IRMA

Initiative for Responsible Mining Assurance

Standard for Responsible Mining Draft v1.0

July 2014

The Initiative for Responsible Mining Assurance (IRMA)

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PHOTOS ON COVER, CLOCKWISE FROM TOP

Zortman-Landusky mining complex, Montana, USA. Photo by Earthworks

Barrick's Porgera Gold Mine in Papua New Guinea, with village in foreground. Photo by Marta Miranda

Fish killed in the Tizsa River by the Baia Mare cyanide spill, Romania. Photo by Tibor Kocsis

Anglo American miner, South Africa. Photo by Anglo American

Contents

Notes on this draft

We invite your review of this first public release of a draft Standard for Responsible Mining as developed by the Initiative for Responsible Mining Assurance (IRMA). We will appreciate your feedback, suggestions for improvement, and also your recommendations of others to whom this should be sent.

This draft Standard was created by the IRMA Steering Committee in consultation with representatives from each of the five sectors involved in IRMA:

1) organized labor,
2) nongovernmental organizations (NGO),
3) mining companies,
4) impacted communities, and
5) downstream users (private businesses purchasing mined materials for the products/services they provide).

After several years of preparation, cooperative dialogue and expert consultation, the Initiative for Responsible Mining Assurance has reached a milestone in its process by releasing the draft Standard for public comment. While Steering Committee members have not reached agreement on all aspects of the standard, they believe that now is an appropriate time to open up the standard to broader consultation and input. The Steering Committee has elected to release the draft Standard in its current form with full expectation that there will be a robust and engaged comment period in which diverse stakeholders will weigh in on each chapter to provide expert insight and nuanced guidance. We welcome individuals and organizations worldwide to comment and inform the next version of the draft Standard to be released for a subsequent round of public comment.

The IRMA Steering Committee will continue to review and revise the working draft through a full, publicly accessible standards development process scheduled to take place during 2014 and 2015, in line with the ISEAL Code of Good Practice for the Development of Social and Environmental Standards.

Representatives from each of IRMA's five sectors (labor, NGO, impacted communities, mining industry and downstream business users of mined materials) will carry out proactive outreach to encourage diverse meaningful feedback from stakeholders around the globe throughout that process. We encourage you to share this draft with your colleagues and others you think may be interested and let them know of our desire to hear their feedback.

IRMA will be accepting feedback on the first draft of the IRMA Standard for Responsible Mining until 22 October 2014. We encourage interested stakeholders to provide feedback through our online survey tool: www.surveymonkey.com/s/DraftIRMAStandard_07-2014

Comments may also be emailed to us at: info@responsiblemining.net

Further information about IRMA is available at our website at: www.responsiblemining.net. Information on IRMA's standard development process is on the IRMA website at: www.responsiblemining.net/the-irma-process/standard-development.

IRMA Founding Members have agreed to the following principles as a basis for their participation in IRMA and/or initiatives or projects that flow out of IRMA:

- We are committed to and recognize the value of a multi-sector process and solutions with the participation of all sectors.
- We acknowledge that we must develop strategies and systems that add value for all sectors, recognizing that different sectors define value differently.
- We recognize that while we may not always agree, and that sometimes our disagreements may be aired in public, we see value in finding solutions where we are able to find agreement. We are therefore committed to dialogue despite these disagreements or differences of opinion.
- We are committed to a process that seeks to improve and advance best practices and standards.
- We will seek to learn from and build upon current examples of site-based good practice as well as broader initiatives that are underway.
- We will seek to identify and recognize progress and improvements at existing operations, understanding that there could be, in some cases, inherent limits as to what can be achieved at these sites. We recognize that in certain cases sites with complex and challenging issues could implement improvements that could lead to certification.
- We recognize that in certain cases, whether or not there is governmental approval, due to potential impacts or other values or benefits, no mining could be the best option. We seek to advance methodologies that allow such decisions to be made within a sustainable development context. We also recognize that we must pursue solutions that avoid simply leaving the mining of such sites to less responsible operators.
- We will ground our standard setting and verification process in sound science with regard to all stages of mine development through closure, giving careful consideration to identified risks, while recognizing that scientific uncertainty is not a reason for inaction, and respecting traditional knowledge, custom and values.
- We agree that efficiency is essential. We seek to develop and advance criteria, targets, benchmarks and processes that integrate, whenever possible, existing tools, processes and resources, such as current reporting or auditing. We seek to build on existing knowledge and systems where applicable.
- We agree to develop a list of agreed-upon topics for standards that includes, at a minimum, those topics previously agreed upon in IRMA.
- We recognize that it is essential to develop a system that enables mutually acceptable, credible, independent, third-party verification of compliance with standards, thresholds or performance targets. Accordingly, we seek to create a system that offers public recognition for such compliance and a mechanism to ensure that these commitments are being met in practice on an ongoing basis.

A.
Preamble

The IRMA Standard for Responsible Mining

Modern societies rely on mined minerals and metals to function. Nearly everything manufactured or constructed – from buildings to roads to computers and trains – contains material mined from the Earth.

Mining is a complex and intensive process that can have major environmental and social impacts. In even the best-managed mines some degree of disturbance is inevitable. In some cases the potential for harm may mean that a decision not to mine may be the best option. In many cases, however, the most negative social and environmental impacts can be avoided if companies operate according to best practice standards.

Many organizations and initiatives have developed guidance for different elements of responsible mining. Guidance exists for stakeholder relations, respect for indigenous peoples, the implementation of the UN Guiding Principles on Business and Human Rights, the use of cyanide, management of water, and for many other social and environmental aspects of mining.

Some organizations have specialized in providing guidance for particular mining sectors such as gold, coal, bauxite or tin mining, or for particular groups, such as small-scale or artisanal miners. However, no standard has yet been developed that specifies best practice performance requirements that are applicable to all kinds of industrial mining worldwide, that are designed to be independently auditable at the mine site level, and that are supported by leading companies as well as civil society organizations. The IRMA Standard for Responsible Mining aims to fill this gap.

Once completed, the IRMA Standard for Responsible Mining will be a key part of a global mining assurance system consisting of six integrated elements:

- The international IRMA Standard for Responsible Mining, endorsed by leading stakeholders from all key stakeholder groups;
- A trusted, independent, third-party mechanism to verify implementation of the standard;
- Communication tools (such as certificates, approved claims and labels) to generate rewards for companies that implement the standard;
- Mechanisms for resolving disputes relating to the implementation of the IRMA system;
- A membership program designed to generate and maintain long-term support for the system from all key stakeholder groups;
- An organizational structure sufficient to ensure the long-term stability and success of the system as a whole (for example through one or more legal entities and associated personnel, governance and financial resources).

Standards Development

Development of the IRMA Standard for Responsible Mining is being overseen by the IRMA Steering Committee, which includes representation from mining companies, downstream users of minerals and metals, non-governmental organizations specializing in social and environmental aspects of mining, mining-affected communities and labor unions.

All decisions relating to the approval of the IRMA Standard for Responsible Mining are taken by the Steering Committee through a balanced decision-making process in which support is required from all IRMA stakeholder groups.

The IRMA Steering Committee currently comprises:

IRMA Stakeholder Sector	IRMA Steering Committee Participation
Mining Companies	Jon Samuel, Group Head of Government and Social Affairs, Anglo American
Downstream Users	Anisa Kamadoli Costa, Vice President of Global Sustainability & Corporate Responsibility, Tiffany & Co. Susan Posnock, Director of Public Affairs, Jewelers of America
Non-governmental Organizations	Payal Sampat, International Program Director, Earthworks Alan Young, Director, Corporate Programs, Canadian Boreal Initiative
Affected Communities	Larson Bill, Community Planner, Western Shoshone
Labor	Glen Mpufane, Director, Mining and Diamonds, Gem, Industries and Ornament and Jewelry Processing, IndustriALL Joe Drexler, Head, Strategic Campaigns Department, United Steelworkers Canada

IRMA is committed to developing a formal standards development procedure, in line with the requirements of the *ISEAL Code of Good Practice for Setting Social and Environmental Standards, P005, version 5.01* (June 2010),[1] and in consequence complying with the applicable requirements of the *ISO/IEC Guide 59 Code of Good Practice for Standardization* (February 1994) and the *WTO Agreement on Technical Barriers to Trade (TBT), Annex 3: Code of Good Practice for the Preparation, Adoption and Application of Standards* (January 1995).

The first draft of the IRMA Standard for Responsible Mining is scheduled for publication in July 2014, for review, consultation and field testing during 2014 and 2015, and for finalization in July 2015.

B.
Introduction
to the IRMA Standard

Scope

The IRMA Standard for Responsible Mining (the IRMA Standard) is intended to be applicable to all kinds of industrial mining (including surface, sub-surface and solution mining) with the exception of the energy fuels sector including oil and gas, and with more work needed before consideration of thermal coal and uranium.

The IRMA Standard is not designed to be applicable to small-scale or artisanal mining, but is intended to avoid or mitigate potential negative impacts of industrial mining on small-scale or artisanal miners. IRMA expects to work with other organizations and standards systems that specialize in the needs of small-scale and artisanal miners to ensure that this objective is achieved.

Overall Objectives

The overall objective of the IRMA Standard for Responsible Mining is that industrial mining should:

- respect the human rights and aspirations of affected communities;
- provide safe, healthy and respectful workplaces;
- avoid or minimize harm to the environment; and,
- leave positive legacies.

The IRMA Standard aims to support the achievement of this overall objective by defining best practice in relation to the social and environmental aspects of mining within its defined scope.

Best Practice

Best practice is defined as practices that are widely recognized by interested stakeholders as being the most effective way to achieve agreed goals, given the current state of knowledge.

In the context of the drafting of the IRMA Standard, this has been interpreted to mean that the Standard should consist of a set of auditable requirements that reflects agreement of the multi-stakeholder IRMA process on the most effective way to achieve the agreed social and environmental objectives of each chapter of the IRMA standard, given the current state of knowledge.

The IRMA Standard is intended to specify levels of performance such that a mine that is operating according to best practice could reasonably be expected to conform with all the specified requirements of every chapter.

Mine Life Cycle Application

The requirements of the IRMA Standard are intended to be applicable to mining projects at all phases of the mine life cycle (exploration, construction, operations and closure), and for assessment of compliance to be possible at any stage of the mine life cycle, unless otherwise stated.

Once the draft standard has been completed IRMA expects to develop supplementary guidance to explain in more detail how the standard should be applied, and how conformity should be assessed, at different phases of the mine life cycle.

It is recognized that different aspects of some requirements will be assessed at different phases of the life cycle (for example, whilst planning requirements in relation to mine closure may be assessed even at the construction phase, effective implementation of those requirements cannot be assessed until closure is under way or completed).

The IRMA Steering Committee will also consider and develop policies to address non-compliances that took place prior to the date of assessment.

Structure

The standard is divided into 28 separate chapters, addressing key social or environmental aspects of responsible mining. The chapters are organized within five broader sections as follows:

- Business Integrity
- Social Responsibility
- Environmental Responsibility
- Reclamation and Closure
- Management Systems

Each chapter of the standard has the following structure:

Background: a short introduction to the issue covered in the chapter, which may include an explanation of why the issue is important, a description of key issues of concern, and the identification of key aspects of recognized or emerging best practice that the standard aims to reflect.

Objectives/Intent statements: a short description of the key objectives that the chapter is intended to contribute to.

IRMA System Impact Indicators: the specification of indicators that would allow progress towards IRMA's global objectives to be measured over time.

It should be emphasized that these indicators are *not* intended to measure or monitor compliance, or progress towards compliance, with the IRMA Standard's requirements. Instead, they are intended:

- to provide a link between the higher level objectives of each chapter and the more detailed process and performance specifications that make up each chapter's requirements, and thereby to guide the development of those detailed process and performance specifications

- to provide a framework:

    - for monitoring the extent to which compliance with the IRMA Standard is achieving the standard's higher level objectives at certified mine sites;

- for comparing performance in IRMA-certified mine sites with performance in comparable, non-certified mine sites;

- for monitoring progress towards IRMA's global objectives at all mine sites, whether IRMA-certified or not.

The IRMA Standard is expected to require that IRMA-certified projects monitor their own performance in relation to these indicators and report this information to IRMA in a standardized format, and on a regular basis. Over time, these data will provide a basis for monitoring the extent to which the IRMA system as a whole is achieving its global objectives, and for continuous improvement in the system's design as required.

Requirements: specification of the requirements that must be met for an IRMA certificate to be issued and subsequently maintained by a mining project. Responsibility for ensuring that the requirements are met rests with the operating company that applies for certification, and which (if successful) subsequently holds the project's certificate of compliance.

Although the scope of the certificate applies to a specific mining project, and responsibility for ensuring that the requirements are met rests with the operating company that holds the certificate, IRMA requirements may be specified that would be implemented by the project's corporate owner(s), by the operating company, and/or by other project partners, contractors or subcontractors working on the mining project. The operating company is responsible for ensuring that where work related to the mining project is implemented by contractors or subcontractors, those contractors or subcontractors are in full compliance with the IRMA Standard's requirements.

The requirements are intended to bear a clear relationship to the achievement of the specified objectives.

Requirements may include both system requirements (e.g. the existence of policy statements supported by documented procedures and requirements for record keeping) and performance threshold requirements (e.g. specifications of levels of performance that must be achieved during operational implementation). The choice and/or combination of system and performance requirements is guided by practicality, efficiency and the ability to assess conformity.

Requirements may be defined at a relatively high level, or at a very specific level, as appropriate. Separate guidance will be developed at a future date to clarify IRMA's expectations for conformity, and to clarify how such conformity can be assessed objectively by an independent auditor.

Requirements may in some cases consist of hierarchical elements at more than one level, for example there may be a high level requirement that "The operating company shall ensure that X is the case", followed by a list of several requirements that can be assessed to determine whether X is the case. Applicants for certification may be required to meet all the elements of such a list, or may be required to achieve one or more of the elements of such a list, as specified.

Means of Verification: for each requirement the standard lists one or more 'means of verification'. The means of verification are non-normative. They are intended to clarify the sources of information that an auditor would be expected to have access to and/or the kinds of activities that the auditor would be expected to undertake in order to verify conformity with each requirement.

Examples of means of verification could include:

- a documented policy statement published on a publicly accessible website;
- specification of a procedure in a procedure manual;
- review of water quality records

- physical inspection
- confidential interview with a formal labor representative;
- consultation with an elected representative of a local community;

The documentation or records that are required to demonstrate conformity with the IRMA Standard do not have to be prepared exclusively or specifically for that purpose. Documentation or records that have been prepared to meet a company's legal obligations, or to meet a company's voluntary commitments, may also be submitted to demonstrate conformity with the requirements of the IRMA Standard.

Where a requirement of the IRMA Standard specifies that information must be publicly available, publication of the requisite information on the internet for free public download is sufficient to meet the requirement.

Language

The IRMA Standard follows ISO guidance in the use of the word 'shall' to indicate a requirement that must be met. For example, "There shall be an environmental impact assessment for the mine site".

The requirements of the IRMA Standard have been drafted taking account of the intent that conformity will be strictly assessed in accordance with the wording.

If there is intended to be flexibility in relation to a requirement, for example if it is intended that time is permitted to implement a requirement, or that a limited number of elements from a longer list must be implemented, then this is specified in the wording of the requirement.

A range of technical terms are defined in the accompanying Glossary. Where these terms appear in the text of the requirements they are highlighted in blue the first time the term appears in each chapter. The meanings of terms given in the glossary are considered to be normative for the purpose of interpreting the IRMA Standard.

Application in Relation to Scale and Type of Mine Site

All certified mine sites of whatever scale or type will be required to comply with all relevant requirements of the IRMA Standard. The requirements have therefore been drafted at a level of generality that allows different actions to be taken at mine sites of different types and scales, whilst still being able to demonstrate compliance.

A requirement is only 'not relevant' if the issue to which a requirement relates is not relevant at a particular mine site. For example, requirements related to the use of cyanide would not be relevant at a mine site at which cyanide is never used.

IRMA will pay specific attention to the issue of applicability of the IRMA Standard for Responsible Mining to mine sites of different scales and types within its scope during field testing, and if necessary will develop further guidance.

Basis for Certification

The basis for IRMA certification will be that all the requirements of the IRMA Standard for Responsible Mining are met by the operating company in respect of the mining project to which the certificate applies, and/or by the operating company's corporate owner(s), by other project partners, contractors or subcontractors as applicable, to the best knowledge of the issuing body on the basis of the evidence reviewed.

Failure to meet any individual requirement would normally be expected to indicate that a certificate of conformity cannot be issued.

However, it should be noted that:

- Auditing conformity with some requirements of the IRMA Standard for Responsible Mining will be based on sampling, and some level of failure within a sample may be accepted whilst the overall level of performance required to conform with the requirement may still be met. Where possible IRMA will aim to provide quantitative guidance but in the absence of specific guidance decisions will be based on the professional judgment of the auditor.

- Occasional, temporary failures of conformity are inevitable when managing large, complex operations over time, and such temporary failures do not imply the automatic, immediate withdrawal or suspension of an IRMA certificate so long as the failure is not the result of negligence, recklessness or intentional wrongdoing, and so long as appropriate and timely action is taken to correct such failures when they are identified and to analyse and address the issues that resulted in such failures so that they can be avoided in the future.

In all cases, the basis for IRMA certification will be that any failures or apparent failures of conformity with the requirements of the IRMA Standard for Responsible Mining that are identified by an auditor will be explicitly documented in the audit report at the time, and the resulting decision to issue, confirm, suspend or withdraw a certificate will be clearly and explicitly justified by the responsible certification body.

Responsibility for Conformity

Responsibility for ensuring conformity with the IRMA Standard for Responsible Mining will lie with the certificate holder. The certificate holder will be responsible for all decisions, policies and management activities required to ensure that the requirements of the standard continue to be met.

The certificate holder is responsible for demonstrating to the certification body assessing conformity with the IRMA Standard that other persons or entities that are permitted or contracted by the certificate holder to operate in, or for the benefit of the mine project comply with the standard's requirements. Accordingly, the certificate holder will be required to implement corrective actions in the event of such persons or entities not being in compliance with the requirements of the IRMA Standard for Responsible Mining. If these corrective actions do not result in conformity with the standard's requirements the certificate will be suspended or withdrawn.

Interoperability

The IRMA standard is intended to facilitate compatibility with other relevant standards and systems, in order to increase the potential benefits for companies that choose to participate in the IRMA system.

The Technical Experts and stakeholders drafting the IRMA Standard have been encouraged to:

- Use terminology and concepts (and their associated definitions) that are already used in other relevant standards and systems, where these also meet IRMA's objectives. For example, in relation to the conservation of biodiversity IRMA proposes to make use of the 'High Conservation Value' concept as originally developed by the Forest Stewardship Council (FSC), and now supported by advice and quality assurance from the High Conservation Value Resource Network (HCVRN).

- Reference pre-existing standards or elements of standards, where these also meet IRMA's objectives. For example, IRMA proposes to adopt elements of the IFC Performance Standards in relation to some aspects of fair labor and working conditions, and to reference the Cyanide Code in relation to the responsible handling and management of cyanide.

- Build on the requirements of other relevant standards such that where the IRMA standard exceeds the requirements of other systems, conformity with such systems can provide a logical and useful stepping stone towards conformity with the requirements of the IRMA standard.

In future IRMA expects to work with other organizations that share IRMA's social and environmental objectives to achieve those objectives in the most practical and effective ways possible.

C.
The IRMA Standard: Requirements

Business Integrity

Chapter 1.1—Legal Compliance

Background
Compliance with applicable host country laws is one of the most basic principles of operating a mine, or any activity, in a given jurisdiction. As an international best practice standard IRMA's requirements may also contain provisions that will be more stringent or demanding than the minimum legal requirements specified at the national level in a particular country.

This chapter seeks to ensure that the IRMA Standard supports and complements compliance with international and national laws and regulations. It is based on five precepts:

- Compliance with host country laws and permits
- Compliance with the IRMA Standard and requirements
- Compliance with the most protective of host country or IRMA requirements
- Compliance with the host country law when there is a direct conflict with an IRMA requirement - and explanation and documentation of any conflict to ensure that the decision process and response are clear and available to interested parties
- Maintenance of records - and public access to those records - sufficient to document and demonstrate compliance with host country requirements and the IRMA Standard.

IRMA certification is based on the evidence available to and reviewed by a certification body. Certification does not guarantee that a certificate holder complies with all the legal obligations associated with a certified mining project and may not be used to suggest otherwise or as a defense to claims regarding legal violations.

Objectives/Intent of this Chapter
The intent of this chapter of the IRMA standard is to support the application of the laws and regulations of the country in which mining takes place, consistent with international law and best practice.

IRMA System Impact Indicators

- **Indicator 1.1.a** The number of claims of legal non-compliance associated with IRMA-certified mining projects and their related activities that are formally lodged with the appropriate authority.

- **Indicator 1.1.b** The number of claims of legal non-compliance associated with mining projects and their related activities that are subsequently upheld.

Legal Compliance Requirements	Means of Verification
Applicable at operating company level:	
1.1.1. The operating company shall comply with an IRMA list of international treaties and conventions that apply to corporate entities. This list shall be established and updated/maintained by the IRMA Steering Committee.	Review of claims and/or prima facie evidence of non-compliance. Review of government, company, and third-party records and documentation sufficient to demonstrate compliance in relation to any claims/prima facie evidence of non-compliance. **Notes:** An action for purposes of IRMA compliance may be either an act or the failure to act. The failure to act may prevent or cause non-compliance or harm just as much as an affirmative action. IRMA will establish and maintain a list of international laws that will be applicable to IRMA certification, to be included as an Annex to this standard. Compliance with international law includes not participating in or benefiting from any action by the State that violates one of the international treaties or conventions.
1.1.2. The operating company shall comply with all applicable host country laws, rules, regulations, and permit requirements in relation to the mining project, unless these conflict with the operating company's ability to comply with applicable international law.	Review of claims and/or prima facie evidence of non-compliance. Review of government, company, and third-party records and documentation sufficient to demonstrate compliance in relation to any claims/prima facie evidence of non-compliance. **Note:** An action for purposes of IRMA compliance may be either an act or the failure to act. The failure to act may prevent or cause non-compliance or harm just as much as an affirmative action. Laws, rules, regulations, and permit requirements include, but are not limited to: laws, regulations, rules,

Legal Compliance Requirements	Means of Verification
	guidelines, required practices, and any obligation imposed on the operating company as a written, documentable, measurable element. Where host country and international requirements overlap and conflict with each other, such that it is impossible simultaneously to comply with both sets of requirements, international requirements take precedence.
1.1.3. Where host country or international requirements overlap with IRMA requirements and do not conflict with IRMA requirements, then the requirements that are most protective to human health and the environment shall apply.	Review mine operations and practices for clear demonstration that mine applied actions and practices that are the most protective of human health/rights and the environment.
1.1.4. The operating company shall maintain a valid mining/operations permit and other required permits from appropriate governmental-regulatory agencies that are necessary or appropriate for mining, including, but not limited to: a. effluent discharge; b. materials storage; c. materials transport; d. construction; e. other operations regulated by governmental authority; f. management of finances, materials and resources; g. employment.	Review operating company permits and operational notices, including notices of compliance, payments, and other regulatory documentation.
1.1.5. If a non-compliance with host country/ permit requirements has taken place, the operating company shall be able to demonstrate that timely and effective action was taken to remedy the non-compliance and to prevent further non-compliances from recurring.	Review operating company responses and remedies to measure the “cure” for non-compliances and problems. Review operating company responses and remedies for the responses’ qualitative and quantitative effectiveness.
1.1.6. The operating company shall disclose records relating to any legal and permit-related non-compliance. Records shall include those reasonably related to the non-compliance and be sufficiently organized to ensure reasonable accessibility to show the non-compliance and the final remedy. The operating company shall include a link in its annual	Review the company or mine annual report to verify that the information is present and up-to-date. Provide access to actual government reports, such as inspection reports, notices of violations and cures, etc.

Legal Compliance Requirements	Means of Verification
report and sustainability report to the company's permit-related compliance. This link should document non-compliance events and activities - and the company's cure of each non-compliance.	
1.1.7. The operating company shall maintain and manage its real and personal property according to applicable laws and regulations and prudent management practices to ensure that such property is safely maintained and operated.	Review operating company's management/maintenance practices and procedures for instances of illegal or unsafe access to operating company lands or the illegal or unsafe use of operating company property.
1.1.8. Contractors and Subcontractors 1.1.8.1. The operating company shall be responsible for the compliance of its contractors and their subcontractors on the mine site and while in route to and from the mine site. The operating company shall maintain and enforce a policy to demonstrate that it take appropriate steps to ensure compliance of IRMA standards by its contractors and their subcontractors.	Review company policy to ensure that it reasonably accomplishes the stated goals and review company implementation/enforcement of that policy. This shall include, but not be limited to, appropriate policy(s), training, responses to infractions, etc. Review actions and documentation demonstrating the operating company's effective oversight and monitoring of its subcontractors.
1.1.9. The operating company shall maintain records and documentation sufficient to authenticate and demonstrate compliance with host country requirements and IRMA standards. Records shall include document dates and be sufficiently organized to ensure reasonable accessibility.	Review operating company's records for their qualitative and quantitative completeness demonstrating compliance with host country and IRMA requirements. Examples of this information may include documentation related to IRMA's individual chapters, host country regulatory reports (both compliance and non compliance, compliance inspections), and monitoring data/reports.
1.1.9.1. The operating company shall maintain this information on a publicly accessible website in both English and the dominant host-country language.	Review mine operator and company policies and practices to ensure that the public has reasonable access to relevant documentation.
1.1.9.2. Where the operating company claims that information or documentation is confidential, it shall provide in its files and to public requests a description of the information/materials that are being withheld as confidential and an explanation of the reason or reasons for classifying the information as confidential. These shall be of sufficient content so that the public can understand what is being withheld and why.	Review mine operator and company files and documentation about what is being withheld from public review based on company assertions of confidentiality to ensure that the requirements of this section are compiled-with. IRMA inspectors may be required to execute nondisclosure-confidentiality agreements to view confidential information. These agreements shall not be a bar to IRMA inspectors disclosing information necessary to

Legal Compliance Requirements	Means of Verification
	report actual or reasonably possible threats to human health or the environment.
1.1.9.3. If a part of a document is confidential, only that confidential part shall be redacted, allowing for the release of non-confidential information.	
1.1.10.1. Policy on Association.[1]	

Notes

The IRMA process is necessarily iterative. Certification bodies, certification applicants and certificate holders are encouraged to contact the IRMA Steering Committee where they find conflict between host country requirements and IRMA standards. The Steering Committee seeks to advance and develop IRMA standards just as it seeks to advance and develop mining best practices and standards of the industry.

[1] IRMA is currently considering pre-draft language for a "Policy on Association." This addition to the Legal Chapter will contemplate assessing and barring IRMA participation based on corporate culpability for knowingly or intentionally causing or contributing to - or inappropriately benefitting from - especially egregious conduct, such as human rights abuses or armed conflict.

Chapter 1.2—Revenue and Payments Transparency

Background
The capacity of governments to effectively manage and disclose material payments and revenues received from extractive industries in resource rich countries is sometimes underdeveloped. Revenues derived from the extraction of a country's mineral wealth sometimes have a lower impact on reducing poverty or generating broader economic growth or benefit than may have otherwise been possible. Without proactive measures the extractive sectors may exacerbate poverty, corruption and conflict. Increased transparency of material payments to and revenues received by the host country government can be one step toward addressing this matter.

The Extractive Industries Transparency Initiative (EITI) is a global coalition of governments, companies and civil society working together to improve openness and accountable management of revenues from natural resources allowing citizens to see for themselves how much their government is receiving from their country's natural resources. The IRMA Standard is intended to support and avoid duplication with EITI's work.

Objectives/Intent of this Chapter
The purpose of this chapter is to increase the transparency of material payments made by mining companies and/or received by governments, providing communities and the general public with the information they need to understand and assess the fairness of financial arrangements related to mining operations.

IRMA System Impact Indicators

- **Indicator 1.2.a** Value in US$ of payments associated with mining projects that are disclosed by corporate owners and/or mining companies, by mining company, country, year of payment and payment type.

Revenue and Payments Transparency Requirements	Means of Verification
Applicable at corporate owner level:	
1.2.1. The corporate owner shall demonstrate its compliance with the requirements of the US Dodd-Frank Act or the EU Transparency Directive, or shall comply with the requirements listed under 1.2.2, 1.2.3, and 1.2.4, below. 1.2.2. The corporate owner(s) shall publish on their website(s) all material payments to all governments (including in relation to those countries that are not members of EITI), updated on an annual basis. 1.2.2.1. This information shall be broken down by country of operation and by payment type, in line with applicable reporting requirements specified by EITI. 1.2.2.2. The types of payment disclosed shall include as a minimum, as applicable:	List of corporate owner(s) of the mining project Review of information published on corporate owner(s) website(s)

Revenue and Payments Transparency Requirements	Means of Verification
a. The host government's production entitlement. b. National state-owned enterprise production entitlement. c. Profits taxes. d. Royalties. e. Dividends. f. Bonuses, such as signature, discovery and production bonuses. g. Licence fees, rental fees, entry fees and other considerations for licences and/or concessions. h. Any other significant payments and material benefit to government.	
1.2.3. The corporate owner(s) shall be active and formal participants of the EITI as evidenced by the corporate owner(s) having: a. published a clear public statement endorsing the EITI Principles and Criteria on its external website(s) b. provided links on its external website to completed Company Forms, for all operations in EITI implementing countries that have completed at least one validation c. assigned strategic responsibility for EITI to a member of its senior management and appointed a lead contact person responsible for communication of the company's EITI policy, action in support of EITI, and responding to queries from EITI stakeholders d. been represented by a member of senior management, or sent a statement of support, to the most recent International EITI Conference e. included a summary of its contribution to EITI in its most recent global sustainability report or corporate sustainability report, or equivalent.	Review of corporate owner(s) website(s) Copy of international-level self-assessment form as submitted to EITI Secretariat Copy of country- level self-assessment forms as submitted to EITI Secretariat for all participating countries in which the corporate owner(s) operate
1.2.4. The corporate owner(s) shall have a public policy commitment to engage constructively with EITI in countries in which it is active and that are committed to implementing EITI, consistent with the multi-stakeholder process adopted in each country.	Review of public policy commitment
1.2.5. Anti-Corruption Measures 1.2.5.1. The corporate owner(s) shall have: a. a publicly available policy prohibiting bribery and other forms of corruption by employees and contractors, at corporate as well as project	Confirm public availability of policy Review policy and associated procedures.

Revenue and Payments Transparency Requirements	Means of Verification
management levels; b. internal procedures and associated employee training to ensure the implementation of the policy c. procedures to assess and review internal compliance	
Applicable at operating company level:	
1.2.6. Transparency of Terms 1.2.6.1. The material terms for mineral exploration, development and production agreed between the operating company and government entities shall be freely and publicly accessible, in the national language(s) of the country in which the mining project is located. 1.2.6.1. a) Where these terms are negotiated, rather than governed by law, the company shall make the relevant agreements, licenses or contracts freely and publicly accessible. 1.2.6.1. b) Where these terms are governed by law, free, public access to the relevant statutory documentation is deemed sufficient to meet the IRMA requirement. NOTE: Confidential business information that is not material to the terms for mineral exploration, development and production may be excluded or redacted from the publicly accessible documentation as necessary.	Confirm public availability of relevant agreements and contracts, e.g. concession agreements, licensing agreements, production sharing agreements, service agreements.
1.2.7. Project Level Production and Financial Reporting 1.2.7.1. The operating company shall demonstrate its compliance with the project level reporting requirements specified in Chapter 10 of the European Union Directive 2013/34/EU, or shall comply with the requirements listed under 1.2.7.2 below. 1.2.7.2. The operating company shall ensure that the following information at the mining project level is reported on an annual basis and is readily accessible to the public: a. mine production, disaggregated by product type and volume b. revenues from sales, disaggregated by product type c. payments and other material benefits to	Review of information published on corporate owner(s) website(s)

Revenue and Payments Transparency Requirements	Means of Verification
government over US$100,000, as listed in paragraph 1.2.1.2 and disaggregated according to the receiving government entity (e.g. national, regional, local entity; name of government department) d. social expenditures including in-kind expenditures, and including the names and functions of beneficiaries e. payments related to transportation of minerals f. any payments to politicians' campaigns, political parties or related organizations	
1.2.7.3. The operating company shall publish annual accounts, following international accounting standards	Annual accounts, approved by accredited auditor
1.2.7.4. The operating company's financial reporting and accounts shall comply with the applicable provisions of the OECD *2010 Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations*.	Statement in annual accounts Statement by accredited auditor
1.2.8. Anti-Corruption Measures 1.2.8.1. The operating company has documented policies and procedures prohibiting bribery and other forms of corruption by employees and contractors, in line with corporate level commitments; 1.2.8.2. Employees and contractors have been trained in the application of the operating company's policy and procedures; 1.2.8.3. There is evidence that confirms that the policies and procedures are implemented in practice	Interviews with employees and contractors Records of training Absence of significant claims of bribery/ corruption in relation to the mining project.

Notes

The EITI maintains the EITI Standard. Countries implement the EITI Standard to ensure full disclosure of taxes and other payments made by producing oil, gas and mining companies. These payments are disclosed in an annual EITI Report (to see all EITI Reports, go to datat.eiti.org). This report allows citizens to see for themselves how much their government is receiving from their country's natural resources. This chapter of the IRMA Standard aims to complement EITI's scheme by requiring companies to report information about their payments, allowing country and corporate reporting to be compared.

The first section of the chapter applies to the corporate owner(s) of projects seeking IRMA certification, including all subsidiaries operating in countries where material payments are made to governments as part of the commonly recognized revenue stream for the commercial development of minerals.

The second section of the chapter applies specifically to the mining project level, and includes requirements in relation to project-level reporting of payments, accounts, mine development agreements, and anti-corruption measures.

As for all aspects of the IRMA Standard, documentation or records that are required to demonstrate conformity with this chapter of the IRMA Standard do not have to be prepared exclusively or specifically for that purpose. Documentation or records that have been prepared to meet a company's legal obligations, or to meet a company's voluntary commitments (e.g. to meet standards other than IRMA's) may also be submitted to demonstrate conformity with the requirements of the IRMA Standard.

Where a requirement of the IRMA Standard specifies that information must be publicly available, publication of the requisite information on the internet for free public download or accessibility through public registers (e.g. in the case of laws or regulations) is sufficient to meet the requirement.

Provision to protect all workers from discrimination by their employer in the case that they reveal information of corporate wrongdoing to the appropriate authority (so called 'whistle-blowing') is included in IFC Performance Standard 2, compliance with which is required in Chapter 2.1, section 2.1.1 of the IRMA Standard. This would include protection for workers revealing wrongdoing in relation to financial matters, bribery, corruption, etc.

Social Responsibility

Chapter 2.1—Fair Labor and Working Conditions

Background
Historically, a portion of the labor force has been the subject of mistreatment in industries of all types. Child and forced labor, physical mistreatment, unsafe working conditions, and non-compliance with respect to worker rights have all occurred. This is contrary to the Universal Declaration of Human Rights and the Core Labor Standards of the International Labour Organization and has had a negative impact on companies, individuals and communities.

There are existing standards that aim to protect labor rights and ensure fair working conditions (e.g., International Finance Corporation (IFC) Performance Standard 2; Social Accountability International SA8000). There is an inextricable link between the role of workers and the practice of freedom of association in any responsible labor standard and verification system. Workers having first-hand knowledge of environmental, human rights and labor practices must have the right to participate in the verification process without fear of employer retribution, as needed by the independent auditor. This can be best guaranteed by workers having the right to freely establish or join trade unions of their choosing without employer interference and through protections provided in collective bargaining agreements.

Objectives / Intent
The objective of this chapter is to ensure that the social and economic wellbeing and health of workers is maintained or enhanced. This will be accomplished by ensuring that companies protect the basic rights of the workers they employ directly and those that are employed by its contractors and suppliers.

IRMA System Impact Indicators

- **Indicator 2.1.a** Mine workers and their families are able to live comfortably (in a safe and secure environment with access to health care and education) on miners' wages.

Fair Labor and Working Conditions Requirements	Means of Verification
Applicable at operating company level:	
2.1.1. The operating company shall comply with the requirements of *IFC Performance Standard 2: Labor and Working Conditions* ("IFC PS2") and with the additional requirements specified below. Where the IRMA requirements differ from IFC PS2, the operating company shall adhere to IRMA requirements (unless doing so would endanger IFC project financing.).	Review any existing operating company documentation related to IFC PS2 compliance Throughout this section, all interviews with workers must be allowed to occur without the presence of operating company management.
2.1.2. Working Conditions and Management of Worker Relationship 2.1.2.1. In addition to those requirements specified in IFC PS2:	Review of the operating company labor-related policies Require operating company management to provide evidence that policies are publicly available, and

Fair Labor and Working Conditions Requirements	Means of Verification
a. The operating company shall provide information to workers on the IRMA labor requirements. b. The operating company shall make publicly available policies that have a material impact on the wellbeing of employees (e.g., wages, provision of social insurance, pensions, health and safety, provision of personal safety equipment, housing, and discipline).	review company records of trainings or programs implemented to educate workers on policies Interviews with operating company management, workers and worker representatives to determine if policies have been provided to employees
2.1.3. Working Conditions and Terms of Employment 2.1.3.1. In addition to those requirements specified in IFC PS2: a. The operating company shall not make use of short-term contracts or other measures to undermine a collective bargaining agreement, prevent unionization or avoid obligations to employees under applicable labor and social security laws and regulations. b. Due to the unique conditions created by fly-in/fly-out (FIFO) mining operations, at FIFO sites where trade unions exist, the operating company shall: involve workers and/or their representatives in the development and implementation of policies, practices and agreements that promote safe and healthy working and living conditions at these sites; and provide accommodations for trade union/workers' representatives to carry out their work at FIFO operations.	If possible, review of all collective bargaining agreements, or conduct in-depth interviews with operating company management, workers and trade union/worker representatives regarding collective bargaining agreements, and use of contract labor. Inspect accommodation services at FIFO operations, and interview company management and workers and trade union/worker representatives regarding development and implementation of policies to ensure safe and healthy working conditions at FIFO operations.
2.1.4. Workers' Organizations 2.1.4.1. In addition to those requirements specified in IFC PS2: a. The operating company shall respect the right of workers to freedom of association and collective bargaining, and honor in good faith, for the term of the agreement, the terms of any collective bargaining agreement they have agreed to and signed. b. The operating company shall inform workers upon employment of any existing collective bargaining agreement at the site; that they are free to join a trade union/workers' organization of their choosing; and that their doing so will not result in any negative consequences to them, or retaliation, from the operating company.	Conduct in-depth interviews with operating company management, workers and trade union/worker representatives regarding all of these requirements. Review public and regulatory documents and newspaper reports related to worker organizations, collective bargaining, strikes and interactions between worker organizations and the operating company.

