

SCS-007 Draft Standard, Version 1.0

CERTIFICATION STANDARD FOR SUSTAINABLE DIAMONDS

**Applicable to Industrial-Scale Mining and
Laboratory Grown Diamond Production Operations, Recycled Diamonds
and the Diamond Chain of Custody**



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SCS 007 Draft Standard, Version 1:

Certification Standard for Sustainable Diamonds

SCS Standards wishes to thank the Standard Development Committee for its efforts in bringing the standard to this stage, and to invite stakeholders to participate in the Public Consultation Process, formally opening January 13, 2021 and extending through March 15, 2021.

This Draft Standard is subject to change and may not be referred to as a Final Standard.

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71 **0. Introduction**

72 **0.1 Purpose**

73 The purpose of this Standard is to establish a uniform and credible basis for independently assessing and
74 certifying the environmentally and socially responsible production and handling of gemstone-quality
75 diamonds, and for supporting business and consumer-facing claims for such diamonds.

76 **0.2 Intended Users**

77 This Standard is intended for use by industrial-scale
78 mining (“ISM”) and laboratory grown diamond
79 (“LGD”) Producers interested in demonstrating their
80 environmentally and socially responsible diamond
81 production practices and performance.

82 In addition, the Standard is intended for use by chain-
83 of-custody participants interested in marketing
84 Certified Diamonds, including cutters, polishers,
85 jewelry manufacturers, and recycled diamond
86 handlers, herein collectively referred to as
87 “Handlers,” as well as diamond retailers at the end of
88 chain of custody who sell Certified Diamonds
89 directly to end consumers, herein referred to as
90 “Retailers.” It is also intended for use by empirical
91 testing providers seeking to conduct diamond origin
92 testing in accordance with the Standard’s CoC
93 provisions.

94 In some cases, a Producer may also be a Handler –
95 that is, the Producer may conduct handler functions.
96 Examples would include a vertically integrated
97 Producer that also sells cut stones, or a Producer that
98 handles a mix of Certified or non-certified stones in
99 addition to those stones it directly produces.

Support for ASM Miners and Communities

Artisanal and Small-Scale Mining (ASM) is an additional source of diamonds. An estimated 15-20% of diamonds are sourced from ASM operations.¹ ASM, which is largely informal, provides a livelihood and lifeline for tens of millions of people, but has frequently been associated with questionable working conditions that negatively impact health and safety, human rights, and the environment. A number of independent and stakeholder-driven efforts are underway to strengthen and improve ASM operations to support workers, communities and the environment, and ensure a fair market value for diamonds produced in this manner. As the OECD has stated, efforts to advance responsible sourcing of minerals, including international standards, should endeavor not to “further marginalize workers of the informal sector.”

To reinforce these efforts, the program will support current independent initiatives aimed at improving the lives of ASM miners and their communities, either through direct aid to miners and communities or through support of initiatives aimed at integrating ASM operations into formal market channels. The initiative(s) will be internationally recognized, have been developed with the participation of stakeholders, and be administered by a non-governmental organization with expertise on these issues.

100 **0.3 Scope**

101 The Standard covers Production Operations involved in the production of gemstone-quality diamonds,
102 including the upstream supply chain. Production Operations that only produce industrial grade diamonds are
103 outside of the scope. For all Producer-related criteria in this Standard, the Production Operation is assessed,
104 whether the Production Operation is owned and operated by or contracted by the Producer.

105 Each Production Operation is individually assessed, in order for the gemstone-quality diamonds from that
106 operation to be certified. All processes involved in diamond production and inventory management are within
107 the scope of assessment, such as extraction, production, processing, maintenance, storage and transport
108 activities. In the case of a Production Operation that produces both gemstone and industrial grade diamonds,
109 the entirety of the diamond Production Operation is subject to assessment, even though only the gemstone
110 diamonds are allowed to carry the certification status through the chain of custody.

111 Over time, it is anticipated that the Standard will be expanded to include artisanal and small-scale mines
112 (ASM). Such a scope expansion will involve industry and stakeholders to develop the specialized criteria
113 needed to address the unique issues represented by such operations.

114 The Standard also covers Handling Operations involved in the diamond chain of custody (CoC), including
115 cutters, polishers, jewelry manufacturers, recycled diamond handlers, and retailers. Loose stone traders are
116 outside the scope of this standard. All processes related to the handling and inventory management of Certified
117 Diamonds are within the scope of assessment, such as processing, maintenance, storage, segregation from non-
118 certified diamonds, and transport activities.

119 Table 1 lists the specific criteria that apply to Producers and Handlers. In addition, in some instances, a
120 Producer or Handler will find that a particular subsection or criterion is not relevant to its operation.
121 Requirements related to Retailers, which treated as a special category of Handler, are listed separately. It
122 should also be noted that some criteria are phased-in milestones that are required to be achieved over the stated
123 timeframes to maintain certification status.

Table 1. Scope of the Standard – General Applicability to Producers, Handlers and Retailers

(Note: Some criteria may be deemed non-applicable on a case-by-case basis)

	ISM Producers	LGD Producers	Handlers – Cutters, Polishers, Jewelry Manufacturers	Handler – Recycled Diamond Handler	Retailer
Sections 1.1	√, except 1.1.4.1	√	NA	NA	NA
Sections 1.2	√	√	NA	NA	NA
Sections 1.3	√	√	NA	NA	NA
Sections 1.4	√	√	NA	NA	NA
Sections 1.5	√	√, except 1.5.2	NA	NA	NA
Sections 1.6	√	√, except 1.6.7 and 1.6.8	NA	NA	NA
Sections 1.7	√	√	NA	NA	NA
Sections 1.8	√	√	NA	NA	NA
Section 2.1	√	√, except 2.1.1.3 - 2.1.1.9	NA	NA	NA
Section 2.2	√	√, except 2.2.1.1 and 2.2.2	NA	NA	NA
Section 2.3	√	NA	NA	NA	NA
Section 2.4	√	NA	NA	NA	NA
Section 3.1	√	√	NA	NA	NA
Section 4.1	√, except 4.1.4.2 and 4.1.4.4	√	NA	NA	NA
Section 4.2	NA	NA	√, except 4.2.2.3, 4.2.2.4	√, except 4.2.1.3, 4.2.1.4, 4.2.1.5, 4.2.2.2	NA
Section 5.1	NA	NA	√	√	√
Section 5.2	NA	NA	√	√	√
Section 5.3	NA	NA	√	√	√
Section 5.4	NA	NA	√	√	√
Section 5.5	NA	NA	√	√	√
Section 5.6	NA	NA	√	√	√
Section 5.7	NA	NA	√	√	NA
Section 6.1.1	√	√	√	√	√, except 6.1.1.3 and 6.1.1.4
Section 6.1.2	6.1.2.1 - 6.1.2.2	6.1.2.1 - 6.1.2.3	6.1.2.3 - 6.1.2.4	6.1.2.3 - 6.1.2.4	6.1.2.5
Section 6.1.3	6.1.3.1	6.1.3.1	6.1.3.2	6.1.3.2	6.1.3.2
Annex A	√	√	NA	NA	NA
Annex B	√	√	NA	NA	NA
Annex C	√	√	NA	NA	NA
Annex D	√	NA	NA	NA	NA
Annex E	√	√	NA	NA	NA
Annex F	NA	√	√	√	√

128 **0.4 Public Assertions and Market Claims**

129 Requirements related to public assertions and market claims are provided in Section 6. Business-to-business
130 (B2B) claims are supported, as well as business-to-consumer (B2C) claims when diamonds are handled in
131 accordance with the CoC provisions of this Standard. B2C claims require that all requirements applicable to
132 both Producers and Handlers be satisfied.

133 All market claims and assertions must be certified by an accredited third-party certifier.

134 **0.5 Principles, Criteria and Word Usage**

135 The Standard is comprised of general principles, supported by specific criteria.

136 The verb “shall” is used in criteria to indicate a requirement of the standard. The verb “can” is used to express
137 an ability to perform an action that is not a requirement. Word spellings are American English, unless referring
138 to specific organizations or documents.

139 **0.6 Conformance**

140 In general, the Producer’s *Production Operation* is considered to be in conformance with the Standard if it
141 meets all applicable criteria identified in Table 1, as confirmed by a qualified third-party certification body
142 approved to conduct audits under this Standard. The certification period is three years, including annual
143 surveillance audits. Conformance includes satisfactory actions taken to address any non-conformities observed
144 during the certification audit. Documentation and records to support certification conformance must be made
145 available to the third-party certification body, consistent with the Producer requirements herein, taking
146 confidentiality needs into consideration.

147 In general, the Handler’s *Handling Operation* is considered to be in conformance with the Standard if it meets
148 all applicable criteria identified in Table 1, as confirmed by a qualified third-party certification body approved
149 to conduct certification audits under this Standard. The certification period is three years, including annual
150 surveillance audits. Conformance includes satisfactory actions taken to address any non-conformities observed
151 during the certification audit. Documentation and records to support certification conformance must be made
152 available to the third-party certification body, consistent with the Handler requirements herein, taking
153 confidentiality needs into consideration.

154 Criteria are identified either as “critical” or “non-critical.”

- 155 • For applicable critical criteria, denoted with an asterisk, non-conformities must be closed before a
156 certification can be issued. (Additionally, any such non-conformities must be closed within a maximum of
157 12 months of the certification audit; otherwise a new certification audit will be required.)
- 158 • For applicable non-critical criteria, a corrective action plan must be put into place to close non-conformities
159 within a period of 12 months, by or before the time of the first annual surveillance or recertification audit.

160 Table 2 provides a list of critical criteria for each Section. These critical criteria are also summarized within
161 each subsection, and denoted on a case-by-case basis with an asterisk (*).
162

Table 2. Summary of Critical Criteria in the Standard

Section 1		Section 2	Section 3	Section 4	Section 5		Section 6
1.1.1.1	1.6.4.1	2.1.1.1	3.1.1.1	4.1.1.1	5.1.1.1	5.4.3.5	6.1.1.1
1.1.1.4	1.6.4.5	2.1.1.2	3.1.2.1	4.1.2.1	5.1.1.3	5.4.4.1	6.1.1.2
1.1.2.1	1.6.4.7	2.1.1.3	3.1.2.2	4.1.2.2	5.1.1.4	5.4.4.5	6.1.1.3
1.1.2.2	1.6.4.8	2.1.1.4	3.1.3.1	4.1.2.3	5.1.2.1	5.4.4.6	6.1.1.5
1.1.2.3	1.6.5.1	2.1.1.6		4.1.2.4	5.1.3.1	5.4.4.8	6.1.2.1
1.1.3.1	1.6.5.2	2.1.1.8		4.1.3.1	5.1.3.2	5.4.5.1	6.1.2.2
1.1.3.2	1.6.5.4	2.2.1.1		4.1.4.1	5.1.4.1	5.4.5.2	6.1.2.3
1.1.5.1	1.6.5.5	2.2.1.2		4.1.4.2	5.1.5.1	5.4.5.3	6.1.2.4
1.2.1.1	1.6.6.1	2.2.1.5		4.1.4.3	5.2.1.1	5.4.5.4	6.1.3.1
1.2.2.1	1.6.6.3	2.2.1.8		4.2.1.5	5.3.1.1	5.4.5.5	6.1.3.2
1.3.1.1	1.6.7.2	2.2.1.9		4.2.2.1	5.3.1.2	5.4.6.1	
1.3.1.2	1.6.8.1	2.2.1.11		4.2.2.2	5.3.1.4	5.4.6.3	
1.3.1.3	1.6.8.2	2.3.1.1		4.2.2.3	5.3.1.5	5.5.2.2	
1.3.1.4	1.6.8.3	2.3.1.2		4.2.2.4	5.3.2.1	5.5.2.4	
1.3.2.1	1.7.1.2	2.3.1.4		4.2.2.6	5.3.2.3	5.5.3.1	
1.3.2.3	1.7.1.3	2.4.1.1		4.2.2.7	5.3.3.1	5.6.2.1	
1.3.3.1	1.7.1.6	2.4.1.5		4.2.2.9	5.3.3.2	5.6.3.1	
1.3.3.2	1.7.1.8	2.4.1.6		4.2.2.10	5.3.3.3	5.6.3.2	
1.3.3.3	1.7.1.9			4.2.2.11	5.3.4.1	5.6.4.2	
1.3.3.4	1.7.1.11			4.2.2.12	5.4.1.1	5.6.4.3	
1.3.3.6	1.7.1.12			4.2.2.13	5.4.2.1	5.7.1.2	
1.3.4.1	1.7.2.1			4.2.2.14	5.4.2.2	5.7.1.3	
1.3.4.3	1.7.3.1			4.2.2.16	5.4.3.1	5.7.1.4	
1.4.1.1	1.7.3.3			4.2.3.2	5.4.3.2	5.7.1.7	
1.4.1.2	1.7.4.2			4.2.3.3	5.4.3.3		
1.4.1.3	1.7.4.4			4.2.4.1			
1.5.1.1	1.7.5.1			4.2.4.2			
1.5.2.1	1.7.5.3			4.2.4.3			
1.5.2.2	1.8.2.1			4.2.4.4			
1.6.1.1	1.8.3.1			4.2.4.5			
1.6.2.1	1.8.3.2						
1.6.2.2	1.8.4.2						
1.6.2.3	1.8.4.3						
1.6.3.1							
1.6.3.2							

163 0.7 Annexes

164 Annexes A - F provide details pertaining to various aspects of the calculations and assessment required under
165 the Standard.

166 0.8 Terms and Definitions

167 The following abbreviations are used in the Standard.

168	ASM	Artisanal and Small-Scale Mining
169	CAHRA	Conflict-Affected and High-Risk Areas
170	CoC	Chain of Custody
171	IFC	International Finance Corporation
172	ILO	International Labor Organization
173	IRMA	Initiative for Responsible Mining Assurance
174	ISM	Industrial Scale Mining
175	ISO	International Organization for Standardization
176	LCA	Life Cycle Assessment
177	LGD	Laboratory Grown Diamond
178	KPCS	Kimberley Process Certification Scheme
179	OECD	Organization for Economic Co-operation and Development
180	OH&S	Occupational Health and Safety
181	RF	Radiative Forcing
182	UN	United Nations

183 Applicable terms and definitions are provided below.

TERM	DEFINITION
Acquisition	The act of obtaining a diamond (e.g., purchase, consignment).
Ancillary Material	A material used to produce laboratory grown diamonds that: <ul style="list-style-type: none"> a) is not a diamond b) contributes less than 1% of the production process in either total mass or energy use, or is used in a minor amount compared to its resource base (e.g., water); and c) its production or use does not cause either observed or measurable environmental or human health impacts.
Applicable Law	Laws of the country in which an organization is located. Host country law includes all applicable requirements, including but not limited to laws, rules regulations, and permit requirements, from any governmental or regulatory agency, including but not limited to applicable requirements at the federal/national, state, provincial, county or town/municipal levels, or their equivalents in the country where the facility is located. ¹ Where applicable law is more stringent than the requirements of this Standard, applicable law has precedence.
Approved Database	Database meeting the approved technical testing protocols.

¹ IRMA Standard for Responsible Mining (IRMA-STD-001)
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Artisanal and Small-Scale Mining (ASM)	Diamond mining operations primarily involving the use of simplified, low-capital intensive forms of exploration, extraction, processing and transportation technologies.
Bribery	The offering, promising, giving, accepting or soliciting of an advantage as an inducement for an action which is illegal, unethical or a breach of trust. Inducements can take the form of gifts, loans, fees, rewards or other advantages (e.g., taxes, services, donations, favors). ²
Business Partners	Organizations with direct business relationships, engaged in buying or selling of a product or service that directly contributes to the mining, growing, manufacture or sale of diamonds and/or jewelry.
Certified Diamond	Diamond derived from a certified Production Operation.
Chain of Custody	Each step in the value chain from the time diamonds are certified to the time such diamonds are sold to the end consumer.
Chain of Custody Documentation	Documentation that accompanies the shipment of a certified diamond when it changes ownership or control.
Climate Footprint (also called RF Footprint)	Summary of the RF associated with the relevant climate forcer emissions (long-lived and short-lived), accumulated (legacy) climate forcer emissions, other climate forcers and climate forcer removals, both direct and indirect.
Climate Neutral	The circumstance in which an organization or operation's positive radiative forcing is offset through direct reductions in climate pollutant emissions and non-emission climate forcers, direct sponsorship of RF reduction projects, purchased carbon credits, or a combination thereof. (Also referred to as "Zero net climate impact".)
Collective Bargaining	All negotiations that take place between an employer, a group of employers or one or more employers' organizations, and one or more workers' organizations, for: ³ <ul style="list-style-type: none"> • determining working conditions and terms of employment; • regulating relations between employers and workers; or • regulating relations between employers or their organizations and a workers' organization or workers' organizations.
Conflict Affected and High-Risk Areas⁴	Areas identified by the presence of armed conflict, widespread violence or other risks of harm to people. <i>NOTE: High-risk areas may include areas of political instability or repression, institutional weakness, insecurity, collapse of civil infrastructure and widespread</i>

² Transparency International Anti-Corruption Glossary: <https://www.transparency.org/glossary/term/bribery>

³ Article 2 of the ILO Collective Bargaining Convention, 1981 (No. 154)

⁴ The EU is expected to release a list of CAHRA countries – this will be added as a reference when available.

	<i>violence. Such areas are often characterized by widespread human rights abuses and violations of national or international law.⁵</i>
Contractor	An individual or entity hired by a Producer to perform a function that is directly in contact with Certified Diamonds or an input used in the production of Certified Diamonds, or hired by a Handler to perform a function that is directly related to the cutting, polishing, manufacturing, or provision of laboratory services for Certified Diamonds, whether on or off-site.
Corruption	The abuse of entrusted power for private gain. <small>Error! Bookmark not defined.</small>
Counterparty	The opposite party in a financial transaction.
Critical Toxic Effect	The first adverse toxic effect that appears in an organism when a threshold concentration or dose is exceeded.
Cut diamond	Diamond that has been cut and polished.
Diamond	A mineral consisting essentially of pure crystallized carbon in the isometric system, with a hardness on the Mohs (scratch) scale of 10, a specific gravity of approximately 3.52, and a refractive index of 2.42. ⁶
Due Diligence	<p>An on-going, proactive and reactive process through which a company can identify, prevent, mitigate and account for how it addresses its actual and potential adverse impacts as an integral part of business decision-making and risk management systems.</p> <p><i>NOTE: Due diligence can help a company ensure that it observes the principles of international law and complies with domestic laws, including those governing the illicit trade in minerals and UN sanctions.</i></p>
Effluent	Treated or untreated-liquid waste or sewage discharged into the environment
Emission	Discharge of a substance into the air, water or ground, such as a gas, liquid, particulate, radiation, or solid material.
Environmental Release	Accidental or uncontrolled discharge of a potentially harmful emission or effluent to air, land, or water. (Also used simply as “release”)
Facilitation Payments	Money paid to expedite an administrative process or otherwise receive preferential treatment.
Gem Identification	A process that uses the combination of physical attributes that can serve as the unique basis of identification of a specific diamond. Referred to as “gem identification” in this Standard.

⁵ OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas <https://www.oecd.org/corporate/mne/GuidanceEdition2.pdf>

⁶ Adapted from KPCS. <https://www.kimberleyprocess.com/en/system/files/documents/KPCS%20Core%20Document.pdf>

Gem Identification Data	Empirical data regarding a diamond's physical characteristics, generated using a diamond gem identification scanning technology or assessment.
Gem Identification Database	A structured set of data related to individually tested diamonds, including diamond gem identification data.
Gem Identification Dataset	The discrete diamond gem identification data that is complete enough to uniquely identify the diamond.
Gem Identification Laboratory	Entity that provides gem identification type I or II services, as defined in this standard. (Gem identification laboratories can also be gemological or grading laboratories.)
Gem Identification Matching Process	A process whereby empirical data collected about a diamond's physical characteristics are used to conclude if the same stone was present at a different point in the chain of custody using comparable data collected at that location.
Gem Identification Assessment	Process through which diamond gem identification data are developed.
Gem Identification Type I	Gem identification matching process that measures the physical characteristics of rough diamonds only, and therefore can be used to determine if an unaltered rough diamond was present at another location (e.g., at the site of Production). Such characteristics are not preserved after cutting and polishing.
Gem Identification Type II	Gem identification matching process that records physical characteristics of cut diamonds. Type II processes can determine if an unaltered cut diamond was present at a different location.
Grading Laboratory	Independent entity that analyzes and provides detailed grading certificates for individual cut diamonds.
Grading Certificate	Report provided by a Grading Laboratory for a cut diamond, addressing at minimum the diamond's cut, carat weight, clarity grade, dimensional information, inclusion information and whether the diamond is mined or laboratory grown.
Handler	An organization situated along the diamond chain of custody connecting the Producer to the end consumer that takes physical custody of the diamond, including cutters and polishers, jewelry manufacturers, and recycled diamond handlers, as well as vertically integrated producers. Grading laboratories are not considered Handlers.
Hazardous Waste	A waste with properties (e.g., ignitability, corrosivity, toxicity, reactivity) that make it dangerous or capable of having a harmful effect on human health or the environment. Hazardous wastes are typically subject to regulatory oversight as defined by the local or otherwise applicable regulatory body (e.g., the United States Resource Conservation and Recovery Act).
Hazardous Environment Contaminants	Substances that can cause adverse toxic (chronic or acute) effects in sensitive species when exposed to doses over safe thresholds, and which have the potential

	to expose living organisms (excluding humans) in receiving environment(s) at unsafe levels.
Human Rights	A set of inalienable rights and freedoms endowed equally to all men and women. Governments only exist to secure these rights, and to do not establish them. Specific human rights recognized by this standard include all of the articles of the 1948 UN Universal Declaration of Human Rights applicable to companies. ⁷
Human Rights Violation	Any event during which a person is prevented the ability to exercise a human right.
Indigenous People	A self-identified group of: (a) tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations; or (b) peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions. <i>(adapted from ILO C169)</i>
Indigenous Sovereign Nation	A sovereign group of indigenous people (tribal or otherwise) that is self-governing.
Industrial-Scale Mining	Formal surface or sub-surface diamond mining exploration, extraction, processing and transportation operations, typically labor, technology and capital intensive. Frequently but not always large-scale.
Know Your Counterparty	The process of obtaining and maintaining sufficient information regarding the persons or organizations with whom one conducts business in order to avoid transactions that are in violation of laws, Organization policies or best practice.
Laboratory Grown Diamond	Man-made diamond with the same chemical, physical and optical properties as a mined diamond
Market Claim	A public assertion made in connection with this standard pertaining to environmental protection, social responsibility, and governance performance.
Matching Test	A process, algorithmic or otherwise, in which two gem identification datasets are compared and a conclusion is drawn as to whether the two datasets represent the same diamond.
Mined Diamond	A diamond that was geologically formed in the earth and extracted from a mine.
Non-Certified Diamonds	Diamonds in the inventory of a Handler that are neither certified nor in the Certified list of diamonds.

⁷ Articles 1-20, and 30 apply in the context of companies
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Non-Hazardous Waste	Effluent and emission waste streams that are not classified as hazardous under regulatory authority
Origin	The location where a diamond was originally produced, either extracted from the ground (for natural mined diamonds) or manufactured in a lab (for laboratory grown diamonds). <i>Also referred to as “provenance.”</i>
Parent Rough Diamond	Rough diamond from which a specific cut diamond was cut.
Parcel	A quantity or amount of gemstones, especially as dealt with in one commercial transaction.
Physical Characteristics	Unique characteristics of a diamond or a set of diamonds that can be physically or chemically tested.
Producer	Entity that produces the rough diamond, whether mined or laboratory grown.
Production Operation	Those industrial processes controlled by the Producer and its upstream suppliers that are connected with the production of gemstone quality diamonds to be evaluated for conformance with the Standard. All processes involved in diamond production on the Production Operation’s premises are included, including extraction, production, processing and maintenance activities.
Provenance Analysis	Physical test that compares a specific diamond’s physical attributes (e.g., its chemical composition) to the “provenance signature” of diamonds in a “reference collection” from a verified origin, in order to evaluate the likelihood that the diamond is from that origin.
Provenance Signature	Data containing physical attributes (e.g., its chemical composition) of diamonds from a reference collection. The signature contains enough information that diamonds can be tested and compared to determine if they are from a known origin.
Provenance Testing Laboratory	Independent entity that generates provenance signature and performs provenance analysis of stones against the relevant signature.
Radiative Forcing (RF)	The change in the net, downward minus upward, radiative flux (expressed in W/m ²) at the tropopause or top of atmosphere due to a change in an external driver of climate change, such as a change in the concentration of carbon dioxide or the output of the Sun.
Receiving Environment	Environmental receptors, including surface water, groundwater, humans, air, wildlife, vegetation, that are potentially affected by stressor(s) including effluents, emissions, wastes and activities associated with diamond production operations.
Recycled Diamond	Diamonds that have had prior consumer use and have reentered the supply chain to be recut, polished and/or resold.
Recycled Diamond Handler	Individual or entity that acquires and/or reprocesses post-consumer recycled diamonds to be recut, polished and/or resold.

Recycled Material	Pre-consumer or post-consumer material that has been reprocessed from recovered [reclaimed] material by means of a manufacturing process and made into a final product or into a component for incorporation into a final product. ⁸
Reference Collection	A randomly selected set of diamonds which were collected from a verified mine or lab grower with the goal of generating or updating a provenance signature.
Retailer	Diamond or diamond jewelry establishments selling merchandise directly to end consumers.
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. (Source: IFC. 2012. <i>Performance Standard 2</i> , Guidance Note GN 48.)
Rough Diamond	Diamond that is unworked or simply sawn, cleaved or bruted.
Salient Human Rights Risk	The human rights at risk of the most severe negative impact through a company's activities and business relationships. They impact people (rather than businesses) and have the potential to actually occur. They include (but are not restricted to) security, child labor, forced labor and human trafficking, health and safety, freedom of association and the right to collective bargaining, discrimination and gender equality, disciplinary practices, working hours, remuneration, indigenous peoples and sourcing from artisanal and small-scale mining or conflict-affected areas. (<i>UN Guiding Principles Reporting Framework, Salient Human Rights Issues</i> : www.ungpreporting.org/resources/salient-human-rights-issues)
Scrap	Rejected or discarded material generated by a manufacturing process. Scrap cannot be considered to be pre-consumer recycled material unless it requires further processing before being fed back into and reused in the same process that generated it. Examples of scrap include material from manufacturing equipment (e.g. start-up/shut-down material), side/end trimmings, material generated from sanding, and off-spec/non-conforming product.
Shipment	Tamper-resistant containers used to transport diamonds that physically change hands in the chain of custody.
Site of Production	The specific mine or lab growing production facility where a diamond was produced (where it was created or extracted).
Stakeholder	Individual or organization with an interest in a particular decision, including those who make or can influence a decision as well as those who are potentially affected by the decision. Stakeholders may include, for instance, non-government organizations, governments, rightsholders, indigenous peoples and sovereign nations, shareholders and workers, as well as local community members.

⁸ Adapted from ISO 14021:2016
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Stated Origin	The Handler's declaration of the mine or lab of origin of a specific diamond.
Stressor	Any life cycle inventory input, output, or other activity associated with an industrial process that can be linked to observable impacts through a defined cause-and-effect chain.
Stressor Characterization Factor (SCF)	A factor characterizing the relative potency of an individual stressor that contributes to a common impact endpoint. Related stressors can be aggregated into a single category indicator.
Supplier	An individual or entity hired by a Producer to supply a product used as an input in the production of a Certified Diamonds, or hired by a Handler to supply a product directly related to the cutting or polishing or manufacturing or providing laboratory services for Certified Diamonds, whether on or off-site
Third-Party Certifier	A qualified independent organization that conducts audits to assess conformance with this Standard.
Ton	Metric ton, unless otherwise noted
Unique Tracking Number	Identification number or code assigned to an individual stone, parcel or container, and linked to the gem identification assessment data for each Certified Diamond and entered into an Approved database.
Unique Database Identifier	Identification number or code that links a diamond to its digital record and gem identification data in an approved database, and, in the case of a cut diamond, to its parent rough diamond, for the purpose of tracking and searching.
Unit Operation	A group of linked unit processes.
Worker	Full-time, part-time, temporary or contract employee who carries out Person(s) who carry out work for compensation.

1 Social Responsibility and Governance Criteria for Producers

1.1 Business Integrity

***Principle:** The Producer conducts its business with the highest degree of integrity, in compliance with applicable laws and international agreements.*

***Critical Criteria denoted with *:** 1.1.1.1, 1.1.1.4, 1.1.2.1, 1.1.2.2, 1.1.2.3, 1.1.3.1, 1.1.3.2, 1.1.5.1*

1.1.1 Legal Compliance

1.1.1.1* The Producer shall comply with all host country laws and regulations that are relevant to its operation.

1.1.1.2 The Producer shall establish and implement documented procedures to maintain awareness of and ensure compliance with applicable law and international agreements, including:

- a. Identifying its legal obligations under relevant local and national laws;
- b. Monitoring relevant legal developments and areas of non-compliance risks;
- c. Maintaining a list of relevant agreements, legislation, regulations, permitting, licensing and disclosure requirements

1.1.1.3 The Producer shall train relevant workers on legal obligations.

1.1.1.4* If non-compliance is found, the Producer shall remedy the non-compliance, conduct compliance assessments, and maintain records and documentation sufficient to demonstrate compliance.*

1.1.1.5 The Producer shall publicly report on compliance failures and actions taken to address the non-compliance.

1.1.2 Responsible Business

1.1.2.1* The Producer shall establish and make publicly available documented environmental, social and governance policies and procedures to ensure conformance with this Standard that:

- a. Have been approved by the senior management of the Producer;
- b. Are communicated to all personnel to whom they are relevant;
- c. Cover all aspects of this Standard relevant to the Producer; and
- d. Require appropriate documentation.

