Annexure 2 for Section A

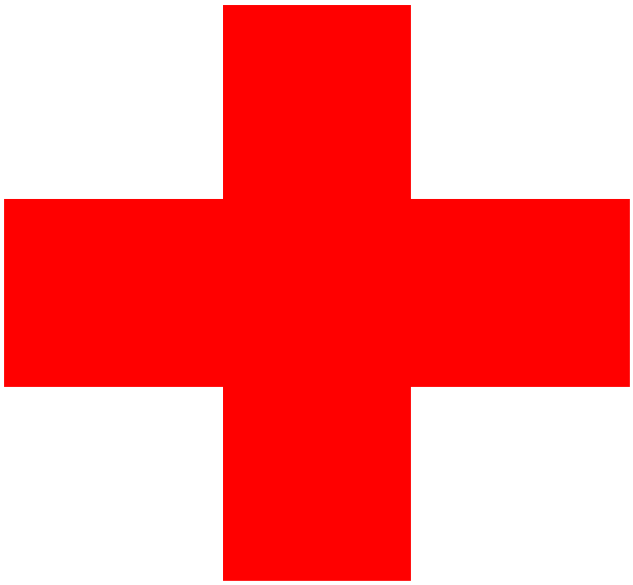
Nalunaq Project

Safety Management Plan

Mineral Exploitation Licence:

2003/05

2018 Field Season



Contents

1 INTRODUCTION

The aim of this Project Management Plan is to:

- Clearly and succinctly communicate how significant risks will be managed;
- Provide direction to Health, Safety, Environment and Community (HSEC) procedures and guidelines for general HSEC management; and
- Outline how the implementation of the plan will be evaluated.

A copy of this plan will be made available to employees and contractors on site and a review of this management plan will be included in the site induction process. Employees and contractors are required to comply with the stated control measures applicable to their work activities.

This HSEC Management Plan is to be considered live and dynamic during the project. Project risks and how they are managed can change and control measures improved.

Defining "Project"

The Nalunaq Project (henceforward "Project") is here defined as all activities within the 2003/05 exploitation licence area. The licence is located in South Greenland and has an area of 22 km².

2 Project Description

2.1 Project Scope and Details

Field activities in the form of:

-
- surface diamond drilling (planned 4000m to 7000m)

Additional activties that will take place in the licence in 2018 are likely to include the following:

Infrastructure

- The access road from the camp to the mine will be reconditioned and maintained and a temporary bridge will be installed across the main river.

- Enlarge the camp by adding up to 15x 20 foot foldable containers to accommodate around 20 people on site at Nalunaq

Underground

Only a number of inspection visits to the underground excavations are planned this year. These will involve only mapping and some simple sampling. This will not involve intrusive works or the operation of machinery on a regular basis. It is envisaged that the minimum number of visitors would be 2 for safety reasons. Personnel with underground experience will be used. PPE, proper lamps and a gas detector will be used at all times. A check in and check out system and a rescue plan are detailed below.

Surface

- Collection of a small number, less than 100, surface channel check samples from various points on the Main Vein outcrop around Nalunaq mine. There will also be a small amount of surface geological mapping.
- Drilling of 4,000-7,000 m of diamond drill core around the South Block area of Nalunaq mine. This will be done by drilling additional holes around some of the historic boreholes down dip and along strike of South Block
- The logging and processing of the resultant core together with its splitting, sampling and storage.

Technical Studies

- Once works for 2018 have been completed the results will be combined with those from 2017 and will be used compile and updated NI 43-101 independent technical report.

2.2 Location and Topography

The centre of the exploitation licence is approximately 33 km to the northeast of Nanortalik. In the licence area the elevation varies from about 200 m to 1,300 m above sea level. A deep northeast-trending valley cuts through the licence area with steep alpine mountains on either side, including the Nalunaq Mountain that hosts the gold mine. Boats can be used to access the head of the fjord closest to the licence area. From there, there is a 10 km road that leads to the mine site. Subject to permission, vehicles can be used to access the mine.

2.3 Environmental Setting

The climate in the region under investigation is a maritime-influenced sub-Arctic climate with cold, snowy winters and cool summers. Average temperatures for the time of year in question are approximately 6 ˚C. Weather conditions are generally fairly stable and dry during summer months. Mosquitoes can be plentiful during the summer months such that they can be a nuisance, but they are not a health risk. They do not carry any transmittable diseases.

