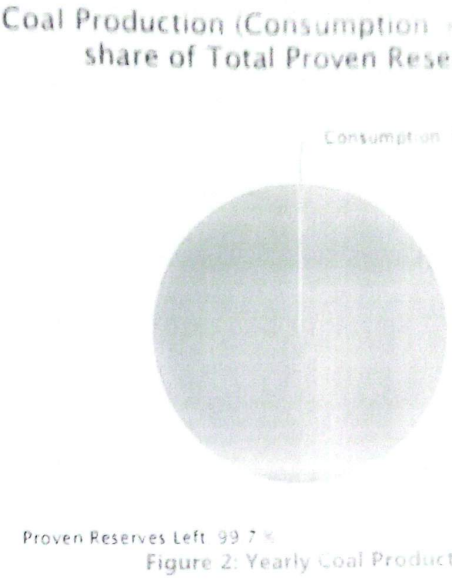

Figure 2: Yearly Coal Production

In proposed project proponent is to aim extract the Coal resources at Lalumi,District Khushab to play his part in the development of area.

1.1 Screening:

As per review of Initial Environmental Examination (IEE) and Environmental Impa Assessment (EIA) Regulations, 2000 the proposed project falls in **Category C (1)** of t Schedule-II, i.e. ***"Mining and mineral processing (Mining and processing of coal, go copper, sulphur and precious stones)".***

1.2 Purpose of Report

The main objectives of this EIA Study are:

- To determine and record the state of the environment of the project area establish a baseline in order to assess the suitability of the project in that propo area
- To operation activities and to assess their impacts on environment

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- Provide assistance to the proponent for planning, designing and implementing project in a way that would eliminate or minimize the negative impact on biophysical and socio-economic environment and maximizing the benefits to parties in the cost-effective manner
- To present mitigation and monitoring plan for smooth implementation of suggested mitigation measures and supervise their efficiency and effectiveness
- To provide opportunity to the public for understanding the project and its impact on the community and their environment in the context of sustainable development
- Prepare an EIA Report for submission to the EPA, Punjab for Environmental Approval (NOC)

1.3 Project Scope

Coal is an organ classic sedimentary rock, composed essentially of lithified plant de Coal is an important energy source and is available in all over the world. Pak possesses huge coal reserves across the country that can play a pivotal ro development of the country overcoming the energy crises prevalent in four sea Government of Pakistan is seriously looking for alternative resources other than h and thermal energy to meet the ongoing and growing energy requirements. Most o world's lignite deposits are located in Asia. Pakistan is among the top most lignite bearing countries in Asia possessing almost 97% of the coal reserves bearing li variety. The rest of the grades are of sub-bituminous to bituminous content. Among the reserves in Asia, 3% are located in Pakistan. The major coal reserves in Punja found in Eastern & Central Salt Range and Trans-Indus Range. Most of the region's and carbonaceous coal deposits are located in the Paleocene Patala Formation, w minor occurrence in the Tobra formation of the Permian age. Mining techniques are pursued viz; room and pillar method and longwall system that are commonly appli

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the areas. Supports are provided without geotechnical evaluation. Timbering is provided as supports in these coal mines.

Hence the said proposed project of Coal mining will help in boosting the economic growth of the country as well as the area and help to fulfill the ever-increasing demand ofcoal.

1.4 Nature, Size and Location of Project

The proposed project is the extraction of the Coal with total area of 375.46 Acres. The capacity of the project will be 600M/Month. The proposed project is located near Lalumi, District Khushab. The coordinates of the site are; LAT. 32.612615 N and LONG. 72.496776 E. The project location is shown in Figure 3.

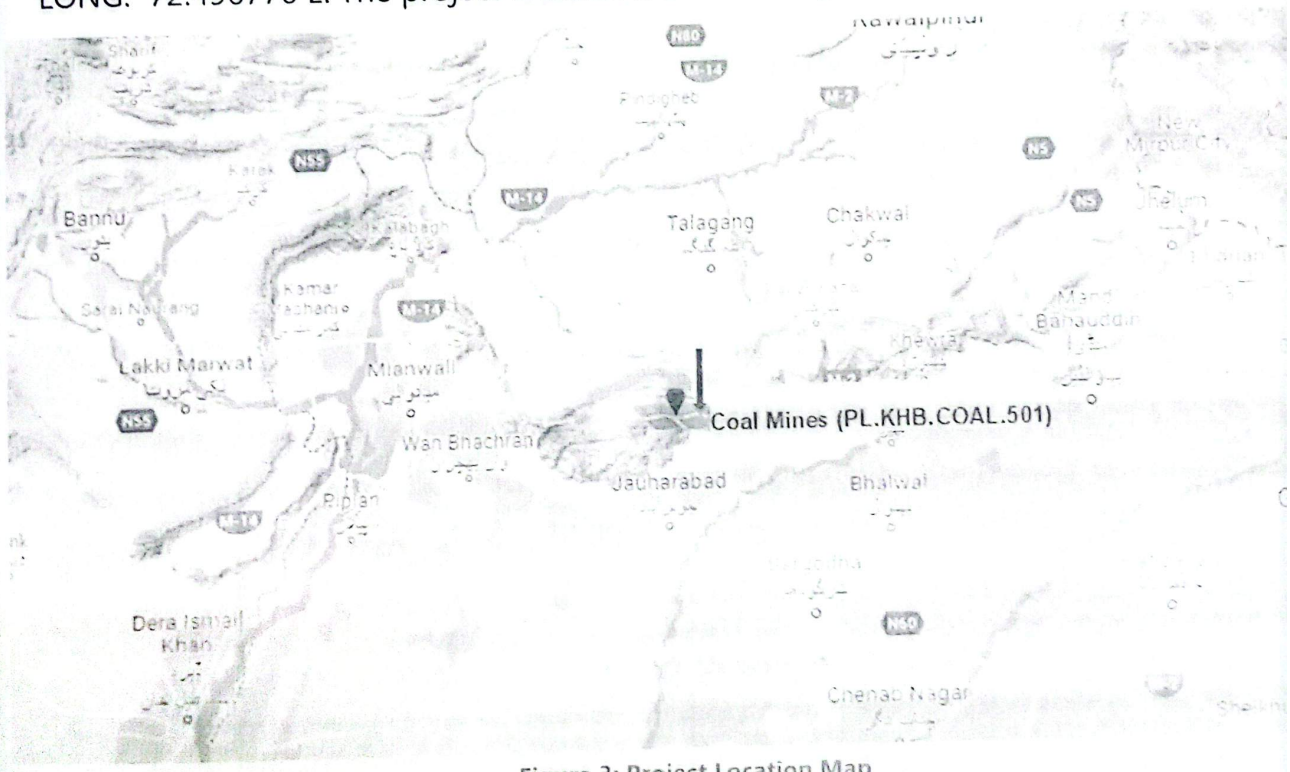

Figure 3: Project Location Map

1.5 Project Proponent

The detail of the proponent for the extraction of coal from mines (PL.KHB.COAL.501) given in Table IV below:

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Table IV: Proponent Details

Proponent Details	
Name	M/S Nighat Shaheen Shahwaar
Resident of	House No. 134-AA, Phase-IV, DHA, Lahore

1.6 Project Consultant

The services of environmental consultant M/s **Environmental Greentech Services Pvt. Ltd.** have been taken by the proponent for the formulation of Environmental Impact Assessment (EIA) Report. Greentech is an environmental and engineering services providing firm that has an unrivalled reputation for providing high quality tailored services. Greentech is a dynamic, responsive and innovative in providing this cost-effective solution and comprising of Environmental Engineers & Consultants and rendering their services to clients in both industrial and the government sectors. With the visionary leadership of its veteran management and enthusiasm of its team, it is committed to come up with innovative ways of maintaining and enriching the Environmental Profiles / Portfolios of its prestigious clients with activities having a strong and lasting impact to their corporate image. It has attracted and retained staff with an unrivalled depth and breadth of expertise and experience that they have from working, not just in consultancy but also in commercial, industrial and regulatory environments. With its pool of Environmental Consultants, Environmental Scientists and Environmental Engineers, company offers one stop solutions tailored to its client's needs.

Contact Details:

Focal Person	**Hassan Waqas (CEO)**
Address	Office No. 10, 4th Floor, Tele Tower,Main Link Road Model Town, Lahore
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Table V: List of Experts

Sr. No.	Team Member	Position Held	Qualifications
1.	Hassan Waqas	Team Lead, Principal Environmentalist-I	PhD Scholar MS Environmental Sciences University of Gujrat (UOG)
2.	Muhamamd Waqas	Manager Operations / Environmentalist-II	Mphil Environmental Sciences The University of Lahore BS (Hons.) Environmental Sciences University of Gujrat
3.	Saddat Mazhar	Ecologist	MS Forestry & Environment University of Viterbo "La Tuscia", Italy BS Environmental Sciences University Of Gujrat (UOG)
4.	Anam Imtiaz Zaidi	Environmentalist-III	Mphil Environmental Sciences The University of Lahore BS (Hons.) Environmental Sciences The University of Lahore
5.	Waqas Ahmed	Environmental Geologist	Mphil Environmental Sciences The University of Lahore BS (Hons.) Environmental Sciences University of Gujrat
6.	Zain Abbas	Principal Environmentalist-II	MS Environmental Sciences, National University of Science and Technology (NUST), Islamabad BS Environmental Sciences University of Gujrat
7.	Rizwan Saeed	Field Engineer	BS Environmental Sciences, University of Gujrat

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1.7 Structure of Report

This EIA Report reviews information on existing environmental attributes of the project area and study area (which is considered 1km in radius around the project area) Geological, hydrological and ecological features, air quality, noise, water quality, soils, social and economic aspects and cultural resources are included and discussed in detail. The EIA Report predicts the probable impacts on the environment due to the proposed project establishment. This EIA Report also proposes various environmental management measures to mitigate the associated adverse impacts up to the extent practically possible. Details of all background environmental quality, environmental impact/pollutant generating activities, pollution sources, predicted environmental quality and related aspects have been provided. The structure of the EIA Report will be as follow;

- Description of the Project
- Description of Environmental and Social Conditions
- Assessment of the Anticipated Impacts
- Screening of Environmental Impacts and Mitigation Measures
- Mitigation Measures for Identified Impacts
- Environmental Management and Monitoring Plan (EMMP)
- Recommendations and Conclusions

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SCREENING AND SCOPING

2.1 Screening/Type and Category of Project

Section 12 of Punjab Environmental Protection Act, 1997 (amended 2012) states "No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be, or, where the project is likely to cause an adverse environmental effects an Environmental Impact Assessment (EIA), and has obtained from the Government Agency approval in respect thereof." Punjab Environmental Protection Act provided the guidelines for categorizing the projects. According to Schedule-II of IEE and EIA Regulations, 2000 proposed project falls in category **C (1), "Mining and mineral processing (Mining and processing of coal, gold, copper, sulphur and precious stones)**". i.e., the project requires an EIA Study. Thus, an EIA Report is being prepared and submitted accordingly for approval.

The proposed project is the extraction of coal from mines.

2.2 Scoping:

2.2.1 Spatial and Temporal Boundaries of Environmental Assessment:

A major activity of scoping is to identify key interest groups, both governmental and non-governmental, and to establish good lines of communication. People who are affected by the project need to hear about it as soon as possible. Their knowledge and perspectives may have a major bearing on the focus of the EIA. Rapid rural appraisal techniques provide a means of assessing the needs and views of the affected population.

The main EIA techniques used in scoping are baseline studies, checklists, matrices and network diagrams. These techniques collect and present knowledge and information in a

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straightforward way so that logical decisions can be made about which impacts are most significant. Risk and uncertainty are discussed further in the section Managing uncertainty.

Temporal and spatial boundaries for the effects assessment are defined by the characteristics of the project and the VECC being assessed. These boundaries encompass time periods and areas during and within which the VECCs are likely to interact with or be influenced by the project.

- Temporal Extent (during construction and operation)
- Spatial Extent (local or widespread)

In the proposed project checklists and matrices techniques have been used to assess impacts and are being discussed in detail in chapter 8

2.2.2 Views, Concerns and Suggestions of Various Stakeholders

Community showed a lot of concerns; a few are being mentioned here:

- Removal of shrubs and trees should be avoided to the extent possible
- The project will become the source of income for local to earn their livelihood easily and honorably
- The area will become further explored
- For the solid waste management and waste disposal, proper disposal techniques should be adopted
- Employment opportunities will be generated, and locals should be hired on the priority basis
- The air pollution is one of the major impacts of the proposed project so ambient air quality should be monitored regularly

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- Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training
- The contractor should prefer hiring local labor from adjacent nearby villages
- Indigenous tress around the facility should be planted to control air pollution and as the compensation
- Noise reducing barriers should be installed to reduce noise pollution as the nearest community lies within the radius of 0.8 km

Concerns

- Workers should be hired from local community
- Proper disposal of solid waste should be practiced
- Indigenous tress around the facility should be planted to control air pollution
- Removal of shrubs and bushes should be avoided to the extent possible

2.2.3 Significant impacts and factors to be determined

The proposed project is of extracting coal. The nature of the land is reserved for mining by the Government of. The study area is uneven/ nonagricultural. In addition, to the noise and fugitive dust emissions during the development phase solid waste management and disposal issues may arise along with wastewater disposal issues. There are few minor impacts associated with the mining of coal includes the management of the municipal solid waste generated which will be managed according to local practices of area.

