BARRICK	**Tailings Management Standard**
GENERAL/CRITICAL	Critical

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SCOPE: This Critical Standard is applicable to all Barrick Gold Corporation ("Barrick") personnel, where Barrick refers to Barrick Gold Corporation and all subsidiary companies, including, subject to any shareholders' agreement, joint venture agreement or similar agreement, joint ventures where Barrick is the operator.

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Performance Standards

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RELATED DOCUMENTS	
	Management of Change (MOC) Procedure
	TSF Risk Management Procedure
	Critical Control Management Plan Guideline
BGENV-ST-005	Closure Planning for Project Development, Mine Operations, and Closure Properties Standard ("Closure Standard")

1 PURPOSE

This Corporate Standard for Tailings Management facilitates compliance with Barrick policies. The objectives of this Critical Standard are to:

- Ensure that Barrick locates, designs, constructs, operates and closes its tailings storage facilities (TSFs) using risk-informed decision making and in compliance with all applicable laws and regulations, and in alignment with the Global Industry Standard on Tailings Management;
- Strive to meet Barrick's commitment to implement practices consistent with the ICMM Tailings Governance Framework and where applicable MAC's Towards Sustainable Mining® (TSM®);
- Establish appropriate geotechnical, hydrological, hydrogeological and environmental design, construction, operation and closure criteria and procedures for Barrick's TSFs;
- Mandate the development, compliance with and regular updating of key tailings management documents;
- Define the requirements and resources for the dedicated management and technical review of Barrick's TSFs; and
- Promote improvement of existing tailings management strategies as well as development and implementation of alternative and new technologies to reduce undesired environmental impacts, social effects and financial costs associated with construction, operation and closure of Barrick's TSFs.

2 INTERPRETATION

Responsibility for interpretation of this Critical Standard resides with Barrick's Metallurgy, Engineering and Capital Projects Executive.

3 DEFINITIONS, ORGANIZATION AND SCOPE

Terminology and definitions associated with the performance standards are summarized in Section 1 (Acronyms and Definitions) of Appendix A.

The performance standards are grouped by: siting, design and construction; operation; and closure, with aspects common to all phases indicated first. Many of the performance standards reference the requirements and technical criteria provided in Appendix A.

In applying this Critical Standard, reference should be made to the other Barrick Standards, Guidelines or Procedures. Should any conflict(s) be encountered between the performance requirements outlined in this Standard and the requirements and/or guidance provided by other documents, this Standard shall prevail.

With regard to tailings management, this Critical Standard applies to all tailings storage facilities. Some components of this Critical Standard may not apply to tailings storage in former open pit mines. This Standard does not apply to tailings storage in underground mine workings, lacustrine and riverine tailings disposal or submarine tailings discharge.

This Critical Standard applies to TSFs at all Barrick-owned operations and all joint ventures where Barrick is the majority owner or the operator. Where Barrick has a minority equity stake and/or no operational authority, this Standard will be made available to the operator along with a request that comparable or better management objectives and performance requirements be applied.

The performance standards outlined in this document supersede previous and existing Barrick Corporate requirements for tailings management. The performance standards must be applied to all current and future TSF design projects, operating facilities and closed sites.

4 PERFORMANCE STANDARDS

(a) Requirements Common to all TSF Phases

(1) An Engineer of Record (EoR) must be identified for all design and construction work, including but not limited to earthwork, civil, infrastructure, mechanical and geosynthetic material components. Where a new EoR is to be appointed, the selection shall be decided by the Accountable Executive.

(2) A Responsible Tailings Facility Engineer (RTFE) must be identified for all phases throughout the TSF lifecycle.

(3) The EoR and RTFE must comply with their respective qualification requirements, duration of assignment, roles and responsibilities as outlined in Section 2 (Roles and Responsibilities) of Appendix A.

(4) A Potential Failure Mode Analysis (PFMA) must be performed for all phases to identify credible failure modes and to determine the Failure Consequence Classification (FCC) as outlined in section 4 (Geotechnical Criteria) of Appendix A. The PFMA and FCC must be updated/reviewed at least every five years or sooner in response to significant design, construction, operation and closure milestones, events or material change in the social, environmental and local economic content downstream of the facility.

(5) Barrick's TSF Risk Management Procedure (TSF RMP) must be followed for all phases. The TSF RMP must be carried out to determine the current level of risk associated with the identified credible failure modes (as per the PFMA). The TSF risk assessment must be updated as appropriate in response to significant design, construction, operation and closure milestones or events. At a minimum TSF risk assessment must be reviewed annually.

(6) Barrick's critical controls management plan (CCMP) procedure must be followed for all phases. Critical controls and their associated verification activities must also be identified and documented in relation to each of the credible failure modes. The CCMP must be kept current and reviewed at a minimum annually.

(7) Barrick's management of change (MoC) procedure must be followed as part of the evaluation of any significant, proposed modification to the design, construction, operation or closure plan for a facility and as part of the evaluation of any changes to personnel in key roles notably the EoR and RTFE.

(8) TSFs must be designed, constructed, operated, closed and reclaimed with the consideration of protection of: human health; water and air quality; domestic livestock; and aquatic, avian and terrestrial wildlife. Where cyanide solutions are present, the requirements of the International Cyanide Management Code must be followed. Applicable technical requirements for geochemical and environmental control are summarized in Section 3 (Geochemical and Environmental Requirements) of Appendix A.

(9) TSFs must be designed, constructed, operated, closed and reclaimed so as to prevent the uncontrolled release of solids and/or fluids, and the compromise of buried elements including filter zones and/or geosynthetic liners, resulting from large-scale structural instability such as slope failure or deformation. Adequate controls must be provided for all phases to prevent unacceptable erosion by wind and water. Potential physical and chemical degradation of structural or critical elements such as TSF embankment fills or filter material must be considered. Applicable technical requirements for physical stability are summarized in Sections 4 (Geotechnical Criteria) of Appendix A.

(10) TSF slurry transport, discharge and reclaim water systems, must be designed, constructed, operated, closed and reclaimed so as to reduce net fluid losses and prevent the uncontrolled release of hydraulically-transported solids and/or fluids to the environment. Applicable technical requirements for fluid and transported solids management are summarized in Sections 5 (Hydrological Criteria) of Appendix A.

(b) Siting, Design and Construction

(1) For new facilities a siting study must be carried out to identify all feasible sites. A multi-criteria alternative analysis of all feasible sites, technologies and tailings management strategies must be carried out.

(2) Reclamation and post-operation performance requirements must be incorporated in the design and operating plans to reduce closure construction costs and long-term liabilities. Where regulatory and property-ownership conditions allow the possibility of returning a closed TSF site to the state, the design, permitting agreements and reclamation strategy should avoid perpetual care.

(3) A design must be developed for each stage of construction and a constructability review appropriate for the project must be assigned and completed during the final design phase. The review shall verify whether or not the issued-for-construction documents are coordinated, complete and buildable, and if the construction schedule, resources and management team are adequate.

(4) TSF construction must follow construction quality control (CQC) and construction quality assurance (CQA) plans approved by the RTFE in consultation with the EoR.

(5) Prior to initial operation, a permanent document archive system must be established.

(c) Operation

(1) A dedicated management system must be established and maintained for each TSF, and the RTFE assigned to the management of each facility must be provided with the appropriate staff, technical support, financial resources and time to ensure a sustainable, environmentally acceptable and safe operation of the facility. All personnel operating, maintaining and monitoring the facility must be properly trained in their duties.

(2) Quantitative performance objectives (QPOs) must be established for each TSF to help define and guide critical management objectives for the facility. QPO requirements are summarized in Section 6 (Quantitative Performance Objectives) of Appendix A.

(3) Each active TSF must be monitored and subjected to routine technical inspections and reviews. Recommendations from such inspections and reviews must be tracked and acted upon, as summarized in Section 7 (Monitoring, Inspections and Reviews) of Appendix A.

(4) Key operating documents must be developed prior to initial operation, and kept current, tested (as appropriate) and adhered to during operation. Overall document requirements are summarized in Sections 8 (Document Management) of Appendix A and listed in Appendix B.

(5) For each active TSF, a LOM tailings generation and storage requirement review that incorporates the current, applicable processing schedule must be completed at least once per year. Requirements for completion of annual LOM tailings capacity are summarized in Section 9 (LOM Reviews) of Appendix A.

(6) During operation, the closure plan for the TSF must be maintained current and the facility must be operated in a manner consistent with its closure plan, including safeguarding reclamation materials and ensuring that dimensions and slopes are consistent with budgeted closure construction work. Overall closure requirements are summarized in Section 10 (Closure Requirements) of Appendix A.

(d) Closure

(1) Final closure plans must be consistent with Barrick's Closure Standard and the requirements summarized in Section 10 (Closure Requirements) of Appendix A.

(2) Closure performance objectives and a performance assessment period must be clearly defined and documented before the end of operations, and contingency plans prepared in case closure monitoring results indicate unacceptable departure from performance objectives.

(3) A closure care and maintenance manual must be developed before the end of operations and kept current throughout the post-operation period.

(4) Geotechnical, hydrological and environmental monitoring must be conducted as required to enable assessment of the closure performance objectives. At a minimum, the closure monitoring programs must include the schedule of technical reviews and inspections, and tracking and acting on resulting recommendations, as summarized in Section 7 (Monitoring, Inspections and Reviews) of Appendix A.

5 EFFECTIVE DATE AND REVIEW OF THIS STANDARD

This Critical Standard is effective 14 January 2022. This document will be reviewed and updated as necessary.