- 211 1.1.2.2* The Producer shall implement quality assurance procedures to ensure that its management systems
212 and procedures related to each section of the Standard are being followed.
- 213 1.1.2.3* The Producer shall publicly and transparently report on its compliance with this Standard on an
214 annual basis, consistent with auditor report findings in a program-approved template, which covers
215 activities over a 12-month reporting period, taking into consideration business confidentiality and
216 other competitive concerns.
- 217 1.1.2.4 The Producer shall communicate its ethical business values and principles related to governance,
218 environmental and social performance, to workers, contractors, suppliers and other business partners,
219 and should obtain validated acknowledgement from workers of said values and principles.
- 220 1.1.2.5 The Producer shall require contractors to agree in writing to abide by its environmental, social and
221 governance policies.
- 222 1.1.2.6 The Producer's management systems, organizational structure, and processes shall be documented
223 and have sufficient resources to implement and enforce its environmental, social and governance
224 policies and procedures.
- 225 1.1.2.7 The Producer shall conform with national or international accounting standards in regard to financial
226 accounts associated with business transactions.
- 227 1.1.2.8 The Producer shall annually undergo a financial audit or review by an independent accountant, in
228 jurisdictions where such audits are allowed.
- 229 **1.1.3 Anti-Corruption**
- 230 1.1.3.1* The Producer shall establish and implement documented anti-corruption procedures to:
- 231 a. Prohibit bribery, embezzlement, extortion, money laundering, facilitation payments and
232 smuggling, and set criteria and approval process for offer or receipt of gifts or services;
- 233 b. Identify and avoid potential conflicts of interest;
- 234 c. Identify and avoid charitable and political contributions with potential corruption risk;
- 235 d. Require workers to internally report suspected corruption and protect them from penalty or
236 adverse consequences for doing so or for refusing to participate in corruption;
- 237 e. Identify, monitor and manage the parts of its business with high corruption risk;
- 238 f. Investigate suspected corruption and impose sanctions if found; and
- 239 g. Report to the relevant authority corruption incidents or similar illegalities.
- 240 1.1.3.2* The Producer shall train relevant workers in anti-corruption procedures.

241 **1.1.4 Material Sourcing and Due Diligence Policies**

242 1.1.4.1 If the LGD Producer uses conflict minerals in its process as defined by EU regulation 2017-821, the
243 Producer shall:

- 244 a. develop a material sourcing and due diligence policy for those materials; and
245 b. conduct due diligence on said materials, in accordance with the *OECD Due Diligence Guidance*
246 *for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*.

247 **1.1.5 Know Your Counterparty**

248 1.1.5.1* The Producer shall establish and implement documented Know Your Counterparty procedures for
249 its suppliers, contractors, other business partners and customers, including:

- 250 a. knowing the identity of its suppliers, contractors, other business partners and customers, and
251 whether they are linked to high risk, conflict affected areas or money laundering, knowing the
252 ultimate beneficiaries, structure and ownership of their business;
253 b. verifying that business suppliers, contractors, other business partners and customers and ultimate
254 beneficiaries are not on government or international lists of persons or organizations linked to
255 money laundering, fraud, prohibited organizations or linked to conflict;⁹
256 c. understanding the nature of its suppliers, contractors, other business partners and customers
257 business;
258 d. monitoring financial transactions for suspect activities and reporting any suspicious transaction
259 to relevant authorities; and
260 e. keeping records of this due diligence and its outcomes on counterparties for a minimum of three
261 years.

262 1.1.5.2 The Producer shall designate a senior representative with sufficient knowledge, authority and
263 experience to manage the due diligence process.

264 1.1.5.3 The Producer shall train relevant personnel in its due diligence policy and procedures.

265 1.1.5.4 The Producer shall periodically review and publicly report on its due diligence policy and procedures
266 to ensure they are up to date and sufficient.

267 **1.2 Stakeholder Engagement**

268 *Principle: The Producer effectively engages with stakeholders.*

⁹ The EU is expected to release a list of CAHRA countries – this criteria will be updated to reflect that list when available.
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269 **Critical Criteria denoted with *: 1.2.1.1, 1.2.2.1**

270 **1.2.1 Stakeholder Engagement**

271 1.2.1.1* The Producer shall identify and analyze the range of stakeholders directly or potentially affected by
272 the Producer's production-related activities.

273 1.2.1.2 The Producer shall provide relevant information in a timely manner about issues of concern requested
274 by stakeholders in connection with this Standard that provides sufficient detail and substance for
275 stakeholders to engage effectively on such issues, unless the Producer deems the request would reveal
276 proprietary information, in which case, an explanation for the qualification of a request as
277 unreasonable should be provided in writing to the concerned stakeholder.

278 1.2.1.3 The Producer shall develop and document a stakeholder engagement process, which at a minimum:
279 a. Includes participation by site management and subject-matter experts as needed when
280 addressing stakeholder concerns in connection with this Standard;
281 b. Is conducted respectfully, and free from manipulation, interference, coercion or intimidation;
282 c. Is open to feedback from stakeholders; and
283 d. Provides transparency about the way in which stakeholder feedback has been taken into
284 consideration in the decision-making process and how grievances have been resolved.

285 Documentation pertaining to stakeholder engagement shall be maintained for a minimum six years.

286 1.2.1.5 The Producer shall, if requested, provide full or partial funding to cover the costs of participation of
287 independent subject matter experts in full or in part, under a mutually acceptable agreement.

288 **1.2.2 Grievances and Complaints**

289 1.2.2.1* The Producer shall establish, implement and make publicly available a grievance mechanism for
290 external parties to lodge complaints or grievances with the company that will, at a minimum, include
291 procedures for:¹⁰

292 a. establishing how grievances will be registered, acknowledged, assessed, addressed and
293 documented, and what general timelines for each phase may be expected;

294 b. providing for both individual and group grievances, and for confidential and anonymous
295 grievances;

296 c. being easily accessible, taking into consideration the languages and other aspects of accessibility

¹⁰ Refer to Principle 31 of UN Principles on Business and Human Rights for effectiveness criteria for non-judicial grievance mechanisms including legitimacy, accessibility, predictability, equitability and transparency.

https://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf

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specific to the production site.

d. ensuring that no penalty, retribution or retaliation is suffered by workers making complaints;

e. providing a transparent and clear process to address complaints promptly, providing timely feedback and remedy to concerned parties

f. providing sensitivity and response training to managers and other relevant personnel involved in the disposition of complaints and grievances (e.g., gender and discrimination issues);

g. explaining the appeals process; and

h. establishing how grievances and outcomes will be tracked, communicated and recorded.

1.2.2.2 The Producer shall record all grievances and their remedies, with documentation maintained for a minimum of 6 years in a secure location.

1.2.2.3 The Producer shall monitor the efficacy of its grievance mechanism.

1.3 Human Rights

Principle: *The Producer respects and protects human rights, and prevents discrimination in compliance with international law and norms.*

Critical Criteria denoted with *: 1.3.1.1, 1.3.1.2, 1.3.1.3, 1.3.1.4, 1.3.2.1, 1.3.2.3, 1.3.3.1, 1.3.3.2, 1.3.3.3, 1.3.3.4, 1.3.3.6, 1.3.4.1, 1.3.4.3

1.3.1 Human Rights Due Diligence

1.3.1.1* The Producer shall have:

a. a zero tolerance for human rights violations by its workers, contractors, suppliers and other business partners acting directly on its behalf;

b. a process to remedy harm should a violation occur; and

c. public reporting on adverse impacts and how they were addressed.

1.3.1.2* The Producer shall have established and communicated its zero tolerance policy for human rights violations within its supply chain.

1.3.1.3* The Producer shall create or adopt a public policy affirming its commitment to respect for human rights, and describing how it protects human rights for all individuals affected by its operations and business relationships which:

a. Is approved by the Producer's highest senior management;

- b. Is relevant to the Producer's size and sphere of operations;
- c. States the expectations of workers, contractors, suppliers and other business partners linked directly to business operations;
- d. Is publicly available; and
- e. Is communicated to workers, contractors, suppliers and other business partners linked to the Producer's business operations, and is included in contracts or written agreements with suppliers.

1.3.1.4* The Producer shall establish ongoing due diligence procedures to identify, prevent, mitigate and monitor how it is addressing salient human rights risks, weak or collapsing governance, or ongoing or emerging conflicts in conflict-affected and high risk areas.¹¹ This due diligence shall include:

- a. Adoption and establishment of a methodology aligned with international best practices (e.g., OECD Due Diligence Guidance), which addresses the identification of the relevant human rights, and their potential severity and impacts, relevant laws, approach to consulting with stakeholders, types of data collection, development of prevention and mitigation measures, and frequency of monitoring and evaluation of the efficacy of implemented measures.
- b. A screening assessment based on evidence from credible sources to determine if the Production Operation is located in a CAHRA;¹²
- c. Analysis of the local human rights conditions, including identification of those persons, or groups of people, who might be vulnerable to human rights violations, the potential risks they might face;
- d. A listing of the Producer's activities identified during the due diligence process that could lead to potential human rights violations; and
- e. Identification of the measures the Producer is taking to monitor and prevent human rights violations, to mitigate and remediate if human rights have been violated.

NOTE: Groups of people with particular vulnerability can include, but are not limited to, indigenous peoples, women, minorities and others vulnerable based on gender identification or orientation.

1.3.1.5 If operating in a country with known widespread or state-sponsored human rights violations (e.g., as identified in the UN Human Rights Index), the Producer shall undertake reasonable measures within its capabilities to protect its workers from gross human rights violations committed by the

¹¹ OECD Due Diligence Guidance for Responsible Supply Chain of Minerals from Conflict-Affected and High-Risk Areas, Third Edition

¹² Companies may consult independently compiled lists, such as the "Indicative, Non-Exhaustive List of Conflict and High Risk Areas under Regulation (EU) 2017/821 found at <https://www.cahraslist.net/cahras>, or the list published by The Dragonfly Institute (TDI), https://tools.tdi-sustainability.com/cahra_map. Bear in mind that there is no definitive, universal CAHRA list within the due diligence community. Ultimately, companies must make their own determination of CAHRA locations."

government or other parties.

1.3.2 Human Rights Violations Monitoring, Prevention, Mitigation and Remediation

1.3.2.1* If the Producer finds out, through monitoring or evaluation of any of its activities, that human rights violations might be at risk to occur, it shall:

- a. make a good faith effort to prevent such violations from occurring;
- b. if absolute prevention is not possible, the Producer shall design a preemptive mitigation plan, whereby Persons at risk shall have the opportunity to participate in the mitigation plan design; and
- c. when applicable, attempt to influence parties contributing to the violation to prevent human rights violations or mitigate their severity.

1.3.2.2 If the Producer finds out that, through a contractor, supplier or other business partner relationship, there are risks of human rights violations, it shall attempt to influence responsible parties to prevent human rights violations or, if violations occur, mitigate their impact.

1.3.2.3* If the Producer learns that a human rights violation has occurred in connection with a contractor, supplier or other business partner relationship, it shall:

- a. stop relevant activities and develop mitigation and remediation plans in consultation with affected Persons or groups;
- b. if the Producer and affected Persons or groups cannot find agreement in an acceptable remedy, engage an independent third-party mediator to mediate an agreement;
- c. when applicable, attempt to influence contributing parties to stop or change their activities, in order to mitigate and remediate the impact; and
- d. cooperate with any legitimate process or proceedings related to human rights violations caused, contributed to or linked to the Producer.

1.3.2.4 The Producer shall conduct monitoring to determine whether identified human rights risks and violations are being appropriately addressed.

1.3.3 No Child Labor¹³

1.3.3.1* The Producer shall not use or tolerate the use of child labor (any person under the age of 15, or below

¹³ The *OECD Due Diligence Guidance for Responsible Mineral Supply Chains* identifies the worst forms of child labour as a serious human rights abuse associated with the extraction, transport or trade of minerals that companies should not tolerate, profit from, contribute to, assist with or facilitate in the course of doing business. Although the Due Diligence Guidance recommends that companies implement a supply chain due diligence risk framework in order to respect human rights, there is little detail available on how companies can conduct due diligence of child labour-related risks.

the minimum age stated by national law, whichever is higher) consistent with ILO conventions C138, C146, C182 and C190, and shall comply with pertinent national and international law.¹⁴

1.3.3.2* The Producer shall document and verify the age of workers at the time of their hiring.

1.3.3.3* The Producer shall ensure that no workers below the age of 18 are employed in hazardous or heavy work (ILO convention C138).

1.3.3.4* If a child is found working in violation of 1.3.3.1, the Producer shall remove the child from the job and institute remediation procedures to help the child transition to legal work or school, taking into consideration the child's welfare and family's financial situation.

1.3.3.5 The Producer shall develop and implement procedures to monitor its contractors with high risk of use of child labor.¹⁵

1.3.3.6* If the Producer identifies a case of child labor among its contractors, and remediation is not undertaken or possible, Producer shall stop working with that supplier until it can be demonstrated that the supplier is in compliance with this section.

1.3.4 No Forced Labor

1.3.4.1* Neither the Producer nor its contractors or suppliers shall use or tolerate the use of forced, compulsory, bonded, trafficked or otherwise involuntary labor or recruitment, consistent with ILO conventions C29 and C105.

1.3.4.2 The Producer shall develop and implement procedures to monitor its contractors with high risk of forced labor.¹⁶

1.3.4.3* If the Producer identifies a case of forced labor among its contractors, and remediation is not undertaken or possible, the Producer shall stop working with that contractor until it can be demonstrated that the supplier is in compliance with this section.

1.4 Free, Prior and Informed Consent

Principle: *The Producer respects the rights and interests of indigenous peoples, and of indigenous sovereign nations, and works to assure their free, prior and informed consent.*

¹⁴ OECD Worst Forms of Child Labour Guidelines: <https://mneguidelines.oecd.org/Practical-actions-for-worst-forms-of-child-labour-mining-sector.pdf>

¹⁵ If the Producer is only seeking to make claims for its rough diamonds, then it is exempted from this requirement to monitor contract cutters and polishers.

¹⁶ If the Producer is only seeking to make claims for its rough diamonds, then it is exempted from this requirement to monitor contract cutters and polishers.

406 **Critical Criteria denoted with *:** 1.4.1.1, 1.4.1.2, 1.4.1.3

407 **1.4.1 Respecting the Rights of Indigenous Peoples and Interests of Indigenous Sovereign**
408 **Nations**

409 1.4.1.1* The Producer shall identify indigenous individuals, communities or sovereign nations that may be
410 directly affected by its operations.

411 *NOTE: Only if such individuals or entities are identified will 1.4.1.2 – 1.4.1.4 apply.*

412 1.4.1.2* The Producer shall have a published policy declaring its respect for the rights of indigenous peoples
413 and the interests of indigenous sovereign nations, its recognition of the historical, traditional and
414 religious significance of the land on which its operations take place, and its recognition of the fauna
415 and flora inhabiting this land. The Producer shall have communicated this policy to indigenous
416 peoples potentially affected by its activities, and shall document its conformance with this policy on
417 an ongoing basis.

418 *NOTE: See, for instance, the UN Declaration of the Rights of Indigenous Peoples and the ILO C169.*

419 1.4.1.3.* The Producer shall confirm that its Production Operation is located in an area in which the applicable
420 governmental jurisdiction has consulted with indigenous peoples (if any such communities are
421 present in the region) and has gained free, prior and informed consent regarding access to mineral
422 resources, and provide documentation.

423 a. If governmental consultation has not occurred and consent has not been obtained, then the
424 Producer shall provide written evidence of its own actions taken to consult with the indigenous
425 community (see, for instance, see UN FAO 2014, *Respecting free, prior and informed consent:*
426 *Practical guidance for governments, companies, NGOs, indigenous peoples and local*
427 *communities in relation to land acquisition*, Annex II).

428 b. For any new Production Operation, the Producer shall seek free, prior and informed consent
429 during the planning stages from indigenous peoples if their rights or interests could be affected.
430 No new Production Operation is allowed to be opened unless such consent is granted (where
431 applicable), on the basis of a mutually agreed upon decision-making process for obtaining
432 consent that is democratic across the community.

433 c. The Producer shall notify indigenous peoples if changes to diamond production related
434 activities have the potential to impact their rights or interests.

435 d. The Producer shall collaborate with indigenous peoples' representatives in monitoring of the
436 implementation of free, prior, and informed consent agreements.

437 e. The Producer shall operate in conformance with any existing FPIC until and unless a new FPIC
438 is negotiated that supersedes it.

f. The Producer shall document the FPIC process and publicly report its results.

1.4.1.4 The Producer shall undertake steps to ensure meaningful communications and ongoing engagement with indigenous peoples, as may be applicable and to the extent practicable.

1.5 Community Engagement

Principle: *The Producer respects the rights and interests of local communities, and works to assure that diamond production activities are aligned with these rights and interests.*

Critical Criteria denoted with *: 1.5.1.1, 1.5.2.1, 1.5.2.2

1.5.1 Engagement with Local Communities

1.5.1.1.* The Producer shall identify local communities that may be directly affected by its operations.

1.5.1.2 The Producer shall have a published policy for meaningful engagement with local communities in the region within which its diamond production-related activities occur, supplemented with procedures and plans, aimed at benefitting the local economy, sensitivity to cultural values and protection of cultural heritage, and protection of the environment. The Producer shall communicate this policy to the community, and document its conformance with this policy on an ongoing basis.

1.5.1.3 The Producer shall engage in, document and maintain regular consultation and planning with representatives of local communities at least annually in support of community development, and demonstrate that it has earned broad community support for its diamond production-related activities, free from coercion or manipulation.

1.5.1.4 The Producer shall assess the ways in which its operations might adversely impact community health and safety, and shall develop, implement and monitor a plan to actively prevent any adverse impacts, or mitigate any impacts that cannot be prevented.

1.5.1.5 The Producer shall periodically monitor the efficacy of its local engagement, and publicly document the outcomes.

1.5.2 Resettlement

1.5.2.1* The ISM Producer shall evaluate the potential need for resettlement in consideration of any mine expansion or new mine project. It shall:

- a. only consider the need for local population resettlement as a last resort;
- b. conduct a risk assessment prior to identify the likelihood that forced resettlement would be required;

- c. undertake good faith negotiations with all affected households, including offers of fair compensation; and
- d. allow affected people to access independent legal counsel.

1.5.2.2* Pursuant to 1.5.2.1, any resettlement shall be allowed to proceed only after the ISM Producer has undertaken a process that is fairly adjudicated and that provides the resettled persons a chance to voice their objections to an impartial government authority. If resettlement occurs:

- a. Measures to mitigate its negative impacts shall be undertaken consistent with IFC Performance Standard 5;
- b. Loss of land or assets shall be compensated (for instance, in accordance with local law) in equal or higher value as the resettled persons determine in mutual agreement, either in terms of a choice of replacement property (land or assets) or cash compensation or equivalent (worth the full market value of the lost land or assets); and
- c. No forced resettlement shall be allowed.

1.6 Worker Rights

Principle: *The Producer respects and upholds worker rights and supports worker well-being.*

Critical Criteria denoted with *: 1.6.1.1, 1.6.2.1, 1.6.2.2, 1.6.2.3, 1.6.3.1, 1.6.3.2, 1.6.4.1, 1.6.4.5, 1.6.4.7, 1.6.4.8, 1.6.5.1, 1.6.5.2, 1.6.5.4, 1.6.5.5, 1.6.6.1, 1.6.6.3, 1.6.7.2, 1.6.8.1, 1.6.8.2, 1.6.8.3

1.6.1 Human Resource and Labor Rights

- 1.6.1.1* The Producer shall establish policies and procedures for managing workers that respects their human rights, reflects their responsibilities, and is consistent with relevant laws in the jurisdiction in which it operates.
- 1.6.1.2 The Producer shall communicate these policies and procedures to workers and employment agencies using languages and channels that are understood and accessible.

1.6.2 Non-Discrimination

- 1.6.2.1* The Producer shall, consistent with ILO conventions C100 and C111:
 - a. establish and implement policies and procedures, and base employment relationships, on the principle of equal opportunity; and
 - b. not engage in or support discrimination in hiring, salary, promotion, training, advancement

496 opportunities or termination of any worker on the basis of gender, race, national or social origin,
497 religion, disability, gender identity, marital status, age, family responsibilities, parental or
498 pregnancy status, health condition, political affiliation, caste, union membership or any other
499 personal characteristic or condition that give rise to discrimination.

500 1.6.2.2* The Producer shall have in place procedures to prevent and address harassment, intimidation,
501 coercion and exploitation.

502 1.6.2.3* The Producer shall establish and implement policies and procedures that ensure respect for the rights
503 and interests of women (e.g., aligned with the goals of the UN Convention on the Elimination of All
504 Forms of Discrimination Against Women).¹⁷

505 **1.6.3 Worker's Rights to Freedom of Association and Collective Bargaining**

506 1.6.3.1* The Producer shall respect the rights of workers to associate freely, consistent with local labor laws,
507 without interference and collectively bargain without discrimination or retaliation.

508 1.6.3.2* The Producer shall participate in any collective bargaining process in good faith, adhere to collective
509 bargaining agreements where such agreements exist, and refrain from using replacement workers,
510 short-term contracts or other measures to undermine collective bargaining agreements.¹⁸

511 1.6.3.3 Where national law restricts the right to freedom of association, collective bargaining and worker
512 organizations, the Producer shall respect and support legal alternative means for workers to associate.

513 **1.6.4 Terms of Employment and Working Hours**

514 1.6.4.1* The Producer shall communicate to workers the terms of employment, including but not limited to:
515 a. wages, pay structure and pay periods;
516 b. hours of work, payment, overtime, compensation, benefits and other employment conditions;
517 c. resolution of workplace and compensation issues;
518 d. their right to join a worker's organization without any negative repercussions;
519 e. worker rights under national labor and employment law; and
520 f. their rights under applicable collective agreements, with a copy provided to them.

521 1.6.4.2 The Producer shall communicate the terms of employment to workers at the beginning of the working

¹⁷ UN Convention on the Elimination of All Forms of Discrimination Against Women:
<https://www.ohchr.org/en/professionalinterest/pages/cedaw.aspx>

¹⁸ The company may hire replacement workers to ensure critical maintenance, so long as they are not hired in order to break up a legal strike.

522 relationship and when any material changes occur, using languages, methods and channels that are
523 accessible and easily understood.

524 1.6.4.3 The Producer shall have procedures in place for workers and their representatives to suggest
525 improvements or changes to the workplace and working conditions without threat of reprisal,
526 intimidation or harassment.

527 1.6.4.4 The Producer shall maintain records of working hours and wage payments for all workers consistent
528 with applicable laws, and for at least three years.

529 1.6.4.5* The Producer shall comply with applicable law on working time, and at a minimum, ensure that:
530 a. regular work weeks, not including overtime, do not exceed 48 hours, or 60 hours with overtime,
531 except in extraordinary circumstances or contractual situations that are consensual and fair;
532 b. workers receive at least 24 consecutive hours off in every seven-day period except in
533 extraordinary circumstances (per ILO C14 and C106) or contractual situations that are
534 consensual and fair.

535 1.6.4.6 The Producer shall not require workers to work on days of observance relevant to their religion,
536 unless mutually agreed upon and documented in writing.

537 1.6.4.7* The Producer shall ensure that all legally mandated workday breaks are provided to workers, or in
538 countries where breaks are not mandated, shall conform with international laws and norms.

539 1.6.4.8* The Producer shall ensure that all legally mandated leave (such as maternity and paternity,
540 compassionate and paid annual leave, and public holidays) is provided to workers. If no applicable
541 law exists, the Producer shall provide paid annual leave in accordance with ILO C132, and a
542 maternity leave of no less than 14 weeks.

543 **1.6.5 Wages**

544 1.6.5.1* The Producer shall pay wages that meet or exceed the legal minimum wage, or wages agreed through
545 collective wage agreements, whichever is greater.

546 1.6.5.2* The Producer shall pay overtime hours at a rate defined by applicable law, a collective bargaining
547 agreement or, where none exists, at a premium rate at least 1.5 times the regular hourly wage except
548 in contractual situations that are consensual and fair.

549 1.6.5.3 The Producer shall pay wages in a manner consistent with the terms of employment, including being:
550 a. timely, regular and predetermined and not delayed or deferred;
551 b. accompanied by a wage statement detailing wage rates, benefits and deductions when

552 applicable; and

553 c. by bank transfer, cash or check.

554 1.6.5.4* The Producer shall not deduct wages for disciplinary purposes.

555 1.6.5.5* The Producer shall not deduct wages for payment of items needed by the worker to perform
556 effectively and/or efficiently her/his job (e.g., tools or equipment), and shall provide such tools or
557 equipment at no cost to the worker.

558 **1.6.6 Disciplinary Practices and Grievances**

559 1.6.6.1* The Producer shall not engage in or tolerate the use of corporal punishment, harsh or degrading
560 treatment, sexual or physical harassment, mental, physical or verbal abuse, retaliation, coercion or
561 intimidation of workers.

562 1.6.6.2 The Producer shall document, and clearly and actively communicate, its disciplinary process and
563 policies regarding acceptable and unacceptable disciplinary procedures and worker treatment.

564 1.6.6.3* The Producer shall document, investigate and address all allegations of unacceptable worker
565 treatment.

566 1.6.6.4 The Producer shall provide a grievance mechanism for workers to raise workplace concerns, with
567 the right to remain anonymous, that is in conformance with the UN Principles on Business and
568 Human Rights and Section 1.2.2 of this standard. The Producer shall, at a minimum:

- 569 a. follow a transparent process easy to understand;
570 b. involve an appropriate level of management;
571 c. address concerns and provide feedback in a timely manner;
572 d. if the concerned worker requests it, ensure that workers' representatives are present;
573 e. maintain a record of all grievances and remedies for a period of at least 6 years; and
574 f. allow access to other judicial or administrative remedies available under the law or through
575 existing arbitration procedures, or collective agreements.

576 1.6.6.5 The Producer shall inform workers of the grievance mechanism and ensure that this process is easily
577 accessible to them.

578 **1.6.7 Worker Retrenchment**

579 1.6.7.1 The ISM Producer shall analyze alternatives to worker retrenchment. If no feasible alternative to
580 retrenchment is found, a plan shall be developed aiming to minimize negative impacts on workers.

581 1.6.7.2* The ISM Producer shall notify workers affected by retrenchment in a timely manner, and all benefits,
582 both legal and under a collective agreement, shall be paid according to the applicable law or a
583 timeline agreed in a collective agreement.

584 **1.6.8. Worker Housing**

585 1.6.8.1* If the ISM Producer provides worker housing, it shall:
586 a. be safe, adequately climate controlled, structurally sound, clean, and litter-free, with potable water,
587 sanitary facilities, waste collection, sewage disposal, and sufficient fire exits;
588 b. not be overcrowded; and
589 c. be located to prevent worker exposure to dangerous chemicals, noise levels, and physical
590 disruptions.

591 1.6.8.2* If the ISM Producer provides worker housing, employer-provided housing safety and security
592 policies shall not infringe upon workers' freedom of movement (i.e., ability to come and go),
593 personal integrity, and basic rights.

594 1.6.8.3* The ISM Producer shall demonstrate that rent charged to workers living in employer-provided
595 housing is not in excess of comparable housing in nearby communities.

596 **1.7 Occupational Health and Safety**

597 ***Principle:** The Producer identifies potential workplace risks, and has safe and healthy working*
598 *conditions for workers.*

599 ***Critical Criteria denoted with *:** 1.7.1.2, 1.7.1.3, 1.7.1.6, 1.7.1.8, 1.7.1.9, 1.7.1.11, 1.7.1.12, 1.7.2.1,*
600 *1.7.3.1, 1.7.3.3, 1.7.4.2, 1.7.4.4, 1.7.5.1, 1.7.5.3.*

601 **1.7.1 Ensuring Occupational Health and Safety**

602 1.7.1.1 The Producer shall have a policy and target of zero incidents in the workplace involving bodily
603 injury.

604 1.7.1.2* The Producer shall take all practicable steps to assure that workplaces, machinery, equipment, and
605 processes under its control are safe and do not represent an unreasonable risk to health.¹⁹

606 1.7.1.3* The Producer shall take all practicable steps to ensure that chemical and physical agents under its
607 control do not represent an unreasonable risk to health when the appropriate measures or protection

¹⁹ Adapted from ILO C155 Article 16.
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- 608 are taken.¹⁹
- 609 1.7.1.4 The Producer shall provide adequate protective clothing and equipment to prevent risk of accidents
610 or of adverse effects on health.¹⁹
- 611 1.7.1.5 The Producer shall take additional protective measures if its procedures identify workers who have
612 disclosed unique OH&S risks.
- 613 1.7.1.6* The Producer shall keep a basic first aid kit on the premises, and provide measures to deal with
614 emergencies and accidents, including first aid, and when necessary, transportation to relevant
615 medical facility. At least one person on-site at all times shall be trained in first aid.²⁰
- 616 1.7.1.7 The Producer shall instigate a root cause investigation and analysis for any incidents that do occur,
617 and undertake mitigation steps to prevent future such incidents.
- 618 1.7.1.8* The Producer shall ensure the availability of clean drinking water in the facility. It shall be free of
619 charge.
- 620 1.7.1.9* The Producer shall ensure the availability of free, adequate and clean lavatory facilities.
- 621 1.7.1.10 The Producer shall prohibit the consumption of alcohol and illegal drugs in its facility. (An exception
622 is made for legal substances allowed at official company events.)
- 623 1.7.1.11* The Producer shall not require workers to pay for any measures to ensure their own occupational
624 safety and health in the workplace.²¹
- 625 1.7.1.12* The Producer shall not engage in or tolerate harsh or degrading treatment, physical harassment,
626 mental, physical or verbal abuse, retaliation, coercion or intimidation of workers reporting incidents
627 of bodily injury or illness.
- 628 **1.7.2 Occupational Health and Safety (OH&S) Policy, Risk Assessment and Management**
629 **System**
- 630 1.7.2.1* The Producer shall establish and implement OH&S procedures consistent with ILO C155 and C176,
631 national and local laws and regulations that;
- 632 a. Include OH&S objectives, including a goal of zero severe incidents within three years;
- 633 b. Apply to all relevant workers, contractors, suppliers, other business partners and visitors while
634 on-site;
- 635 c. Are communicated to all workers;

²⁰ Adapted from ILO C155 Article 18.

