Reunion Gold Oko West Project—Development Phase

Project Summary

5 September 2023

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Acronyms and Abbreviations

Acronym	Name
CIL	carbon-in-leach
cm	centimeters
DDH	diamond drill hole
EBS	environmental baseline study
ERM	Environmental Resource Management
g/t	grams per tonne
HDPE	High-Density Polyethylene
HFO	heavy fuel oil
IFC	International Finance Corporation
kV	kilovolt
m^3	cubic meters
Mm^3	million cubic meters
MRE	Mineral Resource Estimate
MWe	megawatt electric
Mt	million tonnes
PL	Prospect License
PMF	probable maximum flood
RC	reverse circulation (drilling)
STP	sewage treatment plant
TSF	tailings storage facility
TSS	total suspended solids
TWSR	treated water storage reservoir
UV	ultraviolet
WSF	waste rock storage facility
WTP	water treatment plant

1. PROJECT SUMMARY

This Project Summary describes the development, operations, and closure stages of the Oko West Gold Project, an early-stage mining exploration property planned to be developed in Region 7 of Guyana ("the Project").

1.1 Project Background and Overview

Reunion Gold Inc., a Guyanese subsidiary of Reunion Gold Corporation (the "Company" or "Reunion"), currently holds a 100 percent interest in the Prospect License (PL) issued for the Project. The PL covers approximately 4,400 hectares of mineral rights. The PL was issued on 23 September 2022, by the Guyana Geology and Mines Commission, following the relinquishment of eleven medium-scale mining permits held by two Guyanese entrepreneurs with whom Reunion had signed agreements. These entrepreneurs had acquired some of these permits from other local parties and registered them to their names. The previous permit holders had artisanally produced an unknown quantity of gold, primarily by alluvial mining.

Reunion is a gold exploration and development company focusing on mineral projects in the Guiana Shield of South America. The Project is Reunion's principal asset. The Project is currently considered an "early-stage exploration project." Its maiden mineral resource estimation is 2.475 million ounces of gold in indicated resources contained within 41.789 million tonnes (grading 1.84 grams per tonne [g/t]), and 1.762 million ounces of gold in inferred resources contained within 27.129 million tonnes (grading 2.02 g/t). A Preliminary Economic Assessment is underway, and this will be followed by further studies.

1.2 Project Location

The Project straddles the Cuyuni-Mazaruni Mining Districts (Guyana administrative Region 7) in north-central Guyana, South America. The Project is located approximately 100 kilometers southwest of Georgetown, the capital city of Guyana, and approximately 60 kilometers from Bartica, the capital city of Region 7. The PL area is shown on ***Figure 1-1***. Bartica is accessible by a 20-minute direct flight from Ogle airport in Georgetown or by road to Parika and then by boat from Parika to Bartica or Itabali on the Essequibo River. There are regular boat services between Parika and Bartica.

The Project area is accessible by the Puruni and Aremu laterite roads from the town of Itabali at the confluence of the Cuyuni and Mazaruni rivers and then along any of several trails that connect the Project area to these two roads. The Project area is also accessible by helicopter; the helicopter pad at the Project campsite is at the coordinates 6°20'54.6" N and 59°03'13.3" W. The Project area is situated at elevations ranging from between approximately 60 and 400 meters above sea level.

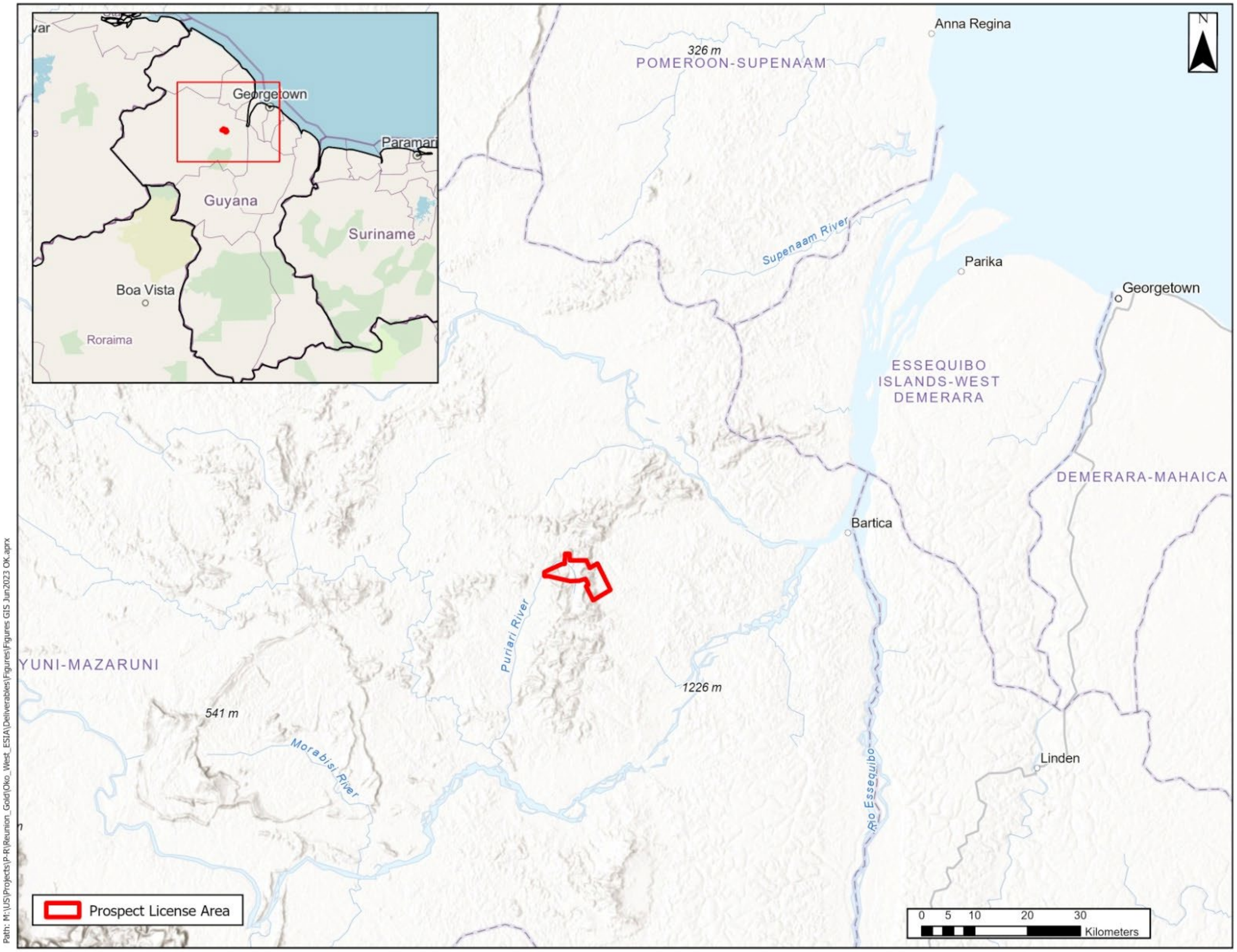
1.3 Resource Information

The Project gold mineralization can be classified as shear-hosted, orogenic gold mineralization related to two tectono-metamorphic deformation events (between 2.1 and 2.0 Ga[1]). Recent data from the Karouni orogenic gold deposit in Guyana support this timing, as gold mineralization was dated to 2.084 Ga ± 14 Ma[2]. The quartz vein's stockwork-related mineralization occurs along shear zones straddling the contact of a volcano-sedimentary sequence and granitoid intrusions.

[1] Ga is the notation for giga annum from the present or billions of years from the present.

[2] Ma is the notation for mega annum from the present or millions of years from the present.

Figure 1-1 Prospect License Area Location



1.4 Project Activities Conducted to Date

1.4.1 *Exploration*

The modern exploration phase of the Project has comprised geophysics, reconnaissance stream-sediment geochemistry, soil geochemistry, trenching, and drilling. Reunion has conducted all modern exploration of the Project.

Gold mineralization at the Project was first identified to the northeast of the current Project area. A soil geochemical survey was completed over the eastern portion of the Project area and defined a gold anomaly straddling the contact between the Oko pluton to the east and a volcano-sedimentary sequence to the west, with a strike length of approximately 6 kilometers. Mechanized trenching over the anomaly successfully intersected near-surface, *in situ* gold mineralization (e.g., 5.98 g/t gold over 69.0 meters in trench 44).

1.4.2 *Drilling*

Drilling methods at the Project have comprised diamond drill hole (DDH) and reverse circulation (RC) drilling. DDH drilling commenced for the Project in December 2020, with five reconnaissance holes targeting primary mineralization beneath the locations previously identified from trenching. Drilling since 2021 has been mainly focused on delineating gold mineralization and satisfying the drill spacing required to calculate a maiden mineral resource estimation. As of the writing of this document, approximately 115,000 meters of drilling and trenching has been conducted for the Project, including approximately 80,000 meters by DDH drilling, approximately 27,000 meters by RC drilling, and approximately 8,000 meters by trenching.

Drill core recovery to date is considered excellent, averaging 97 percent in fresh rock. The lateritic profile is drilled with HQ[3]-diameter drill rods, and NQ[4]-diameter drill rods are used once hard ground conditions are encountered.

