



Eagle Mountain Gold Mine Project, Guyana

ENVIRONMENTAL IMPACT ASSESSMENT REPORT: NON-TECHNICAL SUMMARY

CLIENT: STRONGHOLD GUYANA INC. (SUBSIDIARY OF MAKO MINING CORP.)

REFERENCE: 0763224, DATE: 17 MARCH 2026



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Volume 1: Introduction

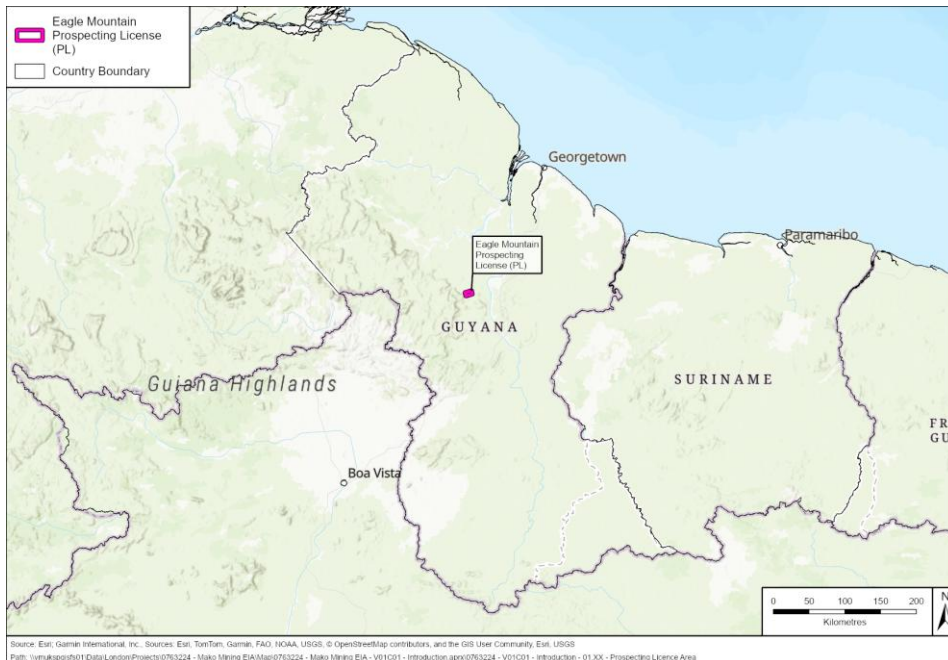
Introduction

Overview and Context

The Eagle Mountain Gold Project in Guyana considers an open pit gold mining operation planned to produce approximately 1.2 million ounces of gold over 15 years. The Project is owned by Stronghold Guyana Inc., a subsidiary of Mako Mining Corp.. The property covers a total area of approximately 11,820 acres under various licenses. This Environmental Impact Assessment (EIA) report, prepared by ERM, evaluates the potential environmental and social impacts of the project in compliance with Guyanese regulations and international standards.

Project location

- Potaro-Siparuni Region 8, approx. 200 km south-southwest of Georgetown.
- Nearest communities are Mahdia and Campbelltown, located approx. 8 km north of the Project area.



EIA Regulatory Process

EIA purpose and standards

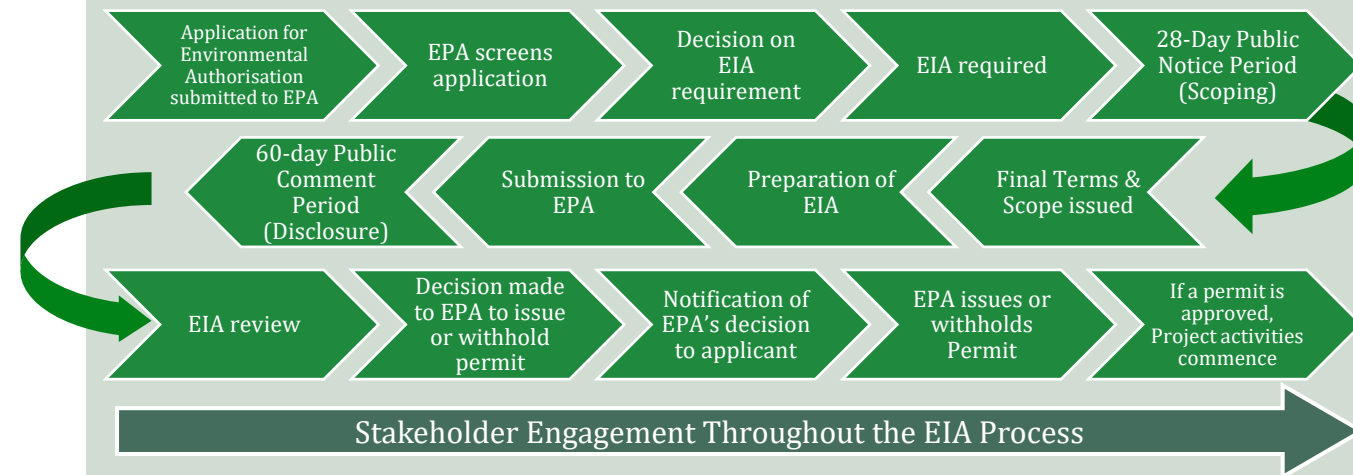
The EIA aims to identify environmental and social impacts and propose mitigation measures, adhering to Guyana EPA guidelines, and in consideration of international best practices.

EIA limitations and assumptions

The assessment is based on available data and assumptions guided by good international industry practice, with recognition that project design may evolve requiring further assessments during project phases.








EIA structure

The report includes chapters detailing the project description, alternatives, legal framework, baseline environments, risk assessments, impact evaluations, management plans, and appendices covering emergency response, rehabilitation, waste management, and stakeholder engagement.



Project Description

Mining Method and Production

-  Use of traditional truck and shovel mining methods. Mining will start with a higher proportion of soft rock saprolite and transition to the harder fresh rock
-  Project consists of two main resource areas with a mineable mineral resource of approximately 27 million tonnes
-  Estimated gold production of 1.2 million ounces over 15 years
-  Proposed mine will consist of several shallow and medium depth open pits in the valley bottom trending north-south and several shallow interconnected pits trending north-east making up the Eagle Mountain deposit
-  Mining plans and infrastructure are proposed for the west side of the Eagle Mountain Prospecting License (EMPL)
-  Transport via public roads from Linden to Mabura/Mahdia, the old Potaro-Konawaruk Road from Mahdia, Mahdia commercial airstrip, and Essequibo River pontoon ferry. Gold doré bars to transported by air to Georgetown
-  Construction requires approx. 320-350 workers and approx. 300 workers during production

Proposed Key Infrastructure

- ❖ Open pits areas
- ❖ Haul roads and other access roads
- ❖ Run-of-mine storage and crushing plant
- ❖ Processing plant with cyanide destruction
- ❖ Waste Storage Facility (WSF)
- ❖ Tailings Storage Facility (TSF)
- ❖ Process water tanks
- ❖ Accommodation camp
- ❖ Maintenance shops
- ❖ Fuel and chemical storage
- ❖ Landfill and other waste management facilities



Project Phases

Project Phase and Timing	Activities
Pre-production (Years 0-2)	Construction of camp, landfills, sediment dams, roads, TSF, WSF, processing plant, and commissioning. Recruitment and training are key activities.
Operations (Years 1-15)	Open pit mining, ore processing, tailings and waste management, accommodations operation, transport logistics, solid waste management, and power generation.
Closure	Site stabilisation, revegetation using native species, pit backfilling and lake management, grading, infrastructure decommissioning, and environmental monitoring. Closure ends when the site is sustainable and post-closure begins

Project Activities to Date

Exploration

Exploration from 2011 to 2023 included infrastructure improvements (e.g. geophysical surveys, trenching, magnetic and radiometric surveys), environmental data collection, topographic surveys, line cutting, trench and outcrop sampling, hand auger sampling, ground geophysical surveys, and reprocessing of existing geophysical data.

Drilling

Since 2011, extensive drilling techniques (auger, sonic, diamond). Have been conducted for prospecting, resource delineation, and geotechnical information. Core sampling followed rigorous procedures, and drill hole locations were independently surveyed.

Environmental Studies

Environmental baseline studies began in 2013 and were updated in 2021 and 2025, for wet and dry seasons covering biodiversity, water quality, hydrology, hydrogeology, geotechnical, and mercury testing.

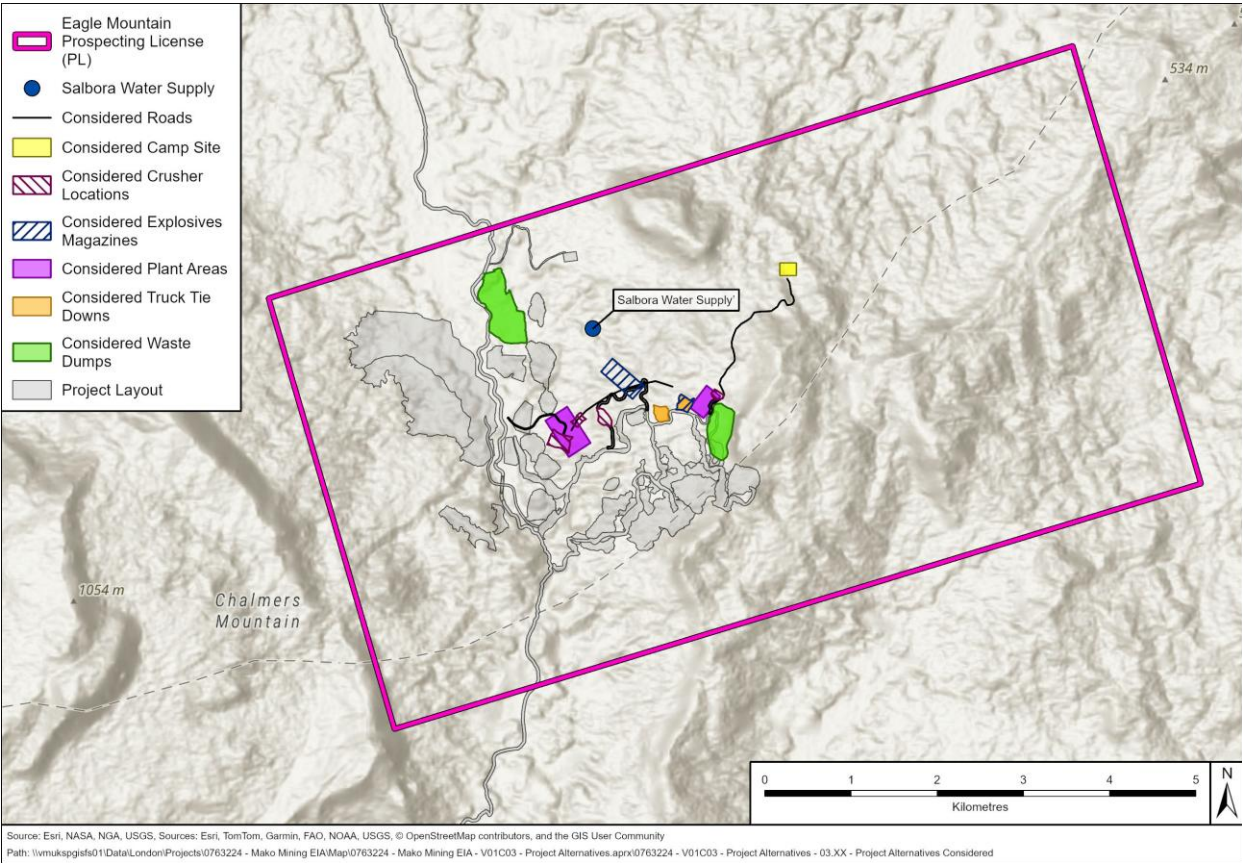
Stakeholder Engagement

Community engagement plans include public consultations and information sessions and support for local livelihoods.