Appendix A
Requirements and Technical Criteria

SECTION 1 ACRONYMS AND DEFINITIONS

AA	Assurance Audit
AEP	Annual Exceedance Probability
ANCOLD	Australian National Committee on Large Dams
ARD	Acid Rock Drainage
CAP	Corrective Action Plan
CCMP	Critical Control Management Plan
CDA	Canadian Dam Association
CQA	Construction Quality Assurance
CQC	Construction Quality Control
CRR	Construction Records Report (as-built report)
DAR	Deviance Accountability Report
DBR	Design Basis Report
DMF	Design Maximum Flood
DSHA	Deterministic Seismic Hazard Analysis
DSI	Dam Safety Inspection
DSR	Dam Safety Review
EDGM	Earthquake Design Ground Motion
EoR	Engineer of Record
EPRP	Emergency Preparedness and Response Plan
ESA	Effective Stress Analysis
FRA	Formal Risk Assessment
FS	Factor of Safety
GCL	Geosynthetic Clay Liner
GIS	Geographic Information System
GISTM	Global Industry Standard on Tailings Management
GM	General Manager
HDPE	High-Density Polyethylene
HLF	Heap Leach Facility
ICMC	International Cyanide Management Code
ICMM	International Council on Mining & Metals
ICOLD	International Commission on Large Dams
InSAR	Interferometric Synthetic Aperture Radar
IR	Independent Third-Party Review
LOM	Life of Mine
MAA	Multi-criteria Alternative Analysis
MAC	Mining Association of Canada

MCE	Maximum Credible Earthquake
MDE	Maximum Design Earthquake
ML	Metals Leaching
MoC	Management of Change
MQA	Manufacturer's Quality Assurance
MQC	Manufacturer's Quality Control
OMS	Operation, Maintenance and Surveillance
PFMA	Potential Failure Mode Analysis
PHGA	Peak Horizontal Ground Acceleration
PMF	Probable Maximum Flood
PMP	Probable Maximum Precipitation
PSHA	Probabilistic Seismic Hazard Analysis
QPO	Quantitative Performance Objective
RASCI	Responsible, Accountable, Support, Consult and Inform
RTFE	Responsible Tailings Facility Engineer
SANS	South African National Standards
TARP	Trigger Action and Response Plan
TSF	Tailings Storage Facility
TSF RMP	TSF Risk Management Procedure
TSM®	Toward Sustainable Mining®
USA	Undrained Strength Analysis

SECTION 1 ACRONYMS AND DEFINITIONS (Cont.)

Construction, Operation and Closure Phases	
Construction	For a TSF, construction entails the development and completion of a Stage 1 or Starter Dam facility, including the impoundment of non-process affected water. Once non-contact water, tailings solids, process-affected fluids and/or other mine waste materials have been placed within the facility, the TSF is no longer considered to be in construction phase.
Operation	For a TSF, operation implies the continuous or periodic receipt of tailings and fluids with corresponding crest raises. A TSF no longer intended to receive new tailings but being used to store and/or transfer water as part of an operating mine's fluid management strategy is considered to be in operation phase and is subject to applicable management, inspection and review requirements.
Closure	For a TSF, three closure phases are considered[1]: • Transition (also referred to as closure construction); activities may include continuous or periodic decant pond removal, cover placement and grading, spillway construction and slope profiling or buttressing. An inactive TSF that is no longer intended to receive new tailings and is not used to store and/or transfer water as part of an operating mine's fluid management strategy is considered to be in closure transition phase and is subject to applicable management, inspection and review requirements. • Active Care; activities primarily include regular monitoring and inspections of performance as the TSF proceeds to steady-state conditions, with routine maintenance and water management as required • Passive Care; activities include monitoring and inspections at a reduced frequency and few maintenance requirements, reflective of the TSF being near or at steady-state conditions.

[1] Terminology and definitions adopted from the Canadian Dam Association: Application of Dam Safety Guidelines to Mining Dams (2014); reference should be made to this document for further clarification.

SECTION 1 ACRONYMS AND DEFINITIONS (Cont.)

Design and Performance Monitoring Definitions	
Observational Method	In the context of a TSF, the observational method[2] for geotechnical engineering entails: • adequate investigation and characterization of site, material and operation/closure conditions and their most unfavorable deviations; • completion of a design based on anticipated, reasonable conditions; • identification of performance parameters to monitor (construction, operation and/or closure phases) and estimation of their expected values under the anticipated conditions and under their most unfavorable deviations; • in advance, the selection of and preparation for corrective actions to counter trends deviating from expected values; • regular measurement and evaluation of performance parameters; and • modifications to design and/or operation to suit observed conditions.
Performance-Based Risk Informed Method	In the context of a TSF and in addition to the requirements of the observational method, the performance-based risk informed method[3,4] for design, operation and closure entails defining performance objectives using sequential forecasts of the facility behavior throughout the lifecycle and verifying that the performance is behaving as intended and ensuring that the designs are informed by an appropriate assessment of the risks and uncertainties associated with the TSF. The performance-based risk informed approach involves: • expansion of surveillance capacity; • instrumentation automated data acquisition, reduction and reporting; • advanced numerical modeling to forecast tailings facility performance; • ongoing validation of performance and risk assessment; and • modification to design and/or operation to suit performance criteria and acceptable level of risk.

[2] Reference should be made to the seminal paper by Ralph B. Peck: *Advantages and Limitations of the Observational Method in Applied Soil Mechanics*. Ninth Rankine Lecture. Geotechnique, June 1969, 19(2), pp. 171-187.
[3] Reference should be made to the seminal paper by N. Morgenstern 2018, Geotechnical Risk, Regulation, and Public Policy, The Sixth Victor de Mello Lecture
[4] ICMM, Tailings Management: Good Practice Guide (2021)

SECTION 1 ACRONYMS AND DEFINITIONS (Cont.)

Earthquake Design Definitions and Performance Criteria	
Probabilistic Seismic Hazard Assessment (PSHA)	Methodology that evaluates the probability of a given earthquake level being met or exceeded at the site of interest, based on the effects of all earthquakes of different magnitudes spatially distributed around the site of interest and accounting for uncertainties in earthquake size, location and rate of occurrence, and variations in ground motions.
Deterministic Seismic Hazard Assessment (DSHA)	Methodology that evaluates the greatest earthquake (MCE) shaking level from identified sources, which will generate the most severe ground motions at the site of interest.
Maximum Credible Earthquake (MCE)	Greatest conceivable earthquake that could reasonably occur along a recognized fault or within a defined tectonic zone, under the presently known or inferred tectonic framework.

SECTION 1 ACRONYMS AND DEFINITIONS (Cont.)

Flood Design Definitions	
Design Maximum Flood (DMF)	For rainfall-only sites, the flood criteria associated with the failure consequence classification. For rainfall and snowmelt sites, the greater of: • the flood resulting from the most-critical duration spring flood associated with the failure consequence classification acting on the normal year snow accumulation, or • the flood resulting from the most-critical duration 1:100 year rainstorm acting on the probable maximum snow accumulation. Rain-induced snowmelt should be calculated based on rain depth and monthly average temperature and windspeed at end of snowmelt season. For sites subject to extreme meteorological events (such as cyclones, tropical storms or hurricanes), the flood resulting from the most-critical duration PMP associated with the meteorological events.
Probable Maximum Precipitation (PMP)	Theoretically, the greatest precipitation for a given duration that is physically possible over a given watershed area or size of storm area at a particular geographic location at a certain time of the year, under modern meteorological conditions.[5]
Design Wind Event	For wind setup and wave run-up, the greater of: • the two-year maximum hourly wind velocity, or • the mean of the annual average hourly wind velocity plus the standard error (the standard deviation divided by the square root of the sample size).
Wind Setup	Increase of water surface level at the downwind end of a water body due to the horizontal stress applied to the water surface by wind, compared to non-wind conditions.
Wave Run-up	Difference in vertical height between the maximum elevation reached by a wave breaking on (running up) an embankment slope and the water surface elevation at the slope excluding wave action.

[5] Manual on Estimation of Probable Maximum Precipitation (PMP) (3rd Edition, 2009). Publ. No. 1045, World Meteorological Organization, Geneva, 243.

SECTION 2 ROLES AND RESPONSIBILITIES

	Engineer of Record (EoR)	Responsible Tailings Facility Engineer (RTFE)
Role	Reporting to the RTFE, the EoR must advise and assist Barrick or the joint venture in establishing and defining performance objectives and criteria and providing assurance that the facility is or has been: - Designed in accordance with current and applicable laws and regulatory requirements, standards, design guidelines and established performance objectives and criteria; - Constructed in accordance with the design intent, and that any changes implemented during construction are likewise consistent and appropriate to the design intent; - Operated, monitored and performing as per the design intent. The EoR must also advise the Accountable Executive and/or his delegate, in a timely fashion, of any discrepancies and makes recommendations regarding necessary corrections or remedial action to achieve compliance with the requirements.	Reporting to site management, the RTFE is accountable for the integrity of the TSF and responsible for the implementation of the design. The RTFE must establish a working relationship with the EoR, mining, process, permitting, environment and other site-based teams as required. Where applicable the RTFE will be supported by a Tailings Disposal Contractor responsible for the day-to-day operation and monitoring of the facility. Where needed the RTFE will be supported by an external and experienced geotechnical engineer.

SECTION 2 ROLES AND RESPONSIBILITIES (Cont.)

