IRMA

Initiative for Responsible Mining Assurance

EXCERPT FROM THE

IRMA Standard

for

Responsible Exploration, Extraction, and Processing of Minerals

2nd DRAFT

for public consultation

CHAPTER 4.4 – **Biodiversity, Ecosystem Services, and Protected and Conserved Areas**

IRMA Standard v2.0 DRAFT 2

July 2025

English Version

Disclaimer and Context on this Draft

The 2nd DRAFT Version of the IRMA Standard for Responsible Exploration, Extraction, and Processing of Minerals V2.0 (hereafter referred to as the "2nd DRAFT") is being released for public consultation, inviting the world to join once again in a conversation around expectations that drive value for greater environmental and social responsibility in mining and mineral processing.

The 2nd DRAFT does not represent content that has yet been formally endorsed by IRMA's equally-governed multi-stakeholder Board of Directors. IRMA's Board leaders seek the wisdom and guidance of all readers to inform this through an inclusive revision process one more time, to improve the Standard.

This draft document builds on the 1st DRAFT Version published in October 2023, and invites a global conversation to improve and update the 2018 IRMA Standard for Responsible Mining V1.0. This 2nd DRAFT is intended to provide as final of a look-and-feel as possible, although input from this consultation will result in final edits, and consolidation to reduce overall number of requirements (more on this on page 6), for a version that will be presented to IRMA's equally-governed multi-stakeholder Board of Directors for adoption and implementation.

This 2nd DRAFT has been prepared and updated by the IRMA Secretariat based on:

- learnings from the implementation of the current IRMA Standard (V1.0)
- experience from the first mines independently audited (as of July 2025, 24 sites have completed audits or are in the process of being audited)
- evolving expectations for best practices in mining to reduce harm
- comments and recommendations received from stakeholders and Indigenous rights-holders
- the input of subject-specific Expert Working Groups convened by IRMA between 2022 and 2024
- all comments and contributions received during the public-comment period of the 1st DRAFT version (October 2023-March 2024)

Please note that Expert Working Groups were created to catalyze suggestions for solutions on issues we knew most needed attention in this update process. They were not tasked to come to consensus nor make formal recommendations. Their expertise has made this consultation document wiser and more focused, but work still lies ahead to resolve challenging issues. We encourage all readers to share perspectives to improve how the IRMA system can serve as a tool to promote greater environmental and social responsibility, and create value for improved practices, where exploration, extraction, and processing of minerals happens.

IRMA is dedicated to a participatory process including public consultation with a wide range of affected people globally and seeks feedback, comments, questions, and recommendations for improvement of this Standard. IRMA believes that diverse participation and input is a crucial and determining factor in the effectiveness of a Standard that is used to improve environmental and social performance in a sector. To this end, every submission received will be reviewed and considered.

This current 2nd DRAFT is based on content already in practice in the IRMA Standard for Responsible Mining V1.0 (2018) for mines in production, and its accompanying normative Guidance document and Supplementary Guidance, combined with the content drafted in the IRMA Standard for Responsible Mineral Development and Exploration ('IRMA-Ready' Standard – Draft v1.0 December 2021) and in the IRMA Standard for Responsible Minerals Processing (Draft v1.0 June 2021), and offers an updated version of the 1st DRAFT Version of the IRMA Standard V2.0 that received over 2,500 unique points of comments between 2023 and 2024.

Please note: The IRMA Standard V2.0 is new in its approach in that it now covers more phases of the mining and mineral supply chain, from exploration and development, through mining, closure, and mineral processing. IRMA also, separately, oversees a Chain of Custody Standard for tracking materials through the supply chain from mine-to-market end use products.

Disclaimer on Language and Corrections

For this public consultation, only an English version is available. A Glossary of Terms used in this Standard is provided at the end of the full version of the document (see below). IRMA reserves the right to publish corrigenda on its web page, and readers of this document should consult the corresponding web page for corrections or clarifications.

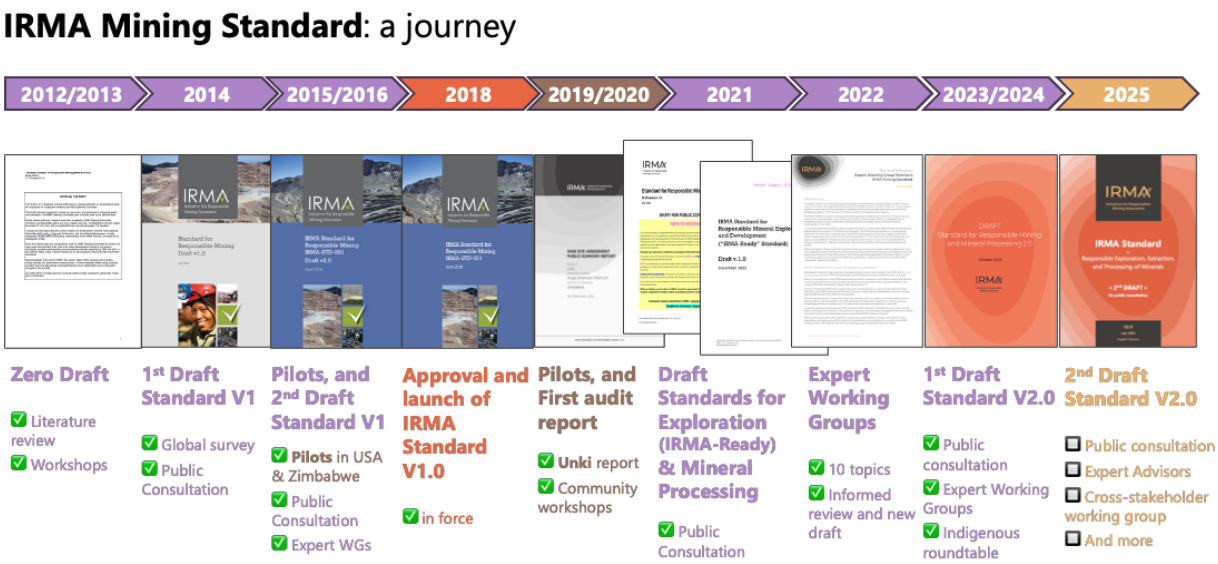
This document provides only one chapter excerpt from the IRMA Standard v2.0 DRAFT 2.

The full version contains 27 Chapters, click here to view it.

Objectives of this 2nd public consultation

Following the release of a 1st DRAFT of the IRMA Standard V2.0 in October 2023 for a 90-day public consultation, the IRMA Secretariat received more than 2,500 points of comments from 82 organizations, then organized additional engagement with stakeholders and Indigenous rights-holders, and solicited complementary guidance from multiple topic-specific Expert Working Groups.

We anticipated release of this 2nd DRAFT for a second round of public consultation as early as Q3 2024, then subsequently announced that more time was needed to support engagement of diverse stakeholders; the revised release date was July 2025. We provided more detailed explanation for the extended process here and here.



The release of this 2nd DRAFT marks a significant milestone on the road to the revision of the IRMA Standard: this public consultation will be the last of this revision cycle on V2.0.

Informed by the outcomes of this public consultation, along with guidance from Expert Advisors and IRMA Working Groups (see more below), and additional engagement with Indigenous rights-holders and stakeholders as requested, the IRMA Secretariat will prepare a final version. This final version will be discussed by the IRMA Board and refined to reach consensus for adoption by all six governing houses of IRMA: Affected Communities including Indigenous Rightsholders; Environmental and Social NGOs; Organized Labor; Finance and Investment Professionals; Mining Companies; Purchasers of Mined Materials.

In IRMA's strategic decision-making, Board members work to achieve consensus. IRMA believes a majority vote is not a model of equal governance. Instead, any motion that results in both of the two representatives from the same governing house voting "no" must go back to the full group for further discussion. In other words, a proposed course of action cannot proceed if both representatives from one of our six governing houses are opposed. Board members will keep talking until a resolution that works for all groups is found. It is a model that has worked for IRMA for nearly two decades and is fundamental to IRMA's credibility, accountability and service to all six houses of governance.

What is IRMA seeking guidance on?

Comments, feedback, and suggestions are welcome on any aspect of this 2nd DRAFT version (including intent and text of the requirements, endnotes, annexes, format and structure, design, readability, etc.).

IRMA is particularly interested in hearing the views of rights-holders and stakeholders on **the provisions in the Standard that are substantially new compared to the IRMA Standard for Responsible Mining V1.0.** These provisions (requirements or at a sub-requirement level) are highlighted in yellow throughout this Draft, to ensure they are easily identifiable.

We ask readers to assist us in weighing these potential new provisions, and also hold awareness that, prior to adoption of the final version, many of these will be consolidated and reduced in overall number.

Although these new requirements have each been drafted in response to lessons learned, the current state of best practices, emerging expectations, and/or in response to requests and suggestions made during the previous public consultation, collectively they represent substantive increased expectations for both implementing entities and audit firms. The IRMA Board of Directors seeks to ensure that the IRMA Standard, while recognized the world's most rigorous and comprehensive mining standard, continue to welcome and support uptake of newcomer companies engaging from the mineral supply chain around the world.