RC drilling is used for reconnaissance scout drilling to test regional soil anomalies and to test for strike extensions of known mineralization. RC drill samples are sourced from an onboard splitting system on the drill rig to ensure sample quality and representativity. RC drillholes are typically terminated when water is encountered in three consecutive meters.

1.4.3 *Environmental Studies*

In 2022, Reunion engaged the international consultancy Environmental Resource Management (ERM) - which has a registered Guyana entity - to conduct an initial environmental baseline study (EBS) of the Project area. ERM's team included several subject matter experts from the University of Guyana's Centre for Study of Biological Diversity and professionals from other Guyanese environmental consultancies. Reunion also hired the firm Sustainability Frameworks, LLP of Washington, DC to act as a peer reviewer of the work completed by ERM and to provide advisory services to Reunion.

The EBS completed in 2022 (referred to herein as the 2022 EBS) included a wet-season and dry-season survey event and focused on the Project area's physio-chemical and biological baseline characteristics. To complement the conventional biological baseline survey components, ERM collected ten water samples and submitted them to the international firm Nature Metrics, who performed environmental DNA analysis on the samples.

[3] HQ is a letter name specifying the dimensions of bits, core barrels, and drill rods in the H-size and Q-group wireline diamond drilling system having a core diameter of 63.5 millimeters and a hole diameter of 96 millimeters.

[4] NQ is a letter name specifying the dimensions of bits, core barrels, and drill rods in the N-size and Q-group wireline diamond drilling system having a core diameter of 47.6 millimeters and a hole diameter of 75.7 millimeters.

In 2023, Reunion plans to conduct a second EBS, covering a wet-season and dry-season, and including physio-chemical, biological, socioeconomic, community health, and cultural heritage components—all over a larger geographic area than what was surveyed in the 2022 EBS. Additionally, Reunion has initiated a metallurgical characterization program to study the potential for acid rock drainage from the Project activities.

1.5 Surrounding Properties / Data

According to the Guyana Geology and Mines Commission, the PL is surrounded by thirteen medium-scale mining and prospecting permits held by various Guyanese title holders and one group of medium-scale mining and prospecting permits controlled by G2 Goldfields.

The Project area has not been identified as a priority area of conservation interest by the Government of Guyana, nor does it fall in or near a Guyana Protected Area, a World Heritage Site, an International Union for Conservation of Nature Key Biodiversity Area, or an Alliance for Zero Extinction site.

The Government of Guyana has not designated the area covered by the PL or any adjacent areas as part of an indigenous territory.

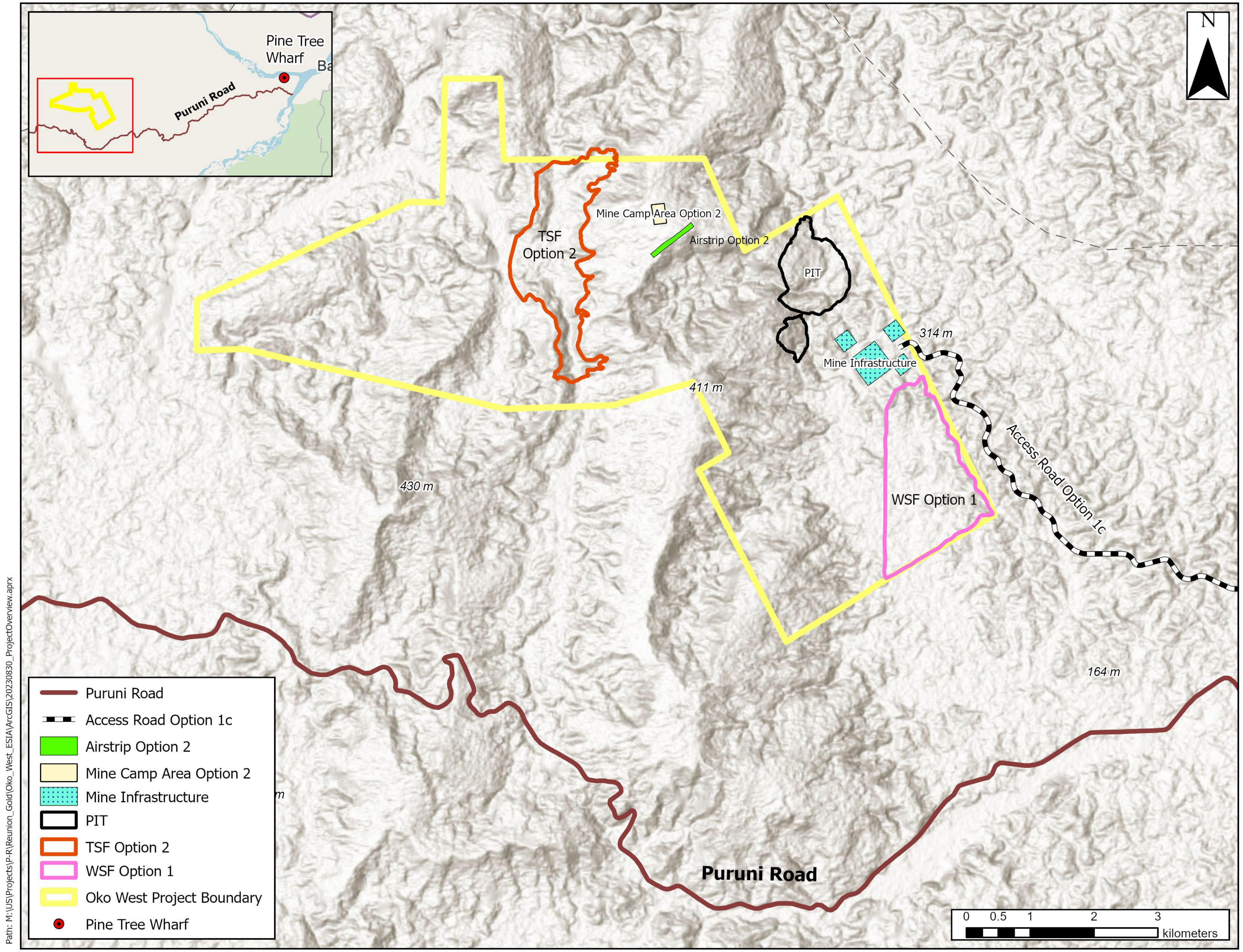
1.6 Preliminary Project Description Details

The Project consists of the development of an open pit and underground gold mine with planned production of approximately five million ounces of gold over 14 to 16 years from the processing of an estimated 65 to 70 million tonnes of ore, creating 280 to 350 million tonnes of waste rock and 65 to 70 million tonnes of tailings. Mining will take place over 12 to 14 years, and processing over 14 to 16 years. Exploration of the Project area will continue during operations. There is potential that additional deposits may be identified throughout the mine life, although the current study addresses only the currently known resource.

The construction and operation of the Project requires the development of supporting infrastructure. In addition to the open pit and underground mines, Project facilities will include a processing plant, power plant, fuel storage, tailings storage facility (TSF), waste rock storage facility (WSF), water source, process water holding ponds, diversion channels, shop facility, administration building, camp, airstrip, haulage roads, and access roads to the Project area.

Various alternatives for some of the Project facilities are still under consideration, but the currently proposed layout is shown on ***Figure 1-2***. More information on the alternatives is provided in Section 1.7.

Figure 1-2 Proposed Layout of Project Facilities



The Project mine site will include the following:

- An open pit mine;
- An underground mine;
- A WSF;
- A run-of-mine storage area ahead of a crushing plant;
- A processing plant, including a counter-current decantation circuit and cyanide destruction;
- A backup diesel-fired generating station;
- A TSF;
- Process water holding ponds;
- An effluent water treatment plant (WTP) to treat TSF supernatant, and an associated treated water storage reservoir (TWSR);
- Borrow areas for laterite and sand;
- An airstrip;
- An accommodations camp;
- Maintenance shops;
- Fuel and chemical storage;
- A potable WTP;
- A domestic sewage treatment plant (STP);
- Haul roads and other access roads;
- A landfill and other waste management facilities; and
- Other miscellaneous on-site infrastructure.

Proposed off-site infrastructure supporting the Project will include the following:

- A heavy fuel oil- (HFO) fired power plant (50 megawatt electric [MWe] maximum installed capacity and 40 MWe maximum running capacity) at Pine Tree Wharf;
- Electricity transmission line from Pine Tree Wharf to the Project mine site;
- Hydrokinetic river power installation on the Cuyuni River (to be constructed by Instream Energy Systems, and not part of the Project for which this Application for Environmental Authorisation is being submitted);
- Electricity transmission line from the hydrokinetic river power installation to the electricity transmission line from Pine Tree Wharf to the Project mine site;
- Loadout infrastructure at Pine Tree Wharf;
- Barge loading infrastructure at Pine Tree Wharf; and
- Port of Entry wharf and staging area along the Essequibo River, north of Pine Tree Wharf.

The transportation routes supporting the Project (collectively referred to herein as the Transportation Corridor) include the following:

- Use of barges from Georgetown or other international destinations along the Essequibo River to the wharves at Itabali or Pine Tree;
- Use of the existing public roads and ferries from Linden to Bartica/Itabali;

- Use of the existing Puruni Road from Itabali;
- Construction of a new link from the Puruni Road to the Project Area in the vicinity of the Duck Pond Trail; and
- Transport of the final product (gold doré) from the Project airstrip via airplane to Cheddi Jagan International Airport for export to an accredited gold refinery.