Fair Labor and Working Conditions Requirements	Means of Verification
c. The operating company shall ensure that workers' representatives have access to facilities needed to carry out their functions in the workplace. This includes access to designated non-work areas during organizing campaigns for the purposes of communicating with employees. d. The operating company shall not establish or support a company union for the purpose of undermining legitimate worker representation. e. The operating company shall remain neutral in any legitimate unionizing or worker-organization effort; shall not produce or distribute material meant to disparage legitimate trade unions; shall not discriminate or retaliate against trade union or other workers' representatives; and shall not impose sanctions on workers organizing or participating in a legal strike. f. The operating company shall not hire replacement workers in order to prevent or break up a legal strike, support a lockout, or avoid negotiating in good faith. The operating company may, however, hire replacement workers to ensure that critical health and safety, and environmental control measures are maintained. g. Nothing in provision 2.1.4.1.e. shall remove the right of an operating company to seek enforcement action when workers representatives or trade unions are operating in contravention to laws or regulations.	
2.1.5. Non-Discriminatory and Respectful Workplace 2.1.5.1. Operating companies shall not make employment decisions on the basis of personal characteristics (gender, race, nationality, ethnic, social and indigenous origin, religion or belief, disability, age, or sexual orientation) unrelated to inherent job requirements, with the exception of: a. Targets mandated by law b. Targets developed through local agreements for the employment of local residents, indigenous peoples, or individuals who have been historically disadvantaged c. Operating company targets for the employment of local residents, indigenous peoples, or individuals who have been historically disadvantaged that are expressed in publicly accessible policies with explicit goals and justification for such targets 2.1.5.2.	Determine how the company has conveyed to its employees its stance on the prohibition of harassing, intimidating or exploitative behavior in the workplace (e.g., through a company policy, memos, records of trainings, etc.). Interview management, workers and workers' representatives, ensuring that females, workers from different races/ethnicities, migrant workers (if any), children (if any) are included, to determine if the workplace is free from harassment or other inappropriate behaviors. Review complaint or grievance statistics and/or information not protected by privacy laws that is related to harassment, discrimination, etc., and records of how the operating company remedied or resolved the

Fair Labor and Working Conditions Requirements	Means of Verification
In addition to requirements specified in IFC PS2 the operating company shall: a. Prohibit any behavior that is harassing, intimidating or exploitative in the workplace and, where applicable, in residences and other facilities provided by the operating company for use by personnel.	complaints/grievances. There should be no complaints related to discrimination, harassment, intimidation, or exploitation left unresolved at the time of the IRMA audit (with the exception of recent complaints filed within the three months prior to the audit).
2.1.6. Child Labor 2.1.6.1. The minimum age for child labor for non-hazardous work shall be 15, or the minimum age as outlined in national law, whichever is higher. For hazardous work, the minimum age shall be 18. 2.1.6.2. In addition to requirements specified in IFC PS2, if children below the minimum ages for hazardous and non-hazardous work are found to be working at the site, the company shall: a. Immediately remove children from tasks that are dangerous, harmful, or inappropriate given their age; and b. Develop and implement remediation procedures that include, at minimum, the provision of financial and/or other support to enable children to attend and remain in quality education until they meet the age where compulsory education laws no longer apply; and steps for the continued welfare of the child that take into consideration the financial situation of the child's family.	Review the operating company's procedures for age verification in hiring, conducting risk assessments, and monitoring of child worker health, working conditions and hours of work. Examine documentation of risk assessments and monitoring performed Review remediation procedures Review documentation related to remediation of any children under the age of 15 found to be employed at the operation, or under the age of 18 if found to be employed in hazardous jobs Review information not protected by privacy laws that relates to complaints/grievances filed in relation to child labor, and records of how the operating company remedied or responded to them Interview management, workers and trade union/workers' representatives, ensuring that child workers (if any) are included
2.1.7. Grievance Mechanism and Disciplinary Measures 2.1.7.1. The operating company shall provide a grievance mechanism for workers (and their organizations, where they exist), to raise workplace concerns, as per IFC PS2. 2.1.7.2. In addition to the requirements specified in IFC PS2:	Interview workers and trade union/workers' representatives to ensure that they are aware of grievance mechanisms and disciplinary processes Interview management, workers and trade union/workers' representatives to determine the effectiveness/fairness and respectful treatment of workers involved in

Fair Labor and Working Conditions Requirements	Means of Verification
a. The operating company shall not, under any circumstances, use corporal punishment, harsh or degrading treatment, sexual or physical harassment, mental, physical or verbal abuse, coercion or intimidation of workers during disciplinary actions. b. Disciplinary processes shall be applied equally to all management and staff, and records shall be kept of disciplinary actions taken.	grievance and disciplinary processes If necessary, review complaint or grievance statistics and/or information not protected by privacy laws to determine if company has attempted to resolve complaints and grievances in a fair, effective and respectful manner.
2.1.8. Wages 2.1.8.1. The operating company shall pay employees a wage that meets or exceeds the higher of either the applicable legal minimum wage plus associated statutory benefits, or a living wage. Living wage calculations and a step-by-step approach to achieving living wage shall be undertaken in accordance with Social Accountability International's SA8000 Standard (2008).[2] 2.1.8.2. All premium and overtime hours shall be paid at a rate defined in a collective bargaining agreement or national law, and if neither exists, at a rate above the regular hourly wage. 2.1.8.3. All workers shall be provided with written and understandable information about wages (overtime rates, benefits, deductions and bonuses) before they enter employment, and for the pay period each time they are paid. 2.1.8.4. While operating company may determine the way that wages are paid, it must be in a manner that is reasonable for workers (e.g., bank transfer, cash, check or other). 2.1.8.5. The operating company shall ensure that deductions from wages are not made for disciplinary purposes unless one of the following conditions exist: a. deductions from wages for disciplinary purposes are permitted by national law; or b. deductions from wages for disciplinary purposes are permitted in a freely negotiated collective bargaining agreement.	Review the operating company policy regarding wages Discuss with management how it determined living wage rates and overtime wage rates, and review any wage studies conducted or commissioned by the company. Interview workers to determine if wages are enough to meet basic needs,and to determine if other requirements regarding wages are being met. If relevant, interview trade union/worker representatives to determine if the operating company is abiding by wage-related provisions in collective bargaining agreements.
2.1.9. Working hours and leave	Review the operating company procedures regarding working hours

Fair Labor and Working Conditions Requirements	Means of Verification
a. As per ILO Convention 1,3 regular working hours shall not exceed eight in the day, or 48 in the week. Where workers are employed in shifts the 8-hour day and 48-hour week may be exceeded, provided that the average number of regular hours worked over a 3-week period does not exceed 8 hours per day and 48 hours per week. b. Workers shall be provided with at least one day off for every 7-day period, on average. c. Overtime shall be consensual, and limited to 12 hours a week. d. Exceptions to 2.1.9 (a), (b), (c) shall be allowed if: i. A freely negotiated collective bargaining agreement is in force that allows work times exceeding those in (a), rest time different from (b), and/or overtime in excess of (c); and ii. Through consultations with workers representatives, a risk management process that includes a risk assessment for extended working hours is established to minimize the impact of longer working hours on the health, safety and welfare of workers. e. Operating company shall comply with national laws or IRMA's requirements on working hours, whichever affords greater protection to the health and safety of workers. Where no national law exists, the operating company shall meet IRMA requirements. f. The operating company shall provide workers with all legally mandated leave including maternity and paternity, compassionate, sick, paid annual, and public holidays. Where no national law or collective bargaining agreement exists, paid annual leave will be provided in accordance with ILO Convention 132.	and leave Interview workers and trade union/workers' representatives to ensure adherence to IRMA working hours and leave requirements Interview operating company and workers and trade union/workers' representatives to determine if there are health and safety concerns associated with working hours. If working hours exceed requirements in 2.1.9, ensure that a collective bargaining agreement allows for the extended working hours, and that a risk management process is in place.
2.1.10. Retrenchment 2.1.10.1. The company shall comply with the retrenchment (i.e., collective dismissals and/or layoffs) requirements specified in IFC PS2. 2.1.10.2. In addition to the requirements in IFC PS2, when significant layoffs or dismissals cannot be avoided a plan shall be developed to address the adverse impacts on workers and their community. 2.1.10.3. The retrenchment plan shall address issues such as: a. the consideration of alternatives to	If applicable, review the operating company analysis of alternatives to retrenchment, and retrenchment plan to determine if efforts have been made to reduce adverse impacts of retrenchment on workers. If applicable, interview workers and trade union/workers' representatives to ensure that they were consulted during development of the retrenchment plan. If applicable, interview workers and trade union/workers' representatives to ensure that they have been provided with due notice of dismissal, and that they received severance

Fair Labor and Working Conditions Requirements	Means of Verification
retrenchment; b. schedule of dismissals, if unavoidable; c. retrenchment methods and procedures; d. selection criteria; e. severance payments; f. offers of alternative employment or assistance in retraining efforts; and, g. job placement.	payments (and back pay/benefits) mandated by law or collective agreement in a timely manner.

Notes

As mentioned in Section B.5 of the introduction to the IRMA Standard, the IRMA Standard applies to the operating company and contractors operating on the mine site.[4]

Chapter 2.2—Occupational Health and Safety

Background
Occupational health impacts related to the mining industry may include physical injuries; musculoskeletal disorders; noise-induced hearing loss; hand-arm vibration syndrome; skin cancer; dermatitis; heat exhaustion; hypothermia; eye disorders related to radiation exposure; asphyxiation; pneumonia; respiratory disorders; damage to internal organs and other effects related to chemical/metal exposures; decreased mental health and wellbeing; and others.[5]

It is the responsibility of employers to ensure that a working environment is safe and healthy, and the duty of workers to take care of their own safety as well as the safety of anyone who might be affected by their actions.[6] According to the International Labour Organization, in order to manage safety and health at mine sites, three basic rights of workers must be respected.[7] First, workers have the right to be informed of occupational hazards and adequately trained to carry out their tasks safely; second, workers have the right to refuse unsafe work; and third, workers have a right to information, training, genuine consultation and participation in the preparation and implementation of occupational health and safety measures.

Objectives/Intent of this Chapter
The intent of this chapter is to ensure that a company provides a safe and healthy environment that protects and promotes workers' health and their working capacity. This will be accomplished through consultation and cooperation with workers and/or their representatives to identify workplace hazards and risks, implement measures to eliminate or minimize workplace hazards and risks, and develop and provide information and training programs to promote workplace safety and health.

IRMA System Impact Indicators

- **Indicator 2.2.a** The number and nature of occupational illnesses, injuries or fatalities associated with mining projects.

- **Indicator 2.2.b** The number and nature of worker grievances related to health and safety associated with mining projects.

Occupational Health and Safety Requirements	Means of Verification
Applicable at operating company level:	
2.2.1. The operating company shall conform with the requirements of Part III of *ILO Convention 176 on the Safety and Health in Mines, 1995*[8] and with the additional requirements listed below. Where the IRMA requirements are more stringent than or go beyond the requirements in ILO C176, the operating company shall adhere to IRMA requirements.	Verification relies heavily on interviews with company management personnel with occupational health and safety (OH&S) responsibilities and workers and their representatives. Auditors shall be able to interview workers without management present.
2.2.2. Hazard Identification and Risk Assessment 2.2.2.1. The operating company shall establish and maintain formal systems and processes for the ongoing identification of	Interview operating company employees with OH&S responsibilities to determine what systems have been put in place for the ongoing identification and assessment of health hazards and risks

Occupational Health and Safety Requirements	Means of Verification
health hazards for all of its operations related to the mining project. Hazards to be evaluated fall into the following categories: physical environment, chemical agents, biological hazards, psychological issues, and ergonomics.[9] 2.2.2.2. The health risk assessment process shall follow a recognized risk assessment methodology for industrial operations.[10] At new mines, a baseline health risk assessment shall be undertaken. At existing mines issue-based risk assessment and continuous health risk assessment shall be conducted as necessary (e.g., see 2.2.2.3.f, below). 2.2.2.3. The health risk assessment process shall consider, as a minimum: a. structural geology/inherent physical stability of mining area(s)[11] b. all equipment and facilities c. the design, commissioning and operation of the workplace, processes, installations, machinery, operating procedures, purchase of equipment and chemicals and the organisation of work d. all personnel, contractors, business partners, suppliers and visitors e. routine and non-routine activities, products, procedures, and services f. planned or unplanned changes in duration, personnel, organization, processes, facilities, equipment, procedures, laws, standards, materials, products systems and services	Review health assessment documents. Interview worker representatives and/or survey employee perceptions of the operating company's health risk assessment system.
2.2.3. Prioritization of protective measures 2.2.3.1. In accordance with the requirements of ILO C176, Article 6, the operating company shall implement protective measures in the following order of priority, having regard to what is reasonable, practicable and feasible, and to good practice and the exercise of due diligence: ○ eliminate the risk; ○ control risk at source; ○ minimize risk by means such as design of safe work systems; ○ in so far as the risk remains, provide for the use of personal protective equipment at no cost to workers. 2.2.3.2. The operating company shall take all necessary measures to eliminate or minimize the risks to safety and health for the	Interview the operating company employees with OH&S responsibilities to determine the rationale for implementing protective measures (e.g., what prevented companies from eliminating certain risks; why was personal protective gear selected over installing equipment to minimize the risk) Review the operating company OH&S risk assessments Review minutes of any meetings, or written input from workers or their representatives regarding suggestions for OH&S prioritization and effectiveness of protective measures If grievances regarding the company's approach to prioritizing protective

Occupational Health and Safety Requirements	Means of Verification
specific situations mentioned in ILO C176, Article 7.	measures have been raised, determine if the grievances have been addressed to the satisfaction of the company and workers
2.2.4. Communication and Engagement with Workers and Others 2.2.4.1. The operating company shall develop and implement a formal process (e.g., a joint health and safety committee, health risk assessment advisory group, etc.) to ensure effective worker consultation and participation in matters relating to occupational health and safety, including hazard identification and risk assessments. 2.2.4.2. Workers shall have the right and opportunity, collectively or individually, to participate in formal health and safety related processes. 2.2.4.3. The operating company shall develop systems to provide effective communication with, and input from the entire workforce on matters relating to occupational health and safety. 2.2.4.4. Visitors and other third parties accessing the mining premises shall receive an OHS briefing, and be provided with relevant protective equipment for areas of the mine site that they will be entering.	Interview the operating company employees with OH&S responsibilities Interview workers and worker health and safety representatives regarding whether or not consultations and participation in occupational health and safety processes have been effective (e.g., they allow for genuine worker involvement in occupational health and safety issues on site) Review minutes or actions items from meetings held as part of the formal process, and query operating company and workers to determine if worker recommendations are generally implemented and questions responded to, or whether input rarely affects the operating company's actions Survey workers to determine if they are aware of the participation of workers and/or their representatives in a formal occupation health and safety process Review training materials and policies related to visitors and third party OH&S requirements Review sample of methods of communication (e.g., emails, posters, videos, brochures, others)
2.2.5. Worker protections In addition to those requirements specified in ILO 176, Articles 9, 10, 13: 2.2.5.1. The operating company shall extend relevant occupational health and safety training and health promotion programs free of charge to all workers, and provide trainings and materials in language(s) understood by the majority of workers.	Interview the operating company employees with OH&S responsibilities Review records of worker instruction or trainings related to OH&S (e.g., instruction specific to a particular job, trainings on PPE use and maintenance, first aid, fires safety, chemical safety, sexual harassment, etc.) Tour site and look for safety instruction information/access to MSDS; toilet/washing facilities; food

Occupational Health and Safety Requirements	Means of Verification
2.2.5.2. Whenever possible, training shall occur during regular work hours, and not as an added task. If training is not held during regular works hours, or if it occurs on weekends, workers shall be compensated with overtime premium rates of pay, or with rest days to offset time spent in training. 2.2.5.3. There may be unique occupational health and safety risks for certain types of workers (e.g., women, children, HIV-positive, workers at FIFO operations). The operating company shall ensure that additional protective measures are taken, and trainings and health promotion programs are available to support the health and safety of these workers. 2.2.5.4. If risks to mental health and wellbeing are identified through the health risk assessments or health surveillance, the operating company shall consult with workers, and formulate and institute policies to prevent or mitigate the identified risks.[12] 2.2.5.5. The operating company shall provide ergonomic work stations that are designed to be appropriate to the task performed, and minimize occupational health risks such as repetitive strain. 2.2.5.6. All chemicals and hazardous substances (including arsenic, lead, mercury and cyanide) shall be properly labeled, stored, transported and disposed of in a safe and legal manner. Safety instructions shall either be posted near all machinery and/or readily accessible to the workers. Material Safety Data Sheets (MSDS) shall be freely accessible to workers wherever chemicals and hazardous substances are used or stored. All instructions, labels and MSDS shall be in language(s) understood by the majority of workers. 2.2.5.7. A sufficient number of workers shall be trained in first aid and fire fighting techniques, and be present during every shift.[13] 2.2.5.8. The operating company shall provide workers who have suffered from an injury or illness at the workplace with first aid, access to appropriately staffed and stocked on-site health and medical facilities, and for more serious health concerns, appropriate transportation from the workplace to	storage/preparation areas; potable drinking water sources Tour worker accommodations Interview a sample of workers and worker representatives, including women and child workers if any, to determine awareness of trainings, health promotion programs and safety instruction/labeling requirements (e.g., access to MSDS in appropriate languages) Determine if sufficient workers have received first aid and fire-fighting training (e.g., cross-check rosters with names of those receiving training), and review any assessments or materials that enabled the company to determine fire-fighting and first aid equipment needs and many first aid responders were sufficient per shift or location. Review information not protected by privacy laws that relates to OH&S complaints/grievances Review the number of work refusals for occupational health and safety reasons, and the manner of their resolution. Review accident investigations, the recommendations developed to prevent recurrences, and the implementation of the recommendations.

Occupational Health and Safety Requirements	Means of Verification
nearby hospitals or medical facilities. Adequate arrangements shall made for compensation of work-related injuries and diseases, as well as for rehabilitation, and to facilitate a prompt return to work. 2.2.5.9. Safety and medical equipment (e.g. fire fighting equipment, first aid kits) shall be available in sufficient numbers throughout the workplace, be appropriately maintained and stocked, and easily accessible to workers. 2.2.5.10. Companies shall provide workers with clean toilet, washing and locker facilities (commensurate with the number and gender of staff employed), potable drinking water, and where applicable, sanitary facilities for food storage and preparation. Any accommodations provided by the operating company shall be clean, safe, and meet the basic needs of the workers.	
2.2.6. Inspections, Monitoring and Investigations In addition to those requirements specified in ILO 176, Articles 10, 13: 2.2.6.1. Regular inspections of the working environment shall take place to identify the various hazards to which workers are exposed. 2.2.6.2. Where indicated by baseline risk assessment, air quality monitoring and/or biological monitoring (e.g., of workers' blood, urine, exhaled air) shall be carried out at appropriate intervals to quantitatively measure workers' actual exposure to measurable health hazards. a. The monitoring programs shall be designed and conducted by a certified industrial hygienist or other trained professional, in consultation with worker health representatives. Samples shall be analysed in an ISO/IEC 17025 certified or nationally accredited laboratory. b. Measurements of health hazards to which workers are exposed shall be compared against national occupational exposure limits (OELs) and/or biological exposure indices (BEIs), if they exist,[14] and OELs/BEIs developed by the American Conference of Governmental Industrial Hygienists (ACGIH).[15] c. If a nationally established or ACGIH OEL/BEI is exceeded the affected worker(s) workers shall be informed, and controls shall be reviewed (and if	Interview the operating company employees involved in inspections, monitoring, and investigations, and determine how information has been used to assess and where necessary improve the effectiveness of protective measures Review inspection data and a selection of reports Review monitoring data (and/or summary reports) Review investigation and remedial action reports Review health surveillance data (or summary reports) Interview medical professionals about surveillance program Interview workers and/or worker representatives involved in the joint health and safety committee or similar formal process (see 2.2.4.1.), and, if relevant, any workers who have been subjects of monitoring programs, or involved in inspections, investigations and monitoring

Occupational Health and Safety Requirements	Means of Verification
necessary, altered) to ensure that they effectively maintain worker exposures below the allowable limits over time. d. At all times, the right of workers to expect medical confidentiality and a professional doctor-patient relationship shall be respected in biological monitoring. 2.2.6.3. The operating company shall provide regular health surveillance of workers. The medical surveillance programme shall be risk-based and linked to the exposure profile for each job category that is identified in the risk assessment. Health surveillance shall be carried out in consultation with workers or their representatives, shall protect workers' rights to confidentiality of medical information, and ensure that health surveillance is not used in a manner prejudicial to workers' interests. 2.2.6.4. All accidents, dangerous occurrences, and incidents (e.g., occupational injuries, illnesses and fatalities), shall be documented and investigated, and remedial action taken as necessary. 2.2.6.5. The operating company shall use information from inspections, investigations, exposure monitoring and health surveillance to assess the effectiveness of OH&S controls and protective measures, and adjust controls and protective measures and update health risk assessments as necessary.	
2.2.7. Health and Safety Reporting and Document Management 2.2.7.1. The operating company shall maintain accurate records of monitoring programs and workplace assessments used as a basis for actions taken to address occupational health and safety risks to workers. 2.2.7.2. The findings of monitoring, health surveillance and health risk assessments shall be communicated to all workers, and training materials shall be updated if necessary, to reflect assessment findings. 2.2.7.3. Accidents, dangerous occurrences, incidents (e.g., occupational injuries, illnesses and fatalities), inspections, investigations and remedial actions shall be fully documented and accessible to workers.	Interview the operating company employees with OH&S responsibilities Review assessments for past several years Look at systems for maintaining monitoring data, medical surveillance and other OH&S data Review a selection of incident, investigation and remedial action reports Review copies of reports filed with authorities related to OH&S statistics and incidents

Occupational Health and Safety Requirements	Means of Verification
2.2.7.4. The operating company shall promptly notify "competent authorities" of occupational diseases, accidents, dangerous occurrences and other occupational health and safety statistics in accordance with national laws or regulations. Operating company shall ensure that workers have access to this information through the joint health and safety committee or other formal structure established as per 2.2.4.1. 2.2.7.5. The operating company shall maintain a system that allows medical surveillance and occupational exposure records to be identified, securely stored, readily located and retrievable, have established retention times of a minimum of 30 years and have responsible custodians assigned. The system shall ensure that medical and legal confidentiality is protected. 2.2.7.6. The operating company shall establish systems to provide workers with access to personal information regarding exposure measurements, potential health risks related to exposures, occupational hygiene measurements and medical examinations. The operating company shall inform workers of their right to obtain personal health information collected by the operating company.	
Exploration and Planning	
2.2.8. The operating company shall conduct a desktop analysis of potential health hazards	Review any pre-mining occupational health hazard analysis

Notes

As mentioned in Section B.5 of the introduction to the IRMA Standard, the IRMA Standard applies to the operating company and contractors operating on the mine site.16 ILO C176, Article 12 specifies that "Whenever two or more employers undertake activities at the same mine, the employer in charge of the mine shall coordinate the implementation of all measures concerning the safety and health of workers and shall be held primarily responsible for the safety of the operations." Consequently, an IRMA certificate holder has the responsibility to ensure that contracted workers and any other workers who provide project-related work and services are afforded a safe and healthy work environment, and that health and safety risk prevention and control measures are applied at all operations related to the mining project.

Chapter 2.3—Emergency Preparedness and Response

Background
Modern mines are large industrial facilities and have operational risks. These risks are common to industries that make, handle, transport and use chemical substances, and include the potential for explosions, fires, releases of gas, ventilation failures, rock falls, water or slurry inundation, radiation exposures, earthquakes and environmental incidents.

Mining companies have direct responsibility for both minimizing risks (through prevention, mitigation, and preparedness) and developing effective and thoughtful emergency response plans for emergencies or major accidents. Mining companies must also work with joint venture partners, contractors and suppliers providing bulk and dangerous materials to put adequate emergency response plans in place to deal with both on-site and off-site accidents. It is also very important to coordinate and communicate with communities that could be affected by these accidents, both to protect health and safety in these communities, and so that the emergency resources in the communities are available if needed.

Objectives/Intent of this Chapter
The objective of this chapter is to ensure that mining companies identify, plan for and are prepared to respond effectively to potential emergency situations, in close cooperation with workers, trade unions, local communities, local authorities, environmental organizations and other stakeholders, thereby reducing the likelihood of accidents and emergencies and minimizing loss of life, injuries and damage to property, environment, health and social well-being if they occur.

IRMA System Impact Indicators

- **Indicator 2.3.a** The proportion of mining projects with Emergency Response Plans that conform with the requirements of Part III and Part V of International Labour Organization Convention 174 on Prevention of Major Industrial Accidents, 1993.

- **Indicator 2.3.b** The proportion of mining projects which conform to the guidelines set forth in United Nations Environment Programme, Awareness and Preparedness for Emergencies at the Local Level (APELL) for Mining.

- **Indicator 2.3.c** The proportion of mining projects that actively test their Emergency Response Plans on an annual basis.

Requirements	Means of Verification
Applicable at operating company level:	
2.3.1. All operations related to the mining project shall have an emergency response plan conforming to: *a.* The guidelines set forth in *United Nations Environment Programme, Awareness and Preparedness for Emergencies at the Local Level (APELL) for Mining, (Technical Report 41), 2001;* *b.* The applicable requirements of Part III of *International Labour Organization Convention 176 on the Safety and Health in Mines, 1995;* *c.* The applicable requirements of Part III and Part	Review of the operating company documentation related to hazard identification and risk analysis, and hazard/risk minimization measures Review of the operating company's emergency response plan Review of the operating company's current safety report Review of the operating company's

Requirements	Means of Verification
V of *International Labour Organization Convention 174 on Prevention of Major Industrial Accidents, 1993.*	accident reports Review of documentation related to worker and contractor training sessions related to emergency prevention, preparedness and safety Evidence that emergency plans and procedures are available to workers and contractors Interviews with workers and their representatives Evidence that efforts have been made to inform the broader community about potential hazards and emergency response plans Evidence that emergency response plans are publicly available and readily accessible in appropriate formats (e.g., on-line, hard copies in various locations) and languages
2.3.2. The emergency response plan shall be developed in formal consultation with the local community and with labor, and shall incorporate community input and worker safety and emergency response participation per the IRMA Standard Occupational Health and Safety chapter.	Interviews with community members and labor representatives Review evidence that community members and mine labor have been involved in the development of emergency response plans (e.g., advertisements, meeting minutes, sign-in sheets)
2.3.3. The communications contacts of the emergency response plan shall be updated in accordance with APELL Section 4, Step 3[17], at least annually.	Verify that the communications plan/contacts have been updated annually
2.3.4. The operating company shall conduct a role-playing exercise to test the plan, with key participants describing how they would respond to a variety of different emergency scenarios, in accordance with APELL, Section 4, Step 3[18], at least annually.	Check to see that the emergency response plan has been exercised annually, and what lessons were learned as a result (a compilation of this information will be helpful over time).
2.3.5. Accident Insurance – All operations related to the mining project shall be covered by an accident insurance policy that provides financial insurance for unplanned accidental events.	Verify that an accident insurance policy is in force. Note in the IRMA report the deductible amount of the policy.
2.3.5.1. The accident insurance shall cover unplanned accidental events such as flood damage, landslides, subsidence,	Review terms of accident insurance policy

Requirements	Means of Verification
tailings dam failures, major spills of process solutions, etc.	
2.3.5.2. The accident insurance coverage shall remain in force for as long as the operating company, or its successors, has legal responsibility for the property.	Review terms of accident insurance policy

Notes
This chapter applies to the operating company and to its on-site contractors and subcontractors involved with dangerous and bulk materials.

The chapter is focused primarily on the issue of emergency preparedness and response. Other chapters in the IRMA standard address occupational safety, health, and environmental risks.

The IRMA Standard does not require a separate emergency response plan from those already prepared for mining operations, contractors, suppliers, and transportation companies, provided it can be demonstrated that the plan is in compliance with the standard.

There may be several different components of an emergency response plan maintained by different functional areas, such as safety, environmental and social responsibility, security, and communications/external affairs. Efforts should be undertaken to integrate individual plans and to also make them compliant with the IRMA Standard in a reasonable period of time. Consideration should be given to the development of a single reference document that identifies the location(s), responsible person(s) and contact information for each of the separate emergency response plans or supplements to those plans. A crisis management/communications, rapid response, or other incident command system should be developed in conjunction with the emergency response plans.

Cross References to other Chapters
Also see: Chapter 2.2 (Occupational Health and Safety) for requirements for labor involvement in emergency planning; Chapter 2.8 (Community and Stakeholder Engagement) for guidance on community involvement; and, Chapter 4.1 (Reclamation & Closure) for discussion of financial sureties.

Chapter 2.4—Human Rights Due Diligence and Compliance

Background
In 1948, the United Nations General Assembly adopted the Universal Declaration of Human Rights, which for the first time in human history spelled out basic civil, political, economic, social and cultural rights that all human beings should enjoy. Since that time, a series of international human rights treaties and other instruments have established the international legal framework for human rights.

In 2011, the "UN Guiding Principles on Business and Human Rights" (the 'Guiding Principles') were unanimously endorsed by the United Nations' Human Rights Council. The Guiding Principles clarify the corporate responsibility to respect human right, stating that corporations "should avoid infringing on the human rights of others."

The IRMA Standard chapter on Human Rights Due Diligence is based on the framework established in the Guiding Principles, but contains additional best practice requirements to increase transparency and accountability in order to ensure that communities affected by mining have the opportunity to effectively participate in and evaluate a company's human rights due diligence.

Objectives/Intent of this Chapter
The objective of this chapter is to ensure that companies involved in mining projects fulfill their responsibilities to respect human rights.

IRMA System Impact Indicators

- **Indicator 2.4.a** The number and nature of claims and substantiated human rights violations have taken place in association with mining projects.

- **Indicator 2.4.b** The number of human rights violations associated with mining projects that are remediated to the satisfaction of those whose rights have been affected.

Human Rights Due Diligence and Compliance Requirements	Means of Verification
Applicable at corporate owner level:	
2.4.1. Policy commitment 2.4.1.1. The corporate owner shall develop a policy that includes an explicit acknowledgement of the corporate owner's responsibility to respect all human rights, and a commitment to comply with enumerated global human rights principles as well as laws, treaties and other binding instruments at the national, regional or sub-regional levels. 2.4.1.2. The corporate policy as a whole must meet the criteria outlined in Principle 16 of the United Nations' Guiding Principles on Business and Human Rights (GP).	Review the corporate owner web site and published materials Interview the operating company representatives at the mine site level to ensure they understand and adhere to the corporate policy commitment.

Human Rights Due Diligence and Compliance Requirements	Means of Verification
Applicable at operating company level:	
2.4.2. Communication to mining project stakeholders 2.4.2.3. The operating company shall communicate to stakeholders its responsibility to respect human rights.	Review the operating company web site and published materials Interview a variety of stakeholders, especially those at most risk for human rights impacts, to determine if they have been informed of the operating company's human rights commitments (e.g., during stakeholder consultations and/or in project-related materials distributed by company).
2.4.3. Human rights due diligence 2.4.3.1. The operating company shall carry out due diligence to prevent or mitigate potential human rights abuses and remediate the effects of existing human rights impacts related to company activities or business relationships. Due diligence includes steps outlined in 2.4.4.– 2.4.7.	See verification steps in 2.4.4.– 2.4.7.
2.4.4. Human Rights Impact Assessment 2.4.4.1. The operating company shall establish an ongoing process to identify and assess all potential and actual human rights impacts from the project and relevant business relationships. 2.4.4.2. Prior to the development of a new mine, the operating company shall conduct a comprehensive human rights impact assessment (HRIA). At existing mines, assessments of human rights impacts shall take place at regular intervals: prior to a new activity or relationship; prior to major decisions or changes in the operation; in response to changes in the operating environment; and periodically throughout the life of an activity or relationship. The first assessment at an existing mine shall be a comprehensive HRIA; periodic assessments may address specific risks or impacts, or provide updates to the comprehensive HRIA. 2.4.4.3. As long as an HRIA meets the requirements of 2.4.4.3 – 2.4.4.7 it may be conducted as stand-alone assessment or integrated into a larger impact assessment process (see Chapter 5.1). 2.4.4.4. Prior to undertaking an HRIA the operating company shall	Interview stakeholders and rights-holders regarding their involvement in design of impact assessment, and whether or not their feedback on the draft HRIA was sought Review the operating company web site and published material to determine if HRIA is publicly available Interview a variety of stakeholders, especially those at most risk for human rights impacts, to determine if they have been included in human rights impact assessment consultations, and if they had the opportunity to review the draft assessment and provide feedback.

Human Rights Due Diligence and Compliance Requirements	Means of Verification
consult with stakeholders, including stakeholders with the highest risk of experiencing human rights impacts, regarding the assessment process (e.g., who shall carry out the assessment, the design and scope of the assessment, timeline, participation of stakeholders in the assessment, etc.). 2.4.4.5. Human rights impact assessment shall include stakeholder input and feedback. 2.4.4.6. A draft HRIA report shall be prepared that includes, at minimum: the current human rights context in the project area; identification of relevant human rights standards and issues; identification of those whose human rights may be affected, including disadvantaged and/or vulnerable stakeholders; disclosure of potential and actual human rights impacts related to the activities of the operating company or relevant business relationships; and recommendations for preventing and mitigating potential impacts and remediating existing impacts. 2.4.4.7. At minimum, stakeholders who participated in the assessment and stakeholders with the highest risk of experiencing human rights impacts shall have the opportunity to review a draft copy of the HRIA, and shall be consulted to provide feedback on the draft. 2.4.4.8. A final HRIA report, including assessment methodology, shall be made public, except for information that may be culturally inappropriate, compromise the safety of any individual or be legitimate confidential business information. Justification shall be provided for information that is omitted. The final HRIA report shall be made available in the dominant language(s) of potentially affected stakeholders.	
2.4.5. Prevention, mitigation and remediation of human rights risks and impacts 2.4.5.1. Where HR due diligence or stakeholder input reveals that the operating company may cause, contribute to or be linked to an adverse human rights impact, it shall take the necessary steps to prevent, and if this is not possible, mitigate the impact. When an actual adverse human rights impact is discovered, the operating company shall cease causing, contributing to or being linked to the impact, and immediately take steps to remediate the impact.	Interview the operating company representatives Interview affected stakeholders to determine if the potential impacts identified in the HRIA have been prevented or addressed in mitigation plans; and if any actual human rights impacts were stopped and remediated. Interview affected stakeholders and company representatives to determine

Human Rights Due Diligence and Compliance Requirements	Means of Verification
2.4.5.2. Culturally acceptable mitigation plans shall be developed in collaboration with affected stakeholders. 2.4.5.3. Remedies shall be agreed to by affected stakeholders.	if mitigation plans were developed through a consultative process. Review mitigation plans. Interview affected stakeholders and company representatives to determine if remedies provided for human rights impacts were agreed to by stakeholders. Review any company documentation on the remedies.
2.4.6. Monitoring and accountability 2.4.6.1. The operating company shall monitor and periodically report on the effectiveness of its due diligence activities. Reports shall document potential and actual human rights impacts and account for how the operating company has prevented, mitigated and remediated those impacts. Reports shall be made publicly available, except for information that may be culturally inappropriate, compromise the safety of any individual or be a legitimate requirement of commercial confidentiality. Justification shall be provided for information that is omitted. Reports shall be made available in the dominant language(s) of potentially affected stakeholders to the extent necessary in the cultural context. 2.4.6.2. External monitoring of an operating company's human rights due diligence shall occur if an operating company's due diligence efforts have repeatedly failed to prevent, mitigate or remediate human rights impacts that were caused, contributed to or linked to the company. a. This requirement does not apply if a company has knowingly caused, contributed to or been linked to serious human rights abuses. (See Notes section, below, on serious human rights abuses) b. The company shall provide funding for the external monitoring. The form of such monitoring shall be determined in collaboration with affected stakeholders. c. Any reports produced as a result of external monitoring shall be made publicly available, except for information that may be culturally inappropriate, compromise the safety of any individual or be legitimate confidential business information. Justification shall be provided for information that is omitted. Reports shall be	Review company web site and published material to determine if the operating company has made progress reports publicly available Interview stakeholders, especially those with expertise in human rights and those with the greatest potential to experience human rights impacts, to determine if there have been significant human rights impacts related to operating company or its business relationships that were not prevented, mitigated or remediated. Determine if independent monitoring has been conducted, and if reports are publicly available. Interview the operating company representatives and stakeholders to determine if a collaborative process was undertaken to develop the external monitoring program.

Human Rights Due Diligence and Compliance Requirements	Means of Verification
made available in the dominant language(s) of potentially affected stakeholders to the extent necessary in the cultural context.	
2.4.7. Rights-compatible Grievance Mechanism 2.4.7.2. In collaboration with stakeholders, the operating company shall develop a rights-compatible, project-level grievance mechanism, and other mechanisms if so desired, to address stakeholder concerns related to potential or actual human rights impacts. (See 5.3 on Grievance Mechanism and Other Remedies) 2.4.7.3. The operating company shall ensure that all stakeholders are informed of the existence of mechanisms for raising human rights concerns.	See Chapter 5.3

Notes
Note clause 1.1.10.1 of Chapter 1.1 in reference to the consideration of an IRMA "Policy on Association".

The United Nations Office of the High Commissioner for Human Rights web site provides links to the core human rights treaties and other universal instruments relating to human rights.[19] Additionally, eight International Labour Organization (ILO) Conventions have been identified by the ILO's Governing Body as being fundamental to the rights of human beings at work.[20]

External Monitoring: The decision to initiate external monitoring may be made by an operating company that has recognized its repeated failure to prevent, mitigate or remediate human rights impacts. External monitoring may also be a suggested remedy agreed to through an IRMA Grievance Mechanism process. The IRMA Grievance Mechanism (under development) will afford stakeholders and the operating company due hearing as part of the grievance process, and will attempt to resolve grievances through agreed-upon remedies.

Chapter 2.5—Mining and Conflict-Affected or High-Risk Areas

Background
Mining projects may take place in areas where there are current or potential conflicts or political instability that can adversely affect the project and local communities.

Conflict-affected areas may be identified by the presence of armed conflict, widespread violence or other risks of harm to people. High-risk areas include regions subject to political instability, where human rights abuses occur, or where governance systems are weak or lack enforcement.

A primary obligation of companies in conflict-affected or high-risk areas is to ensure that they do not intentionally or unintentionally cause, contribute to, or benefit from human rights abuses or armed conflict. Responsible companies, therefore, first attempt to develop a thorough understanding of the national and regional context of the areas where they seek to operate. This context is essential if a company is going to identify the potential risks and develop appropriate steps to prevent contribution to armed conflict and human rights abuses in conflict-affected areas.

Developing suitable responses to conflict-related issues is challenging, but there is guidance available to assist companies in identifying, assessing and mitigating risks associated with entry into an area of existing or latent conflict. The most widely recognized due diligence framework for minerals sourced from conflict zones is the "OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas" (OECD Guidance).

Objectives/Intent of this Chapter
The objective of this chapter is to ensure that mining projects do not contribute to conflict or the perpetration of human rights abuses.

IRMA System Impact Indicators

- **Indicator 2.5.a** Where mining projects take place in conflict-affected or high-risk areas, workers and local community members feel that their lives are better, not worse, for the operating company's presence.

Mining and Conflict-Affected or High-Risk Areas Requirements	Means of Verification
Applicable at operating company level:	
2.5.1. No contribution to armed conflict or serious human rights abuses in conflict-affected or high-risk areas 2.5.1.1. The operating company shall not knowingly or intentionally: d. cause, support,or benefit armed conflict; or e. tolerate, profit from, contribute to or facilitate the commission of any serious human rights abuses by any party in a conflict-affected or high-risk area. 2.5.1.2. If the operating company is found to have contravened provision 2.5.1.1, it shall not receive or shall lose IRMA certification. The decision of whether or not to deny or	Review verification results from requirements 2.5.2. – 2.5.8 Review company information and any other records or reports related to the company's unintentional contribution to conflict or human rights abuses. Ensure that due diligence has occurred to remediate issues.

<table>
<tr><th>Mining and Conflict-Affected or High-Risk Areas Requirements</th><th>Means of Verification</th></tr>
<tr><td>revoke IRMA certification shall be made through a process outlined in the IRMA Association Policy (under development, see Notes below).

2.5.1.3.
If the operating company is found to have been unknowingly or unintentionally complicit in armed conflict or serious human rights abuses in conflicted-affected or high-risk areas, the operating company shall immediately cease the offending actions, provide remediation where possible, and undertake a third-party assessment of its due diligence (as per section 2.5.7.3) to prevent recurrence of such actions.</td><td></td></tr>
<tr><td>2.5.2.
Determine if the project is in a conflict-affected or high-risk area

2.5.2.1.
During the early stages of project investment, the operating company shall conduct a screening analysis to determine if a proposed mining operation, transport routes, and, if relevant, processing facilities[21] are located in an area that may potentially become, currently is, or within the past two calendar years has been considered a conflict-affected or high-risk area.

The company may use the Conflict Barometer produced by the Heidelberg Institute for International Conflict Research[22] or another documented method to determine whether or not the risk-based due diligence outlined in 2.5.3 is required.

The Conflict Barometer rankings shall be used in the following manner:

<table>
<tr><th colspan="3">Within the past two years, the proposed mining operation, transport routes, and relevant processing facilities are located in an area of:</th></tr>
<tr><td>Dispute (1) or Non-violent Crisis (2)</td><td>No further due diligence necessary at this point in time.</td><td rowspan="3">Must conduct annual review using Conflict Barometer or other method to determine if the conflict status of the area has changed.</td></tr>
<tr><td>Violent Crisis (3)</td><td>Must continue with more in-depth screening analysis, to determine if there is armed conflict or serious human rights abuses occurring in the vicinity of the mine-related activities. If, after further screening, the company does not believe its mine-related activities are located in a conflict-affected or high-risk area, it must provide evidence supporting this conclusion.</td></tr>
<tr><td>Limited War (4) or War (5)</td><td>Further due diligence is necessary.</td></tr>
</table>
</td><td>Review screening analysis or the operating company documents related to screening analysis.