Thus, in this consultation, we seek guidance from all on **the new provisions that seem most urgent** to be integrated in the final version of the Standard V2.0, so that the revised Standard's expectations are paced at a realistic level to support engagement of mineral operations of a range of sizes, materials and global contexts.

It is important to note that all new requirements and sub-requirements, including those not retained in the final V2.0, will serve as the basis for the ongoing review process once the V2.0 is approved and released by our Board, and will provide fodder for future revisions, when it is decided that a V2.1 or V3.0 is needed.

Chapter 4.4
Biodiversity, Ecosystem Services, and Protected and Conserved Areas

SECOND DRAFT (JULY 2025): SUMMARY OF CHANGES

- Chapter title expanded to "Biodiversity, Ecosystem Services, and Protected **and Conserved** Areas", to align with international terminology Conserved Areas.
- Added "Sites of other effective area-based conservation measures (OECMs)" and "Proposed new protected areas and OECMs" to the categories of conserved areas that need to be identified and considered.
- Added "Ecologically or Biologically Significant Marine Areas (EBSAs)" to the categories of areas of important biodiversity values that need to be identified and considered.
- Added reference to the High Conservation Values approach, and strengthened language around natural habitats supporting high biodiversity values.
- Added subrequirements related to quantitative measures of abundance, distribution and other measures of violability and/or function (4.4.1.4).
- Added subrequirement for sharing publicly the rationale for when the ENTITY is unable to achieve the required net gain or no net loss outcomes, and what other conservation measures are being implemented to address this shortfall.
- Clarified that mitigation measures should be designed to deliver a NET GAIN for critical habitats (in line with the IFC PS), and at least no net loss (and preferably a net gain) in other important biodiversity values.
- Strengthened and clarified language regarding natural forests in endnotes.
- Added one optional requirement related to the protection and restoration of primary forests, natural regenerating forests and natural ecosystems, in line with the EU Deforestation Directive (which currently does not apply to mined minerals); and one optional baseline study requirement to inform it.
- Added one optional requirement related to Nature-based Solutions.
- Clarified the need to assess and address risks as well (not only potential and actual impacts).
- Added more categories of conserved and protected areas to the no-go zone requirements (4.4.4.4).
- Added one requirement related to the integration of Traditional Knowledge and Traditional Ecological Knowledge.
- Removed specific reference that biodiversity offsets be aligned with international best practice, as this would have required that offsetting projects themselves would be audited (e.g., for credibility of methodology, effectiveness, respect of fundamental rights of stakeholders and Indigenous rights-holders etc.). At the present time IRMA could not identify agreed international best practice for offsets that is **consistently successful and non-controversial**. Thus, IRMA does not want to appear as if its own audit system can sufficiently evaluate the legitimacy, integrity or long-term effectiveness of offset projects. The chapter instead emphasizes the first three tiers of the mitigation hierarchy, and requires transparency and explanation regarding why avoidance or further minimization and further restoration are not deemed feasible, what additional measures are proposed/taken -as a last resort- if mitigation measures fail to achieve net gain/no net loss.
- Clustered stakeholder engagement requirements together.
- Clustered and clarified requirements related to continuous improvement.
- Added public reporting requirements, in line with GRI 101: Biodiversity 2024 standard.
- Major structural changes for greater auditability and consistency across the Standard.

RESPONSE TO CONSULTATION QUESTIONS OUTLINED IN FIRST DRAFT

Question #	Question	Feedback and Proposed Decision
4.6-01	(4.6.1) **Question**: Should mining entities be required to identify ICCAs (Indigenous and Community Conserved Areas) as part of their scoping? If so, and if they are identified in the area of influence, would the next steps be: consultation with ICCA custodians to determine what values are being conserved and identify potential impacts on the ICCA, free, prior and informed consent from Indigenous Peoples for proposed activities that would affect their rights or interests, collaboration with affected local stakeholders to determine mitigation strategies as per the mitigation hierarchy, implementation, monitoring and reporting on effectiveness of mitigation (in other words, steps outlined in this chapter)?	**Feedback received**: 12 responses received (4 NGO, 4 mining, 1 purchasing, 1 finance, 2 consultancy). All but one respondent supported the inclusion of ICCAs in the scoping. **Proposed decision**: We have added a sub-requirement that other effective area-based conservation measures (OECM) be identified during Scoping. As per the IUCN and IRMA definition, OECMs including ICCAs, IUCN Green List sites, certain Private Protected Areas, etc.
4.6-02	(4.6.3) **Question**: Should IRMA also include specific requirements to manage and minimize impacts on plant or animal populations or species even if those plants/animals do not provide a priority ecosystem service or if impacts on them will not lead to an overall loss of biodiversity? Or should IRMA keep this chapter focused on the most critical/material impacts on biodiversity and ecosystem services?	**Feedback received**: 8 responses received (5 mining, 2 NGO, 1 purchaser). All mining and purchaser respondent suggested to keep the focus on the most critical/material impacts. The 2 NGO respondent suggested to expand the focus. **Proposed decision**: We have retained the focus on important biodiversity values and priority ecosystem services, in alignment with the Ecosystem Approach, Systematic Biodiversity Planning principles, and material impact approaches. But we have proposed additional explanations and guidance for the identification of important biodiversity values and priority ecosystem services. In the proposed changes, we require that, if potentially significant impacts on any biodiversity values or ecosystem services are identified, they should be addressed in the management plans (see 4.4.3.1), but the most stringent objectives (e.g., net gain, no net loss) and highest priority in the plans would be for critical habitats, and the important biodiversity values and the priority ecosystem services (See 4.4.3.2).
4.6-03	(4.6.3.2) **Question**: Do you agree that all projects and operations should be required to demonstrate no net loss and preferably a net gain in important biodiversity values, and in priority ecosystem services?	**Feedback received**: 13 responses received (6 mining, 3 Ngo, 1 purchaser, 1 finance, 2 consultancy). 6 respondents agree (1 mining, 2 NGO, 1 purchaser, 1 finance, 1 consultant).

		2 respondents (1 mining, 1 NGO) do not agree. 4 respondents (3 mining and 1 consultancy) expressed skepticism about the feasibility of being able to achieve "no net loss" and the ability to demonstrate it, at the level of a site. 1 respondent (1 consultant) does not have preference. **Proposed decision**: We have proposed a revision to the draft standard requiring "a net gain for critical habitats; and no net loss when possible, and preferably a net gain, in other important biodiversity values, and priority ecosystem services in alignment with international best practice". Net gain is required for critical habitats as per IFC PS6 (2012). We propose to also provide additional guidance for this requirement, particularly regarding no net loss and net gain.
4.6-04	(4.6.6) **Question**: Do you think that a reporting requirement should be added to this chapter? If so, what would be some of the information that should be shared on an annual basis? And would a written report suffice, or should entities be engaging directly with stakeholders?	**Feedback received**: 11 responses received (5 mining, 2 NGO, 1 purchaser, 1 finance, 2 consultant). All but one respondent (mining) agreed that a reporting requirement should be added. **Proposed decision**: We have added requirements for public reporting in alignment with the GRI 101: Biodiversity 2024 standard and the GRI 14 Mining Sector

BACKGROUND

Biological diversity, or biodiversity, describes the variety of life on Earth. It refers to the wide variety of ecosystems and living organisms, including animals, plants, fungi, and their habitats and genes. Biodiversity underpins ecosystem functioning and the provision of ecosystem services essential for human well-being, it is a central component of many belief systems, world views and identities, it provides for food security, human health, clean air and water, and contributes to local livelihoods and economic development. Despite its fundamental importance, however, biodiversity continues to be lost.[1]

Mineral development and mineral processing operations may take place in certain landscapes that are already heavily modified or degraded, where they pose little or no threat to global biodiversity loss. When located in areas of high biodiversity value, however, there is the potential that mining and mineral processing activities may lead to a temporary or permanent loss in biodiversity and ecosystem services.

In some cases, mining and mineral processing sites may permanently remove entire ecosystems, particularly where biota have co-evolved with specific mineral substrates. In other cases, biodiversity may be unaffected by these activities, or they may cause less damage than alternative land uses.[2] However, even where one mining or mineral processing operation does not create significant impacts on biodiversity on its own, there may be larger indirect impacts caused by its development, such as the exacerbation of deforestation,[3] or a single operation may contribute to significant impacts when considered cumulatively with other developments (either on a spatial or temporal basis).[4]

Globally, a network of protected areas has been put in place, offering various levels of protection for biodiversity, landscapes, and seascapes. Developments such as exploration, mining and mineral processing are expected to respect those protections and operate in a manner that safeguards biodiversity and other values that led to a protected area designation (e.g., cultural, spiritual, or scenic values). In many areas of the world, however, an adequate system of protected areas has yet to be established, or where protections exist further opportunities to conserve biodiversity and other important values remain.