2.4 Community Setting

There are no permanent settlements within the licence area. The closest permanent settlement is the small town of Nanortalik, about 33 km from the mine site. The international airport at Narsarsuaq is some 92 km in a straight line to the north-northwest. Boats can be chartered from Nanortalik for transport to the head of the fjord closest to the licence area, and it is also possible to charter helicopters if required.

3 General Project Risks Table

An initial risk assessment for the project was undertaken in June 2016. The following table presents the significant risks identified during the assessment. Refer to Appendix A for detailed risk assessment for underground work.

Exploration or Project Activity	HSEC Issue / Hazard	Impact Briefly describe the outcome of the hazard	Inherent Risk			Existing Controls (For projects, list both existing and "planned" controls)	Residual Risk		
			Probability / Health Exposure	Result / Health Effect	Risk Rating (High & Critical risks are shaded red)		Probability / Health Exposure	Result / Health Effect	Risk Rating (High & Critical risks are shaded red)
ANY ACTIVITY DEEMED TO BE OF SIGNIFICANT RISK IS TO BE APPROVED BY THE PROJECT LEADER IN ADVANCE									
All types of activities	Community Outrage	Accidents involving death/injury of people or protected fauna.	**Unlikely**	**Medium**	**Low**	**Physical:** Trenches and pits rehabilitated as soon as practical. **Procedural:** Adherence to procedures should ensure that people and fauna have minimal contact with risk areas. **Behavioural:** Inductions, HSEC interactions.	**Rare**	**Major**	**LOW**

Field Operations, Hydrocarbon and hazardous substance transport handling and storage	Hazardous Materials & Contamination	Contamination of soil and/or water from inappropriate storage and disposal of hydrocarbons and spills.	**Possible**	**Serious**	**HIGH**	**Physical:** Designated disposal for waste. Empty drums to be removed from site. Bunds, spill kits **Procedural:** Hydrocarbons and Hazardous Substances and Camp Management training. **Behavioural:** Induction, Spills training.	**Rare**	**Medium**	**LOW**
Field Operations, Hydrocarbon and hazardous substance transport handling and storage	Hazardous Substances	Risk of eye injuries or skin damage due to contact with hazardous substances during handling.	**Possible**	**Major**	**CRITICAL**	**Physical:** Use appropriate PPE - Gloves and goggles. **Procedural:** Follow manual handling procedures. **Behavioural:** Inductions, awareness of hazards.	**Unlikely**	**Serious**	**MODERATE**
Field Operations. All types of activities.	Legal Compliance	Non-compliance with local legislation and permit conditions.	**Possible**	**Major**	**CRITICAL**	**Physical:** Obligations register, compliance audits and map of tenement area. **Procedural:** Legal Obligation Register requirements to be addressed in PMP and implemented. No operations on environmentally restricted areas. **Behavioural:** Inductions. No earthworks to occur without the approval of project geologist.	**Unlikely**	**Major**	**MODERATE**
Field Operations. All types of activities.	Other	Fire or explosion caused by flammable substances coming in contact with ignition sources.	**Possible**	**Catastrophic**	**CRITICAL**	**Physical:** Appropriate hazard warning signs erected where necessary. No smoking near flammable substances. **Procedural:** Store materials well away from ignition sources. Procedure: Hazardous Substances. **Behavioural:** Inductions. Awareness of hazards and Take 5s.	**Unlikely**	**Major**	**HIGH**
Field Operations. All types of activities.	Other	Fatality or multiple trauma injuries resulting from field teams being caught in rain/snow/blizzard/wind storms.	**Possible**	**Serious**	**HIGH**	**Physical:** Suitable shelters provided, e.g. tents **Procedural:** Field activities suspended during adverse weather conditions. **Behavioural:** Employee awareness to potential dangers. Stay in shelter.	**Unlikely**	**Medium**	**LOW**

