M/S Ittefaq Enterprises (Private) Limited

Granite Mining Project in Phaker, District Nagar, Gilgit-Baltistan.

Initial Environmental Examination Report.

Submitted To: Environmental Protection Agency, Gilgit-Baltistan

Report Prepared By: Premier Mountain Communities Consultants (Pvt) Limited. Gilgit-Baltistan.

PMCC
PREMIER MOUNTAIN COMMUNITIES CONSULTANTS

Executive Summary

Ittefaq Enterprises (Private) Limited proposes a granite exploration project in Phaker village, District Nagar, Gilgit-Baltistan, to extract dimension stones, specifically granite, a type of igneous rock formed through magma crystallization deep within the earth's crust.

Granite is mainly composed of Quartz and feldspar, with minor amount of mica, amphiboles and some other minerals. This mineral composition usually gives dimension stones a gray or white color with dark mineral grains visible throughout the rock. Because granite is so hard, people sometimes use it for building stone or statues and many objects that we encounter in daily life. These include counter tops, floor tiles, paving stone, curbing, stair treads, building veneer and cemetery monuments.

The Phaker valley's dimension stones feature grey granite with distinctive patterns, including zebra-like designs and striking black to dark green dolerites, forming a significant dimension stone complex. The area boasts three main types of grey granite, varying from fine-grained statuary grade to porphyritic types.

Ittefaq Enterprises (Pvt) Limited has commissioned Premier Mountain Communities Consultants (Pvt) Limited to conduct an Initial Environmental Examination (IEE) study to secure environmental approval from the Environmental Protection Agency (EPA) for the proposed dimension stone exploration project. Premier Mountain Communities Consultants (Pvt) Limited engaged environmental consultants to conduct the IEE study and prepared the report for submission to Gilgit-Baltistan Environmental Protection Agency (GB-EPA), in compliance with the Environmental Protection Act-2015.

It is concluded that the exploration and developmental phase of dimension stones will generate employment opportunities. The high quality and friendly working environment will provide the workers with stress free working condition and occupation. The project will generate revenue for the town and the district.

Based on a comprehensive impact assessment, it is concluded that the project's potential environmental impacts are manageable and unlikely to cause significant, long-lasting harm to the physical, ecological, or socio-economic aspects of the area. Provided that the proposed activities are carried out as planned and the recommended mitigation measures are fully implemented, the project's environmental risks are considered acceptable. The Initial Environmental Examination (IEE) report is deemed sufficient to justify the project's environmental feasibility, and no further investigation is warranted.

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Chapter 1: Introduction

1.1 Background

Exploration and mining of Granite in Phaker Valley, in District Nagar, is a project being proposed by the proponent Messer Ittefaq Enterprises (Pvt) Limited. The project involves extracting dimension stones, specifically granite, a type of igneous rock formed through the crystallization of magma deep within the earth's crust.

Granite primarily consists of quartz and feldspar, with smaller amounts of mica, amphiboles, and other minerals. This composition gives granite its characteristic colors, such as red, pink, gray, or white, often with visible dark mineral grains. Due to its hardness and durability, granite is commonly used for various applications, including:

- Building stone and statues
- Countertops
- Floor tiles
- Paving stones
- Curbing
- Stair treads
- Building veneer
- Cemetery monuments

Its versatility and aesthetic appeal make granite a popular choice for both functional and decorative purposes.

Dimension stones rocks of Phaker valley are composed of grey and green granite having several exotic iso-grade patterns like zebra and eye catching black to dark green dolerites. These rocks form a largest dimension stone complex in the Phaker and Pissan-Minapin locality. There are three main texturalvarieties of grey granite are present in the locality. These varieties are ranging from spectacular fine grained statuary grade to porphyritic types.

In district Nagar, Mountains offers tremendous potential of granolithic gneisses, showing pronounced iso-grade patterns. These high grade dimension rocks are representing the basement sequence of the area. These rocks are entitled medium grained textured. Color varies from grey, light grey to grey depending on proportion of dark mineral constituents.

The proposed dimension stone exploration project in Phaker Valley, District Nagar, will yield high-quality granite for decorative purposes, such as tiles, while also generating local employment and business opportunities. The project proponent is committed to maintaining a safe and healthy work environment for employees and partners. To obtain necessary approvals, an Initial Environmental Examination (IEE) report has been prepared and will be submitted to the Gilgit-Baltistan Environmental Protection Agency (GB-EPA). In adherence to the Environmental Protection Act, the proponent commissioned Premier Mountain Communities Consultants (PMCC) to conduct an Initial Environmental Examination (IEE) study. This comprehensive assessment aimed to identify and evaluate potential environmental and social impacts associated with the project, and subsequently develop effective mitigation strategies to minimize adverse effects, thereby ensuring the project's sustainability and environmental integrity.

1.2. Introduction of the Firm:

Ittefaq Enterprises (Pvt) Limited is a registered entity operating in Gilgit-Baltistan, Pakistan, specializing in mineral exploration and mining since 2004. Registered under the Partnership Act 1931, our company aims to boost the local economy through mineral sector development. We contribute to Gilgit-Baltistan's economic growth by creating jobs, uncovering mineral resources, and participating in the global market. Our approach prioritizes sustainable natural resource management and environmental stewardship, adhering to national and international regulatory standards and ethical practices.

1.3. Purpose

The project proponent needs to obtain an Environmental Approval (NoC) from the GB Environmental Protection Agency for operation and development of projects falling under projects categories as set under Pakistan Environmental Protection Agency Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations. The project under consideration falls in Schedule I as it is a small scale exploration project for Granite and also it does not cause any significant environmental or social negative impacts. To obtain environmental approval from the Agency, IEE for the proposed project being carried out and the findings are documented.

The Initial Environmental Examination (IEE) aims to:

1. Identify and assess environmental and socio-economic impacts.
2. Evaluate existing conditions for potential improvements.
3. Assess post-project changes.
4. Document resources likely to be affected.
5. Determine environmental compatibility.
6. Develop mitigation measures for adverse impacts.
7. Prepare an Impact Mitigation and Management Plan (IMMP).
8. Compile an IEE report for submission to GB EPA.

The IEE's primary goal is to ensure environmentally sustainable project development.

1.4. Geographical Location

The geology of the District Nagar is complex and varied. The rocks in the Karakoram Range are mostly sedimentary and metamorphic rocks, which were formed over millions of years. The most common sedimentary rocks in the Phaker valley, Nagar District are sandstone, shale, and limestone. These rocks were formed from the deposition of sediments in ancient rivers, lakes, and oceans. The metamorphic rocks were formed in the Phaker valley Nagar.

Topographically, the entire Nagar district is a mountainous area, generally with a wide range of slopes. The steep slopes in the south are due to the presence of the Karakoram Range, The gentler slopes in the north are due to the presence of the Hunza-Nagar River Valley.

The main range of the Phaker valley district Nagar is the Karakoram Range. It is one of the highest mountain ranges in the world, with a number of peaks that are over 8,000 meters tall. The Karakoram Range is located in the southern part of the district and forms the border between Pakistan and China. Phaker Nala, in the Nagar No 2 sub-division, and Pisan Nala, in the Nagar no also sub-division district Nagar are the two main streams. However, numerous other rivulets flow in the district.

1.5. Project overview

Exploration of Granite stones in Phaker valley of District Nagar, Gilgit-Baltistan isa worthy step towards the development of faraway and rural areas like Nagar valley. The dimension stone from the Phaker is known as Phaker Valley section. This area has been

identified as hubfor the production of dimension stones due to geographical coexisting position of stones varieties, quality and available huge reserves, subject to the establishment of a viable quarrying operation. A gigantic statuary grade granitic mass associated with dolerite clusters and extensive high quality Marble signifies the area a




veritable warehouse of dimension stones.

