



USAID FIRMS PROJECT

Review and Recommendations on Regulatory/ Institutional Framework and Business Processes

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Data Page

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Abstract

This document is the fifth of six to be delivered under the consultancy to provide assistance to develop a modern mineral market in Khyber Pakhtunkhwa (KP) Province. Included under the Scope of Work, Task 2A the following work (sub-tasks (e), (f), and (g)) has been conducted.

- e. Through consultation with public and private stakeholders, identify key regulatory constraints to mining and quarrying in Khyber Pakhtunkhwa (KP).
- f. Analyze existing protocols and support services being extended by the respective provincial government [agencies] to the industry. “Support services” are defined as prospecting services and inspection services provided by the mining department.
- g. Provide recommendations to address gaps in current environmental and safety laws relevant to mining, regulatory and institutional arrangements relevant to mining and business processes in KP.

Consultant has worked under the supervision of Mr. Farhan Shah (BEE Specialist). Thanks to the Secretary of the Mines and Minerals Development Department of Khyber Pakhtunkhwa, public and private sector stakeholders for sharing objectives and goals on developing the KP mineral sector and significant insights on actual sector operations.

Acronyms

BEE	Business Enabling Environment
CDA	Community Development Agreement
EHS	Environmental, Health and Safety
EITI	Extractive Industries Transparency Initiative
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan (Program)
IFC	International Finance Corporation
ISO	International Standards Organization
KP	Khyber Pakhtunkhwa
LIFO	Last in, Last out
MMDD	Mines and Minerals Development Department
RAP	Rehabilitation Action Plan
USAID	United States Agency for International Development

Table of Contents

EXECUTIVE SUMMARY	VII
1. KEY REGULATORY CONSTRAINTS TO MINING AND QUARRYING IN KHYBER PAKHTUNKHWA	1
1.1 MINE VS. QUARRY	1
1.2 REGULATORY CONSTRAINTS.....	1
1.2.1 POLITICAL ECONOMY INFLUENCES.....	1
1.2.2 STANDARD MINE REGULATORY TERMINOLOGY AND STANDARDS	3
1.2.3 ANTIQUATED ENFORCEMENT.....	3
1.2.4 UNCLEAR ROLE OF STATE	4
1.2.5 UNCOORDINATED REGULATION	5
1.2.6 DISCRETION AND TRANSPARENCY	5
1.2.7 COMPREHENSIVE “MINERAL VALUE CHAIN” REGULATION NEEDED.....	5
1.2.8 INCOMPLETE MINING FISCAL REGIME.....	6
1.3 ADDRESSING REGULATORY CONSTRAINTS.....	7
1.3.1 CONTINUED LEGAL AND REGULATORY REFORM	7
1.3.2 SUPPORT OF TECHNICAL MODERNIZATION ACTIVITIES	7
1.3.3 ESTABLISHMENT OF A CLEAR MINING FISCAL REGIME	8
1.3.4 DESIGN AND IMPLEMENTATION OF A MINERALS REVENUE MANAGEMENT PROGRAM .	8
1.3.5 IMPROVED TRANSPARENCY.....	8
1.3.6 PUBLIC INFORMATION CAMPAIGN ON MINING.....	9
1.3.7 CAPACITY BUILDING.....	9
2. ANALYSIS AND RECOMMENDATIONS ON MINING “SUPPORT SERVICES”	11
2.1 EXISTING PROSPECTING PROTOCOLS AND SUPPORT SERVICES	11
2.1.1 DEFINITIONS.....	11
2.1.2 EXISTING PROSPECTING PROTOCOLS.....	11
2.1.3 LOOKING FORWARD.....	11
2.2 EXISTING INSPECTION PROTOCOLS AND SUPPORT SERVICES	13
2.2.1 EXISTING INSPECTORATE FUNCTION AND PROTOCOLS.....	14

2.3	GOING FORWARD.....	14
3.	RECOMMENDATIONS.....	17
3.1	ADDRESS GAPS.....	17
3.2	KEY ENVIRONMENTAL AND SOCIAL DEFINITIONS THAT REFLECT BEST PRACTICE.....	17
3.2.1	ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA).....	17
3.2.2	ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (OR PROGRAM) (ESMP).....	18
3.2.3	RESETTLEMENT ACTION PLAN (RAP).....	18
3.3	RECOMMENDATIONS FOR STRENGTHENED ENVIRONMENTAL MANAGEMENT.....	18
3.3.1	STREAMLINING MONITORING AND OVERSIGHT.....	18
3.3.2	LEGITIMIZING.....	19
3.3.3	INCLUDE SOCIO-ECONOMIC ISSUES AS PART OF ENVIRONMENTAL ISSUES.....	19
3.3.4	ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REGULATIONS.....	20
3.3.5	ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA).....	20
3.3.6	ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS.....	21
3.3.7	REHABILITATION, REMEDIATION, ABANDONMENT.....	21
3.3.8	FINANCIAL GUARANTEES.....	22
3.4	RECOMMENDATIONS TO ADDRESS SAFETY ASPECTS.....	22
3.4.1	STRENGTHENED INSPECTORATE.....	22
3.4.2	AWARENESS BUILDING FOR MINE OPERATORS AND MINERS.....	22
3.4.3	REPORTING ACCIDENTS, INJURIES AND ILLNESSES.....	23
3.4.4	DEVELOPMENT OF AND ENFORCED EXPLOSIVES POLICY/REGULATIONS.....	24
3.4.5	REQUIREMENT AND FINANCIAL SUPPORT FOR PROTECTIVE GEAR.....	25
3.4.6	COST OF MINING.....	25
4.	APPENDICES.....	27
	APPENDIX 1.....	27
	APPENDIX 2.....	28
	APPENDIX 3.....	31
	APPENDIX 4.....	33

Executive Summary

Key regulatory constraints to mining and quarrying in Khyber Pakhtunkhwa

Regulatory guidance for mining and quarrying is fundamentally the same. However, in light of the portion of the KP minerals market that encompasses quarrying and the importance of quarry materials in the province, some specific attention to how quarrying is carried out in KP is recommended. Stakeholders expressed concern that the foremost regulatory issue is the manner in which mine and quarry rights are awarded and, at least in perception, the discretion or lack of clarity on how rights are awarded. International experts further cite a lack of monitoring awards once granted which contributes to excessive environmental degradation, poor mineral quality, and dangerous working conditions.

Regulatory constraints in KP mining and quarrying may be attributed to the absence of modern mining regulations and regularized enforcement. Entrenched ways of implementing sector operations will be challenging to modify but a gradual approach may be taken to either:

- a. Start with mines and quarry operations closely located to Peshawar with which KPMMD officials may more regularly and closely collaborate; and/or
- b. Start with a mineral type (i.e., granite, marble) and establish an operators-KPMMD working group to specifically target gaps in how these quarries are being operated.

An important regulatory constraint for all stakeholders is the lack of comprehensive sector approach – this would include not only mining priorities but environmental, social, land access, and fiscal. KPMMD may take the lead to identify areas and government departments that should more regularly be conversing and coordinating on mining and quarrying developments. This will further include “downstream” aspects including mineral transport, sale, storage, processing and export.

Mining “Support Services” for Prospecting and Inspection

Use of the term “prospecting” in KP in fact refers to two aspects of mining: (1) prospecting or “survey” work undertaken by KPMMD itself; and (2) prospecting activities being undertaken by the private sector. It is important that these distinctions are clear. Outside investors have expressed the perception that KPMMD itself seeks to be a mining company at some level; this is not in fact the case according to KPMMD management but perceptions matter for investors. The present institutional arrangements at KPMMD to support prospecting and inspection may be clarified for new investors to clearly understand the divisions of responsibility amongst the various KPMMD departments in line with best international practices. In addition, it will be helpful for KPMMD to more clearly explain its role in prospecting and to reconcile its work as compared to the Pakistan Geological Survey work.

Protocols and support services for prospecting and inspection in KP are in place. They will benefit greatly from updating to reflect modern mining practices, methodologies and an enforcement regime that includes meaningful penalties. Perhaps most important for KP to capture the benefits of prospecting is to shore up its Cadastral Mapping activities. Information and data collected during prospecting is valuable toward building an up-to-date picture of KP mineral resources, probably geological locations of reserves and to define which areas within KP are likely to hold best commercial potential.

The Constitutional arrangement that makes mining a provincial subject in Pakistan is significant but not unique. What is essential is that the provincial approach to mining, notably large-scale

mining where foreign investments are sought, is coordinated with federal approaches. Investors will not invest only in “KP” but in “Pakistan” and will need to have a comprehensive regime that includes their mining investments as well as any downstream investments. Clarity on the role of the Geological Survey of Pakistan and how the KPMMD Exploration Director interact is critical.

Gaps in current environmental and safety laws relevant to mining and business processes in KP

Increasingly, mining markets throughout the world are focused on the environmental impacts of mining and related mining activities such as mineral processing and infrastructure development. In addition, “environmental impacts” has evolved to include in great detail “social impacts” resulting in a more harmonious assessment of the overall impacts of mineral development not only to the natural habitat but to its residents and surrounding communities.

The KP Mining sector has not developed a robust environmental or social impact assessment process and must. No matter its size, mining is an unnatural disturbance of the environment and brings with it a myriad of social change that effect economy, employment, cultural norms and more. Assessment of potential impacts must not only identify likely and possible impacts but provide recommendations for how these impacts will be avoided or at least mitigated.

As an immediate measure, it is recommended that KPMMD institute an environmental and social impact assessment process that includes operators’ developing environmental and social management plans. It is also recommended that broader institutional governance of these issues be facilitated bringing together KPMMD as well as the Environment Department, Labor and Welfare Department and other relevant KP agencies including any at the mining District Level. What must be reconciled is the role of federal agencies in these topic areas which are “cross-cutting” and not only impact KP.

Mine safety aspects in KP can be more rigorously assessed and addressed. Foremost in this process is including the state of mining conditions with emphasis on the individual miner safety. Assessment and procurement of protective gear for miners should be mandatory. Present Inspectorate functions are clear and may be strengthened through broader inspector training, scheduled and more regularized mine/quarry inspections, and a comprehensive review of enforcement mechanisms including level of penalties to be more in line with international best practice.

1. Key Regulatory Constraints to Mining and Quarrying In Khyber Pakhtunkhwa

1.1 Mine vs. Quarry

The difference between a “mine” and a “quarry” may generally be described as follows.