Project Alternatives

The Eagle Mountain Gold Mine Project considered several project alternatives to ensure technical feasibility and minimise environmental and social impacts. The assessment considered various options for mining processes, facility locations, and energy supply to optimise project design.

Map of Proposed Alternatives Considered



No Project Alternative

Choosing not to proceed would forfeit economic benefits and would not leverage the findings of the exploration and prospecting carried out in the Eagle Mountain Property to date.



Mining and Beneficiation

The project will use standard open pit mining for weathered and unweathered rock, applying international best practices and guidelines, including the IFC and Cyanide Code, aiming for about 90% gold recovery.



Location Constraints

No alternative mining locations exist within the property; infrastructure placement was guided by topography, geotechnical viability, and minimising environmental impact.



Accommodation Camp Options

Two camp locations were considered; the northern site was selected due to shorter access road requirements, reducing habitat disturbance and emissions.



Waste Rock Dumps: Six potential sites were evaluated; WRD 1 and 3 were chosen for proximity to roads and pits, reducing transportation emissions and avoiding the Mahdia reservoir watershed.



Tailings Storage Facility

The selected TSF is outside the Mahdia reservoir watershed and benefits from favourable topography; a smaller secondary TSF may be needed and will undergo separate assessment.



Energy Supply

Power will be generated on-site by diesel generators due to lack of local commercial electricity; potential hydroelectric projects are unlikely to be viable or timely for this project.

Administrative Framework

Applicable Standards

This EIA aims to identify environmental and social impacts, as well as mitigation and management measures associated with the Project. The proposed Project has been guided by the following applicable standards:

- ❖ Guyana Environmental Protection Agency (EPA) and GGMC standards (including Codes of Conduct);
- ❖ International Finance Corporation (IFC) Performance Standards (PS) on Environmental and Social Sustainability (2012);
- ❖ World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines: General (2007);
- ❖ World Bank Group EHS Guidelines: Mining (2007); and
- ❖ Other applicable GIIP (including International Council on Mining and Metals (ICMM) and Towards Sustainable Mining).

National Legal Framework

The EIA was conducted in accordance with the Environmental Protection Act (EP Act) which outlines the national policy on critical environmental topics such as pollution control and the requirements for the environmental review of projects that could potentially impact the environment. In 2000, regulations concerning hazardous waste management, water quality, air quality, and noise management were established under the EP Act to regulate the activities of development projects during Construction and Operations phases.

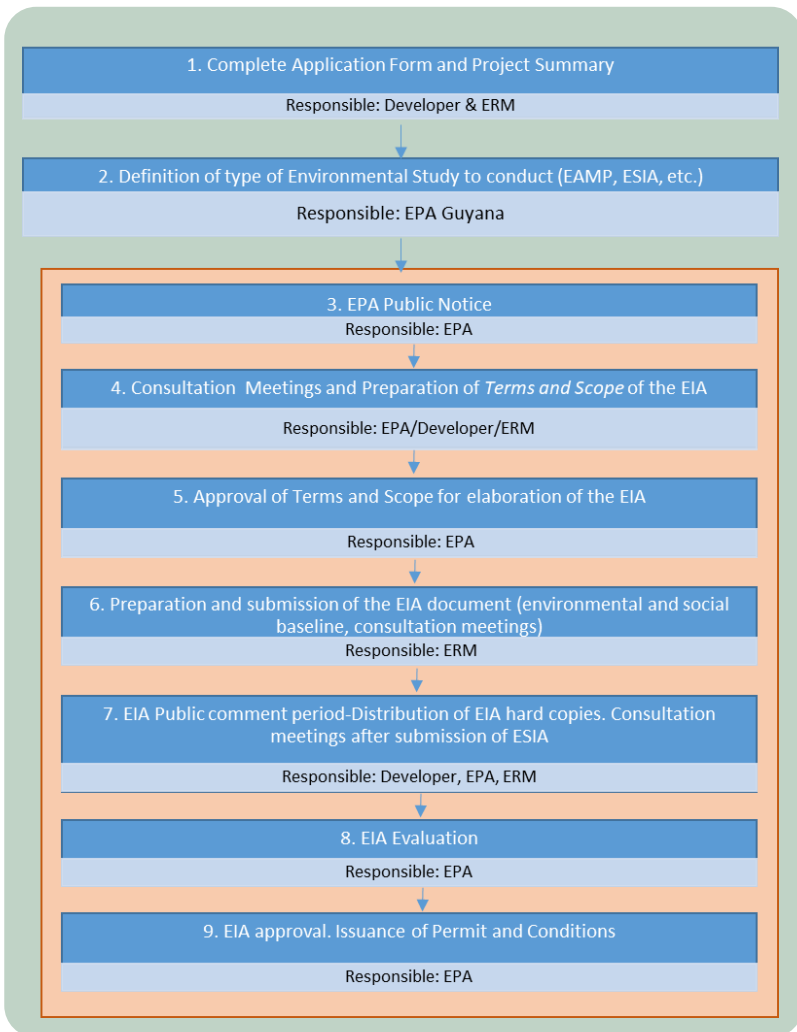
The following regulations are applicable to the Project under the EP Act:

- ❖ The Environmental Protection Water Quality Regulations
- ❖ The Environmental Protection Air Quality Regulations
- ❖ The Environmental Protection Noise Management Regulations
- ❖ The Environmental Protection Hazardous Wastes Management Regulations
- ❖ The Environmental Protection Authorizations Regulations

The Guyana Geology and Mines Commission (GGMC) granted a Prospecting License to Stronghold Guyana Inc. for the Project. Stronghold Guyana are now in the process of obtaining an environmental permit issued by the Guyana Environmental Protection Agency. The Project is subject to both the Mining Amendments Regulations 2005 and the Mining Act 1989, and GGMC would be responsible for enforcing the provisions in this regulation.



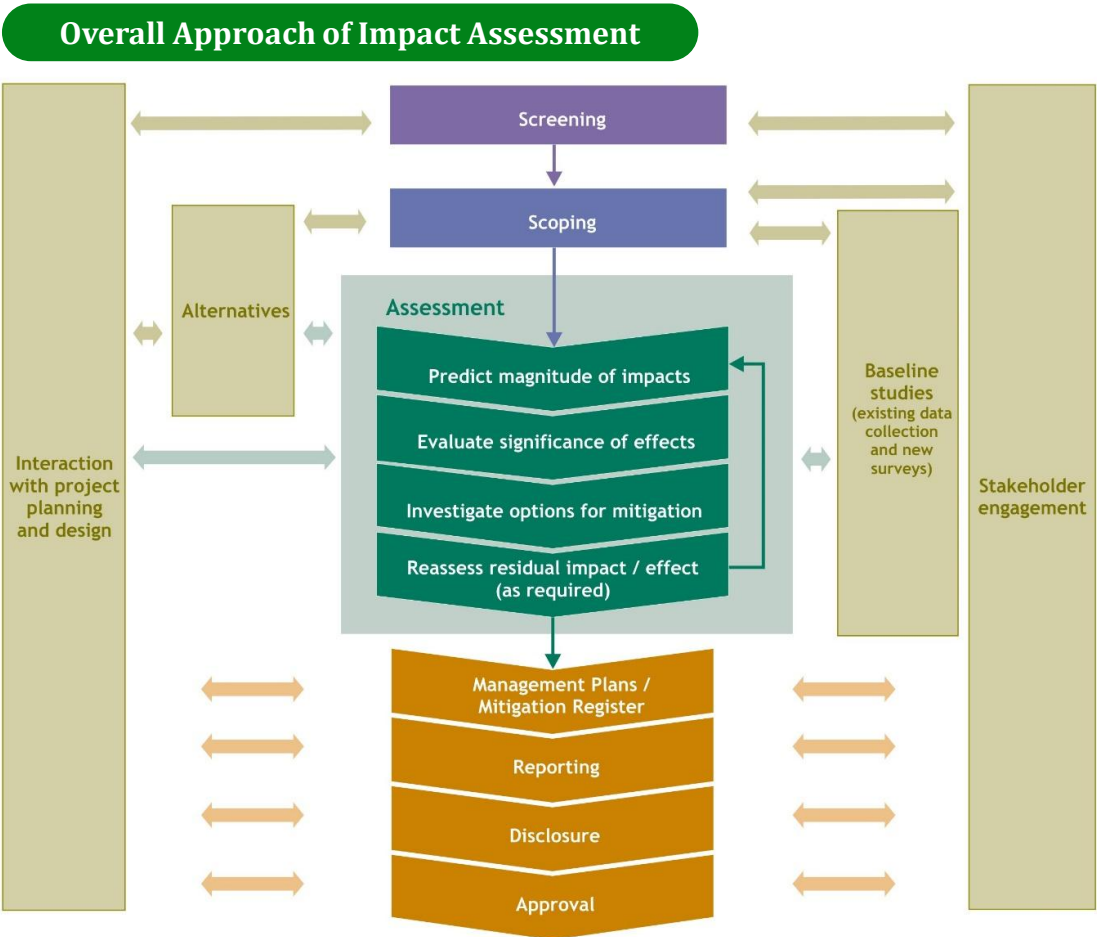
EIA Process in Guyana and Project Responsibilities



EIA Approach

The impact assessment was conducted using a structured process that forecasts and evaluates the potential impacts of the Project on the physical, biological, socio-economic, and cultural environment. It identifies strategies the Project intends to implement to avoid, reduce, mitigate, offset, or compensate for adverse impacts, while enhancing positive impacts where feasible.

The methodology has followed the approach shown in the figure below:



EIA Process Overview

The EIA follows a structured methodology including screening, scoping, impact assessment, and analysis of alternatives, ensuring a focused evaluation of the gold mining project's impacts.

Baseline Assessment

Comprehensive baseline studies cover physical, biological, and social conditions prior to development, including air quality, hydrology, ecology, socioeconomics, and cultural heritage to inform impact predictions.

Stakeholder Engagement

Stronghold Guyana initiated proactive communication in 2025 with government bodies, public stakeholders, and NGOs through meetings, forums, and public notifications, with ongoing engagement planned including public disclosure in early 2026.

Impact Assessment Methodology

Impacts are characterised by type, extent, duration, scale, and frequency, with detailed definitions provided for direct, indirect, and induced impacts, and a qualitative likelihood scale for unplanned events.

Magnitude and Significance

Impact magnitude is derived from impact characteristics and classified as positive, negligible, small, medium, or large. Significance also considers resource sensitivity, with ratings from low to high, resulting in significance levels from negligible to major.

Mitigation Hierarchy

Mitigation follows the IFC/WBG hierarchy prioritising avoidance, reduction, abatement, and compensation measures, supported by monitoring and management to ensure effectiveness documented in the Environmental and Social Management and Monitoring Plan.

Analysis of Alternatives

The report includes a comparative analysis of project alternatives regarding site location, design, and energy use, including a no-project scenario to support decision-making.

