

ESG Report

Based on submission dated 6th July 2023

Jaguar Mining Inc.

and associated mining project(s)

Disclosures in this submission

Type Name ESG framework type

Corporate Jaguar Mining Inc. Producing stage corporate framework

Project Caeté Producing stage project framework

Project Turmalina Producing stage project framework



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Introduction

igbee ESG is the industry standard ESG disclosure framework for the mining sector. It provides mining companies with a right-sized, futurelooking set of frameworks against which they can credibly disclose, track, compare and improve their ESG performance.

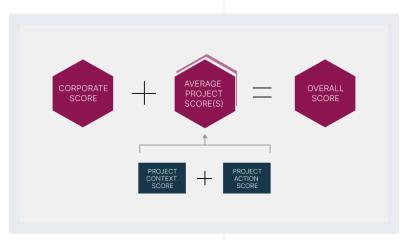
Digbee ESG has been developed in consultation with mining companies, ESG specialists and capital providers and is endorsed by leading financial institutions, producing mining companies and other industry stakeholders.

This Digbee ESG Report is the resulting output from your recent ESG submission and comprises an executive summary, your score, score breakdown, positives and negatives as well as a summary of your ESG submission responses.

How are scores calculated?

All ESG submissions are manually reviewed and scored against a set of rigorous and standardised scoring criteria.

An ESG submission comprises two types of questionnaire:



Visualisation of how Digbee ESG scores are calculated

- 1. A single corporate-level questionnaire.
- 2. One or more project-level questionnaires (one for each disclosable project you own).

The questionnaires are tailored to the stage of the mining company and its projects (i.e., exploration, development and/or producing).

The project questionnaires comprise a number of 'Context' questions (relating to the situation of the project) and 'Action' questions (what is being done by the management both in the boardroom and on the ground to mitigate ESG risks).

There is little one can do to influence context scores, however action scores can vary depending on the action being taken by management. Each question is scored in accordance with our scoring criteria and averaged to provide an overall output score along with a confidence banding. A confidence banding illustrates the potential range with which the awarded score can move should any of the risks be realised or mitigated.

Who scores the submission?

Scoring is undertaken by a team of accredited ESG experts who have deep experience in mining projects similar to those being scored. Each scoring team consists of two scorers and a team lead. This team of three ensures consistent scoring through robust peer review and quality control.



Executive summary



Your next ESG submission is due on 6th July 2024. We will notify you 2 months prior to the expiry of your current Digbee ESG score.

aguar Mining Incorporated (Jaguar) is a Canadian-listed junior gold mining, development, and exploration company operating in the Iron Quadrangle, a prolific greenstone belt in the state of Minas Gerais, Brazil. Jaguar has three gold mining complexes and a large mineral rights holding of nearly 58,000 ha. Two of the complexes, the Caeté Gold Mine Complex and the Turmalina Gold Mine Complex, were submitted to Digbee ESG for review. All facilities are operated by Mineração Serras do Oeste (MSOL), Jaguar's wholly owned Brazilian subsidiary. Operations are fully private as there is no state involvement.

The region in which Jaguar operates is a well-established mining area, with hundreds of years of mining history, and numerous operating mines. Facilities are serviced by power from the national grid which incorporates significant renewable energy generation.

Jaguar was listed in October 2003, and restructured in 2013. Since 2015 it has been producing a total of approximately 20,000 oz Au per quarter.

The company boasts a number of strengths regarding those areas important for ESG. These include explicit focus on diversity and inclusion particularly in executive and management positions, the use of dry stack tailings and investigation of in-pit disposal, environmental education, and increasing stakeholder engagement in ESG. The company prepares biennial Sustainability Reports, the most recent of which was for the calendar year 2020.

The company provides corporate governance documents in a transparent manner, including its policies and procedures related to audit, insider training, corporate governance, compensation, and health and safety. The company has an independent whistleblower hotline.

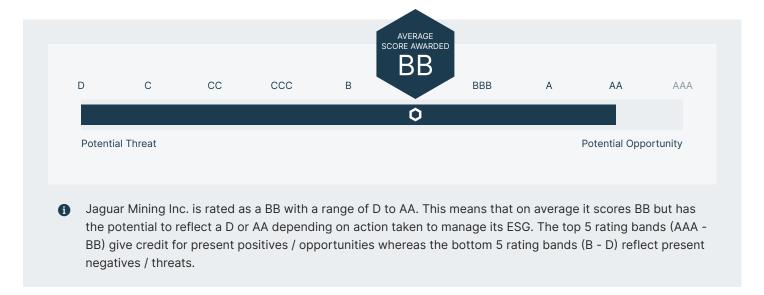
Based on the information provided, Jaguar has achieved an overarching score of BB with a range of D to AA. The range encompasses both areas of concern as well as those that exceed expectations. The corporate achieved a score of BB with a range of C to AA, while Caeté obtained a score of BB with a range of C to AA, and Turmalina a score of BB with a range of D to AA.