- A **mine** is a location that may be (1) on the surface – “open pit” or “surface” or “underground”; and (2) under the surface or “deep” where the extraction of valuable minerals or other geological materials is conducted.
- A **quarry** is the same thing as an “open-pit” or “surface” mine; the difference is that typically the materials extracted from a quarry are construction/building materials and dimension stone.

For purposes of KP, quarrying typically includes granite, marble and construction materials. These may both be used within the province and especially granite and marble, for export. In the current context, most minerals will capture optimum value when exported outside of KP.

1.2 Regulatory Constraints

Perhaps the fundamental regulatory constraint in KP mining is the absence of modern mining regulatory guidance. The absence or regulatory gaps results in an uncertain investment environment in which rules may be unevenly applied to different investors.

Regulatory constraints that have been identified by KP sector players have included political-economy issues such as discretion and politicking surrounding mining in KP. In the competitive global minerals market, as KPMDD seeks to attract large-scale investments, regulatory constraints must be identified and addressed.

1.2.1 Political Economy Influences

Gaps in current regulation is a constraint; there are several regulatory actions that may be taken over time toward reducing political economy impacts, i.e.:

- (1) Reduced discretion of the “Licensing Authority”/KPMDD. This may be achieved through rigorous drafting of time-bound regulatory requirements, practical penalty amounts and enforcement mechanisms. **Note:** It has earlier been recommended that in place of the term “Licensing Authority”, use of “Cadastre” be inserted based on standard terminology in the industry.

Regulatory Constraints
<ul style="list-style-type: none">• Political economy influences• Standard mine regulatory terminology and standards• Antiquated enforcement• Unclear role of State• Uncoordinated institutional inputs and regulation• Discretion and transparency• Comprehensive “value chain” regulation needed• Incomplete Mining Fiscal Regime

- (2) Investor eligibility requirements. It is essential that appropriately rigid regulatory criteria for investors and good due diligence on these investors as well as KP/Pakistan investors is in place so that Government will not have an influx of bankrupted or historically fraudulent investors working in its sector. Clear and enforceable eligibility requirements should further contribute to reduced political and other influences.
- (3) Requirement to Mine. A common problem in KP and other mining markets occurs when the mine operator delays commercial production. This delay results in delayed revenue generation and job creation that will benefit mine communities and KP. As part of either the new KP Mining Act or supporting regulations, some conditionality should be placed on licenses/leases that require commercial production in a certain timeframe or that KPMMD may cancel the license.
 - “Commercial Production” is typically deemed to have commenced on the date upon which minerals mined from the mine property are first delivered to a purchaser on a commercial basis, or on the date upon which concentrates or other products derived from the minerals are first delivered to a purchaser on a commercial basis, whichever date is earlier.
- (4) Cadastral mapping. Quarry operators indicated that insufficient information is available or up to date with respect to quarrying operations in KP. In some mining destinations, in order to immediately streamline information about quarry and small-scale mining, a “paper cadastre” process is used to expedite information submission and cadastral mapping (Appendix 1).
- (5) Public information and awareness. The more stakeholder participation and awareness, the less opportunity for collusive behaviour. KPMMD actions may ensure public forums, community hearings, publication of contracts and other awareness building measures will contribute to improved transparency and reduced political economy impacts.
- (6) Preparation of (predictable) regulatory guidance. A critical next step in improving the regulatory regime in KP is minimizing the use of discretion in all processes. The more clear and predictable the regulatory regime, the more likely to attract credible investment. Investors want to understand at the beginning of their investment what are their rights and their obligations. Examples of important regulatory guidance:
 - Award of Mineral Rights. There is considerable discretion in the award of mineral rights in KP; MMDD indicates that 95% of licenses are at the review of the DG while 5% are actually evaluated by the licensing department. While the appropriate institutional arrangement is in place, the allocation of actual authority internally in the MMDD should be clearly detailed in regulations.
 - Obligations. Under the current concession rules there is a mix of information concerning obligations to maintain the mineral title (process) and obligations to conduct operations (functional implementation). These obligations must be clarified. Any obligations must be not only published, but understood by investors and should include clear monitoring and enforcement processes.
 - Fees and penalties including surface rent, land access and other payments must be published and consistently applied.

- Handling of social impacts including resettlement, compensation, etc. should be known to the investor up-front to avoid “deal making” and made in consultation with mine communities.
- (7) Maintaining clear license records. Investors want to know that their mineral rights are clearly recorded following a published map-based process (i.e., using cadastral blocks), and that this information is secure (cannot be changed), transparent and available for public review.
- Cadastre. Consideration of a “Flexi-Cadastre” and other GIS equipment as well as strengthened GIS capacity at KPMMD may be supported to remove potential conflicts due to lack of regulatory guidance.
 - Mineral Rights’ Registry. Establishing a set of user-friendly “Registers” that clearly record each and every submission for a mineral right and change to a license or lease will improve transparency and accuracy for future awards. Most countries post the registration information online.
 - Information. Geological, financial, and overall sector information may be improved for Government, investors, workers and citizens. Lack of accurate maps is a regulatory constraint for investors – they will not be able to gauge the actual boundaries of their license area. “Layered” mapping that not only includes mine boundaries, but locations of infrastructure, villages, forests, etc. removes any uncertainty about mine sites.

1.2.2 Standard Mine Regulatory Terminology and Standards

Current regulatory terminology somewhat constrains the KP sector – at a minimum in its perception. If to become a competitive investment site for international funds, regulatory terminology may be modified to reflect modern mining markets. This topic has been addressed in earlier analysis and is worth repeating. Some examples:

- (1) Exploration Promotion – in a mineral market economy, investors expect that they will conduct exploration, not government. Government actors are typically expected to conduct basic “survey” work and “investment promotion”.
- (2) License and lease types – notably modifying the definition of “large-scale” mining (now described as \$3million+ investment which is comparatively low) as well as the introduction of “artisanal license” would place the KP regulatory regime along the same course as similar mining markets.
- (3) Discontinue use of “minor” and “major” minerals – use of modern terminology includes “construction materials” in place of “minor minerals” and “minerals” in place of “major minerals”.

1.2.3 Antiquated Enforcement.

KPMMD and other government agencies are constrained by current regulatory guidance that only supports minimal penalties and fees, insufficient for meaningful actions by operators. Close and updated review of enforcement mechanisms and antiquated penalties to be brought current will provide predictability and meaningful enforcement to the sector.

- (1) Penalties. Penalties currently rely on the 1923 Mining Act, its various amendments and the Mining Concession Rules that are financially very weak. These need to be made current to empower KPMMD as well as to better guide investor actions –

their behaviors should be modified knowing that meaningful penalties may be imposed.

(2) Dispute resolution. A regulatory constraint is the absence of modern mechanisms to address mineral-related conflicts. In KP there is significant reliance on use of the provincial court system to resolve the most minimal of cases; this results in project delays and negative perception of mining in the province. Some opportunities to establish alternative dispute resolution approaches:

- Minerals Dispute Resolution Panel. Establishment of an independent expert panel consisting of an odd-number of members that may come from academia, private sector, and government to provide a first point of dispute resolution. Typically the members on this panel will not be permanent but will rotate for each dispute to reduce possibility of deal-making and insider-benefits.
- Community Dispute Resolution Panel. Especially relevant where large-scale mining is taking place, but other mining as well, a panel consisting of community members, government, private sector that will hear disputes particular to community, land and social aspects.
- Establish a formal mine worker grievance system. KP mine workers do not have adequate information to protect themselves; the trade union structure is very weak. As a result, mine workers are paid a minimum of 7500rs/month as is required under the labor law with no consideration of the dangerous aspects or limited timeline for mine work. There is a “produce or perish” approach to pay and workers are not contractual which means they do not have benefits attached to their jobs. Mine workers are not always “registered workers” under the law; KPMMDD may work with the KP Labor Department to address this issue. Improved rights for mine workers including health and safety equipment and protective gear are needed as well as a system of redressal (grievance) for workers. Penalties that may be levied on mine operators rely on 1923 and 1948 legal acts and are far too low (i.e., 10-25 rs per violation) to have impact.

1.2.4 Unclear role of State

Investors need to clearly understand the role of the State in the mining sector and authority of national, provincial and district authorities.

(1) Multiple roles of State. The State as regulator, investor and even as a mine operator creates room for conflict of interest. The current regulatory and institutional framework allows the State to hold mineral rights which is KP; closer review of whether this type of investment will be supported and how is needed.

(2) Clear federal and provincial institutional roles. By Constitution, mining in Pakistan is a “provincial subject”; however, for international investors, there will be considerable national interaction. Clarification and delineation of roles of national, provincial and district institutions is required. Any foreign investment will require a combination of national, provincial and district institutional participation that for an outsider is not yet sufficiently clear. Especially relevant for large-scale mining – some federal institutional functions will emerge, i.e.:

- Ministry of Petroleum and Natural Resources– oil and natural gas

- Board of Investment (BOI) – notably relevant with large and foreign investments
- Ministry of Finance (Federal Board of Revenue, Tax and Custom Authorities)
- Planning Commission of Pakistan – especially when integration of infrastructure, water and mining results
- Ministry of Labor and Manpower
- Ministry of Law
- Water and Power Development Authority (WAPDA)

Note: An issue of Article 173.3 of the Constitution in light of the 18th Amendment says that oil and natural gas is a concurrent item – to be jointly managed by federal and provincial government –investors will similarly need to understand this relationship.

1.2.5 Uncoordinated Regulation

KP mine and quarry investors complain that different provincial and district departments and authorities impose different requirements and penalties and fees relevant to mine and quarry operations. They also note that private actors such as land holders and others often require payments for access and transport rights. The absence of clearly, consistently enforced and close monitoring of these aspects is a regulatory constraint for operators.

- An example of conflicting directions or various fees being levied for quarries and small operators was reported for forestry, environment and land access issues. In some emerging markets, quarry and small operators are regulated using simple forms rather than complicated and extensive environmental reports. These abbreviated submissions are often referred to as “screening reports”; KPMMD may review these and determine the additional level of information that is needed for smaller operators to proceed. Forestry, Environment and other relevant departments should received the same information and convene alongside KPMMD for a streamlined approach to the operators. (Appendix 2).