	Engineer of Record (EoR)	Responsible Tailings Facility Engineer (RTFE)
Prerequisites	The EoR must be an appropriately qualified, licensed, experienced and competent geotechnical engineer employed by the consulting firm retained by Barrick or the joint venture. The EoR must have appropriate experience in the design, construction, performance, analysis, and operation commensurate with the complexity and potential consequences of a failure. For all TSFs with a consequence classification of High or above, the EoR will have at least 15 years of related experience. The EoR must have current knowledge of applicable regulations, Global Industry Standard on Tailings Management (GISTM) and, where applicable, good practices guidance developed by ICMM, ICOLD, CDA, ANCOLD, SANS, MAC and other organizations. The EoR must be supported by a multidisciplinary Design Team scaled according to the complexity of the facility. The multidisciplinary Design Team, as required, will be experienced in the fields of geotechnics, hydrology, hydraulics, hydrogeology, seismicity, environmental sciences and reclamation and closure. The consulting firm will be requested to provide written confirmation of the assignment of the individual engineer to the EoR role.	The RTFE will be an appropriately qualified, experienced and competent Engineer preferably employed directly by Barrick or the joint venture. For closed facilities and where approved by the Accountable Executive the RTFE role can be assigned to an appropriately qualified, experienced and competent Geoscientist supported by a Geotechnical Engineer or contracted to an external Engineer not directly employed by Barrick. The RTFE will have appropriate experience in construction, performance, operation, reclamation, closure and project management commensurate with the complexity and potential consequences of a failure. The RTFE must have current knowledge of applicable regulations, Global Industry Standard on Tailings Management (GISTM) and, where applicable, good practices guidance developed by ICMM, ICOLD, CDA, ANCOLD, SANS, MAC and other organizations.

SECTION 2 ROLES AND RESPONSIBILITIES (Cont.)

	Engineer of Record (EoR)	Responsible Tailings Facility Engineer (RTFE)
Succession Planning	The consulting firm retained by Barrick or the joint venture will identify an appropriately qualified, licensed, experienced and competent geotechnical engineer and a member of the design team as deputy EoR. The consulting firm will be requested to provide written confirmation of the assignment of the individual engineer to the deputy EoR role.	The RTFE supported by site management will identify an appropriately qualified engineer as a deputy RTFE.
Understanding of Design Basis and Operation	The EoR must demonstrate a thorough understanding of the design basis of the TSF; the construction history and past performance of the facility (including any upset conditions or deviations from expected performance); current performance of the facility; and future performance objectives and trends to achieving those objectives. This understanding must include the geotechnical, hydrological and relevant environmental aspects of the facility. The EoR must maintain adequate, regular and scheduled engagement with the RTFE and appropriate site staff to continue to develop this understanding and to serve as an identifier of issues pertaining to the safe and appropriate design, operation and/or closure of the facility.	The RTFE must be intimately familiar with the design basis report, design report, and the construction and performance of the TSF. In evaluating and recommending an EoR, the RTFE must assess the ability and availability of that individual to understand, demonstrate and communicate the design basis, construction history, past performance, future performance objectives and closure performance objectives of the TSF. The RTFE must ensure that the selected EoR is provided sufficient opportunity to engage with the RTFE and appropriate site staff, including through regular visits and other communications, to maintain and develop the EoR's understanding of geotechnical, hydrological and relevant environmental aspects and serve as an identifier of issues.

SECTION 2 ROLES AND RESPONSIBILITIES (Cont.)

	Engineer of Record (EoR)	Responsible Tailings Facility Engineer (RTFE)
Overall Duties	The EoR has professional responsibility for assuring to Barrick or the joint venture that the TSF is constructed, operated, monitored and performing according to the design criteria and intent, applicable regulations and standards. The EoR will lead the Design Team and oversee the preparation and provision of schedules, budgets, staffing, site investigation work, in situ and laboratory testing, construction monitoring, reports, drawings, memoranda and other project management support, activities and technical documents for the TSF, as solicited by the RTFE, and will ultimately be responsible for the quality and timing of work products and advice received from the consulting firm. The EoR will participate in periodic identification or review of failure modes, the identification of credible failure modes and periodic risk assessments. The EoR will also participate in the development and review of the Critical Controls Management Plan (CCMP). The EoR must be involved in the preparation and review of the OMS Manual. The EoR will also support the RTFE in providing training to all levels of site personnel on the implementation of the OMS Manual. The EoR many delegate responsibilities to members of the Design Team but not accountability. The EoR must have regular, scheduled communication with the Accountable Executive and/or his delegate. The EoR must also notify Barrick of any critical concerns, or any significant outstanding concerns that have not been adequately addressed.	The RTFE is accountable for assuring to Barrick or the joint venture that the TSF is constructed, operated, monitored and performing according to the design criteria and intent, applicable regulations and standards. The RTFE will ensure that the current phase of the TSF is executed to its stated intent and obligations, and that all TSF-related staffing, resources, permitting, documentation and reporting are available and completed. The RTFE will schedule and participate in periodic identification or review of failure modes, the identification of credible failure modes and periodic risk assessments. The RTFE will also regularly develop, review and maintain current the Critical Controls Management Plan (CCMP). The RTFE is responsible for the preparation and review of the OMS Manual. Supported by the EoR the RTFE is responsible for providing training to all levels of site personnel on the implementation of the OMS Manual. The RTFE may delegate specific tasks and responsibilities for aspects of tailings management to qualified personnel but not accountability. Where applicable the RTFE may delegate the responsibilities for the operation, inspection, monitoring and construction of the TSF to a qualified operator retained by Barrick or the joint venture but not accountability. The RTFE is responsible for ensuring compliance to the Barrick Corporate Standard for Tailings Management, regulatory requirements and the Global Industry Standard on tailings Management. The RTFE must have regular, scheduled communication with the Accountable Executive and/or his delegate. The RTFE must also notify Barrick of any critical concerns, or any significant outstanding concerns that have not been adequately addressed.

SECTION 2 ROLES AND RESPONSIBILITIES (Cont.)

	Engineer of Record (EoR)	Responsible Tailings Facility Engineer (RTFE)
Duration of Assignment	An EoR must be assigned and available throughout the design, construction and operation phases, and throughout the reclamation (closure construction or transition) phase. An EoR must be identified during the active care phase of closure where the consequence classification is High or above, but is not required for the passive care phase. Any significant modifications to the TSF during the active care or passive care phases, such as dewatering, cover placement or diversion channel construction, will return the facility to a transition phase and thus require identification of an EoR.	An RTFE must be assigned and available throughout the design, construction, operation and all closure phases of the TSF. During construction and operation, the RTFE must be site-based. During closure, if no appropriate site-based individual is available, the RTFE role and responsibilities may be transferred to an appropriately qualified, experienced and competent Barrick or joint venture employee or contracted to an external Engineer not based at site.
Design	For all TSF construction activities related to initial development, modifications, facility development (including crest raising campaigns) and site closure, the EoR must provide signed and/or sealed design documents, in their final versions, consistent with applicable professional engineering regulations and acceptable international practice. The EoR must ensure the timely completion and submission to the RTFE of a signed and/or sealed design basis report (DBR), design report and construction drawings.	The RTFE must ensure that the design process and documents as prepared and submitted by the EoR are consistent with the construction, operation and closure performance requirements of the TSF, and are received in their final versions prior to start of construction. The RTFE is also responsible for ensuring that constructability reviews are scheduled, appropriately staffed and completed prior to start of construction.

SECTION 2 ROLES AND RESPONSIBILITIES (Cont.)

	Engineer of Record (EoR)	Responsible Tailings Facility Engineer (RTFE)
Construction Supervision / Reporting	All TSF construction activities must be completed in accordance with an approved design and under adequate supervision, as verified by the EoR or his/her representative. The EoR must ensure the timely completion and submission to the RTFE of a signed and/or sealed Construction Records Report (CRR)/as-built report, in its final version, for each construction activity. The report must include sufficient detail to demonstrate that the work was completed to design intent. To assess the cumulative impact of changes in design or deviations in construction the EoR must also prepare and submit for each construction activity a Deviance Accountability Report (DAR)[6].	The RTFE must ensure that the TSF is constructed according to design intent. Any permanent deviation from design intent, such as changes to geometry, materials or schedule, may be permitted only after confirmatory Management of Change[7] (MoC) review and with the review and approval of the EoR and the RTFE. The RTFE must ensure that copies of each Construction Records Report (CRR)/as-built report are maintained at site during facility development, operation and closure construction. The RTFE must sign off on the final version of the Construction Records Report (CRR). The RTFE must review and submit the Deviance Accountability Report (DAR) to the Accountable Executive and/or his delegate for approval.
Construction Quality Control and Quality Assurance	The EoR, his/her representative, or a separate, suitably qualified, licensed, experienced and competent engineer acting on behalf of the owner, must develop, supervise and document the results of a construction quality assurance (CQA) program to ensure that the level of quality as reported by the contractor or mine personnel responsible for any TSF construction activity is in accordance with the applicable standards and specifications for the work. The results of the CQA program must be reported in the Construction Records Report (CRR)/as-built report.	For all TSF construction activities related to initial development, modifications or expansions, and facility closure, the RTFE must ensure that the contractor or mine construction personnel develop and conduct a construction quality control (CQC) program to document the process for delivering the level of quality required by the corresponding construction contract. The RTFE must ensure that the results of the CQC program are reported to the EoR or his/her representative responsible for construction supervision and the CQA program.

[6] ICMM, Tailings Management: Good Practice Guide (2021)
[7] The details of a Management of Change review can be found in Barrick Gold Corporation: Management of Change Procedure.

SECTION 2 ROLES AND RESPONSIBILITIES (Cont.)