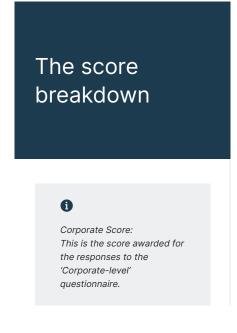
Your submission team

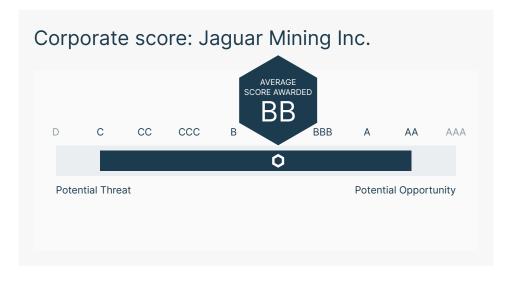
- Hashim Ahmed APPROVER
- Patrícia Pereira ADMIN
- Tiago Wilke ADMIN
- Marina Freitas ADMIN



Overall score for this submission

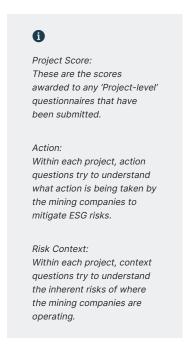






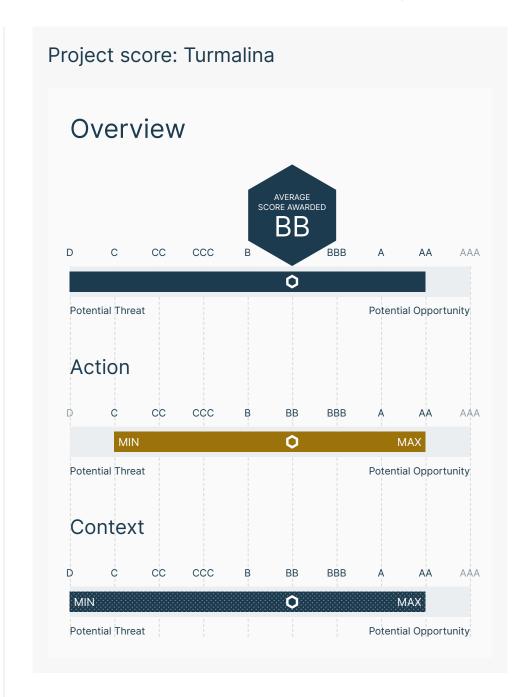


The score breakdown continued...











Overarching positives and negatives

Positives

- Both operations are located in a region and a state highly supportive of mining, in which the regional plans are consistent with mine development and operation. The workforce is largely drawn from the local area of the operations.
- The company places a high degree of importance on diversity and inclusion within its workforce of nearly 1100 persons at present through programs such as the establishment of a forward-looking committee called DIVERSIFICA.
- Information submitted by the company illustrates transparent and regular communication with the environmental regulatory authorities.
- A mature level of documentation is in place for the company as a whole.

Negatives

- · According to the submission, leadership remuneration is not as yet linked to ESG targets.
- The tailings storage facilities (TSFs) at both operations are reaching their maximum capacity, though investigations are ongoing about in-pit disposal as an option for future tailings.
- Information submitted indicates a concerning level of safety incidents, particularly regarding lost time and reportable injuries.
- · Reports of complaints related to noise, dust and vibration are indicated in the submission, however, the documentation does not illustrate how such complaints are documented, responded to, or closed out.
- Information submitted indicates a number of pending lawsuits.

Corporate positives and negatives

Corporate positives

- 1. Jaguar Mining Incorporated (Jaguar) is a Canadian junior gold mining company that conducts business in Brazil v its wholly owned subsidiary, Mineração Serras do Oeste.
- 2. Current company production is averaging approximately 20,000 ounces of gold per quarter.
- 3. Jaguar holds substantial mineral rights across nearly 58,000 ha, as well as three processing plants and four mines. The region it operates in is a long-term wellestablished mining region.
- 4. The Corporate Governance structure provides guidance towards identifying Board skills and replacement procedures, as well as the means of addressing related risks. This also provides guidance related to diversity and inclusion.
- 5. The company has evaluated the skills that are inherent in Board members and has considered the risks related to resignation and/or replacement. Information submitted infers that the identification of skills is a necessary part of replacement of Board members.