1.2.6 Discretion and Transparency

Any appearance of discretion whether by political or other players will diminish the credibility of the sector. Investors are prepared for Government requirements that include reporting, monitoring, audit and other measures to which they must comply during the life of their license/lease. In the current KP context, transparency is constrained by a lack of clear regulatory guidance. Some areas where transparency may be improved:

- Role of government agencies
- Clear fees, penalties
- Land use and access
- Investor and Community rights and responsibilities
- Resolution of conflicts

1.2.7 Comprehensive “Mineral Value Chain” Regulation Needed

A constraint notably for quarry miners but for all mining in KP is the lack of comprehensive and consistent regulatory guidance from “mine to market”. Attracting mine companies that will not only build long-term mining operations, but will integrate their development and activities as part of the overall community development is a priority for KP. Stand-alone investments have not

proven to be effective for the long term in providing full benefits to communities; comprehensive “value chain” investments must be encouraged.

- **Middlemen.** This important point has been cited in earlier deliverables - especially for quarry operators, use of “Middlemen” is unregulated. “Middlemen” often purchase minerals and resell; there is no licensing or other standard in place to guide this segment of the business. These buyers often stockpile resources awaiting higher prices and also purchase from illegal operations. It is not clear whether “salting” (adding non-mineral elements to the actual minerals) is an issue.
- **Mineral quality.** KP mining includes marble, granite and precious gems that are not necessarily being produced using best methodologies. As a result, product quality is diminished and environmental degradation comes along with poor mining practices. Institutional oversight of environmental issues is required to preserve water, soil and other natural resources, optimize minerals’ value, and to safeguard communities. Most of KP chromites is sold to China; China indicates that the chromites must be tested and the “SGS” lab in Pakistan is used. KP MDD is concerned that where they believe the quality is 25%, SGS will report 17%, diminishing the value of the chromites.

1.2.8 Incomplete Mining Fiscal Regime

A closer look at regulatory constraints to support a consistent and realistic fiscal regime for KP minerals is needed.

- Royalties are generally applied; more testing of KP minerals to better distinguish the types of royalties to be applied and value of minerals is recommended.
- In KP, the use of a “CESS” is 3-5 rupees per ton. These funds are collected by the KPMMD and used for social issues such as housing, disability and other social support. This is not necessarily an international norm; some review of how the CESS funds are calculated and collected and used may be designed.
- The Forest Department levies its own fees; these must be predictable and consistently applied. There are reports given that local landowners also charge fees to mining/quarry operations that are “under the table” – improved understanding and transparency of these fees will reduce perceptions of discretion and deal-making.
- Reconciliation of federal and provincial fiscal policies is needed including more developed regulation on royalties and other fiscal benefits of mining. Investors (notably foreign investors) will be reluctant to enter over-taxed markets. For example, there are 6 cement plants in KP that pay 30rs per ton to the KPMMD but the federal government obtains close to 100 rs per bag in taxes. KPMMD would like to explore approaches to improved regulation of revenue generation.
- Fiscal reporting is minimal; especially as large-scale investments increase, KPMMD requirements for financial reports must be more detailed and regularized. Earlier discussion has been given to KP following the Extractive Industries Transparency Initiative (EITI) which would provide an initial baseline for what financial

Minerals Value Chain	
1.	Award of Contracts and Licenses
2.	Regulation and Monitoring of Operations
3.	Collection of Taxes and Royalties
4.	Revenue Management and Allocation
5.	Implementation of Sustainable Development Policies and Projects

information should be collected and publicized for stakeholder review.

1.3 Addressing Regulatory Constraints

Regulatory regimes supporting Minerals Sectors are typically complex – this does not mean that complex regimes are essential.

As noted throughout the course of this consultancy, an approach that may be taken in reviewing the KP regulatory regime and how it may be divided into areas for improvement follows the “Minerals Value Chain” prepared by the World Bank:

1. Award of Contracts and Licenses
2. Regulation and Monitoring of Operations
3. Collection of Taxes and Royalties
4. Revenue Management and Allocation
5. Implementation of Sustainable Development Policies and Projects

1.3.1 Continued Legal and Regulatory Reform

KP has commenced a pro-active review of the overall legal and regulatory context in which mining is being conducted in KP including adoption of a new KP Minerals Policy, drafting a KP Mineral Act and amending the NWFP Mining Concession Rules.

- These are fundamental and important regulatory actions that begin to set the course for new mineral investments in KP. Modern legal and regulatory guidance should be supported with continued re-drafting and new drafting of relevant rules and regulations to ensure modern legal guidance. Time-based requirements for project performance and reporting requirements (i.e., monthly, quarterly, annual) may be detailed as part of the regulatory reform process.
- The manner in which the continued development of the legal and regulatory framework occurs should not be limited to Government participation but should also include investors, civil society. The establishment of the Minerals Working Group on the federal level may be established at the KP level to bring together key provincial government agencies, private sector and stakeholders.

1.3.2 Support of Technical Modernization Activities

- a. Geo-data and mapping enhancements. Introduction of a modern cadastre system (i.e., using cadastral blocks) and requirement of geology-based mine design (‘control mapping’). KP conducts prospecting and even exploration activities but more work to collect geo-data and to systematically provide support services to mine operators will be useful.
- b. Improved Mine Inspectorate. KP maintains Inspectorate offices as part of the MMDD. It relies on the Mines Act and inspection regulations; attention to certification and preparation of inspectorate capacity for all types of mining and quarrying is needed. A dedicated training program for mine inspectors should be institutionalized; this is a critical aspect of mine operations. In addition, enhanced familiarity with modern mining techniques, geological preservation (i.e., use of explosives) and health and safety practices will be useful.

1.3.3 Establishment of a clear Mining Fiscal Regime

- a. Collection and management of mining revenues may be improved. A combination of complex fiscal arrangements blurs the actual reality of payments being made related to mining activities. “Royalty” is a term used to describe every type of payment from a traditional royalty (tax on minerals) to bribes and other local payments that are so entrenched, they have become institutionalized practices. Aside from how revenues are generated and paid, the manner in which they are collected and utilized must also be reviewed; there is no formalized program for management of revenues generated from mining in either province. The provincial mines departments rely on pre-calculated mine royalty receipts and government budget funding that result in cross-subsidization of mineral sector operations not always to the benefit of the local population.
- b. Current mine investments may be reviewed. Some deeper review would be useful to assess existing investments in the minerals sector and whether these types of investments – and investors – are the types that will help the province further develop the sector. Government should be assessing not only the immediate financial benefits of the investments, but whether the investor is bringing shared values of community development, citizen consultation, environmental protection and other aspects to the province. Government consultation with local non-government and citizen groups will also be useful to gauge the sentiment of community members toward mineral investments. In some districts, citizen sentiment was expressed as “100% against mining”. This and other citizen perspectives must be understood and addressed if a sustainable minerals sector is to develop.

1.3.4 Design and Implementation of a Minerals Revenue Management Program

An essential business process for Government is the collection and allocation of revenues. There is presently no formalized program for the management of revenues generated from mining in KP; overall, the collection and management of mining revenues may be improved. It does not appear that current mining investments in either province are optimal. Considerably more attention is needed in costing out the mining investments in both provinces. Market-based analysis and mine cost assessments are essential at every stage of a mine development – the investors will be assessing costs and so should Government. Government may also more closely review the “fiscal incentives” and “benefits” of mining investments to ensure that mining companies want to invest but also that they will responsibly invest for the long-term benefit of the provinces. Some immediate actions may include:

- Development of a provincial “Minerals Revenue Management Plan” that will address:
 - i. Definition of “Minerals Revenue” (i.e., royalties, community funds, taxes)
 - ii. How these revenues will be collected and banked.
 - iii. How these revenues will be monitored and allocated.
- Assessment of “mine investment lessons learned” from other mining markets in the world.

1.3.5 Improved Transparency

- a. Establishment of clear rules for licensing and use of license registries including public access as well as publication of key contract/lease terms is useful. Related to the lack of timely and accurate information is the level of transparency at which mineral rights are auctioned, awarded, implemented and monitored. Award of licenses, i.e., that mining under licenses must commence within a certain time from award so investors

cannot “buy licenses and hold on to them.” Defined royalty system, ideally published as part of law or rules.

- b. Publication of license and investment information. Standard mine contract and publication of terms in provincial gazette. Formalized procedures for public access to cadastre and mine contract information
- c. Reduced discretion and conflict of interest.
 - Participation of community elders in sector decision making may continue but this role should be clearly defined for all to understand.
 - Government officials may not hold licenses or invest in mining until at least one year after leaving office
 - Reduced discretion of licensing authority through more defined rules on award, suspension, cancellation of mineral rights.

1.3.6 Public Information Campaign on Mining

Whether geo-science, investment-related or policy development, timely and accurate information exchange is not presently an inherent part of KP mineral sector operations. There is an extreme lack of public awareness on mining and general lack of understanding of the risks and benefits of mining. Additional measures to improve information exchange and transparency of sector operations may be made, i.e.

- Preparation of basic “what is mining” information including provincial mineral information, why mining is good for the province, etc.
- Use of existing district and village forums to disseminate information and collect feedback from affected communities.
- Training and engagement of local media as a regular part of sector developments to accurately tell the story of mining.

1.3.7 Capacity Building

The array of business processes required to successfully effect a viable minerals sector requires a similar array of capacity building. Beyond directly engaged mining actors, the Pakistan banking sector, environmental authorities, land and social protection agencies are not yet equipped to address the range of issues that stem from mining activities. The KPMMD may “champion” a “Minerals Capacity Building” program that will include key topic areas described in earlier submitted consultant documents:

- KPMMD managers and staff
- Social and environmental protection
- Mine workers
- Curriculum development that may be shared amongst all levels of the education and vocational sector
- Inter-provincial relations and information sharing
- Private sector

2. Analysis and Recommendations on Mining “Support Services”

2.1 Existing Prospecting Protocols and Support Services

2.1.1 Definitions

Under the current regime, “prospecting” and “exploration” are terms that are used interchangeably; more clarity on how these terms are used is recommended.

- a. Prospecting is
 - the “first stage” of geological analysis of minerals territories; and also
 - the term used to describe artisanal and small-scale mineral exploration which is conducted by a license holder to find economically viable/commercial deposits.
- b. Exploration is the “second stage” of geological analysis of minerals territories which is typically conducted by a license holder to find economically viable/commercial deposits.

In very open markets, “prospecting” is often an opportunity for individuals and/or companies to enter an area of land and simply seek a “mining claim” by erecting posts and filing a “claim” with the appropriate mining authority.