	Engineer of Record (EoR)	Responsible Tailings Facility Engineer (RTFE)
Manufactured Materials Quality Control and Quality Assurance	The EoR, or a separate, suitably qualified and experienced engineer acting on behalf of the owner, must develop, review and document the results of a manufactured materials quality assurance (MQA) program to ensure that the level of quality as reported by the supplier and/or distributer is in accordance with the applicable standards and specifications for the material(s) and appropriate for the intended use in the TSF. The results of the MQA program must be reported in the as-built report.	The RTFE must ensure that materials manufactured off-site, such as geosynthetics, pipelines and geotechnical instrumentation, are accompanied with documentation verifying that the manufactured material quality control (MQC) and MQA requirements have been achieved. The RTFE must ensure that the MQC and MQA documentation is provided to the EoR or his/her representative responsible for construction supervision.
Management or Contractor Change		The RTFE will manage the transition to a new geotechnical consulting firm, EoR or construction contractor, if such change is deemed necessary. The transition management plan and documentation must ensure that the reasons, risks, transfer and limits of responsibility, performance requirements, schedule, contractual terms and other key considerations are adequately contemplated, agreed upon and documented, consistent with Barrick's MoC review. In the case of a change to the RTFE, the new (incoming) RTFE will verify completion of the transition management plan and documentation. The appointment of a new consulting firm and EoR and RTFE must be reviewed and approved by the Accountable Executive.
Quantitative Performance Objectives	The EoR must establish and define appropriate quantitative performance objectives (QPO) for the TSF. The QPOs must be documented, stewarded to and (as required) modified following the requirements summarized in Section 6 of this document.	The RTFE must ensure that appropriate quantitative performance objectives (QPOs) for the TSF are defined, documented, stewarded to and (as required) modified following the requirements summarized in Section 6 of this document.

SECTION 2 ROLES AND RESPONSIBILITIES (Cont.)

	Engineer of Record (EoR)	Responsible Tailings Facility Engineer (RTFE)
Performance Monitoring	The EoR must establish trigger action and response plans (TARPs) as required for the geotechnical, hydrological, meteorological and/or environmental instrumentation data, and review and modify as required the TARPs throughout the lifecycle of the TSF. The EoR must ensure timely review and comment on monitoring data results as received from the RTFE, and must respond immediately in writing to the RTFE if unusual conditions are noted.	The RTFE must ensure that adequate resources, time and training are provided to personnel assigned to performance monitoring of the TSF, including the reading, reduction, review and reporting of geotechnical, hydrological, meteorological and/or environmental instrumentation data. Monitoring guidelines must be established, documented in the OMS Manual and followed where such instrumentation exists at operating or closed sites. The RTFE must ensure that a monitoring report is produced and shared with the EoR for review and comments. Requirements for monitoring guidelines are summarized in Section 7 of this document.
Inspections / Reviews	The EoR is responsible for Dam Safety Inspections and associated reports. The EoR must ensure the timely completion and submission to the RTFE of i) draft versions of inspection reports, for review and comment by the RTFE and ii) signed and/or sealed final versions of inspection reports. Final report versions must include all information to support the EoR's opinion as to adherence to design intent, achievement of performance objectives and assurance of adequate safety of the TSF. All recommendations and non-compliance issues must be clearly summarized in the final report. The EoR will also participate in the TSF dam safety review, independent third-party review and assurance audit.	The RTFE must ensure that inspections and reviews of the TSF are scheduled, completed and reported upon according to the requirements outlined in Section 7 of this document. All recommendations and non-compliance issues resulting from the inspections and reviews must be tracked in the Corrective Action Plan (CAP) registry and assigned and acted upon in an appropriate time and manner, as outlined in Section 8 of this document. The RTFE will also participate in the TSF dam safety inspection, dam safety review, independent third-party review and assurance audit.

SECTION 2 ROLES AND RESPONSIBILITIES (Cont.)

	Engineer of Record (EoR)	Responsible Tailings Facility Engineer (RTFE)
Document Management (Operation)	The EoR must develop and maintain relevant records related to the design, construction, operation, surveillance and closure planning and submit those to the RTFE.	The RTFE must ensure that the TSF design, construction, operation, surveillance, reviews and closure planning documents are: in their final (or current), approved versions; saved electronically in an appropriate format (for final documents, in portable document format (pdf) with metadata encapsulated; for active documents, in their native word processing, spreadsheet or database format) and organized systematically in a secure electronic archive. The RTFE must develop and maintain a document management system to receive, track, manage and store documents. For operating TSFs with a failure consequence classification of Very High or above an integrated management system (Geographic Information System or similar) must be established, implemented and maintain current. At a minimum, the management system must integrate geospatial data (topography, structures, surveys, …), imagery (satellite, drones, photographs, …) and remote sensing (InSAR), site investigation location and data, and instrumentation location and real time data.
Emergency Preparedness and Response Plan		With input from the EoR the RTFE is responsible for the preparation/review of the EPRP. The RTFE must ensure that the EPRP is maintained current and tested throughout the lifecycle of the TSF.
Life of Mine Planning		The RTFE must ensure the completion and communication of annual life of mine (LOM) tailings capacity according to the requirements outlined in Section 9 of this document.

SECTION 2 ROLES AND RESPONSIBILITIES (Cont.)

	Engineer of Record (EoR)	Responsible Tailings Facility Engineer (RTFE)
Operation Change		The RTFE must ensure that the TSF is operated according to design intent. Any substantive and permanent deviation from design intent, such as excess water storage in the TSF decant pond, may be permitted only after confirmatory MoC review and with the review and approval of the EoR and Accountable Executive.
Closure Planning		The RTFE must ensure that closure planning for the TSF is kept up to date and at a level of technical detail and cost estimating appropriate for the current design, construction or operation phase. Any substantive changes in the annual LOM tailings capacity must be reflected in the closure planning. Closure planning requirements are outlined in Section 10 of this document.
Document Management (Closure)		The RTFE must ensure that the TSF design, operating, monitoring, review and closure planning documents (electronic and/or paper copy) from the operating phase are archived in a single, secure location on or off-site with controlled access. The RTFE must also ensure that a closure care and maintenance manual is developed and maintained current, consistent with the requirements summarized in Section 8 of this document. The RTFE must develop and maintain a document management system to receive, track, manage and store documents consistent with Barrick's Document Management procedure.

SECTION 3 GEOCHEMICAL AND ENVIRONMENTAL REQUIREMENTS

Cyanide Code	Proposed and operating mines seeking certification as being in compliance with the International Cyanide Management Code (ICMC) must ensure that the performance goals and objectives as set out in the Standards of Practice for each Principle of the ICMC Code can be achieved by the approved TSF design.
Acid Rock Drainage / Metals Leaching	The potential for acid rock drainage (ARD) and metals leaching (ML) associated with the impounded tailings and/or construction materials must be assessed by a qualified person during the initial design work through appropriate laboratory and/or in situ testing on a sufficient number of representative samples. Such testing must continue as required to support the management of ARD and ML through TSF design, operation and closure[8].
Disposal of Other Waste Materials	Only other waste materials compatible to the decant recovery or process recovery, geotechnical, hydraulic, hydrological, geochemical and environmental performance objectives of the TSF, including consideration of closure planning and closure performance goals, may be considered for permanent disposal in the TSF. Other waste materials include, but are not limited to: waste rock; spent ore (ripios); industrial waste or debris; contaminated soils; and sewage. Non-tailings materials disposed of in a TSF must be placed or discharged in a manner and location to avoid compromising the structural or hydrological performance of the tailings beach foundation for planned or potential upstream or centreline crest raises.
Animal Ingress	Measures to restrict animal ingress to the TSF must be included in the design, suitable to the anticipated site conditions. The proposed use of physical barriers such as bird netting over open ponds and perimeter wire fences must be examined in context of the potential for animal mortality due to entanglement, and the use of alternate deterrents must be considered.
Environmental Performance Monitoring	Groundwater monitoring wells must be installed up-gradient and down-gradient to establish baseline flowpath and water quality conditions for at least one year before initial operation of the TSF. Groundwater monitoring must continue thereafter in a manner adequate to characterize any seepage and demonstrate acceptable performance. All other environmental instrumentation needs must be assessed during initial TSF design, including recognition of seasonal variability; appropriate measurements must be taken during construction, operation and closure to assess compliance to performance objectives.

[8] Guidance for the prediction, prevention and management of ARD and ML can be found in the following:
The International Network for Acid Prevention (INAP), 2009. Global Acid Rock Drainage Guide (GARD Guide). http://www.gardguide.com/.

SECTION 4 GEOTECHNICAL CRITERIA

Seismic Design – Failure Consequence Classification	The Failure Consequence Classification ranking as summarized in Table 1 must be used to guide the seismic design of an existing TSF, including selection of earthquake loading parameters summarized in Table 2. The most severe failure consequence identified must be used, regardless of the number of occurrences identified for the indicated areas of concern. The selection of a Low or Significant Failure Consequence Classification for any existing TSF must be approved before design use by the Accountable Executive. All currently operating TSFs or closed TSFs associated with operating mines must plan for passive closure (passive care) requirements and upgrade the facilities accordingly during the operation phase. All new TSFs must be designed to Extreme Consequence Classification loading criteria.
Seismic Hazard Assessment	A site-specific seismic hazard assessment, current and completed to accepted international practice, must be used in the TSF design. The use of both probabilistic seismic hazard analysis (PSHA) and deterministic seismic hazard analysis (DSHA) methodologies must be considered. The site-specific seismic hazard assessment must be regularly (at the time of the DSR) reviewed and updated as necessary throughout the facility lifecycle.
High Earthquake Risk	For high seismic hazard zones or where perceived earthquake risk exposure warrants more rigorous seismic design, more detailed dynamic response and deformation analyses such as finite element or finite difference modeling must be completed. In addition to earthquake magnitude and peak horizontal ground acceleration (PHGA) values, the earthquake design ground motion (EDGM) data will necessarily include representative strong-motion records.
Foundation Conditions	The TSF design must include evaluation of site-specific native foundation conditions, with particular attention to the potential existence of over-consolidated or soft soils, erodible or collapsible materials, fractured or karstic bedrock or any other foundation conditions that could compromise the structural stability or hydraulic containment of the TSF. Unless conclusively demonstrated otherwise by in situ testing and advanced analysis, tailings beach foundation for upstream or centreline raise designs must be considered to be liquefiable.
Parameter Variability	Geotechnical analyses must consider a reasonable variability in the estimated values of controlling parameters, such as density, shear strength and porewater pressure, commensurate with the degree of confidence in the representative value and range of each parameter as obtained from technical references, in situ testing, laboratory results and/or empirical data.
Strain-Weakening and Liquefiable Material	Contractant materials that may undergo strain-weakening and exhibit brittle behaviour or liquefaction under the estimated static or dynamic stress conditions must be appropriately modeled in the geotechnical stability analyses, including but not limited to the use of liquefied (residual) undrained shear strength parameters for post-liquefaction stability and deformation analyses. Sole reliance on the effective stress analysis (ESA) method is acceptable only for dilatant materials or those in which excess positive porewater pressures are known not to be generated during shear.