This is particularly true for any *site of other effective area-based conservation measures* (OECMs), which the International Union for Conservation of Nature (IUCN) defines as "geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values". This could include IUCN Green List Sites that are not protected areas, Indigenous and Community Conservation Areas (ICCAs), Private Protected Areas (PPA), Conservancies, Communal Reserves, Flora and Fauna Sanctuaries, Marine Conservation Areas, Areas of Responsible Fishing (ARF), and areas managed under land-use rights in fisheries, amongst other conservation areas.

Through adherence to the mitigation hierarchy during the most appropriate stages in project development, appropriately located and designed mineral development and mineral processing projects and operations can proceed in a manner that supports global, national and local biodiversity, maintains the ecosystem services that communities need to survive and thrive, and leaves behind structurally safe and functioning ecosystems upon closure.

This chapter puts forward a framework for mining and mineral processing projects and operation to proactively assess and manage impacts on biodiversity and ecosystem services according to the mitigation hierarchy of first avoiding, then minimizing impacts, early in the project life cycle, and if impacts cannot be avoided and/or minimized, restoring and, if necessary, offsetting or compensating for residual impacts throughout the remainder of the operation life cycle. It is recognized though that mining and mineral processing activities in certain locations or via certain methods is not appropriate, which is also reflected in this Chapter.

KEY REFERENCES

This chapter strongly builds on, or aligns with, the following international or multilateral frameworks, conventions, and guidance:

- Kunming-Montreal Global Biodiversity Framework, 2022
- UNESCO World Heritage Convention, and World Heritage List
- UNESCO World Network of Biosphere Reserves
- UNESCO Guidance for the World Heritage 'No-Go' Commitment, 2022
- The (Ramsar) Convention on Wetlands of International Importance, 1971
- IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources, 2012
- IFC Performance Standard 4: Community Health, Safety, and Security, 2012
- IUCN Green List of Protected and Conserved Areas
- IUCN Environmental & Social Management System (ESMS): Standard on Biodiversity Conservation and Sustainable Use of Natural Resources, 2016
- United Nations Rio Declaration on Environment and Development, 1992
- United Nations Convention on Biological Diversity, 1993
- KBA Partnership's Guidelines on Business and Key Biodiversity Areas, 2018

OBJECTIVES OF THIS CHAPTER

To protect biodiversity, maintain viable and safe ecosystems services, and respect the values being safeguarded in protected and conserved areas.

SCOPE OF APPLICATION

This chapter is applicable to all exploration, mining and mineral processing projects and operations. For each requirement, the following colors are displayed in the margin to indicate the phases for which it is required:

E1	Exploration – Stage 1
E2	Exploration – Stage 2
E3	Exploration – Stage 3
D	Project Development and Permitting
M	Operating Mine
P	Operating Mineral Processor

CRITICAL REQUIREMENTS IN THIS CHAPTER

Throughout the Standard, critical requirements are identified using a red frame.
There are six (6) **critical requirements** in this Chapter (including 3 requirements related to operations in no-go zones which are not relevant if the ENTITY does not operate in such zones).

OPTIONAL IRMA+ REQUIREMENTS IN THIS CHAPTER

Throughout the Standard, optional IRMA+ requirements are identified using a dotted blue frame. There are two (2) **optional IRMA+ requirements** in this Chapter.

In this second draft, IRMA introduces a new category of requirements: IRMA+. These requirements are aspirational and forward-looking. They reflect emerging expectations and recommendations from stakeholders, but currently go above and beyond existing and established best practice. IRMA+ requirements are entirely optional, and they will not affect the scores and achievement levels obtained by the entities choosing to be assessed against them.

ISSUES UNDER CLOSE WATCH (EYE ICON)

Integration of Traditional Knowledge (TK) and Traditional Ecological Knowledge (TEK) into the management of biodiversity, ecosystem services, and protected and conserved areas:
In 1992, in the Rio Declaration on Environment and Development, over 175 countries affirmed that "Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development". And in its associated UN Convention on Biological Diversity[5], which all UN member states (except the USA) have ratified, article 8(j) specifically request each state to, "respect, preserve and maintain knowledge, innovations and practices of Indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices[…]".
Several countries have since adapted these expectations into national laws and regulations, or for projects sporadically, including in relation with mineral development and mining activities (e.g. Canada, Norway, Rwanda, USA[6]). The lack of explicit reference to TEK in the was one of the very few areas for improvement identified in a recent benchmark of standards against the 2023 Risk Readiness Assessment Criteria Guide V3.0 (conducted by a consultancy firm on behalf of an industry association). IRMA added one requirement, assessing how entities integrate TK and TEK of local affected communities, and Indigenous rights-holders if applicable, into the management of biodiversity, ecosystem services, and protected and conserved areas. This requirement (4.4.6.1) is signaled with an 'eye icon' to ensure that IRMA closely monitor its relevance, and its implementation as the Standard V2.0 is applied. This is also intended to ensure IRMA will review associated challenges and needed decision more quickly if necessary. Note that thid requirement is not 'optional' (unlike IRMA+).

IRMA Requirements

4.4.1 Scoping and Baseline Studies

E1 E2 E3 D M P

4.4.1.1 **Critical Requirement**

A process is undertaken and documented by competent professionals to identify all **protected and conserved areas** that are located in the area of influence of the project/operation. This scoping process includes the identification of the boundaries of the following areas:

a. Protected areas with international recognition, including: World Heritage Sites, and areas on a state party's official Tentative List for World Heritage Site Inscription; IUCN protected area management categories I-VI; United Nations Educational, Scientific and Cultural Organization (UNESCO) biosphere reserves; and Ramsar sites;

b. Regional, national, sub-national and local legally protected areas[7]; and

c. Sites of other effective area-based conservation measures (OECMs)[8], and proposed new protected areas and sites of OECMs as reflected in formally approved Protected and Conserved Areas Expansion Strategies and/or Plans (or equivalents)[9].

E2 E3 D M P

4.4.1.2 Building on 4.4.1.1, a **protected and conserved area** baseline study is established and documented by competent professionals. This baseline study:

a. Identifies and describes the values[10] being protected or conserved in the identified protected and conserved areas[11];

b. Takes into consideration how risks related to Waste and Materials Management (Chapter 4.1), Tailings Storage Facilities and Physical Stability Management (Chapter 4.2), Water Management (Chapter 4.3), Air Quality (Chapter 4.5), and Noise and Vibration (Chapter 3.7)[12], may result in impacts on the values in protected and conserved areas; and

c. Results in the identification of whether or not any protected or conserved areas, or the values for which the area was designated or is recognized: 1) Are at risk (i.e. may be affected by a proposed project or modification); and/or 2) Are and/or have been impacted (i.e. have been affected by past mining-related activities or are being affected by current mining-related activities).

E1 E2 E3 D M P

4.4.1.3 **Critical Requirement**

A **biodiversity and ecosystem services** scoping process (or equivalent) is undertaken and documented by competent professionals to identify:

a. Boundaries of Key Biodiversity Areas (KBA)[13] and Ecologically or Biologically Significant Marine Areas (EBSAs)[14] that are located in the site's area of influence;

b. Boundaries of other areas of High Biodiversity Value[15] or High Conservation Value[16] that are located in the site's area of influence;

c. The ecological processes and habitats supporting those values[17] (a. and b.);

d. Areas of modified habitat, natural habitat, and critical habitat within the site's area of influence[18];

e. Ecosystems or processes within the area of influence of the project/operation that may provide or do provide provisioning, regulating, cultural and supporting ecosystem services[19];

f. The beneficiaries of the ecosystem services identified (e.); and

g. The priority ecosystem services.

E2 E3 D M P

4.4.1.4 Building on the scoping process required in 4.4.1.3, a **biodiversity** baseline study is established and documented by competent professionals[20]. This baseline study:

a. Identifies the species of flora, fauna, and, where relevant, fungi, in the area of influence of the project/operation, and describes their natural habitats[21];

b. Identifies and describes the important biodiversity values present in the areas of modified habitat, natural habitat, and critical habitat, and provides information on the importance of the habitats and species relative to their global distribution;

c. Identifies quantitative measures of: 1) distribution and other measures of viability and/or function for terrestrial and aquatic habitats (ecosystems) and ecological processes, as required; and 2) abundance, distribution and other measures of viability and/or function for species of conservation concern and species of special concern[22] (terrestrial and aquatic), as required;

d. Takes into consideration how risks related to Waste and Materials Management (Chapter 4.1), Tailings Storage Facilities and Physical Stability Management (Chapter 4.2), Water Management (Chapter 4.3), Air Quality (Chapter 4.5), and Noise and Vibration (Chapter 3.7)[23], may result in impacts on biodiversity;

e. Results in the identification of whether or not there are any areas of potentially important **global or national** biodiversity values that[24]: 1) Are at risk (i.e. may be affected by a proposed project or modification); and/or 2) Are and/or have been impacted (i.e. have been affected by past mining-related activities or are being affected by current mining-related activities); and

f. Results in the identification of whether or not there are any areas of potentially important **local** biodiversity values that[25]: 1) Are at risk (i.e. may be affected by a proposed project or modification); and/or 2) Are impacted (i.e. have been affected by past mining-related activities or are being affected by current mining-related activities.