2.1.2 Existing Prospecting Protocols

There are two aspects relevant to prospecting protocols in KP to be considered. One is how the KPMMD conducts prospecting and the other is the private sector role in prospecting.

- a. KPMMD. The designation of mining as a provincial subject in Pakistan presents a somewhat unique regulatory aspect to prospecting in KP. Geological survey work, typically conducted by the State’s “Geological Survey” includes “survey and prospecting” in order to identify potentially viable mineral deposits for commercial development. In Pakistan, the Geological Survey does conduct this work and is based out of Quetta, Balochistan. There are complaints that the Quetta-based Survey does not adequately share information or conduct sufficiently thorough surveys.
- b. Private Sector. Stakeholders note that in today’s KP context, there is virtually no division between prospecting and exploration and exploitation. In most instances license/lease holders delve directly into exploitation. This approach results in little analysis of geological samples, analysis of deposits or adequate mine and quarry design to optimize resources.

2.1.3 Looking Forward

- a. Cadastral Mapping. KP divides its minerals into five categories:
 1. Dimension Stone
 2. Gemstones

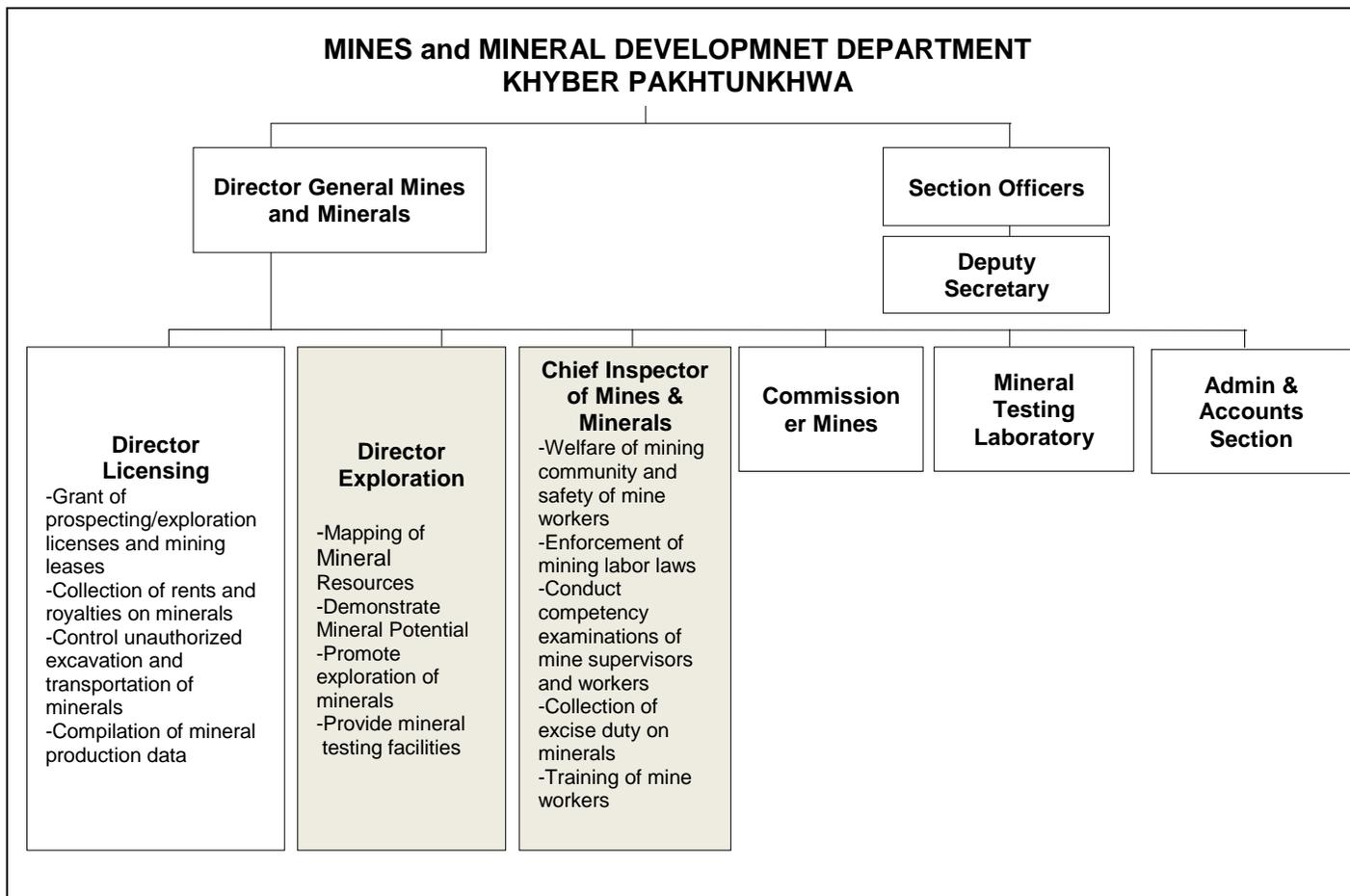
KP Mineral Categories
1. Dimension Stone
2. Gemstones
3. Industrial Rocks
4. Fuel Minerals

3. Industrial Rocks (i.e., rock salt, limestone, phosphates, gypsum, soapstone)
4. Fuel Minerals
5. Metallic Minerals (southern province, i.e., coal, base metals, lead) and construction materials.

Detailed cadastral mapping of these minerals is an important aspect of KP mining sector development. There are geological trends that will be increasingly apparent as the maps are updated first from prospecting findings, then by exploration and exploitation. The “Tethyan Belt” of copper and iron ore deposits stretching from Iran into Afghanistan into Pakistan (Balochistan) is a large-scale example of how mineral resources may be tracked. As KP licenses and leases are issued, updating this map and conducting expert analysis of mineral discoveries is essential.

b. Industry Structure. The KP Government offices supporting mining are themselves important job creators; some consideration has been given by Government to downsize Government mining operations; it is recommended that a close functional analysis be conducted and that the staffing numbers may be adequate but that staff assignments may be reoriented to cover different and additional topics.

The Geological Survey Function includes the surveying and prospecting of mineral resources in consultation and collaboration with existing mining operations, the retrieval and maintenance of geo- science data, and the maintenance of a Geo-Science Data Center. The Survey function should cooperate with exploration and mining companies, license/lease holders and provincial mining authorities.



The KPMMD currently includes 200 Peshawar-based staff as well as 6 regional offices with about 20 staff each. In accordance with the “Rules of Business” the KPMMD departments include: (1) Licensing; (2) Development of Mineral Resources; (3) Land; (4) Regulations and Royalties; (5) Geological Survey; and (6) Health and Safety.

In effect, the survey and prospecting work that is conducted by the KP Exploration and Promotion staff may duplicate the work that the Geological Survey should be conducting. Some very clear division of the “Director of Exploration” function and the Geological Survey function is needed; in fact, a redesign of how the KPMMD is structured is recommended in this regard.

- c. Distinguishing prospecting from exploration/mining. KPMMD engagement in prospecting is helpful in (1) building know-how amongst KPMMD staff; (2) identifying and mapping KP minerals resources; (3) identifying mineral development opportunities that may be tendered for private sector operation.
- d. KPMMD equipment. In order for KPMMD to conduct survey and prospecting work, modern equipment, knowledge of modern prospecting methodologies and health and safety equipment is needed. KPMMD may analyze the types of equipment needed and procure same. Either establishing testing facilities in KP or having access to affordable testing facilities in or near Pakistan (i.e., Dubai) will enable KPMMD to assess quality of its minerals.

However, it is not suggested that KP set up its own Exploration Mine Company as has been the case especially in some African mining countries. In these scenarios, government is beholden to invest in expensive mining operations and/or investors must share equity with government. When these companies develop, government must face several challenges, none of which typically bode well for governments unwilling to invest significant funds:

- Government must contribute to the equity percentage it acquires over a certain number of years; this typically results in governments taking loans that must be repaid.
 - Government takes on a role as investor and as regulator and as policy-maker; the lines amongst these roles is not always well drawn and results in conflicts of interest, collusive behavior and corruption.
 - Government is busy; when it takes on role as mining investor it often neglect other government duties to the detriment of the community.
- e. Introduction of “Artisanal License” will provide KPMMD and operators the opportunity to conduct prospecting activities using private sector funds. Well-monitored artisanal operations can provide important jobs for KP residents but also guide KPMMD toward optimal resource development. For example, where initial private sector prospecting results in the discovery of certain precious gems, it may be that larger mineral deposits exist and KPMMD may further survey those areas.

2.2 Existing Inspection Protocols and Support Services

Inspection services are addressed in detail through regulation in place in KP and throughout Pakistan. These regulations have been periodically updated but do not sufficiently reflect modern mining practices. Further, where regulations are in place, they are not necessarily enforced or enforcement mechanisms (i.e., penalties) are insufficient to have effect on operators.

2.2.1 Existing Inspectorate Function and Protocols.

KPMMDD inspectorate officers have listed the following functions as part of the Inspectorate:

- Welfare of mining community and safety of mine workers
- Enforcement of mining labor laws
- Conduct competency examinations of mine supervisors and workers
- Collection of excise duty on minerals
- Training of mine inspectors

These functions are typical and protocols in place to support them exist. It is however, important that the Inspectorate not carry the entire burden of mining community welfare. As recommended here, and in earlier deliverables, broader outreach to impacted mine communities, relevant non-government organizations and district authorities to ensure that mine community welfare aspects are more broadly addressed is also recommended.

For the Inspectorate, what is absent is significant:

- (1) Protocols that support modern mine methodologies, requirements;
- (2) Enforcement mechanisms that are meaningful in terms of level of penalty, ability to suspend or close mine operations; and
- (3) Linkage of inspection with environmental aspects including water and soil testing, worker health attributed to environmental aspects.

2.3 Going Forward

a. Clarifying the KP Inspectorate Function. In mining, the Inspectorate function is to develop and monitor the adequacy of mine safety and worker conditions, mine health and safety equipment, services, supplies and procedures. It is critical that this function is independent of licensing and other government mining functions so that inspectorate operations are transparent and do not promote insider deal-making or collusive behavior. Clearly stated objectives, timelines for performance and penalties for non-performance by mine operators, miners and even KPMMDD are essential. Some immediate recommendations for streamlining KP Inspectorate priorities:

- The Inspectorate is charged with the regularization of exploration and mining activities
- The Inspectorate must record and assess all existing mining operations, inspect and monitor and audit these operations on a regular basis.
- The Inspectorate must compile an inventory of mines, prepare a strategy working with the Cadastre to license all operations and assist operators to become licensed.
- The Inspectorate must assess project technical, safety, environmental and other risks; check compliance and determine appropriate action, making information

Illustrative near-term KP Inspectorate Actions

- Ensure regularization of mining operations
- Assess, monitor, audit operations
- Inventory existing mine operations
- Prepare strategy to license all operations
- Assess technical, safety, environment and other risks
- Address non-compliance
- Provide confidential approach for miners to report violations
- Conduct audits and inspections

available for public review.

