# APPENDIX Y
# EA COMMITMENTS TABLE

# APPENDIX Y

# COMMITMENTS MADE

# ACCORDING TO THE

# IAMGOLD CÔTÉ GOLD PROJECT EA REPORT

This document provides a summary of the commitments identified in the Environmental Impact Statement (EIS) / Draft Environmental Assessment (EA) Report, in accordance with the Federal Environmental Impact Statement (EIS) Guidelines and Provincially-approved Terms of Reference (ToR). The commitments identified are specific, achievable, measurable and verifiable commitments per the EIS Guidelines.

Tables 1 to 3 list the mitigation and effects management commitments. Tables 4 to 6 list the monitoring commitments. Table 7 lists the ongoing consultation commitments.

**Table 1: Mitigation Measures – Physical Environment**

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Air Quality | Construction | Fugitive Dust Emissions | Dust Best Management Plan (DBMP) | The DBMP will ensure effective fugitive dust management to mitigate potential off-site effects of the particulate matter and trace metals present on the particulate.<br>The DBMP will detail the following measures: watering frequency, visual monitoring, inspection, record keeping, responsibility, training, complaint response, and corrective actions.<br>The site will have water trucks with water sprays and cannons; should weather conditions not permit watering, other MOE approved suppressants (such as calcium chloride) will be used.<br>If further mitigation is required at specific locations (e.g., active stockpiles), dedicated water sprays will be employed.<br>Travel surfaces will be maintained to minimize silt (fine material). | Maintain air quality to be compliant with Ontario Regulation 419/05 standards for total suspended particulate (TSP) and metals at off-site receptors. |
| Air Quality | Construction | Exhaust from generators, trucks and mobile equipment | Engine Maintenance program | A preventive maintenance program will be employed that encompasses all pollution control equipment and diesel-fired engines. | Maintain air quality to be compliant with Ontario ambient air quality criteria (AAQC) for $NO_2$, $SO_2$, CO, and particulate matter at off-site receptors. |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Air Quality | Construction, operations, closure | Exhaust from trucks and off-road mobile equipment | Equipment compliant with Transport Canada vehicle emission requirements | Emission reductions achieved through the use of current equipment that complies with Transport Canada's off-road engine emission criteria. | Transport Canada Off-Road Compression -Ignition Engine Emission Regulations (SOR/2005-32) |
| Air Quality | Construction, operations, closure | Sulphur dioxide ($SO_2$) emissions from diesel fuel use | Use of low sulphur fuel | Low sulphur fuels will be used in off-road diesel engines; this will reduce the sulphur dioxide emissions from all sources and the resultant off-site air concentrations. | *Environment Canada Sulphur in Diesel Fuel Regulation limiting fuel sulphur content* for off-road engines (SOR/2002-254) |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Air Quality | Operations | Fugitive Dust Emissions | Dust Best Management Plan (DBMP) | The DBMP will ensure effective fugitive dust management to mitigate potential off-site effects of the particulate matter and trace metals present on the particulate.<br>The DBMP will detail the following measures: watering frequency, visual monitoring, inspection, record keeping, responsibility, training, complaint response, and corrective actions.<br>The site will have water trucks with water sprays and cannons; should weather conditions not permit watering, other MOE approved suppressants (such as calcium chloride) will be used.<br>If further mitigation is required at specific locations (e.g., active stockpiles), dedicated water sprays will be employed.<br>Travel surfaces will be maintained to minimize silt (fine material). | Maintain air quality to be compliant with Ontario Regulation 419/05 standards for TSP and metals at off-site receptors.<br>DBMP will be part of MOE Environmental Compliance Approval. |
| Air Quality | Operations | Dust from TMF | TMF Dust Best Management Plan (DBMP) | Controlling dust from the TMF is required to prevent off-site dust. As a large exposed area, control method must prevent potential for dusting to occur. | Maintain air quality to be compliant with Ontario Regulation 419/05 standards for TSP and metals at off-site receptors. |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Air Quality | Operations | Exhaust from generators, trucks and mobile equipment | Engine Maintenance program | A preventive maintenance program will be employed for pollution control equipment and diesel-fired engines. | Maintain air quality to be compliant with Ontario ambient air quality criteria (AAQC) for $NO_2$, $SO_2$, CO, and particulate matter at off-site receptors. |
| Air Quality | Operations | Exhaust from trucks and off-road mobile equipment. | Equipment compliant with Transport Canada vehicle emission requirements | Emission reductions achieved through the use of current equipment that complies with Transport Canada's off-road engine emission criteria. | Transport Canada Off-Road Compression -Ignition Engine Emission Regulations (SOR/2005-32) |
| Air Quality | Operations | $SO_2$ emissions from diesel fuel use | Use of low sulphur fuel | Low sulphur fuels will be used in off-road diesel engines; this will reduce the sulphur dioxide emissions from all sources and the resultant off-site air concentrations. | *Environment Canada Sulphur in Diesel Fuel Regulation limiting fuel sulphur content* for off-road engines (SOR/2002-254) |
| Air Quality | Operations | Particulate emissions from drilling operations | Control measures provided by equipment supplier | Mitigation measures are required to prevent off-site effects of TSP and metals, through the use of equipment with dust control. | Compliance with Ontario Regulation 419/05 standards for TSP and metals at off-site receptors. |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Air Quality | Operations | Particulate emissions and NOx from open pit blasting | Blasting to occur mid-day based on favourable climatic conditions<br>Follow manufacturer's recommended guidelines regarding water infiltration and time of explosives usage | Blasting will occur when meteorological conditions are such that off-site TSP, metals and NOx levels are compliant with regulations.<br>Nitrogen oxides (NOx) emissions may increase if emulsion is left in boreholes for extended period of time due to infiltration of water. | Compliance with Ontario Regulation 419/05 air quality standards for $NO_x$, TSP, and metals at off-site receptors. |
| Air Quality | Operations | Hydrogen cyanide (HCN) emissions from tailings | Cyanide destruction at the ore processing plant | HCN emissions from TMF are expected to be minimal, as sulphur dioxide will be used to destroy cyanide at the ore processing plant before tailings are released to the TMF. | Compliance with Ontario Regulation 419/05 air quality standard for HCN at off-site receptors. |
| Air Quality | Operations | Material handling at the ore processing plant | Dust collection systems | Mitigation measures to control dust emissions from crushing (primary and secondary) and reclaim from feed stockpiles are required to prevent off-site effects of TSP and metals.<br>Crushing and reclaim from stockpiles for crushed materials will be controlled with applicable dust control systems.<br>A maintenance plan will ensure that dust control systems are functioning properly. | Compliance with Ontario Regulation 419/05 air quality standards for TSP at off-site receptors. |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Air Quality | Operations | Particulate emissions from lime silo | Dust collection systems | Mitigation measures are required to control dust during lime delivery to the silos to prevent off-site effects of TSP.<br>Lime silo vents are to be controlled by dust control systems.<br>A maintenance plan will ensure dust control systems are functioning properly. | Compliance with Ontario Regulation 419/05 air quality standards for TSP at off-site receptors. |
| Air Quality | Operations | Emissions from lime slaker | Dust collection systems | Mitigation measures are required to control emissions from the lime slaker to prevent off-site effects of TSP. Emissions from the lime slaker are to be controlled.<br>A maintenance plan will ensure dust control systems are functioning properly. | Compliance with Ontario Regulation 419/05 air quality standard for TSP at off-site receptors. |
| Air Quality | Operations | Particulate from dry material handling in ore processing plant (flocculants, copper sulphate) | Dust collection systems | Mitigation measures are required to control emissions from handling and mixing of dry chemicals.<br>Mixing and handling areas are to be controlled.<br>A maintenance plan will ensure dust control systems are functioning properly. | Compliance with Ontario Regulation 419/05 air quality standard for TSP at off-site receptors. |
| Air Quality | Operations | Emissions from induction furnace | Dust collection systems | Emissions from the furnace are to be controlled.<br>A maintenance plan will ensure dust control systems are functioning properly. | Compliance with Ontario Regulation 419/05 air quality standard for TSP at off-site receptors. |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Air Quality | Operations | $SO_2$ emissions from cyanide destruction | Closed loop delivery | To control emissions during delivery, $SO_2$ is to be delivered to the site as a pressurized liquid .<br>Delivery system to include a gas capture system. | Compliance with Ontario Regulation 419/05 air quality standard for $SO_2$ at off-site receptors. |
| Air Quality | Operations | Emissions from on-site emergency generators | Develop a testing schedule to minimize air quality effects | Mitigation measures are required to control NOx and TSP emissions from the generators. Testing will be conducted as per established industry protocols. | Maintain air quality to be compliant with Ontario Regulation 419/05 air quality standards for TSP and $NO_x$ at off-site receptors.<br>Testing schedule will be part of MOE Environmental Compliance Approval (ECA). |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Air Quality | Closure | Fugitive Dust Emissions | Dust Best Management Plan (DBMP) | The DBMP will ensure effective fugitive dust management to mitigate potential off-site effects of the particulate matter and trace metals present on the particulate.<br>The DBMP will detail the following measures: watering frequency, visual monitoring, inspection, record keeping, responsibility, training, complaint response, and corrective actions.<br>The site will have water trucks with water sprays and cannons; should weather conditions not permit watering, other MOE approved suppressants (such as calcium chloride) will be used.<br>Travel surfaces will be maintained to minimize silt (fine material). | Maintain air quality at property line to be compliant with Ontario Regulation 419/05 standards for TSP and metals at off-site receptors. |