Interview the operating company representatives involved in screening analysis.

Interview community, workers, unions, civil society/NGOs and/or others to determine their opinions on conflict issues and level of risk

Interview company to ensure that it is continuing to monitor the potential for conflict. Review any documentation or methods being used to monitor the situation.</td></tr>
</table>

Mining and Conflict-Affected or High-Risk Areas Requirements	Means of Verification
If an alternative to the Conflict Barometer is used, or additional screening is undertaken, the company must document the sources of information and rationale used to determine whether or not further due diligence is required. 2.5.2.2. The screening analysis shall be documented and made available to the IRMA auditor.	
2.5.3. Conduct risk-based due diligence 2.5.3.1. If a proposed or existing operation is located in a conflict-affected or high-risk area, the operating company shall conduct risk-based due diligence to ensure it does not support or contribute to conflict or human rights abuses as a result of its activities. The risk-based framework shall contain the elements in 2.5.4 through 2.5.8.	Ensure that steps 2.5.5.– 2.5.9. have been followed.
2.5.4. Establish strong company management systems a. Adopt and clearly communicate to the public a company policy for minerals originating from conflict-affected and high-risk areas. This policy should include information on the due diligence to be conducted to ensure that mineral extraction and transport to downstream purchasers do not contribute to conflict or human rights abuses. b. Assign authority and responsibility to senior staff with the necessary competence, knowledge and experience to oversee the due diligence process. c. Put in place an organizational structure and communication processes that will ensure critical information, including the company policy, reaches relevant employees and contractors. d. Ensure that stakeholders are aware that the project-level grievance mechanism may be used to provide information on conflict-related concerns.	Ensure that there is a public policy, available on the operating company's web site and other publications, related to minerals originating from conflict-affected and high-risk areas. Interview relevant operating company staff about internal management and product controls/traceability systems. Interview stakeholders to ensure that there are acceptable grievance mechanisms in place to address conflict-related issues. Review with the company the chain of custody and/or traceability information
2.5.5. Conflict Risk Assessment 2.5.5.1. The operating company shall document the factual circumstances of its mineral extraction, transport and, if relevant, mineral processing, as outlined in OECD Guidance.[23] 2.5.5.2. The operating company shall conduct a conflict analysis that	Review the factual circumstances documented by the operating company. Review the conflict analysis undertaken by the company. Interview company representatives involved in carrying out the risk assessment

Mining and Conflict-Affected or High-Risk Areas Requirements	Means of Verification
examines structural/root causes, proximate causes and potential triggers for conflict in the area of operation. 2.5.5.3. The operating company shall consult with stakeholders in the identification of the potential risks and impacts related to the company's presence in the conflict-affected, high-risk area. 2.5.5.4. Based on the information compiled in 2.5.5.1 - 2.5.5.3, the operating company shall assess: the potential risks of causing, supporting, or benefiting armed conflict; or the potential risks that the company, through its operations, may tolerate, profit from, contribute to or facilitate the commission of any serious human rights abuses by any party in a conflict-affected or high-risk area.	Interview stakeholders regarding their involvement in the risk assessment process Review the risk assessment prepared by the company, to determine what potential risks were identified
2.5.6. Design and implement strategies to prevent or mitigate identified risks 2.5.6.1. The operating company shall develop strategies to prevent or mitigate risks identified through the risk assessment process. 2.5.6.2. The operating company shall collaborate with stakeholders to develop strategies to prevent or mitigate risks that are relevant to them.	Determine the process undertaken to develop and implementing mitigation strategies Interview the operating company representatives to determine that strategies are in place to mitigate risks Review any documents such as mitigation plans, to determine if strategies have been developed to address all identified potential risks Interview stakeholders involved in mitigation planning
2.5.7. Monitor and update conflict prevention and mitigation strategies 2.5.7.1. The operating company shall consult with stakeholders to develop criteria and processes to monitor the effectiveness of conflict prevention and mitigation strategies, and update strategies as needed. 2.5.7.2. Monitoring results shall be provided to stakeholders on the issues that are relevant to them. 2.5.7.3. If through monitoring or some other means it is discovered that a company has unintentionally or unknowingly contributed to armed conflict or serious human rights abuses, the operating company shall fund a third-party	Interview the operating company regarding how it monitors and updates mitigation strategies Review any updates to strategies (e.g., revisions of mitigation plans) Interview stakeholders about their involvement in monitoring mitigation activities, updating plans/strategies If relevant, interview stakeholders involved in the third-party assessment selection process

Mining and Conflict-Affected or High-Risk Areas Requirements	Means of Verification
assessment of its due diligence activities. a. The third-party assessment shall be conducted by independent experts who are selected after consultation with affected stakeholders. b. The third-party assessment shall include recommendations on how to improve the company's due diligence. c. The operating company shall report to stakeholders on how it plans to respond to the recommendations and prevent further unintentional/unknown contributions to conflict or serious human rights abuses.	
2.5.8. Report on Due Diligence 2.5.8.1. On an annual basis, the operating company shall publicly report on due diligence undertaken to ensure that it is not supporting armed conflict or the perpetration of serious human rights abuses while mining in a conflict-affected or high-risk area. a. The report shall include information on the risks that were identified and the steps taken to mitigate those risks. The company may exclude information that is culturally inappropriate, compromises the safety of any individual or is legitimate confidential business information. Justification shall be provided for information that is omitted. b. Reports shall be made available in the dominant language(s) of potentially affected stakeholders to the extent necessary in the cultural context.	Ensure that annual reports are publicly available Interview the operating company representatives about the verification process Review independent verification documents Interview stakeholders regarding their involvement in the verification process

Notes
IRMA reserves the right to refuse certification applications from operations located in conflict-affected or high-risk areas if IRMA determines that armed conflict in the vicinity of the mine makes it impossible for auditors to safely visit the operation.

Note also clause 1.1.10.1 of Chapter 1.1 in reference to the consideration of an IRMA "Policy on Association".

Third-Party Assessment: The decision to initiate third-party assessment may be made by an operating company that has recognized it has unintentionally or unknowingly contributed to armed conflict or serious human rights abuses. Third-party assessment may also be a suggested remedy agreed to through an IRMA Grievance Mechanism process (e.g., if stakeholders claim that a company has contributed to armed conflict or serious human rights abuses). The IRMA Grievance Mechanism (under development) will afford stakeholders and the operating company due hearing as part of the grievance process, and will attempt to resolve grievances through agreed-upon remedies.

The requirements in this chapter are based on "OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas," with additional best practices included. The OECD Guidance is focused on the whole of the supply chain, including extraction, transport, handling, trading, processing, smelting, refining and alloying, manufacturing, and selling of mesh products. The focus of the IRMA Standard is primarily on the extraction and possibly transportation parts of that supply chain. Consequently, this chapter requires operating companies to carry out conflict-related due diligence efforts for mining operations proposed or located in conflict-affected and high-risk areas, as well as product that is transported through conflict-affected or high-risk areas while is in the custody of the operating company.[24] If a processing facility is owned by the operating company or its parent corporation, the operating company shall conduct due diligence related to that facility, as well.

In conflict-affected and high-risk areas, the nature and intensity of conflict will almost certainly change over time. Consequently, conflict risk assessment should be carried out and strategies to prevent or mitigate conflict updated at minimum, on an annual basis, and more often if necessitated by the situation.

Chapter 2.6—Security and Human Rights

Background
Security risks to mining operations may result from political, economic, civil or social factors. The role of public or private security forces used in relation to mining operations should be to maintain the rule of law, including safeguarding human rights; provide security to mine workers, equipment and facilities; and protect the mine site or transportation routes from interference with legitimate extraction and trade.

Security arrangements that are founded on a substantial understanding of the context, stakeholders and international best practice can help a company reduce the potential for violent conflicts with communities or workers; contribute to peace and stability in the regions where it operates; and demonstrate respect for the human rights of stakeholders affected by their operations.

The Voluntary Principles on Security and Human Rights (VPs) provide a widely recognized framework for risk assessment and management of security forces that is respectful of human rights. Companies are encouraged to become members of the VPs to learn from and share knowledge with other companies and participants regarding best practices related to security and human rights.

Objectives/Intent of this Chapter
The objective of this chapter is to ensure that security for mining projects is managed in a manner that respects, protects, and promotes human rights and fundamental freedoms.

IRMA System Impact Indicators

- **Indicator 2.6.a** The number of security incidents associated with mining projects and involving inappropriate use of force.

- **Indicator 2.6.b** The number of human rights abuses associated with mining projects and related to mine security.

Security and Human Rights Requirements	Means of Verification
Applicable at operating company level:	
2.6.1. Policies and commitments related to security and human rights. 2.6.1.1. The operating company shall adopt and make public a policy acknowledging a commitment to respect human rights and fundamental freedoms in its efforts to maintain the safety and security of its operation; and a commitment that it will not provide support[25] to public or private security forces that have been credibly implicated in human rights abuses. 2.6.1.2. The operating company shall adopt and make public a commitment to implement systems consistent with the Voluntary Principles on Security and Human Rights (VPs). 2.6.1.3.	Policies may be specific to the operating company, or incorporated within broader corporate policies. Ensure relevant policies and commitments are publicly available, e.g., published on operating company web site or in materials distributed by the operating company, etc. Determine if company is a member of the VPs. If not, determine if the systems they have in place are consistent with the recommended systems in the VPs. Review operating company due diligence – e.g., risk assessments, records related to revenue transparency, documentation related

Security and Human Rights Requirements	Means of Verification
The operating company shall have a policy in place that governs the use of force by company personnel, and require, through contractual provisions with private security providers, that they abide by the policy. At minimum, the company's policy on use of force shall require that: d. Security personnel take all reasonable steps to utilize non-violent means before resorting to the use of force; e. If force is used it shall not exceed what is strictly necessary, and it shall be proportionate to the threat and appropriate to the situation; and f. Lethal force shall only be used for the purpose of self-defense or the defense of others if there is an imminent threat of death or serious injury. 2.6.1.4. The operating company shall inform stakeholders, including host governments and public and private security providers, of it commitments and security policies.	to payments and equipment transfers, human rights screening, used to determine if it may be supporting security forces that are perpetrating human rights abuses. Interview security personnel as to their understanding of appropriate use of force Review information not protected by privacy laws that relates to complaints/grievances, and operating company annual reports; and interview the operating company, workers or workers' representatives and community members to determine if there are cases of inappropriate use of force, and if so, how the operating company responded to the situation Interview community members and other stakeholders to see if they are aware of the company's policies and commitments.
2.6.2. Conduct security risk assessment 2.6.2.1. Prior to hiring security providers, the operating company shall conduct an assessment to identify security risks and potential human rights impacts that may arise from its security arrangements such as theft, robbery, vandalism, fraud, equipment transfers to private or public security forces, the potential for workplace or community violence, terrorism, or social unrest. 2.6.2.2. The assessment shall take into consideration a range of root-cause risk factors associated with the political, economic and social context in which the company operates or plans to operate, including the potential for conflict related to the company's hiring practices and legal factors that might impact how security is provided at the mine site. (This requirement may have been met if the operating company conducted a conflict analysis as per 2.5.5.2.). 2.6.2.3. The operating company shall consult with stakeholders in the identification of risks and potential impacts.	If the operating company makes it accessible, review risk assessment for specific components such as conflict analysis, identification of security risks, human rights analysis, etc. Interview the operating company representatives involved in carrying out the risk assessment Interview stakeholders to determine whether or not they had the opportunity to provide input into the risks and potential impacts identification process, and the review process

Security and Human Rights Requirements	Means of Verification
2.6.2.4. If the security risk assessment reveals the potential for conflicts to arise that may result in interactions between community members or workers and mine security providers, the operating company shall collaborate with communities and/or workers to develop strategies to reduce the risk of human rights abuses related to the company's security arrangements.	
2.6.3. Conduct human rights screenings 2.6.3.1. The company shall ensure, through human rights screenings, that company employees or private security personnel have not been convicted or credibly implicated of committing or aiding or abetting serious human rights abuses or breaches of international humanitarian law. 2.6.3.2. The operating company shall make a good faith effort to proactively screen public security personnel providing security to the mine, to ensure that they have not been convicted or credibly implicated of committing or aiding or abetting serious human rights abuses or breaches of international humanitarian law.	Review screening protocol and samples of screenings, and ensure that the company is conducting screenings as needed (e.g., when new security personnel are hired)
2.6.4. Conduct human rights training 2.6.4.1. The operating company shall provide training that incorporates information related to human rights, the VPs, company's policy on use of force, and other relevant information. Training shall be mandatory for operating company personnel involved in security, and for private security contractors that have not received equivalent training from their employers. The operating company shall offer to provide training to public security personnel that provide mine site security. 2.6.4.2. If requested by the community, the company shall offer a separate training for community stakeholders on the VPs, company's policy on use of force, and other relevant issues related to security and human rights.	Review records of training sessions, including whether participants were company employees, private contractors, public security or others If no private security employees have been trained, interview the operating company to see if they have verified that those private security forces have received training from other sources Interview community members to determine if training (if requested) has taken place
2.6.5. Management of complaints and grievances 2.6.5.1. The operating company shall ensure that a system is in place for reporting, documenting, tracking and addressing grievances from workers, the community and other	Review information not protected by privacy laws that relates to complaints/grievances and the operating company documentation related to follow-up Interview complainants, if possible,

Security and Human Rights Requirements	Means of Verification
stakeholders related to alleged incidences of abuse by security personnel, and other issues related to the operating company's management of security and human rights. The grievance mechanism shall be developed in accordance with IRMA chapter 5.3). Stakeholders shall be informed of the methods available to report security-related concerns.	and other stakeholders to determine accessibility and effectiveness of the operating company's management of complaints and grievances
2.6.6. Management of security incidents 2.6.6.1. The operating company shall: a. develop and implement systems for documenting and investigating security incidents; b. take appropriate actions to mitigate and remediate security incidents that lead to human rights abuses, injuries or fatalities; c. report security incidents to the appropriate authorities and national human rights institutions[26]; d. provide medical aid to all injured persons, including offenders; and e. ensure the safety of victims and those filing security-related allegations. 2.6.6.2. In the event of security-related incidents that result in injuries, fatalities or alleged human rights impacts on community members or workers, the company shall provide communities and/or workers with information on the incidents, any investigations that are underway, and consult with communities in an effort to develop strategies to prevent the recurrence of similar incidents.	Interview operating company on its procedures for documenting and investigating security incidents Interview company representatives and review documents related to security incidents Review records filed with authorities and compare to the operating company records of incidents Conduct interviews with community members or workers involved in security incidents
2.6.7. Reporting and disclosures on security and human rights 2.6.7.1. The operating company shall publish an annual report that includes operation-specific information related to security management, including: stakeholder consultations, the number and nature of complaints/grievances related to security providers, human rights and VPs trainings attended by security providers, the number and nature of security-related incidents, and if it is making any payments or equipment transfers to public security providers. 2.6.7.2. The operating company shall disclose to stakeholders the purpose and nature of private and/or public security providers, the security-related policies that are in place to	Ensure public accessibility to report Review annual report for completeness

Security and Human Rights Requirements	Means of Verification
protect the welfare of local communities and workers, and other relevant information related to site security such as: curfews, restricted roads and areas, policy regarding use of force, incident reporting protocols and investigation procedures. The operating company is not required to disclose information that may create security or human rights risks (e.g., specific troop movements, supply schedules, company personnel or product movements, or locations of valuable equipment). 2.6.7.3. If public security forces are used at the site, the operating company shall encourage host governments to permit making security arrangements transparent and accessible to the public, subject to any overriding safety and security concerns.	

Notes

Risk assessments in 2.6.2 are not one-time occurrences. According to the Voluntary Principles on Security and Human Rights Implementation Guidance Tools, "Any major decision relating to a project or company might represent an appropriate time to conduct or renew a VPs risk assessment. This may be alongside a project expansion, an acquisition or merger or any other major business decision. Major changes in external circumstances may bring about the need to conduct a VPs risk assessment. This may include a change in government, the outbreak of conflict, an economic crisis, or a major political or policy decision."[27]

Chapter 2.7—HIV/AIDS, Tuberculosis (TB) and Malaria

Background
HIV/AIDS, tuberculosis, and malaria are addressed together in this standard due to established linkages between the first two diseases and evidence suggesting increased susceptibility to malaria and tuberculosis in the presence of HIV/AIDS (ICMM 2008). In some regions many economic activities, including mining operations, can increase community health risks associated with HIV, tuberculosis and malaria as well as other infections to people in the areas where they operate. These diseases can increase the threat to public health and potentially harm the socioeconomic future of host communities and other related communities, such as workers' home communities or communities that share water resources. Mining companies can, however, play an important role in controlling the spread of HIV/AIDS and tuberculosis as well as improving the management of malaria.

Objectives/Intent of this Chapter
The aim of this chapter is to protect and improve the health of individuals, families, and communities affected by mining projects, by ensuring that effective measures are taken to mitigate the spread and the impacts of HIV/AIDS, tuberculosis and malaria.

IRMA System Impact Indicators

- **Indicator 2.7.a** HIV prevalence among population aged 15-24 years in communities affected by mining projects.
- **Indicator 2.7.b** Incidence and death rates associated with malaria in communities affected by mining projects.
- **Indicator 2.7.c** Incidence, prevalence and death rates associated with tuberculosis in communities affected by mining projects.

HIV/AIDS, Tuberculosis (TB) and Malaria Requirements	Means of Verification
Applicable at corporate owner level:	
2.7.1 The corporate owner(s) shall have a formal, public policy and associated programs in place to reduce the incidence, prevalence and/or death rates associated with HIV/AIDS, tuberculosis and malaria associated with their mining projects.	Review of corporate owner(s) policies and programs related to HIV/AIDS, tuberculosis and malaria Review of corporate owner(s) websites.
Applicable at operating company level:	
2.7.2. The operating company shall develop, adopt and implement policies, business practices, and targeted initiatives for HIV/AIDS, tuberculosis and malaria at all operations that meet the scope of this standard. 2.7.2.1. Specifically the operating company shall commit to and shall develop a program to: a. Advocate for addressing HIV/AIDS, tuberculosis and malaria as core business issues;	Review of policies and procedures Interviews with representatives from public health agencies, trades unions and other relevant stakeholders.

HIV/AIDS, Tuberculosis (TB) and Malaria Requirements	Means of Verification
b. Promote good corporate citizenship and best practices to address the infections; c. In partnership with public health agencies, trade unions and other relevant stakeholders, create and fund initiatives to educate the affected and vulnerable communities about these infections and modes of prevention of them, commensurate with the risks posed by mining; d. Conform with ILO guidelines for HIV workplace policies and initiatives, including non-discrimination against HIV positive employees; e. Operate in an open and transparent manner and be willing to share best practice for the prevention and treatment of these diseases with trade unions, other companies, Civil Society organizations, and policymakers.	
2.7.3. The operating company shall provide the following as part of its commitment to prevention and treatment: 2.7.3.1. HIV/AIDS a. The operating company shall not discriminate against employees and candidates for employment on the basis of their HIV status. b. The operating company shall provide free, voluntary and confidential HIV testing and counseling for all employees c. The operating company shall provide HIV/AIDS treatment for employees where it cannot reasonably be assumed that this will be provided in an effective manner by public or private insurance schemes at an affordable rate. d. The operating company shall provide access for contractors to education and other preventative programs, and to work with the operating company's or facility's contracting companies or others to identify ways for contract workers to access affordable treatment. e. The operating company shall work with public health authorities, communities, trade unions and other stakeholders towards ensuring universal access to treatment for dependents of employees.	Review of policies and procedures Review of worker contracts/ written terms and conditions. Interviews with representatives from public health agencies, trades unions and other relevant stakeholders. Interviews with contract workers.
2.7.3.2. Tuberculosis a. The operating company shall provide free and voluntary testing where this is not reasonably likely to be provided by public or private health programs at an affordable rate.	Review of policies and procedures Evidence of program implementation, e.g. interviews with medical staff, union representatives.

HIV/AIDS, Tuberculosis (TB) and Malaria Requirements	Means of Verification
2.7.3.3. Malaria a. The operating company shall ensure that company facilities (e.g., drainage and water storage and other mining facilities) are not breeding environments for malaria carrying mosquitoes. b. The operating company shall provide reasonable protection from infection by malaria carrying mosquitoes in company facilities and any company-provided housing (e.g. through the provision of medicated nets, screens or doors and windows, etc.).	Review of policies and procedures Evidence of program implementation Inspection of facilities and company-provided housing
2.7.4. The operating company shall undertake such programs with due respect to human rights and patient confidentiality.	Review of policies and procedures Consultation with local experts
2.7.5. The operating company shall make information available on its infectious disease mitigation program for HIV/AIDS, tuberculosis, and malaria.	Review of publicly available information

Notes

Human Immunodeficiency Virus (HIV) is a retrovirus that infects several kinds of cells in the human body. Acquired Immunodeficiency Syndrome (AIDS) is a physician's diagnosis that describes an HIV infected individual whose immune system has been compromised by the retrovirus. This chapter refers primarily to HIV because AIDS is a syndrome of diseases that can result from HIV infection.

This chapter applies to the operating company and its managed operations or designated facilities (including exploration programs, project development sites and operating facilities) where HIV/AIDS, tuberculosis and malaria pose a significant threat to employee and / or community health. The operating company must periodically report on its activities to control the spread of HIV/AIDS, tuberculosis and malaria.

The IRMA System Impact Indicators are selected from the UN Millenium Development Goals (MDGs).

Cross reference to other chapters

See Chapter 5.2 in relation to general monitoring of health impacts
See Chapter 2.8 in relation to general community engagement

Chapter 2.8—Community and Stakeholder Engagement

Background
Large-scale mining projects have the potential to last for decades. If mining projects are developed in locations with existing communities, the projects have the potential to significantly alter the lives of people living in those communities. Some changes may be beneficial to some community members, for example, through the provision of jobs, or through mining company investment in community development projects. But mining projects also have the potential to create negative impacts, and even be a source of social conflict, within communities.

Increasingly, mining companies, host governments, and financial institutions are recognizing that building strong, lasting relationships with those affected by a project can improve the identification and management of risks, as well as long-term project viability.[28] Poor engagement with communities and stakeholders, on the other hand, has been cited as an important issue in a large proportion of case studies about the conflicts between local communities and the extractive industry.[29]

According to the World Resources Institute, "Community engagement that is inclusive, accountable, and transparent is more likely to result in optimal outcomes for both communities and project proponents. When communities have the opportunity to collaborate with project proponents during the design and implementation of a project, proponents can more effectively identify and mitigate potential impacts, prevent harm, and shape the project to fit local conditions. Communities, in turn, can have a voice in determining how they will benefit from a project and whether a project fits their development priorities. This creates local ownership and support for the project, which is also good for the bottom line."[30]

In addition to affected communities, there will be other individuals, groups or communities who may have an interest in the project or who may affect or be affected by the project. The general principles for meaningful engagement of affected communities and other stakeholders are the same.

Objectives/Intent of this Chapter
The objective of this chapter is to ensure that mining projects carry out effective stakeholder engagement that enables communities to play a meaningful role in mining-related decisions that affect their health, wellbeing, safety, livelihoods and futures, in order to achieve broad community support.

IRMA System Impact Indicators

- **Indicator 2.8.a** The proportion of mining projects for which communities and stakeholders report that they have access to the information they need on issues that affect them.

- **Indicator 2.8.b** The proportion of mining projects for which communities report that they are satisfied with their level of involvement in decisions that affect their lives.

- **Indicator 2.8.c** The proportion of mining projects for which communities report that they feel listened to and that the operating company takes their concerns and grievances seriously.

- **Indicator 2.8.d** The proportion of mining projects for which women and vulnerable groups in the community report that their interests are taken into account.

- **Indicator 2.8.e** The average level of community and stakeholder participation reported for engagement processes related to mining projects.

- **Indicator 2.8.f** Changes in measures of community health associated with mining projects

- **Indicator 2.8.g** The proportion of mining projects for which communities report that they feel their lives are better (or at least not worse) than they were before the mine.

Community and Stakeholder Engagement Requirements	Means of Verification
Applicable at operating company level:	
2.8.1. Preparation for engagement with stakeholders. 2.8.1.1. In preparation for stakeholder engagement the operating company shall: a. Identify the range of stakeholders that may be interested in the operating company's activities b. Create a stakeholder engagement plan. The plan shall be scaled to the project risks and impacts and stage of development, and thus, will evolve over time. c. Consult with stakeholders to design accessible, culturally and gender-appropriate engagement processes. In some cases, there may be the need for more than one process to accommodate the needs of certain stakeholders. d. Consult with experts and/or stakeholders to determine barriers to meaningful participation, and make reasonable efforts to ensure that barriers are removed.	Consult with the operating company regarding its approach to stakeholder identification, analysis, engagement plan, efforts to develop the operating company and stakeholder capacity, and development of engagement processes Review stakeholder analysis and engagement plan Consult with stakeholders and communities regarding the development of mutually accepted engagement processes
2.8.2. Engagement, Consultation and Collaboration requirements 2.8.2.1. Operating company shall ensure that: a. Stakeholder engagement occurs prior to exploration, and is ongoing, throughout the life of the project b. Relevant information is disclosed prior to engagement c. A two-way dialogue and information exchange is fostered d. Engagement processes are inclusive e. Engagement is free from external manipulation, interference, coercion or intimidation 2.8.3.2. Consultation is required in various IRMA requirements. Consultation involves all of the aspects of stakeholder engagement in 2.8.2.1, as well as sufficient time and opportunity for stakeholders to understand the information	Consult with the operating company, stakeholders and communities regarding stakeholder and community engagement processes Consult with the company to determine the process undertaken by the company to verify that community representatives do represent the views of the community, and are reporting back to the community Consult with a diverse sample of the affected community to determine that community representatives have adequately represented their views, and have been reporting back to the community on their engagement with the company.

Community and Stakeholder Engagement Requirements	Means of Verification
and provide input or feedback prior to decision making. Operating companies are responsible for providing stakeholders with information on how they take their input or feedback into account in the decisions that are made. 2.8.3.3. Collaboration is required in various IRMA requirements. Collaboration involves all of the aspects of stakeholder engagement in 2.8.2.1, as well as sufficient time and opportunity for stakeholders to understand the information so that they can engage in a dialogue with the company. Through dialogue, all parties shall make a good-faith attempt to come to mutual agreement on decisions. 2.8.3.5. When the stakeholder engagement processes depend substantially on community representatives, the operating company shall make every reasonable effort to verify that such persons do in fact represent the views of affected communities and that they can be relied upon to faithfully communicate the results of consultations or collaborations to their constituents.	
2.8.4. Strengthening Capacity 2.8.4.1. The operating company shall collaborate with stakeholders to assess their capacity to effectively participate in engagement processes. Capacity needs may be legal, technical, process-oriented (e.g., negotiation skills), logistical, or other. 2.8.4.2. The operating company shall ensure that provisions are made (e.g., through funding, training, access to independent experts, etc.) to provide stakeholders from affected communities with the ability to fully engage in studies, assessments, and the development of mitigation, monitoring and community development strategies related to the mining operation.	Consult with the operating company and stakeholders to determine if attempts have been made to assess capacity needs and strengthen the capacity of affected community members so that they are able to fully participate in project-related engagement activities.
2.8.5. Access to information 2.8.7.1. Unless otherwise indicated in IRMA requirements, the operating company shall provide free, public access to its policies, project design plans, draft and final impact assessments, mitigation plans, and monitoring plans and reports, as well as other non-confidential information requested by stakeholders.	Review the operating company web sites to see if information is publicly available. Consult with communities and stakeholders to determine if they have timely access to the operating company documents and information in appropriate formats.

Community and Stakeholder Engagement Requirements	Means of Verification
2.8.7.2. The operating company shall report to community members and stakeholders on issues raised during engagement processes, and on progress made toward its social, environmental and other commitments. 2.8.7.3. Information shall be in formats that are accessible and understandable to local communities and stakeholders, and provided in a timely, culturally appropriate manner.	
2.8.8. Complaints and grievances 2.8.8.1. The operating company shall provide stakeholders with the opportunity to lodge complaints and provide information or suggestions in a confidential manner. 2.8.8.2. The operating company shall design and implement a grievance mechanism in collaboration with affected communities (See Chapter 5.3 on Grievance Mechanism.)	Consult with the operating company and communities regarding a process for stakeholders to communicate with the company in a confidential manner.

Notes
IRMA certifies mining projects. It is widely recognized, however, that best practice involves engaging with stakeholders and communities at the earliest stage possible.[31] Consequently, the following requirements must be met:

- If a company carried out the exploration that led to the development of a mining project for which IRMA certification is sought, it shall demonstrate that it initiated engagement with affected communities and relevant stakeholders during the exploration stage.

- In the case where an operating company acquired the project after the exploration phase, the operating company shall demonstrate that stakeholder and community engagement processes were initiated upon acquisition of the project.

Chapter 2.9—Obtaining Community Support and Delivering Benefits

Background
Communities living in close proximity to proposed mining projects have the potential to receive benefits, in the form of jobs, infrastructure, and community investment by the operating company, but also the potential to experience negative impacts such as loss of land and livelihood, depletion or contamination of water supplies, and increase in communicable diseases.

Leading companies recognize the need for delivering benefits to host communities, and that these benefits are best defined by the communities themselves. When communities' needs and aspirations are not at the forefront of mining company investments, experience shows that efforts often fail to deliver long-lasting benefits. Increasingly, efforts are being made to ensure that community investments made by mining companies provide both immediate and ongoing benefits that last beyond the life of the mining operation.

There is widespread acknowledgement from extractive industries that in addition to providing tangible benefits to communities, there is a need to obtain and maintain broad community support for their projects.[32] Not only does this help to provide reassurance to a company and its investors, it also encourages the development and maintenance of strong relationships with affected communities.

Objectives/Intent of this Chapter
The objective of this chapter is for companies to show that they have broad community support, and are able to provide tangible benefits that meet the needs of communities.

IRMA System Impact Indicators

- **Indicator 2.9.a** Independent assessments of level/ quality of community support for mining projects.

Obtaining Community Support and Delivering Benefits Requirements	Means of Verification
Applicable at operating company level:	
2.9.1. Policy commitment 2.9.1.1. The operating company shall publicly commit to enhancing the health, social and economic wellbeing of local communities, and developing a project only if it gains and maintains broad community support.	Review the operating company web site or other materials to ensure public commitment
2.9.2. Obtaining Community Support Prior to developing a new mining project or making significant changes to existing facilities (e.g., major mine expansions): 2.9.2.1.	Consult with the operating company and communities regarding process used to determine broad community support. The operating company shall furnish to IRMA auditors documentation to demonstrate that broad community

Obtaining Community Support and Delivering Benefits Requirements	Means of Verification
The operating company shall obtain the free, prior and informed consent of affected indigenous peoples (See Chapter 2.10); 2.9.2.2. The operating company shall obtain broad community support from non-indigenous communities affected by the operation: a. Broad community support shall be determined through local democratic processes or governance mechanisms that include broad community input prior to decision-making. b. When there is no local democratic process that includes broad community input prior to decision-making, or as an alternative to 2.9.2.2.a, broad community support may be determined by other means agreed to by the company and affected local communit(ies). c. Broad community support shall only be valid if it occurs after the operating company has carried out consultations with all relevant stakeholders regarding potential impacts and benefits of the proposed operation.	support has been obtained.
2.9.3. Supporting Community Health and Safety 2.9.3.1. Operating companies shall support communities in the management of mine-related community health and safety issues. The operating company shall conform to IFC Performance Standard 4, requirements 5 through 10 (IFC 2012). This includes: d. Evaluating the risks and impacts to the health and safety of affected communities; e. Designing, constructing, operating and decommissioning infrastructure and equipment in a safe manner; f. Minimizing the potential for community exposure to hazardous materials and substances; g. Avoiding, minimizing and mitigating adverse impacts on priority ecosystem services; and h. Avoiding or minimizing the potential for community exposure to water-borne, water-related, vector-borne and communicable diseases that could result from project activities. 2.9.3.2.	Consult with the operating company and stakeholders on company's conformance with IFC Standard 4, requirements 5-10; and review any documents that pertain to these requirements (e.g., health and safety-related management plans, risk and impact assessments, health action plans and mitigation strategies) Consult with communities to determine their involvement in health and safety risks and impact evaluation, and prevention/mitigation strategies Consult with the operating company and communities to determine how health monitoring indicators and monitoring programs were developed.

Obtaining Community Support and Delivering Benefits Requirements	Means of Verification
In addition to meeting the requirements of IFC PS4, above, the operating company shall: a. Collaborate with communities in the evaluation of health and safety risks and impacts, and in the development of prevention or mitigation strategies. b. Collaborate with communities to determine indicators of community health, and design and carry out community health monitoring programs.	
2.9.4. Planning Community Development and Benefits 2.9.4.1. The operating company, in collaboration with community stakeholders (including local government), shall contribute to the development of a participatory community development planning process to guide a company's contributions to community development and benefits. 2.9.4.2. The planning process shall be designed to ensure local participation, social inclusion (including vulnerable and traditionally excluded community members), good governance and transparency. 2.9.4.3. If requested by the community, the operating company shall provide funding for mutually agreed upon experts to aid in the participatory process. For example, experts may include facilitators, legal or technical advisors, or practitioners to build community capacity or help a community collectively determine needs, priorities, a long-term development vision, and plans. 2.9.4.4. The planning process may lead to a signed agreement, training programs, employment targets, local procurement targets, infrastructure projects, and community development initiatives and mechanisms (e.g., foundations for providing community grants, partnerships with other stakeholders such as government or non-governmental organizations). 2.9.4.5. Efforts shall be made to develop mechanisms that can be self-sustaining after mine closure, and to develop community capacity to oversee and sustain any projects or initiatives agreed upon through negotiations. 2.9.4.6.	Consult with the operating company on its community development initiatives Consult with communities (and relevant stakeholders) regarding satisfaction with the operating company's community development approach Review any community development, employment, training, procurement or other related plans, and determine if targets have been set.

Obtaining Community Support and Delivering Benefits Requirements	Means of Verification
In collaboration with the community, the operating company shall periodically monitor any mechanisms developed to deliver benefits, based on agreed upon indicators, and evaluate if changes need to be made to community development and benefit initiatives.	

Chapter 2.10—Free, Prior and Informed Consent (FPIC)

Background

For more than a quarter century, the international community has recognized that special attention needs to be paid to the individual and collective rights of indigenous peoples.[33] In 2007, the current global understanding of indigenous rights was articulated in the United Nations Declaration on the Rights of Indigenous peoples (UNDRIP).[34]

While many rights may be implicated, the following rights of indigenous peoples are especially relevant in relation to extractive industries, such as mining:[35]

- rights to property, culture, religion, and non-discrimination in relation to lands, territories and natural resources, including sacred places and objects
- rights to health and physical well-being in relation to a clean and healthy environment
- rights to set and pursue their own priorities for development
- the right to make authoritative decisions about external projects or investments[36]

One of the measures employed to safeguard these rights is the requirement to obtain the free, prior and informed consent (FPIC) of indigenous peoples in cases where development projects may affect them.[37] FPIC is both an internationally recognized right of indigenous peoples and a mechanism to ensure that their rights and interests will be respected.[38] The requirement for consent of indigenous peoples has been recognized by international law since 1989, when the General Conference of the International Labour Organization adopted Convention 169 on Indigenous and Tribal Peoples.[39] Since 1989, FPIC has gained broader application and more widespread support in national laws and various international instruments and bodies.[40]

Objectives/Intent of this Chapter

To ensure that mining companies respect the rights, dignity, aspirations, culture, and livelihoods of indigenous peoples.

IRMA System Impact Indicators

- **Indicator 2.10.a** The proportion of mining projects affecting indigenous peoples in which an FPIC agreement has been signed between those indigenous peoples and the companies involved.

Free, Prior and Informed Consent (FPIC) Requirements	Means of Verification
Applicable at operating company level:	
2.10.1. Free, Prior and Informed Consent (FPIC) Scoping	
2.10.1.1. Unless provisions are made in national law for earlier engagement, prior to any land disturbance the operating company shall initiate FPIC scoping. At a minimum, the operating company, in collaboration with indigenous peoples, shall: a. Identify potentially affected indigenous peoples who may be affected by the mining project, recognizing there may be more than one indigenous peoples affected by the project. b. Disclose to potentially affected indigenous	Review company documentation regarding identification of indigenous peoples in proximity to the prospective project. Consult with stakeholders who may be familiar with indigenous peoples in the area. Consult with the operating company and indigenous peoples to determine if collaboration efforts have been

Free, Prior and Informed Consent (FPIC) Requirements	Means of Verification
peoples the preliminary project concepts, the operating company's requirement to obtain FPIC, and indigenous peoples' right to FPIC. c. Determine if there are capacity issues (e.g., lack of access to legal or technical expertise, etc.) that may be prevent full and informed participation of indigenous peoples. If there are, company shall provide funding, and/or help secure other means to meet capacity needs. d. Identify indigenous rights and cultural heritage that may be affected by the project; and delineate traditional lands, territories and resources that may be directly and indirectly affected by the project. e. Identify social, cultural, economic, environmental, human rights and/or other assessments needed to determine the range of potential impacts that the project may have on indigenous peoples and their rights.	satisfactory. Determine if indigenous peoples have access to resources necessary to participate in an informed manner, e.g., legal, technical experts.
2.10.1.2. Collaboration with respect to FPIC scoping shall be gender and age inclusive, and involve a broad cross-section of members of the indigenous peoples. If there are societal norms or other barriers to participation for some groups within the indigenous peoples, operating company shall endeavor to enhance full participation by establishing separate processes or other means of inclusive engagement.	
2.10.1.3. Collaboration with respect to FPIC scoping shall be undertaken until there is mutual agreement by the operating company and indigenous peoples. Agreement may be documented through a jointly prepared "terms of reference" for collection of data (e.g., participatory mapping, baseline studies and/or impact assessments) or some other means.	Review FPIC scoping agreement. If no signed agreement, interview operating company and indigenous peoples' representatives to ensure that mutual agreement on scoping was reached.
2.10.1.4. The operating company and indigenous peoples shall carry out scoping activities as per the agreement.	Consult with the operating company and indigenous peoples to determine if scoping was carried out in line with the agreement.
2.10.2. Determine FPIC process (this may be carried out concurrent with 2.10.1)	
2.10.2.1. If there is more than one indigenous peoples that may be affected by the project, they may be included in a single process or separate FPIC processes, as desired by the indigenous peoples.	Consult with the operating company and indigenous peoples to determine if collaboration efforts have been satisfactory.
2.10.2.2. Indigenous peoples shall define a process of obtaining their	Consult with indigenous peoples to determine if this has occurred.

Free, Prior and Informed Consent (FPIC) Requirements	Means of Verification
free, prior and informed consent that includes: a. A description of how the indigenous peoples will make a collective decision regarding whether or not to provide consent. b. Details on who may legitimately represent the indigenous peoples in negotiations with the company, and who may sign off on an FPIC agreement. c. Conditions, if any, under which the operating company may return to seek FPIC for the same or similar project in the event that consent is not obtained through the initial FPIC process.	
2.10.2.3. The operating company and indigenous peoples shall: a. Mutually establish how the operating company and legitimate representatives of indigenous peoples' will share information, obtain feedback from and document the views of indigenous community members, including vulnerable or disproportionately affected members. b. Mutually determine logistical aspects of the FPIC process, including: where and when meetings will take place; who will participate in discussions or negotiations; provision of resources to fulfill capacity needs during the FPIC process; and other details. c. Mutually develop and sign a document outlining the agreed-to FPIC process.	Review FPIC process document. Ensure that both the operating company and indigenous peoples have signed off on the FPIC process.
2.10.3. Carry out FPIC process	Consult with the operating company and indigenous peoples to determine satisfaction with FPIC process. Include indigenous peoples not directly involved in FPIC negotiations or discussions to determine if they have been kept informed of the FPIC process and proposed project, and if their concerns and views were heard and taken into consideration as part of the process.
2.10.3.1. If consent is given, an FPIC agreement shall be signed or otherwise validated by the operating company and legitimate representative(s) of the indigenous peoples. An FPIC agreement may include provisions such as: economic terms and conditions (e.g., compensation, cost benefit and sharing, community development); duration/term of agreement; renewal, termination, renegotiating or withdrawal of consent; review and	Review signed agreement (or otherwise validated) agreement. .If auditor does not have access to the agreement, consult with operating company representatives, legitimate representatives of indigenous peoples, and other members of the indigenous peoples to confirm the outcome of the consent process.