SECTION 4 GEOTECHNICAL CRITERIA (Cont.)

<table>
<tr><td>Flow Failure</td><td>Where TSF embankment and/or foundation material(s) are susceptible to significant strain-weakening (flow liquefaction with strength loss). Assume estimated liquefied (residual) strength in all saturated (and near saturated), contractant materials or use the results of in situ testing and advanced analyses to assess the likely extent of strength loss (liquefaction) and refine the estimated liquefied (residual) strength under the corresponding static loading.

All embankment raise designs founded in part or completely on tailings must be considered in this category.</td></tr>
<tr><td>Simplified Deformation Analysis under Earthquake Loading</td><td>When no significant material strength loss is expected during seismic loading and where applicable simplified deformation analysis shall be conducted, with maximum tolerable deformations stated in the design basis document.</td></tr>
<tr><td>Factor of Safety (Slope Stability)</td><td>The minimum required factor of safety (FS) values for geotechnical slope design as obtained from two-dimensional, limit-equilibrium analyses are as follows:
<table>
<tr><th colspan="4">Design Condition</th></tr>
<tr><th>Phase</th><th>Normal Static</th><th>Pseudo-static[9]</th><th>Post-liquefaction
(either seismically or statically induced)</th></tr>
<tr><td>Construction</td><td>1.3</td><td>1.1</td><td>1.1</td></tr>
<tr><td>Operation</td><td>1.5</td><td>1.1</td><td>1.1</td></tr>
<tr><td>Closure</td><td>1.5</td><td>1.1</td><td>1.1</td></tr>
</table>
FS values less than those indicated may be acceptable, subject to:

the results of improved understanding of material strength parameters;
the use of lower-bound shear strengths;
data from advanced studies;
demonstration of acceptable predicted deformations under advanced deformation analyses;
empirical evidence; and/or
risk-informed design using site-specific data and incorporating a demonstrable monitoring and risk-management plan.
</td></tr>
</table>

[9] The pseudo-static method is commonly used as a screening tool to indicate whether or not more advanced deformation analyses are warranted. In some jurisdictions, the completion of pseudo-static slope stability analyses is required. This analysis applies only to soils that are not expected to experience any strength loss during seismic loading.

SECTION 4 GEOTECHNICAL CRITERIA (Cont.)

Geosynthetic Components	TSF designs using geosynthetic materials such as high-density polyethylene (HDPE) liners or geosynthetic clay liners (GCLs) for primary seepage containment must incorporate adjacent, secondary containment components, such as low-permeability soil bedding layers, as part of a defensive design strategy. Reliance on geosynthetic seepage barriers for permanent containment of free (i.e. not entrained) water in a TSF, such as a full or partial closure water cover, is not permitted. TSF designs using geosynthetic components such as HDPE pipes or filter cloth for internal drainage features, such as upstream toe drains, must incorporate adjacent or surrounding natural or processed granular materials, such as drain rock or sand and gravel, to provide redundant flow capacity, as part of a defensive design strategy. Sole reliance on geosynthetic drainage components for permanent, internal seepage conveyance is not permitted. An overliner drainage system incorporated in the design of a TSF must be provided with a means for independently measuring the tailings consolidation seepage flow reporting to the system during operation and closure.
Other Failure Modes	The TSF design must include, as appropriate, assessment of the potential for internal erosion (piping); surface erosion (gullying); and potential strain-softening behavior in foundation or embankment soils due to increased loading during operation (crest raising). Secondary failure mechanisms must also be assessed as part of TSF design, including fouling, degradation or deformation of internal drainage and/or seepage barrier features by geochemical, biological or deformation processes leading to increased porewater pressure conditions and compromised stability or performance. Risk-informed assessments of such failure modes may be used to guide design.

Table 1 TSF Failure Consequence Classification (adapted from GISTM 2020)

Dam Failure Consequence Classification	Incremental Losses				
	Potential Population at Risk	Potential Loss of Life	Environment	Health, Social and Cultural	Infrastructure and Economics
Low*	None	None Expected	Minimal short-term loss or deterioration of habitat or rare and endangered species.	Minimal effects and disruption of business and livelihoods. No measurable effect on human health. No disruption of heritage, recreation, community or cultural assets.	Low economic losses: area contains limited infrastructure or services. <US$1M
Significant*	1–10	Unspecified	No significant loss or deterioration of habitat. Potential contamination of livestock/fauna water supply with no health effects. Process water low potential toxicity. Tailings not potentially acid generating and have low neutral leaching potential. Restoration possible within 1 to 5 years.	Significant disruption of business, service or social dislocation. Low likelihood of loss of regional heritage, recreation, community, or cultural assets. Low likelihood of health effects	Losses to recreational facilities, seasonal workplaces, and infrequently used transportation routes. <US$10M.
High	10–100	Possible (1-10)	Significant loss or deterioration of critical habitat or rare and endangered species. Potential contamination of livestock/ fauna water supply with no health effects. Process water moderately toxic. Low potential for acid rock drainage or metal leaching effects of released tailings. Potential area of impact 10 km2 – 20 km2. Restoration possible but difficult and could take > 5 years.	500-1,000 people affected by disruption of business, services or social dislocation. Disruption of regional heritage, recreation, community or cultural assets. Potential for short term human health effects.	High economic losses affecting infrastructure, public transportation, and commercial facilities, or employment. Moderate relocation/compensation to communities. <US$100M.
Very High	100–1,000	Likely (10-100)	Major loss or deterioration of critical habitat or rare and endangered species. Process water highly toxic. High potential for acid rock drainage or metal leaching effects from released tailings. Potential area of impact > 20 km2. Restoration or compensation possible but very difficult and requires a long time (5 years to 20 years).	1,000 people affected by disruption of business, services or social dislocation for more than one year. Significant loss of national heritage, community or cultural assets. Potential for significant long-term human health effects.	Very high economic losses affecting important infrastructure or services (e.g., highway, industrial facility, storage facilities, for dangerous substances), or employment. High relocation/ compensation to communities. < US$1B
Extreme**	>1000	Many (>100)	Catastrophic loss of critical habitat or rare and endangered species. Process water highly toxic. Very high potential for acid rock drainage or metal leaching effects from released tailings. Potential area of impact > 20 km2. Restoration or compensation in kind impossible or requires a very long time (> 20 years).	5,000 people affected by disruption of business, services or social dislocation for years. Significant National heritage or community facilities or cultural assets destroyed. Potential for severe and/or long-term human health effects.	Extreme economic losses affecting critical infrastructure or services, (e.g., hospital, major industrial complex, major storage facilities for dangerous substances) or employment. Very high relocation/compensation to communities and very high social readjustment costs. >US$1B

** The selection of a Low or Significant Consequence Classification for any existing tailings storage facility must be approved by the Accountable Executive.*

*** All new tailings storage facilities must be designed for the Extreme Consequence Classification.*

Table 2 Seismic Design Requirements for Failure Consequence Classification (adapted from GISTM 2020)

Failure Consequence Classification	**Seismic Criteria – Annual Exceedance Probability**	
	Operation, Closure Transition and Closure Active Care	**Closure Passive Care**
Low**	1/200	1/10,000 or MCE*
Significant**	1/1,000	1/10,000 or MCE*
High	1/2,475	1/10,000 or MCE*
Very High	1/5,000	1/10,000 or MCE*
Extreme	1/10,000 or MCE*	1/10,000 or MCE*
Earthquake Design Definitions and Performance Criteria		
Liquefaction Susceptibility	Where TSF embankment and/or foundation material(s) are susceptible to either cyclic liquefaction or significant strain-weakening (flow liquefaction with strength loss). Assume estimated liquefied (residual) strength in all saturated (and near saturated), contractant materials or use the results of in situ testing and advanced analyses to assess the likely extent of strength loss (liquefaction) and refine the estimated liquefied (residual) strength under the corresponding static and seismic loading (MDE). All embankment raise designs founded in part or completely on tailings must be considered in this category.	
MDE Performance Criteria	No uncontrolled release of tailings or fluid and only tolerable deformation that may require economically-feasible reconstruction with acceptable interruption to operation.	
** The selection of the probabilistic 10,000-yr or deterministic MCE earthquake must consider the seismic setting and the reliability and applicability of each method.* *** The selection of a Low or Significant Consequence Classification for any existing tailings storage facility must be approved by the Accountable Executive.*		