| Air Quality | Closure | Exhaust from generators, trucks and mobile equipment | Engine Maintenance program | A preventive maintenance program will be employed that encompasses all pollution control equipment and diesel-fired engines. | Maintain air quality to be compliant with Ontario ambient air quality criteria (AAQC) for $NO_2$, $SO_2$, CO, and particulate matter at off-site receptors. |
| Air Quality | Closure | Exhaust from trucks and off-road mobile equipment. | Equipment compliant with Transport Canada vehicle emission requirements | Emission reductions achieved through the use of current equipment that complies with Transport Canada's off-road engine emission criteria. | Transport Canada Off-Road Compression -Ignition Engine Emission Regulations (SOR/2005-32) |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Noise and Vibration | Construction | Construction blasting noise at the receptors. | Charge size of construction blasting outside of the open pit boundary will be such that the objectives of NPC-119 will be achieved. | Minimum separation distance of 1.25 km between blast location and nearest receptor to be maintained. If blast size exceeds 250 kg per delay and/or if the minimum separation is less than 1.25 km, IAMGOLD will prepare a blast noise study to achieve objectives of NPC-119. | NPC-119 noise limit of 120 dBL. |
| Noise and Vibration | Construction | Construction blasting vibration at the receptors. | Charge size of construction blasting outside of the open pit boundary will be such that the objectives of NPC-119 will be achieved. | Minimum separation distance of 1.25 km between blast location and nearest receptor to be maintained. If blast size exceeds 250 kg per delay and/or if the minimum separation is less than 1.25 km, IAMGOLD will prepare a blast noise study to achieve objectives of NPC-119. | NPC-119 vibration (PPV) limit of 10 mm/s. |
| Noise and Vibration | Construction | Construction noise. | 1 km setback distances to be kept at the Project site between the construction location and the receptors. | 1 km setback distances to be maintained between the construction location and the receptors. If construction occurs closer to the receptors (e.g., waterways, road realignments), IAMGOLD to prepare a construction noise study for the particular activity. | n/a |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Noise and Vibration | Construction | Construction Equipment Noise Limits | Construction equipment not to exceed noise levels specified in NPC-115 and NPC-118 | Ensure equipment used for construction meet the guideline limits. | Achieve objectives of NPC-115 and NPC-118 construction equipment noise limits. |
| Noise and Vibration | Operations | Operational noise at the receptors. | Site equipment will be operated to meet NPC-300 operational noise limits.<br>Alternatively, to meet NPC-300 night-time criteria, sensitive receptors may be purchased. | Some equipment (air track drill, track dozer) may be limited to daytime operation.<br>Haul truck traffic limitations for night time operations may be applied. | Compliance with NPC-300 for operational noise limit of 45 dBA during daytime and 40 dBA during night-time. |
| Noise and Vibration | Construction and operations | Operational blasting noise at the receptors. | Blasting charge size in the open pit is planned to be in compliance with NPC-119. | Blasting charge sizes used in the open pit will be 536 kg per delay or smaller. If it exceeds 536 kg per delay, IAMGOLD will prepare a blast noise study to show compliance with NPC-119. | Compliance with NPC-119 noise limit of 120 dBL. |
| Noise and Vibration | Construction and operations | Operational blasting vibration at the receptors. | Blasting charge size in the open pit is planned to be in compliance with NPC-119. | Blasting charge sizes used in the open pit will be 536 kg per delay or smaller. If it exceeds 536 kg per delay, IAMGOLD will prepare a blast vibration study to show compliance with NPC-119. | Compliance with NPC-119 vibration (PPV) limit of 10 mm/s. |
| Hydrology and Climate | Operations phase, closure phase, post-closure phase (stages I and II) | Realignment of surface water flows | Realignment channels and dams | Realignment channels and dams will be designed to convey the range of flows and water levels reasonably expected over the Project life. Realignment dams will be constructed to allow excavation of the open pit and construction of the TMF. | *Lakes and Rivers Improvement Act*, (LRIA), *Fisheries Act, Navigable Waters Act* |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Water Quality | Construction phase, operations phase, closure phase, and post-closure phase (stages I and II) | Discharge of total suspended solids due to soil erosion and transport of sediments from disturbed areas, and potential increases in total suspended solids concentrations within surface water receivers. | Best Management Practices (BMPs) and engineering design to limit soil erosion and mobilization/transport of sediments from disturbed areas. | During construction, operations and closure phases, BMPs for erosion and sediment control include: design of physically stable mine rock and tailings storage facilities, the use of earthwork methods to minimize slope length and grade, ditching, sediment ponds/traps, channel and slope armouring, use of natural vegetation buffers, vegetation of disturbed soil, and runoff controls (i.e., sediment fencing and small check dams). During post-closure, erosion and sediment control would be focused on monitoring the success of closure activities. | Total suspended solids discharge limits: Metal Mining Effluent Regulations (MMER), and Ontario Regulation 560/94, Effluent Monitoring and Effluent Limits – Metal Mining Sector.<br>Total suspended solids (and turbidity) water quality guidelines: Canadian Water Quality Guidelines for the Protection of Aquatic Life and Provincial Water Quality Objectives. |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Water Quality | Operations phase | Potential influence of process water and seepage/runoff from TMF on receiving environment water quality. | Treatment of process water; construction and operation of engineered water management systems to collect runoff and seepage from the TMF; reclaim water; returned (or recycled) to the process plant; use of liners on starter tailings dams to limit seepage losses during the early years of operations. | Process water will be treated at the ore process plant for cyanide, cyanide destruction constituents, as required, prior to discharge into the TMF.<br>Seepage and runoff will be collected at collection ponds around the perimeter of the TMF and pumped back into the TMF.<br>Water in the reclaim pond will be recycled back to the process plant, with no water from the reclaim pond being discharged to the environment through the polishing pond under normal flow conditions. | Effluent discharge requirements under: Metal Mining Effluent Regulations (MMER), and Ontario Regulation 560/94, Effluent Monitoring and Effluent Limits – Metal Mining Sector.<br>Water quality guidelines: Canadian Water Quality Guidelines for the Protection of Aquatic Life and Provincial Water Quality Objectives. |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Water Quality | Operations and closure phases | Potential influence of seepage/runoff from MRA, low-grade stockpile and open pit on receiving environment water quality. | Construction and operation of engineered water management systems to collect runoff and seepage; monitoring and treatment of effluent, as required. | Open pit inflow and runoff will be collected in the open pit sump. Seepage and runoff from the MRA and from the low-grade ore stockpile will be collected in ponds. During the operations phase, water collected by these facilities will be pumped to the mine water pond. The excess water in the mine water pond reports to the polishing pond, which will be monitored for water quality. Excess water in the polishing pond will be pumped to the reclaim pond, if storage in the TMF is available; otherwise, the excess water is discharged to the environment. | Effluent discharge requirements under: Metal Mining Effluent Regulations (MMER), and Ontario Regulation 560/94, Effluent Monitoring and Effluent Limits – Metal Mining Sector.<br>Water quality guidelines: Canadian Water Quality Guidelines for the Protection of Aquatic Life and Provincial Water Quality Objectives. |
| Water Quality | Operations phase | Potential influence of explosives residuals in mine rock, low-grade ore and open pit on receiving environment water quality (i.e., ammonia and nitrate). | BMPs for explosives use. | Implementation of BMPs during blasting to reduce the blast waste rate and mass of residual explosives present in the open pit, mine rock and low-grade ore. | Water quality guidelines: Canadian Water Quality Guidelines for the Protection of Aquatic Life and Provincial Water Quality Objectives. |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Water Quality | Operations phase | Potential influence of sewage on receiving environment water quality. | Treatment of sewage | Sewage will be treated to a quality that meets federal and provincial legislative requirements before discharge to the environment. | Effluent discharge requirements under: Wastewater Systems Effluent Regulations, and Ontario *Water Resources Act* (Section 53) |
| Water Quality | Operations phase, closure phase, post-closure phase (stages I and II) | Potential impact of landfill leachate from solid domestic and industrial waste on groundwater quality. | Management of solid domestic and industrial waste in a permitted landfill, including the use of BMPs; monitoring of groundwater quality; remedial action, as required. | Solid domestic and industrial waste will be placed into a landfill that will be operated in accordance with federal and provincial legislative requirements, and BMPs, including mitigation, monitoring, remedial action, and closure plans, will be integrated into the operation and closure of the landfill. | Ontario Regulation 232/98 |
| Water Quality | Operations phase, closure phase, post-closure phase (stages I and II) | Acid rock drainage from the MRA potentially affecting effluent quality | Inclusion of PAG rock within the bulk of the MRA | The inclusion of any PAG materials with the bulk of the waste will likely be an appropriate management method and segregation of any PAG materials does not appear to be necessary. | n/a |
| Water Quality | Post-closure phase (stage II) | Potential influence of seepage/runoff from MRA and Côté Pit Lake on receiving environment water quality. | Monitoring and, if determined to be required, water collection and treatment. | Seepage and runoff from the MRA and water in the open pit will be monitored prior to post-closure phase (stage II). If the monitoring determines that the water quality is not suitable for discharge to the environment, then collection and treatment measures will be implemented accordingly. | Water quality guidelines: Canadian Water Quality Guidelines for the Protection of Aquatic Life and Provincial Water Quality Objectives. |