Field Operations. All types of activities.	Thermal Stress	Effects of heat stress	**Possible**	**Major**	**MODERATE**	**Physical:** PPE appropriate clothing (long sleeved shirts, trousers, wide brimmed hats), shelter. Provision of water. Shade Sunscreen. Emergency bags to be equipped with clothing, food, water sufficient for 2 days. Sat phone & GPS **Procedural:** Operating in Extreme Climates and Altitude Manual. **Behavioural:** Work pace, minimise exposure, Regular intake of water. Symptoms and treatment of heat stress to be covered in induction.	**Unlikely**	**Major**	**MODERATE**
Field Operations. All types of activities.	Thermal Stress	Effects of cold stress	**Likely**	**Major**	**CRITICAL**	**Physical:** PPE and warm clothing, shelter, Provision of warm drinks. Emergency bags to be equipped with clothing, food and heating equipment. Satphone & GPS. Good quality sleeping bags for each occupant to be carried. **Procedural:** No field work during extreme weather conditions; Symptoms and treatment of cold stress to be covered in induction. **Behavioural:** Work pace, minimise exposure, HSEC Interactions.	**Unlikely**	**Major**	**HIGH**
Field Operations. All types of activities.	Other	Remote working on single vehicle recon trips resulting in extended periods for rescue response which may lead to fatality.	**Unlikely**	**Major**	**CRITICAL**	**Physical:** Vehicles to be equipped with spare parts, clothing, food, water sufficient for 2 days. Sat phone & GPS. **Procedural:** Single vehicle recon trips as authorised by Project Leader. Regular call-in procedure to logistics officer. Perform daily vehicle checks. **Behavioural:** Remote Working training, Country Briefing	**Unlikely**	**Major**	**HIGH**
General Travel Risk	Travel & Remote Site Work	Diseases as a result of coming in contact with contaminated blood & bodily fluids (Hepatitis, AIDS etc)	**Unlikely**	**Major**	**HIGH**	**Physical:** Gloves, face masks in first aid kits. **Procedural:** Inoculations as advised by country travel advice. **Behavioural:** Employee awareness, first aid training.	**Rare**	**Medium**	**MODERATE**

General Travel Risk	Travel & Remote Site Work	Contraction of disease - food/water borne disease, localised disease, insect (incl. Hepatitis A/B, SARS, bird flu etc)	**Unlikely**	**Major**	**MODERATE**	**Physical:** Containers, clean water, cooking, immunisations, clothing and repellent. Four weeks prior entering Greenland all visitors are to visit travel doctor and receive recommended vaccinations. First aid kits to be carried at all times. **Procedural:** If serious outbreak of deadly disease, cancel fieldwork until considered safe by local medical and state authorities. **Behavioural:** Stay away from animals. Food hygiene, personal hygiene. prevention of insect bites. Boil or sterilise local water before consuming.	**Rare**	**Medium**	**MODERATE**
General Travel Risk	Aviation	Risk of aircraft crash.	**Unlikely**	**Catastrophic**	**CRITICAL**	**Physical:** Read emergency response plans for aircraft. **Procedural:** Use only EU approved airlines. **Behavioural:** Follow instructions of airline staff in an emergency,	**Unlikely**	**Major**	**MODERATE**
Field Operations. All types of activities.	Travel & Remote Site Work	Fatalities, multiple trauma injuries, injuries due to falls in remote areas due to uneven/steep ground.	**Possible**	**Major**	**CRITICAL**	**Physical:** Do not work in areas that are excessively steep without rope support. Maintain fitness for work standards. **Procedural:** Work on or near steep or unstable ground is prohibited without the support of qualified mountain guides. **Behavioural:** Maintain awareness of surroundings at all times. Use helicopter support to cross steep terrain	**Unlikely**	**Major**	**HIGH**
Field Operations. All types of activities.	Travel & Remote Site Work	Fatalities, multiple trauma injuries, injuries due to working on/crossing glaciers.	**Possible**	**Major**	**CRITICAL**	**Physical:** Do not attempt to work on glaciers. **Procedural:** Working on glaciers is prohibited. **Behavioural:** Maintain awareness of surroundings at all times. Use helicopter support to cross glaciers.	**Rare**	**Minor**	**LOW**
Field Operations. All types of activities.	Travel & Remote Site Work	Fatalities, multiple trauma injuries, injuries due to crossing rivers/streams in remote areas.	**Possible**	**Major**	**CRITICAL**	**Physical:** Maintain fitness for work standards. Carry rope if river crossings are anticipated. **Procedural:** Prior to commencing fieldwork river crossing induction to be completed. **Behavioural:** Do not cross alone, maintain awareness of surroundings at all times. Be vigilant.	**Unlikely**	**Major**	**MODERATE**