1.6.1 Project Phases

The Project includes three phases: pre-production (which includes construction, commissioning, and start-up), operations, and closure. The pre-production phase includes all activities required to build the mine and bring the processing plant into commercial operation (60 percent of nameplate capacity). Operations is the phase during which the mine and processing plant is producing gold (at over 60 percent of nameplate capacity). Closure describes the phase after production, during which Reunion will stabilize the site so that it can be left in a sustainable state long-term; the closure phase ends when the Project moves into post-closure, when Reunion no longer has the responsibility of maintaining or managing the site.

The key activities for the pre-production through closure phases are summarized in the generalized Project schedule presented in ***Table 1.1***.

Table 1.1 Generalized Project Schedule

Phase and Planned Timing	Activities
Pre-production (Construction, Commissioning and Start-Up): September 2025 – December 2026	■ Development of Pine Tree Wharf and laydown area ■ Development of port of entry wharf and laydown area along Essequibo River ■ Construction of an electricity transmission line from Pine Tree Wharf to Project mine site ■ Construction of power plant at Pine Tree Wharf ■ Completion of new pre-production phase camp ■ Construction of airstrip ■ Creation of laterite borrow pit ■ Construction of non-hazardous landfill(s) ■ Site preparation at the processing plant, including clearing and leveling ■ Construction of sediment dams and site drainage features (ditches, ponds, site diversion channels, regrading) ■ Construction of the main haul road between the Oko West pit and the processing plant area ■ Construction of the haul road from the Oko West pit to the WSF ■ Construction of an access road from the processing plant to the TSF, road upgrades, and construction or upgrading of other minor access roads ■ Construction of the Phase 1 TSF starter dams ■ Preparation of the Phase 1 TSF, including felling of remaining trees in the TSF impoundment and stockpiling of soil ■ Stripping of Oko West pit area, excavation and stockpiling of saprolitic ore and soil ■ Construction of the operations phase camp ■ Construction of the processing plant, water treatment facilities, and supporting infrastructure ■ Procurement of sand from the existing Sand Hill borrow pit for concrete production ■ Production of aggregates from pit for concrete production ■ Commissioning and start-up of processing plant ■ Construction of the WSF

Phase and Planned Timing	Activities
	■ Construction of operational landfill ■ Construction of the explosives storage facilities ■ Construction of seedlings facility for revegetation ■ Development of the access declines to the underground ■ Development of an exploration drill drive underground
Operations: 2027 to 2039/2041	■ Mining at Oko West pit ■ Development and mining at Oko West underground ■ Operation of WSF and TSF
Closure (after Operations are complete)	■ Capping of WSF with saprolite ■ Regrading of benches on WSF, if necessary ■ Revegetation of WSF and other disturbed areas ■ Establishment of long-term water management at TSF ■ Capping of decline and ventilation openings to surface ■ Decommissioning of processing plant and other aboveground facilities

Additional details regarding the Project phases are provided below. It should be noted that the following details are based on a preliminary conceptual design, and the design elements will be subject to further optimization. Moreover, details on the design of mine infrastructure, specifications on equipment and machinery, and logistical plans for the Project are being studied and finalized.

1.6.1.1 Pre-Production

The pre-production phase includes activities required to build the mine infrastructure and start-up the processing plant until it reaches at least 60 percent of its nameplate capacity, including:

- Recruitment and training;
- Opening of the borrow pits for construction materials;
- Construction of sediment control structures;
- Clearing of the TSF and clearing and grubbing at the Oko West pit site;
- Stockpiling of soil;
- Construction of the main TSF starter dams;
- Construction of the earthworks for the airstrip construction;
- Construction of roads, stockpiles, run-of-mine pads, etc.
- Preparation of the fuel tank storage facilities;
- Earthworks and surface preparation of the WSF;
- Construction of the main camp, including offices and worker accommodations;
- Construction of the processing plant, main power plant and electricity transmission lines;
- Import of major pieces of equipment such as mills, excavators, mine trucks, batch plants/crushers/grinders;
- Commissioning and start-up of the processing plant; and

- Installation and operation of an interim power plant comprising three to four high-speed diesel-fired generators. These generators will be used for emergency and backup power once the main HFO-fired power plant begins operation.

Pre-production activities will be conducted primarily with Reunion equipment, but will also utilize contractor equipment when required. As such, the Project will focus on recruiting and training supervisors, operators, and maintenance personnel to commence activities in the field as rapidly as possible. It is currently assumed that 12 to 24 months will be required to recruit and train the initial employees to operate and maintain the Reunion equipment under the supervision of expatriates.

Access road upgrades and bush clearing will start as soon as contractors can be mobilized to site, which will take approximately 4 to 6 weeks. Once construction earthwork activities commence, the priority will be to complete the access road to allow transportation of equipment to the site.

Simultaneously with upgrading of the access road, the campsite will be cleared of vegetation, soil will be stockpiled, and access from the construction camp to the operations camp will be established.

Simultaneously with upgrading of the access road, the Pine Tree Wharf and port of entry wharf and staging area will be developed. For each wharf, the dock area will be built to receive barges, fuel storage tanks installed, power plant built, and laydown area cleared and fenced to receive equipment and supplies.

All major earthworks will be conducted with Reunion’s main mining fleet. The smaller fleet will be used for the construction of the temporary sediment ponds downstream of the initially disturbed areas. Part of the smaller fleet will also be working at the camp and mill site pads assisting the construction team with miscellaneous small jobs. The contractors will mainly focus on the access roads working from a self-sustained camp, and clearing and grubbing working from the construction camp.

After the sediment ponds and main pads have been constructed, the focus will shift to establishing roads to the pit, where most of the waste will be mined to construct haul roads to the TSF. Once the haul roads to the TSF have been completed, waste saprolite can be mined to start constructing the main dams.

The main exploration decline will be started when the appropriate accesses and infrastructure are in place to support the work.

An electricity transmission line will be installed from Pine Tree Wharf to the Project mine site to transmit power generated by the HFO-powered generators at Pine Tree Wharf. Additionally, a hydrokinetic power supply will be installed by others in the Cuyuni River (see below for further discussion) and an electricity transmission line will be installed to connect the hydrokinetic power supply to the electricity transmission line coming from Pine Tree Wharf to the Project mine site.

The estimated construction timeline to reach commercial production, excluding the completion of the crusher and the STP, is 20 months, consisting of two months of initial mobilization of key personnel and equipment and 18 months of on-site construction activities. The completion and commissioning of the crusher and STP will continue for an additional 4 months post-commercial production, for a total construction duration of 24 months. Pre-stripping activities are expected to start in 2026, but commercial mine production is not scheduled to start until the second quarter of 2027.

1.6.1.2 Operations

Operations are considered to begin when the processing plant is operating at 60 percent of the nameplate capacity. Operations phase activities will include:

- Open-pit mining;
- Underground mining;
- Tailings management;
- Waste rock management;

- Ore processing;
- Operation of accommodations, including sourcing, treatment, and delivery of potable water; sewage treatment; and domestic waste management;
- Transport of supplies into the facility and gold out of the facility;
- Transport of mine employees between the Project site and Georgetown or other nearby towns;
- Solid waste management; and
- Power generation.

1.6.1.3 Closure

Closure is considered to begin once the processing plant is no longer operating. Closure activities will include those required to return the site to current conditions to the extent practicable, as well as improvements to areas historically impacted by artisanal mining. Activities will also be required to ensure public safety related to the post-operations TSF and pit areas. Closure activities will include:

- Progressive regrading of the WSF as it depletes and revegetation using a seedlings facility to be developed in the mine site area;
- Pit lake management, if necessary;
- Any required site grading to ensure appropriate long-term site drainage;
- Stabilization of slopes through regrading and revegetation;
- Capping of any openings to the underground mine;
- Establishment of a long-term water management system at the TSF, if necessary; and
- Environmental monitoring.

The closure phase ends after all closure works are completed in accordance with closure performance specifications (to be established in a closure plan), at which point the Project will move into post-closure, during which the site can be left in an unmaintained state.

1.6.2 Early Works

To support Reunion's ongoing exploration work, a temporary camp was established in 2020 at the northeastern boundary of the PL. ***Figure 1-3*** and ***Figure 1-4*** show the camp facilities as of May 2023. At this camp, all exploration phase workers and any site visitors are housed, equipment is maintained, and the Project team performs exploration work-related activities such as drill core logging, sampling, etc. The temporary camp comprises the following units:

- Electric generator facility
- Satellite communications
- Fuel bay facility
- Kitchen and canteen
- Stores facility
- Dormitories for staff and contractors
- Shower and laundry facilities
- First aid medical clinic
- Sheds for geological work
- Sheds for equipment maintenance

Figure 1-3 Current Camp Facilities

1	Camp Gate and Check Point hut	13	Ablution and laundry area II	23	Fuel drum storage
2	Camp security barracks	14	Old kitchen and canteen - Future training and recr. area	24	ATV Garage
3	Drilling contractors' area	15-a	Staff and visitors' housing	25	New generator station - April
4	Water well	15-b	Staff and visitors' housing – planned for April	26	Workshop
5	Water storage and treatment	16	New Kitchen and Canteen	27	New core storage shed
6	Diesel farm	17	Sample storage sheds	28	Ablution and laundry I
7	Reunion workshop	18-a	Core storage shed I	29	Latrines - Dry
8	Helipad	18-b	Core storage shed II – planned for April	30	Current water hole
9	Dormitories C1–C5, B1–B6, A1, A2	19	Core logging and storage shed	31	Current core cutting shed
10	Medical / first aid center	20	New core cutting facility	32	Current Generator shed
11	Core viewing shed	21	Warehouse / camp stores	33	Driver's shelter
12	Geo/admin office with IT/Satcom, Geo dorms	22	New Camp admin office	34	Bentonite storage

Figure 1-4 Photo of Current Camp Facilities

The temporary camp sources water from a nearby pond; the water is pumped into tanks and disinfected using chlorine tablet addition. This water supply is used for bathing, laundry, and kitchen cleaning, generating a small quantity of grey water. The water consumption for the current temporary camp operation is estimated at about 100 liters per day per person for bathing and laundry. Based on 100 occupants, total water consumption is of the order of 10 cubic meters (m^3) per day.