**Table 2: Mitigation Measures – Biological Environment**

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Aquatic Biology | Construction | During construction water quality may be impaired due to elevated TSS in runoff which can affect aquatic species. IAMGOLD will implement best management practices to control runoff and minimize TSS effects. Some concentrations above background may occur temporarily. | The use of erosion control measures and timing of construction to avoid spawning and egg incubation periods will reduce the potential for effect to fish and aquatic life. | Construction in water bodies will be undertaken within the in-water construction windows to minimize effects to fish spawning.<br>Erosion control fencing and sedimentation catchments will be installed downstream of active construction areas. | As required under a consolidated works permit under the *Lakes and Rivers Improvement Act* issued by MNR and under the *Fisheries Act* Section 35.<br>TSS must not exceed 5 mg/L (long-term) or 25 mg/L TSS (short-term; CCME 2013) |
| Aquatic Biology | Construction | Fish will be relocated from habitats that will be lost during the construction phase (i.e., MRA and TMF) but not all fish will be able to be collected, therefore individual fish will be lost during construction. | Relocate fish (representative numbers of the community) to established habitats. Time relocation relative to life cycle requirements and environmental conditions to minimize stress. | Non-destructive fishing will be conducted in fish habitats that will be lost. Timing of removals will be planned around life cycle requirements to minimize losses of individuals. Small and large-bodied fish will be targeted. | Section 35 of the *Fisheries Act* does not allow for the destruction of fish. A permit is required to provide for loss of some individuals. |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Aquatic Biology | Construction | Construction of the watercourse realignments will result in flooding of some terrestrial vegetation which could cause methyl mercury production and potentially affect recreational use of sport fish through consumption limits. | Removal of terrestrial vegetation prior to flooding will reduce the potential for methyl mercury production through decaying of terrestrial vegetation. | Terrestrial vegetation will be removed prior to flooding. | Health Canada consumptions restriction guideline (0.61 mg/kg Hg)- Health Canada 2004 |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Aquatic Biology | Construction | Blasting in the open pit during construction may affect spawning success and limit habitat utilization by some fish in water bodies adjacent to the open pit. However, the area affected is primarily profundal habitat and is of limited value for fish spawning thus any effects are expected to be minimal. | The spawning habitat within the water bodies affected will be included in the Fisheries Act Authorization for the site as a loss of habitat and will be addressed through the compensation plan. | Spawning habitat in Clam Lake within 238.5 m from open pit will be included in the Fisheries Act Authorization and ensuing compensation plan. | DFO guideline - Wright D-G., and Hopky G-E., 1998. Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters.<br>*Fisheries Act* Section 35. No loss of productive habitat related to commercial, aboriginal or recreational fisheries. |
| Aquatic Biology | Construction | Loss of existing lentic and lotic habitat will occur through the construction of the Project. A small net gain in lentic habitat (0.1%) and a slight loss of stream habitat (1.6%) is expected within the local study area. | Design of the realignment channels will incorporate the life cycle requirements of the resident fish species and promote, where possible, an increase in habitat that is currently limited within the local study area. | Construct realignments to provide for life cycle requirements of resident fish | *Fisheries Act* Section 35. No loss of productive habitat related to commercial, aboriginal or recreational fisheries. |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Aquatic Biology | Operations | Water intake structures will trap, impinge fish. | Design water intake structures to meet DFO requirements to prevent/limit fish impingement. | Ensure intake pipe are fitted with screens to prevent fish impingement and consistent with DFO guidelines. | DFO Freshwater Intake End-of-Pipe Fish Screen Guideline |
| Aquatic Biology | Construction | Reduction in flow associated with the loss of the TMF drainage to Bagsverd Creek will reduce flow and water levels and could affect fish passage and use of habitats. | Predicted reductions in flow will be compared to the measured stream morphology and the stream bed will be modified, as required to ensure fish passage and utilization of habitats. The modifications should be conducted as part of the fish habitat compensation plan. | Conduct a survey of the stream morphology at critical times of the year (low and peak flows) and assess the potential impact to habitat associated with predicted reductions in flow and water levels. Incorporate streambed modifications into the habitat compensation plan, if required. | *Fisheries Act* Section 35. No loss of productive habitat related to commercial, aboriginal or recreational fisheries. |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Aquatic Biology | Operations | Maximum values of several substances are predicted to exceed water quality guidelines in a few locations but concentrations of most substances are less than acute toxicity values appropriate for the assessment of short term exposure. Copper, iron and zinc will periodically exceed water quality guidelines in the effluent mixing zone with potential for short term effects to aquatic life. | Since toxicity of these substances can be modified by factors within the receiving environment such as hardness, dissolved organic carbon and pH, the predicted concentrations may not result in effects to aquatic biota. Site specific water quality objectives will need to be developed for these substances or effluent treatment will need to be employed such that protection of aquatic life is assured. | Prepare site-specific water quality guidelines following CCME protocols. | Water quality outside the mixing zone will need to achieve water quality guidelines and within the mixing zone must be non-acutely toxic to aquatic life– Ontario *Water Resources Act* (OWRA) and Section of the *Fisheries Act* |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Aquatic Biology | Operations | During the first years of operation the watercourse realignments may not be fully established and resident fish may experience some interruption in access to habitat or the quality of habitats. | Time construction of watercourse realignments to allow for vegetation growth for one season prior to commissioning of watercourse realignments, if possible or conduct planting of aquatic vegetation immediately following commissioning of channel realignments to promote the establishment of vegetation within the newly constructed habitats. | Construct habitat/realignments during the winter so that growth can occur over the spring and summer period and water can inundate new habitat areas to allow for vegetation growth or conduct planting of aquatic vegetation in newly constructed habitats immediately following commissioning. Planting of aquatic vegetation during this time will promote more rapid establishment of habitat. | Section 35 *Fisheries Act* authorization |
| Aquatic Biology | Post-Closure (Stage 2) | Dams will be removed and the open pit reconnected to Upper Three Duck Lakes through an outlet channel. Until these habitats are established some reduction in fish access to habitat or the quality of habitats may occur. Once established a net increase in fish habitat will be provided. | Time construction of water realignments to allow for vegetation growth for one or more growing seasons prior to commissioning of watercourse realignments or conduct planting of aquatic vegetation immediately following commissioning of channel realignments to promote the establishment of vegetation within the newly constructed habitats. | Construct habitat/realignments during the winter so that growth can occur over the spring and summer period and water can inundate new habitat areas to allow for vegetation growth or conduct planting of aquatic vegetation in newly constructed habitats immediately following commissioning. Planting of aquatic vegetation during this time will promote more rapid establishment of habitat. | Section 35 *Fisheries Act* authorization |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Construction through Closure | Direct vegetation (and wildlife habitat) loss, alteration, and fragmentation from the physical footprint of the Project. | Limit the area of Project footprint and limit disturbance from employees and mining activities.<br>Where possible, clear vegetation outside of the sensitive wildlife breeding seasons such as the migratory bird nesting season (May 1 to August 1).<br>Construct the 230 kV transmission line to minimize the potential for ground disturbance and soil erosion during construction and to reduce the necessity for creation of additional permanent access roads.<br>Retain existing low-lying vegetation along the transmission line ROW thereby minimizing vegetation clearing and allowing for the maintenance of root masses and ground vegetation that will reduce the potential for erosion and encourage continued vegetation growth through operations and beyond closure.<br>Where practical, use existing roads and trails.<br>Where practical, rehabilitate habitat for plants and wildlife. | Existing access roads, infrastructure used to the extent practical in transmission line construction.<br>Vegetation clearing to take place outside of the migratory bird nesting season (May 1 to August 1). Nest surveys will be completed by qualified individuals prior to commencing work and a mitigation/ management plan will be developed in consultation with Environment Canada and the Ministry of Natural Resources to address potential impacts to breeding birds.<br>Retain existing low ground cover along transmission line ROW thereby minimizing vegetation clearing.<br>Maintain vegetated buffers adjacent to creek and river transmission line crossings.<br>Apply and enforce speed limits along all Project access roads and always give the right-of-way to wildlife.<br>Vehicle use will be restricted to designated areas and use of off-road vehicles for recreational purposes will be prohibited for workers.<br>Progressive revegetation will be implemented where practical to reduce the amount of disturbed habitat during the Project lifecycle and will include active seeding to promote vegetation growth, stabilize the substrate, reduce potential erosion and enhance natural recovery of vegetation communities. | Canadian *Migratory Birds Convention Act* |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Construction through Closure | Introduction of invasive plant species can change vegetation ecosystem composition. | Limit / prevent the transfer of invasive plant species from equipment and imported soil used for rehabilitation. | Create topsoil and overburden stockpiles for use in future rehabilitation activities.<br>Clean construction equipment and vehicles on a regular basis.<br>Use locally-sourced native species to revegetate disturbed and exposed areas and encourage natural revegetation. | n/a |