- 6. The company has established a forward-looking committee in Brazil (DIVERSIFICA) which is directed towards helping to ensure diversity and inclusion within the Brazilian workforce.
- 7. The information submitted illustrates an ongoing concern for the care of its workforce, with aspects related to ergonomics, personal hygiene, and personal health.
- 8. The company publishes a regular newsletter (Jaguar In Focus, Jaguar em foco) which documents a wide range of social and community support activities.
- 9. Jaguar prepares a biennial Sustainability Report, the latest version of which was published for the calendar year 2020.
- 10. Jaguar maintains an up-to-date webpage, which provides clear links to: Corporate; Investors; Operations; Compliance; ESG; and Contact. Corporate policies, committee charters and technical reports are easily accessed from the company webpage.
- 11. Estimated costs have been prepared for Asset Retirement Obligations (ARO) for ten years, to the year 2033.
- 12. The company understands the future tailings management facility requirements will be subjected to permitting processes for implementation.
- 13. The company has established policies for Insider Trading, Internal Audit, Compliance, Anti-Bribery and Anti-Corruption, and Risk Management. The company also has a Code of Conduct and Ethics.
- 14. The company has an established Approval Matrix and a Compliance Programme.
- 15. The company conducts site simulations for specific potential accidental events which are clearly documented.
- 16. The company has a Whistleblower Hotline along with links to contact methods for both internal persons and third parties, executed and operated by an independent operator.
- 17. Information submitted indicates that complaints and concerns are reported to senior management.
- 18. The company complies with Brazilian tax law and regulations.
- 19. The Company has implemented a Risk Management Policy, and a quarterly risk assessment analysis of the main risks, likelihood, impact, and action plans.



Corporate negatives

- 1. The collaboration with IAMGOLD infers exploration activities are occurring on the mineral rights properties managed by the company, however, the information submitted does not provide detail relating to IAM Gold activities.
- 2. While it has been in operation for many years, according to the submission, and the company biennial Sustainability report, the company has not yet committed to specific ESG goals or targets.
- 3. Remuneration for senior leaders is not explicitly linked to ESG performance.
- 4. Although the Board makeup appears sufficient, there is limited information regarding the ESG related skills and experience within existing Board members. Further, there is no system in place for rotation of Board members.
- 5. Based on the information reviewed, the budgets identified in technical reports for closure appear to be lower than those that may be in place for operations of a similar scale and maturity.
- 6. The company has a significant number of ongoing lawsuits as well as several pending labour grievances. Please note that the company should be given credit for its transparency in the disclosure of this level of detail.
- 7. Although complaints have been received and are reported on in the submission, no formal grievance or complaints management process is yet in place.



Project positives and negatives

Project positives - Caeté

- 1. Jaguar Mining Incorporated (Jaguar) has a 100% interest in the Caeté Mining Complex, located approximately 50 km east of Belo Horizonte, in the state of Minas Gerais, Brazil.
- 2. Minas Gerais is a mining friendly state, with mining being a fundamental component of social, community and economic development for hundreds of years, with other existing, operating, and approved mine developments in the area. Mining in the area is consistent with regional plans.
- 3. Mining and processing for Jaguar are carried out by Mineração Serras do Oeste (MSOL), the 100% owned Brazilian subsidiary of Jaguar. The company is private.
- 4. The submission indicates a high degree of compliance with regulations and other relevant expectations regarding necessary reporting to the appropriate government authorities, as might be expected by a mature operation.
- 5. The company is subject to regular inspections by environmental authorities as well as labor authorities.
- 6. The Caeté Mining Complex includes two underground mines (Pilar and Roça Grande) and the Caeté processing plant. The Roça Grande mine has been in Care & Maintenance since 2018. Ore extracted from the operating Pilar mine is transported by vehicle 45 km to the processing plant. The processing plant has a capacity of 2200 tpd and is situated approximately 8 km from the nearest community. The processing plant produces gold dore.
- 7. An Environmental Impact Assessment (EIA) was conducted for Pilar in 2008 with an Environmental Management Plan also being prepared at that time. The Company has contracted third party consultants for the annual monitoring of terrestrial fauna at certain sites in the complex.
- 8. No resettlement of people or livelihoods has been required, or will be required, for the activities at the complex.
- 9. Surface rights are a combination of ownership by MSOL and by third parties.
- 10. The company reports that it holds permits for water use at the complex.
- 11. Processing at the plant includes the use of cyanide, the transportation and handling of which is carried out in accordance with the International Cyanide Code.
- 12. The information provided in the submission shows that the Company documents contamination events and submits these as required by regulation to the environmental agency.
- 13. The Company provides surface water discharge monitoring results as required by regulation and submits these to the environmental regulatory agency.