The impacts from extraction of coal will occur during operation due to mining processes in the project area. These issues included; noise generation, fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and

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change in the geographic features of the area. These all problems should be addresse on-site where they are being generated, to avoid the residual or adverse impacts

2.3 Alternatives

The details of the site alternatives and technology alternatives are discussed below

2.3.1 Site Alternatives:

No other site alternative was available to be considered as feasible option for th extraction of coal because the land is under undisputed leased by the proponent. Th proposed site was selected because of the following reasons;

1) The site is at the distance of 3.35 Km from the nearest residential area is Lalumi.
2) No surface water body is located within the 10 km.
3) Land is reserved for mining purpose by the government of Pakistan
4) No human settlements displacement or relocation associated with the proje development and operation
5) Operation of the facility in the respective zone will provide job opportunities t local people and will improve their socio-economic status of the study area a employees will be hired during the operational phase

2.3.2 Project Alternatives:

According to the Pakistan Energy Yearbook 2015, coal contributed 7% of energ supplies of the country, by source. Pakistan is seeking to expand the share of coal powe generation in total energy pie. The purpose is to save foreign exchange on oil-base electricity generation that stands at 35% and reduce reliance on the declining resource natural gas-based electricity that comprises 42% of the energy source. The governmer has developed policies and frameworks to enhance coal's share to 19% by 2030 and t

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50% by 2050. The Energy Security Action Plan has set a target of generating 20,000 MW power from coal by 2030.

The major consumers of coal as the primary fossil fuel in Pakistan are railways, cement, fertilizer and power plants. The local production of coal is estimated at 3.21 million tons out of which presently over 80 per cent is being utilized by bricks makers, while the rest are being consumed by the cement industry to blend it with the imported coal to reduce the production cost, and only one per cent by the coal-based power stations. It is reported that around 85 per cent of the cement industry has shifted on low-priced coal from relatively more expensive natural gas and furnace oil Use of coal as fuel in sugar industry can save around 9 million tons bagasse, which can be utilized to produce medium density fibreboard, excellent replacement of furniture-making wood and consequently saving our fast depleting forests. Coal is also an important raw material for the production of several chemicals. Refined coal tar can be used in the manufacture of a range of chemicals including pitch, creosote oil, naphthalene, phenol, pyridine, benzene, toluene, xylene, ethylene, propylene, polyesters, plastics, synthesis gas, acetic acid, acetic anhydride. Numerous chemicals and fuels can be manufactured from the gasification of coal. In late 1950's, Pak-American Fertilizers, Iskandarabad, Daudkhel was based on gasification technology supplied by Lurgi to produce ammonia and ammonium sulfate fertiliser.

There are 17 coalfields in Pakistan located in Punjab, Sindh and Balochistan. While Balochistan produces the highest output of coal, Tharparkar has the largest coal reserves in Pakistan. Coal is extracted manually in Pakistan. It's time to explore coal and develop coal-fired power plants to not only lessen dependence on imported fuel but also to cut the cost of power production for the benefit of the industries, trade and individual consumers.

Hence providing a good opportunity for Pakistani mining industry to contribute in well-being of country as well as their livelihood. Therefore, establishing said project is the need

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to of time and the alternative of the project is import Coal from the other countries, consequently no alternative project considered by the proponent.

2.3.3 Environmental Alternatives:

No important religious, archaeological, recreational site or ecologically/declared protected area and human settlement exists within proximity of the selected site i.e. within a safe distance. In view of these facts, it can be concluded that the selected site is best suited for the project and will not pose any adverse impact or threat on any component of the environment.

2.3.4 Economic Alternatives:

Coal is the continuing cornerstone of economic development, social progress, and a higher quality of life. Coal is powering the twenty-first century economic miracles rapidly unfolding in China and India, as reliability, affordability, and availability make coal the fuel of choice in the developing world. Demand modeling from both the International Energy Agency and US Energy Information Administration indicates that coal will provide the most amount of incremental energy over the next two decades. Looking forward, with the expanding implementation of clean coal technologies, the door to coal's global leadership role will remain open as the world strives to meet the ever-rising demand for energy while reducing greenhouse gas emissions. In the light of above facts, there is a need to encourage local coal reserves, which is also upright for economic well-being of the country.

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DESCRIPTION OF THE PROJECT

3.1 General

This section of the study renders a detailed account of the project and its salient features; such as location and various phases. Inputs, outputs, discharges relevant to different phases of the project, such as electricity & materials, etc. have been examined as a response to possible environmental concerns.

3.2 Type and Category of Project

As per review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2000 the proposed project falls in Schedule-II of IEE and EIA Regulations, 2000 proposed project falls in category **C (1), "Mining and mineral processing (Mining and processing of coal, gold, copper, sulphur and precious stones)"**

3.3 Project Objectives

The main objective of the project is to extract Coal to cope with the growing market demand in Pakistan under the prevailing marketing conditions.

2.5 Location and Layout of Plant

The location and layout of the proposed project is given below:

2.5.1 Location of the Project

The proposed project is the extraction of coal from mines (PL.KHB.COAL.501) by M/S Nighat Shaheen Shahwaar at Lalumi, District Khushab. There is no populated area present near proposed project location as it a mining reserved area. The proposed project is located in the mining land and the total area of project is 375.46 Acres.

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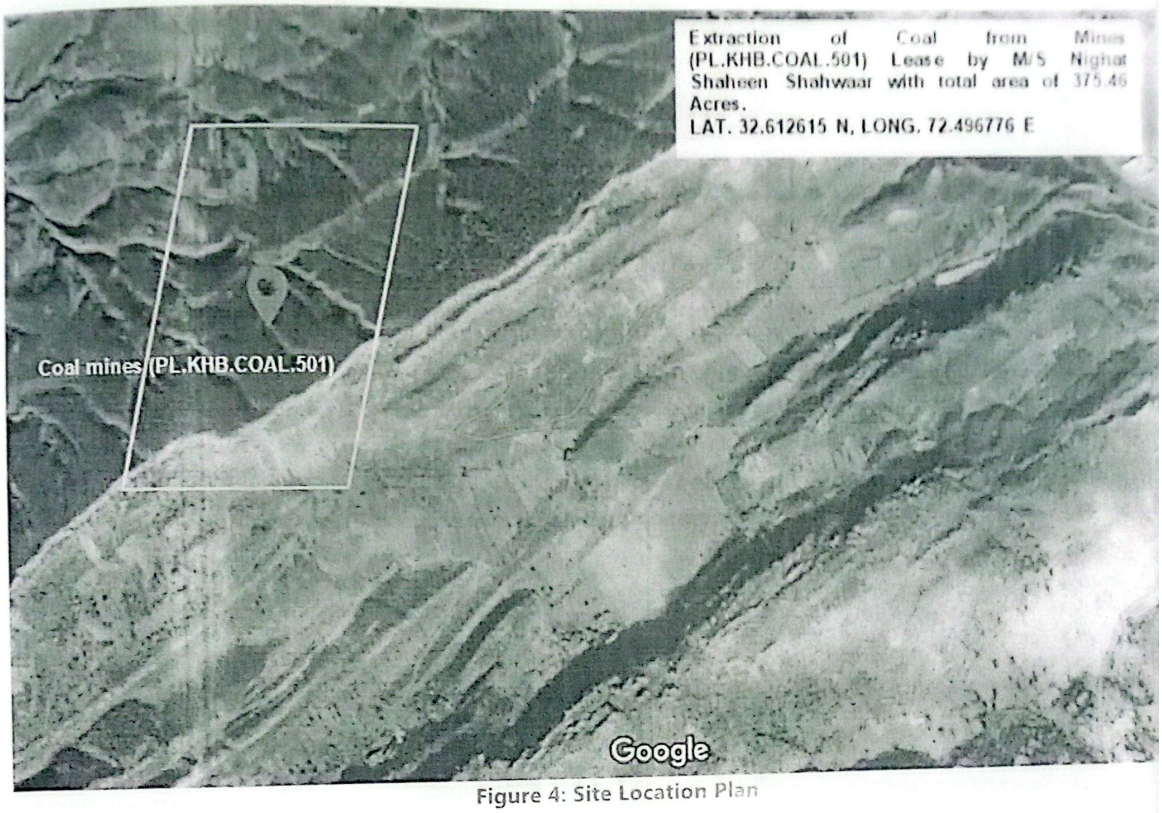

Figure 4: Site Location Plan

2.6 Land Ownership

Land selected for the proposed project is under undisputed lease by t proponent. Land leased documents are attached herewith at Annexure of this EIA Repo

2.7 Vegetation Features

The proposed project is a mining land. Some Trees of native species are pres along the boundary of the project area. It is being envisaged that no vegetation will removed due to the establishment of the proposed project. The proponent has plan a proper tree plantation plan to improve environmental quality of the area.

2.8 Land Use on Site

The area is presently in idle condition however outcrop in the area is exposed.

2.9 Road Access

The said area is approachable through main Khushab Sargodha Road and Kall Road. Multiple sub-roads are also present to reach the proposed site

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Road access is shown in the figure below



Figure 5: Road Network in the Area

2.10 Government Approval

Mining area is already granted to proponent, therefore, NOC from EPA Punjab is the only requirement

2.11 Description of Project

A global profusion of coal provides many countries with opportunities for economic growth. The direction of causality between coal consumption and economic growth is useful for policy making, however, existing empirical evidence have failed to reach a consensus. The preference for coal still remains in the present day because it is the most dependable and coherent source of energy. The availability of coal in profusion makes it cost effective amongst the remnant fuels. The mounting prices of petroleum and natural gas products has made coal more competitive in the global market and importantly policy makers are now interested on the relationship between coal consumption and economic

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growth.

Energy demand of Pakistan has been projected to 129 million tonnes (equivalent) of oil in 15 years (Pakistan Economic Survey, 2011). The country's current and future economic growth partly depends upon the availability and exploration of new energy resources. Recently, energy demand has increased due to increase in per capita income, but the supply of energy is considerably low to meet the required demand. To this end, a sustained effort towards exploration and exploitation of new energy resources would be productive. Pakistan uses coal, hydroelectric, natural gas, nuclear and oil sources to meet energy demand.

Pakistan has huge coal reserves especially lignite coal. The estimated coal resources are more than 185 billion tonnes; 175 billion tonnes discovered from Thar coalfields in Sindh province (Pakistan Economic Survey, 2011). The worth of these coal resources is almost $30 trillion which is 187 times greater than the GDP of Pakistan. Thar coal reserves have the capacity to produce 5,000 MW electricity (for decades) and 100 million barrel of oil (for 800 years) to meet the domestic demand. Pakistan now has the fourth largest and high quality of coal assets in the globe.

2.11.2 Raw Material

No involvement of raw materials as said project is extraction of raw material i.e., extraction of Coal.

211.2 Cost and Capacity:

Total Maximum capacity of project is 6,00M/Month. While the total cost of the project is 12 Million.

2.12 Process Description

The processes involve in the proposed project are given below:

2.12.1 EXTRACTION

The Coal in the area is foused in Swalik Group of the Dhok pathan Formation. The

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thickness of Coal varies from 0.3 m to 1.5 m with an average thickness of 0.75 m. The thickness of seam may differ from place to place due to heavy geotectonic forces which cause numerous local folding and faults. From geological map, it reveals that the total leased area comprised over 100% of Coal bearing formation however keeping in view the mining process involved for extraction of Coal, extension of sub surface deposit and other technical hazards it is impossible to consider the 100% area as mineral bearing area therefore 40% area is taken as mineral prospective for reserve price calculation. The exact reserve estimation is only Coal is extracted from open air or underground mines, using manual open cast method with specific drilling machinery.

2.12.2 STORAGE

Rock that has undergone primary crushing is stored to ensure production continuity, and optimal homogeneity between rock extraction batches. As the proposed project is of mining only so the material extracted will be transported to the corresponding buyer directly from the mining site. No storage will be held at the project site.

2.12.3 SHIFTING

Material will be transported through trucks covered with tarpaulins or in covered containers directly to the concerned person it will be sold as per market demand who will approach proponent as per their requirement.

Description of activities	Estimated Ti
Detailed topographic and geological surveying	01 Week
Construction of infrastructure such as road, water supply, electricity, site offices, platform, medical center etc	04 Weeks
Development of site includes site preparation, development of benches	01 Week
Purchase and development of mining equipment and machinery.	03 Weeks

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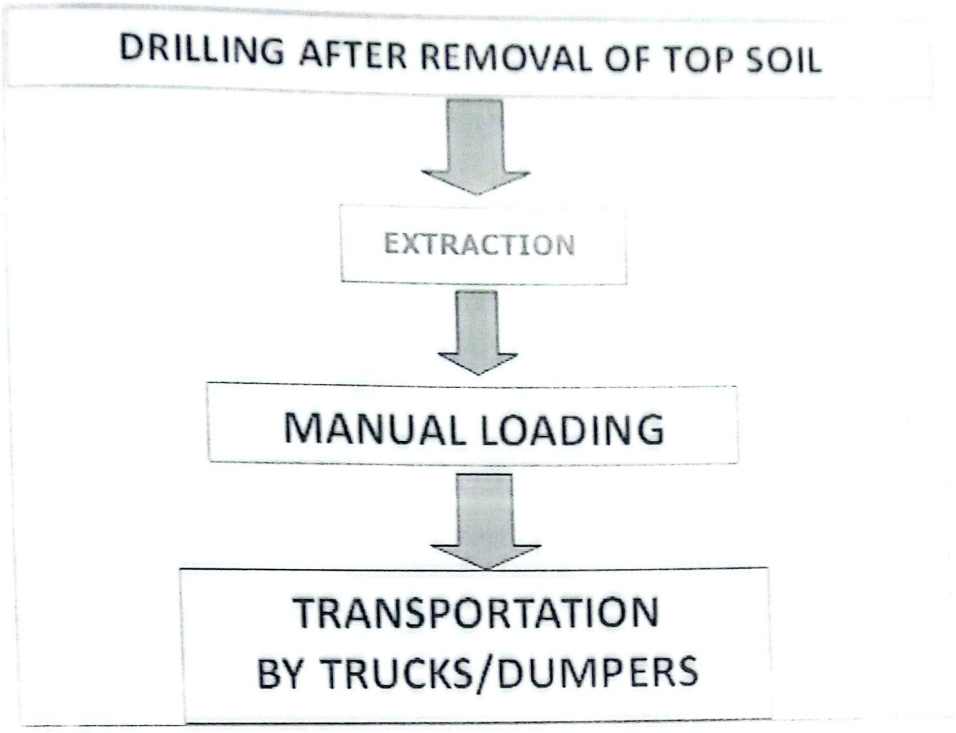

Process Flow Diagram

.13 Emergency Response Plan

Emergency response preparedness committee will be formulated consisted of heads of all departments and nominated members. Project Manager will be the head of the team who will chair the Committee. In the case of emergency, he will immediately inform the concerned authorities. HSE Manager will be responsible for on-site HSE management.