| Terrestrial Biology | Construction through Closure | Construction and operation of the 230 kV transmission line can result in bird and bat strikes and increase mortality of migratory and non-migratory bird and bat species. | Reduce the risk of mortality to birds and bats. | Use bird/bat deterrents / deflectors on transmission lines in high use areas (e.g., waterfowl movement corridors). | Ontario *Endangered Species Act* |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Construction through Closure | Project preparation, construction, operation and closure activities can increase the risk of nest destruction and mortality of migratory birds (incidental take). | Limit risk of nest destruction and mortality of migratory birds. | Typically, clearing of vegetation will take place outside of the migratory bird nesting season (May 1 to August 1). When clearing must occur between May 1 and August 1, nest surveys will be completed by qualified individuals prior to commencing work and a mitigation/ management plan will be developed in consultation with Environment Canada (EC) and the Ministry of Natural Resources (MNR) to address potential impacts to breeding birds.<br>Minimize disturbance to active nest sites. | Canadian *Migratory Birds Convention Act* |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Construction through Closure | Wildlife-vehicle collisions and physical hazards on the Project site may cause injury / mortality to individual animals. | Reduce risk of mortality to wildlife | Enforce speed limits on Project roads.<br>The presence of wildlife will be monitored and communicated to Project site personnel.<br>All Project personnel will be provided with environmental awareness training.<br>Vehicles will yield right-of-way to wildlife.<br>Vehicle use will be restricted to designated areas and use of off-road vehicles for recreational purposes will be prohibited for workers.<br>The MRA, TMF polishing pond and low-grade ore stock pile will be regularly monitored for wildlife activity and hazards.<br>If a Species at Risk is identified within the Project area during construction, and construction activities will harm or harass the observed individual(s), work within the vicinity of the observed occurrence will be modified to minimize disturbance until the individual(s) leave the area. Information regarding the observation of SAR (species, number of individuals, location) should be reported to the MNR within 48 hours.<br>Temporary suspension of surface blasting if moose, black bear, wolf and other wildlife are observed within the danger zone identified by the blast supervisor. | Canadian *Species at Risk Act*<br>Ontario *Endangered Species Act* |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Construction through Closure | Attractants (e.g., food waste, oil products) may increase carnivore-human encounters and result in the loss (destruction or relocation) of individual animals.<br>Attractants may also increase predator numbers and thereby increase predation risk on prey species. | Reduce the risk of mortality to wildlife. | Education and reinforcement of proper waste management practices will be provided to all Project personnel.<br>Prohibit littering.<br>Prohibit feeding of wildlife.<br>Dispose of waste in accordance to a Waste Management Plan which will limit the presence of food attractants.<br>All Project personnel will be provided with environmental awareness training.<br>Presence of wildlife will be monitored and communicated to Project site personnel. | n/a |
| Terrestrial Biology | Construction | Adverse effects to wetlands. | Where practical, avoid placement structures in waterbodies along the transmission line ROW, and to the extent practicable, in low-lying areas (difficult for some portions of the existing Shining Tree ROW). | Where practical, avoid placement structures in waterbodies along the transmission line ROW, and to the extent practicable, in low-lying areas | n/a |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Construction | Adverse effects to ungulates (Moose) and furbearers (Wolves, Bears, Marten) due to the loss of habitat or noise disturbance. | Develop a compact Project site to reduce overall habitat loss and to limit the potential adverse effects related to interference with wildlife movement.<br>Utilize existing infrastructure for access and minimize construction of new roads and other corridors wherever alternatives exist.<br>Construction crews will be advised to not interfere or harass wildlife.<br>No hunting by Project personnel permitted while working or residing on site.<br>Enforce speed limits along Project roads to reduce the potential for collisions with wildlife. Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity.<br>Include wildlife awareness information in regular safety and environmental inductions.<br>Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence. | Minimize the width of the transmission line ROW to the proposed 50 m.<br>Utilize existing infrastructure for access and minimize construction of new roads where practical.<br>No hunting by Project personnel will be permitted while working or residing on-site.<br>Enforce speed limits along Project roads.<br>Include wildlife awareness information in regular safety and environmental inductions. | n/a |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Construction | Adverse effects to bats due to loss of habitat or noise disturbance. | Develop a compact site to reduce overall habitat loss and to limit potential adverse effects related to sound emissions, to the extent practicable.<br>Enforce speed limits along Project roads and reduce vehicular traffic associated with construction. | Minimize the width of the transmission line ROW to the proposed 50 m.<br>Enforce speed limits along Project roads and reduce vehicular traffic associated with construction. | n/a |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Construction | Adverse effects to migratory birds and avian Species at Risk due to loss of habitat or noise disturbance. | Minimize the Project footprint to the extent practicable.<br>Construct the transmission line ROW outside migratory bird breeding season (May 1 to July 31).<br>Maintain existing vegetation ground cover along the transmission line ROW to the extent practicable.<br>Install conductor wires at a sufficient distance apart to prevent the accidental electrocution (contact of wingtips with wire) of large avian species.<br>Utilize existing infrastructure for access and minimize construction of new roads and other corridors where possible.<br>Advise Project personnel not to interfere or harass wildlife.<br>No hunting by Project personnel permitted while working or residing on-site.<br>Educate Project personnel on how to handle food and food wastes in a responsible manner and create and enforce policies to ensure no feeding of wildlife. | Minimize the width of the transmission line ROW to the proposed 50 m.<br>Construct in winter, where frozen surfaces are required to minimize surface erosion.<br>Retain existing low-lying vegetation ground cover along the transmission line ROW thereby minimizing vegetation clearing.<br>Utilize existing infrastructure for access and minimize construction of new roads.<br>No hunting by Project personnel will be permitted while working or residing on-site.<br>Enforce speed limits along Project roads.<br>Include wildlife awareness information in regular safety and environmental inductions. | Canadian *Migratory Birds Convention Act*<br>Canadian *Species at Risk Act*<br>Ontario *Endangered Species Act* |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Construction | Adverse effects to raptors due to loss of habitat or noise disturbance. | Develop a compact site to prevent encroachment of Project activities on raptor nesting sites and adjacent habitat.<br>Minimize the level of potentially disturbing activities near any known or subsequently discovered active raptor nest sites during the raptor breeding season (April 1 – August 1) until nests are vacated.<br>Dispose of food wastes generated on site in an appropriate manner that limits the attraction of wildlife, including Common Ravens, Turkey Vultures and Bald Eagles.<br>Remove carcasses of road-killed animals or any other carcasses found onsite in a timely manner to limit the attraction of wildlife, such as Common Ravens and Turkey Vultures. | Minimize the width of the transmission line ROW to the proposed 50 m.<br>Dispose of food wastes generated on site in an appropriate manner.<br>Remove carcasses of road-killed animals or any other carcasses found onsite in a timely manner. | n/a |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Operations | Adverse effects to vegetation communities due to activities associated with the maintenance of the transmission line wires and poles (dust production by service vehicles) and the need for periodic clearing of tall woody vegetation to ensure adequate clearance below the conductors. | The generation of dust by transmission line service vehicles is expected to be limited and can be minimized by having these vehicles drive slowly along the transmission line ROW.<br>Ensure that ongoing clearing is constrained to the necessary area of clearance (the ROW).<br>Use mechanical brushing. | Minimize the speed of service vehicles along the transmission line ROW. | n/a |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Operations | Adverse effects to ungulates (Moose) and furbearers (Wolves, Bears, Marten) due to activities associated with maintenance of the transmission line wires and poles. | Include wildlife awareness information in regular safety and environmental inductions.<br>Project personnel will be advised not to interfere or harass or feed wildlife.<br>Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence.<br>Project personnel will be required to handle food and food wastes in a responsible manner.<br>No hunting by Project personnel will be permitted while working or residing on-site.<br>Enforce speed limits along Project roads to reduce the potential for collisions with wildlife.<br>Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity. | Include wildlife awareness information in regular safety and environmental inductions. | n/a |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Operations | Adverse effects to migratory birds, raptors and avian Species at Risk due to activities associated with maintenance of the transmission line wires and poles. | Minimize the speed of service vehicles along the transmission line ROW to minimize dust production and thereby limit the zone of influence.<br>Use marker balls and bird diverters on the transmission line wires to reduce the likelihood of bird collisions with power lines in high-risk location such as near wetlands. | Minimize the speed of service vehicles along Project roads and along the transmission line ROW.<br>Use marker balls and bird diverters on wires in high-risk areas. | Canadian *Migratory Birds Convention Act*<br>Canadian *Species at Risk Act*<br>Ontario *Endangered Species Act* |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Closure | Adverse effects to vegetation communities due to activities associated with the removal of the transmission line wires and poles. | Time removal of transmission line infrastructure to minimize the potential for ground disturbance and soil erosion by equipment and vehicles and to reduce the necessity for creation of additional permanent access roads.<br>Retain existing low-lying vegetation ground cover thereby minimizing vegetation clearing and allowing for the maintenance of root masses and ground vegetation that will reduce the potential for erosion and encourage continued vegetation growth beyond closure.<br>Minimize the speed of service vehicles along Project roads and along the transmission line ROW to lessen dust production and thereby limit the zone of influence.<br>Encourage natural revegetation and recolonization of the ROW as part of the reclamation process. | Remove transmission line infrastructure in the winter and minimize disturbance to vegetation during closure activities.<br>Minimize the speed of service vehicles along Project roads and along the transmission line ROW to lessen dust production. | n/a |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Closure | Adverse effects to ungulates (Moose) and furbearers (Wolves, Bears, Marten) due to activities associated with the removal of the transmission line wires and poles. | Utilize existing infrastructure for access and minimize construction of new roads and other corridors where other alternatives exist.<br>Include wildlife awareness information in regular safety and environmental inductions.<br>Project personnel will be advised not to interfere or harass or feed wildlife.<br>Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence.<br>Project personnel will be required to handle food and food wastes in a responsible manner.<br>No hunting by Project personnel will be permitted while working or residing on-site.<br>Enforce speed limits along proposed access roads to reduce the potential for collisions with wildlife.<br>Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity. | Utilize existing infrastructure for access and minimize construction of new roads.<br>Include wildlife awareness information in regular safety and environmental inductions. | n/a |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Closure | Adverse effects to bats due to activities associated with the removal of the transmission line wires and poles. | Utilize existing infrastructure for access and minimize construction of new roads and other corridors where alternatives exist.<br>Project personnel will be advised not to interfere or harass wildlife. | n/a | Ontario *Endangered Species Act* |