- The Inspectorate must work with other KPMMD departments to address non-compliance that may include suspension and/or closure of mine operations with appropriate opportunity to cure and notice.
 - The Inspectorate must improve its tracking of occupational health and safety accidents (incidents), operator requirement for reporting.
 - The Inspectorate must provide a confidential approach for miners to report health and safety violations.
 - The Inspectorate must conduct audit and inspections that include technical, economic and regulatory (including mine contract compliance), health and safety (including risk analysis), project review and evaluation, and review of mine company reports.
- b. Technical modernization. Especially for quarry operators and the KP province at-large, more clear requirements for technology will help to safeguard mineral resources and optimize their exploitation. The KPMMD Inspectorate and Licensing Departments must require actual mine designs and that they include mine closing and an environmental remediation and rehabilitation program. The Inspectorate may immediately:
- repair a modern explosives policy that includes rules for monitoring, enforcement measures and imposition of penalties; and
 - Preparation of a list of modern technologies and costs for marble and granite.
- c. Update inspection protocols.
1. Quarries. In light of stakeholder concerns expressed on quarrying, it may be timely to update inspection protocols specific to quarrying. This would include allowable quarry methodologies, requirements for use of explosives (or non-use), requirements for quarry design and the development of meaningful penalties.
 2. Reporting Accidents (Incidents). Current procedures to report accidents, injuries and even deaths are insufficient. A systemized and well-monitored approach to tracking mine/quarry worker safety is needed. (NOTE: International standard for “death” includes death arising from mine accidents or injuries)
 3. Review and improve enforcement mechanisms. In addition to current penalties being insufficiently low, the overall approach to enforcing inspections will benefit from review and upgrading, i.e.,
 - Ability for inspectors to safely enter a mine/quarry premise
 - Ability for KPMMD to suspend mine operations and even to close them must be conducted in a systemized, transparent manor that allows operators an opportunity to cure any wrong-doing.
- d. Linking inspection with environment. One of the most common observations taken from stakeholders is the use of explosives in quarrying and mining throughout KP and the damage that this practice does to quality of mineral products as well as to the environment. Mention of worker safety should also be given. An immediate measure that may be taken by KPMMD is to develop and implement an explosives protocol (sample included in Appendix 4) and to carefully enforce same. KPMMD working with the

Environment Department to ensure that this and other inspection aspects are addressed will promote department collaboration and consistency in implementation.

- e. Institutional arrangements. The Inspectorate is itself a stand-alone institution operating under its own set of legal/regulatory standards. Investors need clarity and certainty on what these arrangements are and how KPMDD may or may not manage the inspectorate component of mining in KP.
- f. Equipment and protective gear. Just as miners should be required to wear protective gear when located at mine/quarry sites, so too should inspectors.
- g. Inspector protocols.
 - Rotation. Inspectors are typically at the furthest locations from headquarters and working on their own. It has proven useful that inspectors are rotated so that “friendly relationships” with mine operators do not emerge and supersede inspection protocols.
 - Two or more. It is useful to have two or more inspectors per site.
 - Training opportunity. It is also useful to have a senior inspector with a junior inspector for training purposes.
 - Technically qualified and well-paid. International experience has demonstrated that inspectors must be as qualified or better qualified than mine/quarry operators and that part of their job is to offer advice, recommendations to operators toward improved operations. Inspectors must be well-paid to ensure expertise and to alleviate possibility for corrupt practices.

3. Recommendations

3.1 Address Gaps

Current Environmental and Safety Laws Relevant To Mining, Regulatory and Institutional Arrangements Relevant To Mining and Business Processes in KP

General Recommendations

In order to address gaps in current environmental and safety aspects in KP, some general steps may be taken in addition to specific ones.

- a. Strengthened KPMMD. The focus on the KPMMD and its departments should be rudimentary on license procedures and regulatory oversight and all KPMMD staff should be versed in environmental and safety aspects. General training and understanding amongst KPMMD staff on these important topics will have a “trickle down” effect on operators, other stakeholders. (Appendix 3)
- b. Establish a formal mine worker relations system. Mine workers do not have adequate information to protect themselves; the trade union structure is very weak. Aside from low pay, neither operator nor worker gives sufficient consideration to the dangerous aspects or limited timeline for mine work. The “produce or perish” approach to pay and workers are not contractual which means they do not have benefits attached to their jobs.
 - Introduction of “Mine Workers Contract” that goes beyond the labor law requirements to adequately reflect the danger and health issues of mining.

Improved rights for mine workers including health and safety equipment and protective gear is needed as well as a system of redressal (grievance) for workers. Penalties that may be levied on mine operators rely on 1923 and 1948 legal acts and are far too low (i.e., 10-25 rs per violation) to have impact.

- c. Fortify the social and environmental framework for mining. Insufficient attention is given to the social and environmental impacts of mineral development in KP. Dramatically more attention and formalization of how Government will address these issues, expectation of mine operators, and how social and environmental impacts of mining will be monitored is urgently needed.
- d. Facilitate stakeholder consultation. As mining increasingly becomes part of the provincial economy, Government, investors and civil society dialogue must be structured to ensure that developments are sustainable and of equitable benefit to all citizens. Civil society organizations, non-government organizations, district and village councils and other structures are already in place through which consultations may be conducted. A first use of consultation may be in disseminating Government’s Minerals Policy for discussion with all stakeholders.

3.2 Key Environmental And Social Definitions That Reflect Best Practice

3.2.1 Environmental and Social Impact Assessment (ESIA)

Identifies relevant impacts, risks and benefits and, in an integrated manner, assesses their potential nature and scale. The level of detail of the ESIA is determined by the potential nature and scale of the impacts, risks and benefits of a proposed mining activity. An ESIA should be

conducted in accordance with good international practice the process of identifying and evaluating potential environmental and social impacts, risks and benefits (particularly local community development) of a proposed mining or related activity; the process may range between a comprehensive assessment where impacts, risks and benefits are numerous, diverse, and complex to a limited and focused assessment where impacts, risks and benefits are straight forward. Timelines for performance of actions as well as financial sureties to ensure that environmental and social mitigation aspects are sufficiently funded should be included.

3.2.2 Environmental and Social Management Plan (or Program) (ESMP)

An environmental and social management plan (ESMP) (i) identifies specific actions necessary for a project to manage identified impacts and risks and (ii) specifies measures enabling project benefits to be maximized for environmental and social receptors. The ESMP should be conducted in accordance with good international practice a set of actions (including responsibility and budget) to address impacts, risks and benefits identified and evaluated in the ESIA together with defined outcomes; the program may range from a comprehensive set of action plans (including but not limited to a Resettlement Action Plan, Biodiversity Action Plan, Water Management Plan, Pollution Control Plan, Community Health, Safety and Security Plan, Community Development Plan) to the straight forward application of siting, design or mitigation/compensation measures routinely used in the sector. The ESMP should also address mine closure aspects.

3.2.3 Resettlement Action Plan (RAP)

For the purpose of resettlement and compensation to the displaced populations, the mining companies must resort to resettlement if it is absolutely necessary, carry out a detailed social impact assessment that assesses prior living conditions of the project affected persons, their income levels and likely impacts of the project on the communities, compensation and mitigation strategies. Resettlement Action Plans (RAP) should be developed in consultation with the communities and that should include community development programs. They must consider land management laws and ensure the protection of cultural and historically important heritage sites. The RAP should provide for adequate financing to cover all costs of resettlement, and compensation for resettled individuals. It should also provide information on capacity-building and job training programs for project affected persons. The companies also should ensure engagement with women and marginalized sections within the communities.

3.3 Recommendations for Strengthened Environmental Management

3.3.1 Streamlining Monitoring and Oversight

The cross-cutting nature of environmental protection efforts is of course well-known, and the institutions challenged to implement are often weak or not capable. Because the issues to be addressed extend beyond mining, it is important that the roles of and types of documents required by KPMDD, the Environment Department and other relevant agencies are made clear, for example:

- (1) KPMDD will be the government agency responsible to assess pre-feasibility and feasibility studies on mining issues.
- (2) Environment Department will be the government agency responsible to assess water use, land use and other environmental quality aspects.
- (3) Forestry Department will be the government agency responsible for land management, flora and fauna issues.

3.3.2 Legitimizing

Environmental permitting must become an inherent part of sector operations – it should not be a simple “pass through” as part of a license or lease. Monitoring not only of investments but social impacts of these investments is the only way to ensure long-term benefits from non-renewable mining resources. While mining remains a provincial topic, federal authority over environment and foreign investment issues must be reconciled with KPMMD as the primary institutional intermediary. More clarity on how local families/tribes will interface with investment will be useful.

3.3.3 Include Socio-Economic Issues as Part of Environmental Issues

Over the past decade, it has become common international practice to include social-economic aspects of mine development as integral to environmental assessments. This approach is comprehensive and allows for a more complete approach to assessing what impacts of mine and related developments may be and how best to mitigate and remediate them.

Key Socio-Economic Issues and Mining

- Availability of Fresh Water
- Poverty
- Health Care
- Education
- Life Expectancy
- Relevant infrastructure

Some key socio-economic issues in mining include the availability of fresh water, impact on poverty, ensuring health care is available, levels of education to participate in mine development activities, life expectancy as a result of mine activities and the development of infrastructure to support not only mine development but mine communities. As noted in earlier deliverables under this consultancy, use of “Community Development Agreements” (CDAs) primarily with medium and large-scale mining allows mine operators and communities to identify critical social, economic and other issues and to design approaches to ensuring benefits for all stakeholders over the course of the license/lease.