First aid facilities will be available at facility which will include; blankets, hot water bottles, sterilized dressing, snake bite kit, cotton and iodine (2% alcohol).

2.13.1 Safety Trainings

Skilled, semi-skilled and un-skilled staff will be provided with proper training about the work and safety practices that need to adopt during the process activities.

2.13.2 Use of Drugs and Narcotics

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Drugs and narcotics are strictly prohibited during working hours in working area Smoking will be only allowed during rest timings at properly isolated places.

2.12.3 Personal Protective Equipment's

Following Personal Protective Equipment (PPEs) will be provided to the workers

- Safety Helmet
- Safety Shoes/Dry Shoes
- Dust Mask
- Safety Gloves
- Safety Jackets
- Earmuffs
- Insulating Gloves and Suits

2.13.4 Fire-Fighting

The firefighting system will include CO_2 and dry chemical powder fire extinguishe Sand buckets, foam sprays etc. will always remain in ready state.

2.13.5 Prevention of Accidents

To prevent injuries by falling rock pieces, the height of banks and the angle of slopes be kept within normal limits. The slopes of banks, their edges and terms will systematically and carefully checked for crevices, jointing and detached slabs which prove to be a source of danger to men working in the pit. Such slabs will be remove soon as they are sighted.

When work on the banks is completed, the width of the bench should equal 1/10 of bench height and not less than one meter. To prevent people from falling in the pits quarries near settlements and roads will be fenced off.

Drilling and blasting operations will be carried out in accordance with the existing and regulations. Special attention will be paid in handling explosives, particularly in wi

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It has been proved statistically that conveyors in open pits are as a rule extremely he and bulky and for this reason, strictly observe safety rules are setting up and t repairing will be done timely.

2.14 Supplies

Following supplies will be available at the project site:

2.14.1 Water Supply

Total water requirement of the proposed project will be domestic; requ domestic uses (drinking). Groundwater will be the source of water for all t requirements. The ground water will be pumped from 110ft. The total water requiren will be 200-500 litres/day which is only domestic water no involvement of water w take place in process activities. For sprinkling and watering.

2.14.2 Electricity

The main source of the energy will be electricity which will be supplied thr WAPDA.

2.14.3 Manpower

Around 15-20 workers will be hired on the permanent basis for operational p Locals will be given preference while hiring the permanent and temporary staff

2.15 Management Plans

Following management plans will be implemented to protect the surroun from damage.

2.15.1 Wastewater Management

Major wastewater in project processing will be produced by the personnel uses and for sprinkling purpose to control the dust emissions produces by the m process. The wastewater generation rate from domestic activities will be 20 litres/day. This municipal wastewater will be treated through settling tanks. S

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hazardous wastewater will be generated or discharged to environment and septic are sufficient for greywater produced by the project. This treated water will be re-used for sprinkling purpose and to watering tress which will be planted by the proponent to enhance environment around the area and the it will conserve water as well

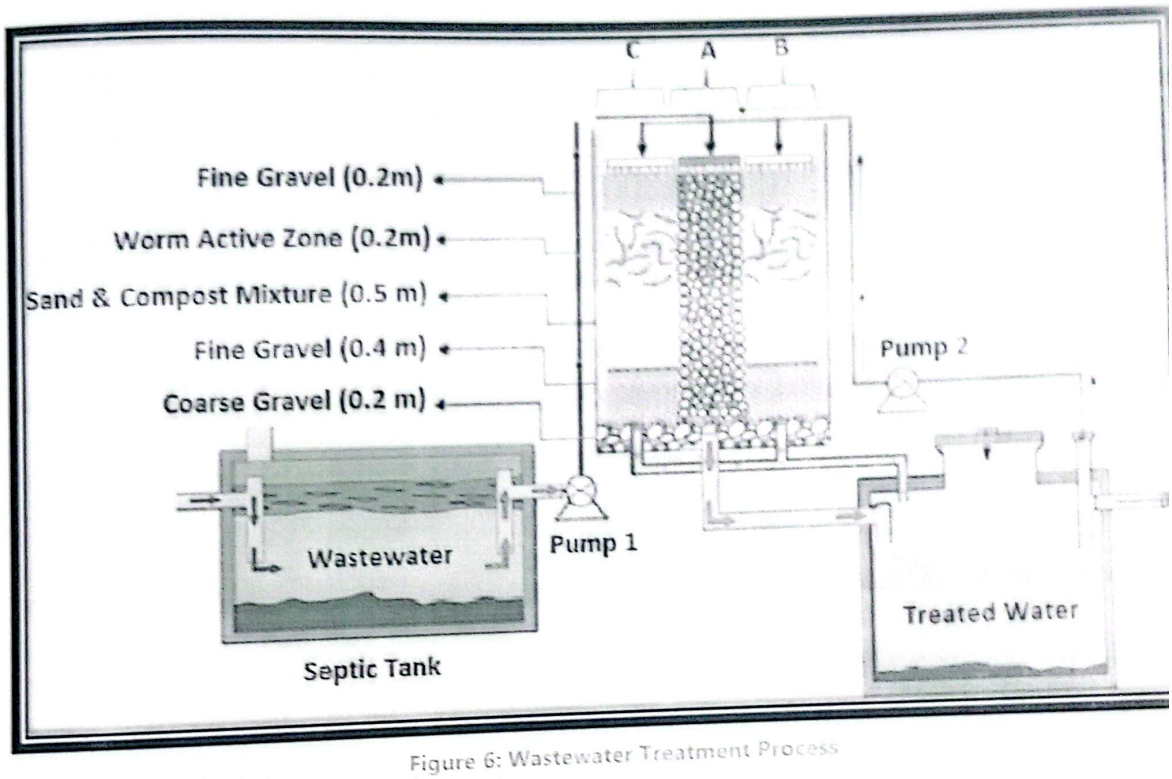

Figure 6: Wastewater Treatment Process

2.15.2 Noise Emissionx

It is envisaged that during the constructional and operational phase noise may be produced from following activities:

a. Construction

During construction phase noise will be produced from:

- Movement of vehicles
- Operation of equipment and machinery (e.g. earthworks, piling etc.)
- Installation of conveyor belts

b. Operational Phase

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uring operational phase noise will be produced from

- Operations of machinery (drilling and transportation of coal from mines to loading area through conveyor)
- Blasting
- Movement of vehicles

uring operation phase, machinery may serve as significant noise source. Proper naintenance and acoustic enclosure of noise producing device will help in reduction of oise pollution. Moreover, tree plantation along the boundary of proposed project will urther reduce noise as trees have the ability of absorbing noise

2.15.3 Solid Waste

Most of the solid wastes that will be generated during the daily work will be ordinary household wastes that the workers and the staff generate all-day around; e.g. kitchen and food residues, papers je sort, personal unneeded articles, etc. and the process will waste consists of materials that must be removed to gain access to the coal resource such as topsoil, overburden or waste rock as well as wastes gangue from underground mining

The municipal waste is going to be dumped in the containers (number, capacity and type will be identified and sufficient for the needs) which will be emptied by the municipality trash collection cars. Collecting the trash/garbage will be followed on daily basis. While the proper management of mining wastes involves their reduction, recycle and reuse. Mining wastes will be used as fuel for raw materials for making bricks and other infrastructure materials such as paving or subsided land fill and will be sold to the concerned person.

It is envisaged that 15-20 workers will hired. The waste generation is considered to be 0.45kg/person/day. The composition of the solid waste will be mainly organic. The generated domestic solid waste will be disposed off as per practices of the area.

2.15.3 Air Emissions

Air pollution from coal mines is mainly due to emissions of particulate matter and

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small amount gases including methane (CH_4), sulphur dioxide (SO_2), and nitrogen oxides (NOx), as well as carbon monoxide (CO). Mining operations like drilling, blasting, hauling, collection, and transportation are the major sources of emissions and air pollution. Dust and coal particles stirred up during the mining process, as well as soot released during coal transport, contributes to emissions and respiratory problems.

To keep dust to a minimum, the whole coal transport chain is considered by the proponent, from mining vehicles through road trucks the coal is exported. Even stationary coal piles and areas for blending can be sources of wind-borne or agitated dust. Wetting and suppression techniques will be applied to keep coal dust in vehicles. Covering stockpiles and handling areas will be done to reduce dust blow-off as well as to recapture this released dust. And proper ventilation system will be providing to underground mining to keep labour safe from the methane emissions issues. However, considering the small quantity of mining operation and thereby production, the gaseous emissions will be insignificant and will be diluted and dispersed in the immediate vicinity. The built up of gaseous pollutant in the atmosphere is not envisaged.

Water sprinkling will be carried out on the regular basis to suppress the dust emission. The proponent is trying to conserve water by re-circulating the washing water.

2.16 Relocation and Rehabilitation Plan

No human population resides within project area, the nature of land as pe government is reserved for mining and under an undisputed leased by the proponent. N structure of any significance (cultural, religious, archaeological, recreational or any othe stands on the land selected for the project requiring dismantling or relocation. No flo or fauna; especially belonging to endangered species is found within a safe distance fro the site which will be removed or moved to some other part. Hence, no relocation ar resettlement are required.

The land leased documents showed that land is leased by Proponent and the land lea documents are attached at Annexure of this EIA Report. Moreover, there is no dispute a

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rehabilitation associated with the Client.

2.17 Magnitude of Operation

Total Cost of the proposed project is 13 Million. The main activities involved in establishment of the proposed project are:

- Purchasing of machinery
- Plantation of plants and grasses

Major machinery used for mining is given in the table below

Sr. No	Mining Equipment	Quantity
1.	Hammering Machines	4
2.	Loaders	5
3.	Trucks	3
4.	Excavator	2

The costly activities involved in the operation phase of the project include purchasing c fuel, Operation and maintenance and other complex management. Safety will be assure if these operations are carefully managed. No separate fund allocation is require However, budget will be allocated for waste management and environment enhancement. Despite these costs, this project was found to be financially feasible in th feasibility report.

2.18 Schedule of Implementation

The proponent has planned to complete construction of the aforesaid project in period of 3 months. The schedule of implementation is given below:

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3. ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

3.1 GENERAL

This Section of the report covers a comprehensive description of the baseline conditions of the project and its related influential area with respect to the physical, biological and social aspects. In addition to the secondary data, the field survey was carried out and the environmental baseline conditions were established based on socioeconomic interviews, impact location profiles; environmental profile questionnaires and public consultations. A social survey was carried out through consultation with various communities. Interviews were conducted from the locals near the project area. The main intention of these interviews was to acquire feedback associated with the project as well as its impacts on their daily life on short term as well as long term basis.

3.2 PHYSICAL ENVIRONMENT

This section provides a clear description of the physical resources such as topography, soil, climatic conditions, surface and groundwater resources and quality, ambient air quality and geology of the project site but also city as a whole. The description of physical environment of project site is presented in following subsections.

3.2.1 Topography

District Khushab was established on July 1, 1982. The word Khushab is derived from two Persian words, "Khush" and "Aab" meaning good or pleasing water. There are different legends about the origin of this name for instance, one local tradition ascribes it to Sher Shah Suri who happened to drink water from river Jhelum refreshing sweet and invigorating. His instant response was to call it "Khushab". District Khushab consists of three Tehsils i.e. Khushab, Noorpur Thal and Qaidabad. There are three sub divisions and 9 Police Stations in the District. Six Districts are linked with this district, Sargodha is located on East, Mianwali on West, Chakwal & Jehlum on North and Jhang, Bhakkar on South of this district.

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According to the topography of the soil this district is divided into the circles nan Pahar, Mohar Barani, Mohar Nehri, Thal Nehri, Thal Barani. The precious mir resources like salt, coal, gypsum are available in the salt range falling the district. district is rich in wild life. The important installation i.e. PAF Base at Sakesar is at he of 5000 feet above the sea level. There are main crops of the district are Gram, Wh Rice, and Sugar Cane. Rain Fall decreases rapidly as one goes lecviour in soon v than in the dry hot thal area at Khushab rain fall is about 32.5 at Mitha Tiwana on edge of the Thal rain fall average is 25cm at Noorpur. The average is about to sum at salt range at Naushera average is 45cm while it is at share about 55cm. Tempera in the month of May and June temperature at Khushab and Thal rises day after da 115 F. As the moon soon rain, commence the temperature falls as low as 80 F, du night. January is the coldest month then the thermometer often stands at 20 C. Wea like the areas of Pakistan and Punjab District Khushab has same four seasons, Wi (Mid December to March), Hot Weather (April to June), Monsoon Season (Jul September) and Post Monsoon season (October to Mid- December). There are beautiful lakes named as usually lake and Jahllar lake in soon valley..

3.2.2 Seismicity

Seismic Zoning Map of Pakistan showing Proposed Project site area is presented as **Figure - 7**, indicating zones according to the Building Code of Pakistan - 2007. The city of Khushab, the project site falls in Seismic Zone 2A according to the Seismic Zoning Map of Pakistan.