| Discipline | Project Phase | Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Terrestrial Biology | Closure | Adverse effects to migratory birds, raptors and avian Species at Risk due to activities associated with the removal of the transmission line wires and poles. | Utilize existing infrastructure for access and minimize construction of new roads and other corridors where alternatives exist.<br>Include wildlife awareness information in regular safety and environmental inductions.<br>Project personnel will be advised not to interfere or harass or feed wildlife.<br>Project personnel will be made aware of seasonal changes in local large mammal behaviour or presence.<br>Project personnel will be required to handle food and food wastes in a responsible manner.<br>No hunting by Project personnel will be permitted while working or residing on-site.<br>Enforce speed limits along Project roads to reduce the potential for collisions with wildlife.<br>Signs warning drivers of the possibility of wildlife encounters will be posted in areas of high wildlife activity. | Utilize existing infrastructure for access.<br>Include wildlife awareness information in regular safety and environmental inductions. | Canadian *Migratory Birds Convention Act*<br>Canadian *Species at Risk Act*<br>Ontario *Endangered Species Act* |

**Table 3: Mitigation Measures – Human Environment**

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Land Use | Construction; operations; closure | Incompatibility with Ontario Ministry of the Environment's Land-Use Policy (D-Series Guidelines) | Incorporate the MOE D-series guidelines (MOE, 1995). | Develop 300 m (minimum) setbacks from provincially or municipally designated sensitive recreation uses, any building or associated amenity area not associated with industrial use where humans or the natural environment may be adversely affected by air emissions from the Class III Industrial facilities (excludes transmission line) such as campgrounds, residences, as per the MOE D-Series Guidelines (MOE, 1995). | MOE D-Series Guidelines |
| Land Use | Construction; operations; closure | Maintain access for mineral exploration | Work with claim holders to identify access changes and negotiate access agreements if there is any requirement to use or cross IAMGOLD properties. | Negotiate access as necessary and maintain access agreements. | As per existing access agreements and exploration permit (*Mining Act*) |
| Land Use | Construction; operations; closure | Maintain access to forestry resources | Re-route the Chester Access Road south of the Project site. | Discuss alignment with the FMA holders and EACOM for re-routing the Chester Access Road south of the Project site. | n/a |
| Land Use | Construction; operations; closure | Hunting – loss of BMAs | To be determined through consultation between the MNR and any affected BMA holders. | Discuss potential Project effects with MNR and the affected BMA holders. | n/a |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Land Use | Construction; operations; closure | Hunting – potential adverse effects due to increased vehicular traffic | Enforce speed limits and warn IAMGOLD personnel of areas of high wildlife activity and crossings. | Enforce speed limits along proposed Project access roads to reduce the potential adverse effects of increased vehicular traffic associated with the Project. | n/a |
| Land Use & Traditional Land Use | Construction; operations; closure | Hunting – safety of Project site workers<br>Hunting (traditional) – safety of Project site workers | Prohibit hunting on IAMGOLD property to provide safety for both hunters and workers. | Inform workers of the no hunting policy and post signs warning hunters.<br>Control access to the site for general public including hunters. | n/a |
| Land Use | Construction; operations; closure | Hunting - potential adverse effects due to poor waste management practices | Food wastes generated on-site will be appropriately disposed of to reduce the attraction of wildlife. | Ensure frequent pick-up and removal of waste generated on-site. | n/a |
| Land Use | Construction; operations; closure | Trapping – loss of access to trapline area (GO031) | Appropriate mitigation measures to be determined through consultation between the MNR and affected trappers. | Continue discussions with the MNR and affected trappers about potential effects and/or effects management strategies, where appropriate. | n/a |
| Land Use | Construction | Trapping – relocation of trapper cabins or buildings along transmission line alignment | Appropriate mitigation measures to be determined through consultation between the MNR and affected trappers. | Discuss with the MNR and the affected trappers about appropriate effects management strategies for the removal of trapper cabins or associated buildings that may be overlap with the selected transmission line alignment. | n/a |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Land Use | Construction; operations; closure | Cottagers and Outfitter Camps – increased boating on Mesomikenda Lake | Limit recreational boating for workers while they are staying at the work camp on-site. | Inform workers of the recreational boating policy. | n/a |
| Land Use | Construction; operations | Navigable Waters – restricted access to the 4M Canoe route | To be determined through consultation with any potential canoe route users to facilitate navigation during construction and operations. | Through consultation with users, establish a suitable portage/ connection such that the portage route will still be usable or an alternative route is developed. | *Navigable Waters Act* |
| Land Use | Construction | Other Recreational Use – access limitations along transmission line alignment | Consult with local snowmobile clubs and organizations, as applicable, to minimize potential conflicts. | Consult with local snowmobile clubs and organizations, as applicable, to minimize potential conflicts with snowmobilers during construction of the transmission line. | n/a |
| Traditional Land Use | Operations | Plant Harvesting (traditional) – contamination of vegetation from use of chemical agents for vegetation management along transmission line alignment | Vegetation clearing will avoid the use of chemical agents. | No use of chemical agents for vegetation clearing along transmission line right of way; use of mechanical vegetation management only. | n/a |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Traditional Land Use | Construction | Fishing (traditional) – in-water works along transmission line alignment | Design or time construction activities so there are limited or no in-water works required. | In-water works are limited during construction of the transmission line alignment. | n/a |
| Traditional Land Use | Construction; operations | Canoeing (traditional) – loss of portage route | To be determined through consultation with any potential canoe route users to facilitate navigation during construction and operations. | Through consultation with users, establish a suitable portage/ connection such that the portage route will still be usable or an alternative route is developed. | *Navigable Waters Act* |
| Traditional Land Use | Construction; operations | Cultural, Spiritual and Ceremonial Sites, Eagle's Nest – impacts to raptors | Inform workers of locally nesting raptors. | Inform workers of locally nesting raptors to avoid unnecessary disturbance. | n/a |
| Visual Aesthetics | Construction, operations, closure | Obstruction of the viewscape | Limit the design height of the MRA to 150 meters. Negotiate removal of the trapper's cabin on Three Duck Lakes. | Mitigation and management measures inherent within the Project design that limit the extent of the visual effects includes: selection of one MRA, located further away from receptors and limiting the design height of the MRA to 150 meters. Additionally, the trapper's cabin on Three Duck Lakes, given its location with respect to Project components, will be negotiated for removal to limit visual aesthetics, air quality and noise and vibration effects from the Project. | n/a |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Archaeology | Construction; operations; closure | Disturbance to Archaeological sites | Completed mitigation - archaeological assessments Stages 1, 2, 3 and 4, as required | Archaeological assessment at identified areas | MTCS Regulations |
| Socio-Economic | Construction; operations | Labour Market / Population Demographics – local employment | Support employment of local community members where possible. | Support employment for local community members (First Nation, Métis communities and Gogama). | n/a or as established in negotiated agreements. |
| Socio-Economic | Construction; operations; closure | Labour Market / Population Demographics – local suppliers | Implement a procurement process that promotes Aboriginal and local suppliers. | Develop and implement a procurement process that promotes suppliers from the local community (First Nations, Métis and Gogama). | n/a or as established in negotiated agreements. |
| Socio-Economic | Construction, operations | Labour Market / Population Demographics– cultural awareness training | Cultural awareness training. | Develop a cultural awareness-training program and require employees and contractors to complete the training. | n/a or as established in negotiated agreements. |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Socio-Economic | Construction; operations | Labour Market / Population Demographics – employee training and development | Provide on-the-job Common Core training to workers. | Provide on-the-job Common Core training to assist local and regional workers to develop mining-specific skills or develop partnerships with existing initiatives.<br>Employees would be part of IAMGOLDs Performance Management Process (PMP) and development needs and opportunities would be identified through this process | n/a or as established in negotiated agreements. |
| Socio-Economic | Construction; operations | Labour Market / Population Demographics – training to access Project employment | Support and/or provide training and education in local communities, where possible. | Support and/or provide education and training for potential employees from local communities (Aboriginal communities and members of Gogama). Initiate discussions with potential partners for developing youth mentorship programs. | n/a or as established in negotiated agreements. |
| Socio-Economic | Closure | Labour Market / Population Demographics – job placement assistance | Offer company services linking workers with local social services that provide job placement assistance. | IAMGOLD will facilitate access to external job placement or community services, etc. to transition laid-off or downsized employees into career opportunities as available | n/a or as established in negotiated agreements or Closure Plan. |
| Socio-Economic | Closure | Labour Market / Population Demographics – employment relations | Develop an employment community relations program. | Develop an employment community relations program to provide appropriate parties with plans and progress throughout the life of the Project. | n/a or as established in negotiated agreements or Closure Plan. |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Socio-Economic | Operations; closure | Labour Market / Population Demographics – further training | Identify and implement basic skills and technical training for Aboriginal and local community members to upgrade marketable skills and increase capacity, where possible. | Identify and implement basic skills and technical training for Aboriginal and local community members to upgrade marketable skills and increase capacity. | n/a or as established in negotiated agreements or Closure Plan. |
| Socio-Economic | Closure | Labour Market / Population Demographics – closure planning | Work with local communities to develop a Project closure strategy that will minimize potential adverse effects of Project closure on regional communities. | Engage and support local communities to develop specific strategies and actions as part of the closure plan that minimizes potential adverse closure effects on the regional communities. | n/a or as established in negotiated agreements or Closure Plan. |
| Socio-Economic | Closure | Labour Market / Population Demographics – future site use | Engage and support local and regional communities and stakeholders in planning decisions relating to future use of the Project site. | Engage and support local and regional stakeholders in planning decisions for future use of the Project site that might benefit the regional economy or contribute to community pride, cohesiveness, and sense of place. | n/a or as established in negotiated agreements or Closure Plan. |
| Socio-Economic | Closure | Labour Market / Population Demographics – connect workers and employment opportunities | Support the establishment of local/regional job opportunities roster/forum accessible for workers. | Support local communities and government efforts to connect workers to a local/regional job opportunities forum prior to Project closure. | n/a or as established in negotiated agreements or Closure Plan. |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Socio-Economic | Closure | Labour Market / Population Demographics – support for small business development | Post information on site for workers about other services agencies in the region that support small business ventures and planning. | Inform workers about regional service agencies that support small business ventures and planning, if available. | n/a or as established in negotiated agreements or Closure Plan. |
| Socio-Economic | Construction; operations; closure | Business Opportunities – Encourage local suppliers | Implement a procurement process that encourages Aboriginal and local suppliers. | Implement a procurement process that encourages suppliers from local Aboriginal communities and Gogama. | n/a or as established in negotiated agreements or Closure Plan. |
| Socio-Economic | Operations; closure | Business Opportunities – procurement process | Implement a procurement policy that structures opportunities in terms of package size and bid evaluation to reflect Aboriginal and local capabilities. | Implement a procurement policy that structures opportunities in terms of package size and bid evaluation to reflect local capabilities, where practicable. | n/a or as established in negotiated agreements or Closure Plan. |
| Socio-Economic | Construction, operations | Business Opportunities – monitor/report on local and regional procurement | Establish a system to monitor and report on local and regional content with mechanisms to adapt procurement policies where required. | Establish a system to monitor and report on local and regional content with mechanisms to adapt procurement policies, where required. | n/a or as established in negotiated agreements. |
| Socio-Economic | Closure | Business Opportunities – communicate contract terminations effectively | Communicate with affected businesses to prepare for the effects of contract termination. | Communicate with affected businesses to prepare for the effects of contract termination. | n/a or as established in negotiated agreements or Closure Plan. |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Socio-Economic | Construction; operations; closure | Business Opportunities – support local businesses through procurement process | Support capacity building for local businesses. | Increase capacity building for local businesses during the construction and operations phases to help them effectively bid for opportunities in the closure and post-closure phases. | n/a or as established in negotiated agreements or Closure Plan. |
| Socio-Economic | Closure | Business Opportunities – entrepreneurial economic development | Support local entrepreneurial development. | Support local entrepreneurial development for a diverse range of industries in order to lay foundations of post-operations economic diversification. | n/a |
| Socio-Economic | Construction; operations; closure | Community Health Conditions – long distance phone service for worker health | Provide access to long distance phone service for employees. | Provide access to long-distance calls and internet connections to help maintain healthy family relationships. | n/a |
| Socio-Economic | Construction; operations; closure | Community Health Conditions – demands on local health services<br>Emergency Services – demands on local emergency services | Provide for basic worker health care. | Provide immediate access to care if required to minimize additional demands on off-site community health facilities. | n/a |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Socio-Economic | Construction; operations; closure | Community Health Conditions – health management | Provide information on health-related issues such as nutrition, sexually transmitted infections, alcohol abuse etc. to workers. | Provide information on health-related issues such as nutrition, sexually transmitted infections, alcohol abuse etc. to workers to promote a healthy living culture in surrounding communities. | n/a |
| Socio-Economic | Construction; operations; closure | Community Health Conditions – unsafe driving conditions potentially leading to traffic accidents | Provide worker transportation to and from Project site. | IAMGOLD will consider bussing from communities that are beyond a reasonable commuting distance, e.g., Timmins and Sudbury. | n/a |
| Socio-Economic | Construction; operations; closure | Housing and Temporary Accommodations – on-site camp | Develop on-site camp. | Develop on-site camp while supporting the needs of commuters from across the regional study area through the provision of transportation services. | n/a |
| Socio-Economic | Construction; operations; closure | Housing and Temporary Accommodations – demands for housing | Monitor indicators of Project housing effects and adapting management measures. | Monitor indicators of Project housing effects and adapting management measures with the local study area communities and appropriate agencies. | n/a |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Socio-Economic | Closure | Housing and Temporary Accommodations – resident retention after Project closure | Support local economic diversification programs that could facilitate resident retention after Project closure. | Support local economic diversification programs that could facilitate resident retention after Project closure. | n/a |
| Socio-Economic | Construction; operations | Public Utilities – demands on Gogama's wastewater treatment capacity | Work with Gogama Local Service Board. | Continue to support Gogama Local Services Board to identify ways to improve Gogama's wastewater treatment capacity. | n/a |
| Socio-Economic | Construction; operations; closure | Education – training to facilitate access to employment | Support post secondary education of workers. | Encourage and support post secondary education of workers (including scholarships for programs related to mining for First Nation and Métis students). | n/a |
| Socio-Economic | Construction; operations; closure | Emergency Services – demands on local emergency services | Maintain open communication with local service providers to monitor existing social issues. | Maintain open communication with local service providers to monitor existing social issues. Indicators will be selected with input from these service providers so that any Project effects are identified and managed properly by responsible parties. | n/a |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Socio-Economic | Construction; operations; closure | Other Community Services and Infrastructure – demands on local medical services | Implement the Zero Harm policy at the Project site. | Implement the Zero Harm policy and associated health and safety plans that could assist in promoting a safety culture in local communities, potentially reducing demands on local medical services. | n/a |
| Socio-Economic | Closure | Other Community Services and Infrastructure – closure effects on employment | Inform and/or provide employees with access to resources to support transition to other employment. | Inform employees of resources to help support employment training, provide information about available financial assistance programs, and career development initiatives. | n/a |
| Socio-Economic | Construction; operations; closure | Transportation – road safety training | Road safety awareness training. | Implement regular road safety awareness training for workers and contractors. | n/a |
| Socio-Economic | Construction; operations; closure | Transportation – highway safety and conflicts with large equipment transport | Schedule major equipment delivery and removal. | Schedule major equipment delivery and removal at off-peak travel times, where practical. | MTO *Highway Traffic Act* |
| Socio-Economic | Construction; operations; closure | Transportation – conflicts with other traffic | Schedule shuttle bus travel. | Schedule shuttle bus travel at off-peak travel times to avoid traffic conflicts with other commuters, school buses and recreation traffic. | n/a |