E2 E3 D M P

4.4.1.5 Building on the scoping process required in 4.4.1.3, an **ecosystem services** baseline study is established and documented by competent professionals[26]. This baseline study

a. Identifies and describes the levels of dependencies of communities, the project/operation[27], and other stakeholders, for each ecosystem service type[28];

b. Takes into consideration how risks related to Waste and Materials Management (Chapter 4.1), Tailings Storage Facilities and Physical Stability Management (Chapter 4.2), Water Management (Chapter 4.3), Air Quality (Chapter 4.5), and Noise and Vibration (Chapter 3.7) [29], may result in impacts on ecosystem services; and

c. Results in the identification of whether or not any ecosystem services[30]: 1) Are at risk (i.e. may be affected by a proposed project or modification); and/or 2) Are and/or have been impacted (i.e. have been affected by past mining-related activities or are being affected by current mining-related activities).

E2 E3 D M P

4.4.1.6 **IRMA+**

If forests are present in the area of influence of the site or its associated facilities, and building on the scoping processes required in 4.4.1.1 and 4.4.1.3, a **forest-specific** baseline study is established or peer-reviewed by a reputable conservation organization and/or academic institution[31], and documented. This baseline study:

a. Identifies, describes, and maps all forests, including Primary Forests and Natural Regenerating Forests (if any), in the project/operation's area of influence;

b. Measures and/or estimates what the surfaces and conditions of all forests, including Primary Forests and Natural Regenerating Forests (if any), in the project/operation's area were on 31 December 2020; and

c. This baseline study is made and maintained publicly accessible.

4.4.2 Risk and Impact Assessment

E2 E3 D M P

4.4.2.1 Building on 4.4.1, when the scoping process identifies protected or conserved areas, ecosystem services, or areas of potentially important global, national, or local biodiversity values that have been or may be affected by a project/operation, a risk and impact assessment is carried out and documented by competent professionals, to determine in detail the potentially significant risks and impacts[32] (direct, indirect, and cumulative impacts) of past and proposed mining-related activities, and associated facilities, on:

a. Biodiversity values, and the ecological processes and habitats supporting them;

b. Ecosystem services, the ecological processes and habitats supporting them, and the beneficiaries of the identified ecosystem services[33]; and

c. The conservation values of protected and conserved areas, and the ecological processes and habitats supporting them.

E2 E3 D M P

4.4.2.2 This risk and impact assessment evaluates options and measures to address potentially significant risks to, and impacts on, biodiversity, ecosystem services and the conservation values in protected and conserved areas in a manner that aligns with the mitigation hierarchy as follows[34]:

a. By first evaluating the technically feasible alternatives to avoid/prevent significant adverse risks and impacts[35], avoiding a priori assumptions and judgements about alternatives[36];

b. Then, where avoidance or prevention is not possible[37], by evaluating options to minimize predicted significant adverse risks and impacts[38]; and

c. As a last resort, where minimization is not possible[39], by evaluating strategies available to restore biodiversity, ecosystem services and the ecological processes and habitats that support them after impacts occur[40].

E2 E3 D M P

4.4.2.3 This risk and impact assessment identifies and evaluates opportunities for:

a. Partnerships and additional conservation measures to enhance the long-term sustainable management of protected or conserved areas;

b. Partnerships and additional conservation measures to enhance the long-term sustainable management of biodiversity and ecosystem services; and

c. Identifies opportunities for compensation or offset for any significant negative residual impacts that cannot be avoided, reduced and/or restored.

4.4.3 Biodiversity and Ecosystem Services Management

E2 E3 D M P

4.4.3.1 Building on 4.4.1 and 4.4.2, a **biodiversity and ecosystem services** management plan (or equivalent) is developed and documented by competent professionals, at the level of the project/operation, to prevent, mitigate, and remediate all the risks and impacts on biodiversity and ecosystem services identified as per 4.4.2. The plan:

a. Outlines the specific mitigation measures that will be carried out to address the adverse risks and impacts on biodiversity values, and the supporting ecological processes and habitats supporting them (identified as per 4.4.2), in a manner that strictly aligns with the mitigation hierarchy[41];

b. Outlines the specific mitigation measures that will be carried out to address the adverse risks and impacts on ecosystem services, the supporting ecological processes and habitats supporting them, and the beneficiaries of those ecosystem services [42], in a manner that strictly aligns with the mitigation hierarchy[43];

c. Includes specific objectives (including regarding no net loss/net gain as per 4.4.3.2) and appropriate time-bound performance indicators[44] to enable evaluation of the effectiveness of mitigation measures over time;

d. Includes appropriate monitoring measures to enable evaluation of the effectiveness of mitigation measures over time against these identified performance indicators;

e. Assigns implementation of measures, and oversight of implementation, to responsible staff[45];

f. Includes an implementation schedule, and estimates of human resources and budget required;

g. Includes a financing plan to ensure that funding is available for the effective implementation of the plan; and

h. Identifies the role of affected rights-holders and stakeholders in the collaborative development, implementation, and monitoring and evaluation of the plan.

E2 E3 D M P

4.4.3.2 **Critical Requirement**

The mitigation measures included in the **biodiversity and ecosystem services** management plans (or equivalent) required in 4.4.3.1 are designed[46]:

a. To deliver a **net gain** for critical habitats;

b. To deliver **no net loss** when possible, and preferably a net gain[47], in natural habitats and other important biodiversity values, and priority ecosystem services; and

c. On an appropriate geographic scale, and to be self-sustaining after closure.

E2 E3 D M P

4.4.3.3 **IRMA+**

The ENTITY can demonstrate that:

a. Mining-related activities do not take place in, or adversely affect[48], Primary Forests and Natural Regenerating Forests after 31 December 2020[49];

b. Mining-related activities do not take place in, or adversely affect,[50] intact Natural Ecosystems, (other than Primary Forests and Natural Regenerating Forest[51]), after 31 December 2020[52]; and

c. The restoration of any affected forests or other ecosystems is successfully completed by competent professionals[53], over and above any mitigation measures identified to achieve no net loss in 4.4.3.1 and 4.4.3.2.

E2 E3 D M P

4.4.3.4 **IRMA+**

The ENTITY has a system in place to ensure that Nature-based Solutions (NbS) are developed and implemented by competent professionals, at the level of the project/operation, in alignment with the IUCN Global Standard for Nature-based Solutions[54].

4.4.4 Protected and Conserved Areas Management

E2 E3 D M P

4.4.4.1 **Critical Requirement**

The ENTITY can demonstrate that mining-related activities do not take place in, and do not adversely affect, **the following protected areas** (whether legally protected or not)[55]:

a. **World Heritage Sites**, and areas on a state party's official Tentative List for World Heritage Site Inscription;

b. Areas classified as **IUCN protected area management categories I-III**; and

c. Core areas of **UNESCO biosphere reserves**.

E2 E3 D M P

4.4.4.2 **Critical Requirement**

The ENTITY can demonstrate that mining-related activities do not occur in **legally protected areas[56]** unless all the following conditions are met:

a. The proposed activities are legally permitted in those areas;

b. The ENTITY has consulted with relevant management authorities, protected and conserved area sponsors, managers, and relevant stakeholders on the proposed activities; and

c. The ENTITY fully meets all other relevant requirements in this chapter[57].

E2 E3 D M P

4.4.4.3 If all the conditions required in 4.4.4.2 are met, and the ENTITY decides to proceed with mining-related activities in legally protected areas, an area management plan (or equivalent) is developed by competent professionals. This plan:

a. Is developed in collaboration with relevant management authorities, protected and conserved area sponsors, managers, and relevant stakeholders;

b. Outlines how mining-related activities will be carried out in a manner consistent with the protected or conserved area management plans developed by relevant management authorities for such areas;

c. If relevant[58], includes measures to mitigate those impacts or risks, identifies key indicators, and ensures that there is an adequate baseline for the indicators to enable measurement of the effectiveness of mitigation activities over time;

d. Includes additional conservation measures to promote and enhance the conservation aims and/or effective management of the area;

e. Assigns implementation of measures, and oversight of implementation, to responsible staff[59];

f. Includes an implementation schedule, and estimates of human resources and budget required,

g. Includes a financing plan to ensure that funding is available for the effective implementation of the plan; and

h. Identifies the role of protected and conserved area sponsors, managers, and relevant stakeholders in the collaborative development, implementation, and monitoring and evaluation of the plan.

E2 E3 D M P

4.4.4.4 **Critical Requirement**

The ENTITY can demonstrate that mining-related activities do not take place in, and do not adversely affect, the following protected and conserved areas: 1) IUCN protected areas designated as protected area management category IV; 2) Ramsar sites that are not in areas classified as IUCN protected area management categories I-III[60]; 3) Buffer zones of UNESCO biosphere reserves; 4) Key Biodiversity Areas (KBAs); 5) Ecologically or Biologically Significant Marine Areas (EBSAs); 6) Sites of other effective area-based conservation measures (OECMs); 7) Proposed new protected areas and OECMs as reflected in formally approved Protected or Conserved Areas Expansion Strategies and/or Plans (or equivalent); unless all the following conditions are met:

a. Mining-related activities are legally permitted in those areas, and the operation was in place[61] prior to the area's official designation;

b. For proposed mining-related activities, an assessment, carried out or peer-reviewed by a reputable conservation organization and/or academic institution[62], and documented, concludes that mining-related activities will not damage the integrity of the special values for which the area was designated or recognized; and

c. The ENTITY fully meets all other relevant requirements in this Chapter[63].