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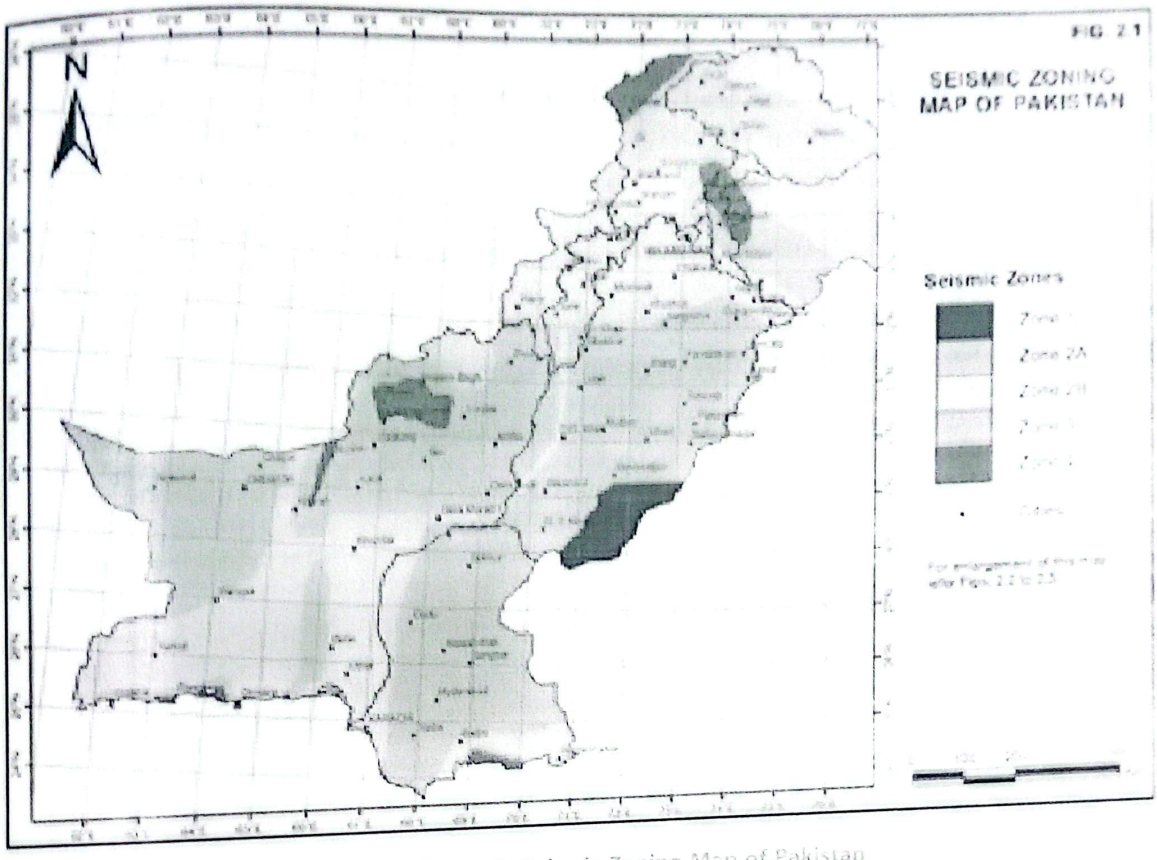

Figure 7: Seismic Zoning Map of Pakistan

3.2.3 Geography

District Khushab is located between 31° 33′ to 32° 43′ north latitudes, and 71° 35′ to 72° 37′ east longitudes. It is bounded on the north by Chakwal district, and on the northeast by Jhelum district. The River Jhelum flows on the district's east boundary and separates it from Sargodha district; Jhang district is located on the district's southeast and its west boundary is flanked by Mianwali and Bhakkar districts. District is located just 1-hour and 30 minutes' drive from the Capital of Pakistan Islamabad, and 3 hours drive from the heart of Punjab Lahore. Khushab is linked with these cities through the National Highway N-5. Several cities are within 1 to 2 hours' drive including Gujrat (home to fan manufacturing) Gujranwala, Chakwal and Mirpur, Azad Kashmir.

The nearest airport is the Islamabad International Airport, which is approximately 110 km by road from Khushab. The Sialkot International Airport is approximately 100 km by road from Khushab. A small airport called Mangla Airport, located near Dina, is in use of

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the aviation wing of the Pakistan Army.

3.2.3 Climate

Khushab has a Semi-arid climate. The maximum recorded temperature in the pre-monsoon season of April to June is 49.2 °C (120.6 °F), whereas in winter the minimum temperature recorded is −0.6 °C (30.9 °F). Average annual rainfall is about 850 millimetres (33 in) which is much below the required quantity given the extremely high evaporation levels. Nevertheless, in the rainy season water torrents flow from the north to Jhelum River very rapidly and cause damage to the crops, bridges, roads. This is responsible for the soil erosion in the district.

Average temperatures and precipitation

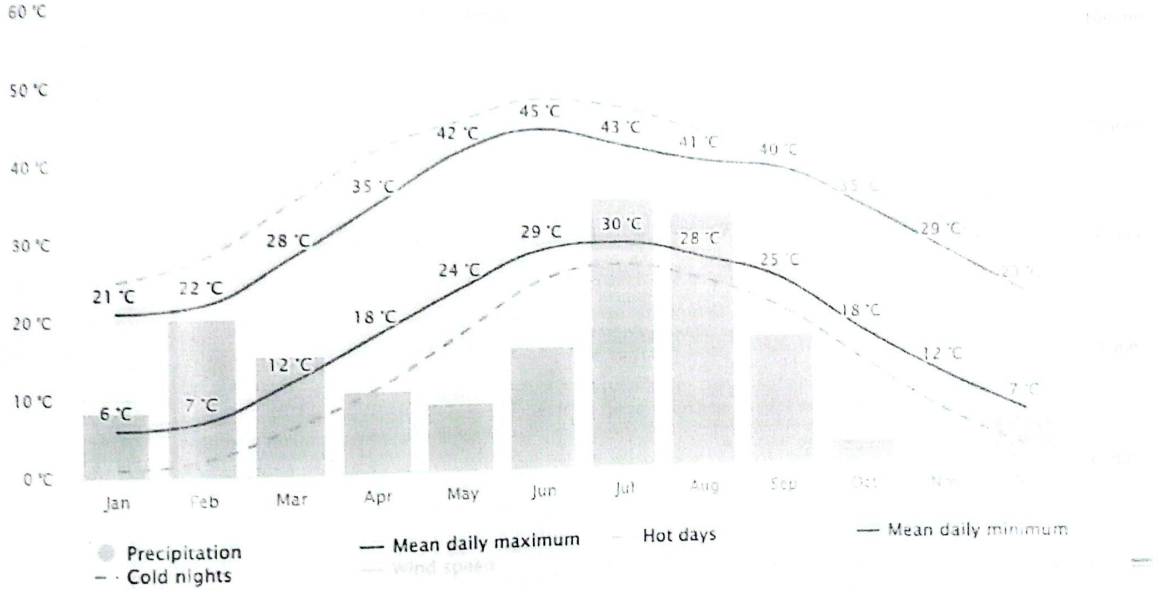

Figure 8: Average Temperature and Precipitation Map

The "mean daily maximum" (solid red line) shows the maximum temperature of ar average day for every month for Khushāb. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month o the last 30 years.

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Cloudy, sunny, and precipitation days

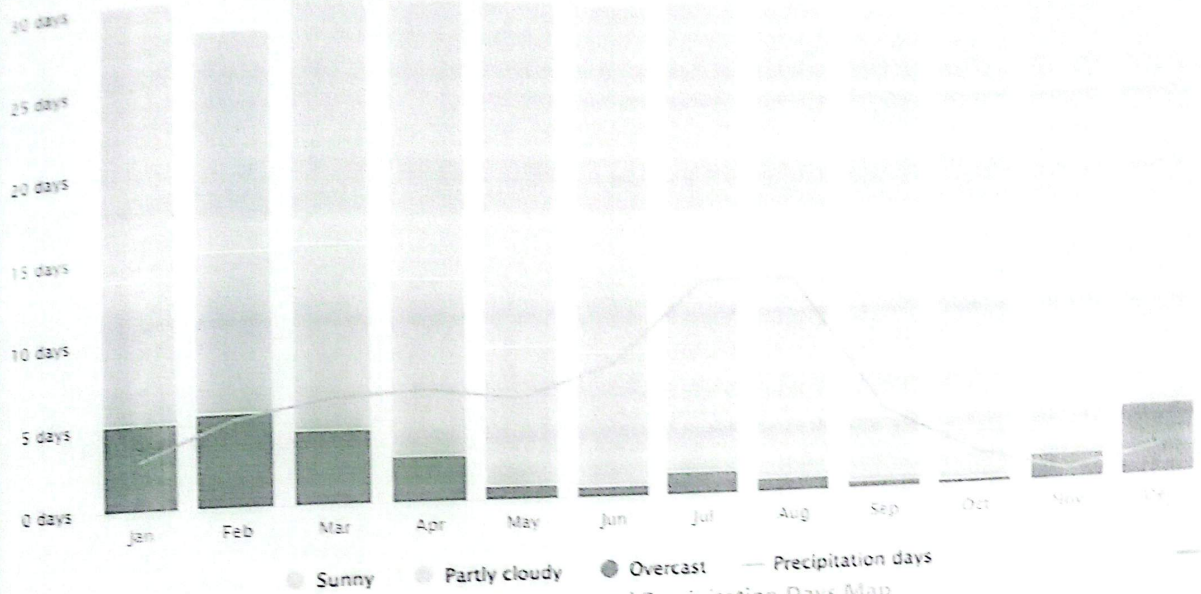

Figure 9: Cloudy Sunny and Precipitation Days Map

Maximum temperatures

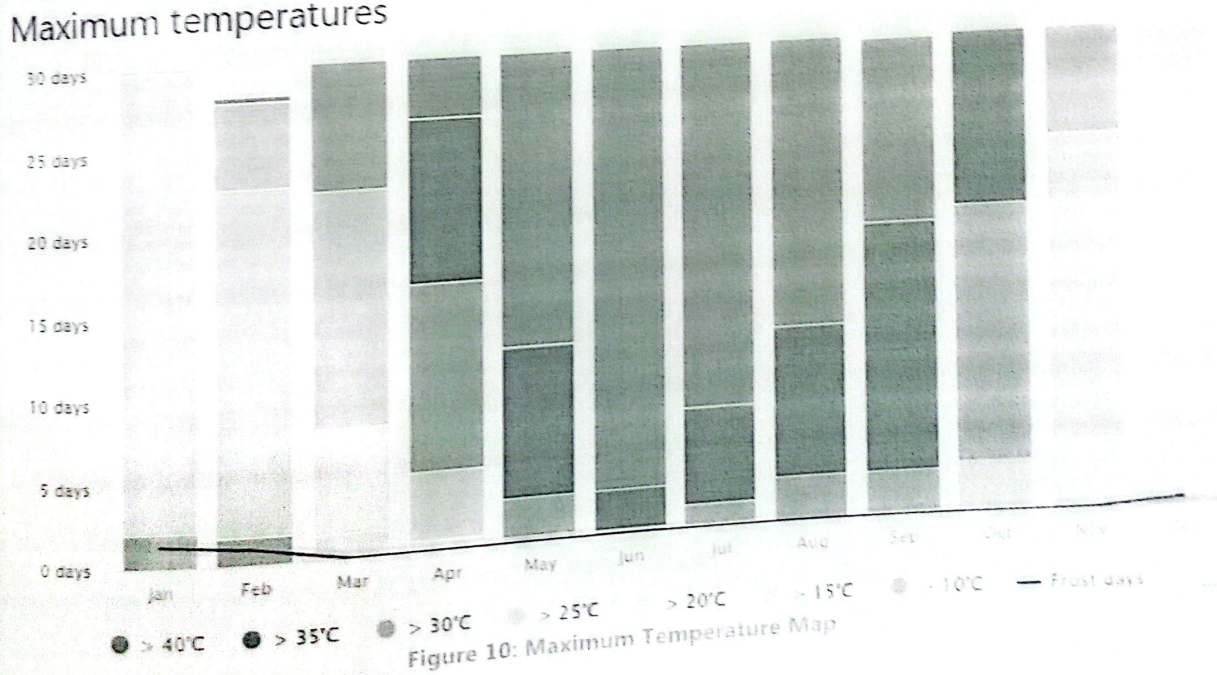

Figure 10: Maximum Temperature Map

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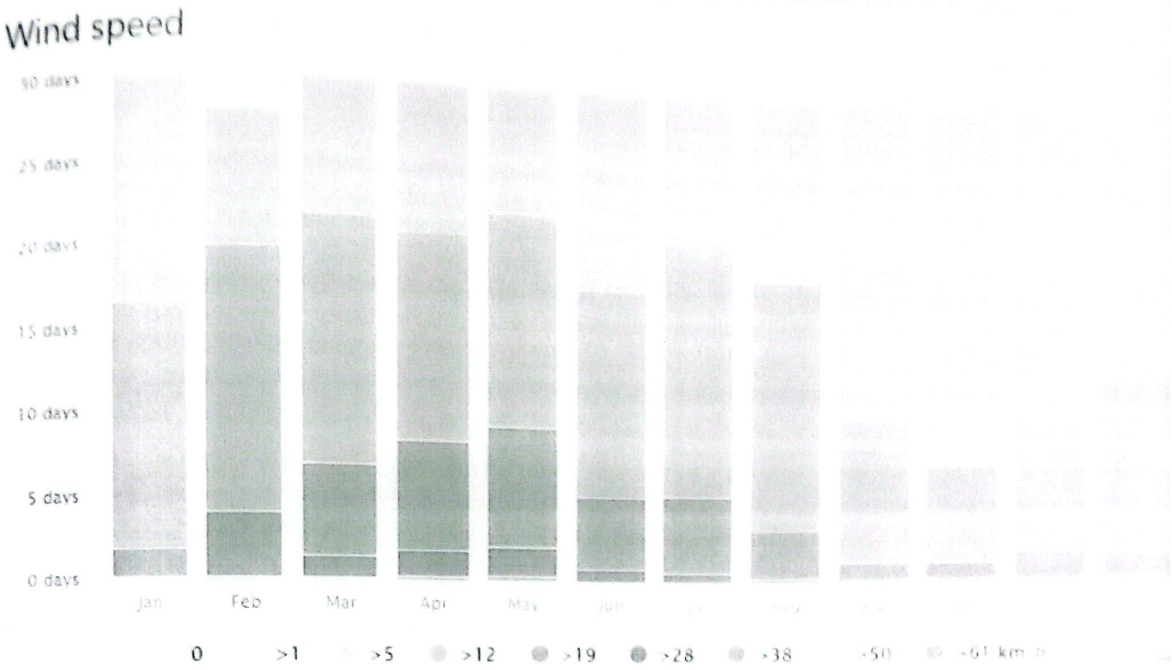

Figure 11: Wind Speed Map

3.2.4 Noise Level

Noise is described as an unwanted sound emitted from un-avoidable sources of anthropogenic activities. Daily based natural induced sources of noise are rare to none but human induced noise sources are plenty and un-avoidable. Physically, there is no distinction between sound and noise. Sound is a sensory perception and the complex pattern of sound waves is labelled noise, music, speech, low altitude aero plane flying etc. Environmental noise is a common cause of hearing loss of people indulged in industrial activities. Noise pollution in the city is on the rise with most residents complaining that the noise is becoming a public nuisance.