| Discipline | Project Phase | Potential Issue / Concern / Interaction | Mitigation Measure | Description / Commitment | Standard |
|---|---|---|---|---|---|
| Socio-Economic | Construction; operations; closure | Transportation – traffic volumes at peak travel times | Schedule shifts to limit the number of daily shuttle buses. | Schedule shifts so that not all construction workers travel off-site on the same days, and thereby limiting the number of daily shuttle buses. | n/a |
| Socio-Economic | Construction; operations; closure | Transportation – effects on highway infrastructure | Ensure heavy load sizing and seasonal load restrictions. | Ensure heavy loads are sized appropriately and that truck traffic observes seasonal load restrictions. | MTO – *Highway Traffic Act* O.Reg., 413/05 |
| Socio-Economic | Construction; operations; closure | Transportation – effects on highway infrastructure | Transport oversized loads in parts. | Transport oversized loads in parts to the mine site, if possible, to limit load stress on highway surfaces and obstruction of other traffic. | MTO – *Highway Traffic Act* O.Reg., 413/05 |
| Socio-Economic | Construction; operations; closure | Transportation – potential for wildlife-vehicular accidents | Report wildlife sightings on highways. | Report wildlife sightings on highways to inform workers and identify areas where wildlife is persistently present. | n/a |

**Table 4: Monitoring Measures – Physical Environment**

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Air Quality | Total Suspended Particulates (TSP) | High Volume (hi-vol) samplers | Ontario Reg,419/05 air quality standard for TSP (24-hr averaging time). | Construction and operations phases<br>One sample every 6 days. | Three locations (to be determined), triangulating the site to provide upwind/downwind assessment. |
| Air Quality | Metals | Analysis of hi-vol TSP samples collected (filter) | Ontario Reg,419/05 air quality standards for metals.<br>The metals to be monitored will be identified in the Ambient Monitoring Plan that will be submitted to the MOE prior to initiating the monitoring program. | Construction and operations phases<br>Select TSP filters (highest loading) to be analysed monthly. | Three locations (to be determined), triangulating the site to provide upwind/downwind assessment. |
| Air Quality | $NOx/SO_2$ | Passive samplers | Screening Level to be established based upon Alberta's proposed Air Monitoring Directive and Ontario's AAQC for other averaging times. | Construction and operations phases<br>Monthly samples. | Co-located with the hi-vol samplers. |

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Noise and Vibration | A-weighted decibels (dBA), construction noise | Noise Monitor | NPC-103 | Construction to closure phases<br>Noise to be monitored for a minimum period of 1 week at any receptor closer than 1 km from the construction activity.<br>Noise monitor to record hourly sound levels, over 24/7 period, during the monitoring period. | When construction is within 1 km of any sensitive noise receptor defined within the regional study area.<br>When a group of receptors fall within the 1 km range of construction activity, the closest receptor can be taken as the representative location for monitoring, if it is shown to have the highest exposure to construction noise for a group of receptors. |
| Noise and Vibration | A-weighted decibels (dBA), operations noise | Noise Monitor | NPC-103 | Construction to closure phases<br>Noise level to be monitored at the closest receptor location (<1 km) at least once per year between the initial operation period (Year 1) and mid-operation period (Year 7) to confirm NPC-300 criteria are not exceeded.<br>Noise monitor to record hourly sound levels for a minimum period of 1 week | Specific sensitive receptors to be determined within the study area based on operations at that time.<br>Typically, the closest sensitive receptor to the operational noise can be used to represent a group of receptors. |

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Noise and Vibration | Decibels (dBL), construction or operational blasting noise | Noise Monitor | NPC-103, NPC-119 | Construction to closure phases<br>Noise level to be monitored at the closest receptor location (<1 km) at least once per year during blasting operations.<br>Noise monitor to be setup to record noise levels for each blast.<br>Noise monitor to record instantaneous sound levels, during the blasting period. | Specific sensitive receptors to be determined within the study area based on blasting at that time.<br>Typically, the closest sensitive receptor to the blast noise can be used to represent a group of receptors. |