E2 E3 D M P

4.4.4.5 If all the conditions required in 4.4.4.4 are met, and the ENTITY decides to proceed with mining-related activities in any of the protected areas listed in 4.4.4.4, an area management plan (or equivalent) is developed by competent professionals. This plan:

a. Is developed in collaboration with relevant management authorities, protected and conserved area sponsors, managers, and relevant stakeholders;

b. Outlines mutually-acceptable mitigation measures to protect, and if necessary, restore the integrity of the special values for which the area was designated or recognized;

c. Identifies key indicators, and ensures that there is an adequate baseline for the indicators to enable measurement of the effectiveness of mitigation and/or restoration activities over time;

d. Includes collaboration with relevant management authorities to integrate the operation's management strategies into the protected area's management plan;

e. Assigns implementation of measures, and oversight of implementation, to responsible staff[64];

f. Includes an implementation schedule, and estimates of human resources and budget required,

g. Includes a financing plan to ensure that funding is available for the effective implementation of the plan; and

h. Identifies the role of protected and conserved area sponsors, managers, and relevant stakeholders in the collaborative development, implementation, and monitoring and evaluation of the plan.

4.4.5 Meaningful Engagement with Stakeholders

E2 E3 D M P

4.4.5.1 In accordance with Chapter 1.2, and as per 1.2.3.1, the ENTITY has a system in place to ensure that affected rights-holders and communities are:

a. Preemptively provided with relevant and comprehensive information, in accordance with Section 1.2.3, about the scoping processes required in 4.4.1, the risk and impact assessment required in 4.4.2, and the relevant mitigation measures that will be carried out;

b. Preemptively provided with relevant and comprehensive information, in accordance with Section 1.2.3, about the estimated timeline, and the range of opportunities for them to participate in consultation and collaborative decision-making within the management of biodiversity, ecosystem services, and protected and conserved areas;

c. Offered equal opportunities to participate in consultations and collaborative decision-making, whether they are supportive of the proposed project/modification or not supportive; and

d. Included in consultations and collaborative decision-making in a manner that is inclusive of different genders, ages, ethnicities, and any potentially underserved and/or marginalized people.

E2 E3 D M P

4.4.5.2 In accordance with Chapter 1.2, the ENTITY has a system in place to ensure that affected rights-holders and stakeholders are consulted and can review and comment, at least 60 days before reports and/or processes are finalized[65], on:

a. The issues, risks, and impacts to be considered in the scoping processes required in 4.4.1[66];

b. The methodologies for the collection of data, and the final outcomes of the baseline studies required in 4.4.1; and

c. The findings of the risk and impact assessment and the recommended mitigation measures required in 4.4.2, and the performance criteria required in 4.4.3.

E2 E3 D M P

4.4.5.3 In accordance with Chapter 1.2, the ENTITY has a system in place to ensure that affected rights-holders and stakeholders:

a. If necessary, are provided with resources for capacity building and training to enable meaningful stakeholder engagement[67];

b. Are provided with the opportunity to propose independent experts to provide input to the ENTITY on the scoping processes, and the baseline studies; and

c. Are provided with the opportunity to propose independent experts to provide input to the ENTITY on the risk and impact assessment, the management plans, and the monitoring and evaluation processes.

4.4.6 Traditional Knowledge

E2 E3 D M P

4.4.6.1 The ENTITY has systems in place to ensure that the traditional knowledge, and especially traditional ecological knowledge, of local affected communities, and Indigenous rights-holders if applicable, is integrated into:

a. The scoping process required in 4.4.1, and the risks and impact assessment process required in 4.4.2;

b. The development of the management plans required in 4.4.3 and 4.4.4; and

c. Relevant monitoring and evaluation processes required in 4.4.7, and relevant review and continuous improvement processes required in 4.4.8.

4.4.7 Monitoring and Evaluation

E2 E3 D M P

4.4.7.1 To monitor and evaluate the effectiveness and appropriateness of its biodiversity and ecosystem services management plan/s, and protected and conserved area management plans (if relevant), at least annually, the ENTITY:

a. Tracks and documents its performance, over successive time periods, against the indicators defined in 4.4.3.1, 4.4.4.3 (if applicable), and 4.4.4.5 (if applicable);

b. Tracks and documents how the measures developed and implemented as per 4.4.3, and 4.4.4 (if relevant), are effectively preventing impacts on biodiversity values and ecosystem services, and on protected and conserved areas (if relevant), and where prevention is not possible or not immediately possible, minimizing these impacts, and where minimization is not possible, restoring biodiversity values, ecosystem services and the ecological processes and habitats that support them after impacts occur; and

c. Tracks and documents its progress toward the objectives of at least no net loss or net gain in biodiversity and ecosystem services over time, as per 4.4.3.2.

E2 E3 D M P

4.4.7.2 The monitoring and evaluation process:

a. Encourages and facilitates joint tracking or joint fact-finding with affected rights-holders and stakeholders, in a manner that is inclusive of different genders, ages, ethnicities, and any potentially underserved and/or marginalized people, as per Chapter 1.2[68];

b. Includes continuous feedback from internal and external sources, including from joint tracking and joint fact-finding with affected rights-holders and stakeholders; and

c. Is reviewed by independent, competent experts, including those proposed by affected rights-holders and stakeholders as per 4.4.5.3.

4.4.8 Continuous Improvement

E2 E3 D M P

4.4.8.1 At least annually, but without undue delay after a significant change, the ENTITY collaborates with affected rights-holders and stakeholders to:

a. Review the monitoring and evaluation results, informed by internal and external feedback, as per Section 4.4.7;

b. Review any biodiversity-, ecosystem services-, or protected and conserved area-related grievances and the functioning of the relevant grievance mechanism/s (see also Section 1.6.4);

c. Review the ENTITY's effectiveness in achieving the objectives of at least no net loss or net gain in biodiversity and ecosystem services as per 4.4.3.2, informed by the monitoring and evaluation required in 4.4.7.1 and 4.4.7.2;

d. Develop and implement time-bound corrective measures to update, if necessary[69], the scoping processes in accordance with Section 4.4.1, and the risk and impact assessment in accordance with Section 4.4.2;

e. Develop and implement time-bound corrective measures to update, if necessary[70], the management plans in accordance with Sections 4.4.3 and 4.4.4; and

f. Develop and implement time-bound corrective measures to update, if necessary[71], the monitoring and evaluation processes in accordance with Section 4.4.7.

4.4.9 Information-Sharing and Public Reporting

E2 E3 D M P

4.4.9.1 At least annually, the ENTITY makes publicly accessible updated versions of, and maintains[72] publicly accessible all previous versions of:

a. The assessments of risks and impacts on: 1) biodiversity values, and the ecological processes and habitats supporting them; 2) ecosystem service, the ecological processes and habitats supporting them, and their beneficiaries; and 3) the conservation values of protected and conserved areas, and the ecological processes and habitats supporting them.[73]

b. The biodiversity and ecosystem services management plans, and the protected and conserved area management plans; and

c. The results, and summaries of the key findings, of the monitoring and evaluation processes and, if the ENTITY is unable to achieve the required no net loss or net gain objectives, a rationale to explain this shortfall and a detailed description of what other conservation measures are being implemented to address it.

E2 E3 D M P

4.4.9.2 At least annually, the ENTITY makes publicly accessible updated data on, and maintains[74] publicly accessible all previous data on, the following land use change, sea use change, and biodiversity change[75]:

a. The size in hectares of natural ecosystem converted since a cut-off or reference date, the cut-off date or reference date, and the type of ecosystem before and after conversion;

b. The size in hectares of land and sea converted from one intensively used or modified ecosystem to another during the reporting period, and the type of ecosystem before and after conversion; and

c. Changes to the state of each affected and/or potentially affected ecosystem, through: 1) the ecosystem type for the base year; 2) the ecosystem size in hectares for the base year; and 3) the ecosystem condition for the base year and the current reporting period.

CROSS REFERENCES TO OTHER CHAPTERS

This table will be added when the new content for all chapters is finalized and approved.