A rainwater harvesting program is currently under study. Additionally, a groundwater well has been drilled and equipped with a submersible pump, and water from this well will be treated with chlorination and filtering before distribution to the camp facilities.

1.6.3 Mine Site

The proposed mine site will comprise an open mine pit, underground ramp portal, ventilation raise openings, process water holding ponds, processing plant, WSF, TSF, fuel tank farm, explosives storage facilities, power generation plant, water treatment facilities, maintenance facilities, offices, and worker accommodations.

1.6.3.1 Mine Pits

Over the life of the Project, the mine pit will produce approximately 65 to 70 million tonnes of ore, 280 to 350 million tonnes of waste rock, and 65 to 70 million tonnes of tailings. The pit is expected to extend approximately 550 meters below ground surface, covering a surface area of approximately 100 hectares.

Blasting will be carried out using a blend consisting of 50 to 70 percent emulsion and 30 to 50 percent ammonium nitrate / fuel oil to accommodate the moisture present in the holes and to ensure sufficient shock energy for fragmentation in relatively low bench heights. Blasting will begin near the end of Year 1 of mining and will be required on average six times weekly or approximately 312 times per year, with a drill pattern of about 315 holes per hectare in the hard rock.

1.6.3.2 Underground Mine

Sublevel open stoping, a large-scale open stoping mining method, or one of its many variations will be used to exploit the underground deposit. The ore body will be divided into a series of primary and secondary stopes. The primary stopes will be mined first, with the unblasted mineralized material between the primaries being left as a temporary pillar to support the hanging wall. These temporary pillars will be recovered at a later time as secondary stopes. Horizontal sections of ore may also be left as crown pillars or sill pillars. Mining activities such as drilling and blasting will be conducted in the sublevels with the mineralized material being collected through drawpoints on these levels.

Sublevel drifts will be strategically located within the orebody between main levels. These drifts will be driven to allow longhole rigs to drill blast patterns. Production blasting will generally be carried out in a single lift and will be commonly initiated around a slot raise located on the end of the stope. The slot raise initially may serve as a fill raise for the stope below, then as a slot for blasting. The frequency of blasting will depend on the stope size and production requirements.

Mucking will be carried out at stope drawpoints on the level at the base of the stope. To ensure the safety of the workers, the longhole drills will be operated by remote control in the stope once the brow of the drawpoint has been exposed. The mucked material may be dumped into an adjacent orepass, or into trucks if the distance to the orepass is excessive.

To minimize ore loss, consolidated backfill techniques will be used to fill the open stopes. The mined-out stope will be backfilled with cemented paste fill and/or cemented rock fill. Cemented paste fill is a high-density mixture of de-slimed tailings mixed with cement. The mixture will be prepared on the surface and pumped underground via a network of drill holes and pipes. Cemented rock fill is a mixture of cement slurry and crushed rock or underground development waste. This mixture will be prepared underground and dumped into the stopes via fill raises. The primary stopes will be mined first, then backfilled so that the secondary stopes can be safely extracted. The secondary stopes, in turn, will be backfilled with a lower ratio of cement content for paste fill or non-cemented waste rock, as the backfill does not require the same strength as in the primary stopes. Backfilling stopes will allow for close to a 100 percent recovery rate of the ore.

1.6.3.3 Waste Rock Storage Facilities

Two alternative WSF locations were under consideration, with the final WSF location selected to minimize truck travel distances from pits to the WSF, balance other environmental and socioeconomic factors, and remain within the PL. The WSF height will be restricted to not exceed the height of the surrounding regional topography and to be geotechnically stable. Waste material will be deposited in the WSF in 10- to 20-meter benches. The benches may vary in height to facilitate drainage toward the working crest while avoiding ponding water on top of the WSF. Depending on operational requirements, the WSF may be operated on several benches at different elevations.

1.6.3.4 Mining Equipment

Table 1.2 provides a summary of an indicative mining equipment fleet. The manufacturer designations are shown for descriptive purposes only. Equipment from other manufacturers could be used in the actual operation. All vehicles will be diesel-powered.

Table 1.2 Summary of Indicative Mining Equipment Fleet

Description	No. of Units
Hydraulic Excavator (Hitachi EX3600 Backhoe Configuration)	2
Hydraulic Excavator (Hitachi EX3600 Face Shovel Configuration)	4
Caterpillar 785 D haul trucks (140 t wet payload)	35–40
Blast Hole Drill (Atlas Copco DML rotary drills)	6
Motor Grader (CAT 16H)	6
Large Track Dozer (CAT D10T)	6–8
Excavators (CAT 349 D(45 t))	6

Description	No. of Units
Water Trucks (CAT 785 D or smaller)	2–4
Fuel and Lube Trucks (CAT 740B)	2–4
D-6 Wide Pad Utility Dozers	1–2

1.6.3.5 Processing Plant

The processing of the ore will begin with crushing in the case of fresh rock and simple screening in the case of saprolitic ore. The processing plant will be designed with the flexibility to run a throughput ranging from 5 to 8 million tonnes per annum. The ore will be conveyed to a grinding circuit comprised of a semi-autogenous grinding mill, a pebble-crusher, and a ball mill. Some coarse gold will be recovered from this grinding circuit through a gravity concentrator and sent directly to the refinery.

In the grinding circuit, water is added to the ore stream and the stream is pulverized by grinding balls into pieces small enough to release most of the contained gold. Coarse and fine ore particles are separated in cyclones, where the fines travel with the overflow through a trash screen and are thickened before the leaching circuit, while the coarser material is captured in the underflow, re-circulated through the grinding circuit and further pulverized until it is small enough to leave the circuit in the cyclone overflow. Cyanide and lime may be added to the ore in the grinding circuit, to initiate the leaching of gold as soon as possible in the process.

The leaching circuit comprises several large leach tanks where additional cyanide and lime are mixed into the ore slurry as required, and the gold is dissolved into a solution. From the leaching circuit, the slurry proceeds to the carbon-in-leach (CIL) circuit, where a series of pump cell tanks mix the slurry with activated carbon, and the gold moves out of the solution and adsorbs onto the carbon. The slurry then goes to tailings processing—where a process (e.g., addition of cyanide destruction reagents) is employed to reduce cyanide levels in the tailings prior to their routing to the TSF. The carbon goes to the elution circuit, where the gold is recovered.

In the elution circuit, the carbon is first acid-washed to remove the lime scale, and then the gold is removed from the carbon in an elution vessel using a hot cyanide / caustic solution (eluate) at elevated pressures. The barren carbon is then transferred to a kiln, where it is reactivated prior to returning to the CIL circuit. The eluate, which is loaded with gold, is run through an electrowinning circuit, where the gold is plated out of the solution onto steel wool cathodes in the form of a gold-laden sludge. The sludge is dried, combined with fluxes, and smelted in a refining furnace to produce gold doré bars.

1.6.3.6 Tailings Storage Facility

The TSF will be designed so that if seepage from the TSF is considered to have the potential to degrade underlying groundwater (studies are underway to characterize expected seepage characteristics), mitigation measures will be established to prevent seepage from reaching the receiving environment. Mitigation measures under consideration include collection and treatment of the tailings effluent to reduce concentrations of constituents of concern, enhancement of natural degradation of cyanide in the tailings pond, surface treatment within the TSF to reduce seepage to the surrounding environment, cut-off walls within or adjacent to the containment dams and dikes, sand drains for the interception and collection of seepage should it occur, and pumping wells for the return of seepage that is collected. The effectiveness of these mitigation measures will be tracked by monitoring wells located downstream of the TSF.

Internal drainage of the dams to control the phreatic surface and enhance the stability of the downstream face will be provided by constructing a toe drain. To enable collection and analysis of any discharge water, the toe drain will be equipped with a rock protection blanket and provided with outlets to a sump that is not connected to the surface water drainage systems. In the event that a crack propagates through the dam, the geotextile beneath the rock protection blanket and around the toe drain would reduce the loss of soil from the dispersive saprolite, should water flow through the crack.

The toe drain and rock protection blanket are critical items for the long-term performance of the dams and will be inspected during construction to verify that these features are protected from potential soil clogging during construction. The internal drainage systems for the large dams will also facilitate tailings consolidation, which will reduce the dams' phreatic surfaces.