- 14. The Company conducts third party testing on a regular basis to characterize tailings.
- 15. The Company conducts third party analysis for tailings containment systems.
- 16. Power supply for processing is drawn from the national grid, which incorporates substantial renewable (hydroelectric) power generation.
- 17. The region in which this complex is located has not been subjected to conflict and there is no evidence of likely future conflict.
- 18. The company has developed cost estimates for Asset Retirement Obligations (ARO) from 2023 to 2033. Progressive rehabilitation work is being carried out.
- 19. The company has developed a clear understanding of the studies, permits and submissions that will be required for closure activities at this complex.
- 20. Over 90% of the total workforce are from the region.
- 21. The complex does not incorporate camp facilities, given that employees live locally. The Company provides adequate sanitary facilities for employees and contractors.
- 22. The Company has proactive health and culture programs focused on improving quality of life.
- 23. The Company has established the DIVERSICA Committee which targets the enhancement of diversity and inclusion in the work force. This committee is established according to a statute of Jaguar which defines its membership and activities.
- 24. The complex uses contracted, armed security forces, which is often a standard security measure for the production and transport of gold dore.
- 25. Purchasing is largely local, to the extent of at least 60% in Minas Gerais, with the total being on the order of 90% in Brazil.
- 26. The Company makes use of a range of social media channels for communicating its activities to interested parties.

Project negatives - Caeté

- 1. The information clearly identifies that the Caeté operation requires additional tailings disposal capacity at the end of 2024, though investigations are ongoing about in-pit disposal as an option for future tailings.
- 2. The submission did not contain information specific to how risks pertaining to the management of tailings storage facilities are managed.
- 3. Secondary information (not included in the submission, but publicly available)



- reviewed by the assessment team indicates that the ore processing plant is in close proximity to a national park. The importance or relevance of this proximity has not been defined in the company submission.
- 4. The information reviewed by the assessment team in the Company technical reports provides a closure capital cost estimate which appears relatively modest given the risk uncertainty and projected potential cost of closure of the complex. The information does not provide details on the significant individual elements of facility closure. The bonding indicated for closure therefore may not be sufficient, unless there are further provisions in place not included in the submission. There is no indication of potential beneficial reuse of facilities beyond closure, nor of stakeholder engagement related to the identification of possible reuse of these facilities.
- 5. The operation at Pilar mine requires continuous pumping and removal of mine water, however, the submission reviewed does not clearly provide detail on how this water is monitored, treated, and/or discharged to the receiving environment.
- 6. Information submitted demonstrates a significant number of disabling injuries over several years, with no observed improvement trend. The assessment team did not encounter information which would indicate that LFI (Learning from Incidents) is incorporated into the review and improvement of controls. Active control management is not evident from the submission.
- 7. Information submitted indicates that risk may exist related to groundwater contamination. However, the submission does not show that groundwater monitoring is being conducted to evaluate or monitor this potential risk on an ongoing basis.
- 8. Community involvement and stakeholder consultation are not specifically defined in the information submitted by the company. There is no indication that stakeholders are consulted regarding ongoing operations and/or future closure and post closure plans. The company does not currently have a person on site who is specifically responsible for community consultation, which may be of concern considering the issues related to impacts and complaints related to mining activities.
- 9. The Company does not have an archaeological chance find procedure for its operation, although some mapping has been prepared to identify historical or cultural features.
- 10. The Company has not initiated work related to biodiversity management, although reporting on presence of fauna has been conducted.
- 11. The company has not made any project specific commitments to international or other standards at this complex.
- 12. The company has not conducted Life Cycle Analysis (LCA) or similar for its



products.

- 13. The Company website is relatively limited in detail concerning the Caeté Mining Complex.
- 14. The Company website is accessible for a user to submit queries or concerns to the Company, however, there appears to be no mechanism yet in place for documenting complaints, or for providing direct feedback to persons with queries or concerns.
- 15. The Company has received complaints about mining related effects from the activities at the complex, including vibration, noise and dust. The information submitted to this review does not identify how these complaints have been responded to. Some indication is provided, however, which refers to the evaluation of alternative ore transport routes.
- 16. The Company does not have a due diligence procedure in place for checking the competency of prospective employees or contractors.

Project positives - Turmalina

- 1. Jaguar Mining Incorporated (Jaguar) has a 100% interest in the Turmalina Mining Complex, located approximately 130 km northwest of Belo Horizonte, in the state of Minas Gerais, Brazil.
- 2. Minas Gerais is a mining friendly state, with mining being a fundamental component of social, community and economic development for hundreds of years, with other existing, operating, and approved mine developments in the area. Mining in the area is consistent with regional plans.
- 3. Mining and processing for Jaguar are carried out by Mineração Serras do Oeste (MSOL), the 100% owned Brazilian subsidiary of Jaquar. The company is private.
- 4. The submission indicates a high degree of compliance with regulations and other relevant expectations regarding necessary reporting to the appropriate government authorities.
- 5. The company is subject to regular inspections by environmental authorities as well as labor authorities, as might be expected by a mature operation.
- 6. The Turmalina Mining Complex was acquired in 2004 and comprises underground mining from multiple ore bodies (termed A, B and C) and the Turmalina processing plant. The site includes two satellite deposits. The total mineral rights held by the company is approximately 7700 ha. Ore from operating mines is transported directly to the Turmalina processing plant, thereby eliminating the need for ore movement by truck through or adjacent to communities. The Turmalina processing plant produces gold dore.
- 7. The company is conducting engineering studies (FEL1) with respect to the