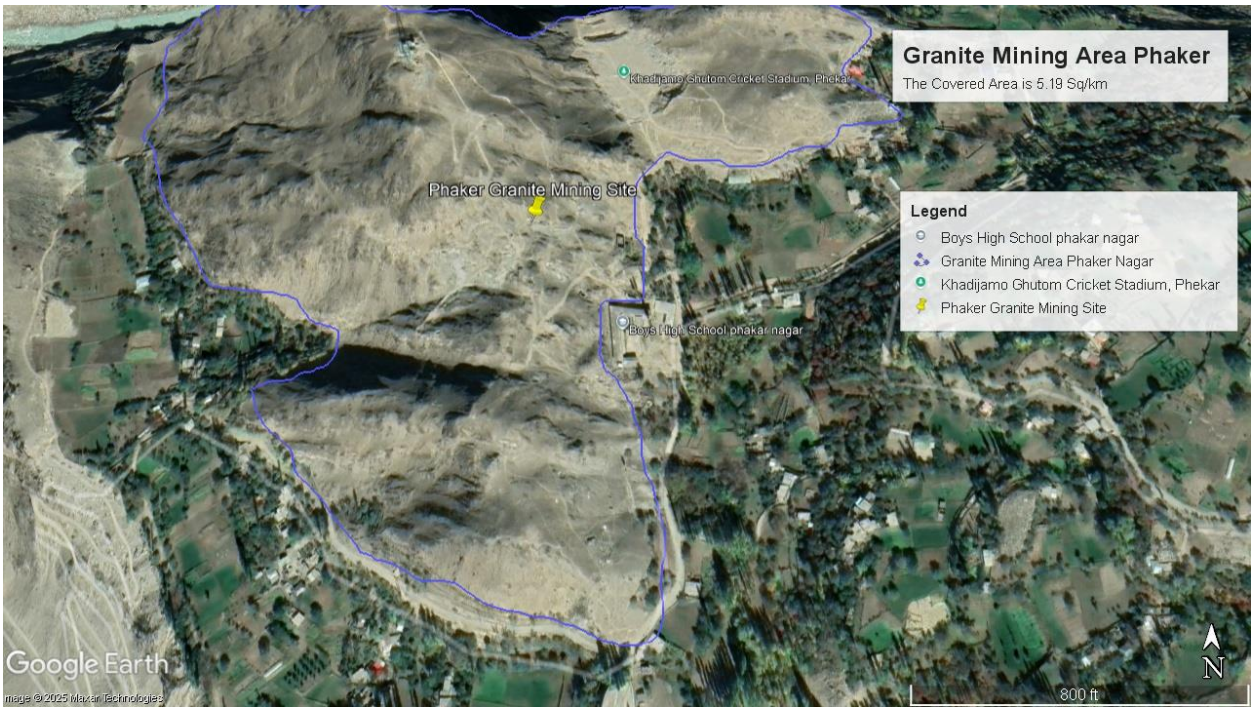
As explored dimension stones are high quality stones with different colors which are not essential for industrial application (they are used to make beautiful tiles and valuable ornaments) but also a pronounced obligation of local people at domestic level. As these dimension stones are applying to any quarried stone that are fabricated into various sizes, with or without polished surface. The use of these dimension stones for interior and exterior adornment of structures, monuments, shrines, statues etc. can increase their

value manifolds. Apart from these benefits the proposed project will also a good step for employment opportunities to the local residents.

The project is to mining large granite stones from the mountain side below Phaker village. The mountain bears the granite deposit is naturally carrying the large and small sizes. Ittefaq Enterprises (Pvt) Limited intends for mining of granite is extracting the stones, then brought to the road using light loaders vehicle. The area has been installed on a covered area of 5.9 Sq/Km land. The mining area to extract the granite 2 to 5 Acres. The average daily generation capacity will be 5 to 10 tons daily.

1.5.1. Project Location:

The project site is located in below Phaker village in Ghutom area of Phaker Valley in District Nagar. Ghutom Area in Phaker valley is underlain by attractive artistic fashioned grey textural greyto light grey varieties of granulitic gneisses. Above the phaker village, Mountains offer tremendous potential of granulitic gneisses, showing pronounced migmatitic textures. Three artistic fashioned grey verities have been marked in the area.



Lofty Granite Mountains of the section indicate a huge resources potential of dimension stones.

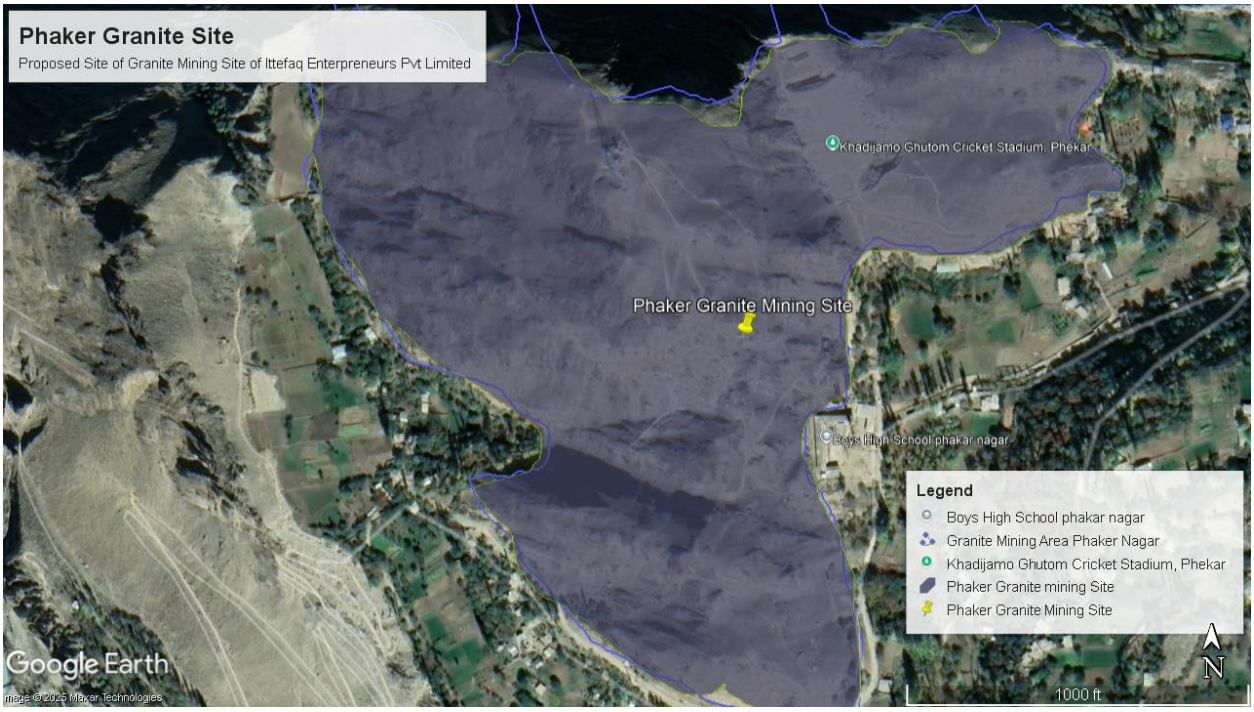
Fine grained grey granitic mass about thousands of meters thick is extensively outcropping over an area ofabout 5.9 Sq/Km belt. Inferred reserves of this granitic mass calculated on the basis of length,average thickness and assumed depth are about 1000 million tones. A block from this gigantic mass has been selected and mapped for quarry development on the eastern top of the proposed area. The reserves of this block based on dimensions are therefore conservatively calculated 1000 million tons.