Field Operations. All types of activities.	Transport, Vehicles & Driving	Fatalities, multiple trauma injuries, injuries resulting from travel by boat.	**Possible**	**Major**	**CRITICAL**	**Physical:** Good quality boats appropriate for conditions. Always wear a lifejacket **Procedural:** Country expected driver behaviour. Boats to be equipped with VHF, flares, EPIRB, lifejackets **Behavioural:** Sea condition awareness training, operate in suitable to conditions.	**Unlikely**	**Medium**	**MODERATE**
Field Operations. All types of activities.	Transport, Vehicles & Driving	Fatalities, multiple trauma injuries, injuries resulting from travel by 4x4 vehicle or mechanical excavator.	**Possible**	**Major**	**CRITICAL**	**Physical:** Vehicles are suitable for the terrain and carrying emergency equipment. **Procedural:** Carry out daily vehicle checks, assess weather and ground conditions, check ground ahead on foot if uncertain of conditions. **Behavioural:** Sea condition awareness training, operate in suitable to conditions.	**Unlikely**	**Medium**	**MODERATE**
Field Operations. All types of activities.	Other	Fatalities, injuries resulting from CO poisoning due to using gas stoves in confined areas (tents).	**Likely**	**Major**	**CRITICAL**	**Physical:** Gas stoves to be clean, using good quality gas cylinders. **Procedural:** Gas stove induction training. **Behavioural:** Do not operate gas stoves inside a confined area e.g. tent. If forced to due to weather be sure to ventilate area.	**Rare**	**Minor**	**LOW**
Field Operations, Hydrocarbon and hazardous substance transport handling and storage	Manual Handling	Eye injuries form coming in contact with hazardous substances during handling	**Possible**	**Major**	**HIGH**	**Physical:** Use appropriate PPE **Procedural**: Follow handling procedures defined in MSD sheets. **Behavioural:** Inductions, wearing correct PPE, awareness to hazards.	**Unlikely**	**Major**	**MODERATE**
Field Operations. All types of activities.	Plants, Animals, Insects	Attacks from polar bears	**Unlikely**	**Critical**	**HIGH**	**Physical:** Bear deterrents, First aid kits, separate food from camps, overnight bear watch **Procedural:** Medical emergency response plans, bear response plans **Behavioural:** Employee awareness, first aid training, training on bear deterrents including firearms	**Unlikely**	**Medium**	**LOW**

Field Operations. Use of power tools.	Manual handling. Site work.	Injury or trauma sustained from accident whilst operating power tools – rock saw, breaker, drills	**Possible**	**Major**	**HIGH**	**Physical:** Use appropriate PPE, ensure areas are safe and stable prior to work, first aid equipment available **Procedural**: Read and understand equipment manuals, check and test equipment prior to use, agree on operational methods for specific jobs in advance, never use equipment for purposes other than those it is designed for **Behavioural:** Inductions, training in use of equipment, awareness of risks of equipment, awareness of equipment limitations, wearing and training in correct PPE, awareness to hazards.	**Unlikely**	**Major**	**MODERATE**
Field Operations. Underground activities.	Underground site work.	Fatalities, multiple trauma injuries, injuries resulting from uunderground rock collapse, entrapment, falls into stopes, poor ventilation	**Possible**	**Critical**	**HIGH**	**Physical:** Use appropriate PPE, use air quality sensors, qualified Mining Engineer to conduct underground stability inspection prior to work, Check-In Check-Out system, self-rescuer breathing apparatus, underground-capable radio systems **Procedural**: Agree working areas and timings in advance, Worker Identification and Check-In Check-Out system, wear air quality sensors and alarms, wear harnesses and suitable tethers if working near open stopes, follow handling procedures defined in MSD sheets. **Behavioural:** Inductions, wearing and training in correct PPE, communications training, awareness to hazards.	**Unlikely**	**Critical**	**MODERATE**
ANY ACTIVITY DEEMED TO BE OF SIGNIFICANT RISK IS TO BE APPROVED BY THE PROJECT LEADER IN ADVANCE									
REFER TO APPENDIX A FOR DETAILED RISK ASSESSMENT TO COVER ANY UNDERGROUND WORK IN 2017									

4 General HSEC (Health, Safety, Environment and Community) Management Issues

4.1 Musculoskeletal injury resulting from manual handling / digging, vibration from machines / vehicles

- An awareness session is provided in the induction to ensure adequate awareness of lifting hazards and safe procedures.
- Use lifting aids where applicable.
- Standard practice for two people lifts when handling heavy loads.
- Use rotation of work duties where applicable.
- Correct manual handling techniques.
- Ask for assistance.

4.2 Cold Stress: Hypothermia and Frostbite

- Exposure to cold temperatures (including those exacerbated by wind-chill) mean that hypothermia (and frostbite during winter) are a real, ever present and serious risk in Greenland. All staff must be suitably equipped, clothed and experienced to avoid suffering these conditions. All must have a good working knowledge of how to avoid and reduce the effects of cold injury on the body and know how to treat a casualty suffering from these conditions.