²¹ Adapted from ILO C155 Article 21.

- d. Uphold the right of workers to refuse or stop unsafe work without penalty;²²
- e. Uphold the right of workers to report incidents of bodily injury or illness without penalty;
- f. Cover the full scope of the facility's activities including non-routine activities;
- g. Assign responsibility and accountability for OH&S to senior management members;
- h. Identify, assess and monitor potential hazards and health risks to workers on an ongoing basis;
- i. Include input from relevant workers and/or worker's representatives;
- j. Identify and institute protective measures to prevent or mitigate accidents and incidents;
- k. Detail safety procedures and relevant standards;
- l. Document and report occupational accidents or incidents;
- m. Provide compensation for work-related injuries or illnesses, including in countries where such injuries or illness are not covered by a government scheme; and
- n. Ensure that all electrical and mechanical equipment is periodically and appropriately maintained.

1.7.2.2 The Producer shall train and educate workers on its OH&S policy and system, especially those that may be susceptible to particular hazards.

1.7.2.3 The Producer shall provide workers with an effective, formal mechanism, such as a joint health and safety committee, by which they can report, raise, discuss and participate in the identification and resolution of OH&S issues. That mechanism shall be communicated to workers.

1.7.2.4 The Producer shall monitor, evaluate and record OH&S risks and performance.

1.7.3 Worker Engagement

1.7.3.1* The Producer shall inform workers of their rights regarding their safety at work, including but not limited to:

- a. Their right to report safety related concerns to the Producer and competent authorities when appropriate and with no reprisals; and
- b. Their right to select OH&S representatives.

²² Unsafe work is work that a worker considers in good faith to involve a real danger of serious injury or death, and that a reasonable person would agree involves such a risk.
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- 661 1.7.3.2 The Producer shall allow workers or their representatives to participate in inspections, to monitor,
662 and to request an independent expert opinion.
- 663 1.7.3.3* If an accident has occurred, the Producer shall communicate to impacted workers in a timely manner.
- 664 1.7.3.4 The Producer shall provide third parties entering the Producer's facility with relevant OH&S
665 information and with appropriate protective equipment.
- 666 **1.7.4 Inspections and Monitoring**
- 667 1.7.4.1 The Producer's representatives, together with workers' OH&S representatives, shall periodically
668 perform inspections to identify potential hazards and the people who may be affected by them, and
669 assess the effectiveness of current measures.
- 670 1.7.4.2* The Producer shall ensure that competent professionals conduct and design OH&S monitoring. If a
671 hazard is found, the Producer shall notify affected worker(s) and review relevant procedures.
- 672 1.7.4.3 The Producer shall review, and periodically update, procedures, measures, and education material.
- 673 1.7.4.4* If an accident has occurred, the Producer shall document and report it to a relevant authority in
674 compliance with applicable laws and shall facilitate investigation.
- 675 1.7.4.5 The Producer shall keep records of all accidents occurred in its facility, and all inspections and
676 monitoring results. Documentation shall be provided to the relevant authority and shall be made
677 available to workers' OH&S representatives, with the exception of confidential medical data.
- 678 **1.7.5 Emergency Preparedness**
- 679 1.7.5.1* The Producer shall establish and test an emergency response plan and procedures to avoid and
680 minimize loss of life, injuries or damage to property, the environment, the health and well-being of
681 workers, and the community in the case of potential health and safety risks, accidents and
682 emergencies.
- 683 *NOTE: The ISM Producer should consider alignment with the UNEP Awareness and Preparedness for*
684 *Emergencies at the Local Level (APELL).*
- 685 1.7.5.2 The Producer's emergency response plan shall be developed in consultation with potentially affected
686 communities and workers or workers' representatives, and incorporate this input.
- 687 1.7.5.3* The Producer shall train workers in emergency response plans and procedures annually.

688 **1.8 Security**

689 **Principle:** *The Producer ensures the security of all personnel, taking into special consideration the*
690 *high value of diamonds and the risk of security breaches, theft and violence.*

691 **Critical Criteria denoted with *:** 1.8.2.1, 1.8.3.1, 1.8.3.2, 1.8.4.2, 1.8.4.3

692 **1.8.1 Security Policies**²³

693 1.8.1.1 The Producer shall have policies and procedures to ensure conformance with the security criteria of
694 Section 1.8.

695 1.8.1.2 The Producer shall have a force and firearms policy, e.g., aligned with the *UN Basic Principles on*
696 *the Use of Force and Firearms by Law Enforcement Officials*.²⁴

697 **1.8.2 Security Risk Assessment**

698 1.8.2.1* The Producer shall, on an ongoing basis, assess and document security risks related to:

- 699 a. its diamond inventory in terms of product theft, tampering, damage or substitution;
700 b. workers, contractors and other people involved in the handling of diamonds; and
701 c. security arrangements (e.g., gaps in location of security personnel, security cameras, and security
702 presence).

703 1.8.2.2 The Producer shall update its assessment of security risks every time the conditions change
704 significantly, and shall follow a credible methodology that at least shall address:

- 705 a. security risks for workers
706 b. security risks for persons in local communities, if relevant; and
707 c. assessment of the political and security context, and current or potential conflicts on the host
708 country or communities, if relevant.

709 1.8.2.3 The Producer shall implement security risk management and monitoring plan, containing measures
710 to ensure the prevention or mitigation of risks identified by the assessment.

²³ See OECD, *Recommendation of the Council on Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*, especially Annex II, 3, <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0386>

²⁴ United Nations Basic Principles on the Use of Force and Firearms by Law Enforcement Officials
<https://www.ohchr.org/EN/ProfessionalInterest/Pages/UseOfForceAndFirearms.aspx>

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711 **1.8.3 Security Personnel²⁵**

712 1.8.3.1* Prior to hiring or contracting with security personnel, the Producer shall perform due diligence (or a
713 good faith effort if security personnel is provided by public security) to avoid hiring security
714 providers or personnel who have been involved in human rights violations, breaches of international
715 humanitarian law, or the use of excessive force.

716 1.8.3.2* The Producer shall require that security personnel, whether internal or external, be trained on the
717 expected ethical conduct, respect for human rights, and the Producer's firearms policy prior to
718 starting their duties. In addition, such training shall be repeated annually. If security is provided by
719 public security forces, the Producer shall facilitate training to personnel who do not have the
720 appropriate training.

721 1.8.3.3 If public or private security is used, the Producer shall ask the security provider to sign a contract or
722 Memorandum of Understanding aligned with Voluntary Principles on Security and Human Rights²⁶
723 and the Producer's policy on firearms. The document shall specify each party's duties with regard to
724 the security of the Producer's activities and infrastructure, and the training of security personnel.

725 **1.8.4 Security Incidents Management**

726 1.8.4.1 The Producer shall implement a security incidents management plan that documents, investigates,
727 and takes appropriate actions to prevent and stop abusive or unlawful behavior, or any behavior that
728 goes against Producer's policies, by security personnel.

729 1.8.4.2* The Producer shall report security incidents caused by security providers to the appropriate authority
730 and local human rights institutions.

731 1.8.4.3* In case of an incident, the Producer shall ensure the safety of the victim and provide the needed
732 medical assistance to affected people.

733 1.8.4.4 The Producer shall notify relevant stakeholders of its firearms policy and its use of force policy upon
734 request.

735

²⁵ See OECD, *Recommendation of the Council on Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*, especially Annex II, 5-10 <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0386>

²⁶ Voluntary Principles on Security and Human Rights <https://www.voluntaryprinciples.org/>

736 2 Environmental Criteria for Producers

737 2.1 Management of Water Resources

738 **Principle:** *The Producer manages its use of water resources to protect water quality and minimize*
739 *depletion of water supply for other users.*

740 **Critical Criteria denoted with *:** 2.1.1.1, 2.1.1.2, 2.1.1.3, 2.1.1.4, 2.1.1.6, 2.1.1.8

741 2.1.1.1* The Producer's water consumption at an existing Production Operation shall meet applicable
742 regulations and permit requirements.

743 2.1.1.2* For an existing Production Operation, the Producer shall assess the total net water consumption.

744 2.1.1.3* The ISM Producer shall establish baseline water quality conditions in freshwater systems (Annex
745 E).

746 2.1.1.4* The ISM Producer shall create a water quality management plan that includes, at a minimum:

747 a. A set of specific water quality criteria targets.

748 b. A plan for water quality monitoring consistent with Annex E.

749 c. A plan for maintaining water quality within local regulatory requirements, or if such
750 requirements do not exist, at levels comparable to or better than baseline conditions.

751 2.1.1.5 If the ISM Producer's water consumption at an existing Production Operation leads to a measurable
752 water resource depletion (see Annex E), then the Producer shall create and implement a water
753 management plan that:

754 a. Describes its approach to monitor and minimize its net water withdrawals.

755 b. Considers all relevant social, regulatory, and economic issues pertaining to its water use.

756 c. Maintain the ability of other users of the same water supply to consume water at the same amount
757 and quality levels that existed before Producer operations began (Annex E).

758 d. The water supply and water quality shall be regularly monitored, and the findings shall be used to
759 inform the water management plan.

760 e. Includes a plan for emergency response for episodes where water availability for other users
761 becomes too low to provide for their uses, as a result of seasonal or weather patterns.

762 2.1.1.6* The ISM Producer shall monitor water quality, and document trends at measurement sites, consistent
763 with Annex E.

- 764 2.1.1.7 The ISM Producer shall develop mitigation measures to address any significant risks identified that
765 could affect or are affecting water resources, and evaluate their effectiveness at least annually.
- 766 2.1.1.8* The ISM Producer shall demonstrate that concentrations in waters downstream or downgradient of
767 diamond Production Operations are maintained within regulatory limits, or if such requirements do
768 not exist, at levels comparable to or better than baseline conditions (see Annex E).
- 769 2.1.1.9 The ISM Producer shall make water quality results publicly available on a quarterly or more frequent
770 basis.

771 **2.2 Minimization of Emissions, Effluents, Wastes, Noise and Vibrations**

772 ***Principle:** The Producer actively works to prevent negative impacts on human health and safety, the*
773 *environment, and communities from emissions, effluents and wastes, noise and vibrations.*

774 ***Critical Criteria denoted with *:** 2.2.1.1, 2.2.1.2, 2.2.1.5, 2.2.1.8, 2.2.1.9, 2.2.1.11*

775 **2.2.1 Monitoring and Management of Emissions, Effluents and Wastes**

- 776 2.2.1.1* The ISM Producer shall, during the planning phase of a mining operation:
- 777 a. establish baseline physical, chemical and biological conditions for water, air, soil, and sediment
778 resources, including any seasonal variations; and
- 779 b. establish baseline terrestrial and aquatic ecosystem conditions, including T&E species
780 populations (see Annex D).
- 781 2.2.1.2* The Producer shall monitor emissions, effluents and waste generation (hazardous and non-
782 hazardous), and document trends at measurement sites.
- 783 2.2.1.3 The Producer shall identify operational facilities or other areas potentially at risk of exceeding
784 regulatory thresholds relevant to the emissions, effluents, or wastes they generate, or otherwise
785 posing a recognized risk to human health and safety, the environment, or communities.
- 786 2.2.1.4 The Producer shall establish and implement measures for improved waste reduction and management
787 for hazardous and non-hazardous wastes related to diamond production that apply a waste mitigation
788 hierarchy (e.g., avoidance, recovery and reuse, recycling, composting, disposal) to reduce risks and
789 negative impacts on humans and the environment.
- 790 2.2.1.5* The Producer shall take steps to eliminate the risk of spills or contamination in the storage, transport
791 and treatment of liquid or solid hazardous waste and non-hazardous waste related to diamond
792 production.

- 793 2.2.1.6 The Producer shall train relevant workers about risks and control measures relevant to emissions,
794 effluents and wastes at least annually.
- 795 2.2.1.7 The Producer shall identify, evaluate, monitor and mitigate risks of potential accidental releases of
796 hazardous wastes, non-waste materials, and emergencies that could result in human health, safety, or
797 environmental impacts. This usually requires special management procedures related to transport,
798 storage, disposal, and treatment governed by applicable regulations (e.g., national, regional).
- 799 2.2.1.8* The Producer shall identify local communities and stakeholders potentially impacted by Production
800 Operations.
- 801 2.2.1.9* The Producer shall have procedures, developed in consultation with local communities and
802 stakeholders related to potential accidental releases or emergencies, including provisions for worker
803 safety, emergency shut-down procedures, public notification on a timely basis, cooperation with
804 relevant government agencies, accident mitigation and clean-up.
- 805 2.2.1.10 The Producer's written policy and procedures for managing emissions, effluents and wastes shall be
806 approved by senior management and communicated to relevant workers and stakeholders. It shall
807 address all relevant emissions, effluents and process wastes, and include monitoring, maintenance,
808 surveillance, and prescribed control measures and actions in case control is lost (e.g., failure of dams,
809 moving hazardous materials).
- 810 2.2.1.11* The Producer shall not dispose untreated effluents and wastes directly into rivers, lakes, marine
811 waters or other sensitive water bodies.
- 812 2.2.1.12 The Producer shall have a policy, developed in consultation with local communities and
813 stakeholders, to notify the parties in the event of an accidental release that threatens human health,
814 safety or the environment (current or future usability), as well as procedures for mitigation measures.
- 815 2.2.1.13 The Producer shall document and make public the results of monitoring on a periodic basis.
- 816 **2.2.2 Monitoring and Management of Noise and Vibration**
- 817 2.2.2.1 The ISM Producer shall assess adverse environmental or community impacts associated with
818 operations related to noise and vibration.
- 819 2.2.2.2 The ISM Producer shall establish and implement steps to mitigate any impacts on the surrounding
820 environment or community related to excessive noise and vibration associated with operations.

821 **2.3 Ecosystem Protection**

822 ***Principle:*** *The ISM Producer protects local ecosystems in its area of operation.*

823 **Critical Criteria denoted with *:** 2.3.1.1, 2.3.1.2, 2.3.1.4

824 **2.3.1. Ecosystem Impact Assessment, Disclosure, and Performance**

825 2.3.1.1* The ISM Producer shall have an environmental impact assessment on file, or conduct such an
826 assessment, in order to establish ecosystem baseline conditions, consistent with Annex D of this
827 Standard.

828 2.3.1.2* The ISM Producer shall demonstrate that operations occur only in legally permitted areas, in full
829 conformance with local regulations and any applicable protected area management plans.

830 2.3.1.3 The ISM Producer shall establish an ecosystem management plan, including goals, key performance
831 indicators, and written procedures to minimize negative localized impacts on biodiversity,
832 ecosystems and habitats of threatened and endangered species from planned or current mining
833 operations. The plan implementation shall be subject to routine monitoring to determine efficacy,
834 and updated as needed

835 2.3.1.4* The ISM Producer shall establish a mitigation plan to address conditions where past adverse impacts
836 have occurred, or where current or future operational impacts are unavoidable, with the aim of
837 assuring no net loss of habitats or species, and no disruption of sensitive ecosystems. The
838 effectiveness of the mitigation plan and measures shall be evaluated at least annually.

839 **2.4 Reclamation and Closure**

840 **Principle:** *The ISM Producer takes steps to plan for a positive legacy with the support of the local*
841 *community, involving a feasible reclamation and closure plan and sufficient finances to restore*
842 *conditions to a defined ecosystem baseline condition after closure.*

843 **Critical Criteria denoted with *:** 2.4.1.1, 2.4.1.5, 2.4.1.6

844 **2.4.1 Reclamation and Closure Plan**

845 2.4.1.1* The ISM Producer shall prepare, make public, and regularly update a Reclamation and Closure Plan
846 to address all mining activities related to the Production Operation from which diamonds are being
847 sourced, which details plans for ecological restoration of disturbed areas, in accordance with
848 internationally recognized norms of best practice. Its objective shall be the full restoration of land
849 and watercourses, including water quality, levels and flows. The plan shall address the following
850 steps:

851 a. Shut-down

852 b. Decommissioning

853 c. Remediation/Reclamation

854 d. Post-closure maintenance

855 2.4.1.2 The ISM Producer's Reclamation and Closure Plan shall include plans to restore mined lands to
856 ecological baseline conditions as defined in conformance with Annex D of this Standard.

857 2.4.1.3 The ISM Producer's Reclamation and Closure Plan shall include plans to restore threatened or
858 endangered species populations to historic conditions defined according to Annex D of this Standard.

859 2.4.1.4 The ISM Producer's Reclamation and Closure Plan shall include plans to restore water quality, levels
860 and flows to historic conditions as defined according to Annex D of this Standard.

861 2.4.1.5* The ISM Producer's Reclamation and Closure Plan shall be made available to stakeholders and
862 affected community representatives for comment and input on the adequacy of the plan at least 60
863 days prior to implementation, and the Producer shall provide the resources and training needed to
864 assure meaningful engagement with stakeholders and community representatives.

865 2.4.1.6* The ISM Producer shall provide evidence of financial surety to guarantee that the costs of the
866 Reclamation and Closure Plan including post-closure can be fully covered.

867 a. The surety shall be independently guaranteed, reliable, and readily liquid;

868 b. The adequacy of the surety shall be subject to public comment and/or independent expert review.

869 c. The terms of the financial surety shall make it clear that the surety may only be released when
870 effective remediation and restoration actions have been demonstrated, and public comments
871 have been reviewed.

872 d. Any withholding of financial surety information due to confidentiality shall be noted to the
873 auditor, who must deem the rationale for withholding reasonable.

874 2.4.1.7 The ISM Producer shall monitor mine facilities and environmental conditions during closure and
875 post-closure and report the findings publicly to assure the effectiveness of the Reclamation and
876 Closure Plan, including but not limited to:

877 a. Inspection of surface and underground mine works for geotechnical stability;

878 b. Inspection of cover and water conveyance systems for integrity relative to design criteria;

879 c. Monitoring of water quality, flows and groundwater levels;

880 d. Inspection of waste facility or waste site stability;

881 e. Evaluation of ecosystem conditions relative to baseline conditions or adjacent or comparable
882 ecosystems in the locality or region; and

883 f. Evaluation of the degree to which mitigation, contingency and corrective action measures have
884 been taken as applicable, and their effectiveness.

3. Life Cycle Assessment Criteria for Producers

3.1 LCA Performance

Principle: *The Producer understands and works actively to reduce or offset the life-cycle impacts of its Production Operation, with the goal of becoming climate neutral and achieving net zero impacts across the entire life cycle.*

Critical Criteria denoted with *: 3.1.1.1, 3.1.2.1, 3.1.2.2, 3.1.3.1

NOTE: *Some criteria in this section – 3.1.2.2, 3.1.2.3, 3.1.2.4 and 3.1.3.2, 3.1.3.3, 3.1.3.4 – are phased-in milestones that are required to be achieved over the stated timeframes to maintain certification status.*

3.1.1 LCA Impact Profile

3.1.1.1* The Producer shall determine its LCA impact profile, calculated and confirmed by a qualified third-party, under each of the applicable environmental and human health categories (Annex C). (A Producer seeking only to make a Certified Responsibly Produced Diamond claim shall calculate and make public its annual RF footprint and accumulated (legacy) RF footprint, confirmed by a qualified third-party in accordance with Annex C, but is not required to conduct a full LCA covering other core impact categories.)

3.1.2 Climate Neutrality

3.1.2.1* The Producer shall publicly commit to having its Production Operation achieve climate neutrality – i.e., net zero impacts – in the two climate change impact categories –i.e., annual RF and accumulated (legacy) RF, calculated based on Annex A. The commitment must be made and signed by a senior management representative of the company.

3.1.2.2* The Producer shall demonstrate, within one calendar year of initial certification, that its Production Operation has achieved climate neutrality in the annual RF impact category, as verified by a qualified third-party.

3.1.2.3 The Producer shall, within one year of certification, prepare a written plan to achieve climate neutrality in the accumulated (legacy) RF impact category.

3.1.2.4 The Producer shall demonstrate, by the end of its second 3-year certification term (i.e., six years), that its Production Operation has achieved climate neutrality in the accumulated (legacy) RF impact category, as verified by a qualified third-party. (See Annexes A and B)

913 **3.1.3 Net Zero Impacts in Other LCA Impact Categories**

914 3.1.3.1* The Producer shall commit to having its Production Operation fully mitigate or offset its impacts
915 (i.e., net zero impacts) in a total of at least 8 of the 15 core impact categories within three years, and
916 in a total of at least 12 of the 15 impact categories within six years.²⁷

917 3.1.3.2 The Producer shall, within one year, establish a plan for its Production Operation to achieve its
918 mitigation or offset commitment, consistent with 3.1.3.1, and within three years, provide a plan to
919 achieve its mitigation or offset commitment consistent with 3.1.3.4.²⁸

920 3.1.3.3 The Producer shall demonstrate that its Production Operation has fully mitigated or offset its impacts
921 in at least 8 of the core impact categories within three years of initial certification, as verified by a
922 qualified third-party.

923 3.1.3.4 The Producer shall demonstrate that its Production Operation has fully mitigated or offset its impacts
924 in at least 12 of the core impact categories within six years of initial certification, as verified by a
925 qualified third-party.

926

²⁷ Core impact categories are established in accordance with Annex C.

²⁸ Allowable RF instruments may include, for instance, credits purchased under the Verified Carbon Standard, American Carbon Registry, Climate Action Reserve, or any other internationally recognized third-party verified carbon offsetting program. In addition, organizations may choose to directly sponsor projects providing independently verified RF reductions.

927 4. Diamond Chain of Custody Tracking and Testing Criteria

928 The Producer is the first link in the chain of custody, implementing testing and other measures to ensure that
929 Certified Diamonds are accurately represented in the marketplace. Section 4.1 criteria are relevant to
930 Producers. Handlers in the chain of custody – including cutters, polishers, jewelry manufacturers, and recycled
931 diamond handlers – put into place management systems, traceability documentation procedures, and when
932 required, empirical testing. Section 4.2 criteria are relevant to Handlers. Both sections apply to Producers who
933 are also Handlers.

934 4.1 Chain of Custody Requirements for Producers

935 **Principle:** *The Producer uses empirical testing technologies to establish a provenance signature so*
936 *that the Certified Diamonds produced can be tracked through the chain of custody, and ensures that*
937 *tracking and management of Certified Diamonds is conducted in a consistent, accurate and transparent*
938 *manner.*

939 **Critical Criteria denoted with *:** 4.1.1.1, 4.1.2.1, 4.1.2.2, 4.1.2.3, 4.1.2.4, 4.1.3.1, 4.1.4.1, 4.1.4.2, 4.1.4.3

940 *NOTE: This section applies to Producers who are interested in having claims related to their Certified Diamonds passed*
941 *along through the chain of custody.*

942 4.1.1 Management System and Responsibilities

943 4.1.1.1* The Producer shall assign at least one senior management member to have overall responsibility and
944 authority over the management of Certified Diamonds.

945 4.1.1.2 The Producer shall establish and implement CoC systems and procedures for Certified Diamonds,
946 including:

- 947 a. procedures related to the establishment of a provenance signature for each Certified Diamond;
- 948 b. procedures for tracking, management and storage of Certified Diamonds while in the Producer's
949 custody;
- 950 c. a procedure to accurately track Certified Diamonds outside of the facility if such diamonds
951 temporarily leave the Producer's custody;
- 952 d. a procedure for responding to CoC non-conformances, including measures to account for
953 deviations or mistakes identified in the process through complaints or other evidence of non-
954 conformance; and
- 955 d. a procedure for responding to reasonable requests for verification of information in CoC

documents.

4.1.1.3 The Producer shall undertake communications and conduct regular training to ensure that relevant workers are aware of, and competent in, their CoC responsibilities.

4.1.1.4 The Producer shall review its Certified Diamonds management and CoC systems and procedures, at least every two years to ensure that its systems are appropriate and up-to-date.

4.1.2 Documentation and Tracking of Certified Diamonds

4.1.2.1* The Producer shall ensure that CoC documentation is included with each shipment or transfer of Certified Diamonds forwarded or sold, including:

- a. name and address of the Producer;
- b. name of Producer's worker responsible for verifying information in the CoC document(s);
- c. name and address of the downstream Handler to receive the Certified Diamond(s);
- d. date of the shipment or transfer;
- e. assignment and listing of unique tracking number for each stone, parcel, or container of diamonds in the shipment or transfer;
- f. weight in carats, to the hundredth of a carat of each stone, parcel, or container of diamonds;
- g. physical characteristics of diamonds shipped (e.g., clarity, shape); and
- h. any additional documentation to support claims of stated origin, such as Kimberley Process certificates.

4.1.2.2* The Producer shall maintain an inventory management system sufficient to be able to individually track and locate each Certified Diamond, or parcel or container of Certified Diamonds, in its possession, including the following information.

- a. site of production;
- b. carat weight for individual Certified Diamonds, or total carat weight for parcel or container of Certified Diamonds;
- c. ownership status (e.g., sold);
- d. For LGD Producers, the dates of production;
- e. the recipient if transferred or sold;

4.1.2.3* The Producer shall segregate Certified Diamonds from non-certified diamonds in its inventory.

4.1.2.4* The Producer shall not commingle Certified diamonds with non-Certified diamonds in any parcel or

container that is shipped or transferred to a customer.

4.1.2.5 The Producer shall continually update its list of Certified Diamonds to account for acquisitions, sales and other transfers.

4.1.2.6 The Producer shall make the requested documentation and data available to the qualified third-party auditor for inspection upon request.

4.1.3 Recordkeeping

4.1.3.1* The Producer shall maintain records of annual inventory, acquisitions, and sales of all Certified Diamonds and non-certified diamonds (if applicable) for at least three years, which includes at least the carat weight of the diamonds, and make these records available to qualified third-party auditors upon request.

4.1.4 Empirical Testing and Database

4.1.4.1* The Producer shall create and maintain a documented provenance signature for its Certified Diamonds, using an approved technology at a provenance testing laboratory accredited for this Standard.

4.1.4.2* When an LGD Producer has two or more laboratory facilities operating identical equipment, not all of which have been certified, the Producer shall put all Certified Diamonds through a gem ID Type I assessment at a location under the Producer's control, and assign each Certified Diamond a unique database identifier. (Otherwise, use of Type I assessment technology is recommended, but not required for Producers.)

a. The resulting gem ID dataset, including the stone's unique database identifier, shall be uploaded to a gem ID database.

b. All gem ID equipment, generated data, and databases used to store and retrieve gem ID data, shall conform to approved technical testing protocols.

4.1.4.3* The Producer shall assign each unique stone, parcel or container that contains Certified Diamonds a unique tracking number (e.g., a 10-digit numeric code) such that the stone, parcel or container can be tracked later on.

4.1.4.4. If applicable per criteria 4.1.4.2, the unique database identifier of each Certified Diamond in the container/parcel shall be documented and cross-referenced with its unique tracking number, such that a complete inventory of Certified Diamonds can be reviewed.

1014 **4.2 Chain of Custody Requirements for Handlers**

1015 **Principle:** *The Handler preserves the identity of each Certified Diamond, and ensures the tracking*
1016 *and management of certified inventory in a consistent, accurate and transparent manner, from*
1017 *acquisition through transfer or sale.*²⁹

1018 **Critical Criteria denoted with *:** 4.2.1.5, 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.6, 4.2.2.7, 4.2.2.9, 4.2.2.10,
1019 4.2.2.11, 4.2.2.12, 4.2.2.13, 4.2.2.14, 4.2.2.16, 4.2.3.2, 4.2.3.3, 4.2.4.1, 4.2.4.2, 4.2.4.3, 4.2.4.4, 4.2.4.5

1020 **4.2.1. Management system and responsibilities**

1021 4.2.1.1 The Handler shall assign at least one senior management member to have overall responsibility and
1022 authority for conformance with this Standard.

1023 4.2.1.2 The Handler shall undertake communications and conduct regular training to ensure that relevant
1024 personnel are aware of, and competent in, their responsibilities under the Standard.

1025 4.2.1.3 The Handler shall specify characteristics of the Certified Diamonds it sources, such as their size,
1026 source, and origin, and provide this information to its suppliers. *(This requirement does not apply to*
1027 *Recycled Diamond Handlers.)*

1028 4.2.1.4 The Handler shall provide its suppliers with written information about its chain-of-custody and due
1029 diligence requirements. *(This requirement does not apply to Recycled Diamond Handlers.)*

1030 4.2.1.5* The Handler shall have systems in place to fulfill third-party auditor requests related to empirical
1031 testing related to Certified Diamonds and/or CoC documents, including independent random testing.
1032 *(This requirement does not apply to Recycled Diamond Handlers.)*

1033 4.2.1.6 The Handler shall review its management and CoC systems and procedures at least every two years
1034 to ensure that its systems are appropriate and up-to-date, as well as its procedures for how to respond
1035 to non-conformances with the Standard.

1036 a. Corrective action procedures shall include measures to account for deviations or mistakes
1037 identified in the process through complaints or other evidence of non-conformance.

1038 b. If a non-conformance is identified for a Certified Diamond received, corrective measures shall
1039 include a process to segregate the non-conforming diamond(s).

1040 4.2.1.7 The Handler shall implement quality assurance procedures to ensure that its management systems

²⁹ Producers that also cut and polish their Certified diamonds, or engage a subcontractor to perform cutting and polishing before retaking custody of the Certified Diamonds, will be required to conform with the relevant Handler requirements of this Section. (Any subcontractor used must either be certified to this Standard or certified under the RJC standard.)

and procedures are being followed.

4.2.1.8 The Handler shall establish and implement procedures that enable it to respond to reasonable requests for verification of information in CoC documents.

4.2.2 Documentation and Tracking of Certified Diamonds

4.2.2.1* The Handler shall establish and implement a documented system and procedures to confirm the origin and chain of custody of each Certified Diamond from acquisition through transfer or sale.