1.6.4 Mine Supporting Infrastructure

1.6.4.1 Power Plant

Power Supply

The Project will include a dedicated HFO-fired power plant. It is anticipated that the power plant will initially comprise five HFO-fired 10 MWe generators, totaling 50 MWe installed capacity and 40 MWe running capacity (assuming one of the generators would be on standby). Power consumption requirements for the Project has been estimated as follows:

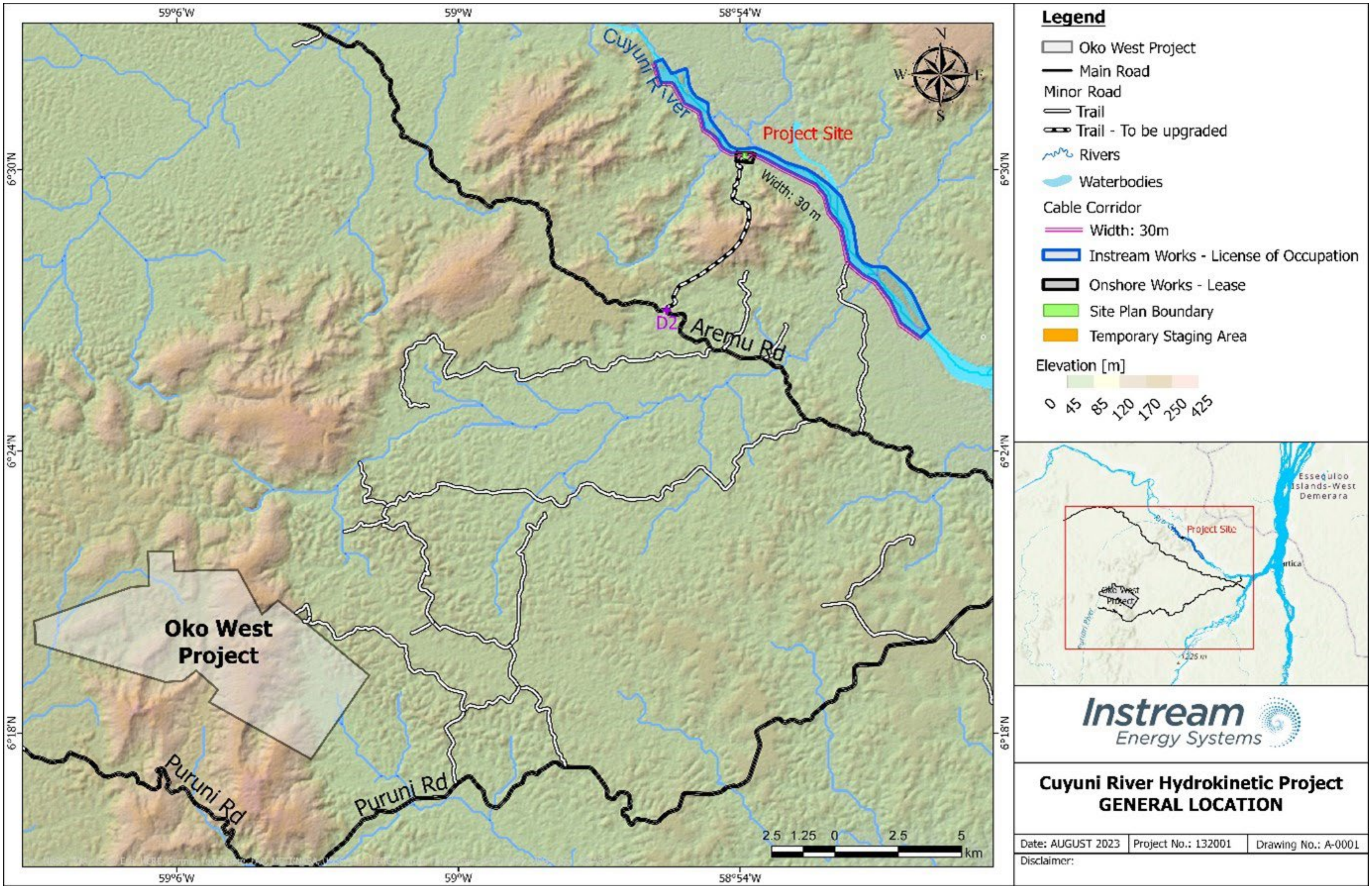
- Crushing and Grinding: Crushing and grinding energy requirements were determined using the ore types' specific energy indexes;
- Fixed Load (Mill): The energy consumption of the processing plant fixed loads was benchmarked against that of similar projects;
- Fixed Load (Other): The energy consumption of the fixed loads outside the processing plant was benchmarked against that of similar projects;
- Variable Loads: Variable loads are functions of the processing plant throughput. These were estimated using the Project's preliminary mechanical list; and
- Power Plant: The power plant's internal energy consumption was benchmarked against that of similar projects.

The power plant will be designed to meet emissions recommended in the International Finance Corporation's (IFC) *Environmental, Health, and Safety Guidelines for Thermal Power Plants* (2008). Sulfur dioxide emissions will be controlled through the use of low-sulfur fuel (<1.5 percent). Nitrogen oxide emissions will be controlled through the tuning of the engines' fuel-air mix during start-up. Particulate matter controls are currently being designed based on the laboratory analysis of the fuel that will be supplied to the Project.

During operations, indicative monitoring of sulfur dioxide and continuous monitoring of nitrogen oxide and particulate matter will be conducted to monitor stack emissions. Additional control technologies will be employed as needed to achieve IFC guidelines for thermal power plant emissions.

In order to reduce emissions associated with power generation, Reunion has established an agreement with Instream Energy Systems—provided currently ongoing feasibility studies confirm project viability—to concurrently install a hydrokinetic power system in the Cuyuni River to provide the baseload power to the Project mine site. Peak loads will still be accommodated using the HFO-powered generators; however, the baseload power will be provided by the hydrokinetic turbines. ***Figure 1-5*** shows the area within and along the Cuyuni River for which Instream Energy Systems will secure a license of occupation to install and operate the hydrokinetic power system. The proposed in-water power generation infrastructure, the land-based cable corridor along the license-of-occupation area, and the land-based power gathering facility where power off-take will occur from the Instream Energy Systems operation are not part of the Project for which this Application for Environmental Authorisation is being submitted.

Figure 1-5 Location of Proposed Instream Energy Systems Hydrokinetic Power System Infrastructure



Power Distribution

A primary electricity transmission line of 69 kilovolts (kV) will be installed from the HFO-fired power plant at Pine Tree Wharf to the Project mine site. An electricity transmission line will be installed from the land-based power gathering facility of the hydrokinetic power supply system to a point near Aremu Road where it will connect to the electricity transmission line running from Pine Tree Wharf to the Project mine site. An on-site transformer will step down the power to 13.8 kV for distribution on site.

Power distribution for the Project will be configured at 13.8 kV, 60 Hertz (Hz) and will consist of substations and powerlines. The processing plant will have various satellite electrical rooms. These electrical rooms will serve the following areas:

- Grinding / gravity / gold room
- Crushing area
- Cyanide detoxification / plant services
- Pre-leach / leach / CIP / acid wash / elution / carbon regeneration
- Ore handling

Power lines will be used to distribute power to other infrastructure, such as:

- Exploration Camp
- Operations Camp / Communication
- Administration Building / Assay Lab / Gate House
- Mine Maintenance Shop / Warehouse / Diesel Fuel Storage / Explosives Storage Facility
- Various Water Management / Treatment Ponds
- TSF Reclaim Water / Seepage Control
- WTP
- STP

1.6.4.2 Airstrip

An airstrip will be constructed in the Project area. A number of alternative locations are currently being considered. The airstrip will be designed to accommodate airplanes up to the size of a Twin-Otter or Caravan and will be approximately 1,000 meters long. The airstrip will be used for the export of gold, personnel transport, and health and safety emergencies during all phases of the Project. An average of three or four flights per week is anticipated; these will occur during daylight hours, as the airstrip will not be lit. The airstrip will be unpaved and constructed from laterite. The airstrip will be oriented northeast-southwest, as required by prevailing winds.

1.6.4.3 Borrow Sites

It is anticipated that the borrow material required for the Project can be obtained from the nearby areas around the Project. Sand will be procured from the Sand Hill area to the north of the PL, and laterite will be procured from the ridge west of the Project mine pit area.

In addition to the borrow sites described above, other construction materials required during the pre-production phase are summarized in ***Table 1.3***. During the operations phase, the Project will be self-sufficient for backfill, aggregate, and rip-rap.

Table 1.3 Construction Material Required during Pre-production Phase

Type	Gradation (millimeters)	Estimated Volume Required (m^3)
Rip-rap - Plating + Sediment Ponds	-	200,000
Engineering Backfill – Dams + Sedimentation Ponds	0 to 50	1,852,168
Sand – Sedimentation Ponds	75 x 10^{-6} to 5	200,000
Bedding	0 to 25	2,000
Aggregate	5 to 25	43,905
Laterite (roads)	To be determined	To be determined

1.6.4.4 Fuel and Chemical Storage

There will be two fuel storage locations during operations. One site will be dedicated to HFO, with two 2,000 m^3 storage tanks at Pine Tree Wharf. The HFO will be sourced from Georgetown or Parika or imported from other suppliers and delivered to the site by barge. It is estimated that the daily consumption of HFO at the power plant will be approximately 120 m^3. The loading/unloading station of the power plant will be equipped with pumps to handle the following:

- Delivery of HFO
- Delivery of fresh lube oil
- Loading of waste lube oil
- Loading of sludge

There will be dedicated fuel storage on the mine site for diesel fuel for mining equipment, vehicles, and diesel generators.