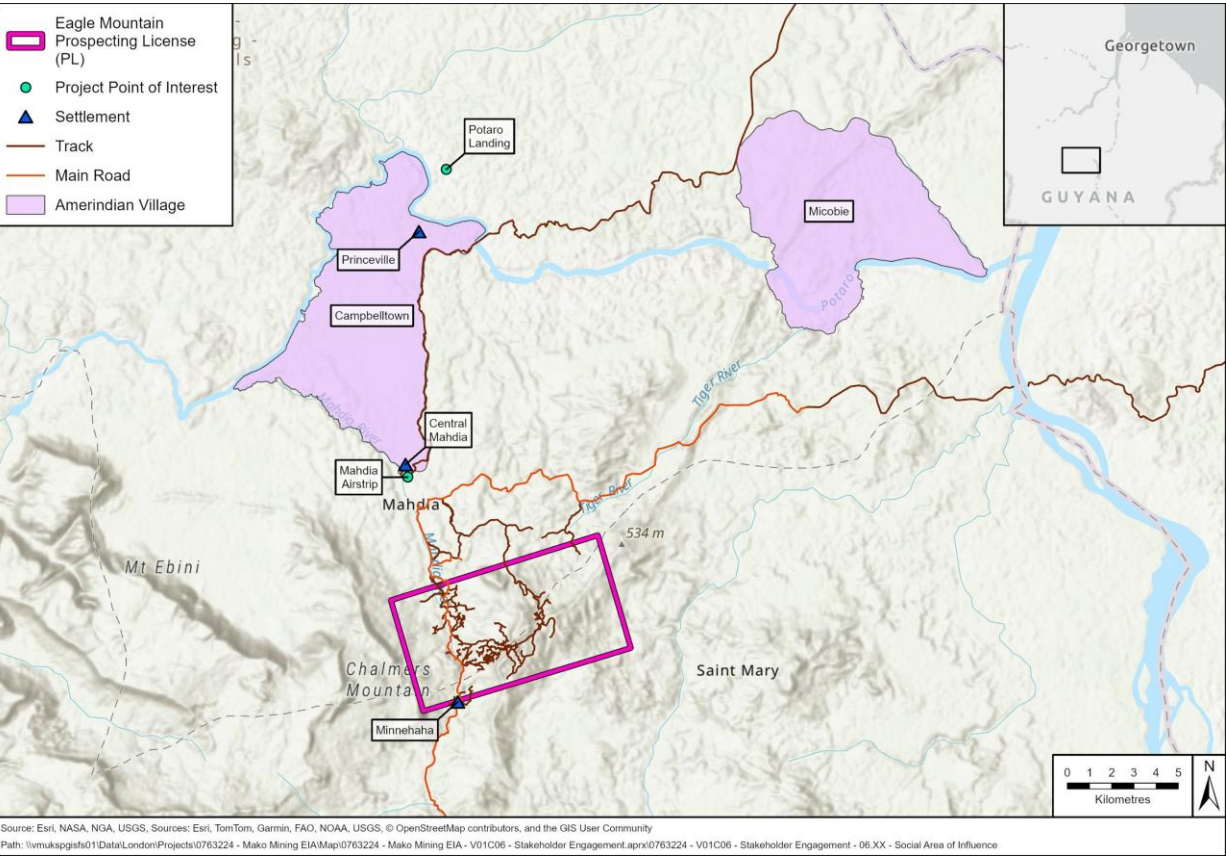
Data Collection and Reporting

Baseline data sources and methods are detailed in the report's subsequent volumes, ensuring transparency and robustness in environmental and social resource assessments.

Stakeholder Engagement

Stakeholder engagement is ongoing throughout the project lifecycle, including during environmental authorisation applications and EIA development. Activities have included individual and community meetings, public forums, workshops, and public notifications to raise awareness.

Stronghold Guyana maintains a comprehensive list of stakeholders across government, civil society, private sector, and local communities, including indigenous and vulnerable groups. Stakeholders are analysed to assess their influence and interest, enabling prioritisation and tailored engagement strategies.



Public Scoping Meetings

Three public scoping meetings were held in October 2025 in Georgetown, Mahdia, and Campbelltown, involving government agencies, local residents, miners, and businesses to discuss the Project and inform the Terms of Reference for the EIA.

Location	Date	Number of Participants	Participants
Georgetown	7 October 2025	16	EPA and government agencies
Mahdia	3 October 2025	32	Local residents, local miners, government representatives, and local businesses
Campbelltown	4 October 2025	42	Local residents (including Micobie Toshao and residents), local miners, government representatives, and local businesses

Social Baseline Surveys

In October 2025, Stronghold conducted social baseline surveys engaging 44 stakeholders across Mahdia, Campbelltown, Princeville, Micobie, and Minnehaha, including local officials, police, teachers, health workers, business owners, and residents.

Location	Dates	Number of Interviews	Interviewees
Mahdia	3 & 7 October 2025	26	Mayor, Deputy Regional Executive Officer, police officers, fire officer, schoolteachers, GGMC officer, business owners, and resident households
Campbelltown	4 October 2025	7	Toshao, resident households, health worker
Princeville	5 October 2025	2	Village council member, resident households
Micobie	5 October 2025	3	Toshao, resident households, schoolteachers, health workers
Minnehaha	6 October 2025	6	Resident households, farmers, shopkeepers
Total		44	

Stakeholder Engagement

At the public scoping meetings, several issues and questions regarding biodiversity, water management, community development, employment, mining operations, road access and public safety and safety and potential Project impacts were raised by attendees. These are included in the table below:

Stakeholder Queries & Comments

Topic	Stakeholder Queries/Comments
Artisanal mining	<ul style="list-style-type: none"> Management of conflicts and artisanal miners within the PL Use of unused lands for artisanal mining
Biodiversity	<ul style="list-style-type: none"> Consideration of biodiversity offsets/set-asides and/or contributions to protected areas Impacts to flora and fauna within the PL Inventory of species in the biodiversity assessment
Blasting & Mining Operations	<ul style="list-style-type: none"> Impacts of blasting during operations on the community Depth of mining operations Leaching in mining process Impacts of chemicals (e.g. cyanide, mercury) on community and management of chemicals Procedures for emergency response and grievances
Community Development & Benefits	<ul style="list-style-type: none"> Plans for community development Community benefit including employment, training, school contributions, recreational facilities Communications with community Stronghold participation in social and cultural development activities Impacts of mining on community Ability of indigenous communities to hunt, fish, and gather traditional medicine within the PL
Employment & Procurement	<ul style="list-style-type: none"> Number of workers to be hired locally Job training opportunities Local businesses benefiting from procurement Process of procurement

Topic	Stakeholder Queries/Comments
Landscape & Visual	<ul style="list-style-type: none"> Visual impacts to Eagle Mountain Impact to mountain's cultural significance for local communities
Logging & Land Use	<ul style="list-style-type: none"> Use of trees/logs cleared from site Impacts to land below mountain during operations
Monitoring & Water Management	<ul style="list-style-type: none"> Ongoing water testing being conducted and by who Impacts to Salbora water quality Impacts to water supply, especially during drought Watershed mapping being conducted
Road Access & Public Safety	<ul style="list-style-type: none"> Access to the area for small-scale miners Diversions to the main road and community use Maintenance of community roads and bridges Management of public safety
Reclamation & Restoration	<ul style="list-style-type: none"> Type of reclamation that will be conducted Stronghold experience in restoration Timeline of restoration as mining progresses
Waste & Water Treatment	<ul style="list-style-type: none"> Treatment of effluent and wastewater at the Project Methods of handling and treatment of wastewater
Traditional Medicines	<ul style="list-style-type: none"> Harvesting of plants used in traditional medicines in the area by indigenous peoples

Scope of the EIA

Area of Influence

The Study Area covers the Project facilities of the mine site including the mine pit area and associated infrastructure, tailings storage facility (TSF), waste storage facilities (WSFs), and accommodation camp located in the Eagle Mountain Prospecting Licence (EMPL), as well as access roads. Areas of Influence (AOIs) are defined individually for each topic-specific chapter. Broadly, they are within 5 km of the Project.



Environmental Area of Influence

Areas of influence have been defined for the environmental and social aspects of the Project. Regarding the environmental aspects, the Project AoI has been adopted. However, individual AoI's have been identified for topics such as air, noise, water, soils and terrestrial and aquatic ecology.



Social Area of Influence

The social area of influence was defined using a two-tier approach, with a Direct AoI and Indirect AoI.

- **Direct AoI** includes the population centres immediately surrounding the EMPL and along the old Potaro-Konawaruk road to Mahdia running North to South through the EMPL.
- **Indirect AoI** includes the population centres located further from the EMPL, in proximity to potential ancillary facilities, and/or that have direct socioeconomic connection with the proposed Project activities. This includes Mahdia and Minnehaha, which would be impacted by increased traffic, and Georgetown where Project supplies would be shipped to and from.

Resources and Receptors Assessed in the EIA



Resources and receptors for assessment have been chosen based on project-specific environmental, social, and health conditions, guided by legislation, international standards, and client information. The scope includes technical, spatial, and temporal categories.

Scoping and Impact Identification



The scoping process was informed by interaction with the Project design team and was further refined based on consultation with a range of stakeholders.

The process used a matrix approach to identify potential interactions between project activities and environmental/social receptors, categorising them by significance and whether they are included in the impact assessment

Challenges in Conducting the EIA



- The EIA is prepared based on design cut off of October 2025 and it is noted that further final design is ongoing and will continue for another year.
- If the design changes in such a way as to require further assessment, this will be reported to the EPA from Stronghold Guyana and will be assessed as required.
- No other challenges were identified during the EIA.

Volume 2: Environmental and Social Baseline

Physical Resources: Geographic Setting

The Project's AoI is characterised mostly by mountainous land and is mostly forested. However, as seen in the photos, the area has been degraded by historic mining activities resulting in forest removal in some areas.

The EMPL is situated at elevations ranging from low-lying alluvial valleys (approximate elevation of 100 metres above mean sea level (amsl)) to the summit of Eagle Mountain (approximate elevation of 724.8 metres amsl).

However, it should be noted that the Project footprint does not encroach on the summit. No facilities will be constructed near the summit to avoid visual impacts from the Project.



Physical Resources: Air Quality

Air quality surveys were conducted during the 2025 wet (10th April – 7th May) and dry (15th October – 12th November) seasons at a single site near the proposed processing plant.