4.2.2.2* When taking possession of Certified Diamonds, the Handler shall confirm the following (*This requirement does not apply to Recycled Diamond Handlers*):

- a. Receipt of Certified Diamonds either individually, or in a parcel or container, that has been assigned a unique tracking number, as well as unique database identifiers for each Certified Diamond as applicable per criteria 4.1.1.2.
- b. Receipt or review of documentation attesting to the certification status of the Producer's Production Operation or the Handler's Handling Operation from which the Certified Diamond was directly obtained;
- c. The physical characteristics of the diamond shipped (e.g., carat weight, color, cut, laser inscription if applicable) match the diamond received, and align with shipment documentation;
- d. The gem ID dataset and unique database identifier created either at the site of production (if applicable per criteria 4.1.1.2) or at the site of cutting and polishing (if applicable per criteria 4.1.1.2), uploaded to an approved database at the time of the assessment.

4.2.2.3* The Recycled Diamond Handler shall establish a traceability system, which includes documentation and information on the identification of the post-consumer source, origin location, and the method of transportation for each recycled diamond or diamond parcel that is received on-site. Once the third-party auditor validates that the recycled diamond is post-consumer recycled, it can be designated to be a Certified Diamond.

4.2.2.4* The Recycled Diamond Handler shall maintain auditable procedures and practices for verifying that diamonds or diamond parcels qualify as Recycled Diamonds prior to inputting the diamond into their Certified Diamond inventory system.

4.2.2.5 If the Handler detects any inconsistencies or discrepancies during the intake and review of the recycled diamond parcel, origin or transport documentation, the Producer shall have procedures to physically segregate the diamond or diamond parcel while the discrepancy is investigated.

4.2.2.6* Once it has possession of Certified Diamonds, the Handler shall maintain an inventory management system sufficient to be able to individually track and locate each Certified Diamond in its possession,

1073 including the following information.

- 1074 a. the Producer, site of production, and the relevant certification(s);
- 1075 b. carat weight;
- 1076 c. ownership status (e.g., consignment, purchase, sold);
- 1077 d. date of acquisition and transfer or sale, the supplier, and the supplier's relevant certification(s);
- 1078 e. the recipient if transferred or sold;
- 1079 f. the unique database identifier for each Certified Diamond, if applicable per 4.1.1.2, tied to a
- 1080 digital record of gem ID data in an approved database (noting that if there is any modification
- 1081 to a diamond's record, the change shall be recorded and the original one preserved for reference);
- 1082 g. cut status (i.e., is the Certified diamond rough or cut);
- 1083 h. if cut, the cutting style; and
- 1084 i. if cut, the unique database identifier of its parent rough diamond if applicable.

1085 4.2.2.7* The Handler shall ensure that CoC documentation is included with each shipment or transfer of
1086 Certified Diamonds forwarded or sold, including:

- 1087 a. name and address of the Handler issuing the CoC documentation and its certification status;
- 1088 b. name of employee of the Handler who was responsible for verifying information in the CoC
- 1089 document(s);
- 1090 c. name and address of the downstream Handler to receive Certified Diamonds and, if it is another
- 1091 CoC certified Handler, its CoC certification certificate number;
- 1092 d. date of the shipment or transfer;
- 1093 e. list of individual Certified Diamonds in the shipment and each diamond's unique database
- 1094 identifier, if applicable;
- 1095 f. weight in carats, to the hundredth of a carat, and cut shape and style (where applicable) of each
- 1096 Certified Diamond;
- 1097 g. evidence that the Producer's site of production is certified to the Standard; and
- 1098 h. any additional documentation to support claims of stated origin, such as warranty statements
- 1099 (e.g., World Diamond Council System of Warranties), Kimberley Process certificates, and
- 1100 reports or comparable certificates (cut, clarity, color, grade) for polished diamonds

1101 4.2.2.8 The Handler shall continually update its list of Certified Diamonds to account for acquisitions, sales,
1102 and other transfers.

1103 4.2.2.9* The Handler shall segregate Certified Diamonds from non-certified diamonds in its inventory.

- 1104 4.2.2.10* The Handler shall establish and implement a procedure to accurately track Certified Diamonds
1105 outside of the facility if such diamonds temporarily leave the Handler's custody.
- 1106 4.2.2.11* The Handler shall document the type of empirical testing it has conducted, if applicable, for each
1107 Certified Diamond, including if applicable (*This requirement does not apply to Recycled Diamond*
1108 *Handlers.*):
- 1109 a. equipment model or procedures used in its process;
 - 1110 b. approach for uploading data; and
 - 1111 c. approach for documenting and managing test results.
- 1112 4.2.2.12* The Handler shall make available to qualified third-party auditors any CoC documentation on
1113 forwarded or sold Certified Diamonds upon request.
- 1114 4.2.2.13* The Handler shall make available to qualified third-party auditors any Certified Diamond in its
1115 possession for independent testing on a random basis, at the auditor's sole discretion.
- 1116 4.2.2.14* The Handler shall ensure that grading laboratories are independent, with no direct interest in the
1117 sale of the Certified Diamond or other conflict of interest, and accredited for this Standard.
- 1118 4.2.2.15 The Handler shall establish a written procedure for vetting independent grading laboratories if
1119 diamonds undergo grading while in their possession. This vetting process shall be documented, and
1120 include any past irregularities found.
- 1121 4.2.2.16* The Handler shall ensure that grading laboratory inscribes the diamond with a unique laser
1122 inscription that is linked to the Certified Diamond's unique database identifier in an approved
1123 database (unless the diamond is already laser-inscribed), and includes in its report at least:
- 1124 a. Precise carat weight
 - 1125 b. Cutting style
 - 1126 c. Clarity grade
 - 1127 d. Dimensional information; and
 - 1128 e. Whether the diamond is mined or laboratory-grown
- 1129 **4.2.3 Recordkeeping**
- 1130 4.2.3.1 The Handler shall maintain records of annual acquisitions, inventory and sales of all Certified
1131 Diamonds and non-certified diamonds for at least three years.
- 1132 4.2.3.2* The Handler shall make records described in 4.2.3.1 available to qualified third-party auditors upon
1133 request.

- 1134 4.2.3.3* The Handler shall maintain all empirical data as long as the Certified Diamond is owned by or in the
1135 control of the Handler. If diamond provenance analysis is completed on incoming diamonds, data
1136 shall include analysis result, diamonds for which analysis are completed, and the name of the
1137 laboratory that completed the analysis.
- 1138 **4.2.4 Empirical Testing and Database**
- 1139 4.2.4.1* The Handler shall use only approved technologies and databases that are interoperable with others
1140 in their specific chain of custody for a given Certified Diamond (i.e., different gem ID systems cannot
1141 be used at different stages).
- 1142 4.2.4.2* Cutters and polishers that receive a Certified Diamond that has already undergone a gem ID Type I
1143 scan (per 4.1.1.2) shall conduct a separate gem ID Type I scan before cutting or polishing for
1144 matching purposes, comparing the two datasets.³⁰
- 1145 4.2.4.3* Cutters and polishers shall put all Certified Diamonds through a gem ID Type II assessment once
1146 the cutting, polishing and any other treatments are completed, and assign a unique database identifier
1147 to each cut Certified Diamond.
- 1148 a. The resulting gem ID dataset, including the cut stone's unique database identifier, shall be
1149 uploaded to a gem ID database.
- 1150 b. All gem ID assessment equipment, generated data, and databases used to store and retrieve gem
1151 ID data, shall conform to approved technical testing protocols.
- 1152 4.2.4.4* Any Handler who receives the cut Certified Diamond after it has been assigned a unique database
1153 identifier shall verify the chain of custody by:
- 1154 a. conducting a diamond gem ID Type II assessment, and upload assessment data to the database;
1155 and
- 1156 b. matching gem ID datasets to the datasets provided by the cutter and polisher or downloaded
1157 from an approved gem ID database.
- 1158 4.2.4.5* The Handler shall upload the following data to an approved database:
- 1159 a. the Certified Diamond's unique database identifier based on its gem ID Type II assessment;
1160 b. the unique tracking number from the Producer's site of production;
1161 c. all gem ID data generated on-site;
1162 d. all conclusions of matching tests, if applicable;

³⁰ The test must conclude that every Certified Diamond now in possession of the cutter or polisher was also scanned at the site of production.

- 1163 e. carat weight;
- 1164 f. if cut, the cutting style, and if applicable, the parent rough diamond's unique database identifier;
- 1165 and
- 1166 g. laser inscription (if applicable).

1167 4.2.4.6 If applicable, Handlers shall establish a procedure to address failed test results for incoming
1168 diamonds (e.g., the CoC or origin of a diamond cannot be confirmed), taking into account the
1169 expected rate of occurrence of false fails.

1170
1171

1172 **5 Environmental, Social and Governance Criteria for Handlers** 1173 **and Retailers**

1174 **5.1 Business Integrity**

1175 ***Principle:** The Handler conducts its business with the highest degree of integrity, in compliance with*
1176 *applicable laws and international agreements.*

1177 ***Critical Criteria denoted with *:** 5.1.1.1, 5.1.1.3, 5.1.1.4, 5.1.2.1., 5.1.3.1, 5.1.3.2, 5.1.4.1, 5.1.5.1*

1178 *NOTE: The criteria in this subsection apply to Retailers as well.*

1179 **5.1.1 Legal Compliance**

1180 5.1.1.1* The Handler shall comply with all host country laws and regulations that are relevant to its operation.

1181 5.1.1.2 The Handler shall establish and implement documented procedures to maintain awareness of and
1182 ensure compliance with applicable law and international agreements, including:

1183 a. Identifying its legal obligations under relevant national laws and international agreements;

1184 b. Monitoring relevant legal developments and areas of non-compliance risks;

1185 c. Maintaining a list of relevant agreements, legislation, regulations, permitting, licensing and
1186 disclosure requirements.

1187 5.1.1.3* The Handler shall train relevant workers on legal obligations.

1188 5.1.1.4* If non-compliance is found, the Handler shall remedy the non-compliance, conduct compliance
1189 assessments, and maintain records and documentation sufficient to demonstrate compliance.*

1190 5.1.1.5 The Handler shall publicly report on compliance failures and actions taken to address the non-
1191 compliance.

1192 **5.1.2 Responsible Business Policies and Management Systems**

1193 5.1.2.1* The Handler shall have established and implemented environmental, social and governance policies
1194 and procedures that apply to its own activities, as well as to work conducted on its behalf by
1195 contractors.

1196 5.1.2.2 The Handler's management systems, organizational structure, and processes shall be documented
1197 and sufficiently resourced to support its environmental, social and governance policies and
1198 procedures.

- 1199 5.1.2.3 The Handler shall publicly and transparently report on its compliance with this Standard on an
1200 annual basis, consistent with auditor report findings in a program-approved template, which covers
1201 activities over a 12-month reporting period, taking into consideration business confidentiality and
1202 other competitive concerns.
- 1203 5.1.2.4 The Handler shall conform with national or international accounting standards in regard to financial
1204 accounts associated with business transactions.
- 1205 5.1.2.5 The Handler shall annually undergo a financial audit or review by an independent accountant, in
1206 jurisdictions where such audits are allowed.
- 1207 **5.1.3 Anti-Corruption**
- 1208 5.1.3.1* The Handler shall establish and implement a written anti-corruption policy and documented
1209 procedures to:
- 1210 a. Prohibit bribery, embezzlement, extortion, money laundering, facilitation payments and
1211 smuggling, and set criteria and approval process for offer or receipt of gifts or services;
- 1212 b. Identify and avoid potential conflicts of interest
- 1213 c. Identify and avoid charitable and political contributions with potential corruption risk;
- 1214 d. Require workers to internally report suspected corruption and protect them from penalty or
1215 adverse consequences for doing so or for refusing to participate in corruption;
- 1216 e. Identify, monitor and manage the parts of its business with high corruption risk;
- 1217 f. Investigate suspected corruption and impose sanctions if found; and
- 1218 g. Report publicly on proven incidents of corruption.
- 1219 5.1.3.2 The Handler shall train relevant workers in anti-corruption policies and procedures.
- 1220 **5.1.4 Material Sourcing and Due Diligence Policies³¹**
- 1221 5.1.4.1* The Handler shall conduct due diligence on its diamond supply chain, including Certified
1222 Diamonds and non-certified diamonds, in accordance with the *OECD Due Diligence Guidance for*
1223 *Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas* (the ‘OECD
1224 Guidance’).

³¹ Handlers that have been independently certified to the *OECD Due Diligence Guidance for Responsible Supply Chain of Minerals from Conflict-Affected and High-Risk Areas, Third Edition* and associated Annexes (OECD Guidance) are recognized as conformant with Section 5.1.4 requirements.

- 1225 5.1.4.2 The Handler shall develop and communicate publicly a supply chain policy addressing sourcing of
1226 diamonds from conflict-affected and high-risk areas, consistent with Annex II of the OECD
1227 Guidance.
- 1228 5.1.4.3 The Handler shall comply with the Kimberley Process Certification Scheme and World Diamond
1229 Council System of Warranties.
- 1230 5.1.4.4 If the Handler determines that a supplier has a high risk of contributing to human rights violations,
1231 it shall conduct enhanced due diligence to determine if the violations are occurring and, if so,
1232 temporarily suspend or disengage business relationships with the supplier until such time as the
1233 violations are mitigated and potentially remediated.”
- 1234 **5.1.5 Know Your Counterparty**
- 1235 5.1.5.1* The Handler shall establish and implement documented Know Your Counterparty procedures for
1236 all of its diamond suppliers (Certified Diamonds and non-certified diamonds), contractors and other
1237 business partners including:
- 1238 a. knowing the identity of its suppliers, contractors, and other business partners and whether they
1239 are linked to high risk, conflict affected areas or money laundering, knowing the ultimate
1240 beneficiaries, structure and ownership of their business;
- 1241 b. verifying that suppliers, contractors, and other business partners and ultimate beneficiaries are
1242 not on government or international lists of persons or organizations linked to money laundering,
1243 fraud, prohibited organizations or linked to conflict;
- 1244 c. understanding the nature of the suppliers’, contractors’, and other business partners’ business,
1245 financing and diamond sourcing;
- 1246 d. monitoring financial transactions for suspect activities and reporting any suspicious transaction
1247 to relevant authorities; and
- 1248 e. keeping records of this due diligence and its outcomes on counterparties for a minimum of three
1249 years.
- 1250 5.1.5.2 The Handler shall designate a senior representative with sufficient knowledge, authority and
1251 experience to manage the due diligence process.
- 1252 5.1.5.3 The Handler shall train relevant personnel in its due diligence policy and procedures.
- 1253 5.1.5.4 The Handler shall periodically review and publicly report on its due diligence policy and procedures
1254 to ensure they are up to date and sufficient.

5.2 Grievances and Complaints

Principle: *The Handler will ensure that there is an open mechanism whereby parties can express grievances and complaints.*

Critical Criteria denoted with *: 5.2.1.1

NOTE: *The criteria in this subsection apply to Retailers as well.*

5.2.1 Grievance Mechanism

5.2.1.1* The Handler shall establish, implement and make publicly available a grievance mechanism for internal and external parties to lodge complaints or grievances with the company that will, at a minimum, include procedures for:³²

- a. establishing how grievances will be registered, acknowledged, assessed, addressed and documented, and what general timelines for each phase may be expected;
- b. providing for both individual and group grievances, and for confidential and anonymous grievances;
- c. being easily accessible (e.g., local languages, paper based, etc. to account for different locations, language, workers);
- d. ensuring that no penalty, retribution or retaliation is suffered by workers making complaints;
- e. providing a transparent and clear process to address complaints promptly, providing timely feedback and remedy to concerned parties
- f. providing sensitivity and response training to managers and other relevant personnel involved in the disposition of complaints and grievances (e.g., gender and discrimination issues);
- g. explaining the appeals process; and
- h. establishing how grievances and outcomes will be tracked, communicated and recorded.

5.2.1.2 The Handler shall record all grievances and their remedies, with documentation maintained for a minimum of 6 years in a secure location.

5.2.1.3 The Handler shall monitor the efficacy of its grievance mechanism.

³² Refer to Principle 31 of UN Principles on Business and Human Rights for effectiveness criteria for non-judicial grievance mechanisms including legitimacy, accessibility, predictability, equitability and transparency.

https://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf

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5.3 Human Rights

Principle: *The Handler protects and respects human rights, and prevents discrimination in compliance with international law and norms.*

Critical Criteria denoted with *: 5.3.1.1, 5.3.1.2, 5.3.1.4, 5.3.1.5, 5.3.2.1, 5.3.2.3, 5.3.3.1, 5.3.3.2, 5.3.3.3, 5.3.4.1

NOTE: The criteria in this subsection apply to Retailers as well.

5.3.1 Human Rights Due Diligence

5.3.1.1* The Handler shall have zero tolerance for human rights violations by its workers, suppliers, contractors or other business partners acting directly on its behalf, shall have a process to remedy harm should a violation occur, and shall have public reporting on adverse impacts and how they were addressed.

5.3.1.2* The Handler shall have established and communicated its zero tolerance policy for human rights violations within its supply chain.

5.3.1.3 The Handler shall create or adopt a public policy affirming its commitment to respect human rights, and describing how it protects human rights for all individuals affected by its operations and business relationships which:

- a. Is approved by the Handler's highest senior management;
- b. Is relevant to the Handler's size and sphere of operations;
- c. States the expectations of workers, contractors, suppliers and other business parties linked directly to business operations;
- d. Is publicly available; and
- e. Is communicated to personnel, business parties, and other business parties linked to the Handler's business operations, and is included in contracts or written agreements with suppliers.

5.3.1.4* The Handler shall establish ongoing due diligence procedures to identify, prevent, mitigate and monitor how it is addressing salient human rights risks, weak or collapsing governance, or ongoing or emerging conflicts in conflict-affected and high risk areas.³³ This due diligence shall include:

³³ OECD Due Diligence Guidance for Responsible Supply Chain of Minerals from Conflict-Affected and High-Risk Areas, Third Edition
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- a. Adoption and establishment of a methodology aligned with international best practices (e.g., OECD Due Diligence Guidance), which addresses the identification of the relevant human rights and their potential severity and impacts, relevant laws, approach to consulting with stakeholders, types of data collection, development of prevention and mitigation measures, and frequency of monitoring and evaluation of the efficacy of implemented measures.
- b. A screening assessment based on evidence from credible sources to determine if the Production Operation is located in a CAHRA;³⁴
- c. Analysis of the local human rights conditions, including identification of those persons, or groups of people, who might be vulnerable to human rights violations, the potential risks they might face;
- d. A listing of the Handler's activities identified during the due diligence process that could lead to potential human right violations;
- e. Identification of the measures the Handler is taking to monitor and prevent human rights violations, and to mitigate and remediate if human rights have been violated.

NOTE: Groups of people with particular vulnerability can include, but are not limited to, indigenous peoples, women, minorities and others vulnerable based on gender identification or orientation .

5.3.1.5* If operating in a country with known widespread or state-sponsored human rights violations (e.g., as identified in the UN Human Rights Index), the Handler shall undertake reasonable measures within its capabilities to protect its workers from gross human rights violations committed by the government.

5.3.1.6 The Handler shall have established and communicated its zero tolerance policy for human rights violations within its supply chain.

5.3.2 Human Rights Violations Prevention, Mitigation and Remediation

5.3.2.1* If the Handler finds out, through monitoring or evaluation of any of its activities, that human rights violations might be at risk to occur, it shall:

- a. make a good faith effort to prevent such violations from occurring;
- b. if absolute prevention is not possible, Handler shall design a pre-emptive mitigation plan, whereby Persons at risk shall have the opportunity to participate in the mitigation plan design; and
- c. when applicable, attempt to influence parties contributing to the violation to prevent human rights violations or mitigate their severity.

5.3.2.2 If the Handler finds out that, through a contractor, supplier or other business partner relationship,

³⁴ See footnote 12.
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there are risks of human rights violations, it shall attempt to influence responsible parties to prevent human rights violations or, if violations occur, mitigate their impact.

5.3.2.3* If the Handler learns that a human rights violation has occurred in connection with a contractor, supplier or other business partner relationship, it shall:

- a. stop relevant activities and develop mitigation and remediation plans in consultation with affected Persons or groups;
- b. if the Handler and affected Persons or groups cannot find agreement in an acceptable remedy, engage an independent third-party mediator to mediate an agreement;
- c. when applicable, attempt to influence contributing parties to stop or change their activities, in order to mitigate and remediate the impact; and
- d. cooperate with any legitimate process or proceedings related to human rights violations caused, contributed to or linked to the Handler

5.3.2.4 Handler shall monitor that identified human rights risks and violations are being appropriately addressed.

5.3.3 No Child Labor

5.3.3.1* The Handler shall not use or tolerate the use of child labor (any person under the age of 15, or below the minimum age stated by national law, whichever is higher), consistent with ILO conventions C138, C146, C182 and C190, and shall comply with pertinent national and international law.³⁵

5.3.3.2* The Handler shall ensure that no workers below the age of 18 are employed in hazardous or heavy work (ILO convention C138).

5.3.3.3* The Handler shall document and verify the age of all workers at the time of their hiring.

5.3.4 No Forced Labor

5.3.4.1* The Handler shall not use or tolerate forced or compulsory labor or recruitment, or participate in the trafficking of persons, consistent with ILO conventions C29 and C105.

5.4 Worker Rights

Principle: The Handler respects and upholds worker rights and supports worker well-being.

³⁵ For further information, organizations may wish to review “Practical Actions for Companies to Identify and Address the Worst Forms of Child Labour In Mineral Supply Chains” OECD, 2017. <http://mneguidelines.oecd.org/Practical-actions-for-worst-forms-of-child-labour-mining-sector.pdf>
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1364 **Critical Criteria denoted with *:** 5.4.1.1, 5.4.2.1, 5.4.2.2, 5.4.2.3, 5.4.3.1, 5.4.3.2, 5.4.3.3, 5.4.3.5, 5.4.4.1,
1365 5.4.4.5, 5.4.4.6, 5.4.4.8, 5.4.5.1, 5.4.5.2, 5.4.5.3, 5.4.5.4, 5.4.5.5, 5.4.6.1, 5.4.6.3

1366 *NOTE: The criteria in this subsection apply to Retailers as well.*

1367 **5.4.1 Human Resource and Labor Rights**

1368 5.4.1.1* The Handler shall establish and implement human resource policies and procedures in line with ILO
1369 conventions, international norms, and applicable national and local laws.

1370 5.4.1.2 The Handler shall communicate its policies to workers, contractors, employment agencies and
1371 providers using languages and channels that are understood and accessible.

1372 **5.4.2 Non-Discrimination**

1373 5.4.2.1* The Handler shall ensure all of its policies and procedures recognize the equal rights of every person
1374 it employs or does business with.

1375 5.4.2.2* The Handler shall, consistent with ILO conventions C100 and C111:

1376 a. establish and implement policies and procedures, and base employment relationships, on the
1377 principle of equal opportunity; and

1378 b. not engage in or support discrimination in hiring, salary, promotion, training, advancement
1379 opportunities or termination of any worker on the basis of gender, race, national or social origin,
1380 religion, disability, gender identity, marital status, age, family responsibilities, parental or
1381 pregnancy status, health condition, political affiliation, caste, union membership or any other
1382 personal characteristic or condition that give rise to discrimination.

1383 5.4.2.3 The Handler shall establish and implement policies and procedures that ensure respect for the rights
1384 *and interests of women, consistent with the goals of the UN Convention on the Elimination of All
1385 Forms of Discrimination Against Women.³⁶

1386 **5.4.3 Worker's Rights to Freedom of Association and Collective Bargaining**

1387 5.4.3.1* The Handler shall respect the rights of workers to associate freely without interference,
1388 discrimination or retaliation in line with ILO conventions C87 and C98.

1389 5.4.3.2* The Handler shall respect the rights of workers to collective bargaining.

1390 5.4.3.3* The Handler shall participate in any collective bargaining process in good faith, adhere to collective

- 1391 bargaining agreements where such agreements exist, and refrain from using replacement workers,
1392 short-term contracts or other measures to undermine collective bargaining agreements.
- 1393 5.4.3.4 Where national law restricts the right to freedom of association, collective bargaining and worker
1394 organizations, the Handler shall respect and support legal alternative means for workers to associate.
- 1395 5.4.3.5* The Handler shall respect the terms of any collective bargaining agreement to which it is a party.
- 1396 **5.4.4 Terms of Employment and Working Hours**
- 1397 5.4.4.1* The Handler shall communicate to workers and their representatives the terms of employment,
1398 including but not limited to:
- 1399 a. wages, pay structure and pay periods;
- 1400 b. hours of work, payment, overtime, compensation, benefits and other employment conditions;
- 1401 c. their right to join a worker's organization without any negative repercussions;
- 1402 d. resolution of workplace and compensation issues;
- 1403 e. worker rights under national labor and employment law; and
- 1404 f. their rights under applicable collective agreements.
- 1405 5.4.4.2 The Handler shall communicate the terms of employment to workers at the beginning of the working
1406 relationship and when any material changes occur, using languages, methods and channels that are
1407 accessible and easily understood.
- 1408 5.4.4.3 The Handler shall have mechanisms and procedures in place for workers and their representatives
1409 to suggest improvements or changes to the workplace and working conditions without threat of
1410 reprisal, intimidation or harassment.
- 1411 5.4.4.4 The Handler shall maintain records of all worker working hours and wage payments consistent with
1412 applicable laws, or in the absence of such laws, for at least three years.
- 1413 5.4.4.5* The Handler shall comply with applicable law on working time, and at a minimum, ensure that:
- 1414 a. regular work weeks, not including overtime, do not exceed 48 hours , or 60 hours with overtime,
1415 except in extraordinary circumstances or contractual situations that are consensual and fair; and
- 1416 b. workers receive at least 24 hours off in every seven day period except in emergencies, unusual
1417 situations or contractual situations that are consensual and fair.
- 1418 5.4.4.6* The Handler shall ensure that all legally mandated workday breaks are provided to workers, or in
1419 countries where breaks are not mandated, shall conform with international laws and norms.

1420 5.4.4.7 The Handler shall not require workers to work on days of observance relevant to their religion.

1421 5.4.4.8* The Handler shall ensure that all legally mandated leave (including maternity and paternity,
1422 compassionate and paid annual leave, public holidays, etc.) is provided to workers. If no applicable
1423 law exists, the Producer shall provide paid annual leave in accordance with ILO C132.

1424 **5.4.5 Wages**

1425 5.4.5.1* The Handler shall pay wages that meet or exceed the legal minimum wage, or wages agreed through
1426 collective wage agreements, whichever is greater.

1427 5.4.5.2* The Handler shall pay overtime hours at a rate defined by applicable law, a collective bargaining
1428 agreement or where none exists, at a premium rate at least 1.5 times regular hourly wage except in
1429 emergencies, unusual situations or contractual situations that are consensual and fair.

1430 5.4.5.3* The Handler shall pay wages in a manner consistent with the terms of employment, including being:
1431 a. timely, regular and predetermined and not delayed or deferred;
1432 b. accompanied by wage statement detailing wage rates, benefits and deductions where applicable;
1433 c. by bank transfer, cash or check.

1434 5.4.5.4* The Handler shall not deduct wages for disciplinary purposes.

1435 5.4.5.5* The Handler shall not deduct wages for payment of items needed by the worker to perform
1436 effectively and/or efficiently her/his job (e.g., tools or equipment), and shall provide such tools or
1437 equipment at no cost to the worker.

1438 **5.4.6 Disciplinary Practices and Grievances**

1439 5.4.6.1* The Handler shall not engage in or tolerate the use of corporal punishment, harsh or degrading
1440 treatment, sexual or physical harassment, mental, physical or verbal abuse, retaliation, coercion or
1441 intimidation of workers.

1442 5.4.6.2 The Handler shall document, and clearly and actively communicate, its disciplinary process and
1443 policies regarding acceptable and unacceptable disciplinary procedures and worker treatment.

1444 5.4.6.3* The Handler shall document, investigate and address all allegations of unacceptable worker
1445 treatment.

1446 5.4.6.4 The Handler shall provide a grievance mechanism for workers to raise workplace concerns, with
1447 the right to remain anonymous, that is in conformance with the UN Principles on Business and
1448 Human Rights and this Standard. The Handler shall, at a minimum:

- a. follow a transparent process easy to understand;
- b. involve an appropriate level of management;
- c. address concerns and provide feedback in a timely manner;
- d. if the concerned worker requests it, ensure that workers' representatives are present;
- e. maintain a record of all grievances and remedies for a period of at least 6 years; and
- f. allow access to other judicial or administrative remedies available under the law or through existing arbitration procedures, or collective agreements.

5.4.6.5 The Handler shall inform workers of the grievance mechanism and ensure that this process is easily accessible to them.