Project Site:

Noise level was monitored at the time of field survey.

3.2.5 Ambient Air Quality

The degradation of air quality in all the large cities is a major environmental concern these days. Air pollution levels in urban centres have either crossed safe limits given in the PEQS or have reached the threshold values.

About 60 to 70 % of the deterioration in the air quality is due to the vehicular emissions

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The parameters which have proved to be the major threat are particulate matter and concentration of oxides of nitrogen that are relatively higher in all the large cities of Punjab. The main exhaust gases include SO_2, NO_2, CO, etc. It was however observed during the visit that environment of the project area is clean.

To record the baseline ambient air quality of the Khushab, three samples were collected atdifferent location to observe the level of CO, SO2, NO2 and Particulate Matter (PM10)

Project Site:

Ambient air quality was monitored during field survey of site. The results of the samples are within the PEQS limits.

3.2.5 Surface water

The surface water is of good quality. All the parameters are within the PEQS.

3.2.6 Ground water

Underground water is available in large quantity and its quality is very good. The underground water is supplied by pumping system (motor pump, tube well, hand pump) to the residents of the area. The underground water is of good quality and all its parameters being tested are within the WHO guide lines and the water is fit for drinking purposes.

3.3 BIOLOGICAL ENVIRONMENT

Natural capital of a country mainly includes all of the country's wilderness areas and scenic landscapes, including also with their associated flora and fauna. Pakistan has a total of nine major ecological zones. The contribution of the "Natural Capital" is recognized at three distinct levels: species, genera, and communities (habitat and ecosystem) both collectively and within each level, the range or variety of the resources are referred to as the "Biological Diversity". The term has relevance for each of Pakistan's administrative units district, province, and particularly country. The more the number of species, genera, and habitats and ecosystems present within these units, the greater is said to be the

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Biodiversity. The biodiversity of the area, with this background, is discussed as under

3.3.1 Flora

Khushab is situated between the cities of Sargodha and Mianwali, near the river Jhelum. The district capital is Jauharabad (founded 1953, pop. 39,477).

Khushab consists of agricultural lowland plains, lakes, and hills. Parts of the Thal desert touch the district, which has a breadth of over 70 miles (110 km) and is situated between the Indus river and the Jhelum river.

There are three lakes (Ochali, Khabbaki and Jahlar) in the district. Kanhatti Garden is the largest forest in Khushab district, near Khabbaki village in the Soon Valley. Khabikki Lake is a salt-water lake in the southern Salt Range. The lake is one kilometre wide and two kilometres long. Khabikki is also the name of a neighbouring village. Sakesar is the highest mountain in the Salt Range,[11] and is the site of the ancient Amb Temples. Sakesar's summit is 1522 metres / 4946 feet high and is situated in Khushab District.

Project Site:

No threatened or endangered species and medicinal plants are present in the project area. No vegetation or plants will be removed due to commencement of project as the site was clear and no flora existed there.

3.3.2 Fauna

The fauna of the District is mostly indigenous restricted, like the vegetation, but similarly varied and interesting. The rugged and rough terrain, low rainfall, the scantly cover of vegetation and the burning passions of the increasing number of hunters, all have their share in limiting the animal kingdom in the District. The riverine offers a better environment than elsewhere though the hills support a more interesting wildlife. Urial and Chinckara are spot aids while wild bores are found in the Salt Range. Wolves, Foxes and Wild Cats are also found. Hare is fairly common. Chikor grey and black Partridge are also found in the parts of the district. Migratory ducks like Teal Pintail and Mallard and some geese visit during winter.

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3.4 SOCIAL & CULTURAL STUDY

3.4.1 Demographic Profile

The Demographic Studies are the major source of any city's Socio Economi profile. Demographic Studies relate to population. Population studies are extremel important from Town Planning point of view. Until and unless we know about populatio in detail we cannot do successful planning. All aspects of population, such as sex-ag composition, trend of migration, social, cultural, political, economic and administrativ works, values and facilities have to be related to planning considerations and decision Individuals are the raw material of society, therefore, society is directly affected by siz growth, composition and distribution of its individuals. The term population refers to th number of individuals living within a geographical area at a given time.

The population of the Khushab city is about 119,384 and it is the 77th largest city Pakistan with respect to population. Total area of city is about 22 km2 (8.5 sq m Population density is 261/km. Population Growth Rate is 1.51which is very low compared to other urban areas of Pakistan. The majority of the population i.e. 98.4 percent is Muslim. Among the minorities Christians are in majority sharing 1.36 perce in the district. Punjabi is the dominant language (96.6 percent), while, other languag spoken in the district are Urdu (1.9 percent), Pushto (1.2 percent)

3.4.2 Health Facilities

Only small scale dispensaries are available at some villages of the area. Howev at khushab city a lot of private and government hospitals are present.

3.4.3 Tribes & People

The principal tribes of the district are the Gujjars, Janjua's Awans, Gakhars, Kashmiri, Khokhars, Pathans, Lilla Qureshis, Phaphra Mughals, Maliar, Syed and Punjabi Shaikh. The major clans of the Jats are the Bhukar, Cheema, Dhamial, Ghuman, Gondal, Hal, Khingar, Khoti, Khatarmal, Mikan, Nagyal, Sipra, Thathaal,

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and Toor. The major clans of the Rajput are the Akra, Bharat, Bhakral, Bhatti, Chauhan, Chib, Janjua Rajput, khokhar Rajputs, Jalap, and Sohlan.

3.4.4 Customs and traditions

Khushab has very rich history and colorful culture. Khushab is situated between the cities of Sargodha and Mianwali, near the river Jhelum. People are of good and harmless nature. They respect their tradition and do according with traditional norms. They take active part in thehappiness and grieve of each other and are very hospitable. People tell stories of traditional tales like Hir Ranjha, Hir Waris Shah and music is also full of colors.

3.4.5 Recreational Resources

Khushab consists of agricultural lowland plains, lakes, and hills. Parts of the Thal desert touch the district, which has a breadth of over 70 miles (110 km) and is situated between the Indus river and the Jhelum river.

There are three lakes (Ochali, Khabbaki and Jahlar) in the district. Kanhatti Garden is the largest forest in Khushab district, near Khabbaki village in the Soon Valley. Khabikki Lake is a salt-water lake in the southern Salt Range. The lake is one kilometre wide and two kilometres long. Khabikki is also the name of a neighbouring village. Sakesar is the highest mountain in the Salt Range,[11] and is the site of the ancient Amb Temples. Sakesar's summit is 1522 metres / 4946 feet high and is situated in Khushab District.

3.5 Occupation of Respondents

Majority of the respondents (26%) belongs to the business, 33% have their own business, 10% daily wagers, 13% attached with Govt. employee, 15% shopkeepers and remaining 18% are private employees. During survey, efforts were made to interact with people representing all walks of life. The detailed graphic representation of occupational status is given below:

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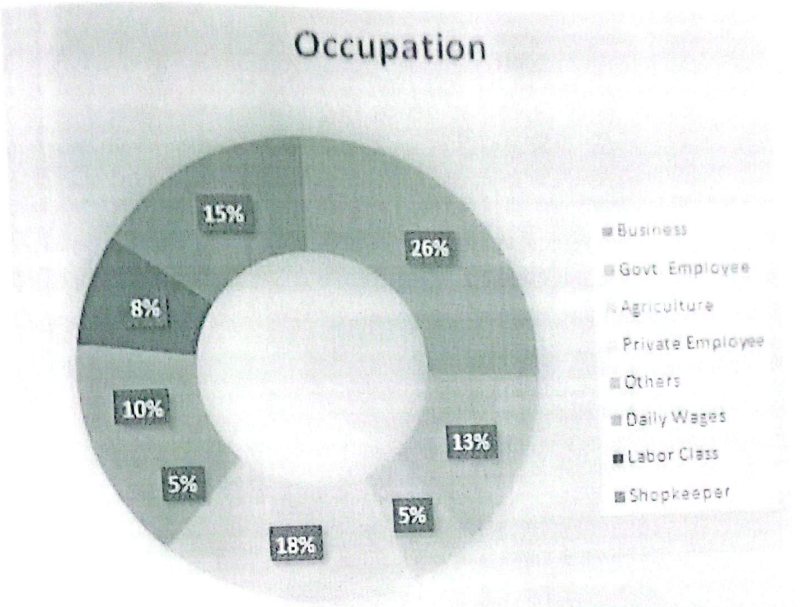

Figure 12: Major Occupation in Project Area

3.5.1 Personal Income

Based on the sample survey results, as the figure shows that nobody was earning less than 20,000 rupees, 69% of respondents fall within the income range of 20,000 25,000, 23% respondents earn 30,001 – 40,000 while only 8% of the respondents ear within the range of 40,001 – 45,000.

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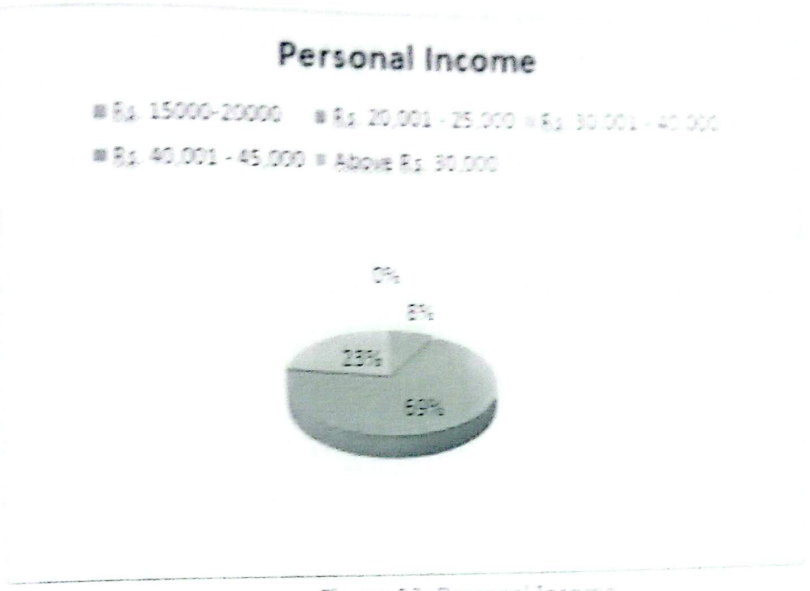

Figure 13: Personal Income

3.6 Lab Reports of Environmental Analysis

Testing of different parameters was done from a certified laboratory named SEA to check the quality of different environmental parameters. The copy of the lab report of these parameters (ambient air analysis, water quality analysis and noise) is attache at Annexure of this EIA Report.

3.7 Suitability of Site:

Comprising all assessment of above baseline data there will be no significa ecological/ environmental impact expected in and around the present selected proje site, hence it is suitable for the proposed project.

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MITITGATION AND IMPACT ASSESSMENT

In the sections below the impacts assessment methodology for the extraction of coal from mines (PL/KHB/COAL/501) by Ms. Nighat Shaheen Shahwaar has been defined. It includes the magnitude, the extent of the impact and the nature of the anticipated impact.

4.1 Methodology

This Section discusses the project's potential environmental impact on the area's geomorphology, soil, water resources, air, biological resources and socio-economic condition and, where applicable, identifies mitigation measures that will reduce if not eliminate, its adverse impact. The assessment carried out in the sub-sections below is based on potential impacts on overall environmental receptors within the project area. Impacts are evaluated on the basis of magnitude, immediacy and sustainability. Evaluation criteria are as follows:

4.1.1 Magnitude

The magnitude of the impact includes the type of impact project will cause such as; direct, indirect and cumulative.

4.1.2 Immediacy

Immediacy focus on the following parameters:

- Temporal Extent (during construction and after construction)
- Spatial Extent (local, widespread)

4.1.3 Sustainability and Reversibility

It focused on the following parameters:

- Mitigability (Fully/Partially)
- Monitoring (Fully/Partially)

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4.2 Objectives

Following are the objectives of screening out all significant environmental and social impacts as well as mitigation measures need to reduce the severity of the impact up to the extent possible:

- To find different alternatives and ways of carrying out the project activities
- To enhance the environmental and social benefits of proposed project
- To avoid, minimize and remediate the associated adverse impacts
- To ensure that residual adverse impacts are kept in acceptable limits

4.3 Purpose of Mitigation Measure

The basic purpose of mitigation measures is to reduce the impacts of the propose project establishment on the socio-environment up to the maximum possible extent. Th mitigation measures are suggested based on the following parameters:

4.3.1 What is the problem?

The proposed project is the mining of Coal in the centre of the mining area. Th nature of the land is defined as the open mining land. So, the no major impacts associat with the development of project during the operational phase expect air emissions, so waste management and wastewater disposal issues may arise.