Importantly, social impacts of mining and related activities can be either harmful or beneficial. Employment and educational opportunities must be balanced against noise pollution, increased dust and changed population (new market entrants will mean foreign influences). There is a definite possibility of displacing KP citizens if large scale mining operations are implemented which can generate social unrest. But, the affected community may also gain access to basic services such as electricity, sanitation, and water as a result of large-scale mining operations. The KPMMD and KP Government must continuously monitor the approach it supports to developing KP minerals and the social impacts that will emerge from this development.

At a minimum, the mining companies working in KP should be required to adopt following socially responsible mining practices:

- Enhance social and economic development in mine sites after engaging in community consultation;
- Contribute to mitigate negative social impacts of the project on local communities;
- Prevent or compensate any loss of assets and livelihood;
- Protect human health and rights of mine workers and provide social protection; and
- Contribute in community development by providing direct employment, creating business opportunities

In addition to including social-economic issues in ESIA's, KP may include social requirements in relevant natural-resource legislation such as legislation that addresses water, land management, labor and community entitlements.

3.3.4 Environmental and Social Impact Assessment Regulations

While it is possible that environmental and social requirements may be specified in a mine contract, it is preferable that a clear set of standards be in place to guide investors, government and citizens. Preparation of specific ESIA regulations will aid investors by providing clear timelines for performance, consistent use of terminology (ideally in line with international standards), and provide meaningful enforcement approaches and penalties.

Note. Artisanal and small-scale mining activities must be regulated with some attention that differs from large-scale mining. Even these smaller operations have the potential to negatively impact workers, their families and communities. In many cases, these operations are informal, not presently regulated. Issues that may immediately be addressed to this class of mining include:

- poor mining extraction methods
- use of explosives
- types of equipment used
- use of child labor
- financial reporting

It can be hoped that were predictable and publicly understood regulations in place, criminal and other affiliations that tend to infiltrate small mining operations will gradually be deterred.

3.3.5 Environmental and Social Impact Assessment (ESIA)

Environmental Audits have been used in various countries to monitor and regulate mining impacts. More formal and strategic tools such as Environmental and Social Impact Assessments (ESIAs) are now the primary tool used in the current attempts to control environmental impacts that may be associated with extractive industry operations. For KP use of the ESIA should be reviewed and designed to be of practical use and enforceable. This may, in the short term mean:

- a. Different levels of ESIA for different stages of projects (prospecting, exploration, mining)
- b. Lesser requirements for artisanal and quarry and small-scale mines than large-scale mines.
- c. Specific emphasis on certain aspects such as clean water, soil pollution, air pollution.

In implementing ESIA's, it is important that,

- mine feasibility studies must include environmental and social impact assessment findings;
- benchmark actions and timelines for mitigation actions are clear,
- institutional review and other roles of KPMDD, the Environment Department and District Government, etc. are clear; and
- enforcement provisions are available.

3.3.6 Environmental and Social Management Plans.

Environmental and Social Management Plans (ESMPs) arise from the ESIA's and provide a strategy to mitigate adverse impacts of mine developments. Risks and benefits should be included and require (i) identification, (ii) assessment and (iii) management. The identification, assessment and management process (i) informs project design, implementation and closure and (ii) recommends measures to address the potential impacts, risks and benefits to environmental and social receptors.

ESMPs are important for the life of the license/lease and require continued monitoring and evaluation by KPMMD, the Environment and Forestry Departments and any other relevant governmental agencies. ESMPs will include post-development and closing aspects as well. Environmental standards to be developed by KP may be commenced through the formation of an inter-departmental working group that as a first step may review fundamental environmental guidelines for extractive industries available in the public realm, these include:

- Operational Procedures of the World Bank, in relation to various aspects of the extractives industry procedures;
- World Bank/IFC Environmental, Health and Safety (EHS) Guidelines (General and Mining Sector Guidelines);
- ISO 14000 series on Environmental Management;
- International Finance Corporation (IFC) Performance Guidelines; and
- European Union "Best Available Technique Reference" documents of the Integrated Pollution Protection and Control Bureau.

A fundamental requirement of the EMP is the definition of the environmental management objectives to be realized during the life of a project (i.e. pre-construction, construction, operation and/or decommissioning phases) in order to enhance benefits and minimize adverse environmental impacts. The mine operator and KPMMD shall review and include:

- Description of the detailed actions needed to achieve these objectives, including how they will be achieved, by whom, by when, with what resources, with what monitoring/verification, and to what target or performance level.
- Mechanisms to address changes in the project implementation, emergencies or unexpected events, and the associated approval processes.
- Clarification of institutional structures, roles, communication and reporting processes required as part of the implementation of the EMP.
- Description of the link between the EMP and associated legislated requirements.
- Description of requirements for record keeping, reporting, review, auditing and updating of the EMP.

3.3.7 Rehabilitation, Remediation, Abandonment

International experiences are large reflecting the devastation of mines that have been improperly remediated or abandoned. Governments have learned that addressing these issues as early as is possible in the mine development phases is essential – even upon award of license/lease – how will this investor address these issues?

NOTE: When these issues are not addressed, the State inherits tremendous liabilities to clean up mine sites.

The ESMPs should be as comprehensive as possible; review by the Inspectorate, Environmental and Social monitors and KPMMD offices must be included as part of the process. It is important that either the law or the regulations are very clear about the extent of liabilities for mine operators. KPMMD and the Environment Department may develop approaches to identify liabilities so that all stakeholders have clarity on roles and responsibilities for environmental or social degradation.

3.3.8 Financial Guarantees.

The uncertainties surrounding the solvency of mining companies makes it all the more important that KP instill financial guarantees from the onset of license/lease aware to ensure that environmental or social issues will be addressed. ESMPs arising from the ESIA process should include information on the guarantees and an escrow fund may be required of license/lease holders as surety for performance.

3.4 Recommendations to Address Safety Aspects

3.4.1 Strengthened Inspectorate

As noted above, the role of inspectors in KP mining is critical and impacts the technical, safety, social and economic well-being of how the sector is developed. As modern mining techniques develop, inspectors must be aware of protocols, best practices and methodologies and what technologies are most appropriate for which types of mining. Training may be conducted at international venues but there is also a trend in Pakistan throughout various provinces to enhance inspectorate functions – inter-provincial training and linkages should be encouraged.

- Establishing a “mine simulator” may be supported with donor funds on which inspectors may be trained.
- Videos of “to do” and “not to do” mining approaches are available in the market and should be included as part of inspector training.

3.4.2 Awareness Building for Mine Operators and Miners

Building operator and miner awareness of the risks and benefits of mine safety may need to commence with a somewhat “heavy hand” – penalty based awareness building. International experience has demonstrated that operators should be penalized for worker violations, not only workers. However, absent adequate awareness of what the “rules of the safety game” are it should not be expected that key stakeholders can comply. The Inspectorate should be conducting regular awareness building for operators and miners that may be marked with “certification” of different levels. Where funding permits, support of travel to other mining destinations (i.e., South Africa, Australia) will provide invaluable first-hand viewing of best safety practices in mining.

Note. There are approximately 32,500 workers in the KP mining sector; an average of 24 workers die each year from mine-related accident/injury; 60% deaths occur from underground mining. When a worker dies in this manner, the family receives 5lak¹ from

¹ Lak = Rs100,000

Illustrative ESIA Issues
<ul style="list-style-type: none"> • Labor and working conditions • Resource efficiency and pollution prevention • Community health, safety and security • Land acquisition and involuntary resettlement • Biodiversity conservation and sustainable management of living natural resources • Cultural heritage/archaeology • Indigenous People

Government and 2 lak from the mine company. Just as attention is given to penalties, attention to worker benefits and review of child labor aspects will be useful.

3.4.3 Reporting Accidents, Injuries and Illnesses

Incidents of accident, injury, or illness are to be reported, whether the workers involved are employees of the mine operator or employees of a contractor. For incidents or accidents which pose a reasonable risk of death, mine operators must report them within 15 minutes. Otherwise, the form (that should be provided by KPMMD) must be completed and submitted to KPMMD within 10 working days after an accident or occupational injury occurs, or an occupational illness is diagnosed.

- The principal officer in charge of health and safety at the mine or the supervisor of the mine area where the incident occurred is responsible for completing the KPMMD form.
- A separate form is required on each accident, whether a person was injured or not.
- A form is required for each individual who became injured or ill, even when several individuals were injured or made ill in a single occurrence.

Recommended Reporting Requirements:

(1) **Mine operators** must call immediately, but not later than **15 minutes** from the time they know or should know that an accident has occurred to KPMMD. "Immediately Reportable Accidents and Injuries" include:

- A death of an individual at a mine
- An injury to an individual at a mine which has a reasonable potential to cause death
- An entrapment of an individual for more than thirty minutes or which has a reasonable potential to cause death
- An unplanned inundation of a mine by a liquid or gas
- An unplanned ignition or explosion of gas or dust
- In underground mines, an unplanned fire not extinguished within 10 minutes of discovery; in surface mines and surface areas of underground mines, an unplanned fire not extinguished within 30 minutes of discovery
- An unplanned ignition or explosion of a blasting agent or an explosive
- An unplanned roof fall at or above the anchorage zone in active workings where roof bolts are in use; or, an unplanned roof or rib fall in active workings that impairs ventilation or impedes passage
- A coal or rock outburst that causes withdrawal of miners or which disrupts regular mining activity for more than one hour
- An unstable condition at an impoundment, refuse pile, or culm² bank which requires emergency action in order to prevent failure, or which causes individuals to evacuate an area; or, failure of an impoundment, refuse pile, or culm bank

² Culm is strata of mainly shale and limestone with some coal thin coal seams; likely present in KP

- Damage to hoisting equipment in a shaft or slope which endangers an individual or which interferes with use of the equipment for more than thirty minutes
- An event at a mine which causes death or bodily injury to an individual not at the mine at the time the event occurs

(2) **Subcontractors are required to report in accordance with Mine operators requirements above.**

(3) **Independent contractors** are required to:

- Report accidents, injuries, and illnesses to KPMMD. If an accident, injury or illness occurs at or in conjunction with activity at a mine, independent contractors are required to report immediately.
- Report immediately reportable accidents and injuries to KPMMD. An independent contractor must call immediately, but not later than 15 minutes from the time they know or should have known that an accident has occurred.

3.4.4 Development of and Enforced Explosives Policy/Regulations

An immediate action that may be taken by KPMMD is to halt any operations that are engaging dynamite. Alternative approaches to granite and marble quarrying may be suggested by the KPMMD Inspectors.