5.5 Occupational Health and Safety (OH&S)

Principle: *The Handler identifies potential workplace risks and has safe and healthy working conditions for workers.*

Critical Criteria denoted with *: 5.5.2.2, 5.5.2.4, 5.5.3.1

NOTE: *The criteria in this subsection apply to Retailers as well.*

5.5.1 OH&S Policy, Risk Assessment and Management System

- 5.5.1.1. The Handler shall establish and implement a documented OH&S procedures consistent with ILO C155 and C176, national and local laws and regulations that:
- a. Include OH&S objectives, including a goal of zero severe incidents within three years;
 - b. Apply to all relevant workers and visitors;
 - c. Are communicated to all workers
 - d. Uphold the right of workers to refuse or stop unsafe work without penalty;
 - e. Uphold the right of workers to report incidents of bodily injury or illness without penalty;
 - f. Covers the full scope of the facility's activities including non-routine activities;
 - g. Assigns responsibility and accountability for OH&S to senior management members;
 - h. Identify, assess and monitor potential hazards and health risks to workers (e.g., work environment temperature, stone dust and particle inhalation) on an ongoing basis;
 - i. Include input from relevant workers;
 - j. Identify and institute protective measures to prevent or mitigate accidents and incidents;

- 1477 k. Details safety procedures and relevant standards;
1478 l. Document and report occupational accidents or incidents; and
1479 m. Provide compensation for work-related injuries or illness, including in countries where such
1480 injuries or illness are not covered by a government scheme; and
1481 n. Ensure that all electrical and mechanical equipment is periodically and appropriately
1482 maintained.
- 1483 5.5.1.2 The Handler shall train and educate workers on its OH&S policy and system.
- 1484 5.5.1.3 The Handler shall provide workers with an effective, formal mechanism, such as a joint health and
1485 safety committee, by which they can raise, discuss and participate in the identification and resolution
1486 of OH&S issues.
- 1487 5.5.1.4 The Handler shall monitor, evaluate and record OH&S risks and performance.
- 1488 **5.5.2 Inspections and Monitoring**
- 1489 5.5.2.1 The Handler's representatives, together with workers' OH&S representatives, shall periodically
1490 perform inspections to identify potential hazards and the people who may be affected by them, and
1491 assess the effectiveness of current measures.
- 1492 5.5.2.2* Competent professionals shall conduct and design OH&S monitoring. If a hazard is found, the
1493 Handler shall notify affected worker(s) and review relevant procedures.
- 1494 5.5.2.3 The Handler shall review, and periodically update, procedures, measures, and education material.
- 1495 5.5.2.4* If an accident has occurred, the Handler shall document and report it to a relevant authority in
1496 compliance with applicable laws and shall facilitate investigation.
- 1497 5.5.2.5 The Handler shall keep records of all accidents occurred in its facility, and all inspections and
1498 monitoring results. Documentation shall be provided to the relevant authority and shall be made
1499 available to workers' OH&S representatives, with the exception of confidential medical data.
- 1500 **5.5.3 Emergency Preparedness**
- 1501 5.5.3.1* The Handler shall establish and test an emergency response plan and procedures to avoid and
1502 minimize loss of life, injuries or damage to property, the environment, the health and well-being of
1503 workers, and the community in the case of potential health and safety risks, accidents and
1504 emergencies.
- 1505 5.5.3.2 The Handler shall train workers in emergency response plans and procedures annually.

1506 5.5.3.3 The Handler shall keep a basic first aid kit on the premises.

1507 **5.6 Security**

1508 ***Principle:*** *The Handler ensures the security of all personnel, taking into special consideration the*
1509 *high value of diamonds and the risk of security breaches, theft and violence.*

1510 ***Critical Criteria denoted with *:*** 5.6.2.1, 5.6.3.1, 5.6.3.2, 5.6.4.2, 5.6.4.3

1511 ***NOTE:*** *The criteria in this subsection apply to Retailers as well.*

1512 **5.6.1 Security Policies**

1513 5.6.1.1 The Handler shall have a force and firearms policy aligned with the UN Basic Principles on the Use
1514 of Force and Firearms by Law Enforcement Officials.³⁷

1515 5.6.1.2 The Handler shall have policies and procedures to ensure conformance with the security criteria of
1516 Section 5.6.

1517 **5.6.2 Security Risk Assessment**

1518 5.6.2.1* The Handler shall, on an ongoing basis, assess and document security risks related to:

- 1519 a. its diamond inventory in terms of product theft, tampering, damage or substitution;
- 1520 b. risks to workers, contractors and other people involved in the handling of diamonds; and
- 1521 c. security arrangements (e.g., gaps in location of security personnel, security cameras, and
1522 security presence).

1523 5.6.2.2 The Handler shall update its assessment of security risks every time the conditions in which the
1524 assessment was performed change significantly, and shall follow a credible methodology that at
1525 least shall address:

- 1526 a. security risks for workers and persons in local communities; and
- 1527 b. assessment of the political and security context, and current or potential conflicts on the host
1528 country or communities.

1529 5.6.2.3 A security risk management and monitoring plan shall be implemented, containing measures to
1530 ensure the prevention or mitigation of risks identified by the assessment.

³⁷ United Nations Basic Principles on the Use of Force and Firearms by Law Enforcement Officials
<https://www.ohchr.org/EN/ProfessionalInterest/Pages/UseOfForceAndFirearms.aspx>
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1531 **5.6.3 Security Personnel**

1532 5.6.3.1* Prior to hiring or contracting with security personnel, the Handler shall perform due diligence (or a
1533 good faith effort if security personnel is provided by public security) to avoid hiring security
1534 providers or personnel who have been involved in human rights violations, breaches of international
1535 humanitarian law, or the use of excessive force.

1536 5.6.3.2* Security personnel, whether internal or external, shall be trained on the expected ethical conduct,
1537 respect for human rights, and the Handler's firearms policy prior to starting their duties. In addition,
1538 such training shall be repeated annually. If security is provided by public security forces, the
1539 Handler shall facilitate training to personnel who do not have the appropriate training.

1540 5.6.3.3 If public or private security is used, the security provider shall sign a contract or Memorandum of
1541 Understanding aligned with Voluntary Principles on Security and Human Rights³⁸ and the Handler's
1542 policy on firearms. The document shall specify each party's duties with regard to the security of the
1543 Handler's activities and infrastructure, and the training of security personnel.

1544 **5.6.4 Security Incidents Management**

1545 5.6.4.1 The Handler shall implement a security incidents management plan that documents, investigates,
1546 and take appropriate actions to prevent and stop abusive or unlawful behavior, or any behavior that
1547 goes against Handler's policies, by security personnel.

1548 5.6.4.2* The Handler shall report security incidents caused by security providers to the appropriate authority
1549 and local human rights institutions.

1550 5.6.4.3* In case of an incident, the Handler shall ensure the safety of the victim and provide the needed
1551 medical assistance to affected people.

1552 5.6.4.4 The Handler shall notify relevant stakeholders of its firearms policy and its use of force policy upon
1553 request.

1554 **5.7 Environmental Criteria**

1555 **Principle:** *The Handler actively works to minimize negative impacts on human health and the*
1556 *environment from emissions, effluents and wastes.*

1557 **Critical Criteria denoted with *:** 5.7.1.2, 5.7.1.3, 5.7.1.4, 5.7.1.7

1558 **NOTE:** *The criteria in this Section are not applicable to retailers.*

³⁸ Voluntary Principles on Security and Human Rights <https://www.voluntaryprinciples.org/>
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1559 **5.7.1 Monitoring and Managing Emissions, Effluents and Wastes**

1560 5.7.1.1 The Handler shall establish and implement pollution prevention procedures consistent with national
1561 law and international best practice.

1562 5.7.1.2* The Handler shall not dispose untreated effluents or wastes directly into rivers, lakes, marine waters
1563 or other sensitive water bodies.

1564 5.7.1.3* The Handler shall identify areas of operation at risk of exceeding legal emission, effluent, or waste
1565 thresholds.

1566 5.7.1.4* The Handler shall establish and implement steps and target dates to mitigate risks linked to
1567 emissions, effluents and wastes, including measures to eliminate the risk of leakage or
1568 contamination in the management, storage, transport and treatment of hazardous waste.

1569 5.7.1.5 The Handler shall establish and implement measures for improved hazardous waste and non-
1570 hazardous waste reduction and management that applies a waste mitigation hierarchy (e.g.,
1571 avoidance, recovery and reuse, recycling, composting, disposal) to reduce risks and negative
1572 impacts on humans and the environment.

1573 5.7.1.6 The Handler shall train relevant workers about risks and control measures relevant to emissions,
1574 effluents and wastes at least annually.

1575 5.7.1.7* The Handler shall have procedures related to potential accidental releases or emergencies, including
1576 provisions for worker safety, emergency shut-down procedures, public notification on a timely
1577 basis, cooperation with relevant government agencies, accident mitigation and clean-up.

1578 **5.7.2 Assessment and Management of Water Use**

1579 5.7.2.1 The Handler shall identify the sources from which it draws water and quantify the amount of water
1580 it uses annually.

1581 5.7.2.2 The Handler shall develop and implement a water conservation plan.

1582 5.7.2.3 The Handler shall monitor the effectiveness of its water conservation efforts.

1583 **5.7.3 Climate Neutrality**

1584 5.7.3.1 If the Handler chooses to assert a separate Climate Neutral claim for its own Handling Operation,
1585 per Section 6.1.2, it shall:

- 1586 a. publicly commit to having its Handling Operation achieve climate neutrality – i.e., net zero
1587 impacts – in the two climate change impact categories –i.e., annual RF and accumulated (legacy)
1588 RF, calculated based on Annex A. The commitment must be made and signed by a senior
1589 management representative of the company.
- 1590 b. demonstrate, within one calendar year of initial certification, that its Handling Operation has
1591 achieved climate neutrality in the annual RF impact category, as verified by a qualified third-
1592 party.
- 1593 c. prepare, within one year of certification, written plan to achieve climate neutrality in the
1594 accumulated (legacy) RF impact category.
- 1595 d. demonstrate, by the end of its second 3-year certification term (i.e., six years), that its Handling
1596 Operation has achieved climate neutrality in the accumulated (legacy) RF impact category, as
1597 verified by a qualified third-party (see Annexes A and B).
- 1598
- 1599

6 Public Assertions

6.1 Truthfulness and Transparency

Principle: Producers, Handlers and Retailers are committed to communicating results truthfully and transparently.

Critical Criteria denoted with *: 6.1.1.1, 6.1.1.2, 6.1.1.3, 6.1.1.5, 6.1.2.1, 6.1.2.2, 6.1.2.3, 6.1.2.4, 6.1.3.1, 6.1.3.2

6.1.1. Truthful Assertions and Claims

6.1.1.1* The Producer, Handler and Retailer shall comply with applicable regulatory requirements pertaining to marketing claims when making any public assertions or market claims in connection with this Standard.

6.1.1.2* The Producer, Handler and Retailer shall assure the accuracy and transparency of any public assertions or market claims made in connection with this Standard, and assuming that such assertions or claims have been independently assessed and certified by a qualified third-party certifier. Such assertions and claims shall:

- a. Relate only to diamonds from the Producer's Certified Production Operation, and only to the diamonds from that certified operation ("Certified Diamonds");
- b. Accurately and fully represent a Certified Diamond's provenance, physical characteristics and other documented attributes;
- c. Use only approved certification marks and program trademarks, in conformance with intellectual property rules and other applicable laws; and
- d. For Handlers, accurately reflect its own status as a Certified Handler in the diamond chain of custody.

6.1.1.3* The Producer or Handler may only pass along market claims for Certified Diamonds to the next Handler in the chain of custody if the requirements of this Standard are satisfied.

6.1.1.4 The Producer that does not comply with Section 4.1 may make a business-to-business market claim for Certified Diamonds, but such a claim cannot be passed further down the chain of custody.

6.1.1.5* The Producer, Handler and Retailer:

- a. shall not make any untruthful, misleading or deceptive representation;
- b. shall not make any material omission in the selling, advertising or marketing of any Certified Diamonds; and

c. shall not represent a non-certified diamond as Certified.

6.1.1.6 The Producer, Handler and Retailer shall provide transparency around the following information for diamonds sold, whether Certified or not:

a. Identify whether the diamond is rough or cut;

b. Identify treated diamonds as “treated” or with a more specific description of the type of treatment applied;

c. Identify composite diamonds that are assembled or constructed from two or more parts, along with the identity of the materials used; and

d. Identify reconstructed diamonds.

NOTE: A treated diamond is a diamond that has undergone an extra process or set of processes to improve clarity, alter color, or for another purpose (e.g., irradiation, laser drilling, fracture filling, HPHT, annealing, coatings). A composite diamond contains two or more diamonds fused together, usually in a jewelry setting.

6.1.1.7 In the event that the Producer, Handler or Retailer is handling a mix of Certified Diamonds and non-certified diamonds, any communications regarding certification under this Standard shall only apply to those stones that have been certified, and shall not imply that any non-certified stones are certified.

6.1.2. Allowed Claims and Required Disclosures

6.1.2.1* The Producer whose diamonds achieve certification under this Standard may make the following claims, consistent with Section 6.1.1 and based on meeting the following conditions:

a. Certified Climate Neutral

1) Achieves climate neutrality for the entire annual radiative forcing footprint.

2) Within five years of initial certification, achieves climate neutrality for the entire annual radiative forcing footprint plus the accumulated legacy radiative forcing footprint since the start of business operations.

NOTE: This claim may be made if the stated conditions are met and certified, irrespective of whether the diamond has been certified to the broader requirements needed to make a Certified Responsibly Produced or Certified Sustainable claim.

b. Certified Responsibly Produced Diamond

1) Meets requirements for all critical criteria, except for the requirements of Section 3.1.3.

2) Meets requirements for all non-critical criteria within 12 months of initial certification (or sooner), except for the requirements of Section 3.1.3.

3) Achieves Climate Neutral for the annual radiative forcing footprint within 12 months of initial certification.

4) Achieves Climate Neutral for the accumulated (legacy) radiative forcing footprint within 6 years of initial certification.

c. Certified Sustainable Diamond

1) Meets all requirements for Certified Responsibly Produced Diamonds as stated above.

2) Achieves net zero impacts in at least 8 of the 15 core impact categories within 3 years of initial certification.

3) Achieves net zero impacts in at least 12 of the 15 core impact categories within 6 years of initial certification.

6.1.2.2* The Producer shall publicly disclose its independently certified LCA impact profile results, either on a per rough carat or per gross production basis, for each applicable environmental and human health category.

6.1.2.3* The Handler whose Handling Operation has been assessed under this Standard and found to be in conformance:

a. may pass along relevant claims for Certified Climate Neutral, Responsibly Produced, or Sustainable Diamonds consistent with Section 6.1.1 and 6.1.2.1.

b. may claim to be a “Certified Chain of Custody Handler.” The word “Handler” can be substituted with a more descriptive term, such as “cutter.”

6.1.2.4* The Handler whose Handling Operation has been assessed under this Standard and found to be in conformance may make provenance claims for other diamonds in addition to Certified Diamonds covered under this Standard if all chain of custody tracking and testing criteria in Section 4 are met for such diamonds. However, such non-certified diamonds shall not be eligible to be identified as Certified Diamonds or carry the claims described under Criterion 6.1.2.1.

6.1.2.5 The Jewelry Manufacturer who has met all of the Handler requirements of this Standard, and who places Certified Diamonds in a setting made with gold, platinum, silver or palladium that has been certified to be conformant with the SCS Recycled Content Standard may additionally make the applicable claim, “Certified Responsibly Produced Jewelry” or “Certified Sustainable Jewelry,” (depending on the level achieved by the Certified Diamond), provided that all components in the jewelry item are certified.

1691 6.1.2.6 The Retailer whose Retail Operation has been assessed under this Standard and found to be in
1692 conformance may make claims for Certified Diamonds consistent with Section 6.1.1 and 6.1.2.1,
1693 and in addition, may claim to be a “Certified Retailer.”

1694 **6.1.3. Documentation for Transfer or Sale of Certified Diamonds**

1695 6.1.3.1* The Producer shall apply the following information, issued upon successful completion of
1696 certification, to shipping documents, invoices, and other business documents used in the sale or
1697 transfer of Certified Diamonds:

- 1698 a. unique Certified Production Operation certification number;
- 1699 b. approved certification mark (or market claim and description);
- 1700 c. unique database identifier(s) for each Certified Diamond; and
- 1701 d. unique tracking number conveying Certified Diamonds.

1702 6.1.3.2* The Handler and Retailer shall apply the following information, issued upon successful completion
1703 of certification, to shipping documents, invoices, and other business documents used in the sale or
1704 transfer of Certified Diamonds:

- 1705 a. unique Certified Handler certification number;
- 1706 b. unique database identifier(s) for each Certified Diamond;
- 1707 c. unique tracking number conveying Certified Diamonds, if applicable; and
- 1708 d. approved certification mark (or market claim and description).

1709

References

The following documents were consulted during the development of this Standard.

- Aluminum Stewardship Initiative (ASI), *Performance Standard* Version 2 (2017) <https://aluminium-stewardship.org/asi-standards/asi-performance-standard/>
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ANNEXES

1796

CERTIFICATION STANDARD FOR

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SUSTAINABLE DIAMONDS

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SCS 007 Draft Standard V1.0

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Annex A

Quantifying Climate Change Related Impacts

The LCA conducted under Section 3 of the Standard involves the quantification of radiative forcing (RF) – positive or negative – associated with climate forcers over the analysis timeframe. Climate forcers include greenhouse gases (GHGs) and other pollutants, as well as non-emission sources, such as landscape-level changes that affect albedo. Climate forcers can either heat or cool the atmosphere (i.e., positive or negative).

The assessment scope includes current annual climate forcers (i.e., most recent 12 months for which data are available), plus the accumulated “legacy” emissions (i.e., the portion of long-lived historic emissions that remain in the atmosphere). The results are reported under two climate change impact categories – *annual radiative forcing*, which includes all contributions to climate change from a single year’s Production Operation activities, and the *accumulated legacy radiative forcing*, which includes the remaining background (i.e., legacy) levels of GHGs from prior years’ emissions.

The emissions included in the calculations are those directly attributable to the Producer Operation being certified, and those indirectly attributable to it through purchases of electricity, goods and services, transportation of goods, business and commute travel, etc. – consistent with the WRI GHG Protocol Accounting Scope 1, 2 and 3 emissions).

The following types of emissions are included: Carbon Dioxide (CO₂), Nitrous Dioxide (N₂O), Methane (CH₄), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF₆), Black Carbon and Organic Carbon, Nitrogen Oxides (NO_x), and Sulfur Dioxide (SO₂).³⁹ Because of their negative RF effects, SO₂ and Organic Carbon are reported separately from other emissions.

The results, initially quantified in units of milli-Watts per meters squared (mW/m²), are then normalized to carbon dioxide forcing equivalents (CO₂fe). CO₂fe provides a comparison of the RF caused by a climate forcer to the RF caused by carbon dioxide at a point in time (e.g., comparing the RF of one kilogram of black carbon to one kilogram of CO₂ over one year).

When data on historic emissions are not available, the Producer extrapolates them by multiplying historic production in carats by a reasonably estimated per-carat emissions factor, or historic facility revenue by a reasonably estimated per-revenue emissions.

The Producer calculates the annual RF and accumulated legacy RF climate change impacts of its Production Operation,⁴⁰ and the effect on RF of any RF reduction instrument purchases, using Equations A.1 and A.2

³⁹ Nitrogen Oxides (NO_x) can act as precursors to the formation of Tropospheric Ozone, a powerful greenhouse gas.

⁴⁰ For purposes of this Standard, “current” refers to the most recent 12-month period for which data are available.

below, and Tables A.1 and A.2. Results in CO₂fe are calculated by multiplying the value calculated in mW/m² by 564 million tons CO₂ per mW/m².

Equation A.1. Radiative forcing calculation for the current annual RF impact category

$$\text{Current annual RF contribution} = (i + j + k)_{tF}$$

Where:

- tF is the year F, the timeframe of analysis – in this case, the most recent 12 consecutive months of Production Operations for which data are available.
- i represents the Scope 1, Scope 2 and limited Scope 3 emissions (related to employee commute, business travel, and emissions from fuel production) of GHGs and other emissions-based climate forcers
- j represents any additional non-emissions based climate forcers associated with the Production Operation contributing to its current annual impact
- k represents the positive RF due to the reduction in negative climate forcers

Equation A.2. Radiative forcing calculation for the accumulated legacy RF impact category

$$\text{Accumulated Legacy RF contribution} = \sum_{\text{year } t_0}^{\text{year } tF-1} (i + j + k + d)$$

Where:

- $\sum_{\text{year } t_0}^{\text{year } tF-1}$ represents the sum of all years from the beginning of Production Operations to the year prior to the current year
- j represents the Scope 1, Scope 2 and limited Scope 3 emissions (related to employee commute, business travel, and emissions from fuel production) for each year from year t_0 to year $tF - 1$
- i represents additional non-emissions based climate forcers associated with the Production Operation contributing to its impact for each year from year t_0 to year $tF - 1$
- k represents the reduction in negative climate forcer emissions resulting from the Production Operation for each year from year t_0 to year $tF - 1$
- d represents the legacy GHG emissions remaining in the atmosphere for any given year from prior years' emissions associated with the Production Operation. Decay factors for GHG emissions are provided in Table A.1.

Table A.1. RF effect of decaying GHG emissions, as well as pollutant precursors

The "years before current" represents the number of years before the current year in which an emission occurred. Multiplying the emissions in that year times the decay factor gives the RF resulting today from such an emission.

	CO ₂	CH ₄	N ₂ O	NO _x (North America)	NO _x (Europe)	NO _x (South Asia)
Radiative Efficiency [mW m⁻² Tg⁻¹]	0.001772	0.26696	0.385	N/A	N/A	N/A
Atmospheric Lifetime [year]	NA	12.4	121	<3 months	<3 months	<3 months
Years before present (year <i>t</i>₀ to year <i>t</i>_F-1)	CO₂fe per unit mass emitted	CO₂fe per unit mass emitted	CO₂fe per unit mass emitted	CO₂fe per unit mass emitted	CO₂fe per unit mass emitted	CO₂fe per unit mass emitted
1 year before present	1.0	152.4	219.8	438.5	-668.7	1,610.2
2 years before present	0.9	140.6	218.0	108.5	155.1	529.7
3 years before present	0.9	129.7	216.2	101.2	156.6	475.0
4 years before present	0.8	119.7	214.4	93.2	157.6	418.8
5 years before present	0.8	110.4	212.6	84.4	158.2	361.3
6 years before present	0.8	101.8	210.9	80.6	155.7	332.0
7 years before present	0.7	94.0	209.2	76.2	152.8	301.4
8 years before present	0.7	86.7	207.4	71.2	149.5	269.9
9 years before present	0.7	80.0	205.7	65.7	145.9	237.4
10 years before present	0.7	73.8	204.0	59.8	142.1	203.9
11 years before present	0.7	68.0	202.4	59.9	137.9	191.7
12 years before present	0.7	62.8	200.7	59.7	133.6	178.7
13 years before present	0.7	57.9	199.0	59.1	128.9	165.0
14 years before present	0.6	53.4	197.4	58.1	124.1	150.7
15 years before present	0.6	49.3	195.8	56.9	119.1	135.8
16 years before present	0.6	45.5	194.2	55.5	118.2	130.1
17 years before present	0.6	41.9	192.6	53.9	117.1	123.9
18 years before present	0.6	38.7	191.0	52.0	115.9	117.2
19 years before present	0.6	35.7	189.4	49.9	114.5	110.1
20 years before present	0.6	32.9	187.8	47.6	113.0	102.6
21 years before present	0.6	30.4	186.3	45.1	111.4	94.8
22 years before present	0.6	28.0	184.8	43.6	108.1	89.6
23 years before present	0.6	25.9	183.2	42.0	104.7	84.2
24 years before present	0.6	23.9	181.7	40.2	101.3	78.4
25 years before present	0.6	22.0	180.2	38.2	97.7	72.4
26 years before present	0.6	20.3	178.8	36.9	95.0	71.6
27 years before present	0.6	18.7	177.3	35.4	92.2	70.7
28 years before present	0.6	17.3	175.8	33.8	89.3	69.5
29 years before present	0.6	15.9	174.4	32.1	86.4	68.1
30 years before present	0.6	14.7	172.9	30.3	83.5	66.5
31 years before present	0.5	13.6	171.5	29.9	81.3	65.7
32 years before present	0.5	12.5	170.1	29.4	79.2	64.8
33 years before present	0.5	11.5	168.7	28.9	77.0	63.7
34 years before present	0.5	10.6	167.3	28.2	74.7	62.5
35 years before present	0.5	9.8	165.9	27.5	72.4	61.1
36 years before present	0.5	9.1	164.6	27.0	70.1	59.7
37 years before present	0.5	8.4	163.2	26.5	67.8	58.1
38 years before present	0.5	7.7	161.9	25.8	65.4	56.5
39 years before present	0.5	7.1	160.6	26.4	62.9	54.8
40 years before present	0.5	6.6	159.2	26.9	60.5	53.0

Table A.2. RF effect for short-lived climate pollutants

	Radiative Efficiency [$\text{mW m}^{-2} \text{Tg}^{-1}$]	Atmospheric Lifetime [year]	CO ₂ e per unit mass emitted
BC (North America)	62.9	<3 months	35,908.0
BC (Europe)	60.4	<3 months	34,480.8
BC (South Asia)	88.4	<3 months	50,465.3
OC (North America)	-1.93	<3 months	-1,101.
OC (Europe)	-1.99	<3 months	-1,136.0
OC (South Asia)	-5.04	<3 months	-2,877.2
SO ₂ (North America)	-6.8	0	-3,881.9
SO ₂ (Europe)	-6.8	0	-3,881.9
SO ₂ (South Asia)	-6.8	0	-3,881.9

Annex B

Types of Projects Approved for Reducing Radiative Forcing and Achieving Other Life Cycle Co-Benefits

In addition to reducing its own Scope 1, 2, and 3 climate change impacts, the Producer can work to reduce its climate footprint and progress toward climate neutrality (i.e., net zero impacts in the annual RF and accumulated legacy RF climate change impact categories) in two ways: 1) the purchase of carbon offset credits; and 2) investment in RF reduction projects. In some cases, these measures may also result in measurable co-benefits (i.e., reduced adverse impacts) in other life-cycle impact categories. This Annex provides further information about these two options.

1 Purchase of Approved Carbon Offset Credits

Projects verified by a third party under any of the following internationally-recognized carbon offset schemes are recognized under the Standard.

- Clean Development Mechanism (Certified Emission Reductions)
- Joint Implementation (Emissions Reduction Units)
- EU Allowances
- Gold Standard
- Verified Carbon Standard
- Climate, Community and Biodiversity Alliance Standard
- American Carbon Registry
- Climate Action Reserve
- California Cap and Trade Program

To be counted toward the climate neutrality goals of this Standard, the overall climate benefits (i.e., RF reduction) achieved through the purchase of such offsets are quantified based on methods described in Annex A, while co-benefits (e.g., reduced air pollution) are quantified based on methods described in Annex C.

2 Investment in Approved RF Reduction Projects

The Producer may invest directly in an RF Reduction project, verified by a third party. The parties involved and requirements for such projects are described herein.

2.1 Involved Parties

The interested parties involved in the implementation of an RF Reduction Project are:

- The project proponent, who is responsible for implementation; and

- 1882 • The project funder(s), who provides the funding.

1883 The project proponent and project funder may be the same entity.

1884 The Producer may choose to directly invest in the project, in which case it is considered a project funder.
1885 Alternatively, the Producer may acquire RF Reduction credits from the project funder or its authorized
1886 intermediary.

1887 **2.2 Project Methodology**

1888 The project proponent’s methodology for analyzing the project’s RF reduction and any co-benefits, including
1889 data collection requirements, monitoring requirements, determination and quantification of relevant climate
1890 forcers,⁴¹ evaluation of other co-benefits and/or trade-offs, and boundary conditions, should be consistent with
1891 the methods described in Annexes A and C.

1892 **2.3 Project Plan**

1893 The project proponent develops a written project plan, including:

- 1894 • The project title, its purpose and objective;
- 1895 • Its location and conditions prior to project initiation;
- 1896 • Project methodology used to calculate RF reductions and mitigation of other impacts;
- 1897 • Description of how the project proponent plans to achieve RF reductions and mitigate impacts;
- 1898 • Timeline for project initiation, termination, frequency of monitoring and reporting, and other relevant
1899 activities in each step of the project;
- 1900 • The technologies, services, products, and other activities used in the project;
- 1901 • RF reductions projected to occur as a result of the RF project for each year over its operating
1902 timeframe;
- 1903 • A description of the other co-benefits and any trade-offs on the environment and human health;
- 1904 • Identification of risks that might affect the RF reductions and other impact mitigations achieved; and
- 1905 • Roles and responsibilities of various personnel and other interested stakeholders.

1906 **2.4 Defining Project and Baseline Scenarios**

1907 “Project” and “Baseline” scenarios are modeled, which include projections of RF changes and environmental
1908 and human health impacts.

⁴¹ Climate forcers include greenhouse gases (GHGs) and other pollutants, as well as non-emission sources, such as landscape-level changes the affect albedo.

1909 The project proponent establishes criteria and procedures for identifying and assessing potential baseline
1910 scenarios, and for demonstrating equivalence in the type and level of activity of products or services provided
1911 between the project and baseline scenarios. The project proponent explains any significant differences between
1912 the project and baseline scenarios. In developing the baseline scenario, the project proponent select
1913 conservative assumptions, values, and procedures that help ensure that RF reductions and mitigations are not
1914 over-estimated.

1915 **2.5 Identifying and monitoring climate forcers**

1916 The project proponent identifies climate forcers relevant to the project, and opportunities for reducing RF
1917 through the project. Climate forcers are: 1) controlled by the project proponent –i.e., the operation is under the
1918 direction and influence of the project proponent through financial, policy, management or other instruments;
1919 2) related to the RF project – i.e., the climate forcer source has material or energy flows into, out of, or within
1920 the project; or 3) affected by the RF project – i.e., the climate forcer source is influenced by a project activity,
1921 through changes in market demand or supply for associated products or services, or through physical
1922 displacement.

1923 “Related” climate forcers are causally linked to a RF project, generally upstream or downstream from the
1924 project, and either on or off the project site. Related climate forcers also can include activities related to design,
1925 construction and decommissioning of a project. “Affected” climate forcers are generally off the project site.

1926 **2.6 Monitoring or estimating relevant climate forcers**

1927 The project proponent establishes criteria and procedures for regularly monitoring or estimating climate
1928 forcers.

1929 **2.7 Calculating RF reductions for the project**

1930 The project proponent quantifies RF reductions achieved for each relevant climate forcer in the project and
1931 baseline scenarios.

1932 When relying upon highly uncertain data and information, the project proponent selects conservative
1933 assumptions and values to ensure that the quantification does not lead to over-estimation of achieved RF
1934 reductions, provided the estimate is still reasonable.

1935 **2.8 Validation and Verification**

1936 The project proponent has the RF project plan validated, and the RF reduction achievements from
1937 implementation verified, by an independent third party. The project proponent presents an RF reduction
1938 assertion for the project to the validator or verifier.