Baseline Results

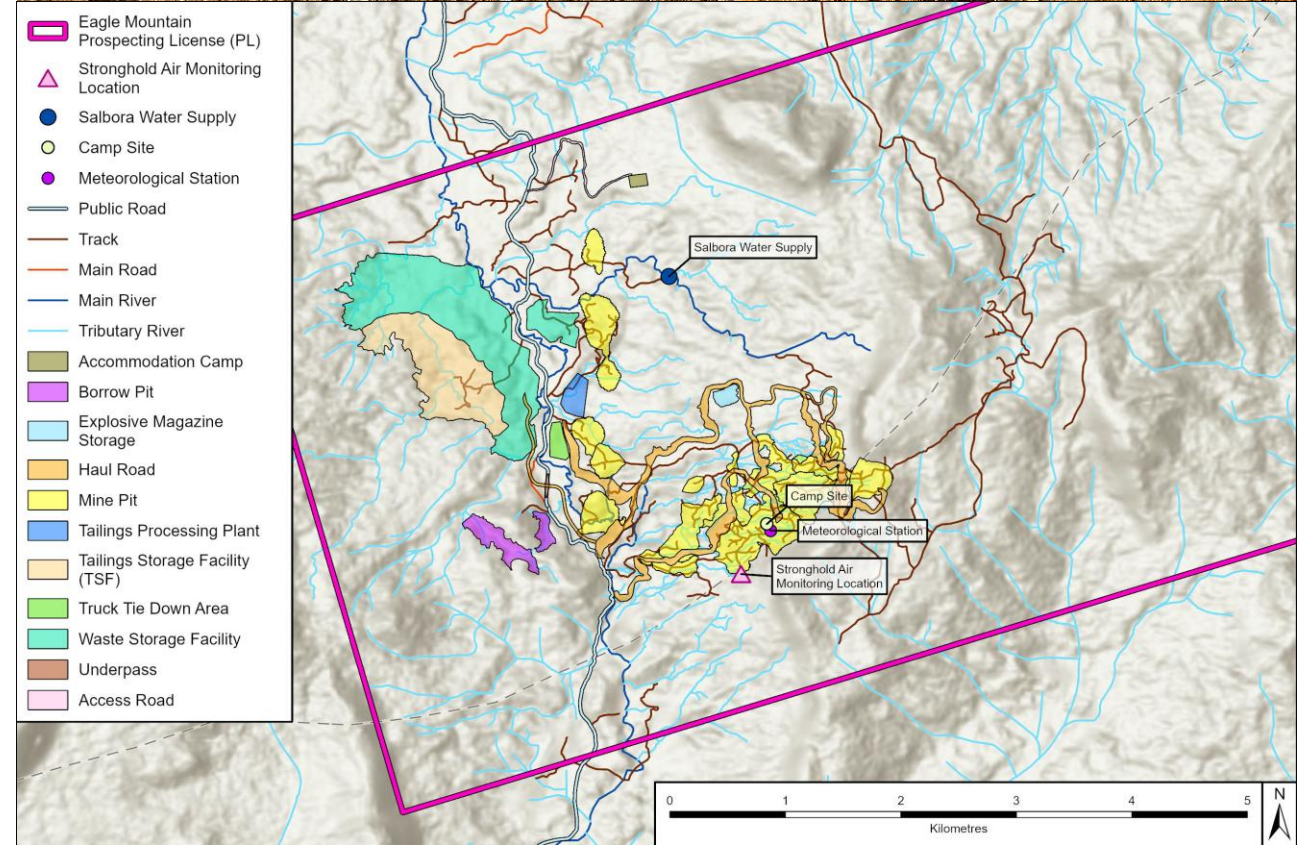
❖ **Particulate matter:** Wet and dry season average concentrations for PM_{2.5}, PM₁₀, and total suspended particles were all below WHO 2021 Air Quality Guidelines for annual and 24-hour averages.

❖ **Dustfall deposition:** The dustfall rate was classified as medium magnitude indicating moderate dust accumulation, potentially requiring mitigation. This elevated rate was expected due to site conditions and nearby vehicle traffic.

❖ **Gaseous pollutants:** CO was not detected, indicating concentrations below detection limits. Average NO₂ and SO₂ concentrations were well below WHO guideline limits, suggesting low health risk.

❖ **Volatile organic compounds:** Most VOCs were non-detectable or at low concentrations; ethyl and acetone were the highest detected, commonly associated with vehicle exhaust and consumer products.

❖ **Meteorological conditions:** The predominant wind direction was west-southwest with calm wind conditions 80% of the time. Relative humidity averaged 93.6%, and total precipitation was 422.2 mm, consistent with typical wet season patterns. The hilly terrain can cause small scale changes in wind patterns throughout the EMPL.



Physical Resources: Noise and Vibration

Noise surveys were conducted in April 2025 around the Eagle Mountain Gold Mine Project area and monitored existing conditions at noise sensitive receptors.

5 sites were selected representing residential (L1, L2, L4) and industrial (L3, L5) receptors and were monitored during daytime and nighttime periods.

Noise Metrics

Key metrics included:

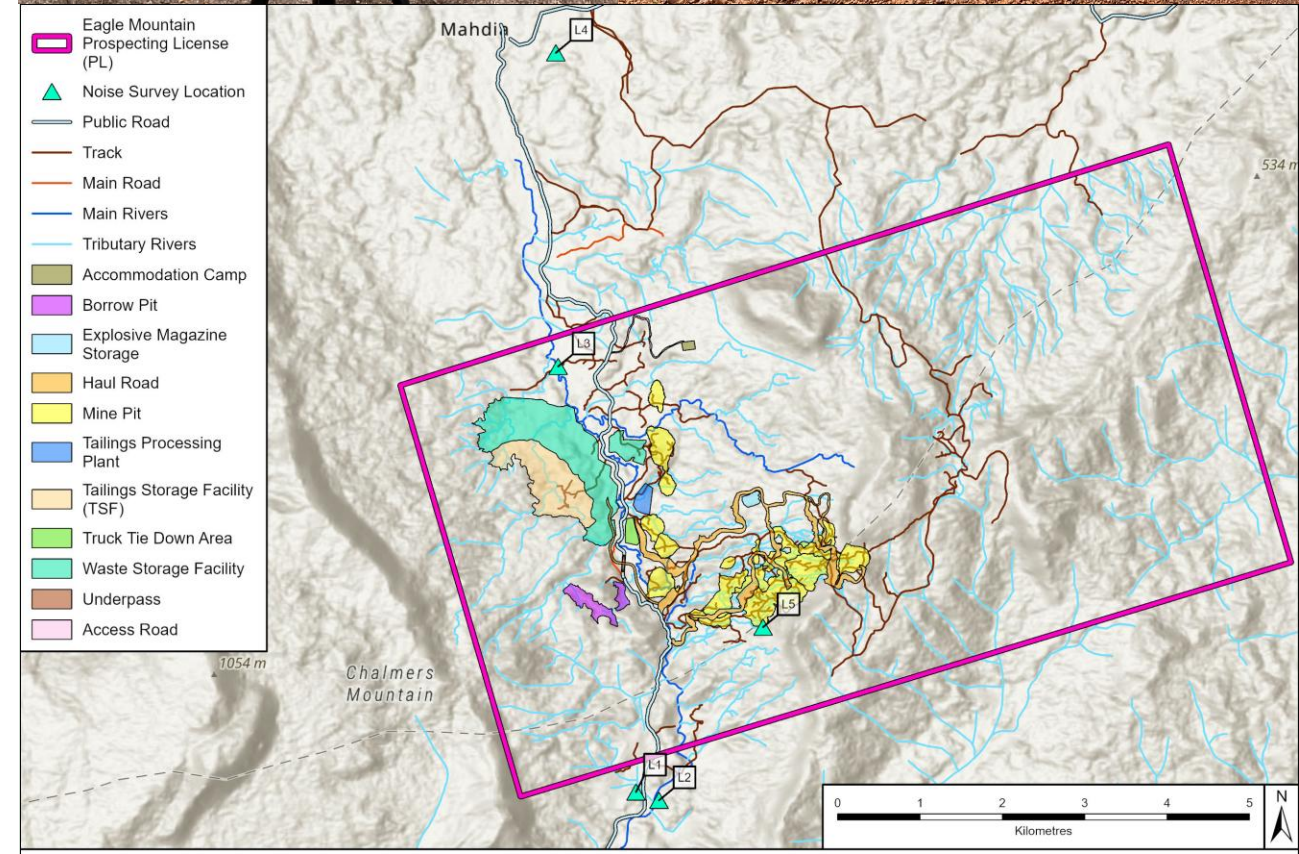
- LAeq (equivalent continuous sound level);
- LA90 (background noise);
- Lmax;
- Lmin;
- LA10;
- LAeq (used primarily for comparison against standards)

Baseline Results

All measured noise levels were below Guyanese criteria during day and night. Residential locations showed typical background noise from traffic, domestic activities, and natural sources, while industrial sites had similar but slightly higher levels.

Noise Management Recommendations

Project noise should not exceed Guyana EPA standards; daytime noise at residential sites should stay below 70 dBA and nighttime below 65 dBA, with industrial sites allowed higher limits. Any increases above existing baseline in residential areas should not exceed 3 dBA above standards.



Physical Resources: Climate, Meteorology, and Climate Change

Guyana has two distinct seasons, with a wet season from mid-April to mid-August and November to February, and a dry season from February to mid-April and Mid-August to November.

Local meteorological data

Temperature and precipitation data from 2010 to 2025 show monthly average temperatures ranging from 23.1°C to 34.6°C and average monthly precipitation of 388 mm, with peak rainfall from May to July.

Flooding Risk

Climate change is expected to increase flooding frequency and severity in Guyana, with rising precipitation trends and sea level rise impacting agriculture and infrastructure, especially in the Potaro-Siparuni region classified as high flood hazard.

Drought and Water Stress

While drought risk is currently low in the region, future climate projections indicate rising temperatures and changing rainfall patterns that will increase drought frequency and severity, threatening water availability and agriculture.

Wildfire Hazard

Wildfire is a potential hazard with increasing frequency and severity expected due to climate change. Recent data show extensive wildfires affecting large land areas and air quality degradation in multiple regions of Guyana.

Extreme Heat

Extreme heat days are projected to increase significantly, with medium hazard classification for the region.

Seismic Risk

Seismic activity near the project is low, with recorded earthquakes mostly below magnitude 5 and low peak ground acceleration expected, indicating low seismic hazard.

Cyclones / Hurricanes

Region 8 has very low hurricane risk due to its location.

Landslides

Landslide susceptibility in the project area is generally low, though local conditions such as steep slopes and deforestation from mining may increase landslide potential.

Summary of Climate Change Risks

Risk Level in Region 8	Natural Event
High	<ul style="list-style-type: none">River floodingWildfires
Medium	<ul style="list-style-type: none">Extreme heat
Low	<ul style="list-style-type: none">Drought and water stressLandslidesEarthquakes
Very Low	<ul style="list-style-type: none">Cyclones/hurricanes

Physical Resources: Geology and Soils

❖ Project physiography overview

The property spans elevations from the valley bottom to the summit of Eagle Mountain (100 to 724.8 metres above mean sea level). Gold mineralisation is hosted along two trends: (1) between 160 and 500 metres elevation on the slopes of Eagle Mountain, characterised by bench-like topography and incised creeks; and (2) trending north-south in the low-lying alluvial valleys.

❖ Regional geology context

Located in the Guiana Shield within the Trans-Amazonian province, the area consists of Paleoproterozoic rocks shaped by the Trans-Amazonian Orogeny, with significant shear zones linked to known gold deposits.

❖ Site geology specifics

The Property is underlain by metavolcanic and metasedimentary rocks intruded by a composite granodiorite pluton that hosts the gold mineralisation at the Eagle Mountain deposit. At the Salbora deposit, mineralisation is within metavolcanic rocks adjacent to a northeast-trending monzonite dyke.

❖ Weathering and saprolite formation

Tropical saprolite weathering affects the deposits to depths of 10 to 50 metres, producing clay-rich material. Gold grains are fine and disseminated, without evidence of gold remobilisation or transport.

Baseline Results

❖ Soil types and sources

Soil information was derived from national land use plans and project-specific sampling, revealing brown-red to yellow-red well-drained gravelly clays, silts, or laterite soils typical of hilly and mountainous terrain.

❖ Soil physical and chemical properties

Soils exhibit granular or blocky textures with low to medium plasticity, predominantly sand and silt, allowing good drainage and low susceptibility to waterlogging.