- possible future processing of ore from a satellite deposit, which include the consideration of the preparation of a gold concentrate from a modified processing plant.
- 8. No resettlement of people or livelihoods has been required, or will be required, for the activities at the complex.
- 9. Surface rights are a combination of ownership by MSOL and by third parties.
- 10. The company reports that it holds permits for water use at the complex.
- 11. Processing at the plant includes the use of cyanide, the transportation and handling of which is carried out in accordance with the International Cyanide Code.
- 12. The information provided in the submission shows that the Company documents contamination events and submits these as required by regulation to the environmental agency.
- 13. The Company provides surface water discharge monitoring results as required by regulation and submits these to the environmental regulatory agency.
- 14. The Company conducts third party testing on a regular basis to characterize tailings.
- 15. Two types of tailings are produced at the Turmalina plant, a paste fill which is used for mine backfill, and a dry stacked tailings which is stored onsite.
- 16. Power supply for processing is drawn from the national grid, which incorporates substantial renewable (hydroelectric) power generation.
- 17. The company has commissioned a third party study of the feasibility of generating solar power from abandoned surface features.
- 18. The region in which this complex is located has not been subjected to conflict and there is no evidence of likely future conflict.
- 19. The company has developed cost estimates for Asset Retirement Obligations (ARO) from 2023 to 2033. Progressive rehabilitation work is being carried out.
- 20. The company has developed a clear understanding of the studies, permits and submissions that will be required for closure activities.
- 21. The company has commissioned third party expert studies for the closure of the Moita dam, a tailings structure at this complex used up until late 2021. The information in these studies demonstrates significant attention to geotechnical stability and phreatic levels. The studies do not, however, clearly indicate how or if the tailings evaluations conform to international standards.
- 22. Rehabilitation costs associated with the closure of the Moita dam are provided



in the company submission.

- 23. Over 90% of the total workforce are from the region.
- 24. The complex does not incorporate camp facilities, given that employees live locally. The Company provides adequate sanitary facilities for employees and contractors.
- 25. The Company has proactive health and culture programs focused on improving quality of life.
- 26. The Company has established the DIVERSIFICA Committee which targets the enhancement of diversity and inclusion in the workforce. This committee is established according to a statute of Jaguar which defines its membership and activities.
- 27. The complex uses contracted, armed security forces, which is often a standard security measure for the production and transport of gold dore.
- 28. Purchasing is largely local, to the extent of at least 60% in Minas Gerais, with the total being on the order of 90% in Brazil.
- 29. The Company makes use of a range of social media channels for communicating its activities to interested parties.

Project negatives - Turmalina

- 1. Certain mining installations at the complex are adjacent to the Casquilho community which houses some 130 families according to the information provided by the company. The nearest community of size is Pitangui, located 10 km north. Given that comments, queries and complaints are not documented by location, it is not possible to identify whether such issues arise from the Casquilho community or from residents of other communities.
- 2. Certain surface rights at the complex are rented and not owned by Jaguar. Specifically, the company response indicates that the land upon which a tailing disposal area is situated is rented land. Aspects related to long term liability are not clearly defined.
- 3. Natural watercourses are adjacent to and within the mining lease area, creating the potential for downstream contamination should discharges be uncontrolled in quantity and/or quality. The processing plant is located approximately 500m from an adjacent watercourse.
- 4. The Company has received complaints about mining related effects from the activities at the complex, including vibration, noise and dust. The information submitted does not identify how these complaints have been responded to.
- 5. The Company does not have a due diligence procedure in place for checking



the competency of prospective employees or contractors.