4.3.2 When problem will occur and when it should be addressed?

The impacts from the mining will occur during operation phase it will include; no generation, solid waste management, wastewater management and disposal, etc. Th all problems should be addressed on-site where they are being generated, to avoid residual or adverse impacts.

4.3.3 Where problem should be addressed?

The problem will be generated from the mining. So, it should be addressed source i.e. at site within the same timeframe.

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4.3.4 How the problem should be addressed?

Proper mitigations measures will be provided according to the nature of impacts/problems. Like for dust emissions sprinkling of water will be done, for solid w proper solid waste management and disposal practices will be adopted, to manage li waste proper treatment will be done before discharging into the receiving body

4.4 Ways of Achieving Mitigation Measures?

Following ways will be adopted to reduce the impacts of the extraction of coal mines

4.4.1 Changing in Planning Design

For the extraction of coal from mines an open mining area has been select the project area or its vicinity no ecologically, important area is present. Howeve human settlement or infra-structure will be dislocated due to the extraction of coal mines. So, no adverse impact is being envisaged. Hence, there is no need to chang design of project is required.

4.4.2 Improved Management and Monitoring Practices

The anticipated impacts had been reduced significantly by adopting management activities, as it will be carried out for betterment of the environment monitoring will be conducted to keep the sources of the pollution and nuisanc check.

Following practices that need to be adopted to reduce the impact significar

a. Compensation in Money Terms

There is no damage envisaged to fauna, flora or any other biological source the Mining Process. So, no compensation in monetary terms will be needed as the under undisputed lease by the Client and the land lease documents are attached at of this EIA Report.

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b. Replacement/Relocation/Rehabilitation

The proposed project is located in open/mining land where there is no sensitive area, population or natural resource is present which could be impacted due to the extraction of coal from mines. No replacement, relocationand rehabilitation are requiring for the proposed project establishment.

4.5 Impacts Associated with Project Location

The proponent has selected the site owing to the following reasons:

- The site is undisputed and under the lease of the proponent
- There is no community or human settlement present on-site
- There is no fauna or flora (particularly belonging to an endangered species) present on-site except crops
- The site has accessible road network.
- There is no ecologically sensitive or declared protected area (PA) like; Reserved Forest, Fish Hatcheries, Territorial Waters, Wildlife or Game Reserves. Moreover, there is no socio-cultural significant structure (historical or archaeological site or religious structures; Masjid, temples, etc.) located within 10km of the selected site that could be impacted

It can be concluded in view of these reasons that the selected site is best suited for the project and will not pose any adverse impact or threat on any component of the environment.

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5. SCREENING OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

In this Chapter anticipated impacts and mitigation measures for the extraction of coal from mines by Ms. Nighat Shaheen Shahwaar have been discussed below in details. The purpose of conducting an EIA Study is to provide information about the general environmental setting of the project area, various impacts has been identified based on project activities on the bio-physical, socio-economic and cultural environment, if any. recommendation measures are suggested accordingly. As well as site specific environmental mitigation measures and an Environmental Management Plan (EMMP) for extraction of coal from mines has been developed to ensure factual assessment of hazards and risks and to suggest the mitigation measures accordingly moreover, to address the requirements of EPA Punjab. The assessment of impacts of proposed project has been carried out for both positive and negative aspects.It is expected that the project activities will not have any significant adverse impact on theenvironment.

5.1 Adverse Environmental and Social Impacts

Construction and everyday operations would involve the use of mechanized equipment with the potential to release the hazardous materials, such as particulate matter, oil, grease and gasoline in surroundings. The severity of the adverse impacts associated with proposed project founding will be reduced up to significant level by adopting best management and monitoring practices. Management and monitoring practices are given below in details below under each specific impact.

5.2 Impacts during Designing phase

Following impacts are foreseen to be occurring during the designing phase of the proposed project:

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a. Impacts of Project Location

As discussed in Chapter 2 (Project Description) of this EIA Report the proposed project is located in mining reserved area. There will be no long-term, high and adverse impact anticipated due to extraction of coal from mines at this location. The selected site is leased by the Client and there is no dispute associated with the lease of the land Moreover, the area is not inhabited by any ecologically important or protected flora and fauna specie as well as within 10 km vicinity of the project area no archaeology and historical important site is located.

It can be concluded in view of these reasons that the selected site is best suited for the project and will not pose any adverse impact or threat on any component of the environment.

b. Impacts of Project Design

The proponent has planned to construct the underground mining structure on modern lines, with incorporation of imported technology. The design, if maintained and operated in an environment-friendly manner, is expected to cast positive impact on the environment and will not pose any adverse impact or threat on any component of the environment.

The design of the proposed project for the extraction of coal from mines will be sustainable and will follow the principles of safe and sound mining. The design of the underground mining will follow the safe supportive and environmental friendly designs such as; maximum availability of ventilation system keepsthe labour safe from methane emissions and get proper breathing conditions, timber support will be done to avoid the collapsing of mine etc. Moreover, the all designing is done keeping in consideration of all the technical standards to avoid adverse impacts onthe environment and society

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c. **Ecology**

Currently, the proposed project is in the mining zone. Due to the establishment of the proposed project no tree will be removed as the trees are present at the boundary of the project area. So, no impact is being envisaged. In the case of the removal of the tress, the removed trees will be planted in the designated green areas.

d. **Geology**

The geology of the proposed project area is uneven/mountainous. The proposed project might have some impact envisaged on the topography of the area but the site is reserved for the mining purpose and natural resources are need of the time to cope with growing demand hence all the activities will be done under the environment friendly conditions.

5.3 Impacts during Construction Phase

No constructional activities being involved for the extraction of coal from mines by Ms. Nighat Shaheen Shahwaar, since it is mining process and no such infrastructure is needed, except mines office, rest shelter, installation of conveyor belts and drinking water point etc, hence there will be no impact regarding constructional phase.

5.4 Impacts during Operational Phase

The environmental and socio-economic impacts associated with the operation phase are had been studied in detail. Following is the detailed description:

a. Water Consumption and Wastewater Production

In aforesaid project, water will be used for sanitation purpose and sprinkling on site to avoid dust emissions and the daily consumption of water is estimated as 300-600 litres/day, major wastewater in project processing will be produced by the personnel daily uses and for sprinkling purpose to control the dust emissions produces by the mining process. The wastewater generation rate from domestic activities will be 200-500 litres/day. The wastewater will be treated through settling tanks, This treated water will be

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re-used for sprinkling purpose and to watering tress which will be planted by the proponent to enhance environment around the area thus resulting in water conservation.

Nature of Impact

The nature of the proposed impact will be direct, low, short-term and hence in significant.

Mitigations

Following mitigation measures will be adopted:

- Freshwater conservation techniques will be adopted to ensure sustainable development
- Monitoring of effluents will be carried out as per requirement of Self-Monitoring and Reporting Tools (SMART) to ensure compliance with the NEQS
- It will be ensured that no solid waste will be entered in the wastewater
- There is no surface water body present in the project proximity that could be impacted
- Septic will be constructed to treat municipal wastewater

b. Noise

This is proposed coal mine having proposed production will be only 74.5dba. However, there will be increase in the mining activities, which may result in the increase in ambient noise levels. Exposure to noise levels, above threshold limit value may have detrimental effect on the workers' health. The adverse effects of high noise levels on exposed workers may result in:

- Annoyance;
- Fatigue;
- Temporary shift of threshold limit of hearing;
- Permanent loss of hearing; and
- Hypertension and high blood cholesterol, etc

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The following source of noise are being identified

- Mining machinery like drilling machines, etc
- Transport machinery like dumpers, tippers, etc.
- Transportation of coal from underground mines through conveyors belts, etc

Nature of Impact

This impact is considered to be low, long-term, temporary and significant

Mitigation Measures

Noise management and mitigation plan should follow the underlying strategy:

- Standard specified mining equipment will be used. The equipment will be in good working conditions, properly lubricated and maintained to keep noise within permissible limits.
- Drilling will be carried out with sharp drill bits which help in reducing noise
- Controlled blasting with proper spacing and optimum charge/delay will be maintained.
- Tall trees with heavy foliage shall be planted along the boundary of mining lease area which will act as a natural barrier to propagating noise
- Regular noise monitoring will be carried at project site to check compliance with prevailing rules.
- Personal Protective Equipment's (PPEs) like ear plugs/ear muffs will be provided

c. Waste Management

Improper disposal off the solid waste generated during the operational phase of proposed project can pose a health hazard; pollute soil, surface and ground water Domestic solid waste will be disposed-off by using standard practices, the process will waste consists of materials that must be removed to gain access to the coal resource such as topsoil, overburden or waste rock as well as wastes gangue from underground mining.

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Proper implementation of the mitigation measures will ensure that the residual impact from improper management and disposal of the waste is minimal. Monitoring and inspection will be undertaken to ensure compliance and minimize any residual impact

Nature of Impact

This impact is considered to be low, long-term, temporary and significant.

Mitigation Measures

Following mitigation measures will be adopted:

- Waste generation will be minimized by adopting waste management strategy of reduce, reuses and recycle
- A waste management plan will be prepared, implemented and monitored for the safe collection, storage and treatment/disposal of the building waste
- Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register
- Records of all waste generated will be maintained
- Training will be provided to personnel for identification, segregation, and management of waste
- Various waste containers for waste collection will be placed at appropriate locations.
- Waste management inspections will be undertaken on a regular basis of onsite waste management and of waste disposal contractors to ensure that the waste management procedures are being followed
- Monitoring measures will include:
  - ✓ Record of all waste generated
  - ✓ Quantities of waste disposed, reused at site or sold should be logged on the waste tracking register
  - ✓ Audit of waste management on annual basis

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- ✓ The areas around the project boundary and access roads should be periodically inspected to verify that no project related waste is scattered in these areas

d. *Air Emissions*

The air emissions from the processing will release dust and particulate matter and some gaseous emission in the environment. If these emissions are not handled may damage the health of workers, may be the cause of public nuisances and the wear& tear of the shelling machinery is fast.

Nature of Impact

This impact is considered to be low, long-term, temporary and significant.

Mitigation

Following mitigation measures will be adopted:

- Development of thick green belt in 7.5 m safety barrier along the mine lease boundary.
- Removal of vegetation from virgin area, only when immediately required for mining.
- Adoption of wet drilling/ drills with dust arrestors to control dust generation during drilling.
- Water sprinkling on mine benches during loading of coal.
- Periodic maintenance of tippers/dumpers and mine machinery.
- Periodic maintenance of haul roads
- Regular water sprinkling on haul roads and mineral transport roads.
- Plantation on inactive dump slopes and stabilization of completed dumps by thick plantation.
- Provision of fixed water sprinkling arrangement at crusher

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- Transport of Graded coal to the buyers location through trucks covered with tarpaulin.
- Provision of dust masks to all the workers exposed to dusty mining operations.
- Periodic monitoring of ambient air quality in the mine lease area and in nearby villages to assess the efficacy of air pollution control measures.

e. Emergency Response

Incidents and accidents may take place unexpectedly during project operations no matter how effective, strong and efficient the mitigation measures for all adverse impacts especially the safety issues may be adopted. These may include any hazard which may poses a serious threat.

Nature of Impact

This impact is considered to be low, long-term, temporary and significant.

Mitigation

Following mitigation measures will be adopted:

- Adequate fire hydrant system will be available on site.
- Flammable materials will be prohibited in the premises
- Adequate training of workers on use of fire-fighting system to deal with the situation.
- Emergency call service will made available

f. Occupational Hazards

It includes occupational hazards like physical injuries arising from accidents such as being hit by falling weak structures, being overrun by heavy equipment. The major safety issues in operational phase are:

- Electrical Hazards
- Machine Guarding

- Eye, Head and Foot Protection
- Fire and Explosion Hazards
- House-Keeping Issues

Nature of Impact

This impact is considered to be low, long-term, temporary and significant.

Mitigation Measures

- Care will be taken to properly ground and insulate all equipment
- Proper drilling machine guarding, which is critical for the prevention of injuries to workers by isolating them from moving machinery, will be provided
- Fire-fighting equipment will be available, and their locations will be clearly marked
- Workers will be told and encouraged to use PPEs as may be standardized
- Workers' awareness and safety wall chart showing safety symbols will be displayed.
- First Aid Box will be kept in easy approach of all in case of any injury or mishap.
- Basic medical and health facilities will be provided to all employees
- Safety and warning devices such as reflectors, lights etc shall be installed at designated spots
- Visual monitoring of hazards and accidents will be done in order to control the potential hazard
- Identification and assessment of the risks from health hazards in the workplace;
- Surveillance of the factors in the working environment and working practices which may affect workers health, including sanitary installations.
- Planning and organization of work, including the design of workplaces, choice maintenance and condition of machinery and other equipment and substances used in work.

- Protective tools like dust masks, ear plugs, helmets, safety boots, radium aprons/jackets, goggles, hand gloves etc. will be provided to mine workers

5.5 Potential Environmental Enhancement Measures

5.5.1 Tree Plantation

Tree plantation within and outside the premises is a potential environmental enhancement measure. Native flora will be planted in the specified green zone which will have the maximum capacity to reduce noise pollution and tolerance index of these species are more than 10. Some floral species like roses and other ornamental evergreen plants will also be introduced which will enhance aesthetic beauty. The proponent will also make arrangements for protection and maintenance of trees.

5.5.2 Social Enhancement Measures

Following measures will be adopted to improve the socio-economic condition of the area:

a. Employment/Poverty Alleviation

The employment opportunities in the project area will be increased due to the founding of project at the proposed location. In totality, the overall economic condition of the area will be improved due to the establishment of the proposed project.

b. Local Economy

The employment opportunities and/or income sources generated by the project operation will be long term in nature. These will be enhanced once the operations phase will start. The local economy will experience a slight boom during development and operational period.