Non-explosive demolition agents³ are commercial products that are an alternative to explosives in demolition, mining, and quarrying. To use non-explosive demolition agents in demolition or quarrying, holes are drilled in the base rock like they would be drilled for use with conventional explosives. A slurry mixture of the non-explosive demolition agent and water is poured into the drill holes. Over the next few hours the slurry expands, cracking the rock in a pattern somewhat like the cracking that would occur from conventional explosives.

Non-explosive demolition agents offer many advantages including they are not prohibited to be brought into Pakistan and obtained by small and artisanal miners, that they are silent and do not produce vibration the way a conventional explosive would. In some applications conventional explosives are more economical than non-explosive demolition agents. In many countries these are available without restriction unlike explosives which are highly regulated.

These agents are much safer than explosives, but it is important to follow directions closely in order to avoid steam explosions during the first few hours after these materials are placed.

Environmentally sound. All manufacturers tout their products as being non toxic and benign to the environment. Most are made of oxides or silicates mixed with an organic compound, which combines to create a quickly expansive product. Aside from its non-toxicity, these very controlled non explosive mining techniques allows controlled demolition which results in virtually no dust or uncontrolled scattering of debris and resulting in a much safer work environment.

Cost effective. Although all manufacturers claim their products to be cost efficient, there is very little data that show cost comparisons between conventional explosive mining and non explosive mining using these products. It is presumed that this product itself is more costly than explosives. However the cost savings presumably come from the safety aspect, resulting in fewer work casualties and deaths, and savings as to the controlled nature of the expansive event which

It is presumed that this product itself is more costly than explosives. However the cost savings presumably come from the safety aspect...

³ Vaughan Smith, mine technical specialist

directs the debris to a confined area, making quicker clean up.

3.4.5 Requirement and Financial Support for Protective Gear

Certain technologies and protective gear are not known or at least not available in KP mining operations. Fundamental requirements should include use of steel-toed boots and helmets but financing support to smaller operators must be similarly considered. For large-scale mining operations a standard list of safety equipment must be included in mine contracts and closely monitored by the Inspectorate.

3.4.6 Cost of Mining

As part of the mine plan, operators must be required to include health and safety projected costs and planned investments. KPMDD must conduct careful analysis of these figures – it may be that the costs of ensuring safe mining are higher than the projected commercial benefit in which case a license/lease should not be granted.

4. Appendices

Appendix 1

“Quarry License” Illustrative “Paper Cadastre”

Process for sand, gravel, construction material for up to \$1.5 million investments

1	Application received from applicant by Cadastre	Quick Cadastre Map & site check by technical delegation of Cadastre office
2	Application registered inc date and time & Cadastre ‘Mine File’ opened in Cadastre	Allocated provincial alpha/numeric number (Steps 1 & 2 = 3 day as soon as possible)
3	Application passed to Mine Directorate with request for site visit. Letter sent to the relevant District Authorities by KPMMD. Cadastre apply for funds for advertisement	KPMMD Director of Finance Admin to approve site visit and funds. Site visit must be undertaken within 10 days of receipt of application
4	Site visit undertaken and site visit report prepared according to standard form.	Site visit report approved by KPMMD and notify Cadastre office to update and save data in to the Cadastre Map and Computer Database (Steps 3 & 4 = 15 days)
5	Cadastre places advertisement as per standard procedure e.g. to include plans for Mine & Social & Financial Capability.	Advertisement placed for 3 days
6	Interested applicants collect bidding docs (Mining form and TOR) and pay the required fee and submit within 15 days (all to Cadastre)	Applications registered by Cadastre. Receipt for fee is given. Deadline for receipt after collecting docs = 12 days . Register all bids. Cost?
7	Receiving of bids on std forms before expiry date for bids and organizes Evaluation and bid opening Commission by provincial Director or Kabul cadastre and notify the provincial Governor.	Receiving of security deposit or Guarantee letter from all applicants. Issue receipts for security deposits (Steps 5, 6, 7 = 15 days).
8	Evaluation Commission opens bids on approved date. According to procedures for opening bids.	Register details of bids –Cadastre
9	Evaluation of bids by KPMMD	Evaluation conducted by Mining Commission (or special Quarry Commission?)
10	Winning bid agreed	By Evaluation Commission
11	Bid winner notified. Invited to participate with KPMMD in contract negotiations.	All other security deposits returned to unsuccessful bidders (Steps 8 – 11 = 1 day) by Cadastre
12	Mine Contract negotiated	Use Mine Contract template (may be shortened for quarries) (Step 12 = 3 days)
13	Conclusion of Mine Contract by KPMMD after the completion of the necessary docs	Copies of contract sent to Cadastre.
14	Issue of the License for the mineral right after the issue of the Environmental permit.	Copies of Mine Contract and License sent to relevant KP government departments.
15	Notification to Inspectorate	Inspectorate opens Quarry/Mine File for routine inspections.

Steps 1-12 should take about 35 working days to complete.

Quarry/Mining site accepted for the proposed mining of the material requested.

Yes No

SIGNED BY:

Engineer1: _____
Name Signature

Engineer2: _____
Name Signature

Engineer3: _____
Name Signature

APPROVED BY THE KPMDD

DATE:

SIGNATURE:

Appendix 3

Environmental Management Course (Illustrative)

Objective To provide KP leadership with tools and understanding of typical and critical environmental management and rehabilitation issues associated with mining and quarrying and related activities. To ensure that managers are sufficiently informed to identify issues, identify measures to address them, develop, monitor and enforce international mining environment standards.

Participants KPMMD Department Heads
KP Environment Department Staff
Mine Inspectors
Mining Commission Members

Course Structure

Using a world-class international mine environment expert, a basic course may be conducted in two weeks and tailored to meet priority topic areas relevant to KP mining.

Illustrative Topic Areas

- An introduction to the structure and operations of mines/quarries
- Current status of environmental mine management in KP
- International approaches to environmental management of mining
 - Legal hierarchy of environmental guidance (treaties, laws, regulations)
 - Mine design
- Definitional tools
 - Environmental and Social Impact Assessments
 - Environmental Management Plans (Programs) (EMP)
 - Environmental Baseline Study (EBS)
 - Mine Plans
 - Mine Closure Plans
 - Waste Management Plans
 - Health and Safety Plans (environmental aspects)
 - Rehabilitation Plans
- Environmental mine management issues
 - Use of Explosives
 - Drilling
 - Water
 - Waste management, Tailings, Storage
 - Industrial processing (e.g., washing, refining, crushing)
 - Seismic drilling (primarily for oil/natural gas)
- Biodiversity/Environmental Mapping
- Environmental Monitoring and Audits

Environment and Social Impact/Community Development

- Nexus between Environment and Social Impact/Community Development
- The Social Baselines and Impact Assessments
- Inter-governmental department cooperation

- International experience of community relations and mine security
- Community Development Agreements and Community Development Plans

Environment and Health and Safety

- Industry Structure –inter-governmental provincial department roles
- National/Departmental structure and responsibilities – international experience
- Health and Safety national regulations
- Roles of mine managers and mine workers
- Health and Safety terminology
- Health and Safety aspects in mining
 - Mining/quarrying equipment
 - Personal safety equipment
 - Reporting “incidents”, etc.

Appendix 4

Licensing and Use of Explosives⁴

Table of Contents

1. Definitions
2. Blasting Licenses
3. Use of Explosives
4. Permit for the purchase and storage of Explosives
5. Storage magazines for Explosives
6. Transport of Explosives
7. Manufacture of Specified Explosives at a Mine

Definitions

- a. “ammonium nitrate blasting agent” means an explosive consisting of a mixture of ammonium nitrate and non-explosive components that is non-water resistant (i.e., ANBA, ANFO or ANFEX);
- b. “approved explosives” means explosives and initiators approved by the KPMDD for use in mines;
- c. “blasting cartridge” means any explosive enclosed in any case so as to form a cartridge for use in blasting operations;
- d. “blasting license” means a license to conduct blasting operations, issued by an Inspector;
- e. “blasting license holder” means a competent person who is the holder of a valid blasting license;
- f. “capped fuse” means a length of safety fuse, at one end of which a detonator has been attached;
- g. “class of explosive “ means class or type as per the schedule of approved explosives;
- h. “detonator” means a capsule containing explosives designed to initiate an explosion in other explosives;
- i. “direct supervision” means that a person working under the direction of a competent person is always within the competent person’s sight;
- j. “detonating fuse” means a cord-like device containing explosives which will explode at high velocity and used to initiate explosion in other explosives;

⁴ Illustrative based on extractions from various mining destinations including South Africa, Argentina, Australia, USA

- k. “explosives box” means a box of an approved design that may be locked provided for the storage of explosives near the mine activities;
- l. “explosives factory” means any site licensed for the manufacture of explosives;
- m. “explosives magazine” means a building or structure at place on surface, whether moveable or immovable, which is licensed for the storage of explosives;
- n. “explosives store” means a secure, temporary place of storage of explosives immediately prior to use, approved by the manager, and does not include an explosives magazine;
- o. “hole” means a hole drilled in rock for the purpose of charging with explosives in order to break rock;
- p. “igniter cord” means a cord which does not detonate but transfers a flame from the point of ignition to a safety fuse or detonator;
- q. “license to manufacture” means a license to manufacture explosives issued under Pakistan law;
- r. “misfire” means an explosive charge which has failed or partially failed to explode;
- s. “mis-fired hole” means a hole in which the explosives have failed or partially failed to explode;
- t. “primer cartridge” means a the only blasting cartridge, or one of a column of blasting cartridges forming the total charge in a hole, to which is attached a detonator or detonating fuse for initiating a blast;
- u. “safety fuse” means a fuse for blasting, which burns and does not explode;
- v. “socket” means the part of a hole that remains after the hole has been charged with explosives and blasted;
- w. “specified explosives” means ammonium nitrate blasting agent or other explosives products for which the KPMMD may issue a license for manufacture at a mine;
- x. “old explosives” means explosives that have been used to charge a hole and have failed to explode, or explosives that have been stored beyond their expiration date or have become unstable;
- y. “workplace” means any place where blasting operations are or have been carried out.