- 6. Considering the context of tailings storage facilities and unrelated, historic failures in Brazil, the potential integrated risks associated with existing and future tailings management are not shown to be considered, documented, controlled, or managed by the Company to the level potentially expected.
- 7. The information reviewed by the assessment team in the Company technical reports provides a closure capital cost estimate which appears relatively modest given the risk uncertainty and projected potential cost of closure of the complex. The information does not provide details on the significant individual elements of facility closure. The bonding indicated for closure therefore may not be sufficient, unless there are further provisions in place not included in the submission. There is no indication of potential beneficial reuse of facilities beyond closure, nor of stakeholder engagement related to the identification of possible reuse of these facilities. Information submitted and reviewed by the assessment team does not demonstrate if there is day to day operational activity that is consistent with future site closure. If the date of LOM is as limited as is suggested in the submission, the activity today would be logically oriented to incorporate pre closure activities.
- 8. Based on the information provided by the company, the need for additional tailings disposal capacity is not clear at Turmalina. Should tailing disposal be transitioned to 100% underground, the need for a future surface TSF could be eliminated. The company submission does confirm that tailings is currently being placed underground as cemented paste.
- 9. The operation at Turmalina requires continuous pumping and removal of mine water, however, the submission reviewed does not clearly provide detail on how this water is monitored, treated, and/or discharged to the receiving environment.
- 10. Information submitted demonstrates a significant number of disabling injuries over several years, with no observed improvement trend. The assessment team did not encounter information which would indicate that LFI (Learning from Incidents) is incorporated into the review and improvement of controls. Active control management is not evident from the submission.
- 11. Information submitted indicates that risk may exist related to groundwater contamination. It is understood that groundwater monitoring and management is undertaken in line with agency requirements.
- 12. Community involvement and stakeholder consultation are not specifically defined in the information submitted by the company. There is no indication that stakeholders are consulted regarding ongoing operations and/or future closure and post closure plans. The company does not currently have a person on site who is specifically responsible for community consultation, which may be of concern considering the issues related to impacts and complaints related to mining activities.



- 13. The Company does not have an archaeological chance find procedure for its operation, although some mapping has been prepared to identify historical or cultural features.
- 14. The Company has not initiated work related to biodiversity management.
- 15. The company has not made any project specific commitments to international or other standards at this complex.
- 16. The company has not conducted Life Cycle Analysis (LCA) or similar for its products.
- 17. The Company website is relatively limited in detail concerning the Turmalina Mining Complex.
- 18. The Company website is accessible for a user to submit queries or concerns to the Company, however, there appears to be no mechanism yet in place for documenting complaints, or for providing direct feedback to persons with queries or concerns.





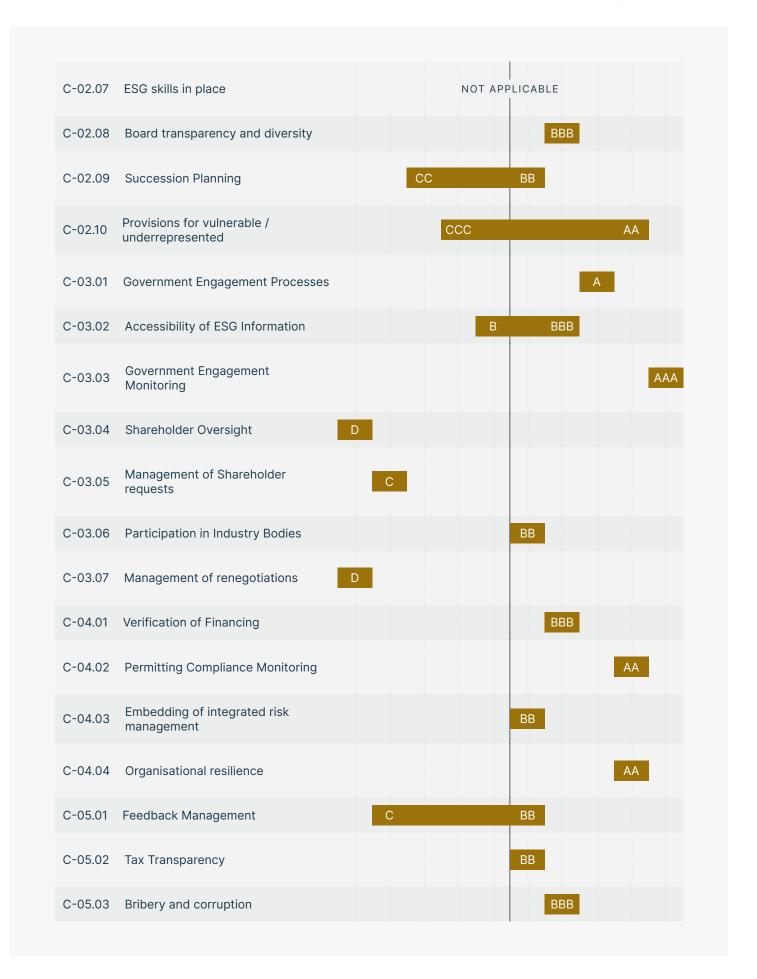
Corporate Score Distributions: Jaguar Mining Inc.

Producing Framework: Scores valid for 12 months as of 6th Jul 2023.

The following visual is an overview of the corporate-level questionnaire scores.