Free, Prior and Informed Consent (FPIC) Requirements	Means of Verification
monitoring of agreement terms and conditions; a mutually agreed grievance process (e.g., in the event that obligations in agreement are not met); what will happen if a company wants to sell the project to a new company; and other terms and conditions that resulted from the FPIC process.	
2.10.4. If consent is not given, operating company shall abide by indigenous peoples' wishes regarding whether or not FPIC may again be sought at a later date. (See 2.10.2.2.c)	
2.10.5. An agreement is not the end of the FPIC process. Engagement with indigenous peoples shall continue in order to ensure that commitments made during the FPIC consent process are carried out, and that consent is maintained and/or renewed as circumstances necessitate.	Consult with the operating company and indigenous peoples to determine if on-going engagement has been satisfactory, and consent has been maintained.

Notes

This standard outlines the process by which mining companies will engage with indigenous peoples with the purpose of obtaining their free, prior and informed consent (FPIC).

Where the legal provisions of a state (e.g., national or industry-specific FPIC laws) do not meet or exceed the requirements of this FPIC standard then following a state's laws alone will not be considered sufficient for compliance with this chapter.[41]

FPIC, in the context of this standard, requires that engagement with indigenous peoples be free from external manipulation, coercion and intimidation; that potentially affected indigenous peoples be notified that their consent will be sought sufficiently in advance of commencement, of any activities; that there be full disclosure of information regarding all aspects of the proposed project in a manner that is accessible and understandable to the indigenous people; and that indigenous peoples can approve or reject a project or activity, and companies abide by the decision (see Glossary).

Because of the requirement that FPIC be free from external manipulation, coercion and intimidation, an FPIC process cannot be undertaken in situations where indigenous or tribal peoples are living in voluntary isolation. Consequently, IRMA will not certify a mines site that where affected communities include indigenous peoples living in voluntary isolation.

For the sake of brevity, this chapter uses the term indigenous peoples, recognizing that there may be peoples for whom this chapter applies who do not call themselves "indigenous peoples" (e.g., tribal, aboriginal, First Nations), but who have the right to FPIC according to international and/or national laws. There is no universally accepted definition of "indigenous peoples" and the prevailing view is that no formal universal definition is necessary for the recognition and protection of their rights.[42] Generally, however, a fundamental criterion for identifying indigenous peoples is their self-identification as such.[43] Therefore, indigenous peoples may include those not explicitly recognized by national governments. For the purposes of interpreting this standard IRMA proposes the definition presented in the Glossary, adopted from guidance published by the UN Permanent Forum on Indigenous Peoples.

Mining projects may apply for IRMA certification at different stages of the mine life cycle. It is widely recognized, however, that to fulfill indigenous peoples' right to free, prior and informed consent, that

consent must be sought at the earliest possible stage of development, as well as be maintained at subsequent stages. By definition 'prior' consent cannot be given retrospectively.

The requirements in the FPIC chapter apply to all new mines applying for certification. IRMA's policy on the application of FPIC requirements to existing mines that did not undertake an FPIC process with indigenous peoples remains to be developed. Preliminary discussions have proposed that in some, limited circumstances it may be possible to certify existing mines despite their not having received FPIC at the appropriate time, if these sites are subject to appropriate corrective action, and so long as such a policy did not create a loophole that weakened on-going and future compliance with FPIC requirements. Another approach under consideration is that if existing mines enter the IRMA program, they would be subject to the FPIC chapter only for major changes being proposed at these operations. In other words, if there are significant changes being proposed such as major mine expansions, new tailings facilities, etc. that affect indigenous peoples' rights, lands and/or use of traditional resources, FPIC must be obtained before these changes may be implemented. This is the general approach taken by IFC.[44]

Chapter 2.11—Cultural Heritage

Background
Cultural heritage is the legacy of physical structures, landscapes and artifacts, as well as intangible attributes of a group or society, such as activities or knowledge that has cultural, scientific, spiritual or religious value.[45]

Mining and other forms of industrial development can result in profound and irreversible damage to cultural heritage. Most obviously, exploration or mining can destroy or damage tangible cultural heritage, such as historical buildings or sites of spiritual significance to indigenous peoples. But damage to intangible cultural heritage may also occur as a result of inappropriate visitation of sites or the inappropriate use of traditional knowledge.[46]

The United Nations' Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) and Convention for the Safeguarding of Intangible Cultural Heritage (2003) encourage States and the international community to ensure that effective and active measures are taken for the protection, conservation and presentation of the cultural (and natural) heritage.[47]

The United Nations Declaration on the Rights of Indigenous peoples affirms that, "Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and cultural expressions."[48] The ability of a mining company address cultural heritage concerns is likely to be a pre-requisite to gaining the free, prior and informed consent (FPIC) of indigenous peoples prior to development.

Increasingly, mining companies are recognizing the importance of promoting cultural heritage as a means of showing respect and strengthening relationships with communities wherever they operate.[49]

Objectives/Intent of this Chapter
The objective of this chapter is to ensure that if mining development occurs, that it proceeds in a manner that respects and protects the cultural heritage of communities.

IRMA System Impact Indicators

- **Indicator 2.11.a** The number of complaints raised by communities in relation to mining projects regarding the protection of cultural heritage.

Cultural Heritage Requirements	Means of Verification
Applicable at operating company level:	
2.11.1. Operating companies shall comply with the requirements of IFC Performance Standard 8, Cultural Heritage.	Consult with the operating company and relevant project stakeholders to determine compliance with IFC PS8.
2.11.2. Free, prior and informed consent (FPIC) for indigenous peoples' cultural heritage 2.11.2.1. Where a mining project may impact cultural heritage of indigenous peoples the operating company shall not proceed with the project unless it obtains the free, prior and informed	Consult with the operating company and indigenous peoples to determine that impacts to and use of cultural heritage only occurred with their free, prior and informed consent.

Cultural Heritage Requirements	Means of Verification
consent of the indigenous peoples, in accordance with the general FPIC process outlined in IRMA Chapter 2.10. 2.11.2.2. Where a project proposes to use the cultural heritage, including knowledge, innovations, or practices of indigenous peoples for commercial purposes, the operating company shall: a. inform the indigenous peoples of their rights under national law; the scope and nature of the proposed commercial development; the potential consequences of such development; b. ensure fair and equitable sharing of benefits from commercialization of such knowledge, innovation, or practice, consistent with the customs and traditions of the indigenous peoples; and c. only proceed with the use of indigenous peoples' cultural heritage if it obtains the free, prior and informed consent of the indigenous peoples, in accordance with the general FPIC process outlined in IRMA Chapter 2.10. 2.11.2.2. A cultural heritage consent agreement that includes procedures to mitigate the loss of tangible or intangible cultural heritage, monitoring, commercial use of cultural heritage and/or other measures agreed to by the company and indigenous peoples, may be negotiated separate from, or as part of the broader FPIC process outlined in IRMA Chapter 2.10.	
2.11.3. Cultural heritage awareness, management and information sharing 2.11.3.1. The operating company shall ensure that employees receive training with respect to cultural awareness, cultural heritage site recognition and care, and protected cultural heritage sites. 2.11.3.2. The operating company shall develop and implement procedures for managing potential impacts to cultural heritage from operational activities, contractors and visitors. 2.11.3.3. If the project affects indigenous peoples' cultural heritage, the operating company shall collaborate with indigenous peoples to determine the appropriate types of information to convey to employees and others and information to be kept confidential.	Consult with the operating company Interview employees Review any training records Review company procedures Consult with indigenous peoples to ensure that the operating company has collaborated with them to determine what information is acceptable to share with employees and others.

Notes
IFC Performance Standard 8 addresses non-indigenous cultural heritage. Additional requirements have been added to address the situation where projects may affect the cultural heritage of indigenous peoples.

This chapter does not specify special requirements applicable to Indigenous and Community Conserved Areas (ICCAs) designated as such by indigenous peoples, but it is expected that such areas would be considered by those peoples to be included as a part of their cultural heritage and, as such, to be covered by the general requirements of the chapter. Specific consideration of the ecological attributes of such areas is addressed in chapter 3.8.

Chapter 2.12—Resettlement

Background
There are well-documented economic, social and environmental risks involved with resettlement. People may be economically displaced from their livelihoods as well as physically displaced from their lands, homes, communities, and social and cultural ties. If planned or executed poorly, resettlement may lead to increased impoverishment of affected households.

Resettlement may occur voluntarily, typically as a result of negotiated agreements that provide benefits to those who move.[50] Resettlement may also occur involuntarily, for example, when people do not wish to move but do not have the legal right to refuse land acquisition that results in displacement.[51] The International Finance Corporation's (IFC) Performance Standard 5 on Land Acquisition and Involuntary Resettlement states that involuntary resettlement should be avoided. The IFC encourages its clients to use negotiated settlements, even if they have the legal means to acquire land without the seller's consent.[52] Negotiated settlements help avoid expropriation and eliminate the need to use governmental authority to remove people forcibly.[53]

When deemed unavoidable, involuntary resettlement, like other evictions, must only be carried out under exceptional circumstances and in accordance with international human rights law.[54] In 2007, the United Nations special rapporteur on adequate housing published "Basic Principles and Guidelines on Development-Based Evictions and Displacement." The principles include, for example: i) the need for valid justification for the project and no other possible alternatives to the eviction; ii) consultation and participation of affected people during the entire process; iii) the right of persons to access timely remedy, such as a fair hearing, legal counsel, and legal aid; iv) prohibition of actions resulting in homelessness or deterioration of living conditions, v) provision of adequate relocation and/or adequate compensation before evictions are carried out; and vi) the right of affected persons, groups and communities to full and prior informed consent regarding relocation.[55]

Objectives/Intent of this Chapter
The objective of this chapter is to ensure that if resettlement associated with a mining project is unavoidable, that affected people are: meaningfully involved in resettlement decisions; compensated equitably; and have the opportunity to improve their living standards and income-earning capacity over pre-resettlement levels.

IRMA System Impact Indicators

- **Indicator 2.12.a** The number of unlawful forced evictions associated with mining projects.
- **Indicator 2.12.b** The proportion of displaced persons associated with mining projects who say they are satisfied with the resettlement engagement process and compensation received.
- **Indicator 2.12.c** The proportion of displaced persons associated with mining projects whose standard of living is improved post-resettlement.

Requirements	Means of Verification
Applicable at operating company level:	
2.12.1. The Operating company shall adhere to the requirements in IFC Performance Standard 5 (PS5), as well as additional IRMA requirements found in 2.12.2 to 2.12.8. Where IRMA requirements differ from IFC PS5, operating companies shall adhere to IRMA requirements.	If an IFC-funded project, review documentation showing adherence to IFC PS5. If not an IFC project, interview relevant operating company employees to determine adherence with IFC PS5 requirements.

2.12.2. Avoid or minimize resettlement 2.12.2.1. The operating company shall avoid resettlement wherever feasible by exploring alternative project design. When avoidance is not possible, the operating company shall minimize resettlement. 2.12.2.2. The operating company shall document decision-making regarding alternative project design, and efforts to minimize resettlement.	Consult with the operating company on project alternatives considered, and rationale for the selected option. Demonstrate that attempts have been made to avoid and minimize physical and economic displacement and that particular attention has been paid to the poor and vulnerable in its selection of project design. Review decision-making documentation. Consult with affected peoples to determine if their input on alternatives was taken into consideration.
2.12.3. Provide access to independent experts 2.12.3.1. The operating company shall facilitate access, if desired by potentially affected people, to independent legal or other expert advice. This may involve providing funding to enable affected people to select and consult with experts; working with government agencies and/or non-governmental organizations to provide free legal and other services to affected people; or another means. 2.12.3.2. Independent experts shall be available to affected people during: the risks and impacts assessment; the consent process; and the development of a compensation framework and resettlement action plan.	
2.12.4. Engagement with communities 2.12.4.1. The operating company shall consult with potentially affected individuals and communities, including host communities, in the resettlement risks and impacts assessment. 2.12.4.2. The operating company shall collaborate with affected communities and individuals to develop a compensation framework and resettlement action plan (RAP) and/or livelihood restoration plan (LRP). The operating company shall ensure that the compensation framework, RAP and/or LRP include measures to assist women and vulnerable groups that may be disproportionately affected by resettlement. 2.12.4.3. Consultation and collaboration shall occur in accordance with Chapter 2.8 of the IRMA Standard. Special attention shall be paid to including women and vulnerable groups.	Interview with the operating company regarding its engagement processes. Interview affected communities and stakeholders, including women and vulnerable individuals, regarding their satisfaction with consultation and collaboration with respect to impact assessment, the development of compensation frameworks and resettlement action plans and monitoring programs.

2.12.4.4. Stakeholder involvement in the resettlement monitoring program shall be in accordance with IRMA Chapter 5.2 (requirements 5.2.4 - 5.2.9).	
2.12.5. Consent of resettled communities 2.12.5.1. If a project requires the resettlement of indigenous peoples, the operating company shall not proceed with resettlement unless it obtains the free, prior and informed consent (FPIC) of affected indigenous communities as per IRMA Chapter 2.10. 2.12.5.2. If the resettlement affects non-indigenous peoples, the operating company shall seek to obtain the free, prior and informed consent of all affected families and single adult individuals, but at minimum shall obtain the free, prior and informed consent of at least 80% of affected families and single adult individuals who will be physically or economically displaced in order to proceed with resettlement.[56] 2.12.5.3. The operating company shall collaborate with affected peoples to establish an acceptable oversight mechanism for the consent process.	Consult with indigenous peoples to ensure that they have provided FPIC for resettlement (if relevant) Review of company documentation to show that prior consent was achieved by a sufficient percentage of those being resettled (e.g., signed settlement agreements that include a provision that the signers' consent was obtained). Consult with affected individuals to ensure that their consent was free, prior and informed.
2.12.6. Risks and impacts assessment 2.12.6.1. The operating company shall assess the direct and indirect risks and impacts from resettlement. The assessment shall include: a. The collection of socio-economic baseline data including a census to identify persons who will be eligible for compensation related to physical and economic displacement; b. Identification of risks and impacts related to displaced persons, host communities, and the potential for conflicts that may occur as a result of relocation; c. A meaningful assessment of the risks and impacts associated with alternative project designs with the objective of avoiding the acquisition of land that results in the physical or economic displacement of people. 2.12.6.2. The resettlement assessment shall be undertaken by, or	Review risks and impact assessment to ensure that alternative project designs have been considered Consult with affected community members, including vulnerable persons, regarding their input on alternative project designs, and risks and impacts Consult with the company and review the qualifications of the company employees or consultants that carried out the resettlement assessment.

with the assistance of qualified external experts with experience in resettlement related to large-scale development projects. 2.12.6.3. The risks and impacts assessment shall be made public, or, at minimum, be made available to all potentially affected people and their advisors.	
2.12.7. Compensation Framework 2.12.7.1. The operating company shall collaborate with affected parties to develop a compensation framework that is discussed and signed off by the affected parties, and used as the basis for negotiating compensation settlements.	Review the compensation framework, and ensure it has been signed by affected parties.
2.12.8. Resettlement at existing operations 2.12.8.1. If direct impacts become significantly adverse at any stage of the mining operation, so that the relevant communities or individuals are left with no alternative except to resettle or become economically displaced, the operating company shall apply the requirements of this chapter. This shall occur even where no initial project-related land acquisition was involved.	If relevant, consult company and affected community members experiencing significant adverse project impacts regarding the need for or undertaking of resettlement efforts.

Notes
This chapter applies to the operating company and its managed operations or designated facilities (including exploration programs, project development sites, operating facilities and ancillary facilities associated with operation) where involuntary resettlement is being considered by the operating company.

This chapter also applies to voluntary resettlement. Voluntary resettlement can occur as part of a community development project, for example to cultivate more fertile soil, to move away from a hazardous or polluted area, or to improve access to basic services and facilities. In other circumstances, people may agree to move, on freely negotiated terms, to make way for a project because they believe that the resettlement terms are better than their current conditions. In all of these situations, despite resettlement being voluntary, it remains necessary to safeguard against risks such as impoverishment, and implement measures to maximize benefits for resettlers. Thus the same policy objectives and entitlements should apply to voluntary resettlement as involuntary resettlement.[57]

This standard does not permit forced evictions, which occur when persons are involuntarily resettled without any access to legal or other protections. IFC Performance Standard 5 (and therefore IRMA chapter 2.12) contains many of the substantive and procedural safeguards that IFC deems necessary for involuntary resettlement to be carried out without resort to forced evictions.[58] IRMA chapter 2.12 goes beyond IFC Performance Standard 5, by requiring companies to facilitate access by affected people to legal and other experts (provision 2.12.3).

Environmental Responsibility

Chapter 3.1—Water Quality

Background
Mine operations can affect water quality in many ways, including: the discharge of mine water to the environment; allowing precipitation to seep through and leach contaminants from mine wastes into groundwater and surface water; and, the release of uncontrolled stormwater.

Remediation of mining-caused pollution can be extremely costly, and prevention of pollution in the first instance is preferable

Responsible mining minimizes water pollution by limiting the discharge of polluted water to the environment, by limiting the amount of infiltration to waste rock, and by collecting all contaminated water before it crossed the mine facility boundary.

Objectives/Intent of this Chapter
Mining projects minimize the pollution of ground and surface water, and achieves the quality specifications listed in Table 3.1.a. "IRMA Surface Fresh Water Quality Criteria," and Table 3.1.b. "IRMA Ground Water Quality Criteria," respectively.

IRMA System Impact Indicators

- **Indicator 3.1.a** The proportion of mining projects in which IRMA water quality specifications (or equivalent) are met at the points of compliance.

Water Quality Requirements	Means of Verification
Applicable at operating company level:	
3.1.1. Water Quality Monitoring Program 3.1.1.1. The operating company shall establish, implement and maintain a documented program to monitor the potential impacts of the mining operation on both surface and ground water.	
3.1.2. Water Quality Sampling 3.1.2.1. The water quality monitoring program shall include a water quality sampling plan informed by baseline water quality results, location of mine facilities, and geochemical characterization of mine waste or other materials which have the potential to adversely impact water quality.	Review monitoring program. Compare predicted water quality with actual water quality data.
3.1.2.2. A new project shall utilize an accepted geochemical / hydrological numerical modelling program that:	

Water Quality Requirements	Means of Verification
a. Identifies which contaminants will be of current and future potential concern; b. Accounts for temporal changes in both water quality and water quantity; c. Predicts potential surface and ground water quality over time for pollution-generating facilities on the mine site, and at the points of compliance; and, d. Predicts whether surface and/or ground water quality will be an issue post-closure.	
3.1.2.3. For new projects, a sufficient number of statistically reliable samples covering a period of at least two years shall be collected prior to the start of mine construction to establish baseline water quality for both surface and ground waters.	Two years of baseline surface and ground water quality data is considered the minimum required.
3.1.2.4. Sampling shall take place at a sufficient number of trigger and compliance sampling points to determine whether the IRMA water quality criteria for the surface and ground waters affected by the mining project operations are being met.	Assess the number and locations of water quality measurement monitoring points.
3.1.2.5. Sampling points shall be selected to ensure reliable evaluation of the nature and extent of any mine-related contamination	
3.1.2.6. Analytical detection limits shall be adequate to confirm that the IRMA water quality criteria are being met at all sampling points.	The company should use a laboratory that can provide detection limits at or below the individual IRMA criteria, where technically possible. The analytical detection limit is the minimum concentration of a substance that can be measured and reported with 99% confidence that the value is above zero.
3.1.2.7. During operation, and post-closure, a sufficient number of samples shall be collected to provide statistical reliability to the measurements at each sampling point. Efforts shall be made to identify when, and to take samples at times with maximum contaminant concentrations.	
3.1.2.8. The monitoring and modelling program will be calibrated by comparing the predicted and actual water quality data. The calibration should occur yearly but, at a minimum be conducted every three years.	
3.1.3. Water Quality Criteria 3.1.3.1. The operating company shall demonstrate that all of its	Confirm the applicable Water Quality Criteria have not been exceeded since the last audit. If local published criteria are stricter than the IRMA criteria, then the published criteria would

Water Quality Requirements	Means of Verification
water discharges, with the exception of unimpacted storm water, to both surface and ground waters comply with: a. The water quality criteria in Tables 3.1.a. or 3.1.b.; or, b. The applicable baseline water quality criteria; unless, c. National or other legal water quality requirements where more restrictive.	apply (by constituent). **Note** The quality criteria are deemed to be met if at least 95% of the measurements over the past 12 months for each specified parameter are met. It is intended that 3.1.3.1 and 3.1.3.2 apply to process water discharges, not to storm water – which is discussed in 3.1.6.
3.1.3.2. The water quality criteria for surface and ground water shall be met: a. At the point of discharge for surface waters; or, b. The facility boundary for ground water; except, c. Where a mixing zone is allowed for surface or ground waters.	(b. applies at new mines, or at mines that are presently meeting this requirement.)
3.1.3.3. The operating company shall ensure that protected waters and/or high-quality waters shall not be degraded above baseline water quality by mine discharges.	Note the presence of protected and high-quality waters (as defined in the Glossary). (This applies at new mines, and at existing mines where practicable.)
3.1.4. Mixing Zones 3.1.4.1. A surface or/and ground water mixing zone shall only be allowed under the IRMA Standard if: a. It is as small as practicable; b. It does not contain a zone of acute toxicity to any resident or transient aquatic species; c. It does not block the passage of migratory fish; d. It does not include the water intake or drinking water well for any public or private drinking water source. e. It was subject to a comprehensive, documented risk assessment prior to implementation f. It was subject to a credible, transparent process of community review and consultation (per section 2.8.3.2. of the IRMA Standard) prior to implementation. g. It complies with all the legal requirements of permitting agencies. 3.1.4.2. The discharge of effluent into a surface water mixing zone	Confirm that a risk assessment was conducted and that the mixing zone has been reviewed through the IRMA Community Consultation process Review the calculations for the extent of the mixing zone to determine if an effort was made to make the mixing zone as small-as-practicable. Review the water treatment scheme at the mine to determine if the water treatment technologies being applied reflect best practices. Review the water treatment scheme to ensure that technical feasibility and ecosystem benefits get equal consideration with economic cost in the choice of treatment technologies. Confirm that untreated mine effluent is not being discharged into a mixing zone.

Water Quality Requirements	Means of Verification
shall take place only after the application of best practice water treatment technologies. 3.1.4.3. If fish are present, Whole Effluent Toxicity testing shall be conducted at least annually on the effluent to verify the absence of acute toxicity. 3.1.4.4. Discharges of effluent shall match the local hydrograph in relation to both contaminant concentrations and surface water flows to the extent practicable.	Confirm that no zones of acute toxicity exist in the mixing zone. Review records of effluent discharge, in comparison to local hydrograph and contaminant levels.
3.1.5. 'Trigger Levels'. 3.1.5.1. The operating company shall define 'trigger levels' which indicate that water quality at specified sampling points is degrading, although it has not yet reached a level at which the applicable Water Quality Criteria are being exceeded. 3.1.5.2. The operating company shall specify and document the pre-planned responses that will be taken if a trigger level is consistently exceeded, in order to ensure that the applicable Water Quality Criteria are not subsequently exceeded.	Confirm that trigger levels have been specified for each contaminant at each point of compliance or trigger monitoring location. Trigger levels are fractions of compliance levels at the specified sampling locations – e.g., 25%, 50%, 75%. Confirm that pre-planned responses have been developed in case trigger levels exceeded. The purpose of these "responses" is drive action beyond the "monitor the problem" stage. These responses might include additional water treatment, source control, pumping, installation of diversion structures, etc. Continued monitoring may be a necessary part of the response, but by itself would not be sufficient as a response.
3.1.6. Stormwater 3.1.6.1. Each significant stormwater discharge point shall be monitored for dissolved metals at least once per year, during a storm event. 3.1.6.2. If the level of dissolved metals in the stormwater discharge exceeds IRMA water quality criteria, additional physical treatment (e.g. increased settling time, the addition of flocculants, or other treatment technologies) and BMPs shall be employed subsequently to ensure that future stormwater discharges minimize water quality impacts, as determined by the IRMA water quality criteria (measured as dissolved metals). Stormwater is not intended to meet the IRMA Suspended Solids criteria. (see Notes for additional discussion)	Review water quality data for the period since the last audit. If water quality data exceed IRMA water quality criteria as measured by dissolved metals, review treatment changes (e.g. increased settling time, the addition of flocculants, or other treatment technologies) that are proposed to remedy the problem.

Water Quality Requirements	Means of Verification
3.1.7. Land Application Disposal (LAD) 3.1.7.1. LAD areas shall be designed so that breakthrough of contamination will not occur. 3.1.7.2. Land Application Disposal (LAD) shall not be a primary treatment method for metals. 3.1.7.3. Prior to land application there shall be a rigorous analysis that shall show: a. The absorbent capacity of the soils in the LAD; b. Which contaminant will saturate the soils first; c. That monitoring, including trigger levels, for both surface and groundwater contamination in the LAD area has been implemented. d. That the level of contaminants taken up in plants will pose no danger of contaminant accumulation that poses a risk to human health, wildlife, or domestic animals. 3.1.7.4. If any contaminant trigger level is exceeded at a LAD surface water or groundwater trigger monitoring point, use of the LAD area shall be discontinued until all contaminant levels drop below the trigger levels.	Ensure that some level of treatment to remove contaminants has been applied before the effluent is land applied. The use of LAD for "polishing" is appropriate, where the metal contaminant concentration acceptable for polishing is the level at or below the trigger level for that contaminant. If the concentration of the metal contaminant exceeds the trigger level, then a means of primary treatment should be employed before LAD is applied. Check technical reports for soil absorption capacity information. Review monitoring results to verify compliance with criteria. The use of the trigger level to control use of LAD is help prevent an exceedance at a point of compliance, which would be difficult to mitigate for an LAD area.
3.1.8. Publication of Water Monitoring Results 3.1.8.1. Water quality data for surface and groundwater points of compliance, and the trigger-level measuring points, shall be published in tabular format, and graphical format if available, at least annually on the mine or company website.	The goal of publishing water quality monitoring results is to allow the public, and their technical experts, to review compliance data to verify both compliance and trends in water quality. Data should be presented in a form/format that facilitates this analysis.

TABLE 3.1.a. - IRMA SURFACE FRESH WATER QUALITY CRITERIA

SURFACE WATERS

METALS / METALOIDS	Units	Criteria[1]	Source for IRMA Criteria[2]
Aluminum	ug/L	200	EU & USEPA (drinking water)
Antimony	ug/L	5	EU
Arsenic	ug/L	10	USEPA, AUS-NZ & EU
Barium	ug/L	1000	Health CA (drinking water)
Cadmium	ug/L	X [3]	USEPA
Calcium	mg/L	measure	
Chromium (Total)	ug/L	50	CCME, AUS-NZ & EU
Cobalt	ug/L	50	CCME & AUS-NZ
Copper	ug/L	X [3]	USEPA
Iron	ug/L	300	USEPA & CCME
Lead	ug/L	X [3]	USEPA
Magnesium	mg/L	measure	
Manganese	ug/L	50	USEPA, Health CA & EU (drinking water)
Mercury	ug/L	0.5	EU
Molybdenum	ug/L	10	AUS-NZ, FAO (irrigation)
Nickel	ug/L	X [3]	USEPA
Phosphorus (Total)	mg/L	measure	
Potassium	mg/L	measure	
Selenium	ug/L	5	USEPA & AUS-NZ
Silver	ug/L	X [3]	USEPA
Sodium	mg/L	measure	
Thallium	ug/L	2	USEPA = drinking water (Primary MCL)
Uranium	ug/L	10	CCME & AUS-NZ
Vanadium	ug/L	100	CCME & AUS-NZ (irrigation)
Zinc	ug/L	X [3]	USEPA
NON-METALS / IONS			
Alkalinity Bicarbonate (as CaCO3)	mg/L	measure	
Alkalinity Total (as CaCO3)	mg/L	measure	
Ammonia (Total)	mg/L	X [3]	USEPA
Chlorine / *Chloride*	mg/L	0.005 / 250	USEPA, CCME, AUS-NZ, EU
Cyanide (Free / *WAD*)	ug/L	5	CCME
Dissolved Organic Carbon	mg/L	measure if Biotic Ligand Model is used to calculate chronic metals criteria	
Fluoride	mg/L	1	CCME, FAO (irrigation)
Hardness	mg/L	measure if USEPA hardness-based method is used to calculate chronic metals criteria	
Hydrogen Sulfide	ug/L	2	USEPA
Nitrates + Nitrites	mg/L	10	USEPA & CCME
Nitrogen, total (as N)	mg/L	measure	
pH (standard units)	s.u.	6.5 - 9.0	USEPA & CCME
Sulfate	mg/L	500	USEPA, Health CA, & AUS
Suspended Solids	mg/L	15	MMER
Temperature	degC	>3 diff	IFC
Total Dissolved Solids	mg/L	500	USEPA & Health CA

Note:

[1] Metals measured as "Total Recoverable." Metals may be measured as "Dissolved" if desired.

[2] See Table 3.1.b. "Notes" for a list of abbreviations

[3] Use USEPA Hardness-based or Biotic Ligand Model (BLM) "chronic" calculations for metals, and Temperature and pH based calculations for Ammonia

TABLE 3.1.b. - IRMA GROUND WATER QUALITY CRITERIA

GROUND WATERS

METALS / METALOIDS	Units	Criteria[1]	Source for IRMA Criteria	
Aluminum	ug/L	200	DW	EU & USEPA
Antimony	ug/L	5	DW	EU
Arsenic	ug/L	10	DW	USEPA, Health CA, AUS, EU, WHO
Barium	ug/L	1000	DW	Health CA
Cadmium	ug/L	5	DW	USEPA, Health CA & EU
Chromium (Total)	ug/L	50	DW	Health CA, AUS, EU & WHO
Copper	ug/L	200	I	CCME, AUS-NZ, FAO
Iron	ug/L	300	DW	USEPA, Health CA, & AUS
Lead	ug/L	10	DW	Health CA, AUS, EU & WHO
Manganese	ug/L	50	DW	USEPA, Health CA & EU
Mercury	ug/L	1	DW	Health CA, AUS & EU
Molybdenum	ug/L	10	I	AUS-NZ, FAO
Nickel	ug/L	20	DW	AUS & EU
Selenium	ug/L	10	DW	Health CA, AUS & EU
Silver	ug/L	100	DW	USEPA & AUS
Thallium	ug/L	2		USEPA = drinking water (Primary MCL)
Uranium	ug/L	25	DW	USEPA, Health CA, AUS & WHO
Vanadium	ug/L	100	I	CCME & AUS-NZ
Zinc	ug/L	5000	DW&I	USEPA & Health CA
NON-METALS / IONS				
Alkalinity Total (as CaCO3)	mg/L	measure		
Chlorine / *Chloride*	mg/L	5 / 250	DW	AUS & WHO
Cyanide (Free or WAD)	ug/L	150	DW	USEPA, Health CA, AUS & EU
Fluoride	mg/L	1	I	CCME, FAO (irrigation)
Nitrate & Nitrite (as N)	mg/L	10	DW	USEPA & Health CA
pH (standard units)	s.u.	6.5 - 8.5	DW	USEPA, Health CA, & AUS
Sulfate	mg/L	500	DW	USEPA, Health CA, & AUS
Total Dissolved Solids	mg/L	500	DW	USEPA & Health CA

Notes:
(1) Metals measured as "Total Recoverable"
(2) DW = Drinking Water Standard
(3) I = Irrigation/Agricultural/Livestock Standard
(4) AUS = Australian National Health and Medical Research Council
(5) AUS-NZ = Australian and New Zealand Environment and Conservation Council
(6) CCME = Canadian Council of Ministers of the Environment
(7) EU = European Union
(8) FAO = Food and Agriculture Organization of the United Nations
(9) Health CA = Health Canada
(10) IFC = International Finance Corporation of the World Bank Group
(11) USEPA = US Environmental Protection Agency
(12) WHO = World Health Organization of the United Nations
(13) MMER = Canadian Metal Mining Effluent Regulations

Notes
The IRMA Standard addresses issues relating to water quality in this chapter. The following chapter (chapter 3.2) considers issues relating to the quantity of water used.

Water Quality Criteria
The IRMA surface and ground water quality criteria were chosen to protect all potential beneficial uses – aquatic organisms (surface waters), drinking water, human health, and irrigation, agriculture and livestock. While this may be a rigorous requirement, it is best practice.

The IRMA water quality criteria were chosen from a mix of international water quality criteria, which are listed in the Notes of Table 3.1.b. Sometimes the criteria from different sources matched, in which case that number was used. If they differed slightly then the most prominently cited number was chosen. In most cases where only one entity had a criteria, that contaminant was not listed. There were exceptions to these guidelines. A detailed list comparing the criteria from each international source is available, along with an explanation of how a particular IRMA criterion was chosen among the various international criteria. This detailed comparison exists on an Excel spreadsheet that is available on request.

Stormwater
The goal of the IRMA Standard is to identify whether there are significant problems with stormwater runoff from the mine facility, and to attempt to rectify these problems using existing Best Management Practices (BMPs).This chapter contains a requirement to measure stormwater discharges once a year during a storm event (this is a best practice). It is assumed that all sample collecting will be conducted in a manner that does not jeopardize the safety of the sample collector.

Most stormwater is routed through a settling pond, although that is not a requirement. Whether it is or not, stormwater should meet either IRMA numerical water quality standards or baseline water quality, since it is technically un-impacted water. If it does not, then something on the mine site is impacting stormwater, so some form of additional treatment is required. Additional treatment could be as simple as increasing the residence time or adding flocculent in a settling pond, or employing better BMPs, including increased settling time, the addition of flocculants, or other treatment technologies.

Since most impacts of metals to organisms are related to dissolved quantities of metals, and since the suspended solids in stormwater are always high and will yield correspondingly high Total metals levels, IRMA is recommending using “Dissolved” metals to judge compliance with the IRMA criteria. It is the intent that stormwater meet the IRMA criteria for Suspended Solids through settling or other means, but it is not an absolute requirement for storm related discharges because of high storm flow volumes.

Cross References to other Chapters
See:
- Chapter 3.2 (Water Quantity)
- Chapter 3.3 (Waste Disposal and Long-Term Storage) for discussions of pit and underground backfill, liners, and lake-riverine-ocean waste disposal
- Chapter 4.1 (Reclamation & Closure) for discussions of financial sureties and long-term/perpetual water treatment.

Chapter 3.2—Water Quantity

Background
Mines are often a large water user for their locale, even if not over a large region. The impacts of the quantity of water used by a mining project are highly location-specific, depending critically on the local climate as well as on competition for water for uses other than mining. In arid regions water scarcity may be a critical concern, whereas in humid regions challenges arise from the need to divert water in order to develop a mine.

The depletion of groundwater by dewatering operations and the presence of large mine facilities can take decades to replenish after mining ceases, and in some instances, groundwater levels and flow directions can be altered indefinitely.

Key aspects of responsible mining in relation to water use include the efficient use of production water, the withdrawal and disposal of mine dewatering water, stormwater, and floodwater in ways that minimize harm to surrounding water users and environmental resources, and ensuring that total withdrawals maintain environmental flows in nearby streams, springs, lakes, wetlands and any other surface water resource

Responsible mining protects water resources by reducing the amount used for processing and by minimizing the need for dewatering or efficiently using the dewatering water. Responsible groundwater use will protect other groundwater users by not causing unreasonable groundwater drawdown.

Objectives/Intent of this Chapter
The purpose of this chapter is to ensure that mining projects minimize their consumptive use of water and the impacts caused by their dewatering operations, and the amount and timing of project water use ensures the detrimental impact of dewatering on the environmental flows of affected streams and springs is minimized.

IRMA System Impact Indicators

- **Indicator 3.2.a** The proportion of rivers and streams potentially affected by mining projects whose environmental flow is maintained over time.

- **Indicator 3.2.b** Groundwater levels in areas potentially affected by mining projects.

Water Quantity Requirements	Means of Verification
Applicable at operating company level:	
3.2.1. Exploration and Planning	
3.2.1.1. During advanced mine exploration, the operating company shall collect sufficient hydrogeologic data to: a. Write a conceptual flow model of the site; b. Determine whether dewatering will be required, and c. Estimate whether a pit lake will form, and its volume.	Verify that adequate hydrogeologic data has been collected to complete the proper analyses and assessments.

Water Quantity Requirements	Means of Verification
3.2.1.2. This data should also be sufficient to: a. Estimate whether production water is available and the impacts of using it; and, b. Determine surface water flows to estimate necessary passby flows, if surface diversions will be required.	
3.2.2. Surface Water Use	
3.2.2.1. Passby Flows	
3.2.2.1.1. The operating company shall establish passby flows for sites affected by the mining project, based on maintaining a specified passby flow unless the existing water rights regime prevents its use (see 3.2.2.3), using the natural flow regime method (NFRM) (Poff et al 1997) or a similar method that accounts for habitat, in-stream flow, and channel-building flow requirements. a. If the watershed area exceeds 50 square miles the passby flow shall be Q75 for winter/spring months and Q60 for the summer months. b. If the watershed area is less than 50 square miles the Q60 value shall apply all year. c. If diversions are higher or passby flows lower than those specified above, the operating company shall demonstrate, using an appropriate in-stream habitat methodology, that habitat will be protected for the aquatic life present at the site.	Confirm that passby flows have been established, using an appropriate methodology. Confirm that the appropriate watershed area and exceedance flows are used to determine passby flows. Confirm that an appropriate methodology was used to assess the in-stream habitat and to assess the mine's effect on surface water flow.
3.2.2.2. Exceedance Flows	
3.2.2.2.1. The operating company shall estimate the exceedance flows using the best available data or methodology and thoroughly justifying its use.	Confirm that the best available data and methodology was used.
3.2.2.2.2. The operating company shall establish a river flow rating and gaging station[59] at the withdrawal site(s) and monitor such site(s) to verify that withdrawals stay within the prescribed values.	Confirm that the mine has plans to and follows through with the construction of a gaging station.
3.2.2.2.3. The operating company shall establish a data gathering plan to verify its analysis of the sites affected by the mining project. If the data does not support the estimates, the analysis and flow estimates shall be revised until data supports the estimates.	Confirm that the mine has a plan to collect data that is lacking and to redo its analyses and plans as it collects new data.
3.2.2.3. Regions where water rights regimes control passby flow.	

Water Quantity Requirements	Means of Verification
3.2.2.3.1. The operating company shall identify all legitimate local[60] water users, regardless of whether their water rights are recognized by a government. This includes water users that rely on water diversions from water resources in the area around the mine.	Confirm that the operating company has taken all reasonable steps to identify local water users.
3.2.2.3.2. The operating company shall establish a plan and agreement with local water rights holders to provide for passby flows or determine when the company may make diversions.	Confirm that the agreement will honor local water rights users.
3.2.3. Groundwater Use	
3.2.3.1. The operating company shall not use groundwater in excess of the rate of replenishment (groundwater mining). Exceptions can be made for: a. Dewatering, see section 3.2.4.1, or b. Providing initial production water if that usage will not cause deleterious effects to surrounding groundwater-dependent resources.	Confirm that the mine's plans for groundwater use do not exceed the available water. Verify through groundwater level monitoring that groundwater mining is not occurring or that the groundwater use will not become groundwater mining in the future.
3.2.3.2. The operating company shall determine the conceptual flow model (CFM) for groundwater in the area of its proposed withdrawal for the mining project. The CFM at a minimum shall include a description of the recharge to the local aquifers, discharges from it, and flow pathways and aquifer properties controlling the flow between recharge and discharge.	Confirm that the mine has developed a CFM and that it is reasonable based on the current understanding of the site within hydrogeologic uncertainty.
3.2.3.3. The operating company shall complete a suitable groundwater analysis to estimate the effect of its pumping on groundwater discharge to surface waters, including springs, streams, rivers and wetlands.	Confirm that the mine has considered its proposed pumping in relation to its CFM.
3.2.3.4. The operating company shall establish that drawdown caused by its production water pumping shall not cause significant adverse impacts to nearby groundwater users, or shall acceptably mitigate those impacts.	Confirm that the mine's pumping plans will not significantly harm local groundwater users and that impacts shall be mitigated.
3.2.3.5. The operating company shall demonstrate that the groundwater production plan at sites affected by the mining projects indicates the time for a pumping effect to reach the stream is greater than 30 days, or the company shall demonstrate that the groundwater it is pumping is not being drawn from the alluvium beneath the river in what is known as a subterranean stream.	Verify that the mine has shown that the pumping will not affect a nearby stream for 30 days.