CHAPTER ENDNOTES

Although presented in a different format, many of the requirements in this chapter are meant to generally align with the International Finance Corporation's (IFC) Performance Standard 6—Biodiversity Conservation and Sustainable Management of Living Natural Resources, and also the KBA Partnership's Guidelines on Business and Key Biodiversity Areas (KBAs).[76]

Several requirements reference the International Union for the Conservation of Nature (IUCN) Protected and Conserved Areas Management Categories. These categories are defined in the glossary definition for 'Protected Area / Protected Area Management Categories.'[77]

This chapter focuses on the conservation of the most important or critical areas of biodiversity (in some cases these have been designated as protected areas or Key Biodiversity Areas, in other cases they will not have been officially designated but still contain important biodiversity values). While the objectives of no net loss and preferably net gain are explicitly required to be planned for in the case of impacts on important biodiversity values and priority ecosystem services, it is strongly encouraged that such objectives be considered for any impacts on biodiversity or ecosystem services (e.g., IFC PS6 states that in areas of natural habitat, mitigation measures will be designed to achieve no net loss of biodiversity where feasible).

[1] Adopted from the Convention on Biological Diversity (CBD) Strategic Plan for Biodiversity 2011-2020. Available at: www.cbd.int/sp/

[2] Mining and biodiversity: key issues and research needs in conservation science. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6283941/

[3] World Wildlife Fund. 2023. Extracted Forests. pp. 22, 23. https://www.wwf.de/fileadmin/fm-wwf/Publikationen-PDF/Wald/WWF-Studie-Extracted-Forests.pdf

[4] Mining and biodiversity: key issues and research needs in conservation science. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6283941/

[5] Convention on Biological Diversity, http://www.cbd.int/convention/text/default.shtml

[6] Examples in Canada: https://www.sciencedirect.com/science/article/abs/pii/S2214790X23000540

Norway: LOV-2009-06-19-100: Lov om forvaltning av naturens mangfold (naturmangfoldloven) [Nature Diversity Act]. Sametingets retningslinjer for vurderingen av samiske hensyn ved endret bruk av meahcci/ utmark i Finnmark (Guidelines for Assessment of Sami interests in cases of changes in land use in Finnmark), 2007. The status of the Guidelines as injunction to the FA was approved by the Norwegian government in 2007. The guidelines are available from https://lovdata.no/ dokument/SF/forskrift/2007-06-11-738 (accessed February 4, 2015). Sametingets planveileder. Veileder for sikring av naturgrunnlaget for samisk kultur, næringsutøvelse og samfunnsliv ved planlegging etter plan- og bygningsloven (plandelen) (The Sami Parliament's Planning Guidelines), 2010. http://www.sametinget.no/Miljoe-areal-ogkulturvern/Areal/Sametinget-planveileder/Sametinget-planveileder (accessed September 7, 2015). LOV-2005-06-17-85: Lov om rettsforhold og forvaltning av grunn og naturressurser i Finnmark fylke (finnmarksloven) [Finnmark Act]. LOV-2008-06-27-71: Lov om planlegging og byggesaksbehandling (plan- og bygningsloven) [Plan and Building Act].

Rwanda: There exists a national law nº 28/2016 of 22/7/2016 on the preservation of both tangible and intangible cultural heritage and traditional knowledge.

USA: see EPA Tribal Councils and

[7] Regional protected areas could include, for example, those in the European Union's Natura 2000 network. National, subnational and local areas may include parks, wilderness areas, wildlife preserves, etc.

[8] Sites of other effective area-based conservation measures (OECMs) are "A geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values" (IUCN, 2024). This could include IUCN Green List Sites that are not protected areas, Indigenous and Community Conservation Areas (ICCAs), Private Protected Areas (PPA), Conservancies, Communal Reserves, Flora and Fauna Sanctuaries, Marine Conservation Areas, Areas of Responsible Fishing (ARF), and areas managed under land-use rights in fisheries, amongst other conservation areas.

[9] Formally adopted by the relevant competent authority/organ of state (e.g., Environmental Ministry, Protected Area Agency, State Department, Local Municipality etc.) that holds a legal mandate for protected and conserved area declaration and/or expansion.

[10] E.g., ecological, biological, geological, geomorphological, cultural, spiritual, historical, scenic, etc.

[11] NOTE: If protected areas have been designated as such to provide protection of cultural values, this needs to feed into Chapter 3.7—Cultural Heritage.

[12] While Chapter 3.7 addresses impacts of noise and vibration on human receptors and structures there may need to be an integrated approach between noise and environmental experts. As part of Chapter 4.4 the relevant Entity's staff working on issues related to protected areas would be expected to determine if any wildlife species are being protected or managed for in the identified protected and conserved areas protected areas. If any protected wildlife species are present that may be affected by noise/vibrations, risk and impacts should be assessed and appropriate avoidance and mitigation measures identified, implemented, monitored and adaptive management measures instituted as per the requirements in other Sections of Chapter 4.4. An integrated approach between noise and environmental experts could include consideration of the pressure levels (dB), frequency (Hz/kHz/cps and number of occurrences in time), acoustic characteristics (e.g., tonality, impulsivity, intermittence), peak particle velocity (for vibration), duration of noise/vibration, and the biology of the relevant specie/s, amongst other relevant factors. For impacts on wildlife, relevant stakeholders under 4.4.5 may include protected area agency representatives, government biologists, wildlife conservation organizations, academic experts, and community members whose livelihoods or sustenance may be affected if noise/vibration has an adverse impact on wildlife.

[13] Key Biodiversity Areas (KBAs) are the most important places in the world for species and their habitats. Key Biodiversity Areas (KBAs) are sites that contribute significantly to the global persistence of biodiversity. KBAs also include Alliance for Zero Extinction (AZE) sites, Important Bird and Biodiversity Areas (IBA), Important Plant Areas (IPA). See https://www.keybiodiversityareas.org/

[14] The EBSAs are special areas in the ocean that serve important purposes, in one way or another, to support the healthy functioning of oceans and the many services that it provides. The CBD scientific criteria for ecologically or biologically significant areas (EBSAs) (annex I, decision IX/20) include Uniqueness or Rarity; Special importance for life history stages of species; Importance for threatened, endangered or declining species and/or habitats; Vulnerability, Fragility, Sensitivity, or Slow recovery; Biological Productivity; Biological Diversity; and Naturalness. See https://www.cbd.int/ebsa/ and https://www.cbd.int/doc/meetings/mar/ebsaws-2014-01/other/ebsaws-2014-01-azores-brochure-en.pdf

[15] Areas of High Biodiversity Value include, but are not limited to: 1) primary forest and other wooded land, that is forest and other wooded land of native species, where there is no clearly visible indication of human activity and the ecological processes are not significantly disturbed; 2) highly biodiverse natural grassland (grassland that would remain grassland in the absence of human

intervention and which maintains the natural species composition and ecological characteristics and processes); and 3) highly biodiverse non-natural grassland (grassland that would cease to be grassland in the absence of human intervention and which is species-rich and not degraded, unless evidence is provided that the harvesting of the raw material is necessary to preserve its grassland status).

To identify areas of High Biodiversity Value, the scoping process should particularly consider the biodiversity value of natural forests, natural peatlands, and permafrost (e.g. supporting tundra and taiga ecosystems), where relevant.

[16] As per the IUCN ESMS, areas with high biodiversity value extend to areas identified as High Conservation Value areas (HCV). The HCV approach has been adopted by TNFD, the Accountability Framework Initiative, and by other standards in soft commodities and agricultural products. The analogous six High Conservation Values are:

> HCV 1: Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels.
>
> HCV 2: Intact forest landscapes and 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: Rare, threatened, or endangered ecosystems, habitats or refugia.
>
> HCV 4: Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.
>
> HCV 5: 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: 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.

[17] Including natural forests and natural habitats.

[18] See glossary definitions at the end of the chapter. Modified, natural and critical habitat refers to the biodiversity value of the area as determined by species, ecosystems and ecological processes. In practice, natural and modified habitats exist on a continuum that ranges from largely untouched, pristine natural habitats to intensively managed modified habitats. Critical habitats are a subset of modified or natural habitats. (See: International Finance Corporation. 2012. Performance Standard 6, Guidance Notes. (GN26 and Para.9) https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/performance-standards/ps6

To identify natural habitats, one can use the Science Based Targets Network map on natural lands (which is also supported by the Task Force on Nature Related Financial Disclosures – TNFD), or to Gosling et al. (2020), developed for compliance with IFC's PS6. Both provide good resource to start delineating what is natural habitat in specific concessions or mining operations and applying the mitigation hierarchy: https://data-gis.unep-wcmc.org/portal/home/item.html?id=4e2d929b580b40f48513906ca5097140 ; https://wri-datalab.earthengine.app/view/sbtn-natural-lands

[19] NOTE: If ecosystem services have been designated as cultural in nature, this needs to feed into Chapter 3.6 (Cultural Heritage).

[20] For more on baseline studies, see, e.g., the International Finance Corporation (IFC). 2019. International Finance Corporation's Guidance Notes: Performance Standards on Environmental and Social Sustainability. Performance Standard 6. "Biodiversity Conservation and Sustainable Management of Living Natural Resources" (paragraphs GN9 to GN14). Available at: https://www.ifc.org/content/dam/ifc/doc/2010/2012-ifc-performance-standards-guidance-note-en.pdf; and Gullison. T, Hardner, J., Anstee, S. and Meyer, M. 2015. Good Practices for the Collection of Biodiversity Baseline Data. Available at https://publications.iadb.org/en/good-practices-collection-biodiversity-baseline-data; amongst other resources.