1.5.2. Scope and Extent of the Project:

The scope and extent of the project is described as under;

The length of exposure is approximate 0.76 Km, with average width of the mountain is 0.72m, and its inferred depth factor is around 1000m and the cover area of the mountain is 5.9Sq/Km with specific gravity of 3.00.

The site is located in Phaker village; district Nagar, Gilgit Baltistan at **36°15'59.84"N** and **74°35'11.10"E** coordinates.



All of the area was taken under mining concession by the proponent under GB Mining Concession Rules 2019 from the Directorate of Mines and Mineral Government of Gilgit-Baltistan to explore and exploit the Granite stones as decorative tiles from Phaker Valley, District Nagar, Gilgit-Baltistan.

The project of Granite exploration will include loader, compressors, drill machines, rock cutters, spares for drilling, hose pipes, shovels, pick axes, trolleys, hammers, livers, ropes, filters and filling machines etc.

A total of 58.85 million are expected to be invested on the project of exploration and exploitation of Granite stones which include salary, machinery and equipment, road, CSR fee, huts and extraction activities etc.

The site will be taken on lease for exploration and exploitation under GB Mining Concession Rules2019 from the Mining and Minerals Department Government of Gilgit-Baltistan.

- Daily roughly 200 liters of water will be required, which will be fetched from natural stream.
- Approximate 2 residential rooms will be constructed in the vicinity of project area for labors working there.
- Installation of Solar panels for electric generation which can be utilized during the project activities and residential area for labors.
- Camp will be established at mining area for environmentalist, geologist/mining staff.
- The project machinery will include loader, compressors, drill machines, spares for drilling, hose pipes, shovels, pick axes, trolleys, hammers, livers, ropes, filters and filling machines.
- A total of 58.84 million are expected to be invested on the work during developmental and exploration phases for Granite stones which include salary, CSR fee, roads, huts and exploration work etc. annually.
- The exploration work will be undertaken by compressors, cutter and drill machines
- There would be 20 – 25 skilled and unskilled workforce required for the said work.

Table 1: Machinery required for project activities

Sr. No	Machinery	Required equipment
1	Wheel loader Drilling machines Cutting machines Compressor/generator Crane Diamond Wiresaw Machines Mini-Wiresaws for Block Dressing/Squaring	**1 set** **2 set** **3 set** **1 set** **1 Set** **1 Set**
2	Pneumatic drill machines	**2**
3	Machinery and equipment's for cutting	**2**

1.6. The Proponent

Ittefaq Enterprises (Pvt) Limited along with director such as: Mr. Farooq Kiyani is the proponent of the project involved in the mining of granite at Phakar village Nagar. Premier Mountain Communities Consultants (Pvt) Limited has drafted the report on behalf of the project proponent.

1.7. Contact Persons

For further details, information or any clarifications about this document, the proponent representative or the consultant representative can be contacted and the contact details are given below.

Proponent's Representative: Mr. Farooq Kiyani	**Ittefaq Enterprises (Pvt) Limited** Cell: 03115022901
Consultant: **Mr. Shahid Hussain** (Lead Consultant) **Ms. Khushbo** Environmentalist **Mr. Safiullah Baig** (Env. economist) Dr. Saulat Husain GIS Specialist	**Premier Mountain Communities Consultants (Pvt) Limited** Suit No. 301, Shan Plaza, Near DC Office Khomer Gilgit, Tel: 03449494594, 03111013320

1.8. Need for Initial Environmental Examination

According to the Gilgit Baltistan Environmental Protection Act, 2000, section 11 (1): "No proponent of a project shall commence construction or operation unless he has filed with the Agency, an Initial Environmental Examination (IEE) or where the project is likely to cause an adverse environmental effect an Environmental Impact Assessment (EIA), and has obtained from the Agency approval in respect thereof.

1.9. Approaches and Methods

Impact Assessment is a systematic process to identify, predict and evaluate the environmental effects of proposed actions and projects. Whenever, appropriate social, cultural and health effects are considered as an integral part of impact assessment. Particular attention is given to practical implementation of the assessment to prevent and mitigate significant adverse effects of proposed undertakings. The revised components will be evaluated as follows:

- Identifying possible environmental impacts
- Scoping of impacts to identify more significant impacts
- Evaluating those impacts
- Discussing appropriate mitigation measures
- Devising impact management and monitoring plan

For timely completion of the IEE study, the field activities were planned and best team was selected. Careful planning ensured effective resource management and timely completion of tasks throughout the period of association.

Project Procurement engaged a team of experts in conducting IEE study, which included the following persons:

Mr. Shahid Hussain Lead Consultant (Environmental Economics)

Environmentalist: Mrs. Khushbo. M.Phil Environmental Science

Economic expert. Mr. Safiullah Baig

Dr. Saulat Hussain GIS Specialist

For effective implementation of the project, it was necessary to discuss and clarify issues, objectives, and scope of the study of the project.

1.9.1. Field Visits and Data Collection

A generic description of the proposed project and its related activities are collected from the project proponent. Baseline of the area's environmental and socio-economic settings iscollected through literature search, field surveys and site investigations and also from the project proponent and local public.

1.9.2. Secondary Data Collection

The published and unpublished secondary data on the physical, biological and socioeconomic environment of the project area was collected for assessing the environmental conditions of the project area.

1.9.2. Site Visits and Public Consultation

Consultation process is considered as an important component for Initial Environmental Examination (IEE) assessment report. The consultation process is a crucial mechanism to inform the public, local authority and community leaders about the proposed project, purpose and aims of the project. A high priority was placed on the views of the public, local officials, community leaders in the proposed project site in order to ensure a fair environmental assessment process.

The local residents, workers, and nearby property owners were consulted to get their views, opinions and concerns regarding the exploration and development of dimension stones under consideration.

All of the people consulted did not say that the proposed project for exploration of Granite

Pictures: shows site visits and data collection

stones will be an annoyance in the area. They seem that they did not bother it rather they consider it a positive project in the area as many of them said that the availability of dimension stones at cheaper rates can improves their life style and income level. The availability of rough stones at lower rate can help the local residents to make their localities more beautiful and attractive for the tourists. So it is best for them to having worthy stone exploitation at their vicinity at lower cost without showing any potential negative impacts on the physical and biological environment.

1.9.3. Impact Assessment and Mitigation

The information collected in the previously is used to assess potential environmental impactsof the proposed project activities. The issues studied include potential impacts on:

- Physical environment of the area
- Biological environment of the area
- Socio-economic environment of the area

Mitigation measures are evaluated to reduce the impacts of project activities onenvironment.

1.9.4. Documentation

At the end of the process, an IEE report is prepared with the assessment of project impacts and mitigations measures to be adopted during the execution of the proposed project activities.

After conducting a kick of meeting with the project proponent, a team of experts from the consultant resources is formulated and then the field activities are planned to collect primary data of the site.

Secondary data and information were collected from published and unpublished but authentic resources on physical, biological and socio-economic matters.

For public consultation, the team approaches the public directly to collect their views and concerns about the proposed project.

1.10. Project Site Land Acquisition:

The project site land will be taken on lease from the GB Government Directorate of Mines and Mineralunder GB Mining Concession Rules 2019. Furthermore, the proponent will avail NoC. from the community via community organizations under customary laws of District Nagar.