SECTION 5 HYDROLOGICAL CRITERIA

Tailings Treatment Strategy	Tailings treatment strategies that reduce water consumption during processing and water storage in the TSF, such as high-density thickening, filter thickening and co-disposal with waste rock, must be evaluated as business-case alternatives to the design of conventional tailings thickening treatment. Such evaluations must consider long-term water treatment and other closure management obligations.
Deposition Model	A tailings deposition model must be developed for the TSF design, and maintained and calibrated during operation. Model development and use must incorporate tailings production, distribution and consolidation parameters appropriate for embankment crest raising and impoundment storage stages.
Water Balance Model	A TSF specific water balance model with a maximum monthly time step must be developed for the TSF design. The model must be maintained during operation and closure and calibrated at least once every three months, unless it can be demonstrated that less frequent calibrations are appropriate for the TSF. Data input to the model, such as rainfall and seepage flows, must be collected at a rate appropriate to the model but no less frequently than once per month, and model calibrations for an established TSF must be based on at least one year of recorded data. Model development and use must include the identification of target compliance and allowable divergence quantities. Assumptions and hydrologic inputs used in the model must be described and acceptable upper and lower parameter bounds defined. The water balance model forecast scenarios should also include potential future climate change, including changes in mean annual precipitation and changes in return period and intensity of extreme events.
Flood Design – Failure Consequence Classification	The Failure Consequence Classification ranking as summarized in Table 1 must be used to guide the flood design of an existing TSF, including the selection of flood design criteria summarized in Table 3A. The most severe failure consequence identified must be used, regardless of the number of occurrences identified for the indicated areas of concern. The selection of Low or Significant Failure Consequence Classification for any exiting TSF must be approved before design use by the Accountable Executive. All currently operating TSFs or closed TSFs associated with operating mines must plan for passive closure (passive care) requirements and upgrade the facilities accordingly during the operation phase. All new TSFs must be designed to Extreme Consequence Classification loading criteria.
Climate Change	To enhance resilience to climate change, the selected DMF must be regularly (at the time of the DSR) reviewed and updated as necessary throughout the facility lifecycle.

SECTION 5 HYDROLOGICAL CRITERIA (Cont.)

Freeboard Requirement	Minimum total freeboard requirements during operation must be identified in the TSF design on the basis of the flood storage capacities summarized in Table 3B. Estimation of design inflows to predict the highest decant pond level for normal year conditions in Table 3B must consider the combined contributions from snowmelt and rainfall where applicable. Estimation of flood storage capacity and spillway routing design must consider the most critical combination of decant pond level and inflow design flood, including the design maximum flood (DMF), for sites subject to rainfall, snow and/or extreme meteorological events.
No-Release Design	Where no release of impounded materials is permitted or desirable under emergency operating conditions, the TSF design must allow for temporary storage of the flood resulting from the most-critical duration 1/10,000 AEP flood event or PMP above the maximum forecast decant water pond level for the corresponding embankment crest elevation.
Decant Return	All TSF decant water pond return systems must incorporate pump-off decant towers, barges or other pump-based components and over-the-crest pipelines that avoid conveyance lines buried within the TSF embankment.
Seepage Detection	Any seepage detection and/or collection system incorporated in the design of a TSF must be provided with a means for independently measuring flow rate and water quality.
Seepage Control	Where a constructed or installed low-permeability impoundment barrier is not included in the TSF design, provision must be made for the incorporation of wells, trenches, collection ponds or other such measures to detect, extract, store and convey as required subsurface seepage from the TSF that would otherwise be released to the groundwater or surface water system.

Table 3A Flood Design Requirements for Failure Consequence Classification (adapted from GISTM 2020)

Failure Consequence Classification	Flood Criteria – Annual Exceedance Probability	
	Operation, Closure - Transition and Closure - Active Care	Closure - Passive Care
Low**	1/200	1/10,000*
Significant**	1/1,000	1/10,000*
High	1/2,475	1/10,000*
Very High	1/5,000	1/10,000*
Extreme	1/10,000*	1/10,000*

** The PMP and PMF are acceptable for assessing flood loading if they meet, or exceed, the requirement for Extreme Consequence Classification facilities and/or facilities in Closure – Passive Care. In some jurisdictions the use of the PMP is required.*

*** The selection of a Low or Significant Consequence Classification for any existing tailings storage facility must be approved by the Accountable Executive.*

Table 3B TSF Flood Design Requirements

Condition	Minimum Flood Storage Capacity	Minimum Additional Freeboard	Spillway Routing Design
Operating: Emergency Release not Permitted or Desirable	Flood resulting from the most-critical duration 1/10,000 AEP flood event or PMP on highest pond level for normal year conditions and corresponding to the season for which the DMF is estimated	No overtopping by wind setup and wave runup from the design wind event	No spillway.
Operating: Emergency Release Permitted	DMF on highest pond level for normal year conditions and corresponding to the season for which the DMF is estimated	No overtopping by wind setup and wave runup from the design wind event	Excess from the 1/10,000 AEP flood event or PMP on the highest decant pond level from DMF.
Closure: Wet Cover	Inflow from the most-critical duration 1:100 year rainfall and/or snowmelt event on the highest pond level for 1:100 wet year conditions and corresponding season	No overtopping by wind setup and wave runup from the design wind event	Excess from the 1/10,000 AEP flood event or PMP on the highest forecast wet closure pond level for 1:100 wet year conditions and corresponding season
Closure: Dry Cover	No storage capacity (TSF surface graded for positive drainage)	None	1/10,000 AEP flood event or PMP diverted around, over or through the TSF

SECTION 6 QUANTITATIVE PERFORMANCE OBJECTIVES

Definition	Quantitative performance objectives (QPOs) must be consistent with design intent, criteria and regulatory requirements. Each QPO should be specific to the TSF, readily measurable, achievable under expected conditions, relevant to the stewardship of the facility and time-bound.
Documentation	Each QPO will be described in detail in design basis report (DBR), design report, operation and/or closure documents, but must be summarized with its corresponding reference in the Operation, Maintenance and Surveillance (OMS) Manual.
Stewardship	Compliance to the stated QPOs must be formally reviewed at a regular basis and no less frequently than once per year. If measures are required to correct deviations from a QPO, they must be fully documented in the Corrective Action Plan (CAP).
Modification	Proposed modification(s) to a QPO as may be required due to changed conditions will be permitted only after confirmatory MoC review and with the review and approval of the EoR and the RTFE.
Specific QPOs	Recommended geotechnical and hydrological QPOs applicable to a TSF operation include: • Minimum TSF storage capacity • Minimum tailings slurry density (solids content) • Minimum deposited dry density • Minimum beach-above-water widths (as measured in a direction normal to the embankment crest) • Minimum available freeboard • Minimum and/or Maximum operating pond volume • Minimum and/or Maximum pond depth • Minimum available flood storage capacity • Minimum acceptable frequency of instrumentation data collection, reduction and reporting frequency • Maximum embankment rate of rise • Maximum tolerable rate of change and absolute values for piezometric, seepage and deformation monitoring data • Verification of required borrow material sources for future construction • Validation of the tailings deposition model and the water balance model.

SECTION 7 MONITORING, INSPECTIONS AND REVIEWS

Instrumentation	All geotechnical, hydrological, meteorological and environmental instrumentation must be designed or specified, installed, monitored and maintained appropriate to the Failure Consequence Classification and performance monitoring objectives for the TSF. If the observational method is invoked in the design and stewardship of the facility in operation and closure, the type, distribution and monitoring frequency of the instrumentation must be adequate for that purpose. Long-term (closure phase) instrumentation needs must be assessed in initial design. Instrumentation installations and/or data collection locations must be provided with adequate protection against damage by traffic, weather, vandalism, animal activity and other causes. Safe and adequate access must be maintained. Warranties, reference manuals, calibration sheets, repair instructions, trouble-shooting guides, data reduction software guides and other such information from the instrumentation manufacturer and/or supplier must be maintained in the document archive and copies made available to site staff charged with data collection, reduction and reporting. An adequate amount of replacement and repair components for the installed instrumentation must be maintained at site.
Data Collection, Reduction, Review and Reporting	Instrumentation monitoring guidelines must be developed, maintained and updated for the TSF throughout operation and closure. The guidelines must outline roles and responsibilities, data management and instrument-specific procedures. The guidelines must include routine reading frequencies and trigger action and response plans (TARPs). By preference, data collection, reduction, initial review and reporting to the Responsible Tailings Facility Engineer (RTFE) will be done by site staff and not contracted to the consulting firm. In all cases, data collection, reduction and review must be kept current. Site staff charged with data collection must also be provided with basic instruction on the instrumentation design, function, data reduction and troubleshooting, including recognition of unusual readings and results. By preference, site staff charged with data collection will also be responsible for data reduction, initial review and reporting to the RTFE. Raw data readings must be included in the TSF document management system. A consistent set of scales for instrumentation reading data and time must be used in graphical presentations, and key reference values such as piezometer tip elevations, nearby tailings or ore surface elevations, precipitation or barometric pressure values, seepage rates, decant or solution pond surface elevations and TARP levels must also be included. For High consequence facilities and above, unless in closure passive care phase, an automated data acquisition system must be implemented, and remote access must be provided to the EoR. Interferometric Synthetic Aperture Rada (InSAR) monitoring must also be implemented, and deformation monitoring reports must be promptly shared with the EoR. The RTFE must ensure that, at a minimum, a quarterly monitoring report is produced and shared with the EoR for review and comments.

SECTION 7 MONITORING, INSPECTIONS AND REVIEWS (Cont.)