Water Quantity Requirements	Means of Verification
3.2.4. Mine dewatering	
3.2.4.1. The expected rate of mine ground water abstraction may exceed the local recharge rate only if necessary and after the operating company takes the steps to improve the efficiency of the operation as specified in 3.2.3.4.	Verify the estimated dewatering rates and compare them to the recharge rate predicted in the conceptual flow model.
3.2.4.2. The operating company shall minimize the amount of dewatering water being pumped by designing their mine to minimize the need for dewatering and by implementing procedures to reduce the rate of water inflow.	Verify that the mine design has used steps to minimize the rate of dewatering, and that procedures like grouting have been examined/used.
3.2.4.3. The operating company shall reduce the effects of mine dewatering by: a. Using the dewatering water as production water; b. Providing the dewatering water to other local water users to replace their pumpage; c. Returning the water to the same aquifer it was removed from; or, d. Returning the water to same local basin, when feasible, and when it will not cause water quality or other water quantity problems.	Verify that the dewatering water will be used efficiently and disposed properly, with priority given to the listed strategies.
3.2.4.4. The operating company shall not discharge or dispose of dewatering water by other means than those listed in 3.2.4.3. above.	
3.2.4.5. The mine dewatering shall not affect critical surface water resources, such as changing stream baseflows to rates less than required for passby flows, or drying or significantly decreasing the flow from springs. Dewatering shall not negatively affect water bodies within protected areas.	Verify the dewatering plan will not harm surface water resources or cause impacts within protected areas.
3.2.4.6. The operating company shall establish a plan: a. To monitor drawdown caused by mine dewatering; b. To monitor all potential groundwater sources; c. To monitor surface water resources that may be affected by the dewatering; and, d. To mitigate damages that occur and may be discovered through monitoring.	Verify there is an adequate mine dewatering groundwater monitoring plan. Verify there is an adequate mine dewatering surface water monitoring plan. Verify the mitigation plan will protect or remediate damages caused by dewatering.
3.2.4.7. Mitigation other than prevention or avoidance is not an alternative within protected areas or on protected waters.	See the Glossary and Chapter 3.7 Protected Areas for definitions / explanations of protected area and waters.

Water Quantity Requirements	Means of Verification
3.2.4.8. The operating company shall consider and plan to mitigate aspects of dewatering that could affect water quality. This includes the development of acid conditions as a result of oxygen reaching the dewatered aquifer or due to leaching caused by disposal of the dewatering water.	Verify the operating company has a mitigation plan See the Chapter 3.1 Water Quality for requirements for avoiding water quality degradation.
Operations & Rehabilitation and Closure:	
3.2.5. Pit lakes and Open voids	
3.2.5.1. Before beginning mine operations, the operating company shall estimate the pit lake volume and long-term evaporation loss from pit lakes: a. During initial pit design, b. During pit design changes, and c. At the end of mining as the pit goes into closure.	Verify that the operating company has estimated pit lake volume and expected long-term evaporation loss from the pit lake at the required times.
3.2.5.2. The final shape of the pit lake shall be designed to minimize evaporative loss. All long-term continuing water losses to evaporation shall be accommodated in the system of local water rights or traditional water uses.	
3.2.5.3. The operating company shall minimize the volume of the open pit as much as practicable within the limits of safety, economics and operational efficiently; this could include partial or complete backfill to lower the pit lake volume. Plans for pit backfilling must include water quality and reclamation considerations. (Also see chapters 3.1 and 4.1)	Verify that the mine plan is efficient from a water volume perspective.
3.2.5.4. Continue monitoring groundwater and surface water resources as the pit lake fills according to the monitoring plan used during dewatering in 3.2.4.6. and continue the mitigation plan established in 3.2.4.7.	Verify the continued use of the dewatering monitoring and mitigation plans.
3.2.5.5. Underground mine workings shall be backfilled to the extent feasible to minimize the amount of water drawn into them. Plans for underground backfilling must include water quality considerations. (Also see chapters 3.1 and 4.1)	Verify that the underground mine plan is efficient from a water volume perspective.
3.2.5.6. Underground mine workings shall be designed so that there will be no discharges from the mine after closure that lowers the water table near the mine void.	Verify that the underground mine plan will not cause a permanent drawdown.
3.2.6. Mine site Water Accounting	
3.2.6.1. The operating company shall provide an accurate water	Verify the accuracy and completeness of the water balance accounting.

Water Quantity Requirements	Means of Verification
balance accounting for its operations. The accounting shall identify the sources of water stored onsite, consumptively used, and discharged. The discharge location shall be disclosed.	
3.2.6.2. The operating company shall use processes that are water efficient in all areas. These processes and their water use shall be included in the accounting required in section 3.2.6.1.	Verify that the operating company has utilized water efficient and water saving practices.
3.2.7. The operating company shall plan, whenever safe and possible, to provide for long-term usage of the pit lake water, providing for beneficial uses that are consistent with long-term water quality and safety.	Verify that the operating company is closing the pit and lake to accommodate long-term beneficial uses. Verify that the operating company is providing for access when possible.

Notes

Groundwater Use

The effect of using groundwater for mine production depends on the source of groundwater, whether it is a large or small aquifer, and whether it is connected to a nearby surface water source. It also depends on the rate of recharge to that aquifer. If groundwater pumping essentially draws water from a river or stream, the pumping may be required to have a water right in the locality's surface water rights system. The requirement to show that pumping will not affect streamflow for 30 days, with the alternative to show the water is not being drawn from the alluvium underneath the stream within a broader subterranean channel, attempts to create a balance between surface and groundwater rights while also acknowledging that most groundwater pumping will eventually be drawn from surface water sources. The IRMA Standard requires that groundwater withdrawals do not result in a significant deficit within the aquifer, based on the conceptual flow model (CFM) for groundwater in the area of its proposed withdrawal. The local area for this consideration is the basin or aquifer that is reasonably considered to be connected to the groundwater withdrawals at the mine.

Surface Water Use

A passby flow is a prescribed flow rate that must be allowed to pass an intake when a withdrawal is occurring; a passby flow also specifies a low flow condition during which no water can be withdrawn. If too low, specified passby flows can allow significant damage to occur to streams, especially small streams. If the required passby flow is small compared to the average, meaning it has a long return interval, it will only rarely restrict water withdrawals and will allow long return interval low flow rates to occur much more frequently; this is tantamount to imposing low-frequency, damaging, drought on the streams much more frequently. Simply setting the passby flow requirement at the seven-day low flow with a ten-year return interval, a common low flow requirement, causes the natural 10-year low flow to occur much more frequently.

Passby flows do not adequately protect surface water from induced recharge, which occurs when a water table that is connected to the surface water is drawn down so that discharge to the surface water decreases or even reverses so that a stream loses flow to the groundwater.

The IRMA Standard uses the natural flow regime method (NFRM) (Poff et al 1997) to establish passby flows. The NFRM requires the determination of exceedance flows. An exceedance flow is the flow that the river will exceed a given percentage of the time. A Q60 flow will be exceeded 60% of the time. The values are usually determined on a monthly basis.

The purpose of the NFRM is to provide seasonally adjusted instream flows that maintain the natural formative process of a stream. It is not simply an academic method but has been applied in practice in some areas, including New York and Michigan, and its goals are repeated in other methodologies. IRMA allows a method appropriate to the area being analyzed, but maintaining the NFRM method's goals, be used to estimate passby flows.

Maintaining passby flows in general requires different strategies and involves different concepts depending on whether the area is arid or humid. The NFRM method maintains the natural formative processes by causing the stream to continue to emulate the natural annual hydrograph, preventing baseflows that are too low, and maintaining flushing and channel-building flows. It was originally derived for humid regions, but also can be applied to perennial rivers in arid regions.

In developed arid regions, local water users usually have rights to the use of the water such that any mining company hoping to use surface water would have to negotiate for the use of those rights. The local water rights regime often has already caused more water to be used than would be protected by the NFRM. Required passby flows in these situations would likely be those necessary to meet water rights. It would not be possible to add an environmental requirement on top of the water rights regime. If the arid region is not developed such that most water is not used for development, then the mine would be required to maintain necessary passby flows.

Determination of passby flows is difficult in areas with few gages. It will be necessary for certification for the operating company to utilize the best available methodology, which may be translation of data from one gage to the study site or the use of an appropriate flow regionalization method. Because the primary interest is in maintaining the flow regime, methods that allow the company to determine and maintain the flow regime will be acceptable in less developed areas (Olden et al. 2012; Kennard et al. 2010; Poff et al. 1997).

Cross References to Other Chapters
3.1 Water Quality
3.7 Protected Areas

Chapter 3.3—Mine Waste Management

Background

Most of the material removed from the ground at a mine will remain on the site as waste. The waste takes two general forms: waste from processing the ore into a concentrate or final product (tailings, spent heap leach materials, etc.), and waste rock from the mine that is not processed for minerals (called overburden, waste rock, subeconomic ore, etc.). All of this material can contain sub-economic concentrations of sulfide and other minerals, and should undergo thorough geochemical testing to determine whether it has the potential to generate acid drainage and/or metals leaching contaminants. In addition, tailings will contain process chemicals, and waste rock will contain nitrogen based explosives compounds, both of which may also contaminate water resources.

It is through waste management that the operating company has the most control over both the short- and long-term environmental contamination, but the control and management associated with these waste materials is a major challenge. Water contamination is the most prevalent problem, but air quality/dust can also be an issue. Impacts can continue over very long timeframes. Similarly, there are legacy problems from old mines that were operated and closed/abandoned under different environmental standards than are applicable today.

Information and concern about contamination problems may not become apparent until a mine has closed, when there is no longer an operator or responsible party in place to address the problems.

Objectives/Intent of this Chapter

The objective of this chapter is to ensure that mine waste (tailings, waste rock, and overburden) and mine facilities (waste rock piles, tailings impoundments, open pits, underground workings, etc.) are managed in a manner that eliminates offsite contamination, and leaves remaining mine features in a condition that brings about the least environmental and financial risk, and the most potentially useful land use, to future users.

IRMA System Impact Indicators

- **Indicator 3.3.a** The number of mining projects using rivers, lakes or the ocean for mine waste disposal.

- **Indicator 3.3.b** The proportion of mine sites with sufficient ground and surface water monitoring programs in place to detect contamination not only leaving the mine site, but also on the mine site to determine the sources of contamination.

- **Indicator 3.3.c** The proportion of tailings dams and waste rock dumps that are judged to be able to withstand the largest seismic and hydrologic events they will experience, in perpetuity.

- **Indicator 3.3.d** The proportion of tailings facilities and waste rock dumps with closure covers that will minimize the generation of contamination, and that will best meet re-vegetation and visual reclamation objectives.

- **Indicator 3.3.e** The proportion of tailings facilities with liners adequately designed to minimize the seepage of contamination to the environment, and with sufficient monitoring in place to provide information on the long-term performance of the liner.

Mine Waste Management Requirements	Verification / Clarification
Applicable at operating company level:	
3.3.1. General Requirements	
3.3.1.1. The operator will provide a detailed physical description of the mine facility, the geology and hydrology, and other design specifications.	See the Guidance document for additional details.
3.3.1.2. Reporting/Monitoring: A report disclosing the amount of toxic constituents generated and/or released from mining and processing operations, and following the rules of the USEPA Toxics Release Inventory (TRI) Program for mining, shall be published at least annually on the mine or company website.	Note that monitoring requirements are detailed in 3.1 Water Quality, 3.2 Water Quantity, 3.4 Air Quality, 3.5 Noise, 3.6 Greenhouse Gasses, 3.9 Cyanide Management, and 3.10 Mercury Management.
3.3.1.3. Riverine, Lake, and Submarine Mine Waste Disposal	
3.3.1.3.1. Rivers and streams shall not be used for the disposal of mine waste.	
3.3.1.3.2. Lakes and the Ocean: At this time, IRMA will only certify land-based tailings disposal.	NOTE: IRMA participants have divergent views on the issue of waste disposal into Lakes and Oceans. Further work is required to determine the specific requirements under which such disposal methods could be considered, and comments are invited on this point.
3.3.2. General Engineering Requirements	See the Guidance document 3.3 General Engineering Requirements for additional information.
3.3.2.1. Engineering plans and specifications shall meet or exceed the requirements, or their equivalent, described in the Guidance document.	See the Guidance document for additional details.
3.3.2.2. All engineering plans shall bear the seal of professional and signature of a qualified licensed professional engineer.	
3.3.2.3. All surveys of designed structures and other work products that require the practice of surveying shall bear the seal and signature of a licensed professional surveyor.	
3.3.2.4. Liners	See the Guidance document 3.3 General Engineering Requirements / Liners for additional information.
3.3.2.4.1. Facilities that impound waste with the potential to leach metals, cyanide, or nitrogen compounds at levels above the	a. Applies to newly constructed waste facilities.

Mine Waste Management Requirements	Verification / Clarification
IRMA water quality criteria shall be lined. a. If acid generation/metals leaching is predicted, the tailings facility area beneath the maximum expected footprint of the supernatant pond shall have a synthetic liner that can achieve a coefficient of permeability equivalent to $1x10^{-11}$ cm/sec or less. b. Liner systems shall be designed to achieve a minimum coefficient of permeability equivalent to $1x10^{-6}$ cm/sec or less, and a thickness of 33 centimetres.	A permeability of 10^{-6} cm/sec and a thickness of 33 cm means that it will take approximately 1 year for seepage to move through the liner. A liner construction that achieves this time of transmission, or greater, is acceptable.
3.3.2.4.2. Natural liner material must be tested to assure permeability requirements are met.	For liners, including natural materials, confirm that adequate QA/QC measures are/were used.
3.3.2.5. Tailings Dams Tailings Dams shall be designed to withstand potentially long-term catastrophic events. Designs shall incorporate the following: a. Apply the guidelines of the Canadian Dam Association Dam Safety Guidelines 2007 (or equivalent) for design; b. The Maximum Credible Earthquake shall be used for long-term seismic stability design for the tailing embankment. c. The Probable Maximum Precipitation event shall be used for the design of operational holding capacity	See the Guidance document 3.3 General Engineering Requirements / Tailings Dams for additional information. This applies to new tailings dams, and to tailings dam expansions if practicable.
3.3.2.6. Tailings Impoundments Tailings impoundments designs shall incorporate leakage collection underdrains/systems.	This applies to the design of all new tailings impoundments See the Guidance document 3.3 General Engineering Requirements / Tailings Impoundments for additional information.
3.3.2.7. Heap Leach Facilities Heap Leach facilities shall incorporate the following: a. Heap leach facilities and associated solution channels within the heap shall have a synthetic liner with a low permeability subgrade b. Heap leach facilities shall be equipped with a leak collection recovery system (LCRS) and/or underdrain system. c. Heap leach liner integrity shall not be intentionally breached on closure.	Adequate groundwater monitoring shall be in place to detect and confirm that seepage is being collected. a. and b. Apply to newly constructed heap leach facilities.
3.3.2.8.	

Mine Waste Management Requirements	Verification / Clarification
Waste Rock Facilities	
3.3.2.8.1. Waste rock facilities shall be designed to minimize seepage to groundwater.	Review facility design.
3.3.2.8.2. Waste rock facilities that contain potentially acid generating or metals leaching (PAG/ML) rock shall be designed and constructed to insulate the PAG/ML waste rock from the environment with NAG waste or a liner before a reclamation soil cover is applied.	The intent of this requirement is to minimize infiltration and/or provide sufficient buffering material to neutralize ARD, and preferably to minimize the seepage from PAG/ML waste rock dumps.
3.3.2.8.3. Seepage control systems, including source control, covers, underdrains, liners, and slurry cutoff walls: a. Shall be designed to minimize seepage; and, b. Shall be employed before a mixing zone is utilized to dilute contaminants.	Confirm that seepage control systems for the waste rock facilities are designed to minimize and collect seepage, and that adequate groundwater monitoring is in place to detect and confirm that seepage is not causing water contamination. This applies to new waste rock facilities. Existing facilities shall comply to the extent practicable.
3.3.2.9. Process Water Facilities	See the Guidance document 3.3 General Engineering Requirements / Process Water Facilities for additional information.
3.3.2.9.1. Facilities designed to store process waters shall: a. Be constructed and operated with no planned discharges of process water to the environment. b. Be constructed and operated to minimize seepage to groundwater. c. Incorporate a seepage collection and/or leak detection systems into the facility design	Review design schemes. It is the best practice objective of IRMA that the discharge of all contaminants be stopped at the facility boundary. While this will inevitably involve the deployment of more than one mitigation strategy, each individual component of the mine facility should be designed, constructed, and operated to provide as much containment as is reasonably possible. c. Applies to newly constructed waste facilities.
3.3.2.9.2. Process water holding ponds, and other mine facilities open to precipitation that involve the storage of contaminated water shall be designed for the 100-year/24-hour maximum precipitation event.	This applies to new construction at both new and expanded facilities.
3.3.2.10. Stormwater Facilities	See the Guidance document 3.3 General Engineering Requirements / Stormwater Facilities for additional information

Mine Waste Management Requirements	Verification / Clarification
3.3.2.10.1. During mine operation stormwater conveyance and storage facilities shall be designed to withstand a precipitation event that is at least twice as long as the projected mine life, unless (for treatment / settling ponds only) it can be demonstrated that stormwater discharge meets IRMA water quality criteria.	Review design of stormwater diversion facilities. The exception for treatment / settling ponds is intended for mines located in areas with geographic limitations for stormwater settling pond building sites. This applies to new stormwater conveyance and storage facilities.
3.3.2.10.2. Stormwater conveyance and storage facilities built for closure / permanent containment or treatment shall be designed for at least the 100-year/24-hour maximum precipitation event, unless (for treatment / settling ponds only) it has been demonstrated that stormwater discharge meets IRMA water quality criteria.	Review stormwater monitoring records. Review 100-year/24-hour maximum precipitation event specification. Review design of stormwater diversions and settling ponds. This applies to new stormwater conveyance and storage facilities.
3.3.2.11. Underground mines	
3.3.2.11.1. Mine workings shall be designed so that there will be no drainage after mine closure, if practicable.	This applies to new construction at both new and expanded underground mines.
3.3.2.12. Monitoring	Also see chapters 3.1 Water Quality and 3.2 Water Quantity
3.3.2.12.1. Groundwater monitoring wells for tailings facilities, waste rock dumps, pit lakes, and from underground workings shall be in sufficient quantity and appropriate locations so as to establish upgradient water quality, and be reasonably able to detect the flow rate and concentration of contaminant plumes down-gradient from the monitored facility.	Determine if the monitoring wells are appropriately located to detect contaminant plumes.
3.3.2.12.2. Surface seeps from waste rock dumps which exceed surface water quality standards shall be monitored quarterly during operation, and annually during closure, for contaminants and flow.	Determine if surface seeps are being monitored, and if there any contamination problems associated with the seeps.
3.3.2.13. Climate Change The design of all mine facilities that store or control the flow of water shall consider the potential impacts of climate change over the facility design life.	This applies to new construction at both new and expanded facilities.

Notes

The guidance document for this chapter was developed to conform with recommendations from:

a. The best practices for waste management provided in the Global Acid Rock Drainage (GARD) Guide;

b. Standards derived primarily from Arizona, Nevada and New Mexico guidance and regulations.

Cross References to other Chapters

Also see Chapter 3.1 (Water Quality), and Chapter 3.2 (Water Quantity) for more monitoring requirements, and Chapter 4.1 (Reclamation & Closure, Financial Surety, and Long-Term Monitoring and Maintenance) for discussions of financial sureties, long-term/perpetual water treatment, and monitoring of waste facilities and groundwater.

Chapter 3.4—Air Quality

Background
Mining sites can release significant quantities of air pollutants in two main categories: particulate matter, and toxics. By volume, the great majority of contaminants are particulate, such as dust from blasting, large truck and equipment traffic, conveyors, ore crushing, etc. Toxics may represent only a small proportion of a mine's air emissions, but are important because they can significantly degrade human health and the environment.

Mines may emit contaminants from localized sources such as processing plants or from more diffused activities, such as fugitive dust emitted by blasting or truck traffic, or wind-blown from exposed surfaces such as roads, pits, and waste piles, or from dried surfaces of tailings impoundments.

These releases can generally be controlled with reasonably inexpensive measures. However, a mine's typically large geographic footprint make control especially important and sometimes difficult. The most common method of dust control is spraying water - such as by truck on roads and near blasting activities. Chemical additives, such as magnesium chloride may be added to increase the effectiveness and durability of sprayed water.

Objectives/Intent of this Chapter
The intent of this chapter is to protect and maintain pre-mine air quality conditions through the reduction and control of physical and chemical emissions into the air.

IRMA System Impact Indicators

- **Indicator 3.4.a** The proportion of mining projects that publish air quality monitoring data and information, sufficient to determine conformity with the European Union's Air Quality Standards, as amended to its latest form, at the project's mine sites and associated transportation routes.

- **Indicator 3.4.b** The proportion of mining projects whose mine sites and associated transportation routes conform with the requirements of the European Union's Air Quality Standards, as amended to its latest form.

Air Quality Requirements	Means of Verification
Applicable at operating company level:	
3.4.1. The operating company shall comply with all requirements of the European Union's Air Quality Standards and regulations as amended to its latest form, including applicable implementation protocols[61], at all mine sites and on transportation routes to/from the mine.	Review host country and EU modeling and/or measurement requirements and standards. Review documentation and records required to demonstrate compliance with EU Air Quality Standards, Regulations and implementation protocols.
3.4.1.1. In addition to compliance with EU implementation protocols the operating company shall position air collection canisters around the mine site such that they provide a representative sampling of air quality sufficient to demonstrate compliance or non-compliance with the	Review and analyze air quality monitoring protocols and records. **Note(s):** Dust contamination monitoring should focus on the boundary of the mine,

Air Quality Requirements	Means of Verification
European Union Air Quality Standards and regulations, most notably with respect to particulate matter contaminants (dust).	thereby reflecting what the mine is emitting onto neighboring properties and communities. Additionally, monitoring should focus on sites where dispersion modeling identifies potential risk sites for environmental or human health (especially for workers) issues. Each mine site is unique and it is therefore up to the IRMA verifier/certifier to review and assess the adequacy and efficacy of air quality monitoring activities.
3.4.1.2. The mining company shall employ air dispersion modeling consistent with the US EPA's Air Quality Guidelines.[62]	
3.4.2. Air Quality Management Plan 3.4.2.1. The operating company shall develop, maintain and implement a documented air quality management plan that adjusts to the specific issues and concerns at the mine site and evolves as data becomes available.	Review of company or mine annual and/or sustainability reports for appropriate content.
3.4.2.2. The operating company shall ensure that protected airsheds and/or high-quality airsheds shall not be degraded above baseline air quality by mine discharges.	Note the presence of protected and high-quality airsheds. This shall apply at new mines and at existing mines where practicable.
3.4.3. Monitoring 3.4.3.1. The operating company shall monitor and record air quality at the operations associated with the mining project by using personnel trained in air quality monitoring who employ widely accepted ("standard") protocols and procedures through trained and approved validation procedures and with trained and approved validation personnel.	
3.4.4. Reporting 3.4.4.1. The operating company shall ensure that up-to-date compliance information relating to the status of air quality protection and practices at the operations associated with the mining project is freely and publicly available	Information published in annual reports or sustainability reports and on a website accessible to the public. Links to the operating company's published air quality information. Review of the operating company or mine annual reports

Notes
European Union's (EU) numeric air quality standards as of July 3, 2013.[63]

Pollutant	Concentration	Averaging period	Permitted Exceedances each year
Fine particles (PM2.5)	25 µg/m3	1 year	n/a
Sulphur dioxide (SO2)	350 µg/m3	1 hour	24
	125 µg/m3	24 hours	3
Nitrogen dioxide (NO2)	200 µg/m3	1 hour	18
	40 µg/m3	1 year	n/a
PM10	50 µg/m3	24 hours	35
	40 µg/m3	1 year	n/a
Lead (Pb)	0.5 µg/m3	1 year	n/a
Carbon monoxide (CO)	10 mg/m3	Maximum daily 8 hour mean	n/a
Benzene	5 µg/m3	1 year	n/a
Ozone	120 µg/m3	Maximum daily 8 hour mean	25 days averaged over 3 years
Arsenic (As)	6 ng/m3	1 year	n/a
Cadmium (Cd)	5 ng/m3	1 year	n/a
Nickel (Ni)	20 ng/m3	1 year	n/a
Polycyclic Aromatic Hydrocarbons	1 ng/m3 (expressed as concentration of Benzo(a)pyrene)	1 year	n/a

Air quality standards and requirements were reviewed for various countries, focusing on the most expansive, developed standards. The greatest focus was on the standards of the European Union, Canada, Australia, and United States. With the goal in mind of adopting a standard that would evolve over time the decision was made to adopt the European Union's (EU) numeric air quality standards.[64] There are many developed standards but the EU's stands out for its breadth of included contaminants, including contaminants released during mining, and its inclusion of specific metalloid contaminants.[65] Further, like many developed national standards, the EU's air quality standards were developed to be comprehensive, transparent (development, review and modification, application, and interpretation in the courts), and enduring. Finally, the EU's air quality standards are evolving and therefore predicating IRMA's air quality standard on them will ensure that IRMA's standards also evolve.

The requirements in this chapter are in addition to the general requirement to meet all applicable host country regulatory requirements, in accordance with Chapter 1.1.

Compliance must be maintained until the operating company is cleared by the host country regulating agencies that the company has completed all regulatory requirements and maintains no obligations to the host country.

Chapter 3.5—Noise

Background
All phases of mining can create significant noise. These include: blasting in both open pit and underground mines; large ore and waste rock truck traffic on the minesite; noise from ore stockpiling, screening, and crushing; and, truck or rail traffic bring consumables to the minesite, and shipping product from the mine for final processing.

Studies have shown that there are direct links between noise and health.[66] Problems related to noise include stress-related illnesses, high blood pressure, speech interference, hearing loss, sleep disruption, and lost productivity.[67]

Many noises can be moderated or partially managed by employing mitigation measures, including berms, mufflers, sequenced blasting, planning, timing, and communications. However, effective control may be challenging due to a mine's typically large geographic footprint, especially when a mine is located near communities.

This chapter of the IRMA Standard considers the impacts of noise on local communities. The impacts of harmful noise on workers are covered in the separate chapter on worker health and safety.

Objectives/Intent of this Chapter
The intent of this chapter is to protect and maintain pre-mine aural conditions through the reduction and control of noise pollution.

IRMA System Impact Indicators

- **Indicator 3.5.a** The proportion of mining projects that publish noise emission data and monitoring information, sufficient to determine conformity with the requirements of the IRMA Standard, at the project's mine sites and associated transportation routes.

- **Indicator 3.5.b** The proportion of mining projects whose mine sites and associated transportation routes conform with the requirements of the IRMA Standard.

Noise Requirements	Means of Verification
Applicable at operating company level:	
3.5.1. The mine shall not emit noise, measured at the property boundary, greater than 70 decibels (dB) at any time. During the hours of 6 p.m. to 8 a.m. the mine shall not emit noise greater than 55 dB.	Provide independent reporting to certify numerically that both host country and IRMA requirements and standards are being met. This shall apply to pre-existing or individuals/communities that are living according to host country law or custom.
3.5.2. Tonal Noise	

3.5.2.1. Where tonal noise is created, a correction of 6 dB shall apply.	**Note(s):** This decibel "correction" shall apply to account for the special impacts that occur from special types of noise. The correction shall be added to the measured dB level before that dB level is compared to the acceptable dB noise level of the IRMA or host country noise standard. Where a correction is applied, the uncorrected dB level shall be reported parenthetically.
3.5.3. Low Frequency Noise	
3.5.3.1. Where low frequency noise is emitted such that dBA is greater than 10 decibels different from dBC at the boundary of the mine site, then: a. the mine shall provide independent reporting to certify numerically that low frequency noise does or does not exist b. the mine shall comply with Danish Statutory Order no. 1284 of 15 December 2011[68] to be measured/implemented at the domestic residence nearest to the mine site's source of low frequency noise.[69]	**Note(s):** This element is additive to other parts of this Chapter. If the mine site includes more than one source of low frequency noise that triggers this requirement then the subpart shall apply individually for each of the sources on the mine site.
3.5.4. Fluctuating Noise	
3.5.4.1. Where noise is fluctuating, a correction of 3 dB shall apply.[70]	This decibel "correction" shall apply to account for the special impacts that occur from special types of noise. The correction shall be added to the measured dB level before that dB level is compared to the acceptable dB noise level of the IRMA or host country noise standard. Where a correction is applied, the uncorrected dB level shall be reported parenthetically.
3.5.5. Impulsive Noise	
3.5.5.1. A time constant of 35 milliseconds shall be applied to monitor impulsive noise.[71]	Provide independent reporting to certify numerically and in calibration reports that the shorter of host country or IRMA time constant is being applied.
3.5.5.2. Where impulsive noise exists, a correction of 5 dB shall be assessed.[72] This correction shall be applied based on any individual impulsive noise or any string of impulsive noise.[73]	Provide independent reporting to certify numerically that both host country and IRMA requirements and standards are being met.
3.5.6. Reporting	

3.5.6.1. Publication of the compliance information is intended to apprise stakeholders of the status of noise pollution and prevention at the mine's sites.	
3.5.6.2. The operating company shall include a link in its annual report or sustainability report to the operating company's published noise information.	Review the operating company annual report to verify that the information is present and up-to-date.

Notes
While most discussions about noise focus on volume, impacts from noise are largely controlled by four factors that can increase the health impacts or annoyance factors associated with noise. The four factors are:

- Tonality, which refers to tonal noises which have a narrow sound frequency, such as the whine of an electric motor or an electric saw. A tonal audibility or annoyance factor may be calculated by comparing the tone level to the level of the surrounding spectral components.[74]

- The presence of low frequencies, which noise are not universally defined but is commonly understood to be noise with a frequency between 20 and 100 - 150 Hz (noise at levels below 20 Hz is referred to as infrasound). Low frequency noise emits from machinery, all forms of transport and turbulence, turbines, exhaust gas, compressors, etc. Low frequency noise often causes community annoyance because buildings/homes amplify resonance of the sound and because low frequency noise can travel greater distance than audible noises. Low frequency noise may cause notable human disturbances even when the decibel level (the sound pressure level) is below 30 dBA.[75]

- Fluctuating or intermittent sounds are those that are inconsistent in time and/or duration. Examples include generators or oil and gas pump jacks which are turned off and on, passing vehicles, machinery operated in cycles, etc. Fluctuating noise, and regular variations of sound pressure levels with time have been shown to increase the annoying aspects/annoyance factor of the noise (notably when compared to average sound levels).[76]

- Impulsive sounds, which are brief, abrupt noises that can cause startling effects that cause greater annoyance levels than may be expected from just measuring the sound level.[77] An impulsive sound at mine sites would be blasting noises, but could also include metal on metal, rock on rock, or rock on metal noise (such as dumping rock from a loader onto a transport truck, railcar, or rock pile).

Annoyance due to a given noise source is perceived very differently from person to person. Most types of noise can cause annoyance, health, or other negative impacts. For example, people who are sensitive to low frequency sounds may suffer dramatic impacts.[78]

The scope of application would include all mining project related activities, including transport to and from the mine.

The requirements in this chapter are in addition to the general requirement to meet applicable host country regulatory requirements, in accordance with chapter 1.1.

Compliance would have to be maintained until the operating company is cleared by the host country regulating agencies that the operating company has completed all regulatory requirements and maintains no obligations to the host country.

For discussion:

- the specific threshold limit for blasting noise (3.5.1)
- the possibility of exceptions for spikes of noise in the case of blasting, with due notice (3.5.1)
- the possibility of exceptions if there are no people or livestock living within 1km of the mine's boundary – with appropriate safeguards to avoid abuse of such a provision (3.5.1)
- consideration of tiered rather than single corrections for impulsive noise (3.5.5.1)

Chapter 3.6—Greenhouse Gas Emissions

Background
Mining is a major energy consumer and emitter of carbon. This incurs a heavy responsibility for the mining industry, but it also shows the potential for mines to consume less energy, emit less carbon, and improve the company's bottom line.

According to the ICMM, the mining industry's greenhouse gas emissions come from two major categories The first half is fuel use in mining and processing operations; transportation of ore and electricity generation at remote sites; and fugitive emissions. The second half is from electricity use, primarily in refining and smelting operations. Mining companies can reduce consumption in both of these groupings and thereby cut costs and improve competitiveness by adopting best practices regarding energy efficiency and emissions reduction.

This Chapter adopts two complementary sets of best practices for greenhouse gas monitoring/reporting and emissions reductions. For the former, it adheres to the GHG Protocol Corporate Standard, which has strong credibility among environmental groups and has already been adopted by several leading global mining companies. For the latter, it adopts two ISO standards that (1) requirements at the organization level for quantification and reporting of greenhouse gas emissions and removals and (2) principles and requirements and provides guidance at the project level for quantification, monitoring and reporting of activities intended to cause greenhouse gas emission reductions or removal enhancements.

Objectives/Intent of this Chapter
The intent of this chapter is to promote and maintain energy efficiency in the mining sector and reduce the sector's impacts on climate change through the increase of energy efficiency, reduction of energy consumption, and reduction of mines' emissions of greenhouse gases.

IRMA System Impact Indicators

- **Indicator 3.6.a** The number of mining projects [corporate owner(s)] that comply with the emissions accounting and reporting provisions of the GHG Protocol Corporate Standard.[79]

- **Indicator 3.6.b** The number of mining projects [corporate owner(s)] that comply with provisions of ISO 14064-1:2006[80] and ISO 14064-2:2006.[81]

Greenhouse Gas Emissions Requirements	Means of Verification
Applicable at operating company level:	
3.6.1. The mining project shall comply with the requirements of the GHG Protocol Corporate Standard.[82]	Provide full documentation in annual report, filed to IRMA and publicly available on the operating company's website. Reports will include details and explanations of calculations made, including assumptions, data sources, and discussion of errors, inconsistencies, and other information that could reasonably be helpful to the public.
3.6.2. Quantification, monitoring and reporting of greenhouse gas	

Greenhouse Gas Emissions Requirements	Means of Verification
emissions, emission reductions or removal enhancements	
3.6.2.1. The operating company shall comply with the requirements of ISO 14064-1:2006[83] and/or ISO 14064-2:2006, as applicable.[84]	If company is independently certified for compliance with ISO 14064-1 and/or 14064-2, check certificate. Otherwise, review documentation and records demonstrating compliance with with ISO 14064-1 and/or 14064-2.
3.6.3. Greenhouse Gas Policy	
3.6.3.1. The operating company shall develop and maintain a Greenhouse Gas Policy that (1) establishes general company policies regarding measuring and reducing greenhouse gas emissions and (2) establishes an annual operating company reduction goal for greenhouse gas emissions, which shall be equal to or greater than 10% per year. New mines, which are defined for this Chapter's purposes as being in operation for less than one year, may waive the 10% reduction requirement for a period of three years from the date of commencement of operations.	Review Greenhouse Gas Policy to ensure that company policies and goals are established and reduction goals are met. The Policy does not have to be stand-alone and does not have to be special/exclusive to IRMA purposes.
3.6.3.2. The Policy should seek to include the following elements: a. Applicable mine buildings should aim to meet LEED Platinum certification. Where that is not practicable then lesser LEED certifications should be considered. b. Electric or electric hybrid machinery should be used where practicable c. The mine should source a portion of the electricity from renewable sources. This should include onsite (or nearby) generation, such as wind turbines or solar generating arrays. A renewable goal of 25% should be considered.	Review mine company documentation of elements employed and goals achieved. Mines should publicly report the elements implemented and the goals that are achieved.
3.6.4. Reporting	
3.6.4.1. The operating company shall identify and report the annual greenhouse gas emissions reduction efforts of the mining project on an annual basis.	Documentation of compliance with GHG Protocol Corporate Standard (see above).

Notes

The IRMA Steering Committee shall within two years develop numeric criteria to further regulate mining GHG emissions as appropriate.

References

GHG Protocol Corporate Standard, available at: http://www.ghgprotocol.org/standards/corporate-standard.

ISO, Greenhouse gases -- Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals. http://www.iso.org/iso/catalogue_detail?csnumber=38381.

ISO, Greenhouse gases -- Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements. http://www.iso.org/iso/catalogue_detail?csnumber=38382.

Chapter 3.7—Protected Areas

Background
Mining can only occur where economically viable mineral deposits are located, and exploration is often focused on remote locations with relatively low populations. These areas may also be important for biodiversity conservation, or for protection of other natural and cultural resources, and there are often tensions around access to and competing uses of such land. A comprehensive system of properly designated, secure and effectively managed protected areas can contribute to the resolution of these tensions.

In some cases, responsible exploration and mining development in or adjacent to such protected areas may be compatible with the objectives for which the areas have been designated for protection. In others, even if all technically and economically feasible steps to reduce adverse impacts were to be implemented, mining would jeopardize those values and should not take place.

Objectives/Intent of this Chapter
Mining and related activities respect, support and strengthen the effectiveness of legally designated protected areas worldwide.

IRMA System Impact Indicators

- **Indicator 3.7.a** The number, area and proportion of Highly Protected Areas that are impacted or threatened by mining projects and related activities.

- **Indicator 3.7.b** The number and area of protected areas per mining project that are impacted or threatened by mining and related activities.

Protected Areas Requirements	Means of Verification
Applicable at corporate owner level:	
3.7.1. The corporate owner(s) shall not carry out any new mining or related activities (including exploration and the establishment of infrastructure) in the following Highly Protected Areas: ○ World Heritage Sites ○ Nominated World Heritage Sites ○ IUCN category I-IV protected areas ○ Category I-V marine protected areas ○ Core areas of UNESCO biosphere reserves	Public company policies of the corporate owner(s) Review of listing of areas of corporate owner(s)' activity. Absence of credible evidence of new mining activity by the corporate owner(s) in any of the specified "Highly Protected Areas". The official list of World Heritage Sites is available at the following Web address: http://whc.unesco.org/en/list/
3.7.2. All possible steps shall be taken at all existing mining projects to ensure that such mining projects do not put the integrity of the special values for which those areas are designated Highly Protected Areas at risk.	Public report on any mining project that could have a negative impact on a Highly Protected Areas. Consultation with parties responsible for the management of any potentially

Protected Areas Requirements	Means of Verification
	affected Highly Protected area.
3.7.3. The corporate owner(s) shall report publicly on the steps being taken at all of their existing mining projects that are in or that may affect Highly Protected Areas, describing the steps that are being taken to ensure that such mining projects do not put the integrity of the special values for which those areas are designated as Highly Protected Areas at risk.	Public listing of all mining projects taking place in or that may have affects on Highly Protected Areas. Public report on all listed mining projects.
Applicable at operating company level:	
3.7.4. The mining project shall identify and document the locations and boundaries of all protected areas that may be affected by the mining operation and its related activities.	List of all identified protected areas. Maps of identified protected areas. Stakeholder consultation to confirm completeness of list.
3.7.5. Mining and related activities shall not take place in areas which are designated Highly Protected Areas, and shall not take place in any other areas in which such activities are prohibited by national legislation.	Operation maps, country lists and maps of "Highly Protected Areas". A list of all natural World Heritage Sites is available through the UNESCO World Heritage Centre website and additional information is also available on the IUCN World Heritage Programme website.
3.7.6. The mining project shall carry out an assessment of each identified protected area, including effective consultation with interested stakeholders. 3.7.6.1. The assessment shall include: a. Identifying and listing the special values which the area is intended to protect b. Assessing the current status of the area in relation to the protection of those values c. Specifically assessing the potential effects of the mining activity(ies) on those special values, including direct, indirect and cumulative effects; d. Identifying and evaluating alternatives to the proposed mining activities, to determine least damaging options; 3.7.6.2. The findings of the assessment process, including data on which the findings are based, shall be publicly available.	Publicly available assessment reports on identified protected areas. Publicly available data used as basis for findings. Status assessment of all listed protected areas. Consultation with interested stakeholders.
3.7.7. Mining activities shall only be undertaken in the following categories of protected area if the assessment clearly demonstrates that the proposed activities are compatible	Operation maps, country lists and maps of sites in the listed "Protected area" categories.