Chapter No. 02: Regulatory and Policy Review

Laws, rules, and regulations that apply to this project are enlisted below and it is expectedthat the project will comply with all of these.

- National Conservation Strategy
- Biodiversity Action Plan
- National Environmental policy,2005
- Gilgit-Baltistan Environmental Protection Act, 2005
- Conservation of Critical environmental resources
- National Environmental Quality Standards

- National (Pakistan) Environmental Protection Agency Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2009

2.1. Legal, Policy, and Administrative Framework

The proposed project has been assessed in compliance with existing legal framework on the environment of the province of Gilgit Baltistan as follows:

- Gilgit-Baltistan environmental protection Act 2014
- Gilgit-Baltistan environmental protection rules 2018
- Gilgit-Baltistan Minerals and Mining Concession Rules, 2019
- The National Mineral Policy, 2013
- Gilgit-Baltistan Forest Act 2019
- Gilgit-Baltistan Wildlife Act 2014
- Gilgit-Baltistan Climate Change Strategy and Action Plan 2022
- Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations, 2000

Therefore, an Initial Environmental Examination (IEE) of the proposed project is required. Ittefaq Enterprises (Pvt) Limitedmining of marble being the proponent of the project will ensure that the operational phase of the project will be in accordance with the Initial Environmental Examination report and the Environmental Management Plan will be implemented effectively.

2.2. National Environment Policy, 2005

The National Environmental Policy (2005) provides a predominant framework for addressing the environmental challenges (particularly pollution of fresh water bodies and, air pollution, lack of proper waste management, deforestation, loss of biodiversity, desertification etc.) confronting Pakistan.

It recognizes the goals and objectives of the Pakistan National Conservation Strategy (PNCS), 1992, National Environmental Action Plans, and other existing environment related national policies, strategies, and action plans. It also provides broad guidelines to the federal government, provincial governments, federally administered territories and local governments to address their environmental concerns and to ensure effective management of their environmental resources.

The objectives of the National Environment Policy are followings:

- Conservation, restoration and efficient management of environmental resources;
- Integration of environmental consideration in policy making and planning processes.
- Capacity building of governmental agencies and other stakeholders at all levels forbetter management of environment.
- Meeting international obligation effectively in line with the national aspiration.
- Creation of demands for environment through mass awareness and community mobilization.

The National Environment Policy has been motivated by the above considerations and is intended to mainstream environmental concerns in all development activities. It briefly describes the key environmental challenges currently and prospectively facing the country. The National Environment Policy is intended to be a guide to action in regulatory reform, programmes and projects for environmental conservation; and review and enactment of legislation, by agencies of the Central, State, and Local Governments. The dominant themeof this policy is that while conservation of environmental resources is necessary to secure livelihoods and well-being of all, the most secure basis for conservation is to ensure that people dependent on particular resources obtain better livelihoods from the fact of conservation, than from degradation of the resource.

2.3. The Biodiversity Action Plan

The Plan, which has been designed to complement the NCS and the proposed provincial conservation strategies, identifies the causes of biodiversity loss in Pakistan and suggests a series of proposals to conserve biodiversity in the country. The BAP recognizes that an EIA is used as a tool at a project level to identify environmental effects of a proposed project andto plan for reducing adverse effects. The BAP further stipulates that an EIA needs to be initiated at an early stage of project development and that public participation in the review of potential effects is important.

2.4. National Environmental Quality Standards (NEQS)

The Pakistan Environmental Quality standards (NEQS) are applied in AJK. The NEQS were firstpromulgated in 1993 and have been amended in 1995 and 2000. The NEQS specify the following standards:

- Maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged to inland waters, and sewage treatment facilities.
- Maximum allowable concentration of pollutants (16 parameters) in gaseous emissions from industrial sources.

2.5. Environment Guidelines

This section provides a brief description of national environmental guidelines under which the report is prepared. The following guidelines were overviewed and kept in consideration while making this IEE report for Granite Mining Operation in Gilgit.

- A sector overview of the industry, nature of business and the processes involved.
- Guidelines for the preparation and review of Environmental Report.

- Guidelines for review of IEE/EIA Regulations 2000.
- Guidelines for the sensitive and critical areas and relevant laws enforced/applicable.
- Pakistan environmental legislation & National Environmental Quality Standards (NEQS)

2.6. EPA Legal Framework

There are two pieces of legislation enacted by the Pakistani government that are intended to provide an overriding legislative framework for environmental issues: **The Pakistan** Environmental Protection Ordinance 1983 and the Pakistan Environmental Protection Act 1997.

2.7. Gilgit-Baltistan Environmental Protection Agency (GB-EPA)

Gilgit-Baltistan Environmental Protection Agency (GB-EPA) has been established under section (8) of the Pakistan Environmental Protection Act, 1997. The main functions of GB-EPA are to:

"Take measures to promote research and development of science and technology which may contribute to the prevention of pollution, protection of the environment, and sustainable development; identify the needs for, and initiate legislation in various sectors of the environment at the provincial level; provide information and guidance to the public on environmental matters; specify safeguards for the prevention of accidentsand disasters which may cause pollution"

"To encourage the formation and working of non-governmental organizations, community organizations, and village organizations to prevent and control pollution and promote sustainable development".

The Agency may undertake inquiries or investigation into environmental issues, either of its own accord or upon a complaint from any person or organization.

GB-EPA provides the framework for implementation of National Environmental Policy and National Sanitation Policy, Establishment of Provincial Sustainable Development Funds, Protection and conservation of species, conservation of renewable resources, and establishment of Environmental Tribunals and appointment of Environmental Magistrate.

Chapter 3: Environmental Baseline

Purpose of this document is to record environmental and social issues and measures planned to mitigate all the adverse impacts of the proposed project to make it environmentally, socially and economically sustainable and acceptable. The document will also service as an evidence of compliance of GB Environmental Protection Act-2018 in order to get Environmental Approval for the (Granite) exploitation project from the GB-EPA. The proposed project will provide, as said earlier, valuable stones for commercial purposes. The project outputs will contribute in local development and provide employment and income generation opportunities to number of locals.

The IEE summarizes the available baseline data on physical environment within the principal area of interest i.e. the area of project influence.

3.1. Physical Environment

Phaker Valleyis a 6 km long, stretched from east to west in Karakorum mountain range some 95 KM away from the capital city of Gilgit-Baltistan, Pakistan. It is situated at the edge of Hunza-Nagar river. The valley is situated in the north of Gilgit city, running parallel to Karakorum Highway in District Nagar. The mountain having minimum forest trees in some areas and front area of the mountain and the mountain is barren bearing hard while marble rocks.

The valley is located at Latitude 36°15'59.75"N and Longitude, 36°15'59.75"N. Phaker Valley is one of the largest valleys in district Nagar of Gilgit-Baltistan having around 700 households and 4700 human population. The valley has fresh stream water flowing from glacier and provides water for agriculture and domestic use. Most of the population is engaged with agriculture and farming and small scale of livestock ranging from 2 to 10 domesticated animals. The valley has agricultural land, fruit trees especially cherries, apples, apricots, walnuts, peaches, mulberry, and so on. There is agricultural land bearing forest and fruit trees, below in the village and footsteps of proposed site while most of the front and upper area is barren containing while marble rock and granite stone. There is no any forest on the mountain while have some medicinal plants such as: Artemisia,

bushes, ephedra, some unidentified plants. There is Artemisia all over the mountain specially in barren area of mountain and few small sea buck thorn have been noticed on the barren land.