❖ Soil fertility assessment

Overall soil fertility is low, with key nutrients such as potassium, phosphorus, calcium, and magnesium below typical benchmark values, though soils maintain moderate moisture content.

❖ Environmental quality evaluation

Soil samples analysed for metals, polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPHs), and BTEX compounds show concentrations below USEPA screening levels or detection limits, indicating no significant contamination concerns.

Physical Resources: Landscape and Visual

❖Topography and landscape features

The region ranges from 100 to 724.8 m asl, featuring steep relief, cliffs, and boulder-strewn slopes, with the Eagle Mountain deposit primarily on northwestern and southwestern slopes between 70 and 500 m elevation. The area is covered by tropical jungle with some regrowth on previously mined lands.

❖Landscape Characteristic Unit (LCU)

The Project lies within the Guianan Lowland Moist Forests ecoregion of the Guianan Forests & Savanna bioregion, characterised by tropical rainforest and savanna mosaics. The local landscape is classified as a single LCU with homogeneous sensitivity due to its natural and degraded tropical forest cover and rocky highlands.

❖Social receptors and cultural heritage

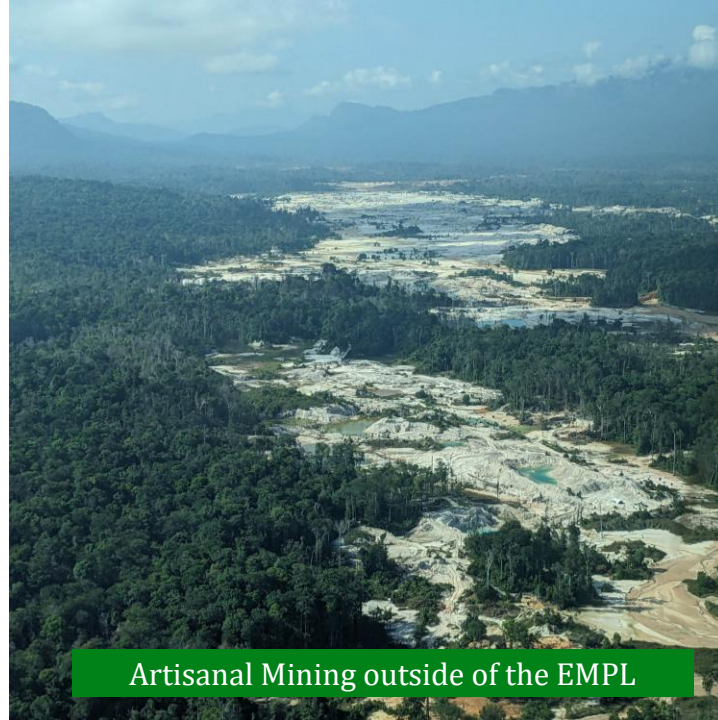
There are no social receptors within the project boundary, but communities exist nearby. Two rock shelters used historically by artisanal miners (pork-knockers) were identified near pit areas, with no archaeological materials found.

❖Protected areas

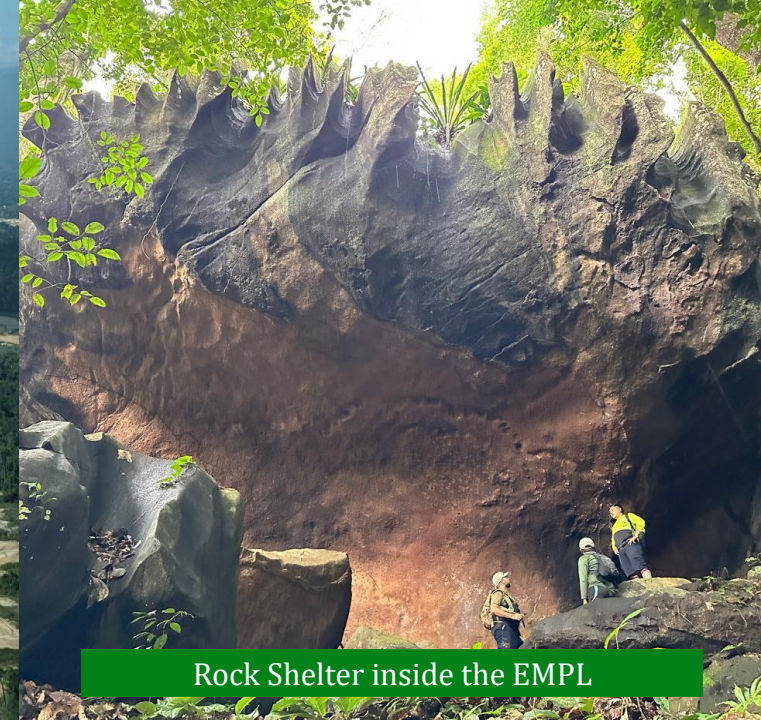
No protected areas are within or near the project boundary; the closest is Kaieteur National Park approximately 40 km west. The landscape value includes cultural aspects related to artisanal mining history.

❖Visual baseline and potential impacts

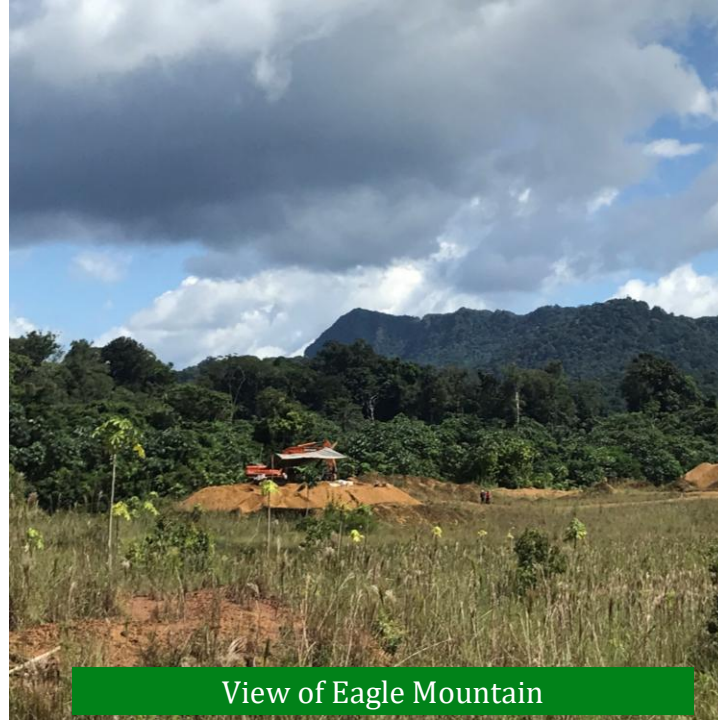
Key project elements such as processing plant, waste dumps, and tailings storage are designed to not exceed surrounding topography heights and are remote from visual sensitive receptors, limiting visual impacts.



Artisanal Mining outside of the EMPL



Rock Shelter inside the EMPL





View of Eagle Mountain



Current Camp in EMPL

Physical Resources: Hydrology and Surface Water

Hydrological and surface water baseline conditions for the Eagle Mountain was compiled from hydrological studies conducted by Global Resource Engineering Inc. (GRE) and ongoing monitoring by Stronghold Guayana between 2024 and 2025.

-  Sampling locations included South Salbora, Minnehaha Creek, and Mahdia River, and TSS-only sampling at Deer Creek.
-  Mahdia River and Minnehaha Creek dominate surface drainage, fed by several smaller, often ephemeral, tributaries and influenced by historical mining disturbances causing contamination and altered sedimentation

Mercury Results

- 30 sediment samples collected from rivers, streams, and ponds showed variable mercury levels, with higher concentrations mainly found in stagnant pond sediments, and lower, more variable levels in flowing streams.
- Mercury levels in the 12 water samples collected were consistently very low, with all samples below laboratory detection limits and international freshwater guideline values.
- No relationship was identified between mercury levels in sediments and mercury levels in surface water.
- Although historic artisanal mining has contributed to localised mercury in sediments, this has not resulted in elevated mercury concentrations in water bodies.
- Overall, the results indicate limited movement of mercury from soils and sediments into surface water, and no evidence of aquatic toxicity risk within the Eagle Mountain Prospecting Licence area.
- No correlation was found between sediment and water mercury concentration.

Baseline Results

Parameter	IFC Guideline Limit	Observed Range
pH	6.0 – 9.0 S.U.	6.00 – 8.67 across stations and seasons
Electrical Conductivity	No guideline limit values specified	Highest in March (~390–438 µS/cm), decreasing during wet seasons
Total Suspended Solids	50 mg/L	Mostly <50 mg/L; one exceedance at 99 mg/L
Total Iron (Fe)	2.0 mg/L	Exceeded at some stations in wet season
Arsenic (As)	0.1 mg/L	<0.001 mg/L, well below limit
Mercury (Hg)	0.002 mg/L	<0.001094 mg/L, below limit
Lead (Pb)	0.02 mg/L	<0.003 mg/L, well below limit
Oil and Grease	10 mg/L	Approaching limit at some stations
Microbial Indicators	No guideline limit values specified	Elevated bacterial counts (E. coli and total coliforms) at Mahdia water supply reservoir during wet and warmer months, typical of surface water storage systems

Physical Resources: Hydrogeology and Groundwater

Hydrogeological and groundwater baseline conditions for the Eagle Mountain Project was conducted by Global Resource Engineering Inc. (GRE) between 2024 and 2025. The field program included installation of groundwater monitoring wells and performing hydrogeological tests (21 packer tests in 14 boreholes, and pumping tests at 8 wells, targeting saprolite, transition zone, and hard rock stratigraphic units).

Pumping Test Results

Pumping tests were conducted on wells in saprolite and transition zones. Hydraulic conductivity values for saprolite were typical of silt or fine sand. Transition zone values corresponded to coarse to fine sand, reflecting variable fracturing and weathering. These results align with geotechnical classifications.

Groundwater Levels

Groundwater levels fluctuate seasonally by 1 to 5 meters. The Mahdia River and Minnehaha Creek serve as the ultimate discharge points for groundwater within the project area, which is located in a valley bordered by ridges and dolerite layers acting as hydraulic divides. Artesian conditions are observed locally. No significant irrigated agriculture is observed in the Project area vicinity except limited agricultural activities in community centres.

Baseline Results

Groundwater monitoring wells were installed across the project area targeting saprolite and transition zone layers. Sampling campaigns occurred in January, March, July, and September 2025, with samples analysed for major ions, metals, trace elements, and microbiological parameters.

Parameter	IFC Guideline Limit	Observed Range
pH	6.0 – 9.0 S.U.	5.64 – 6.76 (some samples slightly acidic)
Electrical Conductivity	No guideline limit values specified	147 – 597 µS/cm (low to moderate mineralisation)
Total Suspended Solids	50 mg/L	7 – 381 mg/L
Total Dissolved Solids	No guideline limit values specified	78 – 146 mg/L
Total Aluminium	No guideline limit values specified	Up to 3.31 at two locations (exceeds WHO guideline of 0.2)
Total Iron (Fe)	2.0 mg/L	0.33 – 15.0 (some exceed IFC limits)
Arsenic (As), Cadmium (Cd), Chromium (Cr)	0.1 mg/L for As and Cr; 0.05 mg/L for Cd	Mostly below detection limits or within IFC limits
Microbiological (E. coli, Total Coliforms)	No guideline limit values specified for total coliforms; E. coli presence non-compliant for potable water	Detected in some samples, including TNTC (Too Numerous To Count)

Physical Resources: Mineral Waste

Geochemical analysis of waste rock and tailings was conducted in 2024 and 2025 to identify risks of Acid Rock Drainage (ARD) and Metal Leaching (ML) that could impact water quality.