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Noise and Vibration | Vibration Levels (PPV), construction or operational vibration | Vibration monitor | NPC-103, NPC-119 | Construction and operations phases<br>PPV to be monitored at the closest receptor location (<1 km) at least once in a year during blasting operations.<br>Vibration monitors to be setup to record PPV for each blast.<br>Vibration monitor to record instantaneous blast vibration levels during the blasting period. | Specific sensitive receptors to be determined within the study area based on blasting at that time.<br>Typically, the closest sensitive receptor to the blast vibration can be used to represent a group of receptors. |
| Geochemistry | ABA and ICP metals scan – mine rock | Blast hole sampling | Mine Environmental Neutral Drainage (MEND) 2009. Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. Natural Resources Canada. | Operations phase<br>Selected composite blast hole cuttings. Details to be established based on mine plan and operations. | Selected cuttings from mine rock blast volumes. |

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Water Quality | Surface water quality samples will be analyzed for various general chemistry, metals and organic parameters<br>The parameters suite may be reduced if it can be demonstrated that any of the tests are not applicable. Additional parameters may be considered depending on site-specific characteristics. | Surface water grab sample collection using in-field filtering and preservation, as required.<br>Quality assurance /quality control samples such as blind duplicates, trip blanks, field blanks and filter blanks will be collected during each sampling round. | Provincial Water Quality Objectives (PWQO) and Canadian Water Quality Guidelines (CWQG), with laboratory detection limits suitable for comparison to these guidelines.<br>*Metal Mining Effluent Regulations* (MMER) and Ontario Regulation 560/94 | Operations phase<br>Sampling events will be conducted at a frequency sufficient to detect changes in water quality; the frequency will depend on the station location and will aim to capture a range of flow conditions, as required. The frequency of effluent monitoring will meet federal and provincial effluent discharge requirements. | Project site components: open pit sump, Mine Rock Storage Ponds (MRSPs), Tailings Dam Seepage Ponds (TDSPs), mine water pond, reclaim pond, polishing pond and domestic sewage effluent outlets.<br>Surface water receivers: Chester Lake, Clam Lake, Three Duck Lakes (upper, middle and lower basins), Mollie River between Three Duck Lakes and Dividing Lake, Dividing Lake, Bagsverd Lake, Schist Lake, Unnamed Lake #1, Bagsverd Creek at locations before and after the treated effluent discharge point, Neville Lake, and Mesomikenda Lake (upper and middle basins). |

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Water Quality | Groundwater quality samples will be analyzed for various general chemistry and metals parameters. A complete parameter list is attached below.<br>The parameters suite may be reduced if it can be demonstrated that any of the tests are not applicable. Additional parameters may be considered depending on site-specific characteristics. | Groundwater sample collection using pumping techniques and in-field filtering and preservation, as required.<br>Quality assurance /quality control samples such as blind duplicates, trip blanks, field blanks and filter blanks will be collected during each sampling round. | Ontario Drinking Water Standards (ODWS**),** PWQO and CWQG, with laboratory detection limits suitable for comparison to these guidelines.<br>MMER and Ontario Regulation 560/94 | Operations phase<br>Sampling events will be conducted at a frequency sufficient to detect changes in water quality; the frequency will therefore depend on the station location and will aim to capture a range of flow conditions, as required. The frequency of effluent monitoring will meet federal and provincial effluent discharge requirements. | Groundwater monitoring wells around the Mine Rock Area (MRA), low-grade stockpile, and TMF. |
| Hydrology and Climate | Surface water level (lakes and streams) | Automatic water level recorder (transducer) along with manual staff gauge measurements. | Good Industry Practice | Construction to closure phases<br>Water level transducers will be set to record on a half-hourly basis. Manual staff gauge measurements will occur quarterly and will be surveyed to a geodetic datum annually. | Selected existing locations*, additional new stations in waterways and realignments surrounding the infrastructure footprint. |

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Hydrology and Climate | Streamflow (lake outflows and streams) | Standard velocity-area stream current methodology. | Environment Canada (1981) Hydrometric Field Manual – Measurement of Streamflow | Construction to closure phases<br>Initially quarterly, frequency may be reduced as natural variability is addressed. | Selected existing locations*, additional new stations in waterways and realignments surrounding the infrastructure footprint. |
| Hydrology and Climate | Meteorological parameters including air temperature, relative humidity, wind speed, wind direction, solar radiation and total precipitation. | Meteorological sampling equipment located on 10 m tower. | Environment Canada (1992) Atmospheric Environment Service (AES) Guidelines for Co-operative Climatological Autostations | Construction to closure phases<br>Parameters will be recorded on an hourly-time interval, data downloaded quarterly | Continue sampling at the current location |
| Hydrology and Climate | In-stream Characteristics | Water samples for total suspended solids will be manually sampled and submitted for laboratory analysis.<br>Measurement of stream cross sections for channel geometry.<br>Installation of erosion pin in stream bank and disturbance rods in streambed for sediment erosion/accumulation.<br>Aerial or photographic analysis to assess stream meander. | Good Industry Practice | Construction to closure phases<br>Twice annually, during the spring melt and low flow conditions, to be initiated prior to realignment construction | Reach of Bagsverd Creek downstream of Un-named Lake #1 and upstream of Neville Lake |

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Hydrology and Climate | Water usage from freshwater sources | Flow meter capable of recording instantaneous and total daily volume. | Ontario *Water Resources Act* (Section 34) | Operations phase<br>Daily | Mesomikenda Lake or other freshwater source |
| Hydrology and Climate | Discharge to the environment | Flow meter or calibrated flow conveyance feature capable of providing instantaneous and total daily volume. | Ontario *Water Resources Act* (Section 53) | Operations phase<br>Daily | Polishing pond outlet |
| Hydrology and Climate | Water transfer | Flow meter capable of recording instantaneous and total daily volume. | Good Industry Practice | Operations phase<br>Daily | MRA collection ponds, mine water pond, reclaim pond, polishing pond |
| Hydrology and Climate | Reservoir Water Levels | Manual staff gauges or automatic water level sensors. | Good Industry Practice | Operations phase<br>Monthly | MRA collection ponds, mine water pond, reclaim pond, polishing pond |
| Hydrology and Climate | Environment Canada Mollie River Streamflow station | Desktop review using available records from Environment Canada. | Good Industry Practice | Construction to closure phases<br>Monthly review, annual summary | Mollie River Streamflow gauging station |
| Hydrology and Climate | Water Levels at Ontario Power Generation (OPG) Mesomikenda Lake Dam | Desktop review using available records from OPG. | Good Industry Practice | Construction to closure phases<br>Annual review and summary | Mesomikenda Lake dam |
| Hydrogeology | Groundwater levels around the open pit | Monitoring wells instrumented with data loggers to obtain continuous records of groundwater levels along with quarterly manual depth to groundwater measurements. | Good Industry Practice | Construction to closure phases<br>Water level transducers will be set to record on a half-hourly basis. Manual measurements will occur quarterly. | Deep groundwater monitoring well nests at select locations around the perimeter of the open pit |

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Hydrogeology | Groundwater levels around the MRA and TMF | Monitoring wells instrumented with data loggers to obtain continuous records of groundwater levels along with quarterly manual depth to groundwater measurements. | Good Industry Practice | Construction to closure phases<br>Water level transducers will be set to record on a half-hourly basis. Manual measurements will occur quarterly. | Up to 15 existing well locations and up to 10 new well locations around the perimeter of the MRA and TMF. |
| Hydrogeology | Groundwater levels in vicinity of surface water features to assess interactions between groundwater and surface water | Monitoring wells instrumented with data loggers to obtain continuous records of groundwater levels along with quarterly manual depth to groundwater measurements. | Good Industry Practice | Construction to closure phases<br>Water level transducers will be set to record on a half-hourly basis. Manual measurements will occur quarterly. | Monitoring well nests adjacent to select hydrological monitoring stations. |

Notes:
* Existing locations may require upgrades or improvements for long term monitoring
ABA – acid base accounting. ICP – inductively coupled plasma.
BMP – Best Management Practice

**Surface Water Parameter List:**
Temperature, pH, alkalinity, acidity, conductivity, hardness, dissolved oxygen, oxygen-reduction potential (ORP), total suspended solids, total dissolved solids, dissolved organic carbon, total organic carbon, biological oxygen demand (BOD), chemical oxygen demand (COD), calcium, chloride, fluoride, magnesium, potassium, sodium, sulphate, aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, silicon, silver, strontium, thallium, tin, titanium, tungsten, uranium, vanadium, zinc, zirconium, nitrate, nitrite, total ammonia, phosphate, phosphorus, cyanide species (total, free, weakly acid dissociable [WAD]) and radium-226. In addition, organic contaminants (i.e. oil and grease, phenols and polycyclic aromatic hydrocarbons) will be analyzed at select stations during select sampling rounds.

**Groundwater Parameter List:**
Temperature, pH, alkalinity, acidity, conductivity, hardness, dissolved oxygen, oxygen-reduction potential (ORP), total dissolved solids, dissolved organic carbon, total organic carbon, calcium, chloride, fluoride, magnesium, potassium, sodium, sulphate, aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, silicon, silver, strontium, thallium, tin, titanium, tungsten, uranium, vanadium, zinc, zirconium, nitrate, nitrite, total ammonia, phosphate, phosphorus, and cyanide species (total, free, weakly acid dissociable [WAD]). In addition, analysis and organic contaminants (i.e. total petroleum hydrocarbons, phenols and polycyclic aromatic hydrocarbons) will be analyzed, if required, at select locations during select sampling rounds.