Blasting License

2.1 A competent person wishing to apply for a blasting license shall make application on the appropriate form to be examined by an Inspector. The application shall be accompanied by,

- a. the required fee;
- b. proof of experience;
- c. a letter of recommendation from the mine manager;
- d. a security clearance;
- e. proof of age; and
- f. two photographs

2.2 The examination of the candidate by the Inspector shall test the candidate's knowledge of the KPMDD mining and explosives procedures in respect of,

- a. the examining and making safe of workplaces of any kind where blasting operations have taken place or will be taking place;
- b. the risks arising from the presence of noxious gases and fumes;
- c. the handling, use of and storage of explosives;
- d. the disposal of old explosives;
- e. procedures in the event of an accident; and
- f. all aspects relevant to health and safety and the responsibilities of a blasting license holder

2.3 A blasting license shall permit the holder to,

- a. be appointed as a competent person to conduct blasting operations; and
- b. be in charge of the transporting, storing and use explosives.

2.4 If at any time the holder of a blasting license is, in the opinion of the manager, guilty of an act of negligence in relation to the transport, storage or use of explosives, the manager shall notify an Inspector.

2.5 If in the opinion of the Inspector, the holder of the blasting license has been negligent in any respect of his work in relation to explosives, the Inspector may suspend the blasting license for a given period or in the case of extreme negligence, cancel the blasting license.

Use of Explosives

3.1 Responsibilities of Mine Manager - The manager of every mine where blasting operations are carried out shall:

- a) appoint competent persons to be in charge of all workplaces in the mine and to conduct blasting operations;
- b) cause the times of blasting to be so arranged, and specify the minimum period prior to re-entry to any blasted workplace, so that workers are not exposed to risk from delayed detonation or fumes or dust from blasting;
- c) ensure that the appointed competent person in charge of any workplace, is the first to enter the area after blasting has taken place; and
- d) ensure that if any person reports that the place in which he is working is unsafe, steps are taken to immediately persons and not to allow them to return until the workplace has been examined by a competent person and certified to be safe.

3.2 Blasting License Holders - every blasting license holder shall ensure that,

- a. no person enters the workplace until the holder declares it safe and authorizes them to do so;
- b. persons assisting the holder to make the area safe work under his direct control and are not exposed to danger; and
- c. if, during the course of work, a dangerous situation occurs, remove all persons from the unsafe area and takes all necessary measures to make the area safe before allowing any persons to re-enter.

3.3 Blasting Operations - No person shall,

- a. transport explosives except under the direct supervision of a blasting license holder, except where the explosives are in locked containers and the keys retained by the blasting license holder;
- b. remove from the storage magazine more explosives than are necessary for immediate use;
- c. store or carry or allow to be stored or carried blasting cartridges, blasting cord or ammonium nitrate blasting agent together with detonators, capped fuse or primer cartridges;
- d. carry or allow to be carried, explosives unless they are carried in strong containers of a design and construction approved by an Inspector;
- e. allow explosives to be left unattended except when stored in a locked magazine or an approved explosives storage box;
- f. allow sourced of ignition to be within two meters of explosives;
- g. allow any person to smoke when handling, transporting or working with explosives;
- h. extract or attempt to extract explosives from a hole that has been charged unless he is the holder of a blasting license;
- i. extract explosives from a hole in which an electric detonator has been used. Such holes shall be re-blasted; or
- j. clean out a misfired hole unless he is the holder of a blasting license and uses a wooden or other non-ferrous scraper.

3.4 Marking and Drilling of Holes

- a. no hole shall be pointed out or marked for drilling except by the holder of a blasting license;
- b. no hole shall be drilled before all loosened rock has been removed and the area washed and examined for misfired holes and sockets, and in the event of being under water, blown over with compressed air; and
- c. no hole shall be drilled closer than 150 mm from a socket or closer than 2 meters from a misfired hole or in a direction that will bring it closer than 2 meters from a misfired hole.

3.5 Charging and Blasting of Holes

- a. only wooden or other non-ferrous rods of an approved material may be used to press home an explosive charge;
- b. charging rods shall have a diameter small enough to fit easily into the hole and shall be cut square at the end;
- c. no person shall force explosives into a hole which is not of sufficient size to freely admit the explosive cartridges;
- d. no person shall use igniter cord in contact with timber or other combustible material which is not part of the charge;
- e. a barricade shall be erected before charging with explosives begins in any workplace;
- f. no charging shall take place until a reasonable time before blasting is to be done;
- g. in a quarry or opencast mine, no blasting shall take place unless a warning siren is sounded three times and responsible persons are positioned with red flags at all possible approaches;
- h. in a sinking shaft, no blasting shall take place unless there is a ladder, rope, windlass or other means of exit to assure the blaster of reaching a place of safety.

3.6 Electric Blasting - where blasting operations are being conducted in a quarry or open cast mine and electric blast initiation systems are used,

- a. preparations for charging and blasting shall not be continued on the approach of or during an electrical storm and all persons shall at a safe distance from any explosives;
- b. the holder of a blasting license shall only use a cable in good order and of sufficient length to allow for the blasting of explosives from a safe distance;
- c. the holder of a blasting license shall ensure that the cable cannot come into contact with other electrical apparatus;
- d. the holder of a blasting license shall, at all times carry with him the operating handle or key of the shot exploder to prevent unauthorized use;
- e. the holder of a blasting license shall not connect the detonating wires until he is satisfied that all persons have been withdrawn to a safe distance, that all access to the area has been barricaded and that a warning has been sounded in the prescribed manner; and
- f. the holder of a blasting license shall immediately after blasting, disconnect both leads from the shot exploder and remove the operating handle and key.

3.7 Duties of the Person in Charge of Blasting Operations - In all underground workplaces where drilling and blasting operations take place,

- a. the workplace shall be under the control of the holder of a blasting license;
- b. the holder of a blasting license shall be the first person to enter the working place, examine and ensure that it is safe. He may be assisted in this by persons under his direct control;
- c. the holder of a blasting license shall ensure that there is adequate ventilation;
- d. the holder of a blasting license shall water down and ensure that there is adequate suppression of dust; and
- e. the holder of a blasting license shall ensure that all barricades, supports and platforms are in place and in safe condition.

Permit for Purchase and Storage of Explosives

- An application for a permit to obtain, store and use explosives shall be made to the KPMMD on the prescribed form.
- The KPMMD shall, on receipt of such application, send a copy of the application to the Pakistan National Police for approval.
- On receipt of approval from the Pakistan National Police, the KPMMD shall issue a license provided that he is satisfied that all conditions prescribed in the Mining Regulations in relation to storage, transport and safekeeping of explosives have been complied with. The KPMMD may specify the maximum quantity to be purchased in any time period and shall specify the maximum quantity to be stored at the mine at any one time, having regard to storage facilities available at the mine.
- The KPMMD may revoke a license if at any time it believes that the manager has substantially failed to comply with the provisions of these Procedures. Revocation of a license shall be subject to the appeal and dispute resolution provisions established in these Procedures.

Storage Magazines for Explosives

- a) Explosives magazines shall be located in places that ensure the safety of persons and property and, in the case of underground magazines, shall in all cases be located away from shafts and means of entry and exit to the mine, and as far as is practicable, away from fresh air intakes.
- b) Explosives magazines shall be constructed in a manner and to a standard prescribed by the KPMMD.
- c) Explosive magazines shall be securely fenced and warning notices shall be placed on the fence on all sides and on all roads or access paths.
- d) Explosive magazines shall be provided with efficient lightening conductors.
- e) Fuses, igniter cord, detonators and other initiators may not be stored in any place within 500mm of other explosives.

- f) A copy of the license to store explosives shall be posted inside every explosives magazine.
 - g) The manager shall appoint a blasting license holder to be in control of the explosives magazine for the receiving, issuing, recording and safe custody of the explosives.
 - h) Every explosives magazine shall be fitted with approved locks and be kept locked at all times except when issuing or receiving explosives. The keys shall remain in the custody of the person responsible.
- 4.1 A register of receipts and issues of explosives shall be kept in the magazine and be available to an Inspector. At weekly intervals, the stock of each product stored in every magazine shall be counted and reconciled with issues and receipts, and any discrepancy immediately reported to the manager who shall take appropriate action.
- 4.2 Explosives shall be used in the order in which they were received into the magazine, i.e. last in, last out (LIFO).
- 4.3 No person may enter an explosives magazine wearing shoes which allow metal to come in contact with the floor.
- 4.4 No sources of ignition may be taken into an explosives magazine.
- 4.5 No person may smoke in or near an explosives magazine.
- 4.6 No underground explosives store shall at any time hold a quantity exceeding three days' estimated consumption.

Transport of Explosives

- a. All explosives being transported from the supplier to a magazine shall be under the control of a competent person who shall remain with the explosives at all times.
- b. All explosives being transported must be either locked in an approved container or covered with a tarpaulin or other suitable covering and must be secured so as to prevent them falling.
- c. Explosives shall be transported directly from the supplier to the storage magazine, as far as practicable in daylight hours.
- d. Vehicles used to carry explosives must be constructed in such a manner as to ensure that no metal parts can come into contact with the explosives.
- e. During transportation, fuses, igniter cord, detonators and other initiators may not be placed or stored in any place within 500mm of other explosives.
- f. Vehicles carrying explosives shall avoid towns as far as practicable and shall strictly observe any restrictions that may have been imposed by any authority on routes and times.
- g. During thunder storms, vehicles carrying explosives shall be stopped at least 500 meters from inhabited places.
- h. The engines of vehicles transporting explosives shall be switched off during loading and unloading of explosives.

Manufacture of Specified Explosives at a Mine

- a. An application to manufacture explosives at a mine shall be made by the manager to the KPMMD on the prescribed form.
- b. On receipt of such application, the KPMMD shall send a copy of the application to the Pakistan National Police for approval.
- c. On receipt of approval from the Pakistan National Police, the KPMMD shall issue a license to manufacture explosives, provided that he is satisfied that all conditions prescribed in the Mining Procedures in relation to the manufacture of explosives have been complied with.
- d. No person may manufacture explosives unless in possession of a license to manufacture explosives, and then only in the explosives factory detailed in the license.
- e. Only the type of explosives specified in the license may be manufactured in the explosives factory.
- f. No person may manufacture a quantity of explosives greater than that specified in the license.
- g. All explosives manufactured in the factory are to be used at the mine locations specified in the license.
- h. The manager shall appoint a blasting license holder to be in control of the explosives factory.
- i. A register shall be kept by KPMMD of all explosives manufactured in and issued from the explosives factory.
- j. No person may smoke in or near an explosives factory nor may open flames be taken into an explosives factory.
- k. Explosives factories shall be securely fenced and warning notices must be placed on the fence on all sides and on all roads or access paths.

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