1939 **2.9 Project Report Requirements**

1940 The project proponent prepares a project report that includes:

- 1941 • The name of the project proponent;
- 1942 • A brief description of the project and project methodology;
- 1943 • An assertion of RF reductions achieved to date (if applicable), and projected future reductions;
- 1944 • A description of the baseline and project scenarios and demonstration that the RF reductions and co-
- 1945 benefits are additional to what would have happened in the absence of the project;
- 1946 • The date of the report;
- 1947 • The time period covered; and
- 1948 • An independent third-party validation or verification statement.

1949 **RESOURCES:**

- 1950 • <https://www.iso.org/standard/68505.html>

1951

Annex C

Quantifying LCA Results for the Production Operation

1. Overview

1.1 LCA Requirements

Life Cycle Assessment (LCA) conducted in conjunction with the standard conform to ISO 14044 and to the requirements of this Annex.

1.2. LCA Impact Categories

The LCA considers each stage, or “node,” along the cause-effects chain of events in which “stressors” lead to “effects.” These effects, are referred to either as “midpoints” or “endpoints,” depending on where they occur in the chain of events, and include impacts on the environment or human health.

There are approximately 30 potential environmental and human health impact categories in which impacts from industrial systems are commonly observed. For any given industry, the “core impact categories” are those that are potentially associated with that industry. At a minimum, for the diamond sector, there are 15 such categories. The LCA results for diamonds cover these impact categories, calculated using the methods provided in the equations in this Annex.

The 15 core impact categories are listed in Table C.1 (middle column), along with the general groupings in which they fall (left column), and the options available for achieving “net zero impacts” in each category (right column). Where “site-generic” and “site-specific” methods are provided for many categories, the user may choose either method. The site-generic method calculates “potential impacts” based on life cycle inventory data. The site-specific method uses additional site-specific characterization data to focus on that fraction of emissions that actually causes impacts. As a result, site-specific impact results are more accurate and often lower than potential impact results.⁴²

⁴² Eligibility for participation during the pilot period includes these caveats:

- If a Production Operation is associated with impacts to wetlands, then the Producer shall not be eligible for provisional certification. There is no data available to establish any baseline against which any LCA comparison could be made.
- If annual average PM_{2.5} concentrations exceed 35 µg/m³ (i.e., the World Health Organization Guideline Interim Target 1) in the region of the Production Operation, then the Producer shall not be eligible for provisional certification.
- If the 8-hour average ozone concentration exceeds 1,000 µg/m³ per 8 hour average (i.e., a level 10-times the ozone level established by the World Health Organization) for more than 10 days in a year in the region of the Production Operation, then the Producer shall not be eligible for provisional certification.
- If hazardous air emissions are released in connection with the Production Operation, then the Producer shall not be eligible for provisional certification.

1975

Table C.1. LCA Groups, Core Impact Categories and Options for Achieving “Net Zero”

<i>Groups</i>	<i>Core Impact Categories affecting the environment or human health</i>	<i>Options for reaching “Net Zero Impacts”</i>
Resource Depletion	Non-Renewable Energy Use	Offsets allowed
	Water Resources	Offsets allowed only if depletion of freshwater reserve base is negligible
Physical Disturbance	Terrestrial Disturbance	Mitigation (offsets not allowed)
	Freshwater Disturbance	Mitigation (offsets not allowed)
	Marine Disturbance	Mitigation (offsets not allowed)
	Threatened and Endangered Species Loss (by Species)	Mitigation (offsets not allowed)
Impacts from Emissions to Airsheds	Regional Acidification	Offsets allowed
	Smog	Offsets allowed
	Soot (PM 2.5)	Offsets allowed
	Hazardous Air Emissions (by emission)	Mitigation (offsets not allowed)
Impacts from Effluents and Releases to Water and Land	Accumulated Ocean Acidification	Offsets allowed
	Eutrophication	Mitigation (offsets not allowed)
	Eco Toxicity and Water Quality Impacts (by release)	Mitigation (offsets not allowed)
Climate Change Impacts	Annual Radiative Forcing	Offsets allowed
	Accumulated (Legacy) Radiative Forcing ⁴³	Offsets allowed

1976

1.3 Characterization Factors

1977 Two types of characterization factors are used –Stressor Characterization Factors (SCFs) and Midpoint
 1978 Characterization Factors (MCFs).

- 1979
- SCFs represent the relative potency of individual stressors that contribute to a common midpoint or
 1980 endpoint effect. The SCF establishes an equivalency among these stressors, making it possible to
 1981 aggregate inventory results to establish results.
 - MCFs characterize the temporal nature, spatial extent, severity, and reversibility of impacts at specific
 1982 environmental or human health midpoints or endpoints. The models from which MCFs are derived
 1983 represent the following characteristics of the midpoint or endpoint node of the corresponding category
 1984 indicator (based on ISO 14044 §4.4.2.2.4):
 1985
 - Conditions of the midpoint or endpoint.
 1986

⁴³ Also referred to as radiative forcing from “legacy” emissions – greenhouse gas emissions from the past that are still present in the atmosphere and are therefore influencing climate today

- 1987 ○ The relative magnitude of the assessed change in the midpoint or endpoint, accounting for the
 - 1988 severity of damage, depletion, or disturbance (i.e., measuring the intensity of a specific
 - 1989 midpoint or endpoint).
 - 1990 ○ Spatial aspects, accounting for geographic area and scale of the midpoint or endpoint.
 - 1991 ○ Temporal aspects, accounting for characteristics such as the duration, residence time,
 - 1992 persistence, and timing of onset, of the midpoint or endpoint.
 - 1993 ○ Reversibility of the environmental mechanism.
 - 1994 ○ Characterization of any relevant thresholds, accounting for the degree to which established
 - 1995 human health and environmental threshold(s) have been or are projected to be exceeded.
- 1996 To include these aspects in the MCFs, characterization models integrate environmental and human health data.

1997 **1.4 Study Boundaries**

1998 The life cycle stages addressed in the LCA include Scopes 1, 2 and 3, including all processes involved in:

- 1999 • diamond production (mined or laboratory-grown);
- 2000 • the production of electricity used in diamond production (including generation, transmission,
- 2001 infrastructure);
- 2002 • purchased, non-ancillary goods and services;
- 2003 • capital goods;
- 2004 • transportation of goods (upstream and downstream);
- 2005 • business commute and travel;
- 2006 • treatment, storage and disposal of wastes streams produced during diamond production;
- 2007 • downstream processing (cutting and polishing);
- 2008 • leased assets and franchises (if applicable); and
- 2009 • investments (if applicable).

2010

2011 LCA results in some categories may be estimated if site-specific data are unavailable, and as such may lack

2012 site-specific accuracy.

2013 **1.5 LCA Impact Statement**

2014 An LCA impact statement is prepared that summarizes the LCA indicator results, by impact category and by

2015 life cycle stage, as well as any significant limitations in results. The statement is accompanied by an LCA

2016 technical report that describes the assumptions, data sources, methodology, and criteria for the exclusion of

2017 inputs and outputs.

2018

2019 **1.6. Abbreviations Used in this Annex**

BOD	Biological Oxygen Demand	L	Liter
CH₄	Methane	LCA	Life Cycle Assessment
CO₂	Carbon Dioxide	MCF	Midpoint Characterization Factor
COD	Chemical Oxygen Demand	MEDA	Mine Ecosystem Disturbance Area
COPCs	Chemicals of Potential Concern	NOAA	National Oceanic and Atmospheric Administration
ERF	Exposure Risk Factor	NO_x	Nitrogen Oxide
FWAU	Freshwater Analysis Unit	O₂	Oxygen
FWDF	Freshwater Disturbance Factor	PM	Particulate Matter
FWM	Freshwater Monitoring	RfC	Reference Concentration
GLO	Ground Level Ozone	SCF	Stressor Characterization Factor
HEC	Hazardous Environmental Contaminant	TDF	Terrestrial Disturbance Factor
IARC	International Agency for Research on Cancer	TEBC	Terrestrial Ecosystem Baseline Conditions
IUCN	International Union for the Conservation of Nature	VOCs	Volatile Organic Compounds
IUR	Inhalation Unit Risk	WHO	World Health Organization

2020 **2. LCA Impact Categories**

2021 **2.1 Energy Resource Depletion**

2022 The indicator characterizes the total nonrenewable energy content. The unit of measure is expressed in units
2023 of energy (e.g., Gigajoule). The indicator equation for calculating Non-renewable Energy Resource Depletion
2024 is shown in Equation C.1

2025 **Equation C.1. Indicator equation for Non-renewable Energy Use.**

Non-renewable Energy Use =

$$\sum_j \sum_n (\text{Non-renewable Energy Resource Consumption} \times \text{SCF}_n)$$

Where:

- j represents all unit processes in the product system
- n represents the total number of types of energy resources consumed by a unit process
- SCF is the equivalent energy content between energy resources

- 2026 All energy resources consumed in a non-renewable fashion are included in category indicator results. “Non-
 2027 renewable energy resource consumption” is defined as a case in which the consumption rate of the resource
 2028 exceeds the accretion rate. This includes consumption of:
- 2029 • All fossil fuels (natural gas, oil, and coal);
 - 2030 • Uranium;
 - 2031 • Forest wood resources (including wood and wood products such as black liquor and hog fuel), used
 2032 for all purposes, if the rate of harvest has exceeded the rate of regrowth over the last 10 years;⁴⁴ and
 - 2033 • Other biotic resources, if the regrowth rate of the resource is smaller than the amount of harvest within
 2034 a specific time horizon relevant to the energy resource.
- 2035 Only direct approaches to reducing energy use can be recognized as having a reduced LCA result (e.g.,
 2036 electricity use during off-peak nighttime hours).
- 2037 If companies have in place plans to reduce emissions within a clearly defined timeframe, this can be used to
 2038 reduce emissions in their LCA. For example, if a company is installing an upgraded boiler with improved
 2039 efficiency on a set date, they can project lower energy use results after that date.
- 2040 Some renewable energy resources are unable to provide energy as a stand-alone source when deployed in the
 2041 electricity grid, but rather must be combined with non-renewable energy resources in order to provide a
 2042 continuous source of energy. If intermittent renewable energy resources are included in the scope of the LCA
 2043 study, the consumption of non-renewable energy resources at the standby power plants must also be included.
 2044 In practice, this entails including all resources consumed at the level of the local electricity grid. (For example,
 2045 due to intermittency, wind power plants must be backed up with “standby” power plants often fueled by non-
 2046 renewable energy resources. These standby plants must increase energy output to compensate for the
 2047 variability of wind resources. The consumption of non-renewable energy resources in these standby plants will
 2048 increase as the penetration of wind energy increases in regional electricity grids.)
- 2049 The SCF is the energy content of each energy resource, in units of Gigajoules of energy per unit of feedstock.
 2050 The lower heating value (also called net calorific value) for all feedstocks must be used consistently for all
 2051 energy resources as the SCFs. The data sources used as the basis of SCFs are described in the LCA report. The
 2052 following characteristics should be taken into account in calculating the SCFs:
- 2053 • The type of feedstock;
 - 2054 • The data source used to derive the energy content;
 - 2055 • The region in which the feedstock is produced;
 - 2056 • The grade of the feedstock (e.g., the coal assay);
 - 2057 • The volumetric density of the feedstock; and

⁴⁴ This period of 10 years is a typical period of time used to evaluate the sustainability of harvest rates in a given forest management regime.

- Whether the energy content is based upon the higher or lower heating value.

These characteristics vary for the same feedstock from different sources, and from the same sources at different points in time. The effect on final LCA results of this variability should be considered and examined in a sensitivity analysis. Region, time, and grade-specific values for energy content for specific feedstocks are preferred to be used.

2.2 Water Resources

This impact category considers the net consumption of freshwater that results in a depletion of its water reserve base. Results are calculated using Equation C.2 below, in units of volume of water consumed (e.g., liters or gallons).

Equation C.2. Indicator equation for net freshwater consumption

Net Annual Freshwater Consumption

$$= \sum_i \text{Withdrawals} - \sum_j \text{Returns}$$

Where:

- Net Annual Freshwater Consumption is the net water consumption for the unit process in a 12-month period.
- *i* refers to all withdrawals in the same 12-month period
- *j* refers to all returns in the same 12-month period
- Returns are to the same water source

In general, net freshwater consumption includes the water withdrawn from surface water or groundwater source that is not directly returned. Consumption of saltwater is not included. Some flows of net freshwater consumption included are:

- Freshwater withdrawn from a hydrological reserve, but returned to another (e.g., water pumped from a groundwater aquifer, but returned to a surface water supply in a different hydrological reserve);
- Freshwater withdrawn and subsequently evaporated;
- Freshwater withdrawn and then incorporated into products or co-products;
- Freshwater withdrawn and then incorporated into waste products (e.g., water used and stored in treated wastes);
- Freshwater withdrawn and subsequently stored without being returned to its source (note: future releases from storage back to the source would count as an offset of water withdrawals); and
- Precipitation that is prevented from being returned to the environmental at an acceptable level of water quality (e.g., captured stormwater runoff).

2081 Freshwater resource depletion can be considered negligible if the total withdrawals from a specific source are
2082 negligible compared to the withdrawals from that reserve base from all users. This shall be evaluated using
2083 the requirements of Annex E. For example, freshwater withdrawn from a municipal source, if treated before
2084 being returned, is considered a negligible use.

2085 **2.3 Terrestrial Disturbance**

2086 This impact category addresses disturbance to the terrestrial area of an ecosystem, and relates to ISM
2087 Production Operations. The result is the disturbed area, calculated using Equation C.3.

2088 **Equation C.3. Terrestrial Disturbance.**

<p style="text-align: center;">Terrestrial Disturbance = $TDF \times years \times area$</p> <p>Where:</p> <ul style="list-style-type: none">• Area is the total area (in hectares or acres) of the mine ecosystem disturbance area (MEDA)• Years is the total number of years the mine has operated• Terrestrial Disturbance Factor (TDF) is a factor from 0 to 1, with 1 representing a fully disturbed condition• Terrestrial Disturbance is evaluated in equivalent fully disturbed hectares (or acres)

2089 The terrestrial disturbance factor “TDF” is a unitless number from 0% – undisturbed, with no difference
2090 between the mine ecosystem disturbance area (MEDA) and terrestrial ecosystem baseline conditions (TEBC)
2091 – to 100%, i.e., “fully” disturbed” (see Annex D). It is a spatially-averaged value of disturbance across the
2092 entire area affected by mining. There are three classes of areas affected by mining, each with a different TDF
2093 value:

2094 • *Sites directly affected by physical disturbance related to mining.* This includes all components of the
2095 mine infrastructure, including pits, buildings, roads, airstrips, holding ponds, and other infrastructure.
2096 The spatial extent of these areas is measured using satellite data. Any data gaps are filled using
2097 reasonable data. It can be assumed that areas directly affected by physical activities have a 100%
2098 disturbance level. Any use of a different TDF than 100% must be justified.

2099 • *Buffer zones surrounding directly affected sites.* Areas in-between and surrounding mine infrastructure
2100 are adversely affected by impacts like “edge” effects and fragmentation. The extent of these area can
2101 be estimated by assuming that buffer effects cause impacts to within 50 meters of mine operations, but
2102 no further. It can be assumed that the TDF in buffer zones is 100%. Site data can be used to establish
2103 a different value.

2104 • *A larger area of ecosystem if the mine fragments contiguous element(s) of the larger landscape.* If the
2105 mine presents significant obstruction of wildlife corridors or impedes the continuity of the larger
2106 landscape, much larger areas may need to be included, reflecting the large potential geographic scale
2107 of fragmentation impacts. Most mines are relatively small areas in larger landscapes, and such large

2108 landscape-level fragmentation should only be considered if there is strong reason and justification to
2109 do so.

2110 Site measurements used to assess TDF values in buffer zones are completed based upon a monitoring plan.
2111 Evaluating the TDF then follows these steps:

- 2112 • A portion of the buffer zones is chosen where data can be collected. These “analysis units” should be
2113 representative of the conditions across all buffer zones.
- 2114 • Within each analysis unit, measurements of ecological conditions are assessed within monitoring plots
2115 with transects in-between each.
- 2116 • Measurements completed at monitoring plots and transects should meet the following requirements:
 - 2117 ○ All terrestrial conditions included in the TEBC are assessed.
 - 2118 ○ Measurements are directly comparable between the TEBC and in the analysis unit (e.g.,
2119 biomass per hectare, number of trees per hectare).
 - 2120 ○ Plots are placed randomly, at least one kilometer apart, and no more than 20 kilometers apart.
 - 2121 ○ Each plot can include multiple types of sub-plots contained within a given area. The smallest
2122 sub-plot plot within a plot is no smaller than 400 m².⁴⁵ The plot design is described in the
2123 monitoring plan.
 - 2124 ○ Plots and transects are fixed in space and re-sampled at least every 10 years.
 - 2125 ○ Measurements of ecological conditions within plots across an analysis unit are used only if
2126 the 95% confidence interval of the result is $\pm 50\%$.

2127 *NOTE. If the 95% confidence interval of measurements of conditions across all plots is greater than $\pm 50\%$ relative to the*
2128 *mean of the measurement values across all plots, then additional plots must be sampled, or a stratified sampling should be*
2129 *performed by creating multiple analysis units in which there is less sample heterogeneity.*

- 2130 • Each measured condition is averaged across each analysis unit, and the deviation of conditions in the
2131 analysis unit as compared to the TEBC is evaluated using Equation C.4. The TDF is then calculated
2132 as an average of all deviation measurements across the analysis unit, per Equation C.5. The TDF for
2133 all buffer zones is the area-weighted average across all analysis units.

2134

⁴⁵ This is the area of the sub-plot with a radius of 24.0 ft (7.32m) defined in the US FS FIA Phase 2 / Phase 3 plot design.

<http://www.fia.fs.fed.us/library/fact-sheets/data-collections/Sampling%20and%20Plot%20Design.pdf>

The Canadian Forest Inventory also recommends a ground plot design of 400m² to measure attributes of trees; Canada's National Forest Inventory Ground Sampling Guidelines (October 2008).

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Equation C.4. Assessing deviation in a condition in the analysis unit.

$$\text{Deviation in a Condition} = \left| \frac{\text{Avg. condition in analysis unit} - \text{Avg. condition in TEBC}}{\text{Avg. condition in analysis unit}} \right|$$

Where:

- TEBC is the terrestrial ecosystem baseline conditions
- Average measurements of conditions are evaluated across all plots. The deviation in a measurement has a minimum of 0%, when TEBC is the same as in the analysis unit; and a maximum of 100%, when alteration in conditions between the TEBC and analysis unit is over 100%.

Equation C.5. Equation for assessing the TDF.

$$TDF = \frac{\sum_i \text{Deviation in Condition } i}{\text{Total number of Conditions}}$$

Where:

- i represents all conditions analyzed

NOTE: Other approaches to calculate the deviation can be used, provided the approach is based upon a methodology that has been reviewed by a panel of at least three experienced ecologists.

2.4 Freshwater Disturbance

This impact category addresses disturbance to freshwater bodies by a mining Production Operation within an ecosystem, such as watercourses, lakes and wetlands. The characterization is limited to the evaluation of the current freshwater disturbance levels and trends in each affected freshwater system.

Equation C.6. Freshwater Disturbance.

$$\text{Freshwater Disturbance} = FWDF \times \text{area}$$

Where:

- Area is the total area of the freshwater disturbance
- Freshwater Disturbance Factor (FWDF) is a factor from 0 to 1, with 1 representing a fully disturbed condition
- Freshwater Disturbance is evaluated in equivalent fully disturbed area

Mining can contribute to freshwater disturbance in several ways, including: direct disturbance of hydrologic conditions from excavation or dewatering; mining practices leading to ongoing excess sediment delivery into

2166 local watercourses; and activities leading to direct physical changes in the channel shape, depth, and contour,
2167 of local watercourses.

2168 *NOTE. These impacts will likely be linked with water resources and water quality impacts associated with the same*
2169 *mining activities, but may be independent, as when a channel contour is changed, altering streamflow characteristics and*
2170 *local habitat, as well as increasing local sediment loading.*

2171 **2.4.1 Identifying Potentially Impacted Freshwater Bodies**

2172 Freshwater disturbance can vary widely for the freshwater bodies in different regions. Furthermore, multiple
2173 freshwater bodies are often affected. The potentially impacted freshwater bodies are based on:

- 2174 • Locations of mining-related activities and infrastructure.
- 2175 • The watersheds in which mining activities and other infrastructure are located. Datasets that provide
2176 watershed definitions at a spatial granularity of approximately 5,000-50,000 acres are used to identify
2177 the applicable watersheds. If data at this granularity are not available, the HydroSheds dataset⁴⁶ is used
2178 as a default.

2179 Specific data from measurements of ecological conditions within a freshwater body can be used to evaluate
2180 disturbance levels using the following approach:

- 2181 • Measurements of ecological conditions are assessed based on data collected at all freshwater
2182 monitoring (FWM) sites within a specifically defined section or reach of the freshwater body
2183 considered representative for potential disturbance, referred to as a “freshwater analysis unit”
2184 (FWAU). The specific approach used to define FWAU, and the justification for doing so, shall be
2185 included in the LCA report.

2186 *NOTE: These same sites can be used to measure water quality (see Annex E).*

- 2187 • The deviation in the measurement of a specific ecological condition is evaluated by considering
2188 conditions across the entire FWAU in comparison to the baseline ecological conditions, referred to as
2189 the freshwater “baseline.” The deviation from baseline is calculated based on the approach described
2190 in section 2.4.2. below.
- 2191 • The Freshwater Disturbance Factor (FWDF) is calculated (see section 2.4.2). If the FWDF value is
2192 larger than the expected uncertainty in measurement based on the standard deviation (i.e., statistically
2193 significant), freshwater disturbance is considered relevant in the watershed.
- 2194 • The trend in freshwater disturbance is evaluated based on an examination of the trend in ecological
2195 conditions over at least a 10-year period.

⁴⁶ United Nations FAO HydroSheds model; <http://www.fao.org/geonetwork/srv/en/main.home?uuid=9c52166f-2a8e-465d-a14a-f230f38d63f9>

2196 *NOTE. The trend in disturbance can be characterized as recovering, increasing, stable or unknown. Projections*
2197 *of recovery are not allowed due to the inherent uncertainty and variability in recovery of freshwater bodies.*
2198 *Hence there is no calculation for foregone recovery in freshwater bodies.*

2199 **2.4.2 Requirements for Freshwater Monitoring and Calculation of Freshwater Disturbance Factors**

2200 Measurements of ecological conditions within a freshwater body are gathered according to a freshwater trend
2201 monitoring plan, which establishes requirements for monitoring at FWM sites. FWM sites should cover a
2202 representative sample of the potentially impacted freshwater resources, and should cover at least the lengths
2203 of fish-bearing streams with clearly defined FWAUs (at least Class I streams). FWM sites are located
2204 permanently in the same location in order to track trends in aquatic conditions over time. Measurements of
2205 ecological conditions at FWM sites are compared to the same conditions in the baseline.

2206 Sampling at each FWM site within the FWAU includes measurements of:

- 2207 • At least 1 condition based upon species composition (e.g., number or relative abundance of species).
- 2208 • At least 1 condition based upon population characteristics of indicator species (e.g., abundance or
2209 relative proportions).
- 2210 • Water quality conditions, including: turbidity; biological oxygen demand and/or dissolved oxygen
2211 content; presence of hazardous environmental contaminants; and pH.
- 2212 • Siltation and sedimentation rates; and
- 2213 • Water temperature.

2214 Once the measurement of ecological conditions is completed, these conditions are compared to the baseline.

2215 *NOTE. As part of local regulatory requirements, mining operations may have established plans for freshwater trend*
2216 *monitoring, which should satisfy this requirement of the standard.*

2217 To calculate the Freshwater Disturbance Factor (FWDF), ecological conditions are assessed considering
2218 measurements at all FWM sites within the FWAU. The ecological conditions considered in the calculation
2219 should include:

- 2220 • At least 1 condition based upon the age composition of freshwater indicator fish species, if applicable;
- 2221 • At least 1 condition based upon population characteristics of indicator species (e.g., abundance or
2222 relative proportions).
- 2223 • At least 1 condition based upon percentage of diseased freshwater indicator species; and
- 2224 • Conditions related to: channel dimensions; particle size of the stream bed surface and subsurface; and
2225 pool characteristics.

2226 The deviation in each measurement of ecological condition for a freshwater body is calculated using Equation
 2227 C.7. The FWDF calculation then uses the arithmetical average of all deviation measurements (Equation C.8).
 2228 Other approaches for assessing the FWDF, based on the deviation measurements, can be used, provided the
 2229 approach is based upon a methodology that is critically reviewed by a panel of at least three experienced
 2230 ecologists.

2231 **Equation C.7. Equation for assessing the deviation in a condition in the FWAU.**

2232

2233 *Deviation in a Condition*

2234
$$= \left| \frac{\text{Average measurement of condition in FWAU} - \text{Average measurement of condition in baseline}}{\text{Average measurement of condition in baseline}} \right|$$

2235

2236 Where:

- 2237 • FWAU is the freshwater analysis unit within the freshwater system
- 2238 • Average measurements of conditions are evaluated across all FWTM plots in the FWAU. The deviation in a measurement
- 2239 has a minimum of zero, when baseline conditions are the same as in the FWAU, and a maximum of 1 when alteration in
- 2240 conditions from the baseline to FWAU is over 100%.
- 2241

2242 **Equation C.8. Equation for assessing the FWDF.**

2243
$$FWDF = \frac{\sum_i \text{Deviation in Condition } i}{\text{Total number of Conditions}}$$

2244

2245

2246 Where:

- 2247 • i represents all conditions analyzed
- 2248

2249

2250 **2.5 Marine Disturbance**

2251 ISMs operating offshore or in coastal areas will directly disturb marine ecosystems through physical activities
 2252 (e.g., dredging, infrastructure), and indirectly (e.g., from sediment upwelling and changes to coastal erosion
 2253 patterns).

2254 The disturbances should be characterized in terms of their total spatial extent and the disturbance effects they
 2255 cause. The severity of disturbance can be characterized by measuring specific relevant ecological
 2256 characteristics and comparing them to undisturbed baseline conditions, either prior to the initiation of a mine's
 2257 activities, or using a nearby site with similar ecological conditions as representative.

2258 If this impact category is applicable, and results are assessed and characterized, then the assessment and
 2259 characterization approach should be documented and recorded in the LCA report.

2260 **2.6 Threatened and Endangered Species Loss**

2261 The specific threatened or endangered species present in the MEDA is listed in the LCA results, including a
2262 table incorporating all information from Table C.2 for every affected species.

2263 **Table C.2. Required reporting parameters for Threatened Species Losses**

Description	Value Reported
Species Name	<i>Common Name</i> <i>Latin Name</i>
Threatened Category	<i>Threatened, Endangered, etc.*</i>
Affected by Mining	<i>Yes or no</i>
(Only if negative affected by mining) Population Reduction from Mining (percent across entire species population)	<i>Percent</i>

2264 **Shall include a reference of the list used to determine this threatened category (e.g., IUCN Red List).*

2265 The result is calculated for each threatened species that has been negatively affected by mining (Equation C.9.)

2266 **Equation C.9. Threatened or Endangered Species Loss (by species)**

<p style="text-align: center;">Threatened or Endangered Species Losses (single species)</p> $= \frac{\text{Population Reduction from Mining}}{\text{Total Population Across Entire Range}}$ <p>Where:</p> <ul style="list-style-type: none"> Species loss for a single species is evaluated as a number between 0% (mining has reduced species populations by <1%) and 100% (mining has completely extirpated the species). Population reduction from mining is the difference between the species population currently present in the Mine Ecosystem Disturbance Area (MEDA) and the population prior to the onset of mining.

2267 In this equation, the total population across the entire species range can be taken from established databases
2268 such as the IUCN Red List or other data sources, provided they are transparent and peer reviewed.

2269 Evaluating the population reduction from mining will require site surveys of species populations in the MEDA.
2270 This can be completed using established sampling techniques that are relevant to the species being sampled.

2271 **2.7 Regional Acidification**

2272 This impact category represents the deposition of acids into terrestrial and inland water receiving environments
2273 where the buffering capacity threshold of regional soils and water bodies has been exceeded. The indicator
2274 result is expressed in units of mass of sulfur dioxide equivalent (SO₂e) using Equation C.10.

2275

Equation C.10. Indicator equation for calculating regional acidification for a single unit process.

$$\text{Regional Acidification (site-generic-case method)} = \sum_n (\text{Emissions}_n \times \text{SCF}_n)$$

$$\text{Regional Acidification (site-specific method)} = \sum_n (\text{Emissions}_n \times \text{SCF}_n \times \text{MCF})$$

Where:

- Emissions represent the acidifying substances emitted by the unit process, in units of mass
- n is the total number of acidifying substances emitted by the unit process
- SCF represents the potential for release of hydrogen ions from the emitted substance, when compared to sulfur dioxide
- MCF represents the fraction of the emission deposited into regions that are in exceedance of threshold for regional acidification

2276

2277

2278

2279

The SCFs represent the potential of substances to release hydrogen ions into the receiving environment, compared to the potential for sulfur dioxide to release hydrogen ions into the receiving environment – i.e., amount of sulfur dioxide equivalent. The SCFs for several acidifying emissions to air are shown in Table C.3 are used.