**Table 5: Monitoring Measures – Biological Environment**

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Aquatic Biology | Water- TSS and turbidity | Standard Methods and YSI meter | 1 mg/L TSS and 1Nephelometric Turbidity Unit ( NTU) as Method Detection Limits (MDLs) | Daily during construction | Downstream of active construction areas |
| Aquatic Biology | Water - metals, pH, nutrients, hardness, dissolved organic carbon, alkalinity | Inductively Coupled Plasma Mass Spectrometry (ICP-MS) (MDL>CCME standards) | (MDL<CCME standards) | Monthly during construction, operation and closure until conditions are stable or less than guidelines for the protection of aquatic life. | Downstream of Project discharge and in appropriate reference areas. |
| Aquatic Biology | Sediment- metals, total organic carbon, grain size | Surficial sediment collected from grab or core sample | Environmental Effects Monitoring (EEM) under MMER and Canada-Ontario Agreement respecting the Great Lakes Basin Ecosystem (COA) requirements under Ontario *Water Resources Act* (OWRA) | Every 3 years during operations and twice following closure | Locations downstream of Project discharge and reference areas |
| Aquatic Biology | Benthic invertebrate community | Depositional sampling using petite Ponar, reduced to 500 micron and identified to lowest practical level. | EEM under MMER and COA requirements under OWRA | Every 3 years during operations and twice following closure | Locations downstream of Project discharge and reference areas |
| Aquatic Biology | Fish community | Collect fish (small-bodied and large bodied) using standardized collection methods. Identify and enumerate and determine relative abundance | EEM under MMER and COA requirements under OWRA | Every 3 years during operations and twice following closure | Locations downstream of Project discharge and habitats affected by watercourse realignments. |

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Aquatic Biology | Fish health | Two sentinel species – either a non-destructive study design (i.e. 100 individuals for length, weight and age) or a lethal survey (40 males and 40 females for length, weight, age, liver weight, gonad weight, egg size and fecundity). Measures of abnormalities on all fish collected | EEM under MMER and COA requirements under OWRA | Every 3 years during operations and twice following closure | Locations downstream of Project discharge and reference areas |
| Aquatic Biology | Fish tissue | Boneless, skinless filet (5 g) from five adult sport fish measured for total mercury. | Cold Vapour Atomic Absorption Spectrophotometry (CVAAS), while tissue metal analysis performed by ICP-MS. | Every 3 years during operations and twice following closure or until mercury concentrations in fish are stable or equal to reference areas | In areas affected by stream realignments and reference areas. |
| Terrestrial Biology | Wildlife-Project interactions (incidents[1]) | Site surveillance monitoring to identify the species, number, and location of wildlife incidents and risks to wildlife. The information provides direct feedback for adaptive management of Project operations, Project designs and effectiveness of mitigation. | n/a | Frequency of interactions will be recorded as they occur throughout the construction, operations and closure phases. | Project Site. |

Note:
[1]Incident is defined as any wildlife interaction that requires a response from Project personnel (i.e., removal or deterrent actions, injury, and mortality).

**Table 6: Monitoring Measures – Human Environment**

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Archaeology | Protection of existing archaeological resources (Stage 1-2 completed in 2012) | Ensure that 20 m "No Work Boundary" and 50 m "Monitoring Buffer" around archaeological site are in effect | Stage 2 Ministry Tourism, Culture and Sport (MTCS) Regulations | Construction to closure phases<br>Periodic visual inspections regarding possible erosion | Makwa Point, Clam Lake (CjHl-3)<br>Clam Lake Gold Mining Company, Clam Lake (CjHl-18)<br>Bagsverd Creek 1, Bagsverd Creek (CjHl-27)<br>West Portage Landing Site, Bagsverd Creek (CjHl-29) |
| Archaeology | Protection of existing archaeological resources (Stage 1-2 completed in 2012) | Ensure that 20 m "No Work Boundary" and 50 m "Monitoring Buffer" around archaeological site are in effect | Stage 2 MTCS Regulations | Construction to closure phases<br>Monitoring, as required, regarding secondary impacts | Table Point Site, Bagsverd Lake (CjHl-17)<br>Gosselin Mining Site, Three Duck Lake (CjHl-20)<br>Weeduck Cabin Site, Weeduck Lake (CjHl-24)<br>Cryderman Site, Three Duck Lake (CjHl-26) |

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Archaeology | Protection of existing archaeological resources (Stage 1-3 completed in 2012) | Ensure that 10 m "No Work Boundary" and 50 m "Monitoring Buffer" around archaeological site are in effect | Stage 3 MTCS Regulations | Construction to closure phases<br>Monitoring, as required, regarding secondary impacts | Sheppard Mining Site, Three Duck Lake (CjHl-21) |
| Archaeology | Marine Archaeological resources/values | Surface check of newly exposed shorelines | n/a (as requested by the MOE and agreed to by the MTCS) | Construction phase<br>Weekly by on-site environmental staff and monthly, or more frequently as needed, by a licensed archaeologist | All water bodies affected by lowered water levels |
| Socio-Economic | Number, skill sets and positions held by local, First Nation and Métis persons and contractors at the Project site (direct employment with IAMGOLD as well as contract employment) | Database system maintained by IAMGOLD Human Resources or others as required. | n/a | Construction to closure phases<br>Annually for the life of the Project | n/a |
| Socio-Economic | Number of employees moving into regional study area communities from outside of the region. | Database system maintained by IAMGOLD Human Resources or others as required. | n/a | Construction to closure phases<br>Annually for life of the Project | n/a |
| Socio-Economic | Number of employees taking cultural awareness training as part of their on-boarding procedure. | Database system maintained by IAMGOLD Human Resources or others as required. | n/a | Construction to closure phases<br>Annually for life of the Project | n/a |

| Discipline | Parameter | Monitoring Method | Standard | Frequency / Timeframe | Location |
|---|---|---|---|---|---|
| Socio-Economic | Number of local employees or local applicants obtaining IAMGOLD-funded training to access Project employment. | Database system maintained by IAMGOLD Human Resources or others as required. | n/a | Construction to closure phases<br>Annually for life of the Project | n/a |
| Socio-Economic | Number of local employees obtaining upgrade training to access higher-paid positions with IAMGOLD. | Database system maintained by IAMGOLD Human Resources or others as required. | n/a | Construction to closure phases<br>Annually for life of the Project | n/a |
| Socio-Economic | Number of local employees making successful transition to new work after closure | Database system maintained by IAMGOLD Human Resources or others as required. | n/a | Starting towards the end of the operations phase as production levels decline until completion of the closure phase | n/a |
| Socio-Economic | Number of local or First Nation and Métis companies hired for decommissioning and closure contracts | Database system maintained by IAMGOLD Human Resources or others as required. | n/a | Closure phase | n/a |

Notes:
* Impact Benefits software is a product of SCI Resource Software of St. John's NL. The SCI software is designed to capture hours worked by individual workers and the dollars paid to suppliers and contractors. By identifying where the individual workers come from and assume some average wage, you can estimate dollars paid to workers from specific communities. By identifying the location of businesses, you can identify the dollars paid into communities. So, the system can track much more than numbers of workers and contractors and is valuable in corporate social responsibility reporting.

**Table 7: Ongoing Consultation Commitments**

| Consultation Commitment | Project Phase |
|---|---|
| One objective of ongoing IAMGOLD-led consultation is to ensure stakeholders have an appropriate opportunity to understand the proposed Project and identify potential environmental effects. | EIS/Draft EA review period |
| The objectives of ongoing IAMGOLD-led consultation are to review and gather feedback on the following: | |
| • results of baselines or other studies; | EIS/Draft EA review period |
| • alternatives and evaluation methods; | EIS/Draft EA review period |
| • final selection of criteria indicators; | EIS/Draft EA review period |
| • results of the selection of the preferred alternative; | EIS/Draft EA review period |
| • potential environmental effects and mitigation measures; | EIS/Draft EA review period |
| • proposed monitoring and management plans; and | EIS/Draft EA review period |
| • decommissioning/closure plan. | EIS/Draft EA review period |
| One objective of ongoing IAMGOLD-led consultation is to demonstrate and discuss how comments heard previously were addressed through Project designs or management practices to help reduce or avoid any potential environmental effects. | EIS/Draft EA review period |
| One objective of ongoing IAMGOLD-led consultation is to provide an explanation of why the proposed Project cannot be modified to reduce or avoid the effects. | EIS/Draft EA review period |
| One objective of ongoing IAMGOLD-led consultation is to discuss appropriate ways that residual effects could be managed. | EIS/Draft EA review period |

| | |
|---|---|
| One objective of ongoing IAMGOLD-led consultation is to document and respond to any issues or concerns raised. | EIS/Draft EA review period |
| One objective of ongoing IAMGOLD-led consultation is to meet all regulatory requirements for stakeholder consultation. | EIS/Draft EA review period |
| The following consultation activities are planned to support the preparation and review of the EA and stated consultation purpose and objectives:<br>• develop and issue newsletters (Quarterly);<br>• develop and issue an EA Results Fact Sheet;<br>• develop and issue Notice of Commencement of an Environmental Assessment to the Project mailing list, publish in local newspapers, and post to the Project website;<br>• issue the draft EA report for review and comment;<br>• conduct open houses, workshops and stakeholder/Aboriginal community meetings to review and discuss the draft EA reports;<br>• conduct government agency meetings to review and discuss the baseline studies and draft EA report;<br>• respond to comments received on the draft EA report; and<br>• prepare and issue the final EA report. | EIS/Draft EA review period<br>EIS/Draft EA review period<br>EIS/Draft EA review period<br>EIS/Draft EA review period<br>EIS/Draft EA review period<br>EIS/Draft EA review period<br>EIS/Draft EA review period<br>EIS/Draft EA review period |
| IAMGOLD is committed to ongoing consultation with interested persons as the Project progresses through construction, operation and decommissioning/closure. IAMGOLD will develop plans for consultation based on evaluation of, and in response to, expressed interests. | All Project phases |