- Team leaders must be competent and experienced in building a variety of snow shelters in case of extreme weather or storms that may cause severe damage to tents. Skills should include building snow walls around camp and techniques for erecting and striking tents in high winds. Without using these techniques in extreme conditions, individuals may be at risk of exposure to strong winds and/or cold temperatures and succumb quickly to frostbite and hypothermia. Hypothermia can kill quickly in extreme conditions.

4.3 Heat Stress

- An awareness session is provided in the induction to ensure adequate awareness of prevention and diagnosis of heat stress.
- No fieldwork in extreme weather conditions.
- Symptoms and treatment sheet to be available in first aid equipment.

4.4 Contraction of disease -food/water borne disease,

- Four weeks prior to field work, visitors to Greenland are to visit their travel doctor and receive recommended vaccinations.
- Maintain food and personal hygiene. Do not obtain drinking water from potentially contaminated sources.
- Personal and Group First Aid Kits.
- Field staff work in teams with good communication between teams, with suitable clothing (such as long sleeves, trousers and high boots as a barrier to bites).
- Gloves to be worn when providing first aid.
-

4.5 Fatalities or injuries associated with weather events (lightning strike, exposure to storm conditions, stranded in blizzard)

- In the event of extreme weather conditions (as determined by the Project Manager), all personnel located in the field remain in position in a place of safety. No unauthorised travel is permitted, including helicopter travel, unless authorised by the Project Manager.
- Any personnel in the field are to be contacted and their condition and location(s) recorded. Contact is to be maintained every three hours, or sooner if news comes to hand.
- If the helicopter cannot be despatched, field personnel are to stay in a sheltered location and await instructions from base. NO UNAUTHORISED ATTEMPTS TO WALK OUT OF AN AREA ARE TO BE MADE.
- The field team should be equipped with camping equipment and a minimum of two days supplies and is to stay in their location until the weather has improved and they can be extracted.
- Movement and communication schedules must be used.
- No fieldwork during thunder storms.

4.6 Bites from insects and other animals. Potential fatality from poisoning due to remoteness. Allergic reactions to plants/food

- First aid kits
- First aid trained personnel on site
- Mobile/satellite telephone communication
- Long sleeve clothing and trousers
- Ankle length boots

4.7 Polar Bear Deterrents

Two large calibre single bolt action rifles will be made available to the field team, they will also be equipped with flares and a perimeter wire with alarms will be installed around the camp. A drone for scouting working areas around the camp and ahead of working parties will also be deployed. The fierams have been obtained and are held legally under Greenlandic law.

- Follow standard procedures if bears are sighted in the field – observe from a distance, slowly retreat to a place of safety and deter bear with loud noises if it makes a sustained approach flares and or rifle will be deployed (see specific procedure below)

4.7.1 Firearms Safety Precautions : Greenland 2018.

1. The Firearms will be secured by the named individual, the Site Manager,at all times throughout the duration of their contractual terms .
2. Ammunition will be stored centrally whilst the party are located inside secure accommodation at night and held by the fire arms practitioners during any outdoors rotations and watch routines. This will be stored in TWO MAGAZINES PER WEAPON, one attached to the weapon and one in reserve in the grab bag of the fire arms user.
3. Responsibility for zeroing and check firing the weapons will be that of the Site Manager. The weapons are not to deploy to any site until the fire arms users are confident that they are properly zeroed at the location of their original handover .

4. Cleaning of the weapons will be the responsibility of the named fire arms personnel , the Site Manager
5. The weapons will be carried using slings and will remain outside of any protective covering at all times when in the tented camp complex .
6. The weapons will be MADE SAFE during all boat journeys .
7. Fire arms personnel will deconflict and ensure arcs of fire and zones of responsibility are declared prior to all outdoors work activities commencing .
8. Correct 'handover procedures' with all weapons will be observed at all times .
9. Weapons will be carried in the HOT mode with the safety applied during all activity in the tented camp period .
10. All fire arms carriers MUST possess a working set of binoculars (at night , designated after official change in daylight conditions ie darkness) they must have Thermal Image equipment) on their person at ALL TIMES .

4.8 Project Communications

4.8.1 Field Locations to Office

- **The field team is to notify the Site Manager before starting work each day of where their working areas will be.**
- Field camps and any separated field parties are required to 'Check in'by email or phone call to the Alopex designated representative daily by **17.00 local time (19.00 GMT).** If the office does not hear from a field party and there is still no contact by 21.00 GMT (Iceland Summer Time) , the following steps will be taken:
    - Alopex designated representative will dial the field team satellite phone(s) and mobile phones directly to try and make contact every hour.
    - If the field party has not been heard from that day the missing person procedure will be initiated and South Greenland Charters 44 boat will be mobilised. This will be authorised once Alopex has discussed the situation.