Protected Areas Requirements	Means of Verification
with the maintenance of the special values for which the area was designated for protection: ○ IUCN Category V-VI protected areas; ○ Ramsar sites that are not already IUCN category I-IV protected areas ○ Natura 2000 sites ○ UNESCO Biosphere Reserves beyond the core areas ○ Indigenous and Community Conserved Areas (ICCAs) in which free, prior and informed consent (FPIC) has been demonstrated, in compliance with the requirements of Chapter 2.10 ○ Important Bird Areas (IBAs) ○ Official buffer zones of sites designated as Highly Protected Areas, and other areas outside the boundaries of Highly Protected Areas in which mining activities may affect the values for which the Highly Protected Area was designated for protection. ○ Sites that are currently included on a State Party's official Tentative List for World Heritage Site inscription ○ Other officially designated protected areas.	Public report of the appraisal process. Species surveys, protected area management plans, protected area management effectiveness assessment reports, etc. Consultation with parties consulted as part of the appraisal process. Consultation with the parties responsible for the management of the potentially affected protected areas. The official Tentative Lists of States Parties are available at the following Web address: http://whc.unesco.org/en/tentativelists
3.7.8. The operating company shall ensure that an effective monitoring system is in place that demonstrates that the operating company's mining and related activities have no significant adverse impact on the special values for which these protected areas were designated for protection. 3.7.8.1. The results of such monitoring shall be publicly available.	Review monitoring systems. Review public reports of monitoring results.
3.7.9. The effects of the operating company's activities on any protected areas in additional categories not listed in 3.7.7 above shall be explicitly considered and addressed within the operating company's policies and procedures for protecting biological diversity outside officially protected areas (Chapter 3.8).	Review of publicly accessible assessment reports (see 3.8.2).

Notes

This chapter defines restrictions on mining and related activities in or adjacent to different categories of legally protected area. A separate chapter (chapter 3.8) addresses the management of biodiversity more generally, including its management outside of legally protected areas.

The chapter distinguishes between two kinds of protected area: Highly Protected Areas, and Other Protected Areas.

Highly Protected Areas are 'no go zones'. No new exploration, mining or related activities would be permitted in these areas. No go zones would have to be recognized at the corporate owner level. Where a corporate owner is already carrying out mining or related activities in these areas it would be

required to carry out 'all possible' steps to ensure that the activity does not damage the values that the areas are designed to protect, and to report publicly on these steps at all applicable sites.

Limited, very specific exceptions to the general prohibition might be agreed in relation to some 'related activities', for example to allow the continuing use of well-established, clearly designated transportation routes across protected areas, where these do not involve the establishment of new infrastructure and have been agreed by the relevant protected area authorities.

Other Protected Areas are treated as special cases, where conservation values are prioritized, but where exploration, mining or related activities may take place so long as such activities can be shown to be compatible with the maintenance of the values that the areas are designed to protect.

The protection of other areas that may have special conservation value but which are not designated as protected areas is addressed in chapter 3.8.

There may be many other areas in which mining is prohibited by national legislation, even though these areas not delineated as official 'protected areas'. This chapter focuses only on official protected areas. General legal exclusions would be covered by Chapter 1.1 on legal compliance.

Cross References to Other Chapters
See also Chapter 3.8 (Biodiversity Outside of Officially Protected Areas) and Chapters 5.1 and 5.2 in relation to the assessment and monitoring of environmental impacts.

Chapter 3.8—Biodiversity Outside Officially Protected Areas

Background
Biological diversity - or biodiversity - describes the variety of life on Earth. It refers to the wide variety of ecosystems and living organisms: animals, plants, their habitats and their genes. Biological diversity underpins ecosystem functioning and the provision of ecosystem services essential for human well-being. It provides for food security, human health, clean air and water; it contributes to local livelihoods, and economic development, and is essential for the achievement of the Millennium Development Goals, including poverty reduction. In addition it is a central component of many belief systems, worldviews and identities. Despite its fundamental importance, biodiversity continues to be lost[85].

Minerals are essential for modern living and mining, minerals and metals are important to the economic and social development of many countries. Mining can only occur where economically viable mineral deposits are located, and these are often areas with high levels of biodiversity. In some situations it is appropriate that biodiversity is protected and that mining should not take place, as described in Chapter 3.7 on Protected Areas. However, if society is to benefit from mining in other locations, while the loss of biodiversity is also to be halted, biodiversity losses where mining takes place must be offset by gains elsewhere. This chapter puts forward a framework designed to ensure that biodiversity losses are minimized but that, where they occur, they are compensated for by verified gains in other locations and through long-term requirements for restoration where possible.

Objectives/Intent of this Chapter
Mining and related activities do not contribute to the global loss of biodiversity.

IRMA System Impact Indicators

- **Indicator 3.8.a** The extent and condition of areas identified as containing or likely to contain HCVs 1 – 3 and affected (positively or negatively) by mining and related activities.

Requirements	Means of Verification
Applicable at corporate owner level:	
3.8.1. The corporate owner(s) have developed and are implementing appropriate corporate level policies and procedures designed to ensure that the following requirements (3.8.2 – 3.8.9) are met at all of their new mining projects.	Corporate-level policies applicable to all new projects. Global procedures applicable to all new projects. Evidence that policy is operational. NOTE: The requirement is that the corporate owner has a policy as described, and that the policy is operational. Incorporation of the policy into the company's standard operating procedures would be considered sufficient evidence of this, and project level verification would not be required unless there is strong evidence that the policy is not operational in practice.

Applicable at operating company level:	
3.8.2. The operating company shall provide a comprehensive assessment of the past and potential future impacts of its mining and related activities on biodiversity, which shall be made publicly available.	Review of publicly accessible assessment reports.
3.8.3. The assessment shall include appropriate consultation with interested stakeholders and shall include explicit identification and consideration of: a. direct, indirect and cumulative effects of the proposed mining and related activities including consideration of positive or negative impacts on biodiversity associated with past phases of the project from the exploration phase onwards. b. past and potential future impacts on any protected areas, that have not been assessed under the requirements specified in 3.7.9. c. past and potential future impacts on High Conservation Values 1 – 3 (HCV 1 – 3), including fish and wildlife, wetlands, and species listed as threatened or endangered. d. options to restore or offset past impacts e. options to avoid, minimize, restore or offset the potential future impacts.	Review of publicly accessible assessment reports. Consultations with stakeholders. See www.iccaregistry.org for an interactive registry for ICCAs worldwide.
3.8.4. The operating company shall develop, in consultation with interested stakeholders, a biodiversity management plan or equivalent which: a. follows the mitigation hierarchy of avoiding, minimizing, restoring and/or offsetting potential future impacts on biodiversity, prioritising the protection wherever possible of existing protected areas and of areas containing or impacting on HCVs 1 – 3; b. describes the specific objectives, timelines, locations and activities that it shall implement to minimize, restore and/or offset any past or potential future negative impacts on biodiversity.	Review of biodiversity management plan (or equivalent). Consultations with stakeholders.
3.8.5. The biodiversity management plan shall demonstrate that the net impact of the operating company's mining and related activities on biodiversity will be neutral or positive over the life time of the project, as determined in accordance with the requirements of IFC Performance Standard 6 and including consideration of the impacts of past phases of the project.	Review of biodiversity management plan (or equivalent). Consultations with stakeholders.
3.8.6. The biodiversity management plan shall include documented policies and best practice procedures	Review of biodiversity management plan (or equivalent).

including: a. The identification of key biodiversity indicators sufficient to monitor the impact of the operating company's activities over time, and to demonstrate that the overall net impact is neutral or positive; b. Surveys or baseline studies to establish the status of the key biodiversity indicators prior to the commencement of site-disturbing operations; c. Mitigation measures to be implemented to minimize negative impacts on biodiversity associated with specific operations or processes, such as in the planning, siting and construction of roads and other infrastructure, the control of hunting, fishing, trapping and collecting of wild fauna or flora within and adjacent to the operating company's areas of operation, the use of introduced species, etc; d. Any specific measures to enhance, protect or restore biodiversity, such as the identification of key areas for protection, measures to offset unavoidable negative impacts, or commitments for site restoration or reclamation at the end of the project's operational life. e. An effective program for monitoring the implementation of the plan, and for monitoring the specified key biodiversity indicators over time at sufficient detail and regularity to evaluate the operating company's success in achieving its 'net positive' objectives.	Assessment of policies and procedures against applicable widely recognized best practice guidance, e.g. for planning, siting and construction of roads and other infrastructure, control of introduced species, control of hunting, etc. Review of baseline surveys and assessments. Review of ongoing results of monitoring. Consultations with stakeholders.
3.8.7. The operating company shall allocate sufficient personnel and other resources for full and effective implementation of the biodiversity management plan.	Consultation with company personnel. Review of implementation of biodiversity management plan.
3.8.8. The findings of the monitoring program shall be subject to professional review and shall be made publicly available on a timely basis.	Review of publicly accessible monitoring findings.
3.8.9. If monitoring shows that the operating company's biodiversity objectives are not being achieved as expected, the operating company shall define and implement timely and effective corrective action in consultation with interested stakeholders.	Review of corrective actions undertaken if required. Consultations with stakeholders.

Notes

This chapter adopts the terminology of 'High Conservation Values' (HCVs) as developed originally by the Forest Stewardship Council (FSC) and subsequently incorporated into other leading international voluntary sustainability standards systems. HCVs 1 to 3 are specified in this chapter as this chapter deals specifically with biodiversity, rather than with broader environmental or social values touched on by HCVs 4 – 6. The issues raised in HCVs 4 – 6 are addressed in different chapters of this standard.

Examples of best practice guidance relevant to the assessment and management of biodiversity include (but are not limited to):

- Voluntary Guidelines on Biodiversity-Inclusive Environmental Impact Assessment, adopted by the 8th Conference of the Parties (CoP) of the Convention on Biodiversity (CBD) (UNEP/CBD/COP/8/31) (2006).

- ICMM Good Practice Guidance for Mining and Biodiversity (2006)

- IFC Performance Standards 1 and 6 (2012).

- Guidance on the identification and management of High conservation values is available from the High Conservation Value Resource Network (HCV-RN) www.hcvrnetwork.org

Cross References to Other Chapters
See also Chapter 3.7 (Protected Areas) and Chapters 5.1 and 5.2 in relation to the assessment and monitoring of environmental impacts.

Chapter 3.9—Cyanide

Background
Cyanide is an industrial chemical used in the processing of gold and silver at many mine sites and as a minor processing reagent at some base metal mines. If released to the environment, or if improperly used in mineral processing, cyanide can pose a risk to workers, to surrounding communities, and to aquatic resources and wildlife.

The International Cyanide Management Institute (ICMI) has developed a program for the gold mining industry to improve the life-cycle management of cyanide used in gold mining, to enhance the protection of human health, and to reduce the potential for environmental impacts. Although the International Cyanide Management Code only provides for the certification of gold mines, the same principles can be applied to other types of mining operations that use cyanide in bulk quantities for the extraction of commercial quantities of minerals. This chapter builds on the ICMI Principles and Standards of Practice.

Objectives/Intent of this Chapter
The intent of this standard is to protect human health and the environment by encouraging the responsible management of cyanide, consistent with the International Cyanide Management Code for all mines that store bulk quantities of cyanide, or that use cyanide in a mill process.

IRMA System Impact Indicators

- **Indicator 3.9.a** The proportion of mines using bulk quantities of cyanide that have been independently verified as complying with the requirements of the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide.

- **Indicator 3.9.b** The proportion of mines that publish cyanide code compliance information and monitoring data as required by the International Cyanide Management Code.

Requirements	Means of Verification
Applicable at operating company level. NOTE: Applicable only to operating companies that own, control or operate projects associated with the production, storage, use or transportation of bulk quantities of cyanide (see Notes below)	Review applicability
3.9.1. Compliance with the International Cyanide Management Code (The Cyanide Code) 3.9.1.1. The operating company shall comply with the Principles and Standards of the Cyanide Code. 3.9.1.2. Operating companies that are eligible shall be Signatories of the Cyanide Code and shall have received certification of compliance with its requirements, in accordance with the requirements of the ICMI.	ICMI Signatories: confirm certification and review most recent Summary Audit Report (available on the ICMI website). Non-ICMI Signatories: review ICMI eligibility. Review most recent audit report. Mining operations that require the storage onsite of cyanide in bags or bulk containers, or that use cyanide in a mill process, must comply with the Code. This does not apply to cyanide

3.9.1.3. Operating companies that are not eligible to become Signatories of the Cyanide Code shall have their compliance with the code independently audited and verified by an auditor listed on the ICMI website.	for laboratory use or other de minimis testing purposes.
3.9.2. Construction 3.9.2.1. In addition to the requirements of the Cyanide Code, the following Design/Construction criteria shall be met:	
3.9.2.1.1. Bulk cyanide containers and process solution tanks shall have impermeable secondary containment with capacity of 110% of the largest tank's capacity or that of the largest tank within the containment with additional capacity for the design storm event and be graded so that releases will drain into a sump.	Review documentation.
3.9.2.1.2. Pipelines containing process solution shall utilize secondary containment in combination with audible alarms, interlock systems, and/or sumps, as spill control measures.	Review documentation.
3.9.2.1.3. Design calculations for cyanide solution ponds, and stormwater diversions that protect these facilities, shall consider the potential for increased precipitation and runoff due to climate change.	Review up to date climate change predictions for the location. Review documentation.
3.9.3. Discharges 3.9.3.1. Discharges to a mixing zone shall not contain cyanide in combination with other toxins that will cause acute toxicity to resident or migratory species.	Review monitoring data
3.9.4. Monitoring 3.9.4.1. The operating company shall monitor discharges to the environment for weak acid dissociable (WAD) cyanide. 3.9.4.2. If WAD cyanide is detected in discharges to the environment, then the operating company shall also monitor total cyanide, free cyanide, and thiocyanate levels. 3.9.4.3. If a mixing zone is utilized for the discharge, the operating company shall conduct Whole Effluent Toxicity testing annually on the effluent to verify the absence of acute toxicity.	Inspect monitoring sites Review monitoring data

3.9.4.4. The operating company shall monitor tailings storage facilities and cyanide solution ponds for mortalities of migratory birds, threatened species, and local wildlife species.	
3.9.5. Cyanide Treatment 3.9.5.1. If there are mortalities from cyanide over a period of one year or more for migratory birds or threatened species, or a significant number of mortalities for local wildlife species, a cyanide destruction process shall be used to reduce cyanide concentrations prior to release to a tailings storage facility.	Review monitoring data Review records of follow-up if applicable.
3.9.6. Reporting 3.9.6.1. Cyanide water quality monitoring data shall be published on at least a quarterly basis on the mine or the operating company internet web site in tabular format, and graphical format if available. 3.9.6.2. Cyanide Code signatories shall include a link in their annual reports or sustainability report if the operating company's audit information and corrective actions are published on the ICMI website. 3.9.6.3. Mortalities of migratory birds, threatened species, and local wildlife species in tailings storage facilities or cyanide solution ponds shall be published on at least a quarterly basis on the mine or the operating company internet web site.	Review the operating company or mine annual report. Review ICMI website Review operating company/ mine website.

Notes

This chapter applies to any mining operation that requires the storage onsite of cyanide in bags or bulk containers, or that use cyanide in a mill process. This does not apply to cyanide for laboratory use or other de minimis testing purposes. It applies during operations and decommissioning of the associated facilities.

Mining operations must also maintain and provide documentation that cyanide producers and transporters supplying the mining operations are International Cyanide Management Code (Code) certified.

The International Cyanide Management Institute (ICMI) Principles broadly state commitments that signatories make to manage cyanide in a responsible manner. Standards of Practice identify the performance goals and objectives that must be met in order to comply with the Principles. Separate Verification Protocols have been developed for cyanide production, transportation, and gold mining operations. Cyanide production, transportation, and gold mining operations are certified as being in compliance with the Code following an independent third-party audit (paid for by the operating company) verifying conformance with the Code's Standards of Practice. Audit results are made public

on the ICMI website to inform stakeholders of the status of cyanide management practices at certified operations. The IRMA Cyanide Standard requires the same auditing procedures, and certified auditors, as for the Cyanide Code.

Cross References to other Chapters

Cyanide discharge limits appear in Chapter 3.1 Water Quality, and cyanide use is also an occupational health and safety consideration (Chapter 2.2).

Chapter 3.10—Mercury Management

Background
Mercury metal is a byproduct of some mining operations, due to the presence of mercury minerals in ore bodies such as gold, silver, copper and zinc deposits. Mercury is a persistent, bio-accumulative pollutant. When released into the environment and deposited or carried into air and water, mercury can be converted to methyl-mercury. Methyl-mercury can be transmitted up the food chain and accumulates in the tissues of animals.

Because of mercury's potentially significant health and environmental impacts, mining operations should work to restrict the release of point source mercury emissions to surface and ground waters and to the atmosphere by adopting appropriate mercury reduction goals and by applying suitable mercury reduction technologies.

Objectives/Intent of this Chapter
The intent of this standard is to protect human health and the environment by encouraging the responsible management of mercury.

Because the science surrounding mercury emissions and the technology of mercury source monitoring and removal is relatively undeveloped, additional short-term objectives are to improve scientific understanding of the issues and improve the technology to monitor and control mercury emissions.

IRMA System Impact Indicators

- **Indicator 3.10.a** The quantities of mercury captured, as well as that released to air and water, by mining operations, per year.

- **Indicator 3.10.b** The qualitative evaluation non-thermal sources, identification of mitigating measures, and development of effective monitoring procedures for these sources.

Requirements	Means of Verification
Applicable at corporate owner level:	
3.10.1. The corporate owner shall select, in consultation with the IRMA Mercury Emission Research Committee (See Notes below), one of its mines that that would trigger the requirements of the USEPA Mercury Rule (US 40 CFR Part 63, Subpart EEEEEEE) for further research on non-thermal mercury air emissions.	Confirmation of participating mine with 'IRMA Mercury Emission Research Committee'.
3.10.1.1. Data collected as a part of the non-thermal mercury air emissions research shall not be used for permit compliance, but may be used for the purpose of publishing research results.	Review data submitted for permit compliance.
3.10.1.2. The non-thermal mercury air emissions research may be conducted for up to 3 years at each participating mine site.	Interview with research program personnel.
Applicable at operating company level:	

3.10.2. Compliance with the Minamata Convention on Mercury	
3.10.2.1. The operating company shall comply with the applicable provisions of the Minamata Convention on Mercury (UNEP, 31Jul13).	
3.10.3. Exploration and Planning	
3.10.3.1. Each mine with a mercury recovery system shall assess the amount of mercury in the waste rock and ore relative to the potential for release of such mercury during the mine ore processing and production facility operations for water and air emissions, and the production of by-product mercury. For new mines with planned mercury recovery systems this assessment shall be conducted in the initial stages of mine permitting and disclosed in the environmental assessment.	Review the EIA for the mine to determine if he required analyses/predictions for mercury were made and disclosed.
3.10.4. Construction	
3.10.4.1. Each mine, ore processing and production facility that utilizes an autoclave, roaster, carbon kiln, refining furnace, or other thermal processes that would trigger the requirements of the USEPA Mercury Rule (US 40 CFR Part 63, Subpart EEEEEEE), shall implement the requirements of the USEPA's "National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category."	Note: Thermal sources include: ○ Roasting operations and autoclaves that are used to pre-treat gold mine ore; ○ Carbon kilns; ○ Preg tanks; ○ Electrowinning cells; ○ Mercury retorts; and, ○ Melt furnaces. (see 40CFR63.11651)
3.10.5. Mercury Capture and Disposal	
3.10.5.1. Mercury from primary emission controls: a. Shall not be stored on-site or disposed with tailings after removal b. Shall not be sold or given away either directly or indirectly to an entity engaged in artisanal or small-scale gold mining, c. Shall be sold only for an end use listed in Annex A (Products) or Annex B (Processes) of the Minamata Convention on Mercury; or, d. Shall be sent to a regulated repository.	Review mercury disposal procedures. Primary mercury includes elemental Hg, calomel, sulfidized carbon residue, etc. Review disposal records. Regulated refers to the certification and regulation of a storage facility by a governmental authority.
3.10.5.2. Mercury from secondary waste streams, which result from primary emission controls, containing low levels of mercury may be disposed of on-site: a. Only after a risk-based evaluation of the on-site disposal; and, b. Only in fully lined tailings storage facilities where	The on-site disposal of secondary mercury waste is anticipated to be only for relatively small amounts of mercury compounds for which it would otherwise be difficult to locate a regulated repository.

the liner is a synthetic material of permeability less than 10^{-9} cm/sec	
3.10.6. Monitoring	
3.10.6.1. For each mine with a thermal source of mercury air emissions a Mercury Monitoring Plan shall be developed in consultation with local communities (per section 2.8.3.2.of the IRMA Standard).	Review Mercury Monitoring Plan Consultation with local communities.
3.10.6.2. The Mercury Monitoring Plan shall address: a. Potential public health impacts (e.g. food source and blood level mercury); b. Environmental impacts monitoring (e.g. fish tissue and stream sediment mercury levels); and, c. Mercury air emission monitoring, including that necessitated as part of a regulatory permit requirement.	Review Mercury Monitoring Plan
3.10.6.3. The Mercury Monitoring Plan shall include the monitoring of: a. The quantity of mercury released to air; b. The quantity of mercury released to water; c. The amount of mercury captured in pollution control systems; and d. The amount of by-product mercury produced (including the mercury captured in pollution control systems).	
3.10.7. Reporting	
3.10.7.1. The operating company shall report publicly, at least annually a summary report of the findings from the implementation of the Mercury Monitoring Plan, including the monitoring data.	Check for compliance. The objective is for those interested to be able to easily calculate the efficiency of the mercury capture systems, and to track the amount and location of mercury disposed.
3.10.7.2. Reporting shall be satisfied by publishing the results annually on the mine or company web site in both English and the primary host country's language.	Check for compliance.

Notes

The USEPA "National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category" regulations, effective December 16, 2010, are the only existing national mercury emissions standards for mining. The EU regulates mercury emissions from major industrial sources (EU Directive 96/61/EC on Integrated Pollution Prevention and Control). These standards do not include direct mining provisions but are intended to reduce mercury use and targeted the "metallic mercury gained from non-ferrous mining and smelting operations" by prohibiting metallic mercury export and by-product sales and requiring safe metallic mercury storage.

The Minamata Convention is designed for use by sovereign national governments, and as such leaves a number of implementation items up to the individual parties to design. One of these items is how to monitor mercury emissions. Another is the "… environmentally sound disposal …" of mercury (Article 11, Mercury Wastes). The Minamata Convention has directed the Conference of the Parties to develop guidance for developing monitoring mercury emissions (Article 8) and for managing mercury waste in an environmentally sound manner (Article 11), but the Convention itself was only adopted on July 31, 2013, so this guidance has not yet been developed.

IRMA recognizes both the paucity of existing regulations and the cost of monitoring and collecting mercury from mine emission sources, and seeks to begin to develop better air monitoring though targeted approaches that use broad, less expensive testing protocols to determine if more testing is necessary. Given the significant health risks associated with mercury, and the challenges and costs associated with reducing mercury once it enters environmental pathways, it is important that accurate information is available on all mercury emissions from mines certified by IRMA.

IRMA is attempting to reduce the costs to public health associated with mercury exposure, and the technical challenges of removing mercury once it's in the environment, by encouraging source control – preventing mercury from getting into the environment in the first place. However, mercury air emission testing is very expensive (hundreds of thousands of dollars annually.

Researchers have documented fugitive mercury air emissions from non-thermal sources at mines, most notably heap leach facilities.[86] Further research is needed to assess the pervasiveness of these non-thermal sources,[87] as well as to verify the reliability of the thermal-source measurements. It is proposed that IRMA will establish an IRMA Mercury Emission Research Committee to supervise research projects at mine sites in the voluntary mercury emissions monitoring program.

The IRMA Mercury Emission Research Committee would be established by the IRMA Steering Committee, and would consist of persons from each interested sector of IRMA who are technically qualified to evaluate and assist in guiding research on mercury emissions from mine facilities. Research project proposals and budgets would be approved by the IRMA Mercury Emission Research Committee before being submitted to the operating company managing the mine involved in the research for final budget approval.

This small-scale effort attempts to take advantage of the unique IRMA opportunity to have participants help encourage a definition of what should honestly be best practice in mercury air management by providing an appropriate test site (one mine per company) to gather some low cost, no-regulatory-strings-attached, but defensible research. The present regulatory methodology and mercury emission control equipment may technically meet the definition of best practice, but the combined approach is not a sufficient best practice.

Reclamation and Closure

Chapter 4.1—Reclamation and Closure

Background
Reclamation refers to the process of reconverting disturbed land to its former or other productive uses.[88] Closure refers to the activities which are required to maintain compliance with environmental regulations during and following completion of reclamation. Discussions over the adequacy of reclamation and closure include: (1) the final use that is appropriate for reclaimed mine lands; (2) whether re-contoured mine lands should be re-vegetated or whether reinvasion of natural vegetation is sufficient; (3) the timing of the reclamation process; (4) whether open pits should be backfilled with waste in a way that does not degrade the environment; and, (5) how much money should be set aside to guarantee that reclamation is accomplished, how should that money be invested or valued in terms of discount rate, and what form of financial surety is required for this guarantee to be effective in practice.

It is now widely recognized that the objectives and impacts of reclamation and closure must be considered from project inception. A reclamation and closure plan should define a vision of the end result of the process and set concrete objectives to implement that vision. The reclamation and closure plan must include only accepted techniques. Reliance on miracle cures in the future are not countenanced. This forms an overall framework to guide all actions and decisions taken during the mine's life.

Objectives/Intent[89] of this Chapter
This chapter is intended to ensure that consideration of the long-term environmental and social potential of a mine site after mining operations have ceased is integrated into mining project management throughout the mine life cycle, from its beginning to its end, and to ensure that the full costs of site reclamation and closure are borne by the mine's financial beneficiaries, and are not passed on to the public.

IRMA System Impact Indicators

- **Indicator 4.1.a** The proportion of mining projects at each stage of the mine life cycle that are associated with an up-to-date, comprehensive reclamation and closure plan covered by an adequately costed and reliable form of financial surety.

- **Indicator 4.1.b** The annual cost to the public and to third parties other than a mine's beneficiaries of mine site reclamation and closure.

- **Indicator 4.1.c** The proportion of mines using backfill in pits and underground workings.

Reclamation and Closure Requirements	Means of Verification
Applicable at operating company level:	
4.1.1. Mineral Exploration	
4.1.1.1. Prior to the commencement of any mineral exploration activity involving off-road vehicle use, road construction, drilling (including helicopter drill rigs), or may otherwise	Review exploration reclamation plan.

Reclamation and Closure Requirements	Means of Verification
have a long-term impact on the land, the operating company shall develop a mineral exploration reclamation plan.	
4.1.1.2. The mineral exploration reclamation plan shall be discussed with local communities, following the IRMA Community Consultation process, before exploration activities begin.	Review exploration reclamation plan and surety, records of community consultation process, and interview community representatives.
4.1.1.3. The operating company shall provide a financial surety to cover the cost of implementing the exploration reclamation plan. If there is no government authority with responsibility for holding and enforcing a financial surety: a. The company will provide a financial surety which meet the relevant requirements of the Financial Surety subsection of this chapter, to IRMA that covers all such exploration situations; b. Appeals of incomplete or inadequate exploration reclamation may be made through the IRMA Grievance Mechanism and Access to Other Remedies process.	
4.1.2. Reclamation & Closure Planning	
4.1.2.1. Prior to the commencement of any site-disturbing activities beyond the exploration phase, a. The operating company shall prepare and publish on the company website a reclamation and closure plan compatible with the protection of human health and the environment, and with other beneficial uses, which demonstrates how the affected areas will be returned to a stable landscape with a self-sustaining plant community. b. The reclamation and closure plan and its provisions shall meet or exceed the requirements, or their equivalent, described in the Guidance document for Chapter 4.1 Reclamation & Closure.	Review the Guidance document for Chapter 4.1 Reclamation & Closure.
4.1.2.2. The reclamation & closure plan shall demonstrate how all the requirements of this chapter will be met, including appropriate references to reclamation commitments presented in the ESIA, incorporating clear descriptions of: a. Post-mine land use; b. The proposed approaches for concurrent, temporary closure, and post-mining reclamation for each major mine feature; c. The proposed methods of stabilization and final	Review the Guidance document for Chapter 4.1 Reclamation & Closure, "Reclamation and Closure Tasks"

Reclamation and Closure Requirements	Means of Verification
topography of the reclaimed mine lands; d. The proposed methods of stormwater runoff/runon management and location of features; e. The proposed methods to salvage topsoil to the maximum extent practicable, and to store topsoil in a manner that preserves its capability to support plant regeneration; f. The proposed methods of re-vegetation and measures for long-term sustainability of the established plant communities; g. The timing of the reclamation process in the event of both unanticipated and planned closure; h. The funding mechanism to pay for all post-closure costs, including monitoring and long-term operation and maintenance costs; and, i. The role of the community (if any) in long-term monitoring and maintenance, and in reviewing the reclamation plan.	
4.1.2.3. The reclamation & closure plan shall include revegetation requirements that specify: a. Plant material selection prioritizing native species; b. Measures for control of noxious weeds; c. Quantitative revegetation standards; and, d. Clear mitigation measures to be implemented if these standards are not met.	Review reclamation & closure plan.
4.1.2.4. Wetland impacts: a. Should be avoided wherever possible. b. Impacted wetlands shall be replaced / mitigated on at least a one-to-one ratio.	
4.1.2.6. Open Pits	
4.1.2.6.1. Open pits shall be backfilled where socially, environmentally, and economically practicable, prioritizing the following: a. Opportunity for sequential backfill of multiple open pits to return the area to usable post-mind land use; b. Enhanced stability of pit walls required to ensure protection of human health and the environment; and, c. Elimination of pit lake impacts on wildlife, and impacts on surface or ground water quality. d. When economically practicable – If the cost	This would apply to new or expanded open pits. The cost savings analysis is to compare the savings (NPV) in long-term water treatment (if any) to the cost of backfilling. At the point where the backfilling cost is less than or equal to the savings, then it is assumed there is less long-term financial risk with the backfilling. At a point where the savings are less

Reclamation and Closure Requirements	Means of Verification
savings produced by a decrease in the net present value (NPV) of long-term water treatment due to backfilling is approximately equal to or greater than the cost of the backfilling itself, then the pit should be backfilled.	than the cost of backfilling then it is not cost effective to backfill the pit.
4.1.2.6.2. Where acid-generating/metals leaching materials are exposed in the pit wall of the mine: a. The pit should be backfilled if this would minimize the likelihood and environmental impact of acid generation/metals leaching; and, b. Sulfide wall rock should be submerged below the water table, if possible, to decrease reactivity; or, c. Exposed sulfide wall rock should have a cover or other mechanism designed to minimize contaminant discharge when it will improve surface or ground water quality conditions.	
4.1.2.7. Underground Mines shall be backfilled if subsidence is predicted and if the mining method allows. The use of backfill is intended to: a. Prevent subsidence, b. Slow the flow of seepage through mine workings; and, c. Store as much PAG/ML waste rock as possible below the long-term water table.	This applies to new or expanded underground mines. Document the hydrologic and geochemical characterization and analysis made for backfilling the underground mine.
4.1.3. Financial Surety	
4.1.3.1. The reclamation & closure plan shall include a detailed determination of the estimated costs of reclamation, based on the assumption that reclamation will be completed by a third party, and using costs associated with the reclamation plan as implemented by a regulatory agency. These costs shall include, at least: a. Hazardous materials b. Facility demolition and disposal c. Earthwork d. Revegetation e. Interim process fluid and site management f. Process fluid management g. Short-term water treatment h. Long-term water treatment i. Mobilization/demobilization; j. Engineering redesign, procurement, and construction management; k. Contractor overhead and profit; l. Agency administration;	Review financial surety calculations in the reclamation plan to insure the specified categories are included, and that reasonable assumptions have been utilized in calculating the financial surety.

Reclamation and Closure Requirements	Means of Verification
m. Holding costs that would be incurred by the regulatory agency following a bankruptcy in the first two years before actual reclamation begins; and n. Post-closure costs for long-term monitoring and maintenance. o. Contingency; p. A multi-year inflation increase in the financial surety; or, q. An annual review and update of the financial surety.	
4.1.3.2. The terms of the financial surety shall guarantee that: a. The surety shall not be released until reclamation and closure are complete, all impacts have been mitigated, and reclamation has been shown to be effective for a sufficient period of time after mine closure to demonstrate that the reclaimed mine site and resources are stable; b. The public shall have at 30 days to comment on the adequacy of the completion of reclamation activities prior to release of part or all of the financial surety.	Review financial surety terms and conditions. Partial bond releases are anticipated, but with public comment. Note how public comment was accommodated with each surety release.
4.1.3.3. Financial surety instruments shall be independently guaranteed, reliable, and readily liquid.	
4.1.3.4. Self-bonding or corporate guarantees shall not be permitted.	
4.1.3.5. Sureties shall be evaluated by independent analysts, using accepted accounting methods, at least every three years or when there is a significant change to the mine plan.	Review independent analysis findings.
4.1.3.6. The operating company shall review and update the reclamation plan and the financial surety as necessary at least every 3 years.[90]	Review latest version of reclamation plan and financial surety.
4.1.3.7. The results of all reclamation plan and surety reviews, as well as the most recent version of the reclamation plan, shall be publicly available on the mine or company website.	Review mine or company website.
4.1.3.8. The operating company shall provide the public with at least 30 days to comment on the reclamation plan and the adequacy of the financial surety: a. Prior to the commencement of the construction of the mine; b. Prior to any renewal of the financial surety and,	Review records of consultation on revision of reclamation plan and surety.

Reclamation and Closure Requirements	Means of Verification
c. Prior to final release of the financial surety.	
4.1.4. Post-Closure Planning	
4.1.4.1. Monitoring of open pit(s), whether or not the ground water table has been penetrated, will be required in post-closure. The reclamation & closure plan shall include specifications for the post-closure monitoring and maintenance of all mine facilities, including, but not limited to: a. Inspection of surface and underground mine workings; b. Monitoring of surface and groundwater quality, including a contingency for biologic monitoring if required; c. Inspection and maintenance of tailings and waste rock disposal facilities including effectiveness of cover and any seepage capture systems; and, d. Mechanisms for contingency and response planning and implementation.	
4.1.4.2. Monitoring locations for surface and groundwater shall be sufficient to detect onsite contamination from all closed mine facilities, as well as at the points of compliance.	
4.1.4.3. Pit lake water quality shall be monitored, and if potentially harmful to wildlife, livestock, or birds, adequate measures shall be taken to protect these organisms.	Review reclamation plan for presence of pit lake water quality monitoring, and the presence of appropriate measures to protect wildlife if pit lake water will be potentially harmful.
4.1.4.4. Long-term water treatment Long-term water treatment shall not take place unless:	This requirement applies to new or expanded mines.
4.1.4.4.1. All practicable efforts to implement best practice water management methods to avoid long-term treatment have been made;	
4.1.4.4.2. Long-term water treatment is explicitly discussed/authorized with the affected stakeholders in conformance with the IRMA Free, Prior and Informed Consent process (see Chapter 2.10) if the project affects indigenous peoples, and/or the IRMA Community and Stakeholder Engagement process;	Confirm that FPIC / Community Engagement requirements have been met to assure that the affected community is aware of the risks associated with long-term water treatment.
4.1.4.4.3. There is no significant risk to water quality, aquatic life, human health, cultural resources, recreation, other economic uses, or other significant uses; and,	Significant risks include, but are not limited to: ○ Acute and/or chronic impacts to aquatic life that would result in a reduction in

Reclamation and Closure Requirements	Means of Verification
	viability or population density. o Impacts to human health. Degradation of water quality that impairs ecological, recreation, cultural or economic uses.
4.1.4.4.4. A third-party engineering & risk assessment, paid for by the operating company but supervised by the local communities, shall be performed and the findings discussed as a part of the IRMA Community and Stakeholder Engagement and/or Free, Prior, and Informed Consent processes prior to mine construction or expansion. a. As a part of the risk assessment the environmental and financial advantages/disadvantages and risks of employing better mitigation methods (liners, seepage pumpback systems, etc.) versus long-term water treatment shall be evaluated; b. The analysis shall incorporate data on the failure rates of the proposed mitigation measures and water treatment mechanisms to protect long-term risks to downstream beneficial uses.	
4.1.5. Post-Closure Financial Surety	
4.1.5.1. The operating company shall provide sufficient financial surety in the form of a trust fund or other similar suitable interest accruing cash or equivalent long-term security for all long-term activities, including: post closure site monitoring and maintenance; and, water treatment operations.	Review financial surety calculations.
4.1.5.2. At the time the mine begins construction, or whenever the commitment for long-term water treatment is initiated: a. The trust fund (or equivalent) for long-term water treatment shall be established in full; and, b. Sufficient funding shall be established to conduct adequate post-closure monitoring and maintenance for as long as mine facilities present any potential contamination threat off the mine site.	When the obligation for long-term water treatment is incurred, the public must be financially protected in full.
4.1.5.3. The post-closure financial surety shall be recalculated and reviewed by an independent analyst at the same time as the reclamation financial surety.	
4.1.5.4. Long-term Net Present Value calculations shall utilize:	A 3% real interest rate is a realistic but conservative assumption for NPV

Reclamation and Closure Requirements	Means of Verification
a. A real interest rate of 3% or less;[91] b. A term of no less than 500-years.	calculations. Higher interest rates, or calculation periods shorter than 500 years, place the public at increased risk, especially during periods of high inflation.

Notes

Reclamation planning and reclamation sureties are controversial topics. There is a great deal of literature available on reclamation planning (ICMM 2005; ICMM 2006; ICMM 2008; Kuipers 2000; USDA 2004), and these sources provide the necessary detail to guide reclamation planning. Detail on how to calculate financial sureties, what form of financial surety should and should not be accepted, and what legal precautions should be taken to insure that the financial surety is available for mine closure are also available (ICMM 2005; Kuipers 2000; USDA 2004).

IRMA auditors will be expected to be familiar with the requirements of these sources, assisted by a Guidance document, and their audits of the reclamation plans and financial sureties will reflect this knowledge. This is why there isn't more prescriptive detail on reclamation plans and financial sureties in the IRMA Standard. It will be up to IRMA to monitor whether the intent of the IRMA Standard is being met in the field, and if it is not, then changes to the standard will be made.

There has been a great deal of discussion as to the meaning of the "practicable" as it relates to the backfilling of pits and underground mines. A fundamental concern in defining practicable is that economic benefits and costs have carried much more weight than social and environmental considerations. As defined in the glossary, practicable means giving equal weight to environmental, social, and economic benefits and costs. In discussing this definition in the IRMA Standard Workshop in Berkeley, in November, 2013, the consensus seemed to be that the process of deciding exactly what "practicable" meant on a site-by-site basis is as important as the formal definition.

Perpetual water treatment is the most controversial issue in this chapter. The NGO community opposes the certification of mines that require water treatment in perpetuity. The mining industry participants have stated that all of their mines will require water treatment in perpetuity. This raises an almost intractable predicament. The proposed standard recognizes that there are an increasing number of mines being permitted by regulatory authorities throughout the world that will require water treatment in perpetuity. It aims to influence the design and management of mines that undergo certification to reduce the number of new mines that will require water treatment in perpetuity, minimize the amount of water to be treated, and provide stakeholders with better information and more say in the process.

The requirements for perpetual treatment proposed do not unilaterally ban long-term water treatment, but if long-term treatment is proposed for a mine, or mine expansion, then the mine planning process must ensure that:

- All practicable efforts to implement best practice water management methods to avoid long-term treatment have been made;
- There must be no significant risk to water quality, aquatic life, human health, cultural resources, recreation, other economic uses, or other significant uses;
- A third-party engineering & risk assessment, paid for by the operating company but supervised by the local communities, is performed and the findings discussed as a part of IRMA community consultation prior to mine construction;
- For proposed mines, or for existing mines that are proposing long-term water treatment, the engineering & risk assessment and the community consultation shall be completed before construction begins; and,

- The long-term water treatment must be explicitly discussed/authorized in conformance with IRMA Free, Prior and Informed Consent and/or Community Consultation process.

Again, this may not be the ideal solution, but these requirements, combined with the financial incentive the mining industry has to eliminate long-term water treatment, are aimed at minimizing the number of new mines that will require water treatment, as well as minimizing the amount water to be treated.