The fuel storage at the mine site will be replenished daily from a storage facility at Pine Tree Wharf and will be designed to meet Reunion's standards for hydrocarbon management, including the following:

- Hydrocarbon storage tanks will be designed and constructed above ground (i.e., not buried).
- Hydrocarbon storage facilities (tanks and piping) will have a system to detect leaks and recover products (e.g., visual inspections, active leak detection system, and annual integrity testing).
- Bulk hydrocarbon storage and transfer systems, including temporary systems, will have secondary containment. Where distribution piping is above ground and visible for inspection, secondary containment is not required; however, the distribution piping will be inspected and documented routinely to verify its integrity.
- The secondary containment structures will be capable of containing a minimum of 110 percent of the volume of the largest tank in the containment area.
- Secondary containment will have a typical water permeability equivalent to untreated concrete.
- Bulk tanks will be equipped with engineered overfill/overpressure protection devices.
- Hydrocarbon use, transfer, distribution, and storage facilities will be designed to control meteoric water, including drainage within and around containment areas.
- The areas around fuel delivery pumps and vehicle refueling points will be protected against spills and releases using containment and collection systems.

During the pre-production phase, fuel with be stored in smaller double-hulled tanks on paved areas designed with secondary containment.

Chemical reagents that could be used on-site and transported daily from Georgetown or a dock in the Itabali area include the following:

- Cyanide
- Lime
- Flocculent
- Caustic
- Nitric Acid
- Carbon
- Anti-scale agents
- Sulfuric Acid
- Peroxide
- Silica
- Borax
- Sodium Nitrate
- Soda Ash
- Copper Sulfate
- Sodium Metabisulfite
- Sodium Hypochlorite
- Iron

As the process engineering is still under optimization, certain reagent requirements could change from the list presented above.

1.6.4.5 Explosives Storage

Explosives storage facilities will be located in a safe, as-of-yet undetermined, location. The area will be secured with fencing and electronic security, and access will be controlled. The facilities will be comprised of two separate locations each containing two to three 40-tonne skid-mounted emulsion tanks for a total capacity of 160 tonnes of emulsion, one location for an explosives magazine with a capacity of 18 tonnes, and one location with an accessory magazine. The four locations will be separated by distance and berms in accordance with explosives storage local regulations and industry best practices. The design storage capacity is sufficient for approximately 15 to 20 days of emulsion and 30 days of accessories. Periodical deliveries will be organized based on operational requirements.

1.6.4.6 Operations Camp

The mine site operations camp will include worker accommodations with a capacity of up to 800 people. The camp will also include ancillary facilities such as a kitchen and dining hall, medical facility, laundry, showers, and recreation or general use areas. The design of the accommodations will meet or exceed international standards.

1.6.4.7 Waste Management

The mine operations are expected to generate the following waste streams during construction:

- Construction waste:
  - Pallets and other wood packaging materials
  - Shipping packaging
  - Discarded dry, non-hazardous materials
  - Scrap metal
  - Scrap lumber

- Discarded office supplies
- Discarded food containers
- Putrescible food waste
- Other “household” waste
- Out-of-service vehicles
- Medical waste
- Solid waste: domestic solid waste or similar industrial waste (non-hazardous and hazardous), including tires, broken and used parts, unused raw concrete, reagent bags, scrap steel
- Liquid waste: unused chemicals, used solvents, used oil, sewage sludge and supernatant water, and wastewater from maintenance shops (non-hazardous and hazardous)

Waste management will follow a hierarchy with the emphasis placed on reuse and recycling. A Waste Management Plan will be prepared to identify what material can be reused and recycled. Currently, materials identified for reuse include tires (recapping), steel, and wood - if useful to local communities. Materials currently identified for recycling include waste lubricants and filters, broken parts, used air filters etc., out-of-service vehicles, typical household recyclables, batteries, and scrap metals.

Non-Hazardous Waste

Non-hazardous waste generated by the Project during construction is anticipated to be primarily associated with packing and surplus construction materials. The primary material types expected are wood (pallets), scrap steel, and cardboard. Smaller volumes of other non-hazardous waste, such as paper and organic food waste, will also be generated. As much as possible, waste will be segregated to facilitate recycling. A reputable, licensed contractor will be hired to handle the final disposal of recyclable and saleable waste. A non-hazardous waste storage area will be constructed from low-permeability materials. Waste processing and storage areas will be constructed with curbs to prevent run-off to permeable areas. Run-off and leachate will be collected and treated as needed prior to discharge to the environment. Materials that are currently being recycled at the Project as part of exploration include scrap steel and other metals (aluminum, copper), plastic bottles, and specific shipping containers that can be returned to the respective suppliers. These practices will continue into the pre-production and operations phases to minimize the volume of non-hazardous wastes that need to be managed.

For non-hazardous materials that cannot be recycled or returned to the suppliers, one or more non-hazardous landfills will be developed within the Project area to manage the waste. The landfill(s) will be created within the WSF areas and will be constructed and operated to be consistent with best practices. This includes consideration of aspects such as landfill siting, engineering to minimize infiltration and facilitate leachate collection if needed, tracking of waste streams, and monitoring of run-off and leachate generation.

Hazardous Waste

Hazardous waste will not be disposed in the on-site landfill(s). Hazardous waste generated by the Project will be temporarily stored on site pending off-site shipment for treatment and/or disposal at an approved facility by a licensed contractor.

Designated facilities used for the collection and temporary on-site storage of hazardous waste will include fencing, signage, roofing, lighting, and secondary containment.

Existing management protocols will be maintained for hazardous wastes, including:

- Medical waste
- Used batteries
- Used or residual oil
- Used oil filters
- Hydrocarbon-impregnated materials
- Light bulbs, fluorescent tubes, and vehicle light lamps
- Printer cartridges

1.6.4.8 Fresh Water Supply

For the mill start-up, the initial TSF dams will be constructed early enough that sufficient water storage is achieved to meet mill start-up needs. Other water required, including for the camp, will be met mainly by the collection of rainwater. As needed, supplemental water will be supplied by a groundwater well field. The estimated freshwater demand during operation is approximately 50 to 70 m^3 per day. During the pre-production phase, estimated freshwater demand is expected to be approximately twice that required for the operations phase. Water will be supplied from a combination of rainwater and groundwater wells. An optional additional source, if needed, is surface water bodies. For collected rainwater, the stored water will be treated with an ultraviolet (UV) system prior to delivery to the camp. The water from surface water bodies will be impounded and treated with aluminum sulfate and chlorine. After settling, the water will be treated with the UV system. The water treatment will include removing iron and manganese, filtration for solids, anion exchange for organic matter, carbon treatment for taste and color, and microbial treatment (UV and sodium hypochlorite).

1.6.5 Mine-Site Water Management

The Project will incorporate numerous structural and operational environmental controls designed to manage water from the Project and minimize potential impacts on water resources, including:

- Installation and active management of sediment ponds downstream of all major disturbance areas, including construction areas, borrow areas, WSF, and pit disturbance areas. Sediment ponds will provide retention time to facilitate (with the addition of flocculants, as necessary) the settling of suspended solids before discharge into the environment. Sediment ponds will be equipped with multi-level discharge outlets to manage discharge rates and attenuate peak flows.

- Incorporation of engineering controls in the processing plant design, including a single-stage counter-current decantation circuit to recycle cyanide into the process, a cyanide destruction circuit before discharge of tailings into the TSF, keyed dam design to minimize seepage through the surficial alluvial soil unit, and seepage collection and recovery systems as described below.

- Installation of a drainage system upstream of the main TSF dams to reduce piezometric groundwater heads, which in turn will reduce the flow of TSF-impacted seepage through the underlying quartz vein system and saprolite. The internal drainage systems will include pumps to facilitate tailings consolidation, further limiting seepage.

- Installation of a seepage collection and recovery system along the downgradient perimeter of the TSF to capture a portion of seepage from through and under TSF dams and allow for its return to the TSF supernatant pool. The seepage collection system will include shallow seepage collection drains to capture seepage through the shallower parts of the quartz vein systems and seepage collection wells to capture seepage through the deeper parts of the quartz vein systems and the fractured saprock and fractured bedrock layers. The specifications for this element will be refined during detailed design to maximize collection efficiency.

- Installation and operation of an effluent WTP to treat excess water from the TSF prior to discharge to a constructed TWSR and then to the environment.

Further details are provided below regarding water management for the following aspects of the Project:

- Site drainage and sediment run-off during construction and operations
- Pit and underground dewatering water
- WSF area run-off and seepage
- TSF seepage and effluent
- Domestic wastewater

1.6.5.1 Site Drainage and Sediment Control

Sediment management relies on (1) run-off controls, (2) source controls near the disturbance, (3) intermediate controls, and 4) perimeter controls. Releases from the perimeter controls must meet effluent limits and achieve ambient criteria at downstream compliance points.