4.8.2 Between field teams

- If field teams are working separately to each other at surface then communications will be primarily by two-way radio (VHF).
- If working out of radio range, then satellite phones will be the main means of communications and contact will be made at pre-set times.
- If separate teams are working underground, then the teams should be fully aware of each other's locations and arrange to meet at designated times and locations in order to perform safety checks.
- Note :If separate teams are working underground, then the teams should be fully aware of each other's locations and arrange to meet at designated times and locations in order to perform safety checks.

5 Management of Significant Risks

All HSEC issues/hazards and controls relating to the project identified as significant risks in the Nalunaq Project Risk Register are described below.

Health and Safety interactions will be used throughout the project as a proactive process to assess potential task related hazards and observe site personnel operating behaviours.

Incident reports will be completed for incidents resulting in personal injuries or illness, environmental damage, community complaints and near miss events that have the potential to cause injury or damage.

5.1 Fatalities, multiple trauma injuries and lacerations resulting from a fall from height or on steep ground (Mountaineering Sampling)

- Work at height or on steep terrain without appropriate safety equipment is prohibited.
- Any work requiring rope access at height or on steep ground is only to be carried out by qualified mountaineers or rope-access specialist.
- Do not attempt roped work if there are any doubts whatsoever on the quality and strength of anchoring points.
- Where possible no work is to be conducted below high elevation climbing activities to due risks from rolling /falling/dislodged rocks.

5.2 Single vehicle fieldwork

- Vehicles to be equipped with spare parts, clothing, supplies, and where applicable a satphone and GPS.
- All drivers must be qualified to drive
- The Site Manager will assess driver's competency
- NO RIVERS ARE TO BE FORDED IF THEY ARE IN SPATE AND THEIR LEVEL HAS RISEN
- Carry out daily vehicle checks.
- ALL DAMAGE TO VEHICLES MUST BE REPORTED TO THE SITE MANAGER
- Work to be authorised by the particular Project Leader or site manager and , routes and timings to be agreed in advance.
- Use a call-in procedure at pre-determined times and provide status and location during these calls.

5.3 Cold Stress

- An awareness session is provided in the induction to ensure adequate awareness of prevention and diagnosis of cold stress.
- Warm clothing is mandatory.
- No fieldwork in extreme weather conditions.
- Symptoms and treatment sheet to be available in first aid equipment.

5.4 Fire, explosion or injury associated with hazardous substances

- Flammable materials to be stored away from ignition sources.
- Fire extinguishers to be located alongside flammable materials and motorised equipment.
- PPE as appropriate.
- First Aid Kits.

5.5 Contamination of soil and/or water source from hydrocarbons or hazardous substance spills

- Company Hydrocarbon management procedure

- All spills to be cleaned up
- Hydrocarbon and hazardous substance waste to be removed from site.
- Hydrocarbon storage in bunded area

5.6 Diamond Drilling Operations

- Diamond drilling will be conducted by a contractor, Cartwright Drilling from Canada.
- They have provided the company with a complete set of their in house safety procedures and protocol for each part of the drilling operations.
- They will be operating a 2 x 12 hours shift system every day.
- The drill crew will have communication kit in the form of a satellite phone and a VHF radio with which to communicate with the Geological Operations Centre should there be an issue.

6 Project Training

This contingency management plan will form a component of the site induction plan.

Role Type	Project Training
All employees and contractors	Project induction, which will include the management of all significant HSEC risks covered in this Project Management Plan, as well as, Incident reporting, emergency response, ARC HSEC Policy

Prior to the start of work staff will have a site induction including:

1. familiarisation with the mine site and surroundings,
2. familiarisation with working areas and the tasks being conducted,
3. boat safety
4. helicopter safety (in case of emergency) – this is now down by Air Greenland crew

Work will be carried out by single day trips to work locations from a base in Nanortalik. Field teams will be self-sufficient when completing campaign work, carrying all required equipment including satellite phones, two-way radios. Most of the geoscientists in the field teams hold qualifications in first aid including first aid in remote areas. Some staff hold trauma first aid qualifications.

7 Safety Meetings

A safety meeting is to be held each day, if required, to highlight any issues that need to be addressed and to share knowledge throughout the team. Minutes will be taken from each meeting and recorded in a safety meeting logbook by the relevant responsible safety officer(s). The logbook must be retained in the field base (Nanortalik). Responsible safety officer will be the Site Manager

8 Emergency Equipment

8.1 First Aid

Each Geologist will carry a small personal first aid kit. A larger kit will be stored at a central location at the Nalunaq Centre of Geological Operations. Drill crews will have their own first aid kits.