Cross References to other Chapters
See Chapter 2.3 (Emergency Preparedness and Response) Section 2.3.5 Accident Insurance, Chapter 3.1 (Water Quality) for additional monitoring requirements, and Chapter 3.3 (Mine Waste Management) for discussions of pit and underground backfill, liners, and lake-riverine-ocean waste disposal.

Management Systems

Chapter 5.1—Environmental and Social Impact Assessment (ESIA)

Background
Mining has the potential to negatively impact the environment, communities and economies in areas on or surrounding a mine site. Conversely, mining projects also can bring opportunities through the development of local capacities and skills, infrastructure and business development, and the investment of resources into environmental and social programs.

In almost all jurisdictions, mining companies are required to conduct environmental and social impact assessments (EIA or ESIA) prior to mine development, and some also require them prior to exploration. ESIA enable regulators and other stakeholders to review predicted impacts and mitigation measures for a mining proposal before it is finalised or approved.

The importance of stakeholder involvement in ESIA is increasingly recognized, improving the quality of the assessments and helping to build community support for a project by involving local stakeholders in the process and associated decision-making.

Objectives/Intent of this Chapter
The objective of this chapter is to ensure that environmental and social impacts are evaluated in a comprehensive and integrated manner; and that the concerns of stakeholders and affected communities are explicitly identified, addressed and incorporated into planning and decisions-making in order to anticipate, avoid, and when that is not possible, minimize and compensate for impacts on affected communities, workers and the environment.

IRMA System Impact Indicators

- **Indicator 5.1.a** The proportion of mining projects for which ESIAs were completed and were judged by independent experts as meeting international best practice.

Environmental and Social Impact Assessment (ESIA)Requirements	Means of Verification
Applicable at operating company level:	
5.1.1. An Environmental and Social Impact Assessment (ESIA), appropriate to the nature and scale of the proposed project and commensurate with the level of its environmental and social risks and impacts, shall be completed prior to the commencement of any site-disturbing operations associated the project.	Review of ESIA report and associated records Consultation with interested and affected stakeholders
5.1.2. The ESIA shall be carried out in accordance with publicly available, documented procedures which include all the elements specified in this standard.	Review documented procedures. Confirm public availability.
5.1.3. Scope	Review ESIA compared to examples of 'best practice' ESIAs for comparable

Environmental and Social Impact Assessment (ESIA)Requirements	Means of Verification
5.1.3.1. The ESIA shall identify and assess all potentially significant social and environmental impacts of the project. 5.1.3.2. The ESIA shall explicitly consider potential impacts in relation to the topics covered in Chapters 2.4 to 2.7, 2.10 to 2.12 and 3.1 to 3.10 of this standard, and if no significant impact is expected shall include a clear statement to that effect. 5.1.3.3. The ESIA shall include the assessment of: a. impacts during all stages of the project lifecycle, from pre-construction through post closure; b. direct, indirect, induced and cumulative impacts; c. other short- and long-duration impacts within the project's zone(s) of influence; and d. potential impacts of extreme events.	projects. Consultation with interested and affected stakeholders
5.1.4. Preparation and Provision of Preliminary Information 5.1.4.1. Prior to the implementation of the ESIA the operating company shall ensure that: a. stakeholders who may be interested in and/or affected by the proposed project have been identified b. a preliminary identification of potential environmental, social and health impacts of the proposed project, and proposed actions that could mitigate any identified negative impacts has been carried out; c. a report has been prepared and published on the operating company's external website, in the official national language(s) of the country in which the project is proposed to take place which provides: i. background information about the project, including information as to the proposed nature and duration of the project and its related activities; ii. the preliminary identification of potential environmental, social and health impacts, and proposed actions to mitigate any negative impacts; iii. a description of the main steps of the social and environmental impact assessment	Consultation with operating company team responsible for ESIA. Review external website. Records of preliminary identification of interested and affected stakeholders.

Environmental and Social Impact Assessment (ESIA)Requirements	Means of Verification
process that will be carried out, the estimated timeline and the range of opportunities for public participation in the process; iv. contact details for the person or team responsible for management of the ESIA. d. there has been a wide, public announcement of the project proposal and the associated ESIA process, and reasonable efforts to contact and inform all affected and interested stakeholders identified through its preliminary assessment taken place.	
5.1.5. Stakeholder Participation 5.1.5.1. The operating company shall ensure that there has been provision for timely and effective stakeholder review and comment on: a. the proposed scope of the ESIA (the issues and impacts to be considered) b. methodologies for the collection of environmental and social information c. the findings of environmental and social studies carried out in relation to the ESIA, or whose findings are relevant to the conclusions and recommendations of the ESIA d. options and proposals to mitigate the potential impacts of the project e. provisional conclusions and recommendations of the ESIA, prior to finalisation f. the final conclusions and recommendations of the ESIA 5.1.5.2. The operating company shall encourage stakeholder participation, where possible, in the collection of data for the ESIA, and in the development of options and proposals to mitigate the potential impacts of the project. 5.1.5.3. If necessary, the operating company shall provide resources for capacity building and training to enable meaningful stakeholder participation. Where such resources have been provided, the company shall ensure that there is a governance mechanism in place that ensures that the ability of stakeholders who have received such training or capacity building to express their views or opinions freely is not compromised.	Consultation with operating company team responsible for ESIA. Consultation with interested and affected stakeholders Review of records of comments, and actions taken in response

Environmental and Social Impact Assessment (ESIA)Requirements	Means of Verification
5.1.5.4. The operating company shall record all stakeholder comments received in relation to the design and implementation of the ESIA and in relation to its findings, conclusions and recommendations, and shall record how any such comments were responded to.	
5.1.6. Data Collection 5.1.6.1. Baseline data describing the prevailing environmental, social, economic and political environment shall be collected at an appropriate level of detail to allow the assessment of the potential impacts of the proposed project. 5.1.6.2. Additional studies shall be carried out as necessary to fulfil the information needs of the ESIA.	Review ESIA
5.1.7. Impact Analysis 5.1.7.1. The operating company shall identify and predict the likely environmental, social and other related effects of the proposed project, in consultation with affected and interested stakeholders.	Review ESIA
5.1.8. Mitigation and Impact Management 5.1.8.1. The operating company shall collaborate with affected communities and other relevant stakeholders to: a. determine the significance of the predicted impacts; b. identify and develop measures to avoid, minimize or offset the predicted adverse impacts, including consideration of alternative approaches to achieved the desired project objectives; c. determine the relative importance and acceptability of residual impacts (i.e., impacts that cannot be mitigated).	Consultation with operating company team responsible for ESIA. Consultation with interested and affected stakeholders Review of records of comments, and actions taken in response

Notes
The requirements of Chapter 5.1 (and the following Chapter 5.2) build on the good practice requirements described by IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts.

As for all aspects of the IRMA Standard, documentation or records that are required to demonstrate conformity with this chapter of the IRMA Standard do not have to be prepared exclusively or specifically for that purpose. Documentation or records that have been prepared to meet a company's legal obligations, or to meet a company's voluntary commitments (e.g. to meet standards other than IRMA's) may also be submitted to demonstrate conformity with the requirements of the IRMA Standard.

Where a requirement of the IRMA Standard specifies that information must be publicly available, publication of the requisite information on the internet for free public download is sufficient to meet the requirement.

The standard does not list the issues and impacts that are likely to be significant, as these will vary greatly depending on the scale, nature, duration and location of the particular project. It is the responsibility of the operating company, in consultation with interested and affected stakeholders, to ensure that all the relevant issues and impacts are identified and considered. Issues/ impacts to be considered may include (but are not limited to) the following:

- environmental impacts, (e.g. surface disturbance, waste generation, air quality, biodiversity, species at risk, noise, water use and quality, spills);
- social impacts, (e.g. housing, infrastructure, social services, poverty, community physical and mental health and safety, local economies, resettlement, ecosystem services, employment, population movements);
- labor and working conditions ;
- human rights;
- trans-boundary effects, (e.g. air pollution, use of international waterways);
- greenhouse gas emissions;
- potential impacts on World Heritage Sites;
- potential impacts on Indigenous peoples and/or other vulnerable individuals or groups (e.g., women, ethnic minorities, youth and elderly, etc.), including impacts on culture and cultural heritage
- socio-political risks, including the potential for human rights abuses, conflict and other political instability.

In many jurisdictions there are legal requirements for undertaking ESIA. Where documents and records produced in satisfaction of legal requirements also meet the requirements of the IRMA standard it is not required to duplicate these. A company may choose to develop summaries and explanations of such documents and records in order to facilitate the IRMA assessment process and thereby reduce its cost.

An ESIA that meets the requirements of this chapter is a critical step in informing interested and affected stakeholders including, where applicable, indigenous peoples about a proposed project and its potential impacts, prior to decision-making. As such, implementation of these requirements can be an important contribution towards the subsequent provision of free, prior and informed consent, as described in Chapter 2.10. However, it should be emphasised that stakeholder participation or collaboration in the ESIA process, including in the consideration of proposals to mitigate expected impacts does not, of itself, imply consent, even if the recommended actions to minimize impacts are fully implemented.

Cross References to Other Chapters

See Chapter 5.2 for consideration of the monitoring of social and environmental impacts.

Chapter 5.2—Environmental and Social Impact Monitoring

Background
Monitoring is an iterative and cyclical process that leads to a re-assessment of relevant environmental, social and health management plans, as part of an adaptive project management process.

A monitoring program should monitor both positive and negative impacts of the mining project, and should provide early warning system of social, environmental or health problems that may occur.

An effective monitoring program linked to responsive management should reduce any negative impacts of the project, support the achievement and maintenance of the its 'social license to operate', control the risk of future liability and litigation, and help protect the project and parent company's reputation.

Objectives/Intent of this Chapter
The objectives of this chapter are to ensure that the environmental and social impacts of a mining project are effectively monitored over time, in a comprehensive and integrated manner; that the monitoring programme addresses the concerns of stakeholders and affected communities; and that systems are in place to respond to and where possible address adverse impacts that are identified in an effective and timely manner.

IRMA System Impact Indicators

- **Indicator 5.2.a** The proportion of mining projects for which the project's monitoring of social, environmental and community health impacts is judged by independent experts as meeting international best practice.

Environmental and Social Impact Monitoring Requirements	Means of Verification
Applicable at operating company level:	
5.2.1. A comprehensive and effective environmental and social impact monitoring program, appropriate to the nature and scale of the proposed project and commensurate with the level of its environmental and social risks and impacts, shall be established and be operational prior to the commencement of any site-disturbing operations associated the project.	Review monitoring methodology documentation. Review records of implementation.
5.2.2. Scope 5.2.2.1. The monitoring programme shall include monitoring of: a. the specific indicators identified in other chapters of the IRMA Standard; b. key social, environmental and community health impacts identified as a result of the project's social and environmental assessment; c. any potential impacts identified as being of high	Review monitoring methodology documentation. Comparison with ESIA reports.

Environmental and Social Impact Monitoring Requirements	Means of Verification
priority to affected communities and stakeholders; and d. the IRMA System Impact Indicators as they relate to the mining project. 5.2.2.2. The monitoring programme shall be sufficient to allow effective monitoring of: a. impacts during all stages of the project lifecycle, from pre-construction through post closure; b. direct, indirect, induced and cumulative impacts; c. other short- and long-duration impacts within the project's zone(s) of influence; d. potential impacts of extreme events; and e. the effective implementation of mitigation measures established as a result of the ESIA.	
5.2.3. Baseline Data 5.2.3.1. The operating company shall ensure that objective, scientifically valid baseline data has been collected and recorded, prior to the start of any potentially site-disturbing operations, in relation to: a. all key social, environmental and potential health impacts identified as a result of the project's social and environmental assessment; b. any potential impacts identified as being of high priority to affected communities and stakeholders; and c. the IRMA System Impact Indicators as they relate to the mining project.	Review records. Comparison with ESIA reports.
5.2.4 Monitoring Methodologies 5.2.4.1. The methodologies and techniques for monitoring key impact indicators shall be: a. based on the 'best practicable' science; b. fully documented; c. designed to result in sufficient, reliable and usable information for timely and effective decision-making in response to any issues of concern; and d. reviewed and if necessary adjusted over time, without compromising comparability with baseline information, to respond to improvements in knowledge or understanding of	Review documented procedures. Review personnel records. Confirm public availability.

Environmental and Social Impact Monitoring Requirements	Means of Verification
the issues of concern. 5.2.4.2. The documented methodologies and techniques used shall be publicly available 5.2.4.3. The collection and analysis of monitoring data shall be implemented by appropriately qualified staff	
5.2.5. Independent Experts 5.2.5.1. The operating company shall provide affected communities and interested stakeholders with the opportunity to propose independent experts to collaborate with the operating company in the design and implementation of its monitoring program. 5.2.5.2. The operating company shall facilitate the independent monitoring of key impact indicators where this would not interfere with the safe operation of the project, for example by allowing independent experts to have access to sites for monitoring social or environmental indicators, and by allowing access to relevant company records, reports or documentation.	Consult with the operating company and stakeholders regarding involvement of independent experts in study design, data collection and monitoring programs
5.2.6. Stakeholder Participation 5.2.6.1. The operating company shall provide for stakeholder review and comment on: a. the proposed scope of the monitoring programme (the impacts to be monitored) b. methodologies for the collection and monitoring of environmental and social information (including potential health impacts) 5.2.6.2. The operating company shall encourage stakeholder participation, where appropriate, in the design and implementation of the monitoring programme. 5.2.6.3. If necessary, the operating company shall provide resources for capacity building and training to enable effective stakeholder participation.	Consultation with interested and affected stakeholders Review of records of comments, and actions taken in response. For large projects, consultation with representatives of permanent monitoring advisory group.

Environmental and Social Impact Monitoring Requirements	Means of Verification
5.2.6.4. For large scale projects for which the total project cycle is expected to last longer than ten years, the operating company shall establish a permanent monitoring advisory group made up of a range of stakeholders, whose role is to review the monitoring programme and its results, and advise on potential improvements to the programme. 5.2.6.5. The operating company shall record all stakeholder comments received in relation to the design and implementation of the monitoring program and in relation to its findings, and shall record how any such comments were responded to.	
5.2.7. Periodic Review 5.2.7.1. The operating company shall undertake, every three years, a participatory and inclusive evaluation of the mining project and its potential environmental, social, health and other relevant impacts, overseen by the project's permanent monitoring advisory group or an equivalent review body.	For large projects, consultation with representatives of the project's permanent monitoring advisory group. Review independent review report.
5.2.8. Disclosure and Reporting 5.2.8.1. All data from the monitoring program shall be made publicly available on a timely basis and in readily accessible, machine readable formats. 5.2.8.2. Summary reports of the findings of the monitoring program shall be made publicly available on a timely basis, and at least annually. 5.2.8.3. Summary reports of monitoring findings shall be available in languages and formats appropriate to affected communities, and in locations and formats that are readily accessible to affected communities and stakeholders.	Review of records and reports. Confirmation of public availability.
5.2.9. The operating company shall have an effective, documented system in place to review the results of monitoring on a regular basis and to respond with timely and effective action as appropriate.	Documented procedures. Evidence of implementation of procedures.

Notes
In general, monitoring should be the overall responsibility of the project. However, aspects of the monitoring program may be commissioned through independent agencies to maintain the trust of

affected communities and other stakeholders. The independence of the monitoring program can be further enhanced by creating a steering or advisory group with a range of stakeholders to help oversee its effectiveness and transparency[92].

Cross References to Other Chapters

See Chapter 5.1 for consideration of social and environmental impact assessment.

Chapter 5.3— Grievance Mechanism and Access to Other Remedies

Background
Mining and other large development projects inevitably raise concerns and complaints from community members and stakeholders affected by these projects. It is now expected practice for mining companies to have a project-level grievance mechanism in place for systematically receiving, tracking, resolving and communicating with local communities and stakeholders, including workers, about their grievances.[93]

To accommodate differences in personal and cultural preferences, a grievance mechanism should offer a variety of approaches, such as addressing complaints through dialogue, dispute resolution, independent third-party mediation or other approaches.[94] Community participation in the design of a project-level grievance mechanism and in the monitoring and evaluation of its effectiveness is more likely to result in approaches that are understandable, accessible, culturally appropriate and viewed as credible by those who use them.[95]

Project-level grievance mechanisms are just one option for individuals to seek justice or remediation for damages that they believe have occurred as a result of company activities. For example, traditional authorities may have conflict or dispute resolution systems in place; countries may have legal frameworks that provide recourse for aggrieved parties; and remedies may be sought through national or international human rights bodies, labor tribunals or other non-judicial mechanisms. Therefore, while the presence of a project-level grievance mechanism is essential, it should not be used to undermine the role of legitimate trade unions in addressing labor-related disputes, nor should the provision of remedy through such a mechanism be used to preclude future access to judicial or other non-judicial grievance mechanisms on the same grievance.[96]

Objectives/Intent of this Chapter
The primary objective of this chapter is to ensure that affected communities and individuals have access to an effective mechanism for raising concerns and grievances related to operating company activities, without limiting individuals' ability to seek remedy for the same complaints through other non-judicial or judicial mechanisms.

IRMA System Impact Indicators

- **Indicator 5.3.a** The proportion of mining projects with a grievance mechanism that is considered legitimate, accessible, equitable and transparent by affected community and stakeholders.

- **Indicator 5.3.b** The percentage of grievances resolved in a manner satisfactory to all parties.

Grievance Mechanism and Access to Other Remedies Requirements	Means of Verification
Applicable at operating company level:	
5.3.1. Access to Project-Level Grievance Mechanism 5.3.1.1. The operating company shall ensure that affected communities and stakeholders have access to a project-	Interview the operating company, community members and stakeholders, and review any written materials describing the process to determine if grievance mechanisms meets the Guiding Principles'

Grievance Mechanism and Access to Other Remedies Requirements	Means of Verification
level grievance mechanism to ensure that individuals and communities can raise grievances and seek remedies. 5.3.1.2. The project-level grievance mechanism shall meet the effectiveness criteria outlined in Principle 31 of the United Nations Guiding Principles on Business and Human Rights, which include the need for the mechanism to be: (a) Legitimate, (b) Accessible, (c) Predictable, (d) Equitable, (e) Transparent, (f) Rights-compatible, (g) A source of continuous learning, and (h) Based on engagement and dialogue. 5.3.1.3. The project-level mechanism shall also be culturally appropriate and offer protection for those filing grievances.	effectiveness criteria, and is culturally appropriate and protective of those filing grievances.
5.3.2. Development of a grievance mechanism 5.3.2.1. The operating company shall collaborate with affected communities and stakeholders to design an appropriate and acceptable project-level grievance mechanism and procedures. 5.3.2.2. The project-level grievance mechanism shall focus on dialogue as the initial means of addressing and resolving grievances. 5.3.2.3. More than one approach to addressing grievances may be deemed necessary to meet the needs of communities and stakeholders. All approaches shall be clearly explained to stakeholders and ensure that no legitimate complaint is left unaddressed. 5.3.2.4. The company shall ensure that personnel involved in the project-level grievance mechanism are adequately trained in conflict resolution and the respectful handling of complaints, including those that may appear frivolous.	Consult with the operating company, affected communities and stakeholders regarding the process for designing mechanisms and procedures.
5.3.3. Access to independent, third-party mediator or other mechanism for determining appropriate remedy 5.3.3.1. The company and stakeholders shall consider the option of utilizing an independent third-party mediator or another mechanism such as a traditional dispute resolution process, if the operating company and those affected cannot reach	Consult with the operating company, affected communities and stakeholders to ensure this option is available.

Grievance Mechanism and Access to Other Remedies Requirements	Means of Verification
agreement on the appropriate remedy through the project-level grievance mechanism.	
5.3.4. Access to other remedy mechanisms 5.3.4.1. No remedy provided by the project-level grievance mechanism or third-party mechanism shall prevent aggrieved parties from seeking recourse from the company for the same complaint through other available mechanisms, including administrative or judicial remedies.	Consult with affected communities and stakeholders to ensure that acceptance of remedy through a non-judicial project-level mechanism did not require the claimants to waive their rights to seek remedy on the same complaint through other non-judicial or judicial mechanisms.
5.3.5. Monitoring and evaluation 5.3.5.1. The operating company shall monitor and evaluate how the mechanism is functioning over time. 5.3.5.2. Stakeholders shall be engaged in monitoring as per the requirements of IRMA Chapter 5.2, Section 5.2.6.	Consult with the operating company and review documentation on monitoring and evaluation. Consult with the operating company, affected communities and stakeholders to determine level of involvement in monitoring and evaluation of the grievance mechanism. If there have been concerns or problems with the mechanism, determine if the company and stakeholders have been able to resolve these issues.
5.3.6. Communications and reporting 5.3.6.1. The operating company shall inform communities and all stakeholders of the existence of the project-level grievance mechanism and any other agreed upon mechanism as per 5.3.3; and explain how the mechanisms were designed, how to access them, and the procedures to file, document, respond to and resolve grievances. 5.3.6.2. The operating company shall inform communities and stakeholders of their rights to utilize external mechanisms for addressing complaints or grievances, such as administrative or judicial remedies. 5.3.6.3. The operating company shall inform all employees and contractors of the existence of the project-level grievance mechanism and the proper procedures for handling stakeholder complaints that are received outside of the project-level grievance mechanism. 5.3.6.4. Periodically, the operating company shall report to affected	Consult with affected communities and stakeholders to their understanding of grievance mechanism and other remedies. Consult with the operating company and review any materials used to educate or inform communities and stakeholders of the grievance mechanisms. Consult with the operating company, affected communities and stakeholders and review any public materials or reports related to complaints or grievance data.

Grievance Mechanism and Access to Other Remedies Requirements	Means of Verification
communities and stakeholders on grievances received and responses provided. This shall be done in a manner that protects the confidentiality and safety of those filing grievances.	

Notes
Grievance mechanisms are explicitly stated as requirements with regard to workers (Chapter 2.1), human rights due diligence (Chapter 2.4), security (Chapter 2.6), and stakeholder engagement (Chapter 2.8), However, even where not explicitly stated (e.g., in Chapter 2.12 on resettlement), it is expected that access to a project-level grievance mechanism and other remedies will be provided throughout the project's life, and therefore, this chapter applies to grievances related to any issues of stakeholder concern with the mining operation.

It is possible that one grievance mechanism may be suitable to address all types of grievances raised in relation to the mining operation, including workers,[97] although typically labor grievances are dealt with through a separate mechanism established through collective bargaining agreements or human resources policies.[98] If, however, a company decides to create multiple grievance mechanisms, all of them shall meet this standard.

This chapter does not pertain to grievances related to IRMA certification. IRMA will establish its own grievance mechanism to enable stakeholders to raise concerns about issues pertaining to certification of particular mining projects and the IRMA certification process more generally.

IRMA Glossary of Terms

The IRMA Glossary of Terms is not intended to be a complete set of terms associated with mining best practices. However, the preparers of the IRMA Standard often found it necessary to depend on rigorous terminology in crafting the wording of the Standard. In those instances where rigorous terminology was deemed necessary, these terms were added to the Glossary of Terms, and the terms themselves are highlighted in blue in the text of the chapters.

100-year/24-hour Maximum Precipitation Event

The maximum amount of rainfall that could be expected to fall in 24 hours, on average, every 100 years at a given location.

Accessible

In reference to grievance mechanism, means being known to all stakeholder groups for whose use they are intended, and providing adequate assistance for those who may face particular barriers to access.

(Source: United Nations Office of the High Commissioner for Human Rights. 2011. Guiding Principles on Business and Human Rights. http://www.business-humanrights.org/Documents/UNGuidingPrinciples)

Baseline Water Quality

The background water quality before the effects of any anthropogenic activity has been detected.

Baseline Health Risk Assessment

An assessment used to determine the current status of occupational health risks associated with a facility. This tends to be a very wide ranging assessment that encompasses all potential exposures.

(Source: ICMM. Good Practice Guidance on Occupational Health Risk Assessment. p. 17)

Best Practice(s)

Practices that are widely recognised by interested stakeholders as being the most effective way to achieve agreed goals, given the current state of knowledge.

In the context of the drafting of the IRMA Standard, this has been interpreted to mean that the Standard should consist of a set of auditable requirements that reflects agreement of the multi-stakeholder IRMA process on the most effective way to achieve the agreed social and environmental objectives of each chapter of the IRMA standard, given the current state of knowledge.

The IRMA Standard is intended to specify levels of performance such that a mine that is operating according to best practice could reasonably be expected to conform with all the specified requirements of every chapter.

Biological Diversity

The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems

(Source: Convention on Biological Diversity 1992, Article 2).

Biological Exposure Indices (BEI)

The concentration of chemicals in the body that would correspond to inhalation exposure at a specific concentration in air.

(Source: ILO. http://www.ilo.org/safework/info/publications/WCMS_151534/lang--en/index.htm)

Certificate Holder

The operating company that applies for IRMA certification and, if the application is successful, is issued with a certificate of compliance and is responsible for ensuring that all the requirements of certification are met on an ongoing basis, and for demonstrating this to the satisfaction of its certification body.

Collaborate

The process of shared decision-making in which all stakeholders constructively explore their differences and develop a joint strategy for action. It is based on the premise that, through dialogue, the provision of appropriate information, collectively defined goals, and the willingness and commitment to find a solution acceptable to all parties, it is possible to overcome the initially limited perspectives of what is achievable and to reach a decision which best meets the interests of the various stakeholders. At this level, responsibility for decision making is shared between stakeholders.

(Source: based on information from Department of Environmental Affairs and Tourism (DEAT). 2002. Stakeholder Engagement, Integrated Environmental Management. DEAT Information Series 3. https://www.environment.gov.za/sites/default/files/docs/series3_stakeholder_engagement.pdf)

Compensation Framework

A document that provides information on the strategy to be used for compensating displaced persons for the partial or complete loss of assets. It includes: a description of the forms of asset ownership or use rights among the population affected by the project; a methodology to value losses; proposed types and levels of compensation to be paid; targeted assistance and opportunities to improve the standard of living of displaced persons; compensation and assistance eligibility criteria; and how and when compensation will be paid.

(Source: Based on IFC. 2002. IFC Handbook for Preparing a Resettlement Action Plan. p. 28).

Comprehensive Human Rights Impact Assessment

A comprehensive Human Rights Impact Assessment (HRIA) is an instrument for examining policies, legislation, programs and projects and identifying and measuring their effects on human rights. The fundamental purpose of HRIA is to help prevent negative effects on human rights and maximize positive effects. Comprehensive HRIA, as with other impact assessments, are carried out through a series of steps: Preparation; Screening; Scoping; Evidence Gathering; Consultation; Analysis; Conclusions and Recommendations; Monitoring and Evaluation; and Preparation of HRIA report.

(Source: based on Nordic Trust Fund/World Bank. 2013. Human Rights Impact Assessments: A review of the literature, differences with other forms of assessments and relevance for development. http://siteresources.worldbank.org/PROJECTS/Resources/40940-1331068268558/HRIA_Web.pdf)

Confidential Business Information

Material that contains trade secrets or commercial or financial information that has been claimed as confidential by its source (e.g. a pesticide or new chemical formulation registrant).

(Source: http://www.epa.gov/opptintr/pfoa/pubs/glossary.html)

NOTE: IRMA's agreed upon definition of Confidential Business Information is not settled. The US Environmental Protection Agency (EPA) definition has been referenced because it is short and uses relatively simple terminology. A detailed, legal explanation of the US EPA's use of the term is also available at: http://www.epa.gov/region7/citizens/pdf/lead_40_CFR_Part_2-203-b_CBI.pdf.

Conflict Analysis

The systematic study of the profile, issues and stakeholders that shape an existing or potential conflict, as well as factors in the interaction between the three. It helps companies gain a better understanding of the environment in which they operate and their role in that context.

(Source: International Alert. 2005. Conflict-sensitive business practice: Guidance for extractive industries. See Macro-level Conflict Risk and Impact Assessment tool. pp. 4, 5. http://www.international-alert.org/resources/publications/csbp-extractive-industries-en)

Conflict-Affected and High-Risk Areas

Areas identified by the presence of armed conflict, widespread violence, including violence generated by criminal networks, or other risks of serious and widespread harm to people. Armed conflict may take a variety of forms, such as a conflict of international or non-international character, which may involve two or more states, or may consist of wars of liberation, or insurgencies, civil wars. High-risk areas are those where there is a high risk of conflict or of widespread or serious abuses as defined in paragraph 1 of Annex II of the Guidance. Such areas are often characterised by political instability or repression, institutional weakness, insecurity, collapse of civil infrastructure, widespread violence and violations of national or international law.

(Source: OECD Due Diligence Guidance, p. 65)

Consultation

Consultation involves an exchange of information between stakeholders, which provides an opportunity for stakeholders to raise concerns and comment on the impacts and merits of a proposal or activity before a decision is made. In principle the company should take into account the concerns and views expressed by stakeholders in the final decision.
(Source: based on information from Department of Environmental Affairs and Tourism (DEAT). 2002. Stakeholder Engagement, Integrated Environmental Management. DEAT Information Series 3. https://www.environment.gov.za/sites/default/files/docs/series3_stakeholder_engagement.pdf)

Continuous Health Risk Assessment

An ongoing monitoring program or a schedule of regular reviews to determine whether conditions have remained the same, whether changes in processes, tasks or areas have occurred and whether these changes have modified any hazardous exposures and hence any potential health risks. A management of change program can also be considered as being part of a continuous health risk assessment program.

(Source: ICMM. Good Practice Guidance on Occupational Health Risk Assessment. p. 17)

Corporate Owner(s)

The corporation(s) or other business institution(s) including any private or state-run enterprises that have complete or partial financial interest in or ownership of a mining project.

Economic Displacement

The loss of assets or access to assets that leads to loss of income sources or other means of livelihood (i.e., the full range of means that individuals, families, and communities utilize to make a living, such as wage-based income, agriculture, fishing, foraging, other natural resource-based livelihoods, petty trade, and bartering). Economic displacement results from an action that interrupts or eliminates people's access to jobs or productive assets, whether or not the affected persons must move to another location.

(Source: from IFC, Performance Standard 5)

Ecosystem

A dynamic complex of plant, animal and micro-organism communities, and their non-living environment, interacting as a functional unit (Source: Convention on Biological Diversity 1992, Article 2).

Ecosystem Services

The benefits people obtain from ecosystems. These include

- provisioning services such as food, forest products and water;
- regulating services such as regulation of floods, drought, land degradation, air quality, climate and disease;
- supporting services such as soil formation and nutrient cycling; and,
- cultural services and cultural values such as recreational, spiritual, religious and other nonmaterial benefits.

(Source: Based on R. Hassan, R. Scholes and N. Ash. 2005. Ecosystems and Human Well-being: Synthesis. The Millennium Ecosystem Assessment Series. Island Press, Washington DC).

Endangered Species

A species that is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by IUCN.

(Source: Adapted from IUCN Red List http://www.iucnredlist.org/static/categories_criteria_2_3.)

Environmental Flow

The quantity, quality and timing of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems.

(Source: The Brisbane Declaration (2007): http://www.eflownet.org/downloads/documents/WorldBank_EF2009.pdf)

Equitable

In reference to grievance mechanism, means seeking to ensure that aggrieved parties have reasonable access to sources of information, advice and expertise necessary to engage in a grievance process on fair, informed and respectful terms.

(Source: United Nations Office of the High Commissioner for Human Rights. 2011. Guiding Principles on Business and Human Rights. http://www.business-humanrights.org/Documents/UNGuidingPrinciples)

Exceedance Flow

An exceedance flow is the flow that the river will exceed a given percentage of the time. A Q60 flow will be exceeded 60% of the time. The values are usually determined on a monthly basis.

Exploration Activity

Any landscape disturbance by a mining company to ascertain whether a deposit is economically viable, including drilling, trenching and road construction.

Facility Boundary

The boundary of the mine facility itself as described during the Environmental & Social Impact Assessment process for the mine. In general this will be the area of active surface disturbance for mining and milling. It is recognized that mine expansions may require the extension of a facility boundary (and it is anticipated this would be accompanied by an environmental & social impact

assessment). A facility boundary shall not be extended merely to establish a new point of compliance for the purpose of complying with water quality criteria.

Forced Eviction

The permanent or temporary removal against their will of individuals, families and/or communities from the homes and/or land which they occupy, without the provision of, and access to, appropriate forms of legal or other protection

(Source: United Nations Committee on Economic, Social and Cultural Rights. 1997.)

Free, Prior and Informed Consent (FPIC)

Consent based on: engagement that is free from external manipulation, coercion and intimidation; notification, sufficiently in advance of commencement of any activities, that consent will be sought; full disclosure of information regarding all aspects of a proposed project or activity in a manner that is accessible and understandable to the people whose consent is being sought; acknowledgment that the people whose consent is being sought can approve or reject a project or activity, and that the entities seeking consent will abide by the decision.

FPIC Scoping

Identification of the indigenous peoples that need to be involved in an FPIC process, and an evaluation of the information and capacity needs that must be addressed in order for indigenous peoples to make a free, prior and informed consent decision.

Grievance

A perceived injustice evoking an individual's or a group's sense of entitlement, which may be based on law, contract, explicit or implicit promises, customary practice, or general notions of fairness of aggrieved communities.

(Source: United Nations Office of the High Commissioner for Human Rights. 2011. Guiding Principles on Business and Human Rights. http://www.business-humanrights.org/Documents/UNGuidingPrinciples)

Grievance Mechanism

Any routinized, State-based or non-State-based, judicial or non-judicial process through which grievances concerning business-related human rights abuses can be raised and remedy can be sought.

(Source: United Nations Office of the High Commissioner for Human Rights. 2011. Guiding Principles on Business and Human Rights. http://www.business-humanrights.org/Documents/UNGuidingPrinciples)

Habitat

The place or type of site where an organism or population occurs.

(Source: Based on the Convention on Biological Diversity, Article 2).

High Conservation Values

HCV 1 - Species diversity. Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels.

HCV 2 - Landscape-level ecosystems and mosaics. Large landscape-level ecosystems and ecosystem mosaics that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.

HCV 3 - Ecosystems and habitats. Rare, threatened, or endangered ecosystems, habitats or refugia.

HCV 4 - Critical ecosystem services. Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.

HCV 5 - Community needs. Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, etc.), identified through engagement with these communities or indigenous peoples.

HCV 6 - Cultural values. Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/ sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.

Highly Protected Areas

Protected areas in the following categories:

- World Heritage Sites
- IUCN category I-IV protected areas
- Category I-V marine protected areas
- Core areas of UNESCO biosphere reserves

High-Quality Waters

High-quality waters are those waters in which baseline water quality has not been degraded by anthropogenic activity, and for which most contaminants do not exceed IRMA water quality criteria.

Holding Costs

The costs that would be incurred by a regulatory agency immediately after bankruptcy of a company responsible for maintaining a mine site, and before reclamation begins. Examples of such costs include continuing water treatment, routine maintenance, and the other operating costs involved with holding a piece of severely disturbed land.

Host Communities

Any communities receiving displaced persons.

(Source: from IFC, 2012. Performance Standard 5)

Indigenous Peoples

An official definition of “indigenous” has not been adopted by the UN system due to the diversity of the world’s indigenous peoples. Instead, a modern and inclusive understanding of “indigenous” has been developed and includes peoples who:

- identify themselves and are recognized and accepted by their community as indigenous
- demonstrate historical continuity with pre-colonial and/or pre-settler societies
- have strong links to territories and surrounding natural resources
- have distinct social, economic or political systems
- maintain distinct languages, cultures and beliefs
- form non-dominant groups of society
- resolve to maintain and reproduce their ancestral environments and systems as distinctive peoples and communities

In some regions, there may be a preference to use other terms such as: tribes, first peoples/nations, aboriginals, ethnic groups, adivasi and janajati. All such terms fall within this modern understanding of “indigenous.”

(Source: United Nations Permanent Forum on Indigenous Issues, Fifth Session, Fact Sheet 1: Indigenous Peoples and Identity.)

Inform

The provision of information to inform stakeholders of a proposal, activity or decision. The information provided may be designed to help stakeholders in understanding an issue, alternatives, solutions or the decision-making process. Information flows are one-way. Information can flow either from the company to stakeholders or vice versa.

(Source: based on information from Department of Environmental Affairs and Tourism (DEAT). 2002. Stakeholder Engagement, Integrated Environmental Management. DEAT Information Series 3. https://www.environment.gov.za/sites/default/files/docs/series3_stakeholder_engagement.pdf)

Intangible Cultural Heritage

Knowledge, innovations and/or practices, including oral expressions of folklore, performing arts, rituals, festivals, that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations.

International Accounting Standards

Several accounting standards are commonly recognised as an international accounting standard. For example, the International Financial Reporting Standards (IFRS), set by the International Accounting Standards Board (IASB).

(Source: Extractives Industries Transparency Initiative, Standard, 2013).

IRMA System Impact Indicators

Indicators that allow progress towards IRMA's global objectives to be measured over time. These indicators are not intended to measure or monitor compliance with the IRMA Standard's requirements.

Landscape

A geographical mosaic composed of interacting ecosystems resulting from the influence of geological, topographical, soil, climatic, biotic and human interactions in a given area.

(Source: based on World Conservation Union (IUCN). Glossary definitions as provided on IUCN website).

Legitimate

In reference to grievance mechanism, means enabling trust from the stakeholder groups for whose use they are intended, and being accountable for the fair conduct of grievance processes.

(Source: United Nations Office of the High Commissioner for Human Rights. 2011. Guiding Principles on Business and Human Rights. http://www.business-humanrights.org/Documents/UNGuidingPrinciples)

Livelihood Restoration Plan

A plan that establishes the entitlements (e.g., compensation, other assistance) of affected persons and/or communities who are economically displaced, in order to provide them with adequate opportunity to reestablish their livelihoods.

Living Wage

A "living wage" means one that enables workers, for their labour during a standard workweek, to support half the basic needs of an average-sized family, based on local prices near the workplace.

(Source: Social Accountability International's SA8000 Standard.)

Local Communities

Communities of any size that are in or adjacent to the mining project area, and also those that are close enough to have their economies, rights or environments significantly affected by the management activities or the biophysical aspects of the mining project. (Source: modified from FSC 2011).

Long-Term Water Treatment

Long-term water treatment is defined as any water treatment that requires active water treatment after mine closure. After mine closure long-term water treatment is assumed to be required until it can be empirically demonstrated that water treatment is no longer needed.

Material Payments

Important or relevant revenue streams. The EITI requires that all material benefit streams be published. According to the EITI Validation guide, a benefit stream is "material if its omission or misstatement could materially affect the final EITI Report." It is typically the responsibility of the national multi-stakeholder group to decide how to define material in quantitative or qualitative terms.

(Source Extractives Industries Transparency Initiative, Glossary, consulted November 2013).

Maximum Credible Earthquake

The Maximum Credible Earthquake (MCE) is defined as the greatest earthquake that reasonably could be generated by a specific seismic source, based on seismological and geologic evidence and interpretations. The MCE is often associated with a recurrence interval of 10,000 years**.**

Mercury Waste

Substances or objects:

- Consisting of mercury or mercury compounds; or
- Containing mercury or mercury compounds; or
- Contaminated with mercury or mercury compounds,

that are disposed of, are intended to be disposed of, or are required to be disposed of by provisions of national law or applicable conventions.

Mercury waste does not include metals, ores, or minerals, including coal, or wastes derived therefrom that contain naturally occurring mercury or mercury compounds.

Metals Leaching

The extraction of soluble metals by percolating solvents. Leaching may be natural or induced. Primary mineral weathering commonly accelerates metal dissolution and removal in minesite drainage. Metals leaching can also be referred to as "neutral" leaching, or "contaminant" leaching.

(Source: Price, 2009)

Mine Closure

Mine closure means that:

- The reclamation surety holder declares reclamation complete;
- All of the reclamation surety (as opposed to the water treatment surety) is returned to the operating company;
- A mine operator no longer maintains an active physical presence on the minesite; and,
- Other obvious or reasonable indicators that most or all of the reclamation activities have been completed.

Mine Dewatering

The extraction of water to lower the water table to a level lower than the deepest point of the mine, thereby keeping the mine dry.

Mining Project

Any set of activities undertaken for the purposes of extracting mineral resources. Mining projects may include exploration, mine construction, mining, mine closure and related activities either as separately or in combination.

Mitigation

The mitigation of adverse human rights impact refers to actions taken to reduce its extent, with any residual impact then requiring remediation. The mitigation of human rights risks refers to actions taken to reduce the likelihood of a certain adverse impact occurring.