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6. ENVIRONMENTAL MANAGEMENT AND MONITORING PLANS

This Chapter presents the implementation mechanism in the form of an Environmental Management and Monitoring Plan (EMMP) for the environmental and social mitigation measures identified during socio-economic survey as given in Chapter 5 of this EIA Report. The existing environmental regulations in Pakistan for the establishment of the mills complied with the potential adverse environmental impacts resulting from the project activities are minimized as practicably as possible. Implementation of on-going environmental monitoring programs will enable the assessment and modification, if required, of the Environmental Management Plan (EMP). This EMMP provides the delivery mechanism to address the adverse environmental as well as social impacts of the proposed project during its execution, to enhance project benefits and to introduce standards of good practice to be adopted for all project works.

Environmental management is carried out in all stages of the project development namely; designing, construction and operational phases. The key stakeholders in the environmental management activities are: Proponent, Contractor, Local Government Authorities, customers and to some extent general public. The EMMP for the management of the identified environmental impacts associated with this project consists of three main components:

1. Implementing the Impact Mitigation Plan
2. Monitoring the implementation of the EMMP
3. Institutional Framework for Monitoring, Reporting and Supervision of EMMP

6.1 Objectives

This EMMP aims at ensuring the application of the mitigation and monitoring measures, needed to reduce and control the various adverse environmental and social impacts associated with the implementation of the aforesaid project. The key objectives of the EMMP are summarized below:

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- Minimizing any adverse environmental, social and health impacts resulting from the project related activities
- Implementation of on-going environmental monitoring programs
- Periodic review of the EMMP to allow for improvement
- Ensure that all stakeholder concerns are addressed, if any
- Overall, this EMMP aims at ensuring the application of the mitigation and monitoring measures needed to reduce and control the various environmental and social impacts associated with the implementation of the proposed project
- Provide the mechanism for taking timely action in the face of unanticipated environmental or social situations
- Identify environmental as well as social training requirements at various levels

6.2 Components of EMMP

The EMMP consists of the following components:

- Institutional arrangements
- Mitigation plan to reduce the severity of associated impacts
- Monitoring plan to monitor the impacts and their severity
- Environmental and social trainings to raise awareness

6.3 Environmental Management Team along with their Roles and responsibiliti

This section describes the organizational structure required for managing t environmental and social aspects of the proposed project as well as it describes the ro and responsibilities of various authorities. The Table 08 emphasize the institutions whi are responsible for proper implementation and effective supervision.

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Table VII: Environmental Training Program

Target Audience	Trainers	Contents	Sched
Selected Management Staff	Subject Expert	Key finding and implementation of suggested mitigation measure	Biannual Basis
All Personnel	HSE Officer	Mitigation measures especially related to fire fighting, health, safety and environment (emissions & discharges), etc.	Monthly
Technical Staff	HSE Officer	Waste disposal, vehicle movement restriction and other mitigation measures	Quarterl
Other Staff	HSE Officer	Waste disposal, resource conservation and other mitigation workers	Monthly

6.4 Proposed EMP reporting and reviewing procedures

The primary responsibility for monitoring the potential impacts during construction and operation of the proposed project will be with responsibility of project proponent. However, the proponent contracts a third party (e.g. Environme GreenTech Services) to undertake independent monitoring required. The construc contractorwill be responsible for the implementation of the construction EMP.

6.4.1 Auditing

The EMMP, its inherent procedures and controls should be audited in the early middle stages of development and on completion of the project. A suitably qual auditor will carry out auditing of the EMMP. Appropriate action shall be take ameliorate any deficiency in implementation of the EMMP and any elements that p to be unworkable.

6.5 Training needs

In order to effectively operate the EMP all the staff to be engaged in this activity s be trained extensively.

All the environment management staff should be trained in all operations of labo testing of the effluents and other relevant materials/samples. Staff should be trai applying analytical methods/techniques of testing, data processing, interpretatio reporting. Staff should know the local laws, rules and regulations as applicable testing of effluents.

The person to monitor gaseous emissions, PM and noise levels should be extensivel trained to handle his job capably. Training program should include use of monitori instruments, data generation, processing, interpretation, recording and presentation

6.6 Management Responsibilities

A number of parties have responsibilities in relation to the implementation of the EMMP. All project staff has a responsibility and must adhere to the procedures outlined in the EMMP at all times. The institutional capacity and the responsibilities of the management are given below:

Role	Responsibilities
Proponent	Following will be responsibilities of the Proponent » Implementation and monitoring of the EMMP with true spirit » Provide all supervisory and management staff with a awareness and understanding of their responsibilities unde this EMMP » Provide appropriate and adequate resources to allow for th effective implementation and maintenance of the EMMP »Conduct periodic reviews of environmental performance » Report any major environmental incidents that may have significant impact on the surrounding environment » Provide employees and contractors with the relevan environmental instruction in relation to the EMP It will includ awareness, understanding of their obligations and duties
Superintendent's Representative, All Employees and Sub-contractors	»Be aware and understand the contents of, and the reason fo implementing the elements of the EMP » Exercise environmental due diligence and achieve complian with the EMP »Report all environmental incidents to the principal as soon practicable possible

6.7 *Proposed monitoring program to assess performance or output of EMP*

Table IX: Environmental Management Plan

Project Activities	Type of Impact	Potential Impacts on Environment	Extent/ Magnitude	Mitigation Measure	Institutional Responsibility	
					Implementing Body	Supervision
CONSTRUCTION PHASE						
There will be no constructional activities involved since, the said project is of extraction of Coal from a mining zone and no infrastructure is required.						
OPERATIONAL PHASE						
Solid Waste Generation	Physical, Biological, Social	Soil Contamination, effecting ground water quality, Emission of GHG, Biological, Particulate	Severe/ local and global	• Separation of recyclable material • Training will be provided to personnel for identification, segregation, and management of waste • Provision of separate waste bins	HSE Officer/ Shift In-charge	Production Manager

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		Matter, Health, Economy and Welfare		• Quantities of waste disposed, recycled, or reused will be logged on a waste tracking register.		
Wastewater	Physical, Biological, Social	Soil Contamination, effecting GW Quality, Biological, Health , Welfare	Severe/ local	The domestic wastewater will be treated through settling tank and will be used for watering plants purposes in the proponent leased land.	HSE Officer/ Shift In-charge	Production Manager
Air Emissions	Physical, Biological, Social	Emission of GHG, Particulate Matter, Health, Welfare	Severe/ local	No air emission is likely to be released during operation of the Project; except the dust some gaseous emissions or PM to be produced during mining and other such operations, which also will not be posing any environmental threat (will not breach the safe standards) • Wet suppression will be done to control dust emissions	---	Proponent

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Emergency Contingency Plan	Physical and social	Reduction of biodiversity, community grievance, economy, welfare and the risk of any contingency	moderate / local	• All monitoring to determine the air quality will be carried out as and when required • Contingency planning has been done to meet any emergency situation arising due to fire, explosion, sudden leakage of gas etc. • Fire fighting equipment and other safety appliances will be kept ready for use during disaster/emergency situation • Drills will be carried out on the regular basis to prepare the staff for the emergency situation	Asst Officer/ Shift In Charge Production Manager

6.8 Environmental Monitoring Plan

An environmental monitoring plan provides a delivery mechanism to address the adverse environmental impacts of a project during its execution, to enhance project benefits and to introduce standards of good practice to be adopted for all project works. An environmental monitoring program is important as it provides useful information and helps to:

- Assist in detecting the development of any unwanted environmental situation, provides opportunities for adopting appropriate control measures
- Define the responsibilities of the project proponents, contractors and environmental monitors and provides means of effectively communicating environmental issues among them
- Define monitoring mechanism and identify monitoring parameters
- Evaluate the performance and effectiveness of mitigation measures proposed in the Environment Management Plan (EMP) and suggest improvements in management plan, if required
- Identify training requirement at various levels

An environmental monitoring plan is suggested to monitor environmental parameters during survey, construction and post construction phase of the project.

Following environmental record should be maintained:

- Periodic inspection reports of the site
- Environmental audit reports
- Incident record of all moderate and major spills and other incidents and accidents.

  The record will include:

  - ✓ Location of spill or battery limit of the accident
  - ✓ Estimated quantity or the amount of injury (as may be reported in LTI or

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LWI)

- ✓ Spilled material or nature of injury or loss (temporary or permanent)
- ✓ Restoration measures
- ✓ Photographs

- Description of any damage to vegetation, water resource, or community asset
- Corrective measures taken, if any
- Waste tracking register that will hold records of waste generated during the construction period. This will include quantities of waste disposed, recycled, or reused.
- Records of water consumption with use wise breakdown

Survey reports, in particular, the following:

- Vehicle and machinery noise
- Ambient noise survey reports
- Ambient level of dust and particulate matter
- Vendor data–all vendors disturbed by the project and compensation paid public infrastructure: Record of all damages and repair work undertaken
- Total number of unskilled, semi-skilled, and skilled jobs offered during construction
- Name and domicile of the employed staff
- Project and community interface
- Record of community complains, and the measures taken to address them
- Number of meetings held in various communities and data of persons who attended
- Environmental and social training records

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Table X: Roles and Responsibilities for Environmental Monitoring

Aspects	Proponent Responsibilities	Contractors Responsibility	Relevant Documentation
Contracting	Ensure that the monitoring and rehabilitation and rebuilding requirements are included in the contract between the proponent and the construction contractor	Understand the requirements and correctly estimate and report the required resources	Contract between the proponent and the contractor
Monitoring Plan	Finalize the monitoring plan.	---	Revised Monitoring Plan
Resources	Ensure the availability of resources for environmental monitoring, rehabilitation and rebuilding	Ensure the availability of resources for environmental monitoring, rehabilitation and rebuilding and their efficient use without wastage	Project Budget
Environmental Staff	Designate an environmental manager for the project	Appoint officer dedicated to environment	Job Description
Monitoring	Undertake the periodic	Systematically	Inspection and

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Survey	(pre-planned and unplanned) inspection and carry out the field measurement or assign this duty to a concerned person or organization	observe and collect the data on the environmental performance	survey reports
Environmental Audit	Conduct periodic audits of the Construction site and commence third party audit	Conduct Audits	Audit reports
Reporting	Ensure that periodic environmental monitoring reports are Received.		Periodic reports
Corrective Action	Verify that activities are carried out complying with EIA/EMP.	Carry out the corrective actions where required.	Corrective action record
Maintenance of Record	Maintain monitoring data and record of all incidents of environmental Significance.	Maintain monitoring data and record of all incidents of environmental significance.	Environmental data base

6.9 Communications and Documentation

An effective mechanism to store and communicate environmental information during the project is an essential requirement of an EMMP.

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6.8.1 Meetings

Two kinds of environmental meetings will take place during the project

- Kick-off meetings
- Weekly meetings

The purpose of the kick-off meetings will be to present the EMMP to project staff and discuss its implementation.

A monthly meeting will be held during operation. The purpose of this meeting will be to discuss the conduct of the operation and environmental issues and their management. The proceedings of the meeting will be recorded in the form of a weekly environmental report.

6.8.2 Changes-Record Register

A change-record register will be maintained at the site, in order to document any change in project design; especially those which have direct impact on the industry's emissions, effluents, wastes and resource management. These changes will be handled through the change management mechanism.

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phase

Table XI: Environmental Monitoring Plan for Operational Phase

Components	Objective of Monitoring	Parameter to be Monitored	Measurement	Frequency	Location	Responsibility
Wastewater generation	To determine the effectiveness of mitigation measures	Effluent discharge quality	Wastewater quality	Once a month	Effluent location	Environmental officer
Waste disposal, procedure for waste collection, storage, and disposal	To check the availability of waste management system and implementation	Inspection of waste generation, collection, storage, and disposal will be undertaken at each site of the project activity	Visual inspection	Daily	Entire Area	Administration Officer
Emission of Exhaust Gases and Particulates	To determine the effectiveness of the air pollutants' abatement devices on the	Source Emission parameters	PM, CH_4, CO, NOx and SOx	Monthly	Site Area	Environment Officer/Manager

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6.10 Impact and their Mitigation Measures

The impact and their mitigation measures is a key component of the EMMP. It enlists all the potential effects of each activity of the project and their associated mitigation measures identified during impact assessment. For each project related activity the following information is presented in the plan:

- A listing of the potential impact associated with that project activity
- A comprehensive listing of mitigation measures (actions)
- The person(s) responsible for ensuring the full implementation of the action
- The person(s) responsible for monitoring the action
- Timely implementation of the environment plan to ensure that the objectives of mitigation are fully met

It should be emphasized that the mitigation measures will have to be translated into environmental as well as social requirements and specifications to be made part of the contracts for the construction activities, with legal binding.

6.9.1 Description of proposed mitigation actions

The summary of the impacts along with proposed mitigation measures and the risk associated with each parameter is given below in details:

Table XII. Summary of Impacts and their Mitigation Measures

ironmenta arameters	Risk Assessment		Mitigation Measures
	During	After	
cation	+1p	+2p	• There is no dispute associated with the ownership of the land • The proposed area is not inhabited by any ecologically important or protected flora and fauna specie vicinity of the project area.