C-05.04 Prioritisation of ESG NOT APPLICABLE		
	C-05.04 Prioritisation of ESG	NOT APPLICABLE

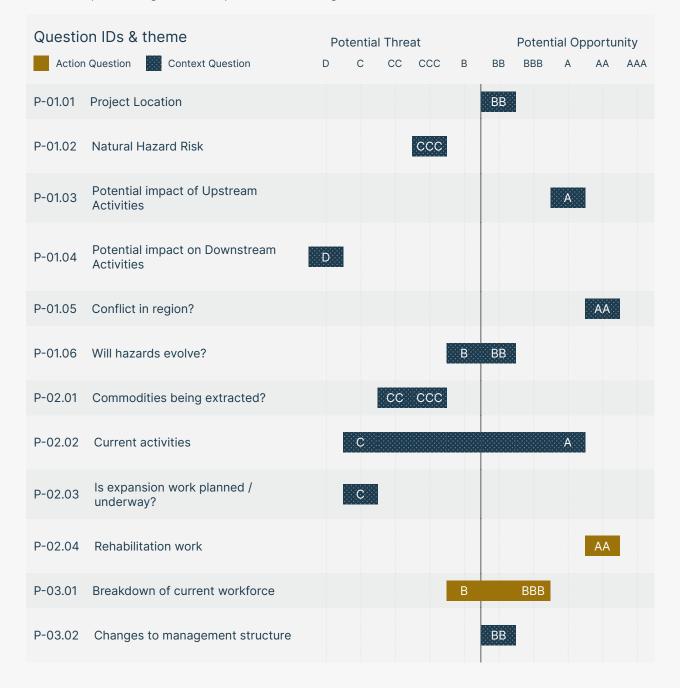




Project Score Distributions: Caeté

Producing Framework: Scores valid for 12 months as of 6th Jul 2023.

This is an overview of the project-level questionnaire scores. In some instances a question may elicit multiple responses (e.g., context and action). In these cases, we provide multiple scores for that question ID. The individual scores noted on each bar are the scores that have been awarded for that question. If an individual bar comprises 2 scores, it's because the scores covered a range across multiple bandings and are represented as a range.











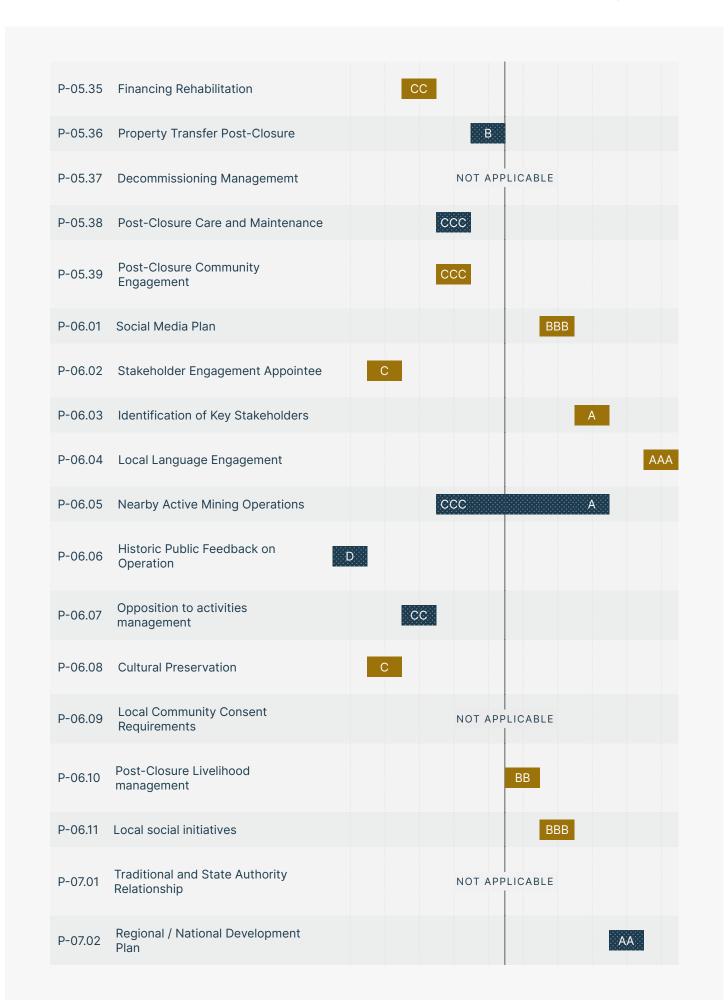


















Environmental (and Social) Impact P-08.04 Assessment (EIA/ESIA) quality and verification	A
P-08.05 Permitting Compliance	NOT APPLICABLE





Project Score Distributions: Turmalina

Producing Framework: Scores valid for 12 months as of 6th Jul 2023.

This is an overview of the project-level questionnaire scores. In some instances a question may elicit multiple responses (e.g., context and action). In these cases, we provide multiple scores for that question ID. The individual scores noted on each bar are the scores that have been awarded for that question. If an individual bar comprises 2 scores, it's because the scores covered a range across multiple bandings and are represented as a range.