(Source: OHCHR)

Mixing Zone

A portion of a surface or ground water in which the effluent discharge mixes with the receiving water, and in which water quality is allowed to exceed otherwise specified standards. Compliance with water quality standards occurs at the downstream end of the mixing zone.

Nominated World Heritage Site

A site that the relevant State Party has nominated for World Heritage Status by submitting a nomination file to the UNESCO World Heritage Centre for review. IRMA considers the site to have nominated status when the UNESCO World Heritage Center transmits the nomination to the relevant Advisory Bodies for evaluation, having first determined that the site's nomination is complete.

(Source: See Operational Guidelines for the Implementation of the World Heritage Convention, July 2013, para 168)

Occupational Exposure Limit (OEL)

An upper limit on the acceptable concentration of a hazardous substance in workplace air for a particular materials (e.g., gases, vapours and particles). It is typically set by competent national authorities and enforced by legislation to protect occupational safety and health.

(Sources: Wikipedia and ILO.
http://www.ilo.org/safework/info/publications/WCMS_151534/lang--en/index.htm)

Operating Company

The legal entity that is responsible for the implementation of a mining project.

Participatory and Inclusive Evaluation

An evaluation in which stakeholders at various levels engage in monitoring or evaluating a particular project, program or policy, share control over the content, the process and the results of the evaluation activity and engage in identifying corrective actions. Participatory and inclusive evaluation focuses on the active engagement of primary stakeholders.

(Source: adapted from World Bank definition of Participatory Monitoring and Evaluation.
http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALDEVELOPMENT/EXTPCENG/0,,contentMDK:20509352~menuPK:1278203~pagePK:148956~piPK:216618~theSitePK:410306,00.html)

Passby Flow

A passby flow is a prescribed flow rate that must be allowed to pass a given point (e.g. a water intake) when a withdrawal is occurring; a passby flow also specifies a low flow condition during which no water can be withdrawn. Diversions must not lower the flow to beneath this flow rate.

Pit Lake

Lake formed in the site of a mine pit when mine dewatering pumpage ceases.

(Source: Schulze 2013, Castendyk and Eary 2009)

Point of Compliance

The physical location where water quality must meet the surface/ground water criteria of the IRMA Standard.

- The point of compliance for a surface water discharge is the point of discharge.
- The point of compliance for a ground water discharge is the mine boundary.
- If a mixing zone is authorized, then the point of compliance is the edge of the mixing zone.

Post-Closure

- The reclamation surety holder declares the activities required by the reclamation and closure plan are complete;
- Any significant objections raised during the public comment period on the final release of the financial surety have been resolved in conformance with IRMA Free, Prior and Informed Consent if the project affects indigenous peoples, and/or the IRMA Community and Stakeholder Engagement process; and,
- The reclamation surety has been returned to the operator or converted to a post-closure trust fund (or equivalent).

Potential Human Rights Impact

A "potential human rights impact" is an adverse impact that may occur but has not yet done so.

(Source: UN OHCHR. 2012. The Corporate Responsibility to Respect Human Rights: An Interpretive Guide. http://www.ohchr.org/EN/Issues/Business/Pages/Tools.aspx)

Practicable

Practicable means giving equal weight to environmental, social, and economic benefits and costs. This is not a technical definition. It is the discussion between the affected parties on the balance between these interrelated costs and benefits that is important.

Predictable

In reference to grievance mechanism, means providing a clear and known procedure with an indicative time frame for each stage, and clarity on the types of process and outcome available and means of monitoring implementation.

(Source: United Nations Office of the High Commissioner for Human Rights. 2011. Guiding Principles on Business and Human Rights. http://www.business-humanrights.org/Documents/UNGuidingPrinciples)

Prevention

The prevention of adverse human rights impact refers to actions taken to ensure such impact does not occur.

(Source: UN OHCHR. 2012. The Corporate Responsibility to Respect Human Rights: An Interpretive Guide. http://www.ohchr.org/EN/Issues/Business/Pages/Tools.aspx)

Probable Maximum Precipitation (PMP)

The Probable Maximum Precipitation (PMP) defined as "theoretically the greatest depth of precipitation for a given duration that is physically possible over a given size storm area at a particular geographical location at a certain time of year"

(Source: Manual for Estimation of Probable Maximum Precipitation, Operational Hydrology Report 1, 2nd Ed, Publication 332, World Meteorological Organization, Geneva, 1986, p. 1)

Process Water

Process water means any water which comes into direct contact with mine workings and ore or waste rock (including roads used to transport ore or waste rock), mine processing facilities, or results from the processing of mineral products (e.g. tailings ponds, heap leach ponds, seepage collection ponds, wastewater treatment facility holding ponds, etc.).

Project-Level Grievance Mechanism

A project- or operational-level grievance mechanism is a formalized means through which individuals or groups can raise concerns about the impact an enterprise has on them—including, but not exclusively, on their human rights—and can seek remedy.

(Source: United Nations Office of the High Commissioner for Human Rights. 2011. Guiding Principles on Business and Human Rights. http://www.business-humanrights.org/Documents/UNGuidingPrinciples)

Protected Area

A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.

The definition is expanded by six management categories (one with a sub-division), summarized below.

Ia Strict nature reserve: Strictly protected for biodiversity and also possibly geological/ geomorphological features, where human visitation, use and impacts are controlled and limited to ensure protection of the conservation values

Ib Wilderness area: Usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, protected and managed to preserve their natural condition

II National park: Large natural or near-natural areas protecting large-scale ecological processes with characteristic species and ecosystems, which also have environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities

III Natural monument or feature: Areas set aside to protect a specific natural monument, which can be a landform, sea mount, marine cavern, geological feature such as a cave, or a living feature such as an ancient grove

IV Habitat/species management area: Areas to protect particular species or habitats, where management reflects this priority. Many will need regular, active interventions to meet the needs of particular species or habitats, but this is not a requirement of the category

V Protected landscape or seascape: Where the interaction of people and nature over time has produced a distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and

sustaining the area and its associated nature conservation and other values

VI Protected areas with sustainable use of natural resources: Areas which conserve ecosystems, together with associated cultural values and traditional natural resource management systems. Generally large, mainly in a natural condition, with a proportion under sustainable natural resource management and where low-level non-industrial natural resource use compatible with nature conservation is seen as one of the main aims

(Source: Dudley N (2008) Guidelines for applying protected area management categories. IUCN, Gland, Switzerland.)

Protected Waters

Protected waters are those waters designated by a national, regional, or local governmental body as waters for which no degradation above baseline water quality values will be allowed.

Rare Species

Species that are uncommon or scarce, but not classified as threatened. These species are located in geographically restricted areas or specific habitats, or are scantily scattered on a large scale. They are approximately equivalent to the IUCN (2001) category of Near Threatened (NT), including species that are close to qualifying for, or are likely to qualify for, a threatened category in the near future. They are also approximately equivalent to imperiled species

(Source: Based on IUCN. (2001). IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN. Gland, Switzerland and Cambridge, UK).

Real and Personal Property

Real property consists of land, buildings, crops, and other resources, improvements, or fixtures still attached to the land. Personal property is essentially all property other than real property, including goods, animals, money, and vehicles.

(Source: http://legal-dictionary.thefreedictionary.com/Property+(law), consulted November 2013).

Refugia

An isolated area where extensive changes, typically due to changing climate or by disturbances such as those caused by humans, have not occurred and where plants and animals typical of a region may survive.

(Source: Glen Canyon Dam, Adaptive Management Program Glossary as provided on website of Glen Canyon Dam website).

Related Activities

Physical activities related to a mining project both inside and outside of the property or concession zone of the project, including exploration activities, the development of any new infrastructure required to implement a project or to transport or process its production, and the transportation of mine supplies or products, and including activities carried out in joint ventures with other companies, or commissioned by the company on its behalf.

Relevant Business Relationships

Include relationships with business partners, entities in its value chain, and any other non-State or State entity directly linked to its business operations, products or services.

(Source: based on UN Guiding Principles definition)

Remediation/Remedy

Remediation and remedy refer to both the processes of providing remedy for an adverse human rights impact and the substantive outcomes that can counteract, or make good, the adverse impact. These outcomes may take a range of forms, such as apologies, restitution, rehabilitation, financial or non-financial compensation, and punitive sanctions (whether criminal or administrative, such as fines), as well as the prevention of harm through, for example, injunctions or guarantees of non-repetition.

(Source: UN OHCHR. 2012. The Corporate Responsibility to Respect Human Rights: An Interpretive Guide. http://www.ohchr.org/EN/Issues/Business/Pages/Tools.aspx)

Resettlement

Voluntary Resettlement: voluntary land transactions (i.e., market transactions in which the seller is not obliged to sell and the buyer cannot resort to expropriation or other compulsory procedures sanctioned by the legal system of the host country if negotiations fail).

(Source: from IFC. 2012. Performance Standard 5)

Involuntary Resettlement: physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in physical or economic displacement. This occurs in cases of (i) lawful expropriation or temporary or permanent restrictions on land use and (ii) negotiated settlements in which the buyer can resort to expropriation or impose legal restrictions on land use if negotiations with the seller fail.

(Source: from IFC. 2012. Performance Standard 5)

Resettlement Action Plan

A plan designed to mitigate the negative impacts of displacement; identify development opportunities; develop a resettlement budget and schedule; and establish the entitlements of all categories of affected persons (including host communities). Such a plan is required when resettlement involves physical displacement of persons.

(Source: based on IFC. 2012. Performance Standard 5, paragraph 19.)

Retrenchment

The elimination of a number of work positions or the dismissal or layoff of a number of workers by an employer, generally by reason of plant closing or for cost savings. Retrenchment does not cover isolated cases of termination of employment for cause or voluntary departure. Retrenchment is often a consequence of adverse economic circumstances or as a result of a reorganization or restructuring.

(From IFC. 2012. Performance Standard 2, Guidance Note GN 48.)

Revegetation

Revegetation is the task of reseeding or replanting forbs, grasses, legumes and other plants (sometimes including shrubs and trees) so as to provide cover to decrease erosion, provide for soil stability and provide forage for wildlife or livestock or to otherwise return the site to a useable state.

(Source: Kuipers, 2000)

Rights-Compatible

In reference to grievance mechanism, means ensuring that outcomes and remedies accord with internationally recognized human rights.

(Source: United Nations Office of the High Commissioner for Human Rights. 2011. Guiding Principles on Business and Human Rights. http://www.business-humanrights.org/Documents/UNGuidingPrinciples)

Secondary Containment

Requires that areas be designed with appropriate containment and/or diversionary structures to prevent a discharge in quantities that may be harmful.

Serious Human Rights Abuses

i) any forms of torture, cruel, inhuman and degrading treatment; ii) any forms of forced or compulsory labour, which means work or service which is exacted from any person under the menace of penalty and for which said person has not offered himself voluntarily; iii) the worst forms of child labour (as per ILO Convention 182); iv) other gross human rights violations and abuses such as widespread sexual violence; v) war crimes or other serious violations of international humanitarian law, crimes against humanity or genocide.

(Source: OECD. 2013. Due Diligence Guidance on Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. 2nd Ed. p. 21. http://www.oecd.org/daf/inv/mne/mining.htm)

Shall

Indicates a requirement of the standard.

Shall Not

Indicates a prohibition.

Should/ Should Not

Indicates a recommendation.

(Source: based on ISO Guide 2, General Vocabulary section 7.1; and ISO/IEC Directives Part 2, Fifth edition. 2004. Annex H, Verbal forms for the expression of provisions).

Significant

For the purposes of Principal 9, HCVs 1, 2 and 6 there are three main forms of recognizing significance.

- A designation, classification or recognized conservation status, assigned by an international agency
- such as IUCN or Birdlife International.
- A designation by national or regional authorities, or by a responsible national conservation organization,
- on the basis of its concentration of biodiversity.
- A voluntary recognition by the manager, owner or Organization, on the basis of available information, or of the known or suspected presence of a significant biodiversity concentration, even when not officially designated by other agencies.

Any one of these forms will justify designation as HCVs 1, 2 and 6. Many regions of the world have received recognition for their biodiversity importance, measured in many different ways. Existing maps and classifications of priority areas for biodiversity conservation play an essential role in identifying the potential presence of HCVs 1, 2 and 6.

(Source: Forest Stewardship Council. 2011).

Source of Continuous Learning

In reference to grievance mechanism, means drawing on relevant measures to identify lessons for improving the mechanism and preventing future grievances and harms.

(Source: United Nations Office of the High Commissioner for Human Rights. 2011. Guiding Principles on Business and Human Rights. http://www.business-humanrights.org/Documents/UNGuidingPrinciples)

Stakeholder/ Affected Stakeholder

A stakeholder refers to any individual who may affect or be affected by an organization's activities. An affected stakeholder refers here specifically to an individual whose human rights has been affected by an enterprise's operations, products or services.

Stormwater

Discharge of rainfall, snow or snowmelt runoff from land and impervious surface areas such as roads. Stormwater discharge often contains pollutants in quantities that could adversely affect water quality. The term does not include discharges from facilities or activities included in a wastewater discharge permit program.

Subsidence

Subsidence is a sinking of the ground surface that results in a fracture of the surface which could change surface water hydrology, or pose a threat to human health or property.

Support

Provision of direct or indirect support includes: procuring minerals from, making payments to or otherwise providing logistical assistance or equipment.

(Source: OECD. 2013. Due Diligence Guidance on Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (2nd Ed.). Gold Supplement, p. 8. http://www.oecd.org/daf/inv/mne/mining.htm)

Tangible Cultural Heritage

Includes buildings and historic places, monuments, artifacts, etc., which are considered worthy of preservation for the future. These include objects significant to the archaeology, architecture, science or technology of a specific culture.

Tentative List for World Heritage Site Inscription

The list of sites that relevant State Parties are formally considering for nomination as a World Heritage Site in the next five to ten years.

Threatened Species

Species that meet the IUCN (2001) criteria for Vulnerable (VU), Endangered (EN) or Critically Endangered (CR), and are facing a high, very high or extremely high risk of extinction in the wild. These categories may be re-interpreted for IRMA purposes according to official national classifications (which have legal significance) and to local conditions and population densities (which should affect decisions about appropriate conservation measures).

(Source: based on IUCN. (2001). IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN. Gland, Switzerland and Cambridge, UK.).

Traditional Knowledge

A cumulative body of knowledge, innovations practices and representations maintained and developed by peoples with extended histories of interaction with the natural environment.

Transparent

In reference to grievance mechanism, means keeping parties to a grievance informed about its progress, and providing sufficient information about the mechanism's performance to build confidence in its effectiveness and meet any public interest at stake.

(Source: United Nations Office of the High Commissioner for Human Rights. 2011. Guiding Principles on Business and Human Rights. http://www.business-humanrights.org/Documents/UNGuidingPrinciples)

Trigger Levels

A trigger level is an event that initiates another event.

Vulnerable Group

A group whose resource endowment is inadequate to provide sufficient income from any available source, and groups that would be vulnerable due to other circumstances (e.g., may include households headed by women or children, people with disabilities, the extremely poor, the elderly, and groups that suffer social and economic discrimination, including indigenous peoples and minorities.

(Sources: FAO. Glossary. http://www.fao.org/ag/wfe2005/glossary_en.htm and IFC. 2002. Handbook for Preparing a Resettlement Action Plan. p. 15. http://documents.worldbank.org/curated/en/2002/04/1990723/handbook-preparing-resettlement-action-plan)

Whole Effluent Toxicity

Whole Effluent Toxicity (WET) refers to the aggregate toxic effect to aquatic organisms from all pollutants contained in a mine's effluent.

World Heritage Site

A site/property inscribed on the World Heritage List, which has outstanding universal value and meets the conditions of authenticity and integrity. The World Heritage property includes within its borders all of the attributes that are recognized as being of outstanding universal value.

(Source: UNESCO World Heritage Commission, "Presentation of the Results of the International Expert Meeting on World Heritage and Buffer Zones," Paper prepared for the 32nd Session of the World Heritage Committee, Quebec, City, July 2-10, 2008).

Endnotes

[1] Conformity pending confirmation by ISEAL

[2] Social Accountability International (SAI). 2008. SA8000 Standard and Guidance. The standard is available at: http://sa-intl.org/index.cfm?fuseaction=Page.ViewPage&pageId=937 Guidance on calculating a living wage, and SAI's step-by-step approach to requiring a living wage can be found in Chapter 8 on Remuneration, available at: http://sa-intl.org/index.cfm?fuseaction=Page.ViewPage&PageID=1471

[3] International Labour Organization. *C001 – Hours of Work (Industry) Convention, 1919 (No.1).* http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100_INSTRUMENT_ID:312146:NO

[4] Section B.5 of the IRMA Standard says that, "The operating company is responsible for ensuring that where work related to the mining project is implemented by contractors or subcontractors, those contractors/subcontractors are in full compliance with the IRMA Standard's requirements."

[5] ICMM. 2009. *Good Practice Guidance on Occupational Health Risk Assessment*. pp. 14, 15. https://www.icmm.com/document/629

[6] Alli, B.O. 2008. *Fundamental Principles of Occupational Health and Safety*. International Labour Organization. pp. 19, 20. http://www.ilo.org/global/publications/WCMS_093550/lang--en/index.htm

[7] See Preamble and Article 13 of: International Labour Organization. *C176: Safety and Health in Mines Convention.* http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C176

[8] International Labour Organization. *C176: Safety and Health in Mines Convention.* http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C176

[9] ICMM. 2009. *Good Practice Guidance on Risk Assessment*. p. 26. https://www.icmm.com/document/629

[10] For example, the risk assessment methodology prepared by the Risk Assessment Expert Committee of the former Major Industrial Accidents Council of Canada (Risk Assessment - Recommended Practices for Municipalities and Industry. http://www.cheminst.ca/sites/default/files/pdfs/Connect/PMS/Risk%20Assessment%20%E2%80%93%20Recommended%20Practices%20for%20Municipalities%20and%20Industry.pdf); the process outlined in *ICMM's Good Practice Guidance on Occupational Health Risk Assessment*. p. 16; or other similar methodologies.

[11] For example, see Hazards classified as Gravitational Energies in: New South Wales. Risk Assessment Workbook for Mines (Metalliferous, extractive and opal mines, and quarries). 2009. IGA-019. pp. 33-29. http://www.resources.nsw.gov.au/__data/assets/pdf_file/0005/315095/IGA-019-Risk-assessment-workbook-for-mines.pdf

[12] Canadian Standards Association and Bureau de normalisation du Québec. Jan. 2013. *Psychological health and safety in the workplace – Prevention, promotion, and guidance to staged implementation.* http://shop.csa.ca/en/canada/occupational-health-and-safety-management/cancsa-z1003-13bnq-9700-8032013/invt/z10032013/?utm_source=redirect&utm_medium=vanity&utm_content=folder&utm_campaign=z1003

[13] See, for example, the process used by Safe Work Australia. (Safe Work Australia. 2012. First Aid in the Workplace. Code of Practice. pp. 13-15. https://www.safework.sa.gov.au/uploaded_files/First%20aid%20in%20the%20workplace.pdf

[14] Some countries have developed occupational hygiene standards for workplaces. The International Labour Organization web site provides links to agencies responsible for establishing exposure limits in various countries. http://www.ilo.org/safework/info/publications/WCMS_151534/lang--en/index.htm

[15] The American Conference of Governmental Industrial Hygienists is a member-based organization composed of independent knowledgeable experts that advances occupational and environmental health. ACGIH develops Threshold Limit Values (TLVs) (akin to OELs) and BEIs through a committee process that involves review of peer-reviewed literature and public input. A description of the process can be found at: http://www.acgih.org/TLV/DevProcess.htm

[16] Section B.5 of the IRMA Standard says that, "The operating company is responsible for ensuring that where work related to the mining project is implemented by contractors or subcontractors, those contractors/subcontractors are in full compliance with the IRMA Standard's requirements."

[17] Section 4: The Ten Steps of the APELL process: Communications in an emergency. Step 3: Have participants review their own emergency plan, including communications, for adequacy relative to a coordinated response.

[18] Section 4: The Ten Steps of the APELL process: Communications in an emergency. Step 3: Have participants review their own emergency plan, including communications, for adequacy relative to a coordinated response.

[19] Office of the High Commissioner for Human Rights web site: "International Human Rights Law." http://www.ohchr.org/EN/ProfessionalInterest/Pages/InternationalLaw.aspx See sidebar for "core international human rights instruments"

[20] International Labour Organization web site: "Conventions and Recommendations." http://ilo.org/global/standards/introduction-to-international-labour-standards/conventions-and-recommendations/lang--en/index.htm

[21] Relevant processing facilities would be facilities located in the same region that process ore from the mine in question, and are owned and operated by the operating company or its parent corporation.

[22] The Heidelberg Institute for International Conflict Research (HIIK) is an independent and interdisciplinary registered association located at the Department of Political Science at the University of Heidelberg. The Conflict Barometer, published since 1992, is HIIK's annual analysis of the global conflict events. http://www.hiik.de/en/konfliktbarometer/index.html

[23] Depending on the minerals being extracted, the operating company shall refer to the OECD Guidance (2nd Ed.) Gold Supplement (pp. 80 – 84) or the Tin, Tungsten and Tantalum Supplement (p. 41 and Appendix) to determine the appropriate list of circumstances to document. If extracting minerals other than gold, tin, tantalum or tungsten, it is recommended that the operating company follow the requirements in the Gold Supplement. (OECD. 2013. Due Diligence Guidance on Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (2nd Ed.). http://www.oecd.org/daf/inv/mne/mining.htm)

[24] This is based on a similar requirement found in the World Gold Council's Conflict-Free Gold Standard. A2.4.(World Gold Council. 2012. Conflict-Free Gold Standard. p. 12. http://www.gold.org/download/cfgs/Conflict_Free_Gold_Standard_English.pdf)

[25] OECD says provision of direct or indirect support includes: procuring minerals from, making payments to or otherwise providing logistical assistance or equipment. (OECD Gold Supplement, p. 8)

[26] Wikipedia. National Human Rights Institutions. http://en.wikipedia.org/wiki/National_human_rights_institutions

[27] Voluntary Principles on Security and Human Rights Implementation Guidance Tools. p. 24. http://www.voluntaryprinciples.org/wp-content/uploads/2013/03/VPs_IGT_Final_13-09-11.pdf

[28] Herbertson, K., Ballestaeros, A., Goodland, R. and Munilla, I. 2009. Breaking Ground: Engaging Communities In Extractive And Infrastructure Projects. (World Resources Institute). p. 4. http://pdf.wri.org/breakinggroundengagingcommunities.pdf

[29] Rachel Davis and Daniel M. Franks, 2011. "The cost of conflict with local communities in the extractive industry," (SRMining Proceedings, 2011), Chapter 6, p. 6. http://shiftproject.org/sites/default/files/Davis%20&%20Franks_Costs%20of%20Conflict_SRM.pdf

[30] Herbertson, K., Ballesteros, A., Goodland, R. and Munilla, I. February, 2009. Breaking Ground: Engaging Communities in Extractive and Infrastructure Projects. World Resources Institute. p. 2. http://pdf.wri.org/breaking_ground_engaging_communities.pdf

[31] For example, ICMM writes that, "It is important to remember that the relationships between mining companies, local communities and other stakeholders begin long before construction of a mine commences, and companies would be wise to invest in establishing good local relationships at the earliest stages possible." (ICMM. 2012.Community Development Toolkit. p. 25. http://www.icmm.com/content/download?version=preview&documentId=3956) See also: Prospectors and Developers Association of Canada, CDA Collaborative Learning Projects and World Vision Canada. 2012. Preventing Conflict in Exploration: A toolkit for explorers and developers. p. 3. http://www.pdac.ca/docs/default-source/e3-plus---common/2012-news-toolkit-english.pdf?sfvrsn=6

[32] For example, ICMM members recognize that: "Successful mining and metals projects require the support of a range of interested and affected parties. This includes both the formal legal and regulatory approvals granted by governments and the broad support of a company's host communities. (ICMM. 2013. Indigenous Peoples and Mining. Position Statement. p. 3. http://www.icmm.com/document/5433), and ICMM materials mention to the need to "gain and maintain the broad community support of the communities on which operations are located (ICMM. 2008. Sustainable Development Framework: Assurance Procedure. p.18. http://www.icmm.com/document/439).

[33] United Nations Development Group (UNDG). 2008. Guidelines on Indigenous Peoples' Issues. p. 10. http://www2.ohchr.org/english/issues/indigenous/docs/guidelines.pdf

[34] According to Mackay (2010. "Indigenous Peoples and International Financial Institutions." p. 317. In International Financial Institutions and International Law, D. Bradlow and D. Hunter, eds. Kluwer Press, 2010. http://ssrn.com/abstract=1853607), UNDRIP is "the primary reference point for comprehending the nature and scope of indigenous peoples' rights. Moreover, because UNDRIP in many respects restates existing rules of international law, it should not be discounted as merely an aspirational or 'soft law' instrument."

[35] Anaya, J. 2012. Report of the Special Rapporteur on the rights of indigenous peoples, James Anaya. Report to the Human Rights Council, 21st Session, July 6, 2012. A/HRC/21/47. Para. 50. http://unsr.jamesanaya.org/annual-reports/report-to-the-human-rights-council-a-hrc-21-47-6-july-2012

[36] United Nations Expert Mechanism on the Rights of Indigenous Peoples. 2010. Progress report of the study on indigenous peoples and the right to participate in decision-making. Report to the Human Rights Council, 3rd Session, 12–16 July, 2010. A/HRC/EMRIP/2010/2. Para. 17.
http://www.galdu.org/govat/doc/decision_making_study.pdf

[37] Anaya, J. 2012. Para. 50.

[38] For a detailed discussion and elaboration on the basis of FPIC as an indigenous right, see Mackay (2010), pp. 303 - 311.

[39] ILO web site: "C169 - Indigenous and Tribal Peoples Convention, 1989 (No. 169)." Article 6. Adopted Geneva, 76th ILC session (27 Jun 1989).
http://www.ilo.org/dyn/normlex/en/f?p=1000:12100:0::NO::P12100_INSTRUMENT_ID:312314

[40] For a detailed discussion of recent international jurisprudence related to FPIC, see: Doyle, C. 2011. "The Requirement to Obtain FPIC: Natural Evolution or Groundbreaking Development?"
http://mdx.academia.edu/JeremieGilbert/Papers/909065/A_New_Dawn_over_the_Land_Shedding_Light_on_Collective_Ownership_and_Consent

[41] This is based on Forest Stewardship Council (FSC) wording found at pp. 11, 12 of FSC Explanatory Notes and Rationales (FSC. 2012. FSC Principles and Criteria for Forest Stewardship Supplemented by Explanatory Notes and Rationales. http://www.fsc.org/download.explanatory-notes.413.htm). Also, IFC Guidance Note 7, GN26 notes that "A state may have obligations or commitments to ensure that Indigenous peoples provide their free, prior, and informed consent for matters pertaining to the overall development of indigenous territories. Such state-level obligations are distinct from the project-level FPIC requirements described in Performance Standard 7." (IFC. 2012. IFC's Guidance Notes: Performance Standards on Environmental and Social Sustainability. http://www1.ifc.org/wps/wcm/connect/e280ef804a0256609709ffd1a5d13d27/GN_English_2012_Full-Document.pdf?MOD=AJPERES)

[42] United Nations Development Group (UNDG). 2008. Guidelines on Indigenous Peoples' Issues. p. 8. http://www2.ohchr.org/english/issues/indigenous/docs/guidelines.pdf

[43] For example, see IFC (2012) Guidance Note 7, GN7.

[44] See IFC (2012) Guidance Note 7, GN28.

[45] Adapted from: Daes, E. 1995. Protection of the heritage of indigenous people. Final report of the Special Rapporteur, Mrs. Erica-Irene Daes, in conformity with Subcommission resolution 1993/44 and decision 1994/105 of the Commission on Human Rights. E/CN.4/Sub.2/1995/26. June 21, 1995.

http://www.unhchr.ch/Huridocda/Huridoca.nsf/0/c6646bc7fe89406f802566c0005cd3f0?Opendocument; IFC. 2012. IFC's Guidance Notes: Performance Standards on Environmental and Social Sustainability. Guidance Note 7, p. 17. http://www1.ifc.org/wps/wcm/connect/e280ef804a0256609709ffd1a5d13d27/GN_English_2012_Full-Document.pdf?MOD=AJPERES; Rio Tinto. 2011. Why Cultural Heritage Matters: A resource guide for integrating cultural heritage management into Communities work at Rio Tinto. p. 93. http://www.riotinto.com.au/documents/Rio_Tinto_Cultural_Heritage_Guide.pdf; For a discussion of aboriginal

cultural heritage, see: O'Faircheallaigh, C. 2008. Negotiating Cultural Heritage? Aboriginal-Mining Company Agreements in Australia. http://www98.griffith.edu.au/dspace/bitstream/handle/10072/23184/53381_1.pdf?sequence=1)

[46] For example, some indigenous heritage sites may be gendered, and safe for one sex but dangerous to the other; that indigenous peoples' knowledge regarding the existence, location and significance of sites is often not public; and that for some indigenous peoples, if knowledge of sacred sites is transferred inappropriately it may be dangerous to both the giver and receiver. (O'Fairchellaigh, 2008. p. 7)

[47] UNESCO (United Nations Educational, Scientific and Cultural Organization). 1972. "Convention Concerning the Protection of the World Cultural and Natural Heritage." UNESCO, Paris. http://whc.unesco.org/en/conventiontext/ and 2003. "Convention on the Safeguarding of Intangible Cultural Heritage." UNESCO, Paris. http://www.unesco.org/culture/ich/en/convention

[48] United Nations General Assembly. 2007. United Nations Declaration on the Rights of Indigenous Peoples. Resolution adopted October 2007. A/RES/61/295. Article 31. http://www.unhcr.org/refworld/docid/471355a82.html

[49] E.g., "Anglo American seeks to protect and, where possible, enhance the value of the cultural heritage of associated communities. Anglo also seeks to ensure that benefits arising from the use of cultural heritage for Anglo's business purposes, e.g. in environmental baseline studies, are equitably shared. The management of cultural heritage must meet or exceed the requirements set out in IFC Performance Standard Number 8 on Cultural Heritage." (Anglo American. 2009. The Anglo Social Way: Management System Standards. p. 12. http://www.angloamerican.com/development/approach-and-policies/policies-standards-commitments/social.aspx). See also: Rio Tinto. 2011. Why Cultural Heritage Matters. http://www.riotinto.com.au/documents/Rio_Tinto_Cultural_Heritage_Guide.pdf

[50] Resettlement may also occur from voluntary land transactions in which the seller is not obliged to sell and the buyer cannot resort to expropriation or other compulsory procedures if negotiations fail.

[51] According to IFC, "This occurs in cases of (i) lawful expropriation or temporary or permanent restrictions on land use and (ii) negotiated settlements in which the buyer can resort to expropriation or impose legal restrictions on land use if negotiations with the seller fail." (IFC. 2012. IFC Performance Standards on Environmental and Social Sustainability. Performance Standard 5: Land Acquisition and Involuntary Resettlement. Para. 1. http://www.ifc.org/wps/wcm/connect/3d82c70049a79073b82cfaa8c6a8312a/PS5_English_2012.pdf?MOD=AJPERES)

[52] IFC Performance Standard 5. Para. 3.

[53] European Bank for Reconstruction and Development. 2008. Environmental and Social Policy. Performance Requirement 5. Land Acquisition, Involuntary Resettlement and Economic Displacement. Para. 5. p. 34. http://www.ebrd.com/pages/research/publications/policies/environmental.shtml

[54] Kothari, M. 2007. Report of the special rapporteur on adequate housing as a component of the right to an adequate standard of living (Mr. Miloon Kothari). A/HRC/4/18. Para. 21. Available at: http://www2.ohchr.org/english/bodies/chr/special/sp_reportshrc_5th.htm

[55] Kothari, M. 2007. "Basic Principles and Guidelines on Development-based Evictions and Displacement." Annex 1 of the Report of the Special Rapporteur on adequate housing as a component of the right to an adequate standard of living (Mr. Miloon Kothari). A/HRC/4/18. Available at: http://www2.ohchr.org/english/issues/housing/docs/guidelines_en.pdf

[56] The 80% number is based on the *Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (*available at*:* http://indiacode.nic.in/acts-in-pdf/302013.pdf*)* in India, which appears to provide current best practice regarding obtaining consent from non-indigenous affected communities that may be resettled as part of a private development.

[57] Bugalski, N. and Pred, D. 2013. Reforming the World Bank Policy on Involuntary Resettlement. (Inclusive Development International, International Accountability Project, Bank Information Center and Habitat International Coalition. p.10. http://www.inclusivedevelopment.net/wp-content/uploads/2013/04/Reforming-the-World-Bank-Policy-on-Involuntary-Resettlement.pdf

[58] IFC. Performance Standard 5. Guidance Note 5. GN55.

[59] Gaging station: A site at which surface flows can be measured. For IRMA, it is primarily used for the maintenance of passby flows or monitoring the effects of groundwater withdrawals on surface water. At a

minimum, it is a staff gage with well-defined stage discharge relationship. If it is part of a monitoring plan, it should include a continuous recording water level measurement device.

[60] Local: the area potentially affected by the mine

[61] See, http://ec.europa.eu/environment/air/quality/legislation/index.htm

[62] Appendix W To Part 51—Guideline On Air Quality Models. Pt. 51, App. W, 40 CFR Ch. I (7–1–03 Edition).

[63] See http://ec.europa.eu/environment/air/quality/standards.htm

[64] See http://ec.europa.eu/environment/air/quality/standards.htm

[65] The US EPA's Air Quality Standards are similar in many ways and would likely suffice for IRMA standards. However the EU includes contaminants not found in the US standards that may be released by mining and mining-related activities, such as arsenic, cadmium, and nickel.

[66] US EPA, Noise Pollution. August 5, 2009 - Revised Regulation for the Labeling of Hearing Protection Devices (HPD). *See also* http://www.nonoise.org/library/handbook/handbook.htm; *and* http://www.nonoise.org/library/suter/suter.htm.

[67] US EPA, Noise Pollution. August 5, 2009 - Revised Regulation for the Labeling of Hearing Protection Devices (HPD).

[68] *See,* Statutory Order on Noise from Wind Turbines. Translation of Statutory Order no. 1284 of 15 December 2011. Although it is intended for wind turbine noise, this standard was chosen because low frequency noise can be particularly disturbing to domestic life, particularly sleep, and the standard provides the latest and most protective standard to date.

[69] The Danish standard is applied at the nearest home site to the mine because low frequency noise is often most disturbing indoors and the low frequency component seeks to protect quality of domestic life.

[70] Broner, N., and Leventhall, H. G. 1983. "Low frequency noise annoyance assessment by Low Frequency Noise Rating (LFNR) Curves," Journal of Low Frequency Noise and Vibration Vol.2, pp. 20-28. Cited in Leventhall, G. 2003, p. 66.

[71] This is considered a sufficiently short duration to detect and present transient noise(s) such that it reasonably resembles how humans perceive sound. *See* http://www.norsonic.com/web_pages/sound_level_assessment.html.

[72] See also Breul and Kjaer. 2000, p. 32.

[73] Leventhall, G. 2003.

[74] See Breul and Kjaer.

[75] Berglund, B., Lindvall, T. and Schwela, D. 1999. Guidelines for Community Noise. Page 46. World Health Organization.

[76] Leventhall, G. 2003. A Review of Published Research on Low Frequency Noise and its Effects. Prepared for Department for Environmental Foods and Rural Affairs. (United Kingdom). p. 11.

[77] Breul and Kjaer. 2000, p. 14.

[78] Moller and Lydolf, 2002. Based on a Denmark survey of people complaining of low frequency noise. *Cited in* Leventhall, G. 2003, p. 48. For more detail about impacts, *see* Mirowska, M., and Mroz, E. 2000. "Effect of low frequency noise at low levels on human health in light of questionnaire investigation," *Proc Inter-Noise 2000, 5, 2809 - 2812. Cited in* Leventhall. 2003. p. 49.

[79] GHG Protocol Corporate Standard, available at: http://www.ghgprotocol.org/standards/corporate-standard.

[80] Greenhouse gases -- Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals. http://www.iso.org/iso/catalogue_detail?csnumber=38381.

[81] Greenhouse gases -- Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements. http://www.iso.org/iso/catalogue_detail?csnumber=38382.

[82] http://www.ghgprotocol.org/standards/corporate-standard.

[83] See endnote 80.

[84] See endnote 81.

[85] Adopted from the Convention on Biological Diversity (CBD) Strategic Plan for Biodiversity 2011-2020

[86] See Joyce, P and Miller, G, Mercury Air Concentrations in Northern Nevada: Monitoring Active Metals Mines as Sources of Mercury Pollution, University of Nevada, Reno, Department of Natural Resource & Environmental Science, January 2007; and most recently: Miller, M and Gustin, M, Testing and Modeling the Influence of Reclamation and Control Methods for Reducing Non-Point Mercury Emissions Associated with Industrial Open Pit Gold Mines, Journal of the Air & Waste Management Association, 2013 Jun;63(6):681-93

[87] Eckley CS, Gustin M, Miller MB, Marsik F. 2011 Nonpoint source Hg emissions from active industrial gold mines-influential variables and annual emission estimates. Environmental Science and Technology 45 (2) 392-399.

[88] Powter, Chris (2002). "Glossary of Reclamation and Remediation Terms used in Alberta". Government of Alberta. ISBN 0-7785-2156-7

[89] This section is adapted from ICMM, 2006.

[90] ICMM, 2008, p. 37.

[91] Real Interest Rate – the difference between the rate of return and inflation (An interest rate that has been adjusted to remove the effects of inflation to reflect the real cost of funds to the borrower, and the real yield to the lender).

[92] Health Impact Assessment: summary of good practice guidance. 2010. International Council on Mining and Metals (ICMM).

[93] The Guiding Principles on Business and Human Rights have identified that access to remedy for grievances is fundamental to ensuring respect and protection of human rights. (Ruggie, J. 2011. Guiding Principles on Business and Human Rights: Implementing the United Nations "Protect, Respect and Remedy" Framework. Report of the Special Representative of the Secretary-General on the issue of human rights and transnational corporations and other business enterprises, John Ruggie, to the UN Human Rights Council, 17th Session. March 21, 2011. A/HRC/17/31. http://www.ohchr.org/Documents/Issues/Business/A-HRC-17-31_AEV.pdf)

[94] Compliance Advisor/Ombudsman (CAO). 2008. A Guide to Designing and Implementing Grievance Mechanisms for Development Projects. p. 3.

[95] See Guiding Principle 31 (h); also ICMM. 2009. Human Rights in the Mining and Metals Industry: Handling and Resolving Local Level Concerns and Grievances. p. 13.

http://www.icmm.com/page/15816/human-rights-in-the-mining-metals-sector-handling-and-resolving-local-level-concerns-grievances; and RioTinto. 2011. Community Complaints, Disputes and Grievance Guidance. p. 6. http://www.riotinto.com/documents/Community_complaints_disputes_grievance_guidance_2011_2014.pdf

[96] Ruggie, J. 2011. Guiding Principles on Business and Human Rights: Implementing the United Nations "Protect, Respect and Remedy" Framework. Report of the Special Representative of the Secretary-General on the issue of human rights and transnational corporations and other business enterprises, John Ruggie, to the UN Human Rights Council, 17th Session. March 21, 2011. A/HRC/17/31. http://www.ohchr.org/Documents/Issues/Business/A-HRC-17-31_AEV.pdf (See commentary for Guiding Principle 29.)

[97] As **discussed in** the context of Guiding Principle 22, it is fairly usual to have separate grievance mechanisms for direct employees and for external affected stakeholders, though it is not always necessary to separate the two. It may also be important to have tailored grievance mechanisms for particular situations, such as community resettlement, or for particular groups, such as indigenous peoples. However, the more streamlined the mechanisms, the more easily their effectiveness can be monitored, and the more successful they can be at identifying generalized patterns and trends in how the enterprise is addressing its human rights impact. (Office of the High Commissioner for Human Rights. 2012. The Corporate Responsibility to Respect Human Rights: An Interpretive Guide. pp. 69, 70. http://www.ohchr.org/Documents/Issues/Business/RtRInterpretativeGuide.pdf)

[98] IFC. 2009. Good Practice Note: Addressing Grievances from Project-Affected Communities. p. 21. http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/publications/publications_gpn_grievances