Conditions on site have been disturbed due to small-scale legacy mining such that sediment loads in the surface water bodies on the mine site have increased dramatically from early 2000s conditions. The Project will apply sediment control measures before discharging to the receiving environment to reduce sediment loads discharging to surface water bodies from Project activities. This includes the development of sediment control structures/dams (sediment ponds) downstream of Project-impacted areas before the start of major earthworks. The sediment control structures will be integrated into a surface water management plan that minimizes run-on flows from undisturbed areas. The discharges from the sediment control structures will not undergo formal treatment, although flocculants may be added to help precipitate fine clays and reduce the retention time needed for total suspended solids (TSS) settling before discharge. The design discharge criteria for TSS will be based on the relevant standards and monitoring of physical conditions in receiving water bodies.

The Kairuni Creek will need to be diverted around the open pit. The current concept is the building of a diversion channel on elevation of one of the open pit benches to then be diverted toward the south.

1.6.5.2 Pit and Underground Dewatering

Geochemistry completed to date indicates that pit-dewatering and underground dewatering water will only require TSS treatment before discharge to the environment. This water stream will be routed through sediment ponds to facilitate solids settling before discharging to the environment. Blasting will be controlled to minimize residual nitrogen in the waste rock. It is assumed that controls can be used to limit wastage to 1 percent or less. This level of wastage would be expected to result in acceptable nitrogen levels in waste rock run-off or seepage. Contingency plans for managing nitrogen in run-off or seepage will be developed in the eventuality that wastage is higher than projected.

Similarly, contingency plans for pumping water from sedimentation ponds to the TSF to allow water treatment will be developed. Water released from the sediment control ponds will meet effluent limits at the point of discharge and ambient water quality criteria for the protection of human health and the environment at a downgradient compliance point. Run-off during wet periods is anticipated to meet discharge criteria without treatment. Water quality analysis of pit and underground water will occur during operations to confirm water quality before discharge to the environment.

Contingency measures for water treatment will be implemented if needed to meet water quality criteria for the discharges. Areas adjacent to pits and underground portals will be filled and graded as needed to drain away from the pits/portals.

1.6.5.3 Waste Rock Storage Facility Area Run-off and Seepage

Similar to the pit and underground water, the geochemistry completed to date indicates that waste rock disposal area run-off and seepage will require treatment for only TSS prior to discharge to the environment. As per the pit and underground water, during operations, water quality analysis of the WSF area run-off will be conducted prior to discharge, and contingency measures will be implemented if monitoring shows that discharge criteria are not met, and additional treatment is required.

1.6.5.4 TSF Seepage and Effluent

The preliminary conceptual TSF design criteria include the following:

- The facility should be fully located within a single watershed.
- The facility should be fully within the boundaries of the property limits.
- The design is based on ore reserves of up to 75 million tonnes.
- Storage of accumulated water for a dry period of 2 months is required.
- Tailings will be deposited / spigotted off of all dams.
- The maximum basin crest elevation will not exceed an elevation of 182 meters above sea level.
- 45 percent solids is targeted for slurry discharge.
- The milling rate ranges from 5 to 8 million tonnes per annum.
- The life of mine is about 14 to 16 years.
- During operation, the TSF should have a minimum pond volume on the order of 2 million cubic meters (Mm^3) and a maximum of 3 Mm^3 (preliminary estimate, subject to change during further design stages).
- The facility is to be capable of containing the three-day probable maximum flood (PMF) event, along with a 1.0-meter freeboard.
- Over-topping of the facility during operations and meteorological events is not permitted.
- Access roads will be required around the full perimeter of the facility.
- A permanent spillway will be constructed at closure.

The design for the TSF will provide sufficient storage for 65 to 70 million tonnes of tailings. The development of the TSF requires the construction of a series of dams. The major and saddle dams will include internal drainage with a toe drain, a rock protection layer with a geotextile filter on the downstream face, and a key at the base of the dam. The TSF also includes internal drainage systems upgradient of the major dams to minimize head and seepage and facilitate consolidation of the tailings. Additionally, a series of seepage collection drains and wells to capture groundwater flow from the TSF will be installed downgradient of the TSF.

Tailings Disposal Method

Tailings will be placed to support the development of dry tailings beaches in front of all of the dams (major and saddle), and to keep the reclaim pond away from the dam faces. The tailings' surface slopes are expected to be relatively flat: approximately 0.3 percent for the dry slope and 1.3 percent for the wet slope.

The initial tailings deposition will be from the main dam west of the TSF. As the Project progresses, the deposition will continue along the remainder of the TSF perimeter, forcing the open water pond toward the reclaim location. Water reclaim will be accomplished using barge pumps.

The TSF will be capable of containing the three-day PMF event, estimated to be approximately 1,300 millimeters of rainfall, along with 1.0 meter of freeboard. During the development of the TSF, sediment ponds will be expanded to allow storage of the PMF precipitation event. At closure, the pond size will be reduced by placing a spillway to allow the passive flow of run-on water to the receiving drainage once the water quality has reached acceptable quality.

Tailings Seepage and Control

While there is a significant occurrence of saprolite in the basin in which the TSF will be constructed, which serves as a barrier to seepage from the TSF, some seepage is expected to occur both through the saprolite as well as in isolated quartz vein structures within the saprolite. To effectively manage seepage, the TSF design includes internal drainage and collection systems and external toe drains and collection wells. These systems will be used to collect seepage so that it can be returned to the TSF and used for process make-up water or treated by the WTP before discharge to the TWSR and then to the environment. The discharged water will meet Project and IFC discharge criteria. The internal drainage system will be constructed upstream of the main dam, as the characterization and modeling work completed as part of the design process indicates that this area accounts for a significant proportion of the potential seepage.

In general, the designed seepage collection system consists of a simple, multi-staged system that can be readily modified, through adaptive management, based on the operational monitoring program results.

The downstream seepage collection system includes:

- Seepage collection drains
- Seepage collection wells
- Surface seep control drains

Excess water from the TSF will be treated as required by pumping to the WTP, and then discharging to the TWSR. Excess water from the TWSR will be discharged to the nearby surface water bodies.

Water quality in the TSF pond will be a function of the TSF slurry and the natural degradation of cyanide. Cyanide destruction will be implemented at the processing plant before the discharge of the tailings slurry so that the cyanide concentration in the water discharged to the TSF pond meets International Cyanide Management Code criteria. Cyanide concentrations in the pond will further degrade due to natural reactions.

Effluent Water Treatment Plant

The WTP, designed to manage excess water from the TSF, is the largest treatment plant for mine site discharges. The WTP is designed to treat divalent metals, including copper and ammonia. The discharges from the WTP will flow to the TWSR. Water released from the TWSR will meet the Project's effluent discharge criteria and support compliance with the Project ambient water criteria for the protection of human health and the environment at the defined compliance points.

Sewage Treatment Plant

During operations, a bio-disc reactor will provide domestic sewage treatment, and the sludge and effluent will be discharged to the TSF. The bio-disc reactor will be the same technology used during the pre-production phase. Two permanent or semi-permanent sewage systems are being considered for use during operations: a mine camp STP (mine site) and a processing plant STP (plant site). The mine camp STP will replace the temporary construction camp STP used during the pre-production phase.

The estimated required capacity for the mine / construction camp STP will be approximately 300 m^3 of sewage / grey water daily at maximum occupancy (200 liters per day per person), reducing to 160 m^3 of sewage/ grey water daily for the operations phase. The processing plant STP will supersede the temporary individual portable toilets and multiple mobile toilet trailers with holding tanks used during the pre-production phase. The estimated required capacity for the processing plant STP will be approximately 60 m^3 of sewage/grey water daily at maximum occupancy (50 liters per day per person), reducing to 25 m^3 of sewage/grey water daily for the operations phase.

1.6.6 Transportation Corridor

The Project area is currently accessible from the Itabali jetty area via the Puruni or Aremu laterite roads, both requiring four-wheel drive vehicles. The access road connections to these routes are still being assessed. Most of the Project’s supplies will be imported to Georgetown or to the proposed port of entry wharf along the Essequibo River, or sourced from suppliers in Guyana/Bartica. Imported supplies will be barged from Georgetown or the proposed port of entry wharf to Pine Tree Wharf or Itabali and trucked from a dock in the Itabali area to the Project area. It is estimated that 15 to 20 trucks/day will be required to keep the mine supplied with fuel, reagents, perishables, and other supplies.

During construction, truck traffic is expected to reach approximately 30 trucks/day. The fuel trucking will be conducted in caravans, while the other supplies will not be organized as they will come from a variety of suppliers. Generally, supplies will leave the dock in the Pine Tree area in the morning and make the return trip in the afternoon to maximize travel during daylight hours. A one-way trip between the dock in the Pine Tree area and the Project area is estimated to be 3 hours.

The primary access road will be approximately 25 meters wide. Six options are being considered, as shown in ***Figure 1-6***. The road will be constructed by clearing the vegetation on the alignment and then surfacing the road using lateritic material from a laterite quarry in the Project area. Horizontal and vertical alignment of the access road will conform to Guyana Forestry Commission guidelines. The access road will be drained by excavating several pits adjacent to the roadway at discrete intervals on the alignment. Run-off from the roadway will be channeled to these pits.

When the roadway crosses streams/creeks, timber bridges will be constructed where spans are over 3 meters. When the spans are less than 3 meters, the stream crossing will be made using high-density polyethylene culverts.