3.2. Climatic Conditions

The project site is comprised on the mountain land between Phakar villageNala. The climate of the district varies with altitude. The temperature generally remains between -6 °C to 30 °C. The main eastern part of the district is very cold in winter and moderate in summer. However, the Phaker valley and its adjoining areas remain cold in winter and hot in summer. June, July and August are the hottest months. Maximum and minimum temperatures during the month of June are about 35 °C and 22 °C respectively. December, January and February are the coldest months. The maximum temperature in January is about -8 °C and minimum temperature is -10 °C respectively. Annual rainfall is about 1500 millimeters.

3.3. Land Use and Land Cover

The lands on the hills and mountains generally belong to the communities of the valley and bear no any forests trees in the proposed area. The lands on the high benches within hilly areas, however proprietary, are used for summer settlements of livestock while in winter they remain in snow cover. Most of the barren land mountain consists on hard white marble and grey granite stone. In major area there are Artemisia and few sea buck thorn trees in barren area of mountain. The few important grass species found in the area are Artemisia, Alfa Alfa, Setaria pallide, and Arunda donax around the mountain in village.

3.4. Water Resources

3.4.1. Surface water

The only surface water body near the project site is water Stream which is located some 20 to 25 Km away from the prosed site. It originate out of glacier melt from the Glacier and peak and falls into the Hunza-Nagar River in downstream. The stream bearing small amount of water in winter and starts from melting glacier from May to September. There

is no any fish fauna in the stream as it remains dry in winter. There are no any lakes below the glacier and proposed project site.

The main source of water from where the water for the activity will be fetched is the community water supply system. The extraction area is being carried out around 150 meters above from the bank of agricultural water channel. It is a source of water for drinking, irrigation, and domestic use of the Phaker village.

3.4.2. Ground Water:

The Major and only source of water is glacier water which is used for drinking, agriculture, and domestic purposes. Glacier water flows from the stream around 10 to 15 km away from the proposed project site while there is no any spring water available in the granite exploration site.

3.5. Soil:

The area has different soil types that have been derived from parent material of different origins as parent material plays an important role in determining characteristic of the soil. Soils of residual slopes have originated from shales, granite, hard rock, white marble mudstone and clays. The texture of the primary soils varies from moderately fine to moderately coarse depending upon the rock type from which these have developed. However, the secondary soils are mostly moderately coarse textured in some areas and sandy in multiple area. The soils of the raised terraces in upper top plains are generally devoid of the stony material. The soils of lower terraces generally contain varied quantities of pebbles, cobbles and boulders.

3.6. Air Quality

In general, there are no major sources of air pollution, i.e., no industries, exist in the project area except little road traffic in the valley. The ambient air quality data has been collected from secondary data. The existing ambient air quality of the study area serves as an index for assessing the pollution load and the assimilative capacity of any region and forms an important tool for planning further development in the area.

3.7. Biological Environment

The ecological conditions of the area focusing on the aquatic and wild ecology, flora, mammals, birds, and reptiles and amphibians are covered in the study. The diversity in these groups has been described along with the population and conservation status of the species. The habitat of the study area has been characterized based on biological and physical factors and its spatial delineation is provided.

There is no any aquatic ecology found in the area while there is no any existence of wildlife mentioned by the locals and observed during the field visits.

3.8. Flora

The project area lies under Karakorum foot hills and has a diversity of floral species. Mostly the area comprises of Rocky Mountains and boundaries of agricultural fields. The mountain of proposed site has no vegetation dominated. Local and indigenous herbs have been found along with underneath species of shrubs and herbs along with ferns and mostly in the area Artemisia found. Major agricultural crops of the area are Wheat, potato, barley, and Maize. There are no trees in project site except Artemisia and some small scale of bushes and sea buck thorn trees. Below the proposed project site, there are different fruit and forest trees such as: walnut, apricot, apple, fig, grapes, pears, berries, mulberry, charry and Russian olive, willow, white popular, etc. Some medicinal plants and herbs have been found in the proposed site such as: ephedra, soliva, Artemisia, ptilostemon, and grassenfamilie.

3.9. Fauna

The project area does not comprise any type of fauna habitats because of being near by the settlement. However, Small flying squirrel (Chitti Ghoshi) is among the small mammal of the project area which was sighted after dawn when it came out of its hiding cavities.

3.10 Socio-economic and Cultural Environment

3.10.1. Social Set-up

In Phaker Nagar there are poor and rich people, there are families of commoners and families of high birth and there are politically elites and comparatively powerless people who are expected only to follow commands and obey orders. However, the community has developed a common organization to protect natural resources and rights of poor people as well. According to local people the social classes of Nagar are formed in three categories i.e. upper social class; middle social class and working social class. The organization represents the whole community and every adult is the member of general body which elects executive body. That takes decisions on democratically on majority basis.

3.10.2. Economic Profile:

Residents of the Phaker Nagar district have diverse but limited means of livelihoods including farming, livestock, poultry farming, government service (both civil and military), and business and overseas employment. Industry is minimal in terms of contributions towards livelihoods. Majority of the rural population still relies on agriculture for its livelihood. However, there is discrepancy between source of income between agricultural and business communities. According to local inhabitants more than 95% relays on agriculture and 100% people belong to rural community. Limited sources of income generation from job is derived from professions which are urban base, such as service/jobs, skilled labor, business. While they have limited job opportunities as there is no any industry functional in the area.

3.10.3. Education

Literacy rate in District Nagar is estimated at 70%, which is higher than Pakistan's national average of 55%. Of the literate population, males constitute 77% and females 43%, according to the Pakistan Bureau of Statistics. There are sufficient educational facilities in provided by the government and privates sectors in Phaker Valley in past whereas Government have provided primary, middle and high schools in the valley, while quality is still considered challenging the students have to go outside the valley for college and university education. But on the other hand this statistic is now changing and the literacy rate that is about 65% in Phaker valley.

3.10.4. Housing

The housing pattern is traditional in terms of size and construction as more than 90% of the structures are kacha and pukka, made of cement and bricks with wooden and iron sheet roofing structures. Only 5% houses and structures are pakka, made of cement, iron and stone.

3.10.5. Water Supply and Sanitation

Currently the majority of households do not have drainage facility but they have excavated the soak pits for drainage of their washrooms and bathrooms. The facility of drinking water inside the house was available to the whole community through water supply pipes. They use tape water in their houses while a large proportion face challenges in winter season especially in December and January because of harsh cool weather.

3.10.6. Archaeology

There is no reported site of archaeological or historical significance in the land where the project is being carried out. As the project site comprises of river following with gravel and stones, there will be]no any impacts on the archeological environment of the project area. The project site is filled with gravel.

3.10.7. Gender Issues

The women have no formal role in the authority structure of the nearby villages. They are about 49% of the population in these villages; the literacy rate for above 10 years of female

population according to local people is 40 to 50%. The traditional attitude of not sending the girls to schoolis changing now, because the parents understand that the basic education is necessary for each individual regardless of sex. Most of the women stay at home and only travel outside the village in case of visiting to shrines, relatives, and going to weddings and hospitals in nearby towns. There is a government higher secondary school for girls and two private high schools which provide coo education for both boys and girls. For higher education in colleges and universities girls move towards Gilgit city and other cities of Pakistan.

3.11. Forest

The type of forest at Phaker Valley Nagar of Project side is a temperate coniferous forest that is in minimal and there is no any forest exist in the proposed site. This type of forest is found in the foothills of the Karakoram Mountains, at altitudes of 2,500 to 3,500 meters.