2280

2281

Table C.3. Potential for release of hydrogen ions per kilogram of substance, compared to potential for release of hydrogen ions per kilogram of sulfur dioxide. *Source: EDIP97.*⁴⁷

Substance	Formula	SCFs: kg SO _{2e} / kg substance
Ammonia	NH ₃	1.88
Hydrochloric acid	HCl	0.88
Hydrofluoric acid	HF	1.60
Hydrogen sulfide	H ₂ S	1.88
Nitric acid	HNO ₃	0.51
Nitric oxide	NO	1.07
Nitrogen dioxide	NO ₂	0.70
Phosphoric acid	H ₃ PO ₄	0.98
Sulfur dioxide	SO ₂	1.00
Sulfuric acid	H ₂ SO ₄	0.65

⁴⁷ Environmental Design of Industrial Products (EDIP), in Danish UMIP. 1996.
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2282 The MCF is the fraction of an emission deposited into sensitive areas for which the buffering capacity of soils
2283 and/or freshwater water bodies has been exceeded. These sensitive regions are defined as regions in Sensitivity
2284 Classes 1-4 (plus fresh water) according to the Harmonized World Soil Database.⁴⁸ (Soil sensitivity classes are
2285 derived from the soil base saturation and cation exchange coefficient, following the approach in Kuylensstierna
2286 *et al.* (2001).⁴⁹) Inland (fresh) water bodies should be included, where such data are available and considered
2287 “sensitive” for the classification.

2288 The MCF differs by the locations of processes. To determine the fraction of emissions that deposit into
2289 sensitive soils, dispersion modeling is used, where a dispersion plume is modeled and deposition rates assessed
2290 for each region in a grid across all regions, relative to the total emission.⁵⁰ The deposition rate in each grid cell
2291 is then overlaid onto soil sensitivity maps (i.e., from the Harmonized Soil Database). The MCF is the total
2292 emission indicated by the dispersion model to be deposited into sensitive soils, divided by the total emission.

2293 This dispersion modeling uses mathematical and numerical techniques to simulate the physical and chemical
2294 processes that affect substances that may disperse and react in the atmosphere, based on inputs of
2295 meteorological data and source information. The dispersion model selected for use should be publicly available
2296 and derived from peer-reviewed work.⁵¹ Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT)
2297 dispersion model is one such model.⁵²

2298 **2.8 Smog (Ground Level Ozone)**

2299 This impact category considers human health impacts from inhalation of ground level ozone (GLO) at unsafe
2300 concentrations. This impact category is relevant for any process that emits ozone precursors that result in GLO
2301 transporting into regions where the average concentration of GLO exceeds 60 ppb over 8-hour period at any
2302 point during the year.

⁴⁸ <http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/index.html>.

⁴⁹ Kuylensstierna, J.C.I., Henning Rodhe, Steve Cinderby and Kevin Hicks. Acidification in Developing Countries: Ecosystem Sensitivity and the Critical Load Approach on a Global Scale. *Ambio*, Vol. 30, No. 1 (Feb., 2001), pp. 20-28.

⁵⁰ The total deposition of emissions (wet and dry deposition) is calculated by summing the hourly deposition rates, as estimated using dispersion modeling, to obtain a spatial distribution of the annual deposition of acidifying emissions for a unit process. Spatial analysis tools (i.e., GIS tools) are then used to identify regions of sensitive soils into which acidifying emissions deposit. Chemicals depositing into non-sensitive soils are not included in the calculations.

⁵¹ Dispersion models which can be used include those used in regulatory applications by air quality management agencies and by other organizations, such as those used in the United States to determine compliance with National Ambient Air Quality Standards. The US Environmental Protection Agency provides guidance and support for the use of numerous air quality models through the Technology Transfer Network at the Support Center for Regulatory Atmospheric Modeling. This guidance is periodically updated and revised to ensure the new model developments or expanded regulatory requirements are incorporated. Access to the descriptions of air dispersion models routinely used in air quality management studies can be found at the website of the US EPA's Support Center for Regulatory Atmospheric Modeling.

⁵² National Oceanic and Atmospheric Administration: Air Resources Laboratory. HYSPLIT - Hybrid Single Particle Lagrangian Integrated Trajectory Model. <http://ready.arl.noaa.gov/HYSPLIT.php>

2303 *NOTE. The World Health Organization has defined this average concentration of 60 ppb of ozone over an 8-hour period*
 2304 *as a health threshold relevant to sensitive populations. This standard uses the WHO definition as the unsafe level for*
 2305 *exposure to ground level ozone.*

2306 The category indicator is calculated using Equation C.11. Results are expressed in units of kilograms ozone.

2307 **Equation C.11. Indicator equation for GLO Exposure Risks for a single process.**

$$\text{GLO Exposure Risks (Site-specific method)} = \sum_n (\text{Precursor emissions}_n \times \text{SCF}_n \times \text{MCF})$$

Where:

- n represents all ozone precursors emitted by a process.
- SCF_n characterizes the chemical transformation of precursor emissions to O_3 .
- MCF characterizes the severity of pollution in regions into which ozone precursors transport.

2308 Air emissions leading to the formation of ground level ozone are included, which depends on whether the
 2309 receiving environment into which ozone precursors transport is NO_x-limited, or VOC-limited:

- 2310 • If the ambient concentration (measured in parts per million, or ppm) of VOCs are more than roughly
 2311 8 times that of NO_x, the environment should be considered NO_x-limited.
- 2312 • If the concentration of VOCs is less than roughly 8 times that of NO_x, the environment should be
 2313 considered VOC-limited.

2314 Only the limiting precursor is included (i.e., NO_x in NO_x-limited environments, VOCs in VOC limited
 2315 environments). As a default, it can be assumed that receiving environments are NO_x limited, in which case all
 2316 NO_x emissions (nitrogen dioxide, nitrogen monoxide, unspecified nitrogen oxides) are included. The basis of
 2317 determination for whether the receiving environment(s) is NO_x-limited or VOC-limited should be described
 2318 in the LCA report.

2319 The SCF represents the rate of chemical transformation of the ozone precursor emissions into ground level
 2320 ozone, and depends upon meteorological conditions and the background concentrations of both VOCs and
 2321 NO_x, and whether the environment is NO_x or VOC limited:

- 2322 • As a default in NO_x-limited environments, the SCF of one ton O₃/ ton emitted NO_x shall be used.⁵³

⁵³Based on global average conversion rates of NO_x to ozone. [Fry, M.M]. *The influence of ozone precursor emissions from four world regions on tropospheric composition and radiative climate forcing.*
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- 2323 • For VOC-limited receiving environments, the SCF for relevant VOCs should be based upon measures
2324 such as the Maximum Incremental Reactivity.

2325 The SCFs and their basis should be described in the LCA report.

2326 NOTE. For NO_x-limited receiving environments, the ratios of conversion from NO_x to ozone can range
2327 significantly – for instance, from 0.2 to 1.3 kilograms ozone per kilogram of NO_x released.

2328 The MCF characterizes the exposure of humans to GLO at levels exceeding the 60 ppb WHO threshold. The
2329 MCF differs by process, and is assessed using GIS tools and dispersion modeling using Equations C.12 and
2330 C.13.

2331

2332 **Equation C.12. MCF for GLO Exposure Risks for a unit process.**

$$\text{MCF for a unit process} = \sum_{i=1}^n \text{ERF} - \text{GLO}_i$$

Where:

- ERF-GLO_{*i*} is the Exposure Risk Factor for GLO for the *i*th grid cell, calculated using Equation C.13.
- *n* is the number of grid cells in the unit process dispersion domain (i.e., the region into which GLO resulting from precursor emissions from the unit process transit.)
- *i* are grid cells (i.e., spatial subdivisions within the dispersion domain).

2333

2334 **Equation C.13. Calculation for the Exposure Risk Factor for GLO for a single grid cell.**

ERF-GLO for a single grid cell =

$$\sum_{i=1}^{\text{year}} \text{Dispersion (GLO)}_i \times \begin{pmatrix} \text{if } O_3 \text{ ambient}_i \geq 100 \frac{\mu\text{g}}{\text{m}^3} \text{ then } \frac{O_3 \text{ ambient}_i}{100 \frac{\mu\text{g}}{\text{m}^3}} \\ \text{if } O_3 \text{ ambient}_i < 100 \frac{\mu\text{g}}{\text{m}^3} \text{ then } 0 \end{pmatrix}$$

Where:

- *i* is hours in the year.
- “O₃ ambient_{*i*}” is the hourly average ambient concentration of GLO in the grid cell in hour *i*, in $\frac{\mu\text{g}}{\text{m}^3}$.
- $100 \frac{\mu\text{g}}{\text{m}^3}$ is the 8-hour WHO health threshold.
- Dispersion (GLO)_{*i*} is the increased GLO concentration from dispersion modeling in the *i*th hour, in $\frac{\mu\text{g}}{\text{m}^3}$.

2335

2336 The following applies to calculations in Equations C.8 and C.9:

- 2337
- Preferably, the integration is based upon hourly ambient ozone data in each grid cell. However, if only 24-hour (daily) average or annual average data are available, these data can be used.
- 2338
- The dispersion domain is calculated using air dispersion modeling. The most appropriate air dispersion model for modeling of ozone transport (and ideally, ozone formation) should be applied.⁵⁴ If ozone data are not available for the entire dispersion domain, a reasonable approximation of a small area can be used. For example, if ozone monitoring concentration data are only available from sensors within a 10-mile radius of the process, then data from those sensors can be used. Similarly, if dispersion modeling data are not available, reasonable estimates can be made about pollutant transport.
- 2339
- MCFs should be evaluated using the same models and data for all unit processes.
- 2340
- As a default assumption for dispersion modeling, annual average emission levels are used to calculate hourly average emissions, assuming that the level of emissions are constant throughout the year. Life cycle inventory data on emissions used in the dispersion modeling should be hourly throughout the year if data are available.
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2351 2.9 Soot (PM 2.5)

2352 This impact category considers health impacts from inhalation of particles less than 2.5 microns in diameter (PM2.5), caused either by emission of particulates or particulate precursors. It characterizes impacts occurring over the 10 µg/m³ annual average health threshold for PM2.5 exposure defined by WHO. LCA results are calculated using Equation C.14 below, expressed in units of mass of PM2.5 inhaled.

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2356 **Equation C.14. Indicator equation for PM2.5 Exposure Risks, in units of lbs. PM2.5 inhaled.**

PM2.5 Exposure Risks (Site-Specific Method) =

$$\sum_i \sum_j \text{Particulates and Particulate Precursors Emissions}_{i,j} \times \text{SCF}_j \times \text{MCF}_i$$

Where:

- “Particulates and particulate precursors” emitted include those emissions linked to the i^{th} unit process
- i is the total number of unit processes in the scope
- j represents the total number of particulate size fractions and particulate precursors emitted
- SCF is the mass of PM2.5 transported into the atmosphere as the result of an emission
- MCF is based on the annual regional average AQI readings exceeding the WHO 10 $\frac{\mu\text{g}}{\text{m}^3}$ threshold

⁵⁴ CMAQ and CAMx are suitable tools for doing so.
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2357 Emissions included are:

- 2358 • Primary particulates emitted directly from combustion sources, including PM_{2.5}, PM₁₀, and
2359 unspecified PM.
- 2360 • Precursor emissions that oxidize to form secondary particulates containing nitrate and sulfate: NO_x and
2361 SO_x emissions.

2362 The SCF characterizes the fraction of PM_{2.5} transported into the atmosphere as the result of an emission. The
2363 SCFs in Table C.4 should be used as a default.

2364 **Table C.4. SCFs for PM_{2.5} Exposure Risks**

Emission	SCF (<i>ton PM_{2.5} eq. per ton emission</i>)
≤ PM _{2.5}	1
> PM _{2.5}	0
PM ₁₀ and unspecified PM	0.9
SO ₂ *	0.36
NO _x **	0.10

2365 **Emissions of all oxides of sulfur are characterized with SCF for SO₂.*

2366 ***Emissions of all oxides of nitrogen are characterization with SCF for NO_x. This includes emissions of nitrogen*
2367 *dioxide, nitrogen monoxide, and unspecified nitrogen oxides.*

2368 SCFs are modified, if possible, to reflect the fraction of particulate emissions that are PM_{2.5}, and the
2369 atmospheric and meteorological conditions influencing precursor conversion to secondary particulates. If site-
2370 specific SCFs reflecting these factors are used, the basis of their calculation is described in the LCA report.

2371 The MCF characterizes the exposure of humans to PM_{2.5} at levels exceeding the 10 µg/m³ WHO threshold.
2372 The MCF differs by process, and is assessed using GIS tools and dispersion modeling using Equations C.15
2373 and C.16.

2374 **Equation C.15. MCF for Soot for a unit process.**

$$\text{MCF for a unit process} = \sum_{i=1}^n \text{ERF} - \text{Soot}_i$$

Where:

- ERF-Soot_i is the Exposure Risk Factor for soot for the *i*th grid cell, calculated using Equation C.16
- *n* is the number of grid cells in the unit process dispersion domain (i.e., the region into which soot resulting from precursor emissions from the unit process transit.)
- *i* are grid cells (i.e., spatial subdivisions within the dispersion domain).

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Equation C.16. Calculation for the Exposure Risk Factor for Soot for a single grid cell.

ERF-Soot for a single grid cell =

$$\sum_{i=1}^{year} Dispersion (PM2.5)_i \times \begin{pmatrix} \text{if } PM2.5 \text{ ambient}_i \geq 10 \frac{\mu g}{m^3} \rightarrow \frac{PM2.5 \text{ ambient}_i}{10 \frac{\mu g}{m^3}} \\ \text{if } PM2.5 \text{ ambient}_i < 10 \frac{\mu g}{m^3} \rightarrow 0 \end{pmatrix}$$

Where:

- i is hours in the year.
- “PM2.5 ambient_{*i*}” is the hourly average ambient concentration of PM2.5 in the grid cell in hour i , in $\frac{\mu g}{m^3}$.
- $10 \frac{\mu g}{m^3}$ PM2.5 is the WHO health threshold.
- Dispersion (PM2.5)_{*i*} is the increased PM2.5 concentration from dispersion modeling in the i^{th} hour, in $\frac{\mu g}{m^3}$.

2377
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The following applies to calculations in Equations C.11 and C.12.

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- Ideally, the integration will be based upon hourly ambient PM2.5 data in each grid cell. However, if only 24-hour (daily) average or annual average data are available, those data can be used.

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- The dispersion domain is calculated using air dispersion modeling. The most appropriate air dispersion model for modeling ozone transport (and ideally, ozone formation) should be applied.⁵⁵ If ozone data are not available for the entire dispersion domain, a reasonable approximation of a small area can be used. For example, if ozone monitoring concentration data are only available from sensors within a 10-mile radius of the process, then data from those sensors can be used. Similarly, if dispersion modeling data are not available, reasonable estimates can be made about pollutant transport.

2387

- MCFs should be evaluated using the same models and data for all unit processes.

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- As a default assumption for dispersion modeling, annual average emission levels can be used to calculate hourly average emissions, assuming that the level of emissions are constant throughout the year. LCI data on emissions used in the dispersion modeling should be hourly throughout the year if data are available.

2.10 Hazardous Air Emissions (by emission type)

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This impact category considers the risk of human exposure by inhalation to hazardous chemicals of potential concern (COPCs) in outdoor settings, arising from air emissions.

2395

COPCs fall into three groups, depending upon their carcinogenicity and/or non-cancer toxicity:

⁵⁵ CMAQ and CAMx are suitable tools for doing so.
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- 2396 • *Chemicals that may cause chronic (non-cancer) toxic effects after long-term inhalation exposure.* These
2397 chemicals are not documented as leading to an increased risk of cancer but can cause toxic effects in human
2398 after chronic exposure via inhalation.
- 2399 • *Chemicals that may cause cancer after long-term inhalation exposure.* A chemical is considered
2400 carcinogenic if either the US EPA defines it as a Group A, or if the IARC define it as Group 1 (Carcinogenic
2401 to Humans).
- 2402 • *Chemicals that may cause cancer and chronic (non-cancer) toxic effects after long-term inhalation*
2403 *exposure.* These chemicals can result in both the increased incidence of cancer, as well as chronic (non-
2404 cancer) toxic effects, after long-term inhalation exposure.

2405 Chemicals are only included if screening demonstrates that concentrations of the chemical are above specified
2406 threshold levels in the region, as follows:

- 2407 • Chemicals causing non-cancer health effects must be found at concentrations exceeding the Reference
2408 Concentration (RfC) level from the US EPA Integrated Risk Information System (IRIS).
- 2409 • Carcinogens present at concentrations that lead to an excess risk of ≥ 1 person per one million people.
2410 This can be estimated using “Inhalation Unit Risk” (IUR), which determines the number of people per
2411 million people who would be projected to die if exposed at a given threshold over 70 years.

2412 This screening is preferably completed using dispersion modeling, but can use other data sources, including
2413 rough estimations, based on available data. If no estimation of relative concentration can be made, all COPCs
2414 emitted during diamond production are included in the LCA result as a default.

2415 The SCF is determined by chemical and is assessed separately for chronic (non-cancer) toxic effects, and for
2416 increased risk of cancer (Equations C.17 and C.18). For indicator results representing chronic (non-cancer)
2417 toxic chemicals, the toxicity of the chemical is compared to that of a reference chemical, benzene.

2418 **Equation C.17. SCF for Hazardous Air Emissions for chemicals with non-cancer toxic effects.**

$$\text{SCF} = \text{RfC (benzene)} \div \text{RfC (chemical)} = 0.03^* \div \text{RfC (chemical)}$$

* NOTE: The RfC for benzene from US EPA IRIS is 0.03 mg/m³.

2419
2420 For indicator results representing carcinogens, the carcinogenicity of the chemical is compared to that of a
2421 reference chemical, formaldehyde, using the Inhalation Unit Risk estimate.

2422 **Equation C.18. SCF for Hazardous Air Emissions for carcinogens.**

$$\text{SCF} = \text{IUR (formaldehyde)} \div \text{IUR (chemical)} = 1.3 \times 10^{-5}^* \div \text{IUR (chemical)}$$

* NOTE: Inhalation Unit Risk for formaldehyde is 1.3×10^{-5} per $\mu\text{g}/\text{m}^3$ according to US EPA IRIS database.

2423 There is no MCF, due to the difficulty in obtaining reliable dispersion modelling results about these chemicals.

2424 2.11 Accumulated Ocean Acidification

2425 This impact category represents the degree to which CO_2 emissions lead to decreases in the pH of the ocean
2426 through the formation of carbonic acid. The indicator characterizes the oceanic formation of carbonic acid,
2427 reported in units of mass of carbonic acid (H_2CO_3), and is calculated using Equation C.19.

2428 **Equation C.19. Indicator result for Ocean Acidification (carbonic acid formation).**

$$\text{Carbonic Acid Formation} = \sum_j \sum_i (\text{Emissions} \times \text{SCF}_i \times \text{MCF})$$

Where:

- SCF_i represents the kilograms of carbonic acid produced per kilogram of substance i emission
- MCF represents the CO_2 absorption fraction
- i represents the total substances contributing to ocean acidification emitted from a unit process
- j represents all unit processes in the product system

2429 Emissions of CO_2 and other substances (e.g., methane) that are ultimately oxidized into CO_2 are included in
2430 this indicator. Other emissions can be included if they are relevant to ocean acidification.

2431 The SCF characterizes the conversion rate of atmospheric CO_2 into carbonic acid in the oceans, on a mass
2432 basis. One mole of CO_2 dissolved in the ocean converts into one mole of carbonic acid. Other emissions that
2433 convert into CO_2 in the atmosphere include methane; it should be assumed that, over time, these other
2434 emissions will be fully converted to CO_2 . The SCF for these other emissions accounts for their relative molar
2435 mass compared to CO_2 . The SCFs for CO_2 and methane, the two primary contributors to this indicator, are
2436 shown in Table C.5, in units of kilogram carbonic acid per kilogram of emission.

2437 **Table C.5. SCFs Used for Ocean Acidification**

Substance	SCFs (kg H_2CO_3 / kg)
Carbon Dioxide	1.41
Methane	3.87

2438 The MCF accounts for the net fraction of CO₂ emissions associated with a unit process that is absorbed by the
 2439 ocean. Approximately 33% of each year's CO₂ emissions are absorbed by the oceans.^{56,57} Accordingly, the CO₂
 2440 and CH₄ MCF is 0.33.

2441 **2.12 Eutrophication (Freshwater)**

2442 This impact category addresses eutrophication impacts in freshwater receiving water bodies (e.g.,
 2443 watercourses, lakes, and wetlands), including both primary and secondary classes of eutrophication effects.

2444 • Primary effect: Significant and unnatural blooms of microscopic and macroscopic algae leading to
 2445 adverse environmental effects, resulting from excess nutrient inputs.

2446 • Secondary effect: Significantly reduced levels of dissolved oxygen (when compared to natural
 2447 conditions), caused by enhanced oxygen respiration from microbes consuming decaying algae and/or
 2448 some organic compounds.

2449 LCA results are calculated using Equation C.20 below. Units depend upon the SCF used. Table C.6 provides
 2450 default SCF values.

2451 **Equation C.20. Indicator equation for freshwater eutrophication.**

Freshwater Eutrophication (Site-generic method) =

$$\sum_j \sum_n \text{Emissions}_{n,j} \times \text{SCF}_n$$

Freshwater Eutrophication (Site-specific method) =

$$\sum_j \sum_n \text{Emissions}_{n,j} \times \text{SCF}_n \times \text{MCF}_{n,j}$$

Where:

- n is the total number of eutrophying emissions linked to the unit process
- j represents all unit processes in the product system
- Emissions represent the eutrophying emissions linked to the unit process, in units of mass
- SCF represents the Redfield ratio⁵⁸ of the emitted substance, when compared to nitrogen or phosphorus, or the potential contribution to oxygen depletion
- MCF represents the fraction of the emission that transports into impaired waters, which varies by unit process and may also vary by emission

⁵⁶ Global Carbon Project. Global Carbon Budget. <http://www.globalcarbonproject.org/carbonbudget/12/data.htm>

⁵⁷ National Oceanic and Atmospheric Administration: PMEL Carbon Program. Ocean Acidification: The Other Carbon Dioxide Problem. <http://www.pmel.noaa.gov/co2/story/Ocean+Acidification>

⁵⁸ Redfield ratio: average composition of carbon, nitrogen and phosphorous found in phytoplankton.

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Table C.6. Default SCF values applicable to category indicators characterizing primary symptoms of eutrophication. These SCFs characterize the Redfield ratio in environments with different limiting nutrients.
Source: Table 6.1, Danish Guidelines^{59, 60}

Substance	Formula	SCF (Nitrogen-limited environment)	SCF (Phosphorus limited environment)	SCF (Limiting nutrient not determined)
		kg N. eq. / kg substance	kg P eq. / kg substance	kg NO ₃ - eq. / kg substance
Nitrogen Compounds				
Ammonia	NH ₃	0.82	0	3.64
Nitrate	NO ₃ -	0.23	0	1.00
Nitrite	NO ₂ -	0.30	0	1.35
Cyanide	CN	0.54	0	2.38
Total Nitrogen	N	1.00	0	4.43
Phosphorus Compounds				
Phosphate	PO ₄ ³⁻	0	0.33	10.45
Pyrophosphate	P ₂ O ₇ ²⁻	0	0.35	11.41
Total Phosphorus	P	0	1.00	32.03

2455 For indicators characterizing primary symptoms of eutrophication, SCFs characterize the potential of an
2456 emission to contribute to algae formation, using the Redfield ratio, compared to the potential of an emission
2457 of the receiving water body's limiting nutrient (either nitrogen or phosphorus). SCFs should be derived from
2458 peer-reviewed sources. SCFs from Table C.5 above should be used as a default.

2459 For indicators characterizing secondary symptoms, the SCF characterizes (when appropriate) the potential of
2460 an emission to contribute to depletion of oxygen using chemical oxygen demand (COD) or biological oxygen
2461 demand (BOD), in units of mass of oxygen demand per mass of substance emission.

- 2462 • The COD is the total measurement of all chemicals in an emission that can be oxidized, reported in
2463 milligrams O₂ per liter (mg O₂/L).
- 2464 • The BOD test measures the amount of organic carbons that bacteria can oxidize in an emission,
2465 reported in units of oxygen consumed per liter of solution (mg O₂/L).

⁵⁹ M. Hauschild and Potting, J., 2003. Spatial differentiation in life cycle impact assessment - The EDIP2003 methodology. Institute for Product Development Technical University of Denmark.

⁶⁰ In situations where the limiting nutrient cannot be determined, the final column can be used.

2466 The SCF values in Table C.7 below are provided as a default to evaluate category indicators characterizing the
2467 secondary symptoms of freshwater eutrophication.

2468 **Table C.7. Default SCF values applicable to category indicators characterizing secondary symptoms of**
2469 **eutrophication.**

Substance	Formula	SCF, kg COD or BOD / kg substance
Chemical Oxygen Demand	COD	1
Biological Oxygen Demand	BOD	1

2470 The MCF characterizes the fraction of emitted eutrophying discharges from a unit process that transports to
2471 impaired waters over a year. A receiving water body is impaired if:

- 2472 • Water column measurements of mean productivity, chlorophyll-a concentrations, algal biomass, or
2473 concentrations of total phosphorus or nitrogen, are significantly elevated over natural levels, and the
2474 receiving water body is, as a result, experiencing adverse ecological effects of primary eutrophication
2475 (e.g., reduction in benthic vegetation, increased turbidity).
- 2476 • Water dissolved oxygen levels are reduced significantly below natural levels, and the receiving water
2477 body is, as a result, experiencing adverse ecological effects of secondary eutrophication (e.g., fish die-
2478 offs).

2479 For a receiving water body, the definition of impaired is based upon definitions in local regulatory frameworks,
2480 or from a more conservative framework. As a default, receiving water bodies should be considered impaired
2481 if dissolved oxygen levels are below 5 mg O₂ /L, and the dissolved oxygen level in the natural state of the
2482 receiving water body is well above 5 mg O₂ /L. The definition of impaired should be described in the LCA
2483 report for the receiving water bodies to which key unit processes are discharging eutrophying substances.

2484 The MCF is a number from 0 to 1, with 0 representing no transport to impaired waters, and 1 representing
2485 100 percent transport to impaired waters. The MCF is calculated using Equation C.21 below. An MCF of zero
2486 means that this impact is not relevant to that unit process.

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Equation C.21. The MCF for freshwater eutrophication, calculated separately for each unit process, characterizes the fraction of emitted eutrophying discharges which transport to impaired waters.

$$\text{MCF} = \frac{\text{Eutrophying Discharges Transporting to Impaired Water} \left[\frac{\text{tons}}{\text{yr}} \right]}{\text{Total Eutrophying Discharges from Unit Process} \left[\frac{\text{tons}}{\text{yr}} \right]}$$

Where:

- “Eutrophying discharges transporting to impaired waters” include those discharges depositing into the impaired water body during the times of the year when it is experiencing symptoms of eutrophication (e.g., emissions in wintertime to an impaired water body that periodically experiences eutrophication only in summer are not included).
- “Total eutrophying discharges” include all the eutrophying discharges released from the unit process each year.

2490 **2.13 Eco-Toxicity and Water Quality Impacts (by Release)**

2491 This impact category considers releases of hazardous environmental contaminants (HECs) that:

- 2492 • Have the potential to expose living organisms in receiving environment(s) to unsafe levels; and
- 2493 • Can cause adverse toxic (chronic or acute) effects in sensitive species when exposed to doses over safe
- 2494 thresholds.
- 2495 • Can cause adverse effects to water quality” relative to applicable water quality standards or criteria
- 2496 (e.g., thresholds)

2497 The safe health threshold for an individual HEC is a measurable concentration in a given medium (usually
2498 water) above which exposure can result in onset of the critical toxic effect in sensitive species. (Safe and unsafe
2499 levels are determined by relevant standards or different water conditions or uses.)

2500 Whether this impact category is relevant is determined on a case-by-case, site-specific basis, and the
2501 justification for its inclusion is documented in the LCA report. It is relevant if any unit process emits HECs or
2502 precursors that transport into a receiving environment where the HEC is present at unsafe levels, which shall
2503 be assumed to be the case if the following two conditions are satisfied:

- 2504 1. The HEC has been either:
 - 2505 — Detected as a contaminant in the receiving environment at concentrations exceeding its safe level;
 - 2506 or
 - 2507 — Has exposed organisms; or
 - 2508 — Has been detected in tissue of organisms at levels that could cause adverse toxic effects.

- 2509 2. The HEC or precursor release occurring at the unit process contributes to contamination of the
2510 receiving environment, either:
- 2511 — Directly, where the HEC enters immediately after the release, without intervening fate and
2512 transport; or
 - 2513 — Indirectly, where the HEC or precursor transports through multiple regions, environments, and/or
2514 media prior to contamination. The indirect route of contamination should be considered for
2515 substances that are persistent,⁶¹ bioaccumulative and toxic, as well as for highly toxic chemicals
2516 with short residence times that are emitted in significant volumes continuously.⁶²
- 2517 It is assumed as a default that an HEC or precursor release from a unit process is relevant if any of the following
2518 conditions are met (with any exclusion justified in the LCA report):
- 2519 • In the region where the unit process is located, the HEC is widespread in receiving environments at
2520 concentrations exceeding safe levels.
 - 2521 • Other similar unit processes have contributed to HEC or precursor releases that have contaminated
2522 receiving environments.
 - 2523 • The HEC's effects on local organisms in ecosystems is an issue of concern to regional government
2524 agencies and or other stakeholders.
- 2525 As a default:
- 2526 • Substances on published lists that have been observed in the environment at concentrations above
2527 defined thresholds (regulatory thresholds, or otherwise), or which are targeted for regulation or
2528 remediation, should be considered for relevance.
 - 2529 • The substances listed in Sediment Quality Guidelines established by the US National Oceanic and
2530 Atmospheric Administration (NOAA), and the US Environmental Protection Agency's Toxic
2531 Resource Inventory, should be considered for relevance. These substances are listed in Table C.8.
- 2532

⁶¹ Measures such as chemical half-life or elimination time in different media (e.g., soil, sediments, water) can be used to determine whether a substance is persistent.

⁶² Both can lead to steady-state concentrations of HECS at unsafe levels.