Waste Rock Testing Methods	Two testing programs were conducted: static testing of 50 samples from various locations and onsite kinetic testing of 10 samples exposed to ambient conditions over 50 weeks, with analyses including Acid Base Accounting, whole rock analysis, and leachate chemistry.
Baseline Results	
Acid-Base Accounting	Out of 50 samples, one volcanic fresh rock sample was potentially acid-generating (PAG), two-fifths non-acid-generating and 19 potentially acid-consuming (PAC), indicating overall low acid generation risk.
Whole Rock Analysis	Waste rock analysis identified showed enrichment above five times crustal abundance for silver, arsenic, bismuth, molybdenum, and selenium, specific to waste along Salbora-Powis trend, which only represents a small part of the overall resource. Other metals like cobalt and copper were at or below crustal averages.
Leachate and kinetic tests	Synthetic Precipitation Leaching Procedure (SPLP) results showed minimal metal mobilisation with few exceedances of U.S. EPA standards. Kinetic cell tests indicated mostly neutral (6-8) to slightly acidic (4-5) pH with mild ARD signs in a small subset of samples.
Tailings analysis	Tailings from saprolite were inert or non-acid-generating, while fresh rock tailings showed potential acid consumption. Some metals in tailings filtrate exceeded U.S. EPA freshwater and drinking water standards, with sulphate and cyanide concentrations noted

Environmental implications



Overall, waste rock poses minimal ARD risk with abundant neutralisation potential minerals, though some metal leaching risk exists, particularly in transition material, although small in volume. Tailings require monitoring due to elevated metal concentrations in filtrate.

Conclusion



Based on GRE’s geochemical characterisation and kinetic testing results, the mining lithologies associated with the project do not currently indicate a risk for ARD generation or significant metal leaching. The results suggest that potential water quality risks are primarily associated with the discharge of excess mine water and are considered manageable under appropriate operational controls. In addition, no degraded pit lake water quality is anticipated based on the geochemical evidence available at this stage of the project.

Ongoing monitoring recommendation



Continued observation of waste rock metal leaching behaviour through onsite kinetic testing is advised to manage potential environmental impacts during mining operations.

Biological Resources: Terrestrial and Aquatic Ecology

Biodiversity surveys were conducted in 2013, 2021, and 2025 wet and dry seasons.



Biodiversity Summary

- Over 450 terrestrial species and >100 terrestrial families identified.
- More than 130 aquatic species and >30 aquatic families documented.
- Total recorded species across surveys exceed 500.

Terrestrial Ecology

Flora



- Surveys identified ~100 tree species from >30 families, with Leguminosae (legumes / peas) dominant.
- Tree abundance peaked at mid-elevations (150-300m), with significant species shifts by altitude and disturbance state.
- Secondary forests show successional species, while undisturbed plots maintain higher tree densities and species such as *Dicymbe altsonii*.

Mammals



- >50 mammal species were recorded (~35 non-volant, ~24 bats) during 2013 and 2021 surveys.
- Common species include Agouti, Lowland Paca, Brocket Deer, Howler Monkey, and Guiana Spider Monkey.
- Five of Guyana's six cat species were documented, including jaguar tracks and camera trap detections of tapirs and tayras.
- Species such as Lowland Tapir, Guiana Spider Monkey, Giant Anteater, and White-lipped Peccary are present and listed as Vulnerable or Near Threatened by IUCN.
- 2025 walkover did not record mammals but noted capybara tracks

Birds



- >200 species identified from >40 families, with diverse habitats supporting a rich avifauna including tyrant flycatchers, antbirds, tanagers, hummingbirds, parrots, and woodcreepers.
- Notable species include swifts, green oropendola, silver-beaked tanager, and brown-throated parakeet.

Terrestrial Ecology

Birds

- Several species are listed as Vulnerable or Near Threatened by IUCN, including toucans and parrots. The 2025 walkover documented 13 bird species primarily through acoustic and visual surveys.

Reptiles

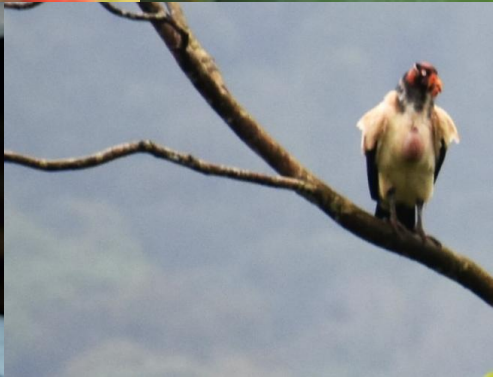


- Over 1,000 reptiles were recorded, including common lizards, snakes, turtles, and caimans.
- The yellow-footed tortoise, listed as Vulnerable by IUCN, was observed.
- Several CITES Appendix II reptile species were documented.
- No critical habitats for reptiles were identified.

Amphibians



- More than 1,400 amphibian individuals were recorded.
- Activity and diversity were higher in wet seasons.
- Endemic species include Kaie Rocket Frog, Evan's Stefania, and Woodley's Stefania.
- One CITES Appendix II species, *Atelopus hoogmoedii*, was recorded. No endangered amphibians were observed.



Biological Resources: Terrestrial and Aquatic Ecology

Terrestrial Ecology

Lepidoptera and Terrestrial Macro-Invertebrates



Terrestrial Fauna eDNA



- 60 butterfly species were recorded, predominantly from the Nymphalidae family.
- Greater species diversity was found in undisturbed areas.
- Terrestrial macro-invertebrates included 26 orders, with presence varying by season and survey.

Aquatic Ecology

Aquatic Macro-Invertebrates

Fish



Aquatic Fauna eDNA



- Aquatic macro-invertebrates were generally poor in mined areas, dominated by generalist species such as *Diptera* and *Hymenoptera*.
- Sampling included mayflies and freshwater shrimps.
- 48 fish species from ~17 families were recorded. *Characidae* and *Cichlidae* were dominant families.
- Species diversity and abundance were higher during dry seasons due to fish being trapped in ponds.
- No migratory or threatened fish species were detected.
- Several fish species are endemic to Guyana.
- eDNA analysis detected ~57 fish species, none of which were species of conservation concern.
- One fish species (*Ancistrus leucostictus*) was identified as endemic to Guyana



Biological Resources: Protected Areas and Special Status Species

The assessment identified species of conservation concern based on IUCN Red List categories (Critically Endangered, Endangered, Vulnerable, Near Threatened), CITES listings, and endemism to Guyana or the Guiana Shield.

No flora species were listed as threatened, but several mammals, birds, amphibians, and reptiles have special conservation status. No aquatic macro-invertebrates or fish species were listed as threatened.

Summary of Special Status Species

Classification	IUCN				IUCN Total	CITES			Endemic
	CR	EN	VU	NT		Appendix I	Appendix II	Appendix III	
Taxa									
Flora	0	0	3	0	0	0	0	0	2
Mammals	0	0	4	1	5	2	8	3	2
Birds	0	0	3	3	6	0	39	1	15
Amphibians and Reptiles	0	2	1	0	3	0	10	0	4
Fish	0	0	0	0	0	0	0	0	0
Aquatic Macroinvertebrates	0	0	0	0	0	0	0	0	0
Grand Total	0	2	11	4	14	2	57	4	23



Mammals of Concern

Five mammal species are IUCN-listed as threatened or near threatened, including Lowland Tapir, Guiana Spider Monkey, Giant Anteater, White-lipped Peccary (all Vulnerable), and Jaguar (Near Threatened). Threats include habitat loss, hunting, and competition with livestock.



Birds of Concern

Several birds are Vulnerable or Near Threatened, such as Channel-billed Toucan, White-throated Toucan, Guianan Streaked Antwren, Mealy Parrot, Blue-cheeked Parrot, and Orange-breasted Falcon. Threats include deforestation, hunting, and habitat fragmentation.



Amphibians and Reptiles of Concern

Two frog species (*Anomaloglossus kaiei* and *Anomaloglossus praderioi*) are Endangered due to habitat degradation. The Yellow-footed Tortoise is Vulnerable, with pressures from hunting and habitat loss.

CITES Listings

Numerous mammals, birds, and reptiles in the Study Area are protected under CITES Appendices I, II, and III, regulating international trade to prevent overexploitation. Notable species include jaguar and ocelot (Appendix I), all primates and many birds (Appendix II), and some mammals like tayra and white-lipped peccary.

Endemism

The Study Area hosts species endemic to Guyana and the Guiana Shield, particularly among plants, amphibians, and fish. No reptiles or mammals are strictly endemic to Guyana, but some are endemic to the Guiana Shield. Bird endemism is regional rather than national.

Migratory Species

No migratory species were recorded in the Study Area, consistent with the region’s ecology. However, the area serves as an important biological corridor connecting to the Amazon Basin, supporting ecological connectivity.

Social Resources: Socio-economic



Region 8 Economy & Land Use

- Region 8's economy is predominantly driven by gold and diamond mining, which is the main source of employment and income, with agriculture and forestry playing secondary roles.
- Land use includes Indigenous customary lands, forestry leases, mining areas, and small-scale agriculture.
- Artisanal and small-scale mining (ASM) is widespread, with regulatory oversight by the Guyana Geology and Mines Commission (GGMC), though informal practices and environmental concerns persist.



Governance

- Mahdia is managed by an elected Town Council;
- Indigenous communities, Campbelltown and Micobie, have elected Village Councils headed by a Toshao;
- Princeville is managed by the Community Development Council;
- Minnehaha informal mining settlement has no formal governance.
- Regional Democratic Council oversees essential services and reports to the central government.



Population & Education

- Region 8 had a population of 13,598 (2022 census).
- October 2025 fieldwork suggest some growth in communities: Mahdia (approx. 3,000); Campbelltown (approx. 1,504); Princeville (approx. 300); and Micobie (approx. 691).
- Education faces challenges due to remoteness and infrastructure, with high primary attendance but low secondary retention.
- Efforts are underway to improve educational facilities, teacher training, and access through programs like the Guyana Online Academy for Learning (GOAL)



Transportation

- Access to Mahdia and the Project site is via road and air.
- Georgetown to Mahdia by road is approx. 310 km, with recent upgrades improving conditions.
- Internal roads in Mahdia and Campbelltown are paved or laterite, while more remote communities have mainly laterite roads.
- Mahdia airstrip is vital for passenger and goods transport, reducing travel time to Georgetown



Social Infrastructure and Services

- Housing includes developed urban to traditional wooden/concrete homes, and semi-permanent structure in informal mining settlements.
- Electricity: Mahdia & Campbelltown supplied by government diesel generators with solar a supplemental source. Other communities use generators and solar panels.
- Telecommunications: Improvements with satellite internet and government initiatives, though connectivity remains limited in remote areas.
- Water supply: Communities reliant on creeks, wells, and rainwater, with concerns about contamination and intermittent supply.
- Waste management: Basic services outside Mahdia, with burning and pit disposal common.



Community Health, Safety & Wellbeing

- Region 8 has 19 health posts, 4 health centres, and 2 district hospitals; key facilities are in Mahdia, Campbelltown, Micobie, and Princeville.
- Mahdia District Hospital offers comprehensive healthcare; smaller centres offer primary care only.
- Key challenges: limited access, understaffing, and intermittent supplies.
- Common health issues: malaria, dengue, teenage pregnancies, chronic diseases, and substance abuse.
- Mental health programs and social services are limited but growing, including child protection and substance abuse.