Chapter 4: Impact Identification, Assessment and Mitigation Measures

The Initial Environmental Examination of the proposed project has identified potential impacts that are likely to arise during operational phase of the proposed project. To minimize the effects of adverse impacts of the proposed project, the IEE has recommended mitigation measures.

As the project site does not comprise of any river following near by the proposed site and no chance of gravel and stones to fall in the stream, there will be minimal impacts on the ecological environment of the project area. The project site is filled with gravel. Project activities will have low impacts on the faunal resources of the area. So The access to the project area is provided from KKH Road around 10km and there will be an approach rough road from main village that is already constructed and requires upgradation and maintenance. There will very less effect on the traffic of the area due to the project. There is no reported site of archaeological or historical significance in the land where the project is being carried out.

4.1. Physical Environmental Impacts:

The soil related impacts due to exploitation of dimension stones (Granite) may include *soil erosion, top soil removal, slope stability, dust generation and soil contamination.* The exploration activities may generate excavated soil, debris and construction waste will lead to minimum contamination the surrounding environment.

Vehicles and machinery operations, during exploration and developmental phase can cause air pollution by exhaust emissions and generation of dust. It can increase the concentration of carbon oxides, sulphur oxides, nitrogen oxides and particulate matter. These emissions can deteriorate the air quality in the immediate vicinity of the area. There is a high school, a first class dispensary (health center) and

4.1.1. Mitigations:

To control soil erosion and soil contamination the vehicles will be moved on designated routes. To avoid exhaust emissions machinery and vehicles will be kept tuned and muffled. To control dust emissions water should be sprinkled on sites to further reduce the generation of dust in the air during the exploration and exploitation phase. There should not be blasts and drilling during school timing to not interrupt the students and their learning. Warsaw should be used rather than random blasting for exploration and exploitation of the stone.

4.1.2. Vegetation and Land Cover:

The ecological baseline study focused on the following components:

- Assessment of vegetation and land cover classification,
- Floral Diversity of the Area

Vegetative cover plays an important role for the quality of soil especially in hilly and mountainous areas such as District Nagar, Gilgit-Baltistan where erosion is a major threat to the ecosystem and productivity. There are no any major forest types of the area include subtropical evergreen drybroad-leaved forests, subtropical chir pine, juniper forests and temperate broad leaved and coniferous forests in the proposed mining site.

4.1.2.1. Mitigation Measures

The local communities use forest trees as their mainsource of fuel wood, timber and fodder such as white popular as they have planted nearby their own lands . The simultaneous increase in the demand of forest products and population has not only deteriorated the condition of these subtropical forests but also affected the species

diversity and community structure. The community is vibrant and they have taken conservation initiatives for forest conservation and development. The project may contribute and support for forest regeneration around the project site in cooperation of local conservation committee of community organization. Following are the specific activities to carry out in the valley around the project site:

- Plantation of forest trees.
- Provide alternative source of energy during the project activities such as LPG
- Cooperate and provide financial support to the surrounding communities for forest regeneration and afforestation of forest trees.
- Use bioengineering techniques on the slopes for slope stabilization where soil faces expected mass movement
- Monitoring the project activities according to forest conservation rules and regulation.

4.2. Ecological Impacts:

Vehicles movement, dust of the project activities by settling on the leaves may cause some impacts on vegetation loss and/or micro fauna loss.

Keeping this in the view and the ground reality, it is evident that the dimension stones exploitation activities would not be causing any major damage to vegetation and/or fauna. The noise of the project activities may affect avifauna however maximum efforts will be exerted to minimize noise generation. It is evident that the project would not cause any significant ecological impact however following measures would be taken to further reduce the impacts.

4.2.1. Mitigations:

The project will not cause any significant ecological impact. However, noise generation will be kept minimized to avoid disturbing avifauna. Dust emissions should be reduced by sprinkling water. Night time and school time operations will not be carried out to avoid

impacting Nocturnal species. The site area will be vegetated after closing of activities after moving towards the next point. Trees will also be planted to improve ecological settings. Trees plantation will also cordon off the site activities and would be a step towards improvementof landscape views.

4.3. Socio-Economic Impact:

As the site is not in congested area and it will not cause any traffic congestion as only few vehicles will be on the move during the project activities from KKH to village and the project site. There are residents, a school and a first class despensary around the site or small business activities which could be affected by the operations. However, the activities can cause noise, generate dust, and solid waste which will be minimized by adopting appropriate mitigation measures. It provides business opportunities to the locals which is further generating employment opportunities thus reducing un-employment rates in phaker village in Nagar.

4.3.1. Mitigations:

All the project machinery and vehicles will be kept tuned, serviced and muffled to reduce the level of noise. The waste generated will be collected, segregated and placed in bags. The recycle and reuse practices will be adopted to reduce the amount of waste.

Hazard indicating signs will be placed at the risky areas. All the workers will be asked to wear personal protective equipment's. A first aid box will be available 24 hours at the site. Workers will be trained and educated about the standard procedures to be followed in case of emergency situations. Fire safety measures should be taken in case of any fire accidents. Water will be sprinkled around at the exploitation sites to reduce the generation of dust. Wire saw should be used rather than blasting and during school time there should not be operational activities.

4.4. Waste Management

Reduce the amount of waste generated the waste rock can be used to create aggregate for construction. Dispose of waste in a safe and environmentally sound manner. This includes using lined landfills, surface impoundments, or deep-well injection. The waste disposal sites must be located in areas where they are not likely to pollute water bodies or groundwater. Monitor the waste disposal sites to ensure that they are not causing any environmental problems. This includes monitoring water quality, air quality, soil quality, vegetation, wildlife, and human health.

4.5. Dust Control

Dust control situation will depend on a number of factors, such as the type of mining operation, the amount of dust being generated, and the environmental conditions. Because the project site is at mountainous area and surrounded by the community that's why the immediate planting trees and vegetation around the project site is possible although perimeter of the quarry can help to reduce dust levels by acting as a natural barrier and absorbing moisture from the air. Neither it is a big enough project to use heavy machinery's like Dust collectors can be used to capture and remove dust from the air. By following these mitigation measures, help to reduce dust levels and protect the health of workers and the environment during granite mining in the areas. Dust emission will be minimized by spraying water on the soil, where required and appropriate. Good housekeeping practices can help to reduce dust levels. This includes keeping equipment clean and well-maintained, and sweeping up dust regularly. Operate equipment at the correct speed to minimize dust production. Wet the ground before blasting to help suppress dust. Train workers on dust control procedures and the importance of wearing PPE.

4.6. Water Resources Management

The project stockholder can make it difficult to access water sources and to transport water. The climate in mountainous areas can be extreme, with hot summers and cold

winters. This can affect the availability of water and the need for water conservation. The first step is to identify all of the water sources in the area, including surface water (rivers, spring, streams), groundwater, and rainwater. Due to the mountainous area of the project site of granite mining extraction there is unviability of water although community water supply near by the project side the project contractor can excess the water from there with prior permission of the community by paying royalties and maintenance and construction cost. The water needed for drilling, blasting, crushing, processing, and transporting the granite. The water management plan should outline how the water will be collected, stored, treated, and used. It should also include measures to protect the water quality and prevent pollution

4.7. Rehabilitation

Rehabilitation of a granite mining site in a mountainous area is a complex process that requires careful planning and execution. The first step is to define the goals of rehabilitation. This includes determining what the site should look like after rehabilitation, and what functions it should serve. The next step is to assess the environmental impacts of mining. This includes identifying the potential impacts on water quality, air quality, soil quality, vegetation, wildlife, and human health. The rehabilitation plan should outline how the site will be restored to its original condition or a new, beneficial use. It should also include measures to prevent erosion, sedimentation, and pollution. The rehabilitation plan must be implemented and monitored to ensure that it is effective. The vegetation can be restored by planting native trees and shrubs. Erosion can be reduced by terracing the slopes and planting groundcover. The water quality can be restored by treating wastewater and preventing pollution. he wildlife habitat can be restored by creating nesting areas and food sources for wildlife.