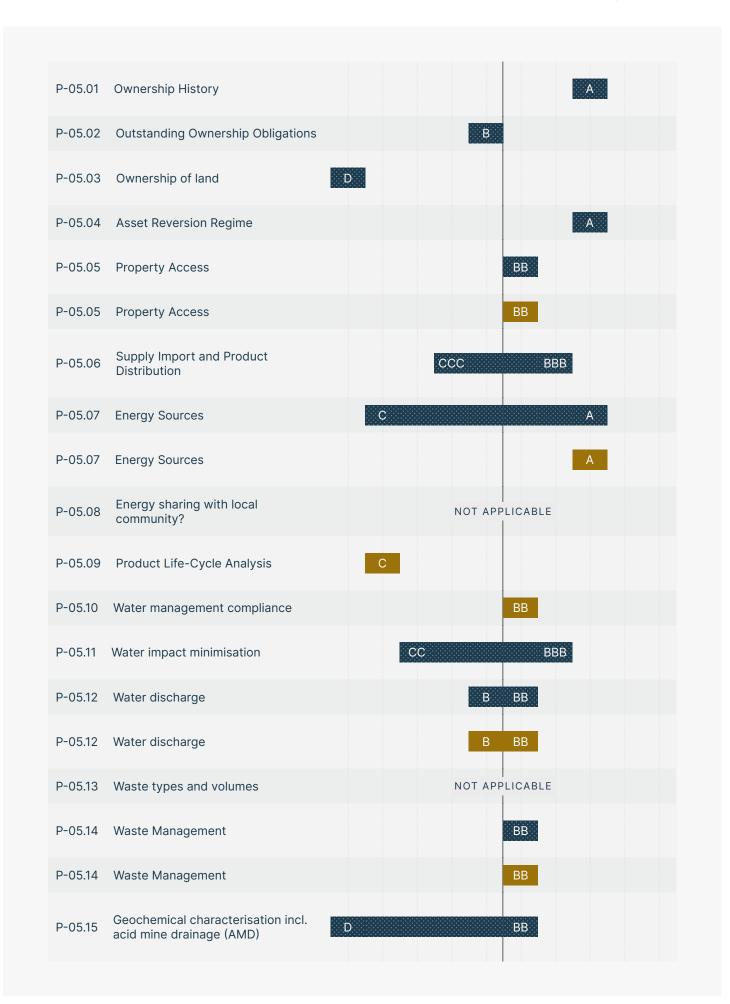








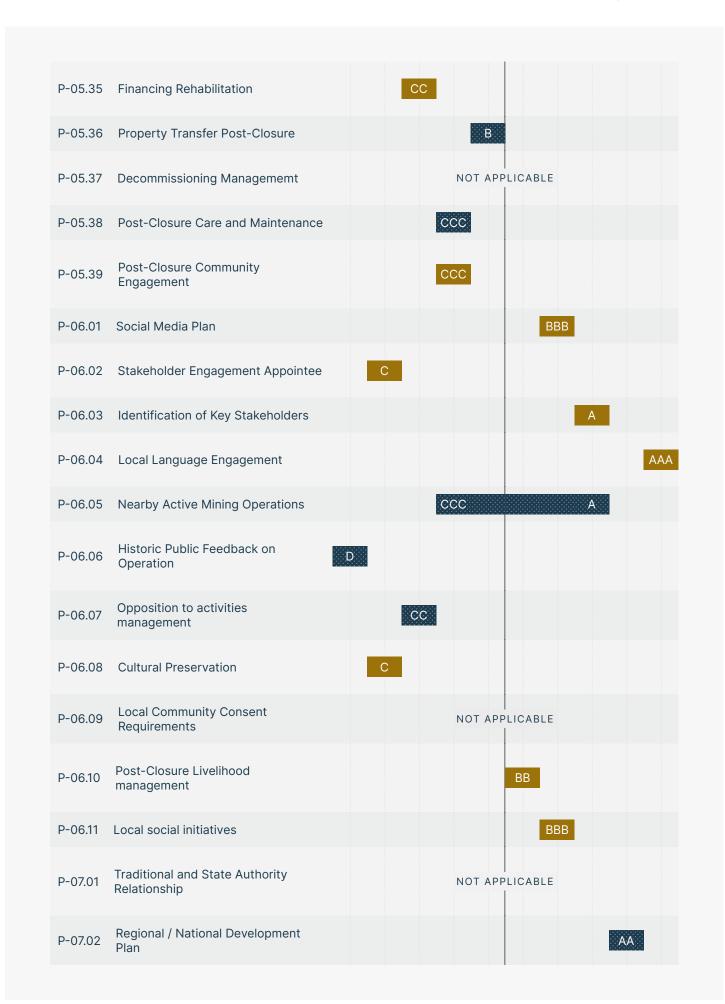


















Environmental (and Social) Impact P-08.04 Assessment (EIA/ESIA) quality and verification	A
P-08.05 Permitting Compliance	NOT APPLICABLE