<table>
<tr><th colspan="2">Technical Inspection, Review and Audit Definitions – Intent and Reporting</th></tr>
<tr><td>Routine Inspection (RI)</td><td>
Conducted by suitably qualified and experienced operation site personnel, in compliance with OMS Manual requirements.
Intended to ensure that the TSF is operating within prescribed parameters.
Observations recorded on prepared inspection forms and submitted the same day to the RTFE, for review, action (as required) and archival.
Significant recommendations requiring action as judged by the RTFE to be fully documented in the Corrective Action Plan (CAP).
Routine Inspections are required immediately after extreme events, such as earthquakes, floods, storms, upset operating or closure conditions, unintentional damage or vandalism.
The RTFE must continuously rank the facility using the following 5-colour Code risk management protocol. Codes Yellow and higher must be reported to the Accountable Executive and/or his delegate
<table>
<tr><td>Code Green</td><td>Indicates a total compliance with all requirement as contained in the design, Barrick Tailings Management Standard, Global Industry Standard on Tailings Management, applicable regulatory requirements and good practice guidance documents.</td></tr>
<tr><td>Code Blue</td><td>Indicates any non-conformance to the design, Barrick Tailings Management Standard, Global Industry Standard on Tailings Management or applicable regulatory requirements. Code Blue condition is virtually a daily occurrence on most facilities and the key motivation for deploying a team of people to operate, administer and manage them.</td></tr>
<tr><td>Code Yellow</td><td>Indicates an unusual event or a slowly developing situation if not corrected could lead to a dam safety issue. Code Yellow also indicates a continued and severe non-conformance to the design, Barrick Tailings Management Standard, Global Industry Standard on Tailings Management or applicable regulatory requirements.</td></tr>
<tr><td>Code Orange</td><td>Indicates a rapidly developing situation that could lead to a potential dam failure. Code Orange represents the initiation of the EPRP.</td></tr>
<tr><td>Code Red</td><td>Indicates that a dam failure is imminent or in progress. In the absence of the ability to prevent an uncontrolled release of solids and/or fluids, a Code Red is initiated, prompting the full implementation of the EPRP and the full evacuation of affected parties in a pre-planned manner.</td></tr>
</table>
</td></tr>
</table>

SECTION 7 MONITORING, INSPECTIONS AND REVIEWS (Cont.)

EoR / Dam Safety Inspection (DSI)	Conducted by the Engineer of Record (EoR) responsible for the design of the current TSF phase, or by a suitably qualified and experienced geotechnical engineer outside of Barrick with a comprehensive understanding of the current TSF phase. Intended to verify that the existing or anticipated TSF conditions follow design intent and that site-specific performance objectives are being met. Observations and recommendations from the Dam Safety Inspection (DSI) submitted to the RTFE via formal engineering report and copied to the Accountable Executive and/or his delegate. All recommendations from the DSI report to be fully documented in the CAP. In years when a Dam Safety Review (DSR) is performed, a DSI is not normally required. EoR / Dam Safety Inspections may be required immediately after extreme events, such as earthquakes, floods, storms, upset operating or closure conditions, unintentional damage or vandalism, at the discretion of the RTFE and following applicable regulations.
Dam Safety Review (DSR)[10]	Conducted by a suitably qualified and experienced lead geotechnical engineer, supported by a multi-disciplinary team scaled according to the complexity of the facility, outside of Barrick who is neither the EoR nor a representative of the TSF operation or closure design consulting firm and who has a comprehensive understanding of the current TSF phase. The same DSR contractor cannot conduct consecutive DSRs on the same TSF. Intended to provide a detailed, independent assessment of the design, construction, safety, performance, operational stewardship and governance of the TSF. The expected type of dam safety review that must be carried out is a comprehensive review, an audit-style DSR is not acceptable. Observations and recommendations from the DSR submitted to the RTFE via formal engineering report and copied to the Accountable Executive and/or his delegate. All recommendations from the DSR report to be fully documented in the CAP.

[10] Guidance for the scope and content of a Dam Safety Review and considerations for Routine Inspections and EoR / Dam Safety Inspections are provided in the following:
Canadian Dam Association, Dam Safety Guidelines (2013) and Application of Dam Safety Guidelines to Mining Dams (2019)
Canadian Dam Association, Technical Bulleting: Dam Safety Reviews (2016)
Association of Professional Engineers and Geoscientists of BC: Professional Practice Guidelines – Legislated Dam Safety Reviews in BC (V3.0).

SECTION 7 MONITORING, INSPECTIONS AND REVIEWS (Cont.)

Assurance Audit (AA)	Conducted by Barrick's Subject Matter Experts (SME) or by an independent SME under coordination and assistance from Barrick corporate. Expected audit frequency of one to three years, based in part on compliance level and previous findings. Intended to ensure that the existing or anticipated TSF conditions and management procedures comply with Barrick's corporate Tailings Management Standard. Audit results submitted to the site RTFE and GM as well as Barrick's Accountable Executive and/or his delegate via formal audit report. All recommendations from the Assurance Audit report to be fully documented in the CAP.
Independent Third-Party Review (IR)	Conducted by one or more qualified and internationally-recognized experts outside of Barrick and not involved with preparation of the TSF design. Intended to provide an expert, independent opinion as to whether or not the TSF design and current and/or anticipated performance demonstrate an acceptable level of care, from geotechnical, hydrotechnical and environmental perspectives and with reference to accepted international practice. Observations submitted to the Accountable Executive and/or his delegate via formal engineering report, for distribution to the RTFE and GM as well as appropriate site manager(s). All recommendations from the Independent Third-Party Review report to be fully documented in the CAP.

Table 4 Geotechnical Inspection and Review Minimum Frequencies* for Failure Consequence Classification

Phase	TSF Failure Consequence Classification				
	Low	**Significant**	**High**	**Very High**	**Extreme**
Siting, Design, Construction					RI: Daily (construction phase) DSI: Annual (construction phase) DSR†: As required IR: 1 to 2 years AA: Once per 2 years
Operation	RI: Daily DSI: Annual DSR†: Once per 10 years IR: 1 to 4 years AA: 1 to 3 years	RI: Daily DSI: Annual DSR†: Once per 10 years IR: 1 to 4 years AA: 1 to 3 years	RI: Daily DSI: Annual DSR†: Once per 5 years IR: 1 to 3 years AA: 1 to 3 years	RI: Daily DSI: Annual DSR†: Once per 5 years IR: 1 to 2 years AA: 1 to 3 years	RI: Daily DSI: Annual DSR†: Once per 5 years IR: 1 to 2 years AA: 1 to 3 years
Transition	RI§: Once per months DSI: Annual DSR†: Once per 10 years IR: Within the first 2 years of post-Operation and thereafter once per 5 years AA: 1 to 3 years	RI§: Once per months DSI: Annual DSR†: Once per 10 years IR: Within the first 2 years of post-Operation and thereafter once per 5 years AA:1 to 3 years	RI§: Twice per month DSI: Annual DSR†: Once per 10 years IR: Within the first 2 years of post-Operation and thereafter once per 5 years AA: 1 to 3 years	RI§: Twice per month DSI: Annual DSR†: Once per 5 years IR: Within the first 2 years of post-Operation and thereafter once per 4 years AA: 1 to 3 years	RI§: Twice per month DSI: Annual DSR†: Once per 5 years IR: Within the first 2 years of post-Operation and thereafter once per 4 years AA: 1 to 3 years
Active Care	RI: Twice per year DSI: As required DSR†: Once per 10 years IR: Once per 5 years AA: 1 to 3 years	RI: Twice per year DSI: As required DSR†: Once per 10 years IR: Once per 5 years AA: 1 to 3 years	RI: Once per 4 months DSI: Annual DSR†: Once per 10 years IR: Once per 5 years AA: 1 to 3 years	RI: Once per 2 months DSI: Annual DSR†: Once per 5 years IR: Once per 4 years AA: 1 to 3 years	RI: Once per 2 months DSI: Annual DSR†: Once per 5 years IR: Once per 4 years AA: 1 to 3 years
Passive Care	RI: Once per year DSI: Not anticipated DSR†: Once per 10 years IR: Not anticipated AA: As required	RI: Once per year DSI: Not anticipated DSR†: Once per 10 years IR: Not anticipated AA: As required	RI: Twice per year DSI: Annual DSR†: Once per 10 years IR: As required AA: As required	RI: Twice per year DSI: Annual DSR†: Once per 10 years IR: As required AA: As required	RI: Twice per year DSI: Annual DSR†: Once per 10 years IR: As required AA: As required

RI: Routine Inspection; DSI: Dam Safety Inspection; DSR: Dam Safety Review; IR: Independent Third-Party Review; AR: Assurance Audit.

* Minimum number of inspections or reviews per reference calendar interval indicated subject to local requirements.
§ During closure construction campaigns, when workers, supervisory and Barrick management personnel are at the TSF on a daily basis, Routine Inspection frequencies may be reduced to no less than once per month.
† Conduct a DSR as per the prescribed frequency, or sooner if there is a material change in the social, environmental and local economical context.