4.8. Community Engagement

Meetings were held with community living in surrounding villages during the mentioned by the proponent. The project specific issues and its potential impacts on the local and

regional environment were discussed. In these meetings, community was informed about the salient features of the project, its location and activities. Generally, the people of the adjoining area were supportive of Mining of granite extract ratio unit project as they can get job opportunities and road access to their village. They were of the opinion that during operational phase of the project, employment opportunities will be created for the local community. People emphasized the use of protective and safety equipment during operational phase to avoid accidents and noise. The community will provide NoC according to their customary and local laws by fulfilling requirements of their local community organization.

4.9. Positive Impacts of the Project

There are many positive impacts for locals and for nearby villages of this project. The majorpositive features of the project are;

The successful execution of the project will increase the assessed potential of Granite dimension stones.

- Employment generation for at least 20 to 25 workers.
- Provides business and employment opportunities to the locals.
- Provision of good quality stones not only for industrial application but also to be used to make beautiful buildings and decorative tiles at local and as well as regional level.
- Commercial exploitation of these dimension stones would bring in revenue for the area.
- Reduction in un-employment in Phaker village of district Nagar.
- Improvement in the living standards of the local residents.
- Revenue generation for the community by availing royalty and government imposed fee.

4.9. Impact Identification, Assessment and Mitigation Measures

In the examination study the potential impacts of the proposed projects have been identified and evaluated which are likely to occur during the exploration and developmental phase of the project. Further to mitigate the significant adverse impacts of the proposed project different measures are proposed to avoid, minimize and reduce consequences of the project activities. The propose mitigation and control measures are based on the magnitude of the impact, sensitivity and behavior of the environmental and social receptors at the project site, regulatory requirements, and best industry management practices. An environmental monitoring plan is also adevised to measure the levels of uncertainty in impact assessments and to set a course of action to manage the unpredicted impacts, if any occurs.

Environmental Impacts Screening

The potential environmental and social impacts during different phases of the project were identified and measured. These impacts are broadly classified as physical, ecological, socio- economic and cultural. Each of these classes is further divided into different aspects. In impacts assessments following parameters have been considered;

Table: Shows impact assessment parameters and their characteristics

Parameter	**Characteristics**
Nature	Direct: when an environmental receptor is directly affected by the projectactivity **Indirect:** when an environmental receptor is affected by change in another environmental receptor. Indirect impacts are less obvious and can occur laterin time.
Magnitude	Estimating the magnitude of the impact is of primary importance. Typically, it is expressed in terms of relative severity, such as major, moderate or small.

Extent/Location	The spatial extent or zone of impact influence is predicted as local at site /regional / global.
Timing	During exploration or operational phase
Duration	**Short-term;** impacts lasting for short duration such as noise fromconstruction activities. **Long-term;** impacts lasting for life of the project such as inundation causedbe reservoir filling. **Intermittent;** projects occurring in intervals such as industrial operations occurring only for few hours. **Continuous;** persistent impacts occurring continuously without any break

Reversibility	**Reversible;** when an environmental receptor can resume to its original stateafter ending the project activity **Irreversible;** when an environmental receptor cannot regain its original state even the impacting activity has been stopped.
Likelihood	**Almost Certain;** expected to occur under most circumstances. **Likely;** probable to occur under most circumstances. **Possible;** may possibly occur at some time. **Unlikely;** could possibly be occur but only under exceptional circumstances.
Significance	Impact significance depends on the sensitivity and value of the impact receptor. For instance, drinking water resources are critically important tothe local communities and likewise endangered species have global importance. Significance can be categorized as High, Medium and Low.

Impact mitigation and management plan provides a delivery mechanism to address the adverse environmental impact of the project during its execution, to enhance the project benefits and to introduce standards of good practice to be adopted for all project works. A monitoring plan also makes the part of impact mitigation and management plan for the plant operations to ensure the legislative and approval conditions compliance.

Chapter 5. Impact Mitigation and Management Plan (IMMP)

5.1. Introduction

Impact Mitigation and Management Plan (IMMP) is prepared for all the tentative characterized environmental impacts of the proposed project that will likely to be occurred during exploration and operation of activities. It summarizes the organizational requirements, management and monitoring plans to ensure that the necessary measures are taken to avoid potentially adverse effects and maximize potential benefits of the project and to operate in conformance with applicable laws and regulations of Gilgit-Baltistan and Pakistan.

This part of the report highlights Impact Mitigation and Management Plan and defines institutional arrangements required for its implementation. IMMP provides implementation mechanisms and ensure that the recommended mitigation measures identified during the IEE study in the previous section are followed, adopted and implemented in good spirit.

5.2. Purpose and Objectives of IMMP

An impact mitigation and management plan provides a delivery mechanism to address the adverse environmental impacts of a project during its execution by adopting appropriate impact mitigation measures to enhance project benefits and reduce its negative consequences and to introduce standards of good practice to be adopted for all project works.

The primary objectives of the IMMP are to:

5.2.1. Facilitate and guide the implementation of the mitigation measures

identified earlier.

5.2.2. Develop a proper monitoring mechanism and identify requisite monitoring parameters to confirm effectiveness of the mitigation measures proposed.

5.2.3. Define the role and responsibilities of the project proponent, mining engineers, supervisors, skilled and unskilled labor, site managers, and project operation managers, and defines means of effective communication among them.

5.3. Management Approach

The Initial Environmental Examination has been prepared to comply with GB-EPA under Environmental Protection Act 2000.

The procedure followed for preparing the IMMP will consists of the following steps:

5.3.1. Deriving mitigation/protection measures for identified impacts using impact evaluationmethod.

5.3.2. Rationalize and combine series of mitigation, compensation and enhancement measuresfrom each identified impacts and risks to prepare overall measures.

5.3.3. Developing a mechanism for monitoring the proposed mitigation measures.

5.3.4. Estimating budget requirements for implementation mitigation and monitoring measures.

5.3.5. Identifying responsibilities of various agencies involved in the Project for implementationand monitoring of mitigation measures.

The management plan for the proposed project has fallen into three categories according to theproposed project activities.

- Developmental phase

- Exploration and Exploitation phase
- Reclamation phase

5.4. Developmental Phase

Development is the preparation the facilities, equipment, and infrastructure required for exploration and exploitation of dimension stones, and the phase includes land acquisition, equipment selection and specification, infrastructure and surface facilities design and construction, environmental planning and permitting, and initial quarrying planning. During this phase of the project, there may also be a need for involuntary relocation of communities located in proximity to the proposed mining area. This can be a fatal flaw of a project and should be facilitated by qualified and experienced consultants. However in this case relocation of localities is not required as nobody reside near the site.

The developmental phase is associated with a number of environmental impacts resulting from excessive site clearance, poor waste management, poor site water management and socio- economic impacts.

- The inside roads will be designed in such a way as to avoid soil erosion and to cause aslittle disturbance to flora as possible.
- Maintenance workshops will be designed to avoid contamination of soil and water byspilled fuel and lubricants.
- An important factor at this stage is the choice of location of the waste dumps, and thesewill be sited in such a way as to minimize the visual impact where possible.