Ecosystem Services

- Ecosystem services vital for sustaining livelihoods, health, and cultural practices include provisioning (e.g. freshwater, wild foods, agriculture, fishing, timber), regulating (e.g. air quality, climate regulation, erosion control), cultural (recreation, Indigenous land values, aesthetics), and supporting services (habitat provision, nutrient cycling, primary production, water cycling).
- Concerns exist about degradation from mining and logging activities.



Indigenous Communities

- Region 8 is largely Indigenous (8,009 peoples, 72% of the Region (2012 census)), incl. Campbelltown, Princeville, and Micobie.
- Indigenous communities have formal governance structures and land titles, with economies based on mining, subsistence farming, fishing, hunting, and logging.
- Traditional medicine is widely used.
- Residents express worries about soil degradation, water pollution, and loss of traditional resources

Social Resources: Cultural Heritage

Cultural Heritage surveys were conducted at Eagle Mountain in April 2025.

Tangible Cultural Heritage

Around 66 archaeological sites have been recorded in Region 8, including ceramic sites, petroglyphs/pictographs, chipping stations, grinding surfaces, terra preta soils, and historic sites.

Expected site types within the project area include sherd scatters, lithic workshops, habitation sites, caves and rock shelters, petroglyphs, grinding surfaces, historic mining sites, and terra preta indicative of anthropogenic soil enrichment.

Intangible Cultural Heritage

Intangible heritage includes traditional beliefs, oral stories, rituals, and spiritual practices.

Interviews with Indigenous communities revealed beliefs in malevolent spirits called Kanaimas and reverence for mountain gods, though such beliefs are declining due to Christian conversion.

These intangible values are not tied to specific physical locations, and no sacred natural features were identified within the project area. Indigenous traditional lands remain largely undocumented but are recognised as important under international and national laws.

Kaieteur National Park, about 42 km from the project, is a protected indigenous sacred site, suggesting potential for significant cultural sites in the broader vicinity.

Baseline Survey Results

The April 2025 survey identified three non-designated cultural heritage resources within the project AoI, all assessed as having low sensitivity:

- ❖ MAK_CH_001: Two historic English bottles near the mine pit, left in situ.
- ❖ MAK_CH_002: Possible rock shelter with no archaeological materials recovered from test pits.
- ❖ MAK_CH_003: Evidence of “pork-knocking” (artisanal mining) activity in the mine site area.

No designated (legally protected) cultural heritage resources were found.

The project area shows extensive disturbance from historical and ongoing artisanal mining, swampy terrain, and vegetation cover limiting survey effectiveness.

Rock shelters identified showed signs of historical mining and transient occupation by porkknockers but no significant archaeological deposits.

Waste storage facilities and tailings storage facilities had limited accessibility and no archaeological materials detected, though geomorphology suggests potential for undiscovered rock shelters.



Volume 3: Environmental and Social Impact Assessment

Risk Evaluation Criteria

Risk evaluation is undertaken to identify the potential risks for the Project, the likelihood of their occurrence to identify the significance of the impacts that could result from these interactions.

Risk significance has been calculated as an interaction between the likelihood of the risk occurring and its impact using a matrix approach. The **likelihood of the risk** occurring has been classified as:

- ❖ **Very likely** – event which is almost certain to arise in the next 2 years and/or will occur several times.
- ❖ **Likely** - event which is likely to arise in the next 2 years.
- ❖ **Possible** – event which can be expected at least once in the next 2 years.
- ❖ **Unlikely** – event which is unlikely to occur during the next 2 years.
- ❖ **Rare** – event which is very unlikely to occur during the next 2 years.

Impacts are classified as:


- ❖ **Critical** – leading to critical / catastrophic adverse environmental and social impacts with no recovery;
- ❖ **Major** – leading to significant adverse environmental and social impacts with large recovery time (5+ years);
- ❖ **Moderate** – leading to environmental and social impacts with medium term recovery (1-2 years)
- ❖ **Minor** – leading to environmental and social impacts with limited remediation action required;
- ❖ **Negligible** - leading to negligible environmental and social impacts.

Risk Matrix


		Risk significance matrix					Key:
Estimated impact	Critical	5 - Medium	10 - High	15 - Critical	20 - Critical	25 - Critical	Low significance (1-3)
	Major	4 - Medium	8 - Medium	12 - High	16 - Critical	20 - Critical	Medium significance (4-9)
	Moderate	3 - Low	6 - Medium	9 - Medium	12 - High	15 - Critical	High significance (10-12)
	Minor	2 - Low	4 - Medium	6 - Medium	8 - Medium	10 - High	Critical significance (15-25)
	Negligible	1 - Low	2 - Low	3 - Low	4 - Medium	5 - Medium	
		Rare	Unlikely	Possible	Likely	Very likely	
		Estimated likelihood					
		1	2	3	4	5	


Risk Assessment


The major risks arising from mining operations as defined by UNEP’s (2001) Awareness and Preparedness for Emergencies at Local Level (APELL) for mining include:


 **Tailings dam failures** – can release liquified tailings in the environment that can travel great distances causing destruction of environmental, biodiversity and human / social receptors.


 **Waste dumps failures** – slides of waste rock can have similar effects to tailing dam failures.

 **Transport to and from site and loading** – transportation of hazardous materials can result in accidental spills and releases in the environment that can affect both environmental and social receptors.

 **Pipeline failures** – tailings, concentrate, fuel or chemicals can be transported via pipeline across large distances, ruptures can lead to leaching of hazardous substances into the environment.

 **Subsidence and land collapse** – generally associated with underground mining activities, subsidence can result in collapse of the ground or deteriorated ground stability across relatively large areas.

 **Fires and explosions** – explosives and flammable substances are commonly used in mining operations, improper use or storage can lead to fires and explosion.

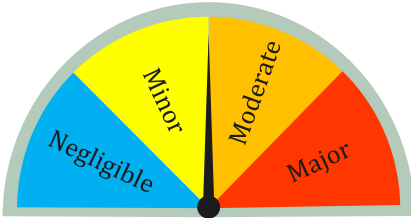
 **Chemical spills** – several chemicals are routinely used in mining operations and improper use; transport or storage can lead to uncontrolled releases into the environment.

Other risks include, soil and water contamination, poor air quality affecting community health and crops, loss of biodiversity and important habitats, increased traffic, and pressure on existing local services e.g. healthcare. These risks can be managed through risks and hazard identification and emergency preparedness.


Risk Register			
Category	Risk	Management	Anticipated Significance
Hydrology	Altered drainage from infrastructure and mining activities, topographic changes from opencast mining, and tailings storage ponds	Management includes riverbank stabilisation and mine backfill methods	Low to High
Hydrogeology	Groundwater lowering from mine dewatering and water abstraction	Groundwater level monitoring and contingency measures	Low
Water Quality	Increased suspended solids from soil disturbance and erosion, contamination from chemical spills, acid mine drainage potential, and waste management	Erosion control, pollution prevention, and water treatment	Low to Medium
Soil	Soil erosion and contamination risks arise from land clearance, chemical spills, and waste disposal	Conservation practices, erosion prevention, and good waste handling	Low to Medium
Biological Environment	Increased exploitation of biological resources, habitat loss, biodiversity disturbance, and contamination of aquatic habitats	Stakeholder engagement, habitat preservation, controlled site access, and environmental management practices	Low to Medium
	Potential injury or death to wildlife from mining activities, disruption of circadian rhythms, and attraction of predators due to lighting are low risks	Staff training and directional lighting.	

Environmental and Social Impact Assessment

The impact assessment of the potential environmental and social impacts attributable to the construction and operational phases of the Project included qualitative and quantitative (where relevant) assessments. The significance of each potential impact was identified, and mitigation measures to minimise and reduce the impacts are recommended. A summary of residual impacts' significance is presented below:

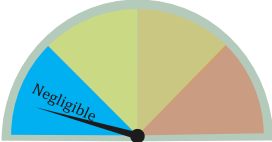
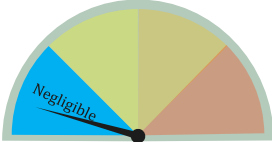
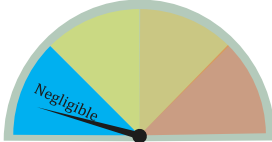
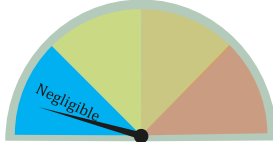
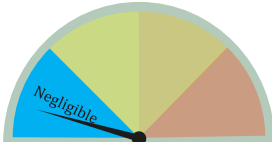
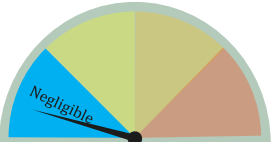
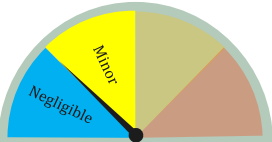
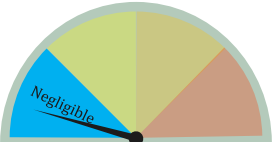


Summary of Residual Impact Significance					
Resource / Recipient	Summary of Impacts	Residual Impact			
		Pre-Construction	Construction	Operation	Closure
Physical Resources					
Air	<ul style="list-style-type: none">Fugitive dust emissions and exhaust combustion emissions impacting sensitive human and ecological receptors close to construction activities and roads used to access the project and during operation of the mine.A major impact is identified during operations due to valley topography funnelling emissions. The AQ model applies a precautionary worst-case scenario in line with best practice, reviewing Year-14 operational levels which are above the long-term average.				
Noise and Vibration	<ul style="list-style-type: none">Disturbance due to noise, vibration on sensitive receptors including nearby settlements located more than 300 m away from the Project's associated infrastructure.				
Soil and Geology	<ul style="list-style-type: none">Increase of soil erosion and sedimentation and topsoil loss during construction activities resulting in the removal, displacement, covering or erosion.Rutting and soil compaction due to increased vehicular movement during construction.Soil contamination primarily from fuel storage and dispensing, hazardous materials and waste, accidental spills and chemical releases, and plant maintenance during construction and operational phases.				
Landscape and Visual	Landscape alteration and visual intrusion				



Early Mountain Gold Mine Project, Guyana: EIA Non-Technical Summary

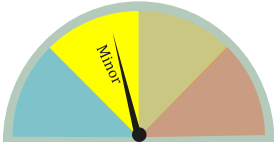
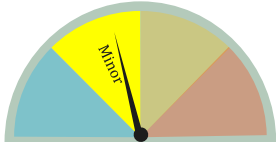
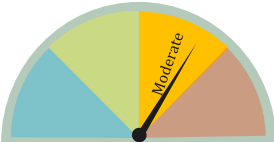
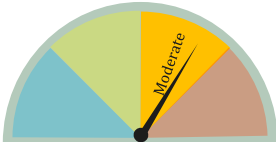
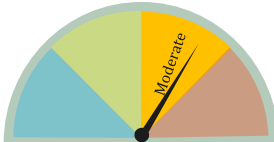
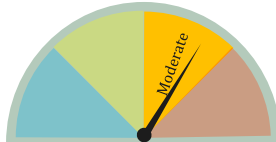
Environmental and Social Impact Assessment