8.2 Communication

Field teams will carry a satellite phone, two-way radio Mobile phones should work in the vicinity of Nalunaq harbour.

8.3 Emergency Equipment

When undertaking single day fieldtrips, a waterproofed bag containing the following must always be carried. This should allow a two man team to remain in the field for 48 hours:

- Tent
- Sleeping bag
- Polar bear deterrents (and rifle/ammunition if qualified/certified to use such a weapon)
- Stove
- Cooking pan
- Lighters
- Freeze-dried food for two man-days
- Satellite phone
- Two-way radio
- Whistle
- First aid kit

9 Emergency Management

9.1 Emergency Contacts

Contact	Location	Contact Number	Email Address
Nalunaq Project			
Field Teams (Equipped with Iridium satellite phones)	Licence 2003/05, Nalunaq Mine. Main point of access into the mine is 300 Level Portal: 60° 21' 21" N 44° 50' 2" W	Sat Phone Alopex **+88 164 148 2479** Sat Phone Field 13 (Res) +881631427587 Sat Phone Field 14 (Res) +881651439119	N/A
Transport Contractor			
Nico Hansen **Boat operator**	Nanortalik	Tel: +299 480486	
Medical Evacuation			
Air Greenland Operations	P. O. Box 1012 DK-3900 Nuuk Narsarsuaq Airport Nanortalik Heliport	+299 34 33 66 (Business Hours) +299 55 47 92 +299 66 54 30 bgbw@mit.gl +299 61 32 88 jnnvagthavende@airgreenland.gl	1. First call nearest Hospital and report type of injury. Staff will provide first aid instructions on how to treat the patient(s). If own helicopter is not available, they will then instruct Air Greenland for Emergency Evacuation. 2. In case of severe injuries call Nanortalik Hospital/Medical Centre. 3. If hospital does not answer call Air Greenland Operations +299 34 33 66 this is a 24 hours hotline and will co-ordinate emergency evacuation procedure for critical injury.
Emergency Service Providers			
Marine Rescue Coordination Centre (MRCC) and Arctic Command Greenland	Nuuk	+299 69 19 11 ako@mil.dk	Military, provide search and rescue services

Nanortalik Hospital	Box 169 3992 Nanortalik Greenland Head nurse: Helle Mougaard	Tel: +299 61 32 11 nanshv@peqqik.gl hmou@peqqik.gl	
Qaqortoq Regional Hospital	Box 512 3920 Qaqortoq Greenland Head Doctor: Lars Klenow	Tel: +299 64 22 11 qaqshv@peqqik.gl lak@peqqik.gl	
Nanortalik Police	Nanortalik	Tel: + 299 70 11 23	
Nalunaq A/S			
Nalunaq A/S	*Eldur Olafsson* Managing Director Klapparstigur 29 Reykjavik 101 Iceland	+354 665 2003 eo@arctic-resources.com	
	Joan Plant Legal and Compliance 14 Old Station Yard Morton Lincs PE10 0NL UK	+44 1778 570141 +44 7827 998155	
	Justinas Matusevicius Finance Director Business Development Klapparstigur 29 Reykjavik 101	+370 682 37849 / +354 787 1340 jm@arctic-resources.com	
Mineral Licence and Safety Authority			
Mineral Licence and Safety Authority (MLSA)	Mineral Licence and Safety Authority Imaneq 1A 201, PO Box 930, 3900 Nuuk Greenland	Tel: +299 55 24 99 **(emergency telephone number)** Tel: +299 34 68 00 (office) mlsa@nanoq.gl	

9.2 Specific Emergency Response Plans

The following emergencies may be encountered during this project:

- Medical
- Missing Person
- Transport Failure
- Major Oil, Fuel or Chemical Spills
- Fire

Emergency response plans for each of the above mentioned situations are detailed below.

The basic procedure to be adopted in the event of an emergency should include one or more of the following:

- DRABC (Danger, Response, Airway, Breathing, Circulation), stay calm, assess the situation, notify relevant personnel.
- If relevant, evacuate all unnecessary personnel from the affected area immediately. If they are at risk or if the emergency cannot be confined, proceed to a safe area.
- If possible, contain the emergency without placing yourself or any other person at risk.
- Contact relevant emergency personnel.
- Contact SRK ES emergency phone or project manager with details of the incident.
- Record all actions taken.
- The Mineral Licence and Safety Authority (MLSA) must always be informed of any accidents.