5.5. The Exploration and Exploitation phase:

The Exploration and exploitation phase would involve major activities that could have impact on environmental resources such as drilling, quarrying and development of pits. These activities, if not carried out carefully, may have aesthetic visual impacts on landscape along with localized dust generations and piling of excavated material.

The impacts can be significant but localized to the disturbed area if the site is not managed properly. A proper environmental impact management process will be implemented to avoid and minimize impacts to a negligible extent.

- The site machinery will be kept serviced and muffled.
- Infrastructure found on most small to medium sized dimension stones quarries includes offices, stockyards, workshops, and dressing yards and waste dumps.
- Offices usually generate domestic waste, stockyards and dressing yards may impact on soil structure in the form of compaction. They will be minimized by collection of solid waste generated in separate bins so that they are degraded easily without sorting.
- If fuel is stored on site, there is a possibility of spontaneous combustion that may lead to uncontrollable fire and soil contamination. To minimize the leakage of fuel from drilling machinery, compressors and other heavy vehicles, proper conditioned and timely tuned vehicles will be used for extraction phase.
- The waste piles of each drilling and excavation will be used to fill up holes and pits of previous exploration to minimize piling of waste.
- Each filled up pit/site will be vegetated with grasses and bushes and trees will be planted so that reclamation process keeps going along with exploitation.

5.6. Reclamation phase:

We prefer the term reclamation, defined as “a response to any disturbances to the earth and itsenvironment caused by explored activities”. As it is wider in scope and includes all aspects of management of negative environmental impacts caused by quarrying.

The dimension stone exploitation is a clean operation; the main aims of reclamation are as follows:

- Ensure that worked-out areas are safe for future uses;
- Minimize visual impact of disturbed areas;
- Revegetate worked-out areas with suitable plant species;

- Achieve long-term stabilization of all worked out areas to minimise ongoing erosion;and
- Monitor and manage reclaimed areas until the vegetation is self-sustaining.

5.7. Recommendations

Following are the actionable recommendations we proposed for the project under this IMMP:

- Train all the skilled and unskilled workers on safety regulations and measures on exploration and exploitation activities and take an insurancecover to buffer any accidents.
- Ensure no idlers and pedestrians are exposed to the impacts of exploitation activities by enclosing the site.
- Take all possible measures to reduce noise levels at site by the use well-tuned work machinery and through setting work hours at specific times during the day to prevent disturbance to the community and biodiversity.
- Sprinkling of water must be used prior to any operational activity at the proposed site.
- The workers should be provided with
    - Hygienic food and healthy environment for living of workers
    - Should be trained and aware about the environmental procedures] and protective measures.
    - First aid kits
    - Recreational activities after working times
    - Working timing should be limited to daily 8 hours with 1-hour break
    - Workman’s compensation and medical insurance covers
    - Hospital emergency telephone number
    - Appropriate personal protective equipment’s
- In order to show respect on social and cultural issues regularly address all

complaintsfrom neighbors as soon as they arise.

- Firefighting appliances should be installed within the site, particularly the generator room and equipment room.
- Ensure compliance with safety procedures during fuel delivery and refueling of generators, machinery and vehicles on site.
- Ensure noise level monitoring of generator to ensure that noise is within NEQS limits.
- Maintenance should be ensured including checks for leaks and spills.
- Proper operating procedures that provide for training and good maintenance practice should be implemented.
- Security guards from the nearby community should be hired so that they are familiar to the residents.
- Guards will be available both at day and night time.
- Security guards must be provided required safety and security training
- Raw material, food and other available items should be preferred to purchase from local market to support local communities
- Educational and health institutes should be supported through community organizations as Corporate Social Responsibility above than regulated royalty and government imposed fee.

5.8. Environmental Monitoring

Project manager will be responsible for making arrangements and collection of key parameters'information for all exploitation and developmental phase activities that can have any environmental or social impacts for both phase environmental monitoring.

5.9. Documentation and Communication

The plant manager will document all the matters related to IMMP. He will record all the monitoring parameters and document the results. If any parameter exceeds the predicted values or mitigation measure fails or unexpected incident / accident occurs, the plant supervisor will document and communicate the matter immediately to the

project plant manager and to the GB-EPA in Gilgit city the capital of Gilgit-Baltiatan.

5.10. Implementation

Project owner, manager and supervisor will be responsible for legislative compliance, meeting approval conditions and successful implementation of the IMMP by following and adopting management approach mentioned above and by proper documentation and following standardcommunication procedures.

5.11. Environmental Impact Mitigation and Management Cost

Sr. No.	Type of Input	Description	Cost in PKR
1	Capacity Building	Training of workers and supervisory staff	350,000.00
2	Workers Safety	Procurement of PPEs and safety training	250,000.00
3	Dust Control	Vegetation, Water Sprinkling, covers	850,000.00
4	Monitoring	Environmental parameters measuring	200,000.00
5	Site improvement	Vegetation, plantations and decontamination etc	400,000.00
		Total Cost	2,050,000.00

6. Conclusions

The IEE for the exploration of Granite stones from Ghutom Area in Phaker valley, district Nagar, Gilgit-Baltistan has been conducted in accordance with the legislated procedures and guidelines provided by the Environmental Protection Agency of Gilgit-Baltistan and by Environmental Protection Agency of Pakistan.

On the basis of the overall impact assessment, more specifically, nature and magnitude of the residual environmental impacts identified during the present IEE, it is concluded that the installation of mining of granite stones is unlikely to cause any significant, lasting impact on the social, physical and biological environment of the area, provided that the proposed activities are carried out as mentioned in this report, and the mitigation measures included in this report are completely and effectively implemented. Furthermore, Ittefaq Enterprises (Pvt) Limited can mining of marble and granite at Phakar village Nagar has to ensure that the Environment, Health and Safety Plan, Fire Prevention and Control, as well as Emergency Plan, are effectively implemented during the operational phase of the project. There are no remaining issues that warrant further investigation for the proposed project. This IEE is considered adequate for the environmental justification of the project.

The IEE is carried out with objectives of identification and assessment of the potential environmental impacts of the proposed project. The IEE report contains description of the project, description of the existing environment, potential impacts and their mitigation measures. An implementation mechanism for the mitigation measures in the form of IMMP is also included in the IEE report.

The major conclusions of the IEE for the extraction of dimension stones (Granite) are as follows;

The project is environmental friendly as it does not involve any blasting or other hazardous actions as the stones were explored through drilling and cutting methods to

extent possible, and the small scales impacts will be minimized or mitigated through IMMP implementation.

However, there could be few environmental and social impacts in the area such as dust and noise. These impacts will largely be reduced by adopting and implementation appropriate mitigation measures which are discussed in the report.

The potential adverse impacts during the operational phase include air quality deterioration, solid waste generation, noise, potential threat to the health and safety of the workers and visual impacts.

However, these impacts can be reduced and minimized to negligible extent by adopting and implementing mitigation measures as discussed in preceding threechapters.

It is concluded that the exploration and developmental phase of dimension stones will generate employment opportunities. The high quality and friendly working environment will provide the community and workers with stress free working condition and occupation. The project will generate revenue for the village and the district.

On the basis of overall impact assessment, more specifically, nature and magnitude of the residual environmental impacts identified during this study, it is concluded that the project under consideration is unlikely to cause any significant, long-lasting impacts on the physical, ecological and /or socio-economic aspects of the area, provided that the proposed activities are carried out as mentioned in the report and the mitigation measures included in the report are fully and effectively implemented. There are no remaining issues that warrant further investigation for the activities of the project under consideration. This IEE is considered adequate for the environmental justification of the project.

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