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			• Land is in mining zone
Design	+1p	+2p	• The design of the proposed project will be sustainable as it follows the principles of energy conservation and management • Proper ventilation system will be provided for the labours who works underground. • Timber support will be given to the underground mines to avoid any incident regarding collapsing of mines
Physical			
			Land Resources
Solid Waste	-1t	-1p	• Solid waste will be store in the covered bins in order to avoid the growth of vectors and rodents as well as to control the odour and to reduce public nuisance • Solid waste will be collected and transported to the waste disposal site on the daily basis • Good management practices will be adopted to avoid the spread of diseases among the locals • Appropriate in-housekeeping, sanitary and solid waste management practices will be adopted • Waste generation will be minimized by adopting waste management strategy of reduce, reuses and recycle • A waste management plan will be implemented and monitored for the safe collection, storage and treatment/disposal of the waste • Quantities of waste disposed, recycled, or reused will be logged on a waste tracking register • Records of all waste generated will be maintained

			• Training will be provided to personnel for identification segregation, and management of waste • Waste management inspections will be undertaken on a regular basis of onsite waste management and of waste disposal contractors to ensure that the waste management procedures are being followed • Monitoring measures will include: ✓ Record of all waste generated ✓ Quantities of waste disposed, reused at site or sold should be logged on the waste tracking register ✓ Audit of waste management on annual basis ✓ The areas around the project boundary and access roads should be periodically inspected to verify that no project related waste is scattered in these areas
Use	-1p	-1p	• The land at the proposed location is mine reserved area Extraction of coal from mines (PL.KHB.COAL.501) by M/S Ms. Nighat Shaheen Shahwaarin this zone will enhance the landvalues in this region. • The prices of the land will be enhanced due to availability of basic facilities
			Air Resources
ission	-1p	-1p	• Proper tuning of vehicles will be done on the regular basis in order to control the air pollution • Avoid unnecessary movement of the trucks carrying materials • Avoid excavation and filling activity on the windy days

			• Impact can be minimized through a management programs which ensure dust will be controlled by regular watering the dusty areas • Regular water sprinkling will be done to control the dust generation • PPEs such as; dust mask will be provided to the workers
Noise	-1t	-1t	• The noise being generated is within the PEQs limit but it can be further mitigated by proper tuning of machinery and automobiles • The noise related activities will be done during the day time to ensure minimum disturbance to the local community • Proper tuning of the vehicles will be done on the regular basis, so that the noise level will be reduce up to the acceptable limits • For people working in, ear-protection aids like ear-plugs, ear-muffs, noise helmets, headphones etc. will be provided to reduce occupational exposure • This is possible if working methods are improved by: ✓ Proper designing and fabrication ✓ Proper lubrication and better maintenance of machines ✓ Reducing the noise produced from a vibrating machine by vibration damping i.e. making a layer of damping material (rubber, neoprene, cork or plastic) beneath the machine

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			✓ Using silencers to control noise from automobiles ducts etc and convey systems with ends opening into the atmosphere • Tree plantation helps to block the propagation of sound. Proponent has planned tree plantation in and around the unit premises • During the project operation, it will be ensured that the noise level does not exceed prescribed limits as set by WHO or Pak-EPA; for which regular monitoring must be carried out.
Water Resources and Wastewater Management			
Water Resource	-1p	-2p	• Best management practice will be adopted to conserve freshwater resources • Special care will be required to protect the petroleum products from spillage • Water conservation program will be initiated to prevent wastage of water • The management will ensure maximum recycling of water, so that overall consumption could be reduced • Reusing the water for sprinkling purpose after treatment of grey water. • The water will passed through water drain, where the settling of the residue material will occur • The grey water will be treated through settling tank which will be recycled to be re-used in watering plants purposes etc.

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			• Waste segregation measures would be employed to minimize entry of solid waste into the wastewater collection system. • Periodic sampling and monitoring of key parameters of wastewater effluent into the receiving body (drain or sewerage system) and for this purpose samples will be collected at the discharge point to ensure effective treatment.
cological			
			Flora
egetation	0	+2p	• Trees will be also planted along the boundary of the project area. • Trees should be planted as soon as possible.
			Fauna
ildlife	N/A	N/A	No impact on the fauna and its habits are foreseen as the project area is located in mining zone
ocio-Economic			
nsportation	0	+2p	• Strict speed limit for the movement of vehicles should be regulated • Avoid unnecessary movement of the vehicles • Enforce traffic rules with true spirit • Implementation of traffic management plan • Penalties should be enforced on the people not following traffic rules
mployment	+1p	+1p	• During this phase skilled and unskilled labour will be required. • Employment opportunities for the un-skilled workers will therefore increase which will enhance the positive

			benefits for the local people who are in dire need of income for sustenance

- ***Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible***
- ***All adverse environmental impacts except natural calamities are manageable easily by implementing EMMP***

6.11 Equipment Maintenance Details

New equipment of latest technology with high efficiency will be purchased by the proponent. Maintenance of equipment will be done twice year for the smooth operation or as and when required.

All the machines involved in extraction of coal will be maintained on the regular basis except that no equipment will be kept on-site that will need maintenance except fire fighting equipment that would be available at approachable locations on mining site. Such as; portable fire extinguishers will be installed which will need regular maintenance Following is the maintenance details for the portable fire extinguisher:

Table XIII: Maintenance Plan

Task	Weekly	Monthly	Semi-Annually	Annually
Visual Inspection	✓		✓	
Testing and Inspection		✓		
Check for Leakage				✓
Recharging			✓	
Containers/Cylinders			✓	
Control and Section Valves				

6.10.1 Environmental Budget

Approximately, **PKR 0.1 million** environmental budget will be reserved for the tree plantation, environmental monitoring and measures.

Table XIV: Environmental Budget

Construction	
Ambient air monitoring	**10,000/-**
Noise monitoring	**1000/-**
Water quality monitoring	**10,000/-**
Health & safety	**49,000/-**
Workers training	**30,000/-**
Operation	
Solid waste management	**30,000**
Wastewater management	**30,000**
Air Emission Control	**20,000**
Plantation/green belt development	**20,000**

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STAKEHOLDERS CONSULTATION

Public consultation refers to the process by which the concerns of local affected persons and others who have a plausible stake in the environmental impacts of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. According to the IEE and EIA Review Regulations, public consultation is mandatory for any socio-environmental study.

7.1 General

Impact assessment survey and public consultation sessions held with different stakeholder groups that may be impacted by the proposed project commencement.

7.2 Proponent's Environment Management Team

As the said project is the extraction of coal from mines in which there will be no involvement of construction activities so Environment Management Team is not required for this purpose while for the operational phase details are given below.

7.2.1 Operation Stage

During this phase of the project, implementation of recommendations of EMP and its supervision will be the responsibility of project coordinator which will be appointed in operational phase and Punjab-EPA as defined in Institutional Capacityof Chapter 6

7.3 The Responsible Authority

The consultation process was carried out in accordance with the guidelines laid by Punjab EPA which is the responsible authority. The objectives of this process were to:

- Share information with stakeholders on proposed project installation and operation
- Access the impacts on the physical, biological, and socioeconomic environment

- ⇨ Understand stakeholder concerns regarding various aspects of the project commencement
- ⇨ Find out valuable suggestions by the stakeholders to improve the proposed project design
- ⇨ Understand the perceptions, assessment of social impacts and concerns of the affected people/communities of the project area
- ⇨ Find out the awareness level and situation of acceptability to identify any issues for the implementation of the proposed project
- ⇨ Invite people to express their views about the positive/negative impacts on their lifestyles and environment
- ⇨ Disclose information about contact offices/officers for any complaints/queries

It is envisaged, there will be no social negative impact being foreseen due to extraction of coal from mines (PL.KHB.COAL.501) by M/S Ms. Nighat Shaheen Shahwaar at the proposed location. This EIA Report includes all the comments, which were taken into account during the social survey and preparing the definitive development concept for the installation and extraction of Coal in Public Consultation.

7.4 Objectives of Consultation

Public consultation plays a vital role in studying the impacts of the proposed project on stakeholders in successful implementation and execution of the project. It provides an opportunity to exchange knowledge with the beneficiaries and affected parties. Referring particularly to a project related to environmental assessment, involvement of the public is all the more essential, as it leads to better and more acceptable decision-making. The overall objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise and to identify those which are not known or are specific to the project. In fact, discourse

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ith many who have thoroughly observed the site conditions in the pre-development phase goes a long way in updating the knowledge and understanding.

7.5 Identification of Stakeholders

ll the people who are directly or indirectly affected or concerned with the project are the stakeholder. Besides the living population of the surrounding areas, some other stakeholders were identified and contacted which enlisted below. They are the key players including: shops, public and government offices, schools, universities, hospitals, media, international agencies and the NGOs. Not only published material, brief or other literature were obtained on request, but also noted their views and the concerns, in an official capacity as well as on the personal basis. Following stakeholders are identified for the project.

Project Affected Persons (PAPs) include the settled families, either property owners or the tenants, businessmen (big, shopkeepers, vendors, etc.), employees of the commercial entities. PAPs are of two types, for instance:

7.5.1 Affected and Wider Community

As, no disturbance in the local community is being foreseen due to the extraction of Coal, there is no populated or sensitive area is present near the site and the site is reserved for mining purpose by Government of Pakistan. No property loss is being envisaged due to extraction of coal from mines.

7.5.2 Other Departments and Agencies

Indirect impact will occur on those who are living or doing business within a Project's Area of Influence (AOI). In the case of the proposed project, the citizens of nearby small towns will get opportunities of being employed. So, in the early development stages and during the operational phase the people will be benefited due to the extraction of coal from mines.

Indirect respondents which were consulted include:

- Members of Forest Departments, and officers of Agricultural Departments, etc
- Officers of Mining Department.
- Officers of TMA and Planning & Development Department

Theirs names along with written feedback is attached as an annexure.

7.6 Public Disclosure

Public disclosure is the outcome of all such activities where the public is involved at least in the information sharing process. This is an integral part of the process. So, before the proponent applies for NOC to the Punjab-EPA, this disclosure will be distributed properly among all stakeholders. It is the responsibility of the proponent and the consultants to display a public disclosure document in prominent places where community has easy access.

7.7 Consultation Process

Information disclosure, public consultation and discussion regarding the various aspects of the project with the people of the area are necessary. This process is intensified during the EIA Studies, and separate rounds of public consultations were held. Surveys were carried out in order to investigate physical, biological and socioeconomic resources falling within the immediate AOI of the project. Primary data collection included

- Data collection regarding the socioeconomic condition of the study area
- Pre-testing of socioeconomic survey tools in the field
- To consult the locals for collection of information on biological environment
- Various meetings with the stakeholders were held the following objectives:
- Share information with stakeholders on the proposed project and expected impacts on community in the vicinity of the project
- Understand stakeholders' concerns regarding various aspects of the project including the existing condition of the upgrading requirements, and the likely

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impact of construction and operation activities

- provide an opportunity to the public to influence the project design in a positive manner
- obtain local and traditional knowledge before decision making
- increase public confidence about the proponent, reviewers and decision makers
- Reduce conflict through the early identification of controversial issues and work through them to find acceptable solutions
- Dissemination of information through discussions, education and liaison
- Documentation of information received by the stakeholders and mitigation measures proposed by the stakeholders
- Incorporation of public concerns and their address in the EIA and eliciting their comments and feedback
- Create a sense of ownership of the proposal in the mind of the stakeholders

7.3 Consultation with Beneficiaries

In addition, to the use of direct methods to evince the response of the various stakeholders in the population of the study area was ascertained by conducting a sample survey through specially formatted questionnaires. Questions posed to the public were related to creation of possible impacts, adverse impacts and beneficial impacts including employment opportunities, income generation activities, change in living standards and provision of the amenity.

Disclose the proponent plan of the construction of the proposed facility

- To share information on the design and specifications of proposed project works
- To analyze the expected impact on the socio-economic environment
- To understand their concerns regarding various aspects of construction and

Concerns

- Workers should be hired from local community
- Proper disposal of solid waste should be practiced
- The provision of paint should be at economical rates for poor farmers
- Indigenous tress around the facility should be planted to control air pollution
- Removal of shrubs and bushes should be avoided to the extent possible

7.8.2 Addressing Public Concerns

The best mechanism of effective communication between the community and the proponent is the by the nomination of the representative of the community and all the issues/concerns must be recorded for future reference. This representative may be the member of the Grievances Redressed Committee (GRC).

a. Grievances Redressed Committee

Grievances Redressed Committee (GRC) will be formulated by the proponent to address the concerns of the locals during the construction phase. The main role of the GRC will be to resolve the issues of the community associated with the proposed project, if any

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CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion

The report presents Environmental Impact Assessment (EIA) of the proposed project "**Extraction of coal from mines (PL.KHB.COAL.501) by M/S Ms. Nighat Shaheen Shahwaar**". EIA of proposed project is performed according to guidelines of EPA. It includes description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan isincluded in the study.

The performed EIA showed all anticipated impacts (both positive and negative) associated with the project. Appropriate mitigation measures as explained in the environmental study shall reduce, if not eliminate, these impacts so that these are within acceptable limits. Moreover, no deterioration, depletion or exploitation of resources is expected to be caused by this project.

Based on overall assessment of the environmental impact of the project, it is concluded that the project is not likely to cause any significant adverse impact on the social, physical and biological environment of the area, provided that suitable mitigation measures as identified in this study are implemented.

It is accordingly recommended that Environmental Approval for the project may be issued by the Punjab Environmental Protection Agency, subject to payment of the requisite scrutiny fee by the proponent of the project.

8.2 Recommendations

The Initial Environmental Examination study and survey results are finally evaluated to recommend the following:

- Implementation of EMMP with true spirit
- Proper PPEs including; ear plugs, ear muffs, mufflers, goggles, gloves and shoes

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etc. should be provided to workers and the train workers to use them

- Installation of fire extinguishers in the premises and their monitoring must be ensured
- Waste minimization practices should be employed and workers should be encouraged to adopt such methods
- The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMMP effectively
- Tree plantation plan should be carried out at the designated green spaces and along the boundaries in order to keep the environment healthy
- It is recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further into the construction activities
- The security guards shall also be trained to act in case of all possible emergency situations. The fire alarms can be activated to signal evacuation. At the same time, communication shall be made with hospitals, emergency services and police for urgent support.



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