The Project will generate ground traffic primarily from tanker trucks hauling fuel to the mine site, trucks hauling chemical reagents for the beneficiation process, water tankers servicing the roadway, and vehicles transporting Project workers and contractors. Traffic will be generated by the following vehicles:

- Four fuel tankers
- Two motor graders
- Two water tankers
- Four x 48-seat passenger buses
- Two x 15-seat minivans

1.6.7 Workforce

The Project currently employs 255 people to support exploration. Additional workers will be required during the development phases of the Project. It is estimated that at peak for the pre-production phase, a total of 1,800 workers will be required. In the operations phase, medium- and long-term employment is foreseen to be provided to more than 800 workers (at peak) directly employed by the Project. In addition, indirect employment will be generated, notably by subcontractors dedicated to the Project's activities.

1.7 Project Alternatives

This section reviews the factors leading to the decisions regarding the selection of the primary alternatives for the development of Project mining operations, including the "No Project" alternative.

1.7.1 No Project Alternative

The "No Project" alternative would result in the foregoing of economic benefits to Guyana derived from the revenues of the gold production and the creation of direct and indirect employment by the Project. This alternative would also lead to the necessity of further exploration in other concessions and would not leverage the findings of the exploration and prospecting carried out in the Oko West Property to date, therefore resulting in greater environmental impacts in areas presently not subject to such activities.

1.7.2 Mine and Infrastructure Location

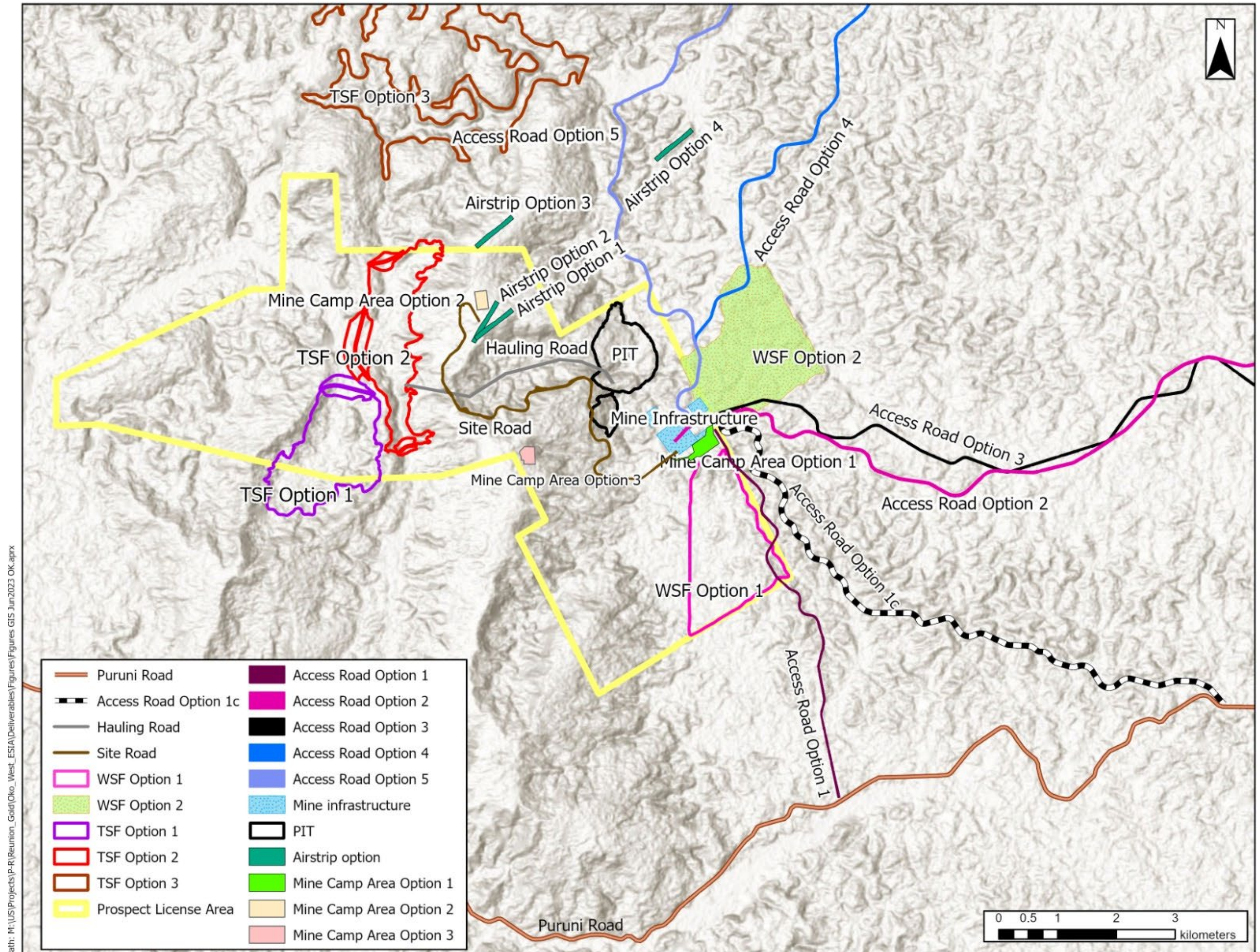
There is no alternative location for the mining activities due to the absence of other significant findings within the Oko West Property. The siting of the tailings dam, the water management area, the mine waste disposal area, and other facilities have been guided by topography and the principles of minimizing the affected area and concentrating the impacts to a single zone within the concession, as well as the IFC *Environment, Health, and Safety Guidelines for Mining* (2007).

Different locations are currently being considered for the following Project facilities:

- Six options for access roads
- Four options for the airstrip
- Two options for the WSF
- Three options for the TSF
- Three options for the operations phase camp

These are shown on ***Figure 1-6***.

Figure 1-6 Alternatives for Mine Facilities



The preferred options for the Project are summarized in ***Table 1.4***.

Table 1.4 Selected Project Alternatives

Facility	Preferred Option	Rationale
Access Road	Option 1c—Puruni to new construction near Duck Pond Trail	This is the shortest route and has the fewest river / stream crossings and less construction required.
Mine Camp	Option 2	The alternative option is near the plant site and is elevated to capture the breeze for air cooling.
Airstrip	Option 2	Located in the predominant wind direction.
TSF	Option 2	Located predominantly within PL.
Waste Rock Storage Facility	Option 1	Similar locations near the plant site. Relatively similar conditions.

1.7.3 Mining and Beneficiation Processes

The resources to be mined consist of both weathered rock (saprolite) and unweathered rock. The unweathered or hard rock portion of the deposit can be recovered solely by drilling and blasting. The saprolite will be removed by excavation without blasting.

The Project will utilize international best practices for all mining and beneficiation processes. It will incorporate the IFC *Environment, Health, and Safety Guidelines for Mining* in the final design of all facilities and processes. The *International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold* (the Cyanide Code) will be applied to cyanide management and destruction processes. The cyanidation alternative adopted for the Project will result in almost 100 percent gold recovery.

1.7.4 Access/Transport Mode

Access to the Project area and transportation of materials and products is possible by three primary modes: overland, river, or air. Air transport could be the primary transportation mode for personnel to and from the mine, which would minimize the number of persons and vehicles/vessels traveling along the access road or on the river.

During construction and mine operations, equipment, materials, and supplies will be transported by barge and truck from Georgetown (or a designated port of entry) to a newly constructed port at Pine Tree and thence overland to the Project area.

1.7.5 Energy Supply

There is no available grid electrical power in the region. The regional power system in the area currently runs on heavy diesel-fired thermal plants installed along the coast and at Linden and Bartica. There are also no power lines or substations in the Project vicinity.

The nearest power-generating project being considered is Amaila Falls on the Kuribrong River in central Guyana. This hydropower project envisages generating 165 megawatts and sending the electricity via a new power line to Linden, where it would be distributed. The Guyana Government has been seeking the engagement of a foreign company on the project's "build-own-operate-transfer" contract. If this hydropower plant goes ahead, the Project could procure power at Linden and build a power line to the mine site (about 135 kilometers along existing roads).

Given the uncertainty for the Amaila Falls project timeline, Reunion contracted Instream Energy Systems to conduct a prefeasibility/feasibility study on the use of their hydrokinetic power generation system on the Cuyuni and/or Mazaruni rivers. This technology could potentially generate the Project's electrical power needs with predictable and clean energy and is included in this Project Summary as the proposed primary source of baseload power; however, to limit the risk of implementing this technology, an HFO-fired power plant will be installed at Pine Tree Wharf. The installation at Pine Tree Wharf minimizes the truck traffic on the Puruni Road and provides a reliable base power load close to Itabali.

1.7.6 Importation Strategy

The Project has considered two alternatives for importation of materials and equipment into Guyana from foreign ports: use of the existing port of entry in Georgetown, and development of a new port of entry outside of Georgetown. The preferred alternative is the development of a new port of entry outside of Georgetown. The proposed port of entry wharf and staging area will be developed on the Essequibo River. Reunion will develop the wharf and staging area facility and the Government of Guyana will establish port authority operations at the facility to facilitation importation approvals. Four preliminary candidate sites have been identified for the port of entry wharf and staging area, as shown on ***Figure 1-7***.

Figure 1-7 Preliminary Candidate Sites for Proposed Port of Entry Wharf and Staging Area

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