[21] The IUCN Red List fungi provides some data on fungal species at risk in various geographies. https://redlist.info/en/iucn/welcome.

[22] Species of conservation concern or Species of special concern are species that have a high conservation importance in terms of preserving high diversity and include not only threatened species as per the IUCN Red List (e.g., Critically Endangered, Endangered, and Vulnerable) or legislation (e.g., state and/or federal endangered species act or imperiled species act lists, European Birds and Habitats Directive), but also those classified in the categories Extinct in the Wild (EW), Regionally Extinct (RE), Near Threatened (NT), Critically Rare, Rare, Declining and Data Deficient - Insufficient Information (DDD). For example, see https://speciesstatus.sanbi.org/about/; https://wildlife.ca.gov/Conservation/SSC; https://myfwc.com/wildlifehabitats/wildlife/; https://environment.ec.europa.eu/topics/nature-and-biodiversity/habitats-directive_en; https://environment.ec.europa.eu/topics/nature-and-biodiversity/birds-directive_en#.

[23] While Chapter 3.7 addresses impacts of noise and vibration on human receptors and structures there may need to be an integrated approach between noise and biodiversity experts. As part of Chapter 4.4 the relevant ENTITY staff working on biodiversity management would be expected to determine if any potentially impacted wildlife specie/s may have important biodiversity value. If the wildlife specie/s constitutes an important biodiversity value that may be significantly affected by noise/vibration, these impacts should be assessed and appropriate avoidance and mitigation measures identified, implemented, monitored and adaptive management measures instituted as per the requirements in other Sections of Chapter 4.4. An integrated approach between noise and biodiversity experts could include consideration of the pressure levels (dB), frequency (Hz/kHz/cps and number of occurrences in time), acoustic characteristics (e.g., tonality, impulsivity, intermittence), peak particle velocity (for vibration), duration of noise/vibration, and the biology of the relevant specie/s, amongst other relevant factors. For impacts on wildlife, relevant stakeholders under 4.4.5 may include protected area agency representatives, government biologists, wildlife

conservation organizations, academic experts, and community members whose livelihoods or sustenance may be affected if noise/vibration has an adverse impact on wildlife.

[24] This is to include consideration of direct, indirect, and cumulative impacts.

[25] This is to include consideration of direct, indirect, and cumulative impacts.

[26] Baselines for ecosystem services and identification of associated dependencies (in subrequirement a.) should have been conducted in Chapter 2.1. If it was not, it would need to be carried out as part of this Chapter in order to meet this requirement.

Also, information gathered related to ecosystems services and associated dependencies may need to be integrated into assessments and mitigation measures in other chapters (e.g., Chapter 1.3, 2.2, 2.3, 2.4, 2.5, 2.6, 3.3), with appropriate levels of integration between the relevant chapters.

[27] Ecosystem services related to the project/operation are those services on which the project/operation is directly dependent for its operations (e.g., water for processing, sanitation etc.).

[28] For more on ecosystem services baseline studies, see, e.g., the International Finance Corporation (IFC). 2019. International Finance Corporation's Guidance Notes: Performance Standards on Environmental and Social Sustainability. Performance Standard 6. "Biodiversity Conservation and Sustainable Management of Living Natural Resources" (paragraphs GN2 to GN41, GN105 and 106, and Annex A). Available at: https://www.ifc.org/content/dam/ifc/doc/2010/2012-ifc-performance-standards-guidance-note-en.pdf; the World Resources Institute's Weaving Ecosystem Services into Impact Assessment: A Step-By-Step Method Version 1.0 and associated appendices and tools. Available at https://www.wri.org/research/weaving-ecosystem-services-impact-assessment; Peh et al. 2022. Toolkit for Ecosystem Service Site-based Assessment (TESSA) Version 3.0. Available at https://www.birdlife.org/assets/TESSA-v3.pdf and https://tessa.tools/; and Neugarten et al. 2018. Tools for measuring, modelling, and valuing ecosystem services: Guidance for Key Biodiversity Areas, natural World Heritage Sites, and protected areas. Gland, Switzerland: IUCN. Available at https://portals.iucn.org/library/node/47778; amongst others.

[29] While Chapter 3.7 addresses impacts of noise and vibration on human receptors and structures there may need to be an integrated approach between noise and biodiversity experts. As part of Chapter 4.4 the relevant ENTITY staff working on biodiversity management would be expected to determine if any potentially impacted wildlife specie/s may provide ecosystem services (e.g., food sources, clothing, pollination, seed dispersion, pest control, nutrient cycling, etc.) that are important to affected communities. If the wildlife specie/s that provide ecosystem services may be significantly affected by noise/vibration, these impacts should be assessed and appropriate avoidance and mitigation measures identified, implemented, monitored and adaptive management measures instituted as per the requirements in other Sections of Chapter 4.4. An integrated approach between noise and biodiversity experts could include consideration of the pressure levels (dB), frequency (Hz/kHz/cps and number of occurrences in time), acoustic characteristics (e.g., tonality, impulsivity, intermittence), peak particle velocity (for vibration), duration of noise/vibration, and the biology of the relevant specie/s, amongst other relevant factors. For impacts on wildlife, relevant stakeholders under 4.4.5 may include protected area agency representatives, government biologists, wildlife conservation organizations, academic experts, and community members who are beneficiaries of the identified ecosystem services that may be at risk from the effects of noise/vibration on wildlife.

[30] This is to include consideration of direct, indirect, and cumulative impacts.

[31] E.g., Peer review should be undertaken by an academic institution or environmental NGO with experience in biodiversity assessments. Also, the personnel responsible for carrying out the peer-review or assessment are expected to be competent professionals (i.e., in-house staff or external consultants with relevant education, knowledge, proven experience and necessary skill-sets and training to carry out the required work. Competent professionals are expected to follow scientifically robust methodologies to carry out their work). Their assessment should be done using the most recent geographic layers.

[32] Including through land use and land degradation.

[33] Assessment of risk and impacts on ecosystem services and their beneficiaries (in subrequirement 4.4.2) should have been done in Chapter 2.1. If it was not, it would need to be carried out as part of this Chapter in order to meet this requirement.

[34] This section is meant to align with many other standards and guidelines that address impacts on biodiversity, such as IFC's Performance Standard 6 (see Para. 10 and 14) and the KBA Partners Guidelines on Business and KBAs (KBA Partners. 2018. Guidelines on Business and KBAs: Managing Risk to Biodiversity. https://portals.iucn.org/library/sites/library/files/documents/2018-005-En.pdf)

[35] Avoidance may be achieved, for example through changes in project designs, technologies, processes, siting of facilities. Alternative locations such as brownfield sites may be feasible for mineral processing facilities. For mines, some facilities such as open pits, will necessarily be tied to a specific location due to the location of the ore, however, there should be options to move other facilities and infrastructure to alternative locations, some of which may already have been developed/brownfields.

[36] Whilst it is recognized that there may be limits to the avoidance of impacts from core mine operations (e.g., mine pits, mine shafts), avoidance should be assessed and implemented to the greatest extent practically possible, particularly for ancillary infrastructure (e.g., waste rock dumps, tailings storage facilities, pollution control dams, maintenance yards, mine offices etc.). This includes prioritizing avoidance of impacts on the ecological processes and habitats (including natural forests, and critical and natural habitats) necessary to support the identified biodiversity, ecosystem services and conservation values.

[37] Evaluations must include clear rationale as to why identified avoidance measures are not deemed possible.

[38] Including those related to land use change of natural forests and natural habitats, and deforestation.

[39] Evaluations must include clear rationale as to why no additional minimization measures are feasible.

[40] Evaluations must include clear rationale as to why further restoration is not possible in cases where all proposed avoidance, minimization and restoration measures will still result in residual impacts.

[41] 1) Prioritize avoidance/prevention of impacts on, and risks to, important biodiversity values, and the supporting ecological processes and habitats supporting them (including natural forests, and critical and natural habitats); and 2) Where avoidance/prevention is not possible, prioritize minimization of impacts and risks, before restoring biodiversity, and the supporting ecological processes and habitats supporting them (including natural forests, and critical and natural habitats). It is recognized that there may be limits to the avoidance of impacts from core mine operations (e.g., mine pits, mine shafts). Avoidance related to ancillary infrastructure (e.g., waste rock dumps, tailings storage facilities, pollution control dams, maintenance yards, mine offices etc.) should be assessed and implemented to the greatest extent practically possible. Entities must provide an analysis and rationale for when a step cannot be fully achieved; and determine residual impacts.

[42] Management of risks and impacts on ecosystem services and the beneficiaries of those services (in subrequirement b.) should have been done in Chapter 2.1. If it was not, it would need to be carried out as part of this Chapter in order to meet this requirement.