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Table C.8. Substances covered by NOAA's Sediment Quality Guidelines and US EPA Toxic Resource Inventory^{63,64,65}

Inorganic Chemicals	Polycyclic Aromatic Hydrocarbons (PAH)	Other Chemicals
Antimony	Acenaphthene	Aldrin
Arsenic	Acenaphthylene	Chlordane
Cadmium	Anthracene	DDT, DDD, DDE
Chromium	Fluorene	Dieldrin
Cobalt	2-Methyl naphthalene	Dioxin and dioxin-like compounds
Copper	Low-molecular weight PAH	Endrin
Cyanide	Benz(a)anthracene	Heptachlor
Lead and Compounds	Benzo(a)pyrene	Hexachlorobenzene
Mercury and Compounds	Crysene	Isodrin
Nickel	Dibenzo(a,h)anthracene	Methoxychlor
Nitrogen compounds	Fluoranthene	Octachlorostyrene
Selenium	Pyrene	Pendimethalin
Silver	High molecular weight PAH	Pentachlorobenzene
Sulfate	Benzo(g,h,i)perylene	Polychlorinated biphenyls (PCB)
Thallium		Tetrabromobisphenol A
Zinc		Toxaphene
		Trifluralin

2535 If this impact category is relevant, separate category indicators are evaluated if unit process(es) emit multiple
2536 HECs (or precursors) that contaminate a receiving environment where HECs are present over safe health
2537 thresholds, and either of the following conditions are met:

- 2538 • The species affected, route and/or toxic endpoint(s) of the HEC, are significantly distinct in spatial
2539 extent, temporal duration, or severity.
- 2540 • There are no consistent measures of ecotoxicity available to establish SCFs for the multiple HECs.

2541 Results are calculated using Equation C.22.

2542

⁶³ NOAA. Sediment Quality Guidelines Developed for the National Status and Trends Program. Released 6/12/99. See http://response.restoration.noaa.gov/book_shelf/121_sedi_qual_guide.pdf

⁶⁴ MacDonald, D.D., C.G. Ingersoll, T.A. Berger. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. Arch. Environ.

⁶⁵ <https://www.epa.gov/toxics-release-inventory-tri-program/persistent-bioaccumulative-toxic-pbt-chemicals-covered-tri>

Equation C.22. Indicator equation for Freshwater Ecotoxicity.

Freshwater Ecotoxicity (Site-generic Method) =

$$\sum_i \sum_j (\text{Releases}_{ij} \times \text{SCF}_i)$$

Freshwater Ecotoxicity (Site-specific Method) =

$$\sum_i \sum_j (\text{Releases}_{ij} \times \text{SCF}_i \times \text{MCF}_{i,j})$$

Where:

- Releases_{ij} are the levels of a given HEC release, reported in units of mass.
- i accounts for each type of HEC emission
- j accounts for each unit process
- SCF_i is the Stressor (potency) Characterization Factor for each HEC calculated
- MCF_{i,j} is the Stressor (potency) Characterization Factor for each HEC for each unit process

2544 All releases of an HEC or precursors occurring at unit processes (including releases into air, water, or soil)
 2545 meeting the requirements of this Standard are classified. Any substances considered to be persistent,
 2546 bioaccumulative, or toxic are considered for inclusion in results.

2547 The SCFs are calculated considering appropriate measures of ecotoxicity and equivalency between HECs and
 2548 precursors. “Effects Range-Low” (ERL) values (see below) are used as the measure of ecotoxicity and
 2549 equivalency, if available.

2550 MCFs are fractions from 0 to 1, representing the fraction (percent) of a release that transports into a receiving
 2551 environment where any HEC is present at concentrations over safe thresholds. The safe health threshold for an
 2552 individual HEC is a measurable concentration in a given medium (usually water) above which exposure can
 2553 result in onset of the critical toxic effect in sensitive species. The safe health threshold for an HEC used in the
 2554 MCF calculation is:

- 2555 • established using toxicity studies evaluating the toxic effects resulting from exposure in as many
 2556 species and as many taxonomic groups as possible.
- 2557 • based upon the tenth percentile value of concentrations that have been observed to result in the critical
 2558 toxic effect in organisms using Effects Range-Low (ERL) values, published by the National Oceanic

2559 and Atmospheric Administration (NOAA).⁶⁶ Alternative approaches to evaluating HEC safe levels
2560 should be used if no ERL values are available, or alternative measures are more appropriate.

2561
2562 The approach used to define HEC safe levels is documented in the LCA report.

2563 Thus, the MCF is the fraction of a release to which living organisms are exposed when overall ambient HEC
2564 concentrations are high enough to be able to cause adverse toxic effects in sensitive species. The MCF is 0
2565 when 0% of the releases transport into such receiving environments –i.e., no organisms are exposed, or
2566 organisms are exposed, but at levels too low to cause adverse effects. The MCF is 1 when all of an emission
2567 transports into such a receiving environment –i.e., 100% of releases transport into environments where
2568 organisms are exposed at unsafe levels.

2569 Site-specific hydrological water modeling is required to evaluate MCF factors. This type of modeling follows
2570 all requirements of *IRMA Standard for Responsible Mining (IRMA-STD-001)*, §4.2.2 (Site Characterization
2571 and Prediction of Potential Impacts: Water Management).

2572 **2.14 Climate Change Impacts**

2573 Instructions for calculating results for the two climate change impact categories – annual radiative forcing and
2574 legacy radiative forcing –are discussed in Annex A of this Standard.

2575

⁶⁶ ERL values are established for heavy metals and several persistent organic substances, and have been used in the Sediment Quality Guidelines used by NOAA. NOAA. Sediment Quality Guidelines Developed for the National Status and Trends Program. Released 6/12/99. See http://response.restoration.noaa.gov/book_shelf/121_sedi_qual_guide.pdf
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2576

Annex D

2577

2578

Requirements for ISM Producers for Establishing Ecosystem Baseline Conditions

2579

2580 The ecosystem baseline conditions (EBC) shall represent the ecological conditions present before mining
2581 began. The EBC shall include measures related to terrestrial conditions and threatened species populations.

2582 1. Terrestrial Ecosystem Baseline Conditions

2583 The terrestrial EBC (TEBC) shall represent the key terrestrial conditions in the region before mining began. A
2584 minimum set of information to be included in the TEBC is in the Table D.1 below.

2585 **Table D.1. Information related to terrestrial conditions which is included in the ecosystem baseline conditions.**

Category of Measurement	Required Measurements	Recommended Additional Measurements
WWF Ecoregion in which mine is present	Listing and qualitative description of terrestrial ecoregion(s) overlapping the DEA, using the WWF Wildfinder Database ⁶⁷	
Spatial Ecosystem Type Structure	<ul style="list-style-type: none"> The percent of land which is desert, forest, grassland, and tundra. Contiguity measures for each type of ecosystem present, e.g.: percentage of forest within 50 meters of a forest edge; the total length of the boundary of the forest divided by the area; and other measures of connectivity. 	
<i>Measures below are evaluated separately within each type of ecosystem present (e.g., vegetation compositional structure within desert, forest, and grasslands)</i>		
Vegetation Compositional Structure, including consideration of the species present	Measured data for: <ul style="list-style-type: none"> Abundance of the most common 5% of the known vegetative species present⁶⁸ 	

⁶⁷ <https://www.worldwildlife.org/publications/wildfinder-database>

⁶⁸ I.e., Abundances of 5 out of 100 tree species, if 100 are present and the 5 are the most common.

Tree size structure and density	<ul style="list-style-type: none"> • Density of trees present in different size classes (e.g., trees over 1" d.b.h.), size classes determined based upon what is appropriate for the given ecosystem⁶⁹ • Tree diameter distribution (e.g., using Kolmogorov-Smirnov goodness-of-fit test) • Mean diameter of trees 	
Relative Measurements of Biomass	<ul style="list-style-type: none"> • Biomass in ground litter, downed (i.e., fallen) dead trees, live and dead understory, living trees and standing dead trees. (The stored carbon in each pool can be used as proxy for biomass.) 	
Surveys of the Vertebrate and Invertebrate Species Communities	<ul style="list-style-type: none"> • Composite of censuses of all vertebrate species in the community, measured as individuals per kilometer of transect, by species; the number of species present. Vertebrate species which shall be included are small birds, small mammals, and herps (i.e., frogs, lizards, and snakes).⁷⁰ 	Census of invertebrate species in the community should also be included.

2586 TEBC are intended to represent terrestrial conditions in the region prior to mining; if no historic data is
2587 available, measured values within a Undisturbed Reference Area (URA) can be used to represent the TEBC.
2588 The URA:

- 2589 • Shall include an area which has not been subject to significant human interventions (i.e., mining,
2590 logging, intensive hunting, non-timber extraction, agriculture, fire suppression, or other activities) for
2591 the longest time possible, which is not less than 80 years. An area can qualify as undisturbed if it has
2592 experienced disturbance events consistent with a natural regime within the last 80 years, including
2593 wildfires, severe storms, or pest outbreaks.
- 2594 • Shall be located in a region with similar climate, elevation, rainfall, and soil conditions, to the mine.
- 2595 • Shall be located as close as possible to the mine, and never farther away than 800 kilometers.
- 2596 • Shall include the largest possible contiguous area in the region satisfying these requirements, which is
2597 no less than 5,000 hectares.

⁶⁹ The specific tree size classes which are analyzed will depend upon local characteristics of the ecosystem. If the mine is present in an arid environment comprised mainly of desert regions, there may be only a very small number of small trees, and so only one or two size classes may need to be evaluated. Conversely, if present in a broadleaf temperate forest, there will be many more trees of a diversity of sizes, requiring evaluation of more size classes. The specific size classes which are relevant (1" d.b.h., 6" d.b.h., 20" d.b.h., etc.) depends upon local conditions.

⁷⁰ If data are unavailable, by default it can be assumed that each species and number of species present is reduced by 100%.

- 2598 • Areas managed primarily for conservation purposes (e.g., national parks) should be used where
2599 available.

2600 If no URA is available in the region meeting these requirements, then ecological conditions in the tEBC can
2601 be specific by a panel of at least three independent experts in local ecology.

2602 **2. Threatened Species included in the Ecosystem Baseline Condition**

2603 **2.1. Species Affected by Mining**

2604 The EBC shall include a list of threatened species which are affected by mining. Threatened species include
2605 all threatened categories of species affected by mining, based upon the definition of the “threatened categories”
2606 according to the IUCN Red List Categories and Criteria Version 3.1 Second Edition (or latest final version of
2607 these criteria). This includes species meeting the categories of Critically Endangered, Endangered, or
2608 Vulnerable. All mammals, amphibians, reptiles, and birds shall be included. Additionally, impacts to
2609 threatened species in other taxa including invertebrates and plants should be included.

2610 In determining which threatened species are included, the first step is creating the list of potentially impacted
2611 species. To create this list, the following data sources shall be used to identify the threatened species which are
2612 affected by mining:

- 2613 1. Species classified as Critically Endangered, Endangered, or Vulnerable, according to the WWF
2614 Wildfinder Database or IUCN Red List of Species, in the ecoregion(s) in which the mine is present.
- 2615 2. Additional threatened species shall be included, where relevant, based on alternative data sources (e.g.,
2616 governmental lists, environmental impact statements, peer reviewed literature), provided their status
2617 is Critically Endangered, Endangered, or Vulnerable, according to the IUCN Red List Categories and
2618 Criteria.

2619 *NOTE. Although alternative definitions exist for categorizing species as “threatened”, use of different lists or different*
2620 *categorizations will lead to inconsistencies in comparisons in the number of threatened species in different regions.*
2621 *Accordingly, only the IUCN categorization is used.*

2622 *NOTE. In many tropical regions, there may be a large number of threatened species affected which are not included on these*
2623 *lists. There may additionally be many species for which very little data is available regarding threatened status or habitat*
2624 *conditions.*

2625 After the potentially impacted list of threatened species is generated, the subset of this list of species with
2626 populations negatively impacted by mining is identified. The following screening considerations shall be used
2627 to exclude species:

- 2628 1. Whether the range (current or historic) of the species overlaps with the mine.
2629 2. If present in the MDEA, the habitat type(s) used by the species in the region.

- 2630 3. If mining does not reduce regional populations. If mining does not affect the species population, the
2631 species can be excluded from the assessment. (While some species will experience deleterious effects
2632 to habitat conditions and/or species populations, some may be unaffected by mining activities.)

2633 In this screening, databases which can be used include those provided by the US Fish and Wildlife Services,⁷¹
2634 local state governments, the International Union for the Conservation of Nature (IUCN), and others.^{72,73} For
2635 many of these species, these data sources will note explicitly that local habitats and populations are impacted
2636 by mining (for example, when mining has been identified as one of the primary threats to species populations,
2637 or when regulatory actions may have been taken to limit species impacts from mining). For some species, even
2638 while mining is not explicitly described as a significant threat, suitable habitat will clearly be impacted by
2639 mining.

2640 *FOR EXAMPLE. Species requiring large contiguous grassland habitats for grazing may be impacted by a mining*
2641 *complex, which blocks their ability to move across these large areas. This may be an issue even if species rarely*
2642 *or never used the mining complex for grazing.*

2643 Assumptions may be required to determine the relevance of mining activities to impacts on habitat and
2644 populations. The following assumptions shall be made as a default for species occupying freshwater, wetland,
2645 and riparian habitats (e.g., streams, rivers, creeks, lakes, wetlands, ponds, and areas near each of them), unless
2646 established to be false for a specific species:

- 2647 • Mining is assumed to negatively impact species occupying habitats that are within areas directly
2648 physically affected or within buffer zones. If it can be established that active management practices
2649 have successfully mitigated these impacts, then species occupying freshwater habitats do not need to
2650 be included.

2651 Specific assessment of species populations using site monitoring can be used to determine whether the species
2652 is in fact affected negatively by mining. Species impacts can be excluded if mining does not measurably
2653 contribute to population reductions.

2654 **2.2. Measuring Species Populations in Baseline Condition**

2655 Evaluating species populations in the baseline conditions, prior to the onset of mining operations, requires
2656 either historic data or proxy data from a similar undisturbed habitat where the species is present. Species
2657 surveys from within this undisturbed habitat will be required. These surveys shall follow the same survey
2658 approach as used to evaluate the population of species within the Ecosystem Disturbed Area.

⁷¹ US Fish and Wildlife Service. Species Environmental Conservation Online System.

⁷² NatureServer Explorer: An Online Encyclopedia of Life.

⁷³ FishBase, 06/2014. <http://www.fishbase.org/>

Annex E

Assessing ISM Impacts on Water Resources and Quality

0. Introduction: Water Quality and Supplies

ISM diamond mining operations can have a variety of impacts on water quality and supplies, which may affect other users of the water as well as the biota in local freshwater ecosystems.

Water quality impacts can occur as a result of direct emissions from mining activities resulting from many types of activities, such as leakage of contaminants from tailings ponds (or lack of storage of tailings) or dust from mining equipment depositing on water. Impacts can also be caused by physical disturbance of land, which can lead to the release of sediment and substances contained therein into local freshwater systems. Both direct and indirect emissions can cause changes in measurable water quality attributes, such as sedimentation load, hazardous environmental contaminant concentrations, salinity, pH, opacity, nutrient loading, or photosynthesis rates.

Diamond mining activities can also lead to the depletion of water supplies. For example, dewatering activities during underground mining can deplete groundwater supplies, and open pit mines can alter local hydrology, affecting surface water supplies. And diminishment of water quality can negatively impact downstream users, thus depleting the water resource in terms of the volume of suitable water available.

It is important to monitor for potential water quality and depletion impacts such as these, as compared to baseline conditions that would be present in the absence of the mining operation. This Annex describes requirements for setting the water quality and water resource baselines, as well as requirements for ongoing monitoring of water quality and supplies, and determination of water resource depletion.

1. Water Quality Assessment

1.1 Planning, Documentation, and Approval

Water quality measurements are gathered according to a written plan, which sets out requirements for monitoring. The objective and scope of the water quality monitoring plan are clearly defined and stated. The water quality monitoring plan is developed and reviewed by a competent expert and is finalized prior to the time monitoring commences.

The water quality parameters and attributes about which a sampling regime is intended to draw conclusions are defined based on the study objectives prior to the planning and implementation of the sampling regime.

2689 All measured conditions are compared to baseline conditions, which reasonably represent the water quality
2690 conditions in the absence of any mining activities. The water quality monitoring results are compared with
2691 baseline conditions and local relevant regulatory thresholds.

2692 The effectiveness of the water quality monitoring plan is reviewed at least every three years. Revisions to the
2693 plan are made in a manner that preserves the consistency of measurements, allowing for evaluation of trends
2694 over time.

2695 The following considerations are taken into account when developing the monitoring plan:

- 2696 • Variations in water quality conditions due to natural and mine waste sources of contaminants.
- 2697 • The natural variations and “controls” on mine- and natural-drainage (geological, hydrological, biochemical,
2698 geochemical) that could affect water quality.
- 2699 • Seasonal variations in hydrological conditions (e.g., increased waterflow from snowmelt) that can
2700 significantly affect local water quality conditions.
- 2701 • The potential effects of episodic events (e.g., storms) that can lead to short-term variations in water quality in
2702 the local freshwater system.
- 2703 • The characteristics of the annual stream hydrograph in the region. The five different hydrologic conditions
2704 defined by in Maest, et al. 2004⁷⁴ can be used (rising limb, peak, falling limb, storm event, and low flow⁷⁵).
- 2705 • The effect of deposition of mining dust on water sources, which in some regions can affect water quality and
2706 nutrient loading.

2707 **1.2 Spatial and Temporal Monitoring Requirements**

2708 Sampling occurs during all phases of the mining activity.

- 2709 • Water sampling includes a variety of measurement sites, for which periodic monitoring of groundwater and
2710 surface water is completed to accurately reflect conditions at a site.
- 2711 • The frequency and timing of sampling are designed to capture seasonal and diurnal variability in water quality
2712 conditions.

⁷⁴ USGS. Prepared in cooperation with the New Mexico Environment Department Questa Baseline and Pre-Mining Ground-Water Quality Investigation 4. Historical Surface-Water Quality for the Red River Valley, New Mexico, 1965 to 2001 Version 2. By Ann S. Maest, D. Kirk Nordstrom, and Sara H. LoVetere. <https://pubs.usgs.gov/sir/2004/5063/pdf/sir20045063.pdf>

⁷⁵ “They define rising limb as starting when flows first increase as a result of snowmelt and ending when flows reach 50% of peak flow for that water year. Peak flow is defined as starting and ending at 50% of peak flow on either side of the peak. Falling limb starts after the peak when flows fall to 50% of peak values and ends when flows fall to 25% of peak values. Low flow starts at 25% of peak flow after the peak and continues to the start of the rising limb the following water year. Storm events are defined as increases in flow superimposed on the hydrograph.” This summary description is from APPROACH FOR ENVIRONMENTAL BASELINE WATER SAMPLING. K. S. Smith, US Geological Survey, Denver, CO. SME Annual Meeting Feb. 27-Mar. 02, 2011, Denver, CO https://clu-in.org/conf/tio/r10hardrock3_030513/Approach_For_Environmental_Baseline_Water_Sampling.pdf

- 2713 • The watershed(s) in which mining activities could affect water quality are identified. Datasets that provide
2714 watershed definitions at a spatial granularity of approximately 2,000 – 20,000 hectares should be used. If data
2715 at this granularity are not available, the HydroSheds⁷⁶ dataset is the default.
- 2716 • The approach used to determine the amount of water sampling required shall be reasonably based and
2717 documented; equations like Pierre Gy's Particulate Sampling Theory can be used.
- 2718 • An iterative approach can be used to determine the appropriate number of samples to take, where collection
2719 continues until the variance in samples no longer changes.
- 2720 • Water quality measurements are completed for all watersheds affected.
- 2721 • If watercourses are present within the freshwater system, measuring sites are located within a reasonable
2722 fraction of the lengths of fish-bearing (Class I) streams, and cover additional streams if possible.
- 2723 • Sampling and measurement sites include a mix of locations ranging from sites close to emission sources to far
2724 downstream from any source.
- 2725 • Sampling and measurement sites are located permanently in the same location and follow the same sampling
2726 protocol in order to track trends in conditions over time.
- 2727 • Sampling and measurements account for natural variability by nesting short-term studies within long-term
2728 studies that encompass variable climatic and hydrologic conditions.⁷⁷
- 2729 • Samples at a given site are obtained throughout the day and night to obtain an actual 24-hour average of
2730 constituent concentrations at a given site.
- 2731 NOTE: Some sampling should be conducted during high-flow events and transient hydrological events (e.g., heavy
2732 rainstorms) to obtain an estimate of the effect of flushing on water quality conditions. When comparing between
2733 sites, samples are collected at the same time under similar hydrologic conditions.

2734 1.3 Water Quality Attributes Measured

2735 The water quality attributes measured are sufficient to:

- 2736 • Allow for a direct and comprehensive comparison with attributes measured in the baseline.
- 2737 • Determine whether water quality is in compliance with local regulations.
- 2738 • Adequately reflect the nature of the impacts on water quality from mining.
- 2739 • Represent key water quality conditions in the freshwater system.
- 2740 • Measurements should take into consideration the chemicals identified in Annex C, Table C.8.

⁷⁶ HydroSheds model. See <https://hydrosheds.org/> for more information.

⁷⁷ APPROACH FOR ENVIRONMENTAL BASELINE WATER SAMPLING. K. S. Smith, US Geological Survey, Denver, CO. SME Annual Meeting Feb. 27-Mar. 02, 2011, Denver, CO https://clui.org/conf/tio/r10hardrock3_030513/Approach_For_Environmental_Baseline_Water_Sampling.pdf

2741 **1.4 Water Quality Sample Collection and Analysis**

2742 Sampling, measurement, preservation and analytical protocols used:

- 2743 • are current and relevant for the intended purpose;
- 2744 • are consistent across time and space;
- 2745 • can be documented; and
- 2746 • have suitable Quality Assurance and Quality Control.

2747 At the point of sample collection:

- 2748 • When applicable, the sampler and any associated equipment not associated with measurement (e.g., floats, boat)
2749 are located downstream of the sampling point.
- 2750 • Personnel with relevant experience or training collect water samples and make relevant measurements.
- 2751 • Blank tests are collected at the same time as real sampling testing, as part of QA/QC procedures
- 2752 • Samples are collected in a way that represents conditions in the entire water column and width of the water
2753 body where sampling is completed.
- 2754 • In larger rivers and water bodies, where there is more chance of variability in water characteristics across their
2755 width, broader sampling is conducted. (For large rivers where mixing will take longer, individual samples
2756 should be taken from different increments across the whole river.)
- 2757 • The procedures, locations, and time of day of sampling are consistent.
- 2758 • Field notes (e.g., time of record, author of record, photographs, water color), meteorological (e.g., temperature,
2759 rainfall) and water (e.g., temperature, pH, dissolved oxygen) conditions are recorded, and included with the
2760 water quality measurements.
- 2761 • If applicable, streamflow conditions (waterflow, water depth) are recorded when sampling are conducted.

2762 Protocols are developed, implemented and documented to prevent sample contamination. Personnel charged
2763 with sampling ensure that samples have sufficient volume and are adequately preserved for testing.

2764 **1.5 Additional Documentation Requirements**

2765 The following shall be documented in the LCA report:

- 2766 • The water quality attributes measured at each site.
- 2767 • A justification for the choice in water quality attributes which are measured.
- 2768 • Any mathematical models used to assess water quality or other physical conditions.
- 2769 • The watershed(s) in which mining activities occur.

- 2770
- A map of water quality monitoring stations.

2771 **1.6 Assessing Water Quality Baseline Conditions**

2772 Sampling conducted during the mine exploration phase, prior to the implementation of mining activities, can
2773 represent baseline conditions. For an existing mine, sampling conducted upstream and upgradient of any mine
2774 waste sources can also be used to establish baseline conditions, or by choosing nearby sites that are similar in
2775 terms of hydrology and mineralogy.

- 2776
- Sampling for baseline should be conducted for at least a two year period.
 - If baseline conditions measured during an exploration phase are very limited in spatial extent, duration, or
2777 have questionable data quality, then sampling from upstream sites may be preferable to pre-mining
2778 conditions.
 - Baseline conditions are used to identify “Target Water Quality Conditions” in the region.
 - Specific baseline conditions present in the absence of mining are clearly defined and documented.
- 2780
- 2781

2782 Baseline water quality conditions are measured in relation to concentrations of specific target substances (see
2783 Annex C, Table C.8).

- 2784
- The basis of the baseline condition (e.g., 24-hour average or seasonal average) must be clearly defined.
 - Different baseline conditions may need to be defined for different seasons if periodic seasonal variations
2785 were measured in the baseline.
 - If episodic events are important, the baseline is defined in such a way that reflects such events.
 - Baseline conditions may vary in different parts of the freshwater system.
 - The water quality conditions that are measured are selected to reflect the nature of the impacts and
2789 represent the key conditions in the freshwater system, and should include at minimum pH and dissolved
2790 oxygen levels.
 - Baseline water quality conditions may also be measured in relation to biological activity such as algae
2792 growth and health of vegetation surrounding the water source, and other characteristics such as
2793 temperature.
- 2794

2795 **2. Water Resource Depletion Assessment**

2796 For some ISM Producers, water consumption can be significant enough to lead to depletion of the water
2797 resource, that is, a reduction in the availability of water supplies at a comparable level of water quality for all
2798 users of a given water reserve base. This occurs in cases where water that is withdrawn from a given resource
2799 is not returned to that resource in the same volume at a level of a quality suitable for downstream users. For
2800 example, dewatering of underground mines and open pits which results in the reduction of groundwater could
2801 reduce water availability for springs that are fed by the same groundwater source.

2802 Water resource depletion is assessed by comparing current and projected amounts of water with historical
2803 baseline levels that were present before a mine's operations began. Determining whether water resource
2804 depletion is occurring involves the following steps.

- 2805 • Identification of the source(s) of water used by the Producer;
- 2806 • Identification of the users of the above water sources (e.g., communities using a surface water supply),
2807 along with their intended uses (e.g., residential or agricultural water);
- 2808 • Determination of baseline amounts of water resources available to these users, and historical water quality
2809 –i.e., prior to initiation of mining activities; and
- 2810 • Monitoring of current water resources.

2811 **2.1 Assessing Current Extent of Water Resources**

2812 The available water resources for users are evaluated using measurements and site data. The measured water
2813 amount conditions include, at a minimum:

- 2814 • Water flow rates and depth of all relevant watercourses streams
- 2815 • For surface water sources such as lakes and ponds, their water storage and water storage capacity.
- 2816 • For groundwater sources, water elevation and pressure.
- 2817 • Vegetation of water source surroundings.

2818 These measurements are conducted at least once per year during the season where water resources are generally
2819 the lowest, but can be conducted more than once per year.

2820 **2.2 Assessing Baseline Water Resources**

2821 Ideally, the amount of water available prior to the onset of Producer activities can be assessed using direct
2822 measurements of water availability at the location(s) of other users' extractions from a period before large-
2823 scale operations began (e.g., before or during mine exploration).

2824 These parameters are best measured over an extended period of time (five years or more), using direct
2825 measurements or historical data from other sources. This approach is used to determine average values for
2826 water variability, and also to determine natural variability due to seasonal changes and fluctuations in the
2827 weather. Historical low amounts of water should be identified, as well as their time of year and any causative
2828 factors that can be determined.

2829 If data do not exist from the pre-mining period, then computational modeling and reconstruction using
2830 historical precipitation records and other data sources can be used. The mathematical model used to estimate
2831 water amounts and other physical characteristics should be documented.

2.3 Assessing Whether Water Resource Depletion is Occurring

Next, the baseline levels of water availability are compared with current levels to determine if there has been a significant reduction in water availability (e.g., reduced to a level that prevents users from engaging in their intended uses) outside of the normal seasonal range.

This reduction is then compared with the net freshwater consumption of the Producer. If the net freshwater consumption is a significant and measurable fraction of the total resource base available, and the total amount of water resource available is reduced from baseline conditions, then water resource depletion is occurring.

If water quality is lower than baseline conditions at the site(s) where user(s) extract water, then the uses by users should be considered (see section 1 above). If the reduced water quality impairs the ability of users to use water resources, then it is considered as a reduction in available water supplies, even if water volume is unchanged. For example, an ISM causing significant sediment loading could impair the ability of downstream surface water users to use this water resource for agriculture; this would be considered water resource depletion for these users. However, if municipal users are treating the water for residential purposes, and the type of treatment can acceptably remove the sediment loading, then it does not count as a reduction in water resource availability.

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Water quality assessment

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Annex F. Multi-Site Organization Sampling

Table 1 provides auditor guidance for sample selection of eligible multi-site organizations.

Number of Sites	Initial Certification Audit	Surveillance Audit	Renewal Audit
1 - 5	All	All	All
6-10	All	All	All
11-20	10	5	10
21-40	20	10	20
41-60	30	15	30
61-80	40	20	40
81-100	50	25	50
101-150	75	37	75
151-200	100	50	100
201-300	150	75	150
301-400	200	100	200
401-600	300	150	300
601-800	400	200	400
801-1000	500	250	500
>1001	501	251	501

Matters to consider when choosing sites for sampling:

- Ensuring Headquarters are always included in sampling;
- Targeting sites that are located in CAHRAs (as defined by the Dodd Frank Act 1502 or countries determined to have reached well-defined thresholds on internationally recognized resources);
- Known or suspected risks related to labor exploitation, illicit financial flows, weakened governance, money laundering, bribery, financing of terrorism and corruption, health and safety and human rights abuses;
- Potential impact of the site's activities on human rights, environment, and health and safety risks;
- Number of employees at each site;
- Any known grievances or complaints;
- Length of time the site has been in operation; and
- Additionally, for certification annual surveillance or renewal, consider sites that have had previous critical non-conformances and sites not previously visited.

NOTE: Conflict-affected and high-risk areas are identified by the presence of armed conflict, widespread violence or other risks of 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, etc. High-risk areas may include areas of political instability or repression, institutional weakness, insecurity, collapse of civil infrastructure and widespread violence. Such areas are often characterized by widespread human rights abuses and violations of national or international law.



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