Resource / Recipient	Summary of Impacts	Residual Impact			
		Pre-Construction	Construction	Operation	Closure
Hydrology and surface water	<ul style="list-style-type: none"> Impacts due to Short-term elevation in suspended solids (TSS) and turbidity at construction outfalls. Impacts due to potential contamination of site drains from fuels, oils and construction chemicals. Impacts on surface waters due to baseflow reduction as a result of pit dewatering. Impacts due to erosion and sedimentation. Impacts due to uncontrolled discharge of mining effluents. Impacts due to potential seepages from TSF and WSF. Impacts due to potential spills from fuels, oils and construction chemicals. 				
Ground-water and hydrogeology	<ul style="list-style-type: none"> Disturbance of shallow groundwater due to construction activities. Localised changes to groundwater recharge pattern. Contamination during the handling of fuel, oil and chemicals. Impacts on groundwater volumes and flow patterns Impacts on stream flow volumes Impacts on groundwater quality due to potential seepages from Waste Storage Facility (WSF) and Tailings Storage Facility (TSF) Recovery of Groundwater Levels and Pit Lake Formation during closure phase. Seepages from Waste Storage Facility (WSF) and Tailings Storage Facility (TSF) during closure phase 				

Environmental and Social Impact Assessment

Resource / Recipient	Summary of Impacts	Residual Impact			
		Pre-Construction	Construction	Operation	Closure
Biological Resources					
Terrestrial Ecology	<ul style="list-style-type: none">• Loss and Degradation of Vegetation/Wildlife Habitat• Vegetative metabolic distress• Sensory disturbance of wildlife• Injury and mortality of wildlife				
Aquatic Ecology	<ul style="list-style-type: none">• Loss of aquatic habitat throughout the Project lifecycle• Degradation of aquatic habitats• Aquatic species injury and mortality• Disturbance of aquatic species				
Social Resources					
Socio-economic Conditions	<ul style="list-style-type: none">• Increased employment and direct hiring of Guyanese nationals.• Increased capacity and skills of local workers and subcontractors.• Increased local business activity and growth.				
Land Use	<ul style="list-style-type: none">• Changes in Land Use and Governance• Impacts to Ecosystem Services				
Community Health & Safety	<ul style="list-style-type: none">• Impacts to Community Health, Safety, and Wellbeing• Impacts to Vulnerable/Indigenous Peoples.				
Social Infrastructure	<ul style="list-style-type: none">• Impacts to transportation networks, including increased congestion, strain on access roads and movement of workers, materials, equipment, and supplies				

Environmental and Social Impact Assessment

Resource / Recipient	Summary of Impacts	Residual Impact			
		Pre-Construction	Construction	Operation	Closure
Tangible and Intangible Cultural Heritage	<ul style="list-style-type: none"> Direct: ground disturbance due to earthworks is the most likely source of direct, physical impacts to known and unknown cultural heritage resources, with the potential to partially or wholly remove these resources. Direct impacts have the potential to be once-off, non-reversible and permanent. Indirect: cultural heritage resources are susceptible to indirect impacts by introducing increased noise, vibration, hydrological and geochemical change, and soil stability to their physical setting. Such indirect effects have no physical impact upon the receptor but impact the value through the way in may be experienced or adversely impacting the conservation environment. Setting can be tangible, such as a defined boundary, or intangible, such as atmosphere or ambience. The main concern for visual effects on a cultural heritage setting is the potential for the Development to fragment the relevant landscape, sever connectivity between sites and impinge upon views to and from sites with important landscape associations. 			N/A	N/A
Unplanned Events					
Tidal flooding and extreme rainfall	<ul style="list-style-type: none"> There are two rainy seasons in the region, with periods of heavy and intense rainfall. Heavy seasonal rain can lead to rapid water runoff and ponding of surface water, resulting in extreme rainfall flooding. During the wet season the Mahdia River to the northeast of the Project site, has the potential to flood if the channel capacity is exceeded. The mine site has many watercourses that can flood, and access roads are liable to impacts from flash floods after heavy rainfall. 				

Environmental and Social Impact Assessment

Resource / Recipient	Summary of Impacts	Residual Impact			
		Pre-Construction	Construction	Operation	Closure
Slope instability and landslides	<ul style="list-style-type: none"> Increased risk of landslide events due to the potential for extreme rainfall flooding, as well as deforestation resulting in slope instability from nearby logging activities in the areas adjacent to the project mine site and ancillary facilities. 				
Earthquakes	<ul style="list-style-type: none"> The Project is located in an area of low seismic activity with eight earthquake events within 300 km of the PLA in recorded history with magnitudes ranging from 4.1 to 5.5. 				
Accidental pollution, spills and leaks	<ul style="list-style-type: none"> There is a potential for an accidental pollution event to occur from the diesel generators used during the pre-production and operational phases of the Project. The release of fuel and other contaminants may negatively impact soil and water quality, the ecological habitats that they support, and the people who rely on these habitats as a source of food and / or income. 				
Traffic accidents	<ul style="list-style-type: none"> Increased traffic from transportation for the Project may lead to increased vehicle collisions in the area. 				
Fire and explosions	<ul style="list-style-type: none"> Fire and explosions from the Project's activities could cause serious or catastrophic accidents. The potential sources of major fire and explosion during construction and operation phases are due to flammable materials, hot works, smoking, and failure in electrical installations, electric shocks, and explosion of transformers. The local community and workers have the potential to be affected, for example, through temporary or permanent physical and economic displacement. Environmental and ecological receptors, such as air, flora and fauna also have the potential to be affected by a fire or explosion. 				

Cumulative Impact Assessment

A cumulative impact assessment (CIA) has been undertaken as part of this EIA, with the overall objective to identify and assess the contribution by the Project to cumulative impacts in the Project’s AoI on identified valued environmental and social components (VECs). The Assessment is based on information presented throughout the impact assessment chapters of this EIA, information provided by Stronghold Guyana as the Project’s sponsor, and information in the public domain.

Region 8 is the small and medium scale gold mining capital centre of Guyana, and there is currently a high level of ASM and medium-scale mining activity in the region and moderately high level within the Social AoI. To the NE corner of the Eagle Mountain Prospecting License (EMPL), is the medium-scale Hopkinson mine, and there are a number of mining licenses in the Region. The closest large-scale commercial project that could be developed at the same time as Stronghold is Omai Gold Mine. However, this is located in Region 10 and is over 50 km from the Project, therefore cumulative impacts are unlikely.

Management of Cumulative Impacts

Cumulative impacts have been managed through project design features and management measures. At the Project level, these measures are considered sufficient to address the contributions of the Project to cumulative impacts. The management of cumulative impacts is the responsibility of government and regional planners. However, it is considered best international practice that private-sector developers make best efforts to engage relevant stakeholders and promote management of cumulative impacts in their project areas (IFC, 2013; Franks et al., 2010). Stronghold will prepare several environmental and social management plans to mitigate the risks of the potential impacts identified through the EIA.

Summary of Cumulative Impact Assessment

Topic	Residual Impact Significance (Construction)	Residual Impact Significance (Operation)
Air Quality	Moderate	Moderate
Noise and Vibration	Negligible	Negligible
Soil and Geology	Minor	Minor
Surface Water Quality	Minor	Minor
Groundwater Quality	Minor	Minor
Biodiversity & Ecosystem Services	Moderate	Moderate
Social	Moderate	Moderate
Cultural Heritage	Minor	N/A
Traffic & Transport	Moderate	Moderate

Environmental and Social Management Plan

For all the impacts identified in the EIA, mitigation, management, and monitoring measures have been proposed and included in the environmental and social management and monitoring plan (ESMMP) framework in the EIA report, including the schedule for monitoring.

The purpose of the ESMMP is to specify the standards and controls required to manage and monitor environmental and social impacts during construction and operational phases. The ESMMP will be part of the future construction and operational phases, and as the future construction and operational plans are prepared, these are expected to confirm how these commitments (i.e., the mitigation and management measures) will be incorporated into the Project's environmental and social management system.

The ESMMP covers built controls and additional mitigation measures to reduce impacts, as well as a list of required management plans. Monitoring will be required for the Project to ensure compliance.

The Project baseline collected shows that the area in which the PL is located has been historically impacted by artisanal mining and logging activities. The natural habitat is not considered to be pristine, and watercourses have been separated by existing artisanal mining ponds in the area.

The Project impacts can be mitigated through application of the mitigation, management, and monitoring measures outlined in Chapter 13 (ESMMP) of the EIA.



Recommendations

Additional Studies Prior to Construction

Recommended studies to improve understanding of groundwater behaviour and to support future predictions include:

- **Refine and extend the groundwater model domain** to ensure pits are positioned far enough from model boundaries, allowing more accurate simulation of groundwater flow, drawdown, and radius of influence.
- **Incorporate pit lake formation into the numerical model** and complete a dedicated pit water balance to improve predictions of post-closure groundwater recovery and pit-lake water levels.
- **Undertake contaminant transport modelling** to evaluate potential pathways, travel times, and risks to downgradient receptors during operations and post-closure.

Management Plans to be Prepared

Construction and Pre-Construction Management Plan covering:

- Air and dust
- Noise
- Hydrology
- Groundwater
- Surface water and sediments
- Soil erosion and control
- Community health and safety
- Occupational health and safety
- Cultural Heritage (including Chance Finds Procedure)

Operational Management Plan covering:

- Air and dust
- Noise
- Hydrology
- Groundwater
- Surface water and sediments
- Soil erosion and control
- Community health and safety
- Occupational health and safety
- Cultural Heritage (including Chance Finds Procedure)

Plans covering all Project Phases:

- Waste Management Plan (including Hazardous Materials Plan)
- Sustainable Water Resources Management Plan
- Cyanide Management Plan
- Emergency Response Plan (including Spill Control Plan)
- Biodiversity Management Plan
- Stakeholder Engagement Plan (including Community Grievance Mechanism)
- Rehabilitation and Closure Plan
- Local Development Plan
- Influx Management Plan

Local Development Plan

The Project has put several plans in place to support employment and communities within the footprint of the Eagle Mountain Project:



Guyanese Labour Resources:

Stronghold Guyana focuses on provision of jobs for citizens and permanent residents of Guyana, provided such persons are available, qualified, and equally suitable for the role.



Training Programme:

A comprehensive training programme will be developed to build Guyanese skills across project phases through courses, on-the-job learning, scholarships and, where required, overseas training.

Training will be coordinated with Government, the Commission, the University of Guyana and the Government Technical Institute to ensure capacity development and return of trainees to Guyana.



Environmental, Community Development and Social Support:

Stronghold Guyana and the Government will support community initiatives, with a focus on benefiting residents of the Potaro Mining District No. 2).

Regular stakeholder meetings will be held in Mahdia with representatives from government, community groups, miners, businesses, and local villages.



Water:

Stronghold Guyana will collaborate with Guyana Water Incorporated (GWI) to identify improvements to the local water supply system and share relevant water data.



Roads:

Stronghold Guyana will work with the Ministry of Public Works to clarify responsibilities for maintenance and upgrades of roads and bridges.



Other Activities:

- **Mahdia office:** A local office will be established to facilitate employment and procurement enquiries.
- **Recruitment outreach:** Outreach across Region 8 communities, potentially including job fairs.
- **Community Relations and Development Officers:** Appointment of CLO and CDO to support community engagement, business development, and stakeholder relations.
- **Media communication:** Project updates may be shared through social media, with dedicated WhatsApp and email channels for community enquiries.
- **Community visits:** Regular visits to Mahdia and Campbelltown to engage directly with stakeholders.