SECTION 8 DOCUMENT MANAGEMENT

Operation	The following documents[11] must be developed prior to initial TSF operation, and maintained current, tested (as appropriate) and adhered to during TSF operation: • Compliance Plan, outlining applicable company standards, signatory policies, regulatory requirements and stakeholder commitments • Organizational Chart, outlining Roles and Responsibilities • Potential Failure Mode Analysis (PFMA) and identified Credible Failure Modes, Critical Controls Management Plan (CCMP), TSF Risk Assessment, Consequence Classification and related documentation • TSF specific and site wide water balance model • Surface water management plan (with superimposed water quality data) • Mass Balance model • Tailings deposition model • TSF Breach Analysis and inundation studies detailing the physical area that would be impacted by a potential failure, flow arrival times and flow depth and velocities at various downstream locations, duration of flooding and depth of material deposition • Emergency Preparedness and Response Plan (EPRP) • Corrective Action Plan (CAP), summarizing recognized issues and recommendations from all TSF inspections and reviews along with their proposed remedial actions, personnel assigned to the work, schedules and verification methodologies. The EoR and RTFE will rank all items tracked in the CAP according to the Priority Ranking System summarized in Table 5 • Operation, Maintenance and Surveillance (OMS) Manual, including inspection plans and monitoring guidelines with quantitative performance objectives (QPOs) summarized. The OMS manual must also include a detailed RASCI matrix • Instrumentation Monitoring Report

[11] Guidance for the preparation of many of these documents can be found in the following:
Canadian Dam Association: Dam Safety Guidelines (2013)
Canadian Dam Association: Application of Dam Safety Guidelines to Mining Dams (2014)
Canadian Dam Association: Technical Bulletin: Guidelines for Tailings Dam Breach Analyses (2020)
Canadian Dam Safety Association: Technical Bulletin: Emergency Management for Dam Safety (2021)
Federal Emergency Management Agency (FEMA), Federal Guidelines for Dam Safety: Emergency Action Planning for Dams, FEMA 64 (2013)
The Mining Association of Canada: Developing an Operation, Maintenance and Surveillance Manual for Tailings and Water Management Facilities (Version 2.1 2021)
The Mining Association of Canada: A Guide to the Management of Tailings Facilities (Version 3.2 2021)
United Nations Environment Programme / International Council on Mining & Metals: Good practice in Emergency Preparedness and Response (September 2005)
United Nations Environment Programme: Awareness and Preparedness for Emergencies at Local Level (APELL) (2015).

SECTION 8 DOCUMENT MANAGEMENT (Cont.)

Reference Documents	The following documents must be developed and maintained current during TSF construction and operation and must be kept at site throughout the operating life of the mine: • Multi-criteria Alternative Analysis (MAA), applicable for new TSFs • TSF Design Basis Report (DBR) • TSF Design Report and Construction Drawings • Constructability Review • Site characterization (geology, hydrogeology, hydrology, geotechnical, seismic conditions, climate, tailings characteristics, water quality) • TSF construction Specifications and CQC/CQA Management Plan • Construction Records Report (CRR) including quality control and quality assurance documents • Deviance Accountability Report (DAR) • Preliminary design to Extreme consequence classification (applicable to all existing TSFs not designed to extreme consequence classification).
Dam Safety Inspection Reports (DSI)	TSF dam safety inspection reports must include: • Assessment of status of existing documentation • Evaluation of current and past TSF performance, site conditions, management practices • Results of geotechnical monitoring data • Findings from discussions with tailings management staff • Any observed non-conformance issues or deficiencies, with corresponding recommendations • Any other information required by applicable regulations • Confirmation that the TSF is constructed, operated, monitored and performing as per the design intent.

SECTION 8 DOCUMENT MANAGEMENT (Cont.)

Dam Safety Review Reports (DSR)	TSF dam safety review reports must include: • Assessment of the safety of the TSF design, including reviews or new analyses of potential failure mechanisms • Summary of site conditions • Appraisal of the operation and maintenance of the TSF with respect to safety • Evaluation of the adequacy of resources devoted to, and the effectiveness of, the TSF safety management system • Review of TSF operational data and records management • Appraisal of the adequacy of the surveillance program in demonstrating safety, including (if invoked in the TSF design and operation) the surveillance program's suitability for the observational method • Assessment of the consequences of dam failure (i.e. dam breach analyses); the dam breach analysis must be completed to internationally-accepted practice, including sunny day and rainy day failure scenarios for the maximum planned dam crest elevation and tailings storage under the current business case • Verification of adequate emergency preparedness • Results and review of TSF performance data, including those from geotechnical, hydrological and environmental monitoring programs, with particular focus on dam safety • Any observed non-conformance issues or deficiencies, with corresponding recommendations • Any other information required by applicable regulations.

SECTION 8 DOCUMENT MANAGEMENT (Cont.)

Closure Plan	A Working Closure Plan must be developed during the TSF design phase and kept up to date throughout the operation phase. The Working Closure Plan must be regularly updated and reviewed as required by Barrick's Closure Standard. The TSF closure plan must include: • Infrastructure removal and/or development plan addressing tailings conveyance lines, reclaim water lines, spillways, access roads and the like • Cover soil, topsoil and geosynthetic materials sourcing plan • Decant pond removal or management plan • Backfilling, surface recontouring, revegetation and erosion control plans as required for the tailings impoundment surface and the embankment dams • Surface water management plan, including freshwater diversion structures as required • Tailings drain down and consolidation predictions with consideration of seepage water quality and management issues • Monitoring plan, including description of instrumentation and reading frequency • Estimated closure cost and staffing requirements • Any other information required by applicable regulations.
Closure	The following documents must be developed prior to initial TSF closure construction, and maintained current, tested (as appropriate) and adhered to during TSF closure: • Organizational Chart, outlining Roles and Responsibilities for closure • TSF Formal Risk Assessment, pertaining to closure conditions • TSF Breach Analysis and inundation studies, pertaining to closure conditions • Emergency Preparedness and Response Plan (EPRP), pertaining to closure conditions • Corrective Action Plan (CAP) for the closure phase • Care and Maintenance manual which must define roles, responsibilities and objectives for: verifying the continued operation of active and passive closure management systems within established parameters; for ensuring site safety and health requirements; and for monitoring, documenting and reporting closure performance, including inspection plans and monitoring guidelines with quantitative performance objectives (QPOs) summarized.

Table 5 Corrective Action Plan (CAP) Priority Ranking System

Priority	Description
1	A high probability of becoming or actual dam safety issues that require immediate attention and are considered immediately dangerous to life, health or the environment, a significant regulatory enforcement.
2	If not corrected, could likely result in dam safety issues leading to injury, environmental impact, significant regulatory enforcement or significant interruption or reduced operation; or, repetitive deficiency that demonstrates a systematic breakdown of procedures.
3	Single occurrences of deficiencies or non-conformances that alone would not be expected to result in dam safety issues.
4	Best management practice as a recommendation for continuous improvement towards industry best practices that could further reduce potential risks.

SECTION 9 LOM PLANNING AND REVIEW

LOM Planning: TSFs	A life of mine (LOM) tailings generation and storage requirement review must be completed for the TSF at least once per year, and the results of the review must be communicated to the Accountable Executive and/or his delegate. Any substantive changes identified in the LOM tailings generation and storage management review must also be reported to the EoR.

SECTION 10 CLOSURE REQUIREMENTS

TSF Closure Plan	A Working Closure Plan must be developed during the TSF design phase and kept current throughout the operation phase. The Working Closure Plan must be regularly updated and independently reviewed as required by Barrick's Closure Standard. The Working Closure Plan must be upgraded to an Execution Closure Plan five years prior to the end of operation (active tailings discharge) and updated as required during closure construction.
Alternative to Wet Cover	A TSF designed with a full or partial water pond as a reclamation strategy (wet closure) will require perpetual care and may result in the designation of the facility as a dam by regulatory agencies. Viable alternate strategies to a water cover, such as multiple-layer soil covers, must be evaluated.
Wet Closure Spillway	All TSFs designed with wet closures must be provided with open-channel, overflow spillways sized according to Table 3 (Closure with Wet Cover), with appropriate recognition of winter conditions or other extreme meteorological events as required. Design of wet closure spillways must consider predicted long-term climate change effects as well as potential for blockage by debris, beaver activity and other factors.
Tailings Consolidation	All TSFs designed with dry closure covers must be regraded with consideration of long-term deformation due to tailings consolidation.

Appendix B
List of Required Tailings Management Documents

#	Document Name/Topic	Review/Update Min. Frequency
1	Compliance Plan	Annual
2	Construction Specifications and CQC/CQA Management Plan	As required
3	Construction Records Report (CRR)	Annual
4	Corrective Action Plan (CAP) Registry	Quarterly
5	Critical Controls Management Plan (CCMP)	Annual
6	Dam Safety Inspection Report (DSI)	Annual
7	Dam Safety Review (DSR)	As per Table 4
8	Design Basis Report (DBR)	As required for every raise
9	Design Report, Construction Drawings and Specifications	As required for every raise
10	Deviance Accountability Report (DAR)	Annual
11	Emergency Preparedness and Response Plan (EPRP)	Annual
12	Failure Consequence Classification (FCC)	At time of DSR
13	Formal Risk Assessment (FRA)	Annual/Every Five years*
14	Instrumentation Monitoring Report	Quarterly
15	Management of Change (MoC)	As required
16	Mass Balance Model	Quarterly
17	Multi-criteria Alternative Analysis (MAA)	As required
18	Operation, Maintenance and Surveillance (OMS) Manual	Annual
19	Potential Failure Mode Analysis (PFMA)	Every Five years*
20	Routine Inspection Report	Daily
21	Site-Specific Seismic Hazard Assessment (PSHA & DSHA)	As required
22	Tailings Deposition Model	Quarterly
23	Breach Analysis	As required
24	Organizational Chart	Annual
25	Water Balance Model (TSF specific & site wide models)	Monthly
26	Surface Water Management plan	Annual
27	Constructability Review	As required for every raise
28	Site Characterization (Geology, Hydrogeology, Hydrology, Geotechnical, Climate, Tailings Characteristics, Water Quality)	At time of the DSR
29	Preliminary Design to Extreme Consequence Classification	As required
30	Working Closure Plan / Execution Closure Plan	As required
31	TSF LOM Planning	Annual
** Or sooner in response to significant design, construction, operation and closure milestones, events or material change in the social, environmental and local economic content downstream of the facility*		