[43] 1) Prioritize avoidance/prevention of impacts on, and risks to, ecosystem services; and 2) Where avoidance/prevention is not possible, prioritize minimization of impacts and risks, before restoring ecosystem services. This includes prioritizing avoidance of impacts on the ecological processes and habitats necessary to support the ecosystem services. It is recognized that there may be limits to the avoidance of impacts from core mine operations (e.g., mine pits, mine shafts). Avoidance related to ancillary infrastructure (e.g., waste rock dumps, tailings storage facilities, pollution control dams, maintenance yards, mine offices etc.) should be assessed and implemented to the greatest extent practically possible. Entities must provide an analysis and rationale for when a step cannot be fully achieved; and determine residual impacts.

[44] Indicators should be quantitative to the greatest extent practically possible, but qualitative at a minimum.

[45] If work is carried out by third party contractors, then there needs to be a staff employee responsible for overseeing the quality of work, timelines, etc.

[46] Examples of guidance include Forest Trends' Business and Biodiversity Offsets Programme tools and publications (BBOP, 2018). Available at https://www.forest-trends.org/bbop/resources; Guidance on achieving no net loss or net gain of biodiversity and ecosystem services (IEEP, 2020), The many meanings of no net loss in environmental policy (Maron et al, 2018), Good Practice Requirements for Delivering Biodiversity Net Gain (On- and Off-Site) (CIEEM, 2021), and Ensuring No Net Loss for people and biodiversity: good practice principles (Bull et al, 2018), amongst others.

[47] No Net Loss and Net Gain should be calculated considering historical baseline conditions (i.e., pre-project condition, including prior to exploration activities) and the biodiversity currency/ies or metric/s for each biodiversity feature that will be lost, amongst other considerations in alignment with current credible methodologies.

[48] This includes but is not limited to habitat conversion, loss, or degradation.

[49] As per the definitions in Regulation (EU) 2023/1115 of the European Parliament and of the Council (i.e., EU Deforestation Regulation).

[50] This includes but is not limited to habitat loss or degradation.

[51] As per the definitions in Regulation (EU) 2023/1115 of the European Parliament and of the Council (i.e., EU Deforestation Regulation).

[52] This requirement is aligned with and in support of paragraph 82 of the preamble of Regulation (EU) 2023/1115 of the European Parliament and of the Council (i.e., EU Deforestation Regulation) in recognition of the global importance of natural ecosystems that are not Primary Forest and Natural Regenerating Forest.

[53] Examples of guidance include Nelson et al. 2024. Standards of practice to guide ecosystem restoration – A contribution to the United Nations Decade on Ecosystem Restoration 2021-2030. Rome, FAO, Washington, DC, SER & Gland, Switzerland, IUCN CEM; Gann et al. 2019. International principles and standards for the practice of ecological restoration. Second edition. Restoration Ecology S1-S46; Young et al. 2022. International principles and standards for the ecological restoration and recovery of mine sites. Restor Ecol, 30: e13771; and Bartholomew and Mosyaftiani et al. 2024. The Global Biodiversity Standard: Manual for assessment and best practices. BGCI, Richmond, UK & SER, Washington, D.C. USA.

[54] IUCN. 2023. Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS. First edition. Gland, Switzerland: IUCN. Available at https://www.iucn.org/news/europe/202007/iucn-global-standard-nbs

[55] Unless the operation was in place prior to the area's official designation. In such a case, the ENTITY is required to either: a) cease activities and remove infrastructures from such areas; or b) develop a justification for why activities are maintained in such areas and develop and implement an area management plan in accordance with 4.4.4.2 and 4.4.4.3. Note that this does not exempt the ENTITY from demonstrating conformance with all other relevant requirements across the Standard (especially related to ESIA, concurrent reclamation, closure and post-closure, Indigenous Peoples rights and FPIC).

If the scope includes exploration activities that were in place prior to the area's official designation, to meet this requirement the Entity would need to cease those exploration-related activities, remove infrastructure, and reclaim the area as per Chapter 2.7.

[56] Including regional, national, sub-national and local legally protected areas. In case the areas listed in 4.4.4.1 are legally protected, requirement 4.4.4.1 supersedes the provisions of 4.4.4.2.

[57] Other relevant requirements include 4.4.1.1, 4.4.1.2, 4.4.2.1, 4.4.2.2, and 4.4.2.3.

[58] I.e., if there is the potential that the project/operation will impact important conservation values of the protected or conserved area.

[59] If work is carried out by third party contractors, then there needs to be a staff employee responsible for overseeing the quality of work, timelines, etc.

[60] If Ramsar sites are in areas classified as IUCN protected area management categories I-III, see requirement 4.4.4.1.

[61] I.e. operational. This excludes exploration; exploration activities prior to the area's official designation do not constitute "the operation" for this requirement.

[62] E.g., Peer review should be undertaken by an academic institution or environmental NGO with experience in biodiversity assessments. Also, the personnel responsible for carrying out the peer-review or assessment are expected to be competent professionals (i.e., in-house staff or external consultants with relevant education, knowledge, proven experience and necessary skill-sets and training to carry out the required work. Competent professionals are expected to follow scientifically robust methodologies to carry out their work).

[63] Other relevant requirements include 4.4.1.1, 4.4.1.2, 4.4.2.1, 4.4.2.2, and 4.4.2.3.

[64] If work is carried out by third party contractors, then there needs to be a staff employee responsible for overseeing the quality of work, timelines, etc.

[65] Unless a longer period is required through a regulatory process. Implications for finalizing any update may vary depending on the jurisdiction. The intent is to ensure that a period of at least 60 days is offered for consultation and feedback on the scoping process; then, once the scoping process is formally finalized, another period of at least 60 days is offer for consultation and feedback on the scoping report; then, once the scoping report is formally finalized, another period of at least 60 days is offered regarding baseline data collection; and so on through risk and impact assessment, and the ESIA report.

[66] For risks and impacts related to ecosystem services, this includes consultation to identify priority ecosystems services for affected communities.

[67] For more on meaningful stakeholder engagement see Chapter 1.2, requirement 1.2.2.2.

[68] This is especially relevant for contexts where your business and (potentially) affected rights-holders are in dispute about a particular (potential) adverse impact, and rights-holders are unlikely to accept the business' own tracking of the effectiveness of its response to it.

[69] If new information on increased or additional risks to biodiversity or ecosystem services becomes available during the life cycle of the project/operation, or if monitoring indicates that mitigation measures are not being effective (see 4.4.8 and 4.4.9); and whenever there are proposed changes to mining-related activities, significant changes to the physical footprint, a new significant impact or risk, or changes in the operational, environmental, or social context that may create new risks to biodiversity, ecosystem services or protected and conserved areas or change the nature or degree of an existing impact. This will be informed by the monitoring and evaluation process required in the previous Section, and on the review process required in a. to c.

[70] If new information on increased or additional risks to biodiversity or ecosystem services becomes available during the life cycle of the project/operation, or if monitoring indicates that mitigation measures are not being effective (see 4.4.8 and 4.4.9); and whenever there are proposed changes to mining-related activities, significant changes to the physical footprint, a new significant impact or risk, or changes in the operational, environmental, or social context that may create new risks to biodiversity, ecosystem services or protected and conserved areas or change the nature or degree of an existing impact. This will be informed by the monitoring and evaluation process required in the previous Section, and on the review process required in a. to c.

[71] If new information on increased or additional risks to biodiversity or ecosystem services becomes available during the life cycle of the project/operation, or if monitoring indicates that mitigation measures are not being effective (see 4.4.8 and 4.4.9); and whenever there are proposed changes to mining-related activities, significant changes to the physical footprint, a new significant impact or risk, or changes in the operational, environmental, or social context that may create new risks to biodiversity, ecosystem services or protected and conserved areas or change the nature or degree of an existing impact. This will be informed by the monitoring and evaluation process required in the previous Section, and on the review process required in a. to c.

[72] All material must remain publicly accessible at least until the completion of all post-closure activities (including any previous versions, iterations and revisions). Note that the intention is not that the reports should be removed from the public domain after that. Rather, where possible, it should be retained indefinitely as the information may be important for legal or other purposes.

[73] Including explanations for why mitigation hierarchy steps of avoidance, minimization and restoration were not sufficient to prevent residual impacts. See 4.4.2.2 (and associated endnotes).

[74] All material must remain publicly accessible at least until the completion of all post-closure activities (including any previous versions, iterations and revisions). Note that the intention is not that the reports should be removed from the public domain after that. Rather, where possible, it should be retained indefinitely as the information may be important for legal or other purposes.

[75] This is aligned with the GRI 101: Biodiversity 2024 Standard.

[76] IFC. 2012. Performance Standard 6— Biodiversity Conservation and Sustainable Management of Living Natural Resources with Guidance Notes. Available at: https://www.ifc.org/en/insights-reports/2012/ifc-performance-standards

KBA Partners. 2018. Guidelines on Business and KBAs: Managing Risk to Biodiversity. https://portals.iucn.org/library/sites/library/files/documents/2018-005-En.pdf

[77] For more information see Dudley, N. 2008. Guidelines for Applying Protected Area Management Categories. https://portals.iucn.org/library/sites/library/files/documents/pag-021.pdf

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