9.2.1 Medical Emergency

Purpose: To ensure that all staff on a specific project have the correct information to assist in the event of a Medical Emergency.

Aim: To sustain life, minimise injury and provide support to the patient.

Equipment: Emergency contact list, Satphones, Radio, PLB, First Aid Kits, Trauma kits, Emergency Logbook	**Project Details:** Nalunaq Project area – licence 2003/05.	**Project Leader:** VP Exploration
Qualifications/Training requirements: Wilderness first aid training. Communications – Satellite telephones, PLBs, and radio carried by field personnel	**Definition:** A Medical Emergency is an event in which trained personnel are required to respond effectively to a medical crisis beyond routine first aid remedies.	**Measures:** Patient admission to acceptable standard hospital within 36 hours of incident.

Stage	Steps	Hints
1. Upon Noticing an Incident	Assess the situation for Danger to yourself or others. Assess the patient's Responses and injuries. Administer First Aid as necessary (Airways - Breathing - Circulation). Monitor the patient, logging all actions and responses in medical emergency log book.	DRABC DRABC DRABC Log actions on any piece of paper if medical emergency log book is not available.
2. After Patient has been Stabilised.	1. Contact and consult with nearest hospital and report type of injury. In case of severe injuries call Nanortalik Hospital directly. Reported WHAT, WHERE and HOW MANY. If hospital does not answer call Air Greenland Operations who will co-ordinate emergency evacuation procedure for critical injury.	Nanortalik Hospital: +299 61 32 11 Air Greenland Operations: +299 34 33 66 (24 hour hotline) Nanortalik Heliport: +299 61 32 88 Nanortalik Police: +299 70 11 23
	2. If medical evacuation is required the hospital will then instruct Air Greenland for Emergency Evacuation	Consider landing areas. Do you need to move somewhere suitable?
	3. Project Leader or nominated person to contact Alopex designated representative and MLSA and advise of situation.	MLSA: +299 55 24 99
	4. Project leader to secure accident scene and prevent any disturbance until such time as a decision is made to conduct a formal accident investigation. If an investigation is to be conducted then site is to remain secured until investigators arrive on site.	
3. After Patient has been Placed in Care	1. Project leader to stop all work (until deemed appropriate or safe to recommence).	Consider emotional state of workers in deciding whether or not to re-commence work.
	2. Project leader to gather any information and statements relating to the incident.	Project Leader will advise further actions.
	3. Project Leader will inform the Workplace Inspectorate and sends a copy to the MLSA.	

9.2.2 Missing Person/Communication Failure

Purpose: To ensure that all staff on an exploration project have the correct information to assist in the event of a Missing Personnel Emergency

Aim: To locate missing personnel in the shortest possible time without endangering anyone that may become involved in the search procedure

Equipment: Sat phone, radio, PLB, Emergency Logbook	**Project Details:** Nalunaq Project area – licence 2003/05.	**Project Leader:** VP Exploration
Qualifications/Training requirements: • Communications • Toolbox talk on this procedure prior entering the field	**Definition:** Personnel are considered missing if: They are 60 minutes overdue from returning to field camp from field work; or 2 hours overdue on scheduled communications with the company office during fieldwork reconnaissance trips; or when communication from the operations base is in excess of 24 hours	

Stage	Steps	Hints
1. Once Personnel are Identified as being Missing	1. If working in two parties, the other field party to attempt contact by satellite telephone or radio with missing field party. 2. Advise project manager of situation. 3. If safe to do so and sufficient light, personnel will mobilise to the field team's last known position, attempt to locate them and then return them to base. 4. If personnel still not located, the Project Leader has the authority to request assistance from Air Greenland. This should be done in coordination with the Police in Nanortalik. 5. If the helicopter cannot extract the field team, the field team is to remain in their last reported position and wait for conditions to improve or for a replacement helicopter. 6. Update Alopex designated representative 7. Log all actions and track location of search party	Air Greenland Operations: +299 343 366 (24 hour hotline) Nanortalik Police: +299 70 11 23 Nanortalik Heliport: +299 61 32 88 • Consider the safety of search parties as the highest priority (they must be properly equipped and be given clear instructions). • Limit search to existing well defined topographic features (e.g. streams, rivers, shoreline) if approaching dusk. Don't continue beyond sunset.
2. If Local Search is Impracticable or Unsuccessful within 3 hours	1. Alooex designated representative must advise authorities in area of the missing person and request search and rescue	
	2. Project Manager to update Alopex CEO and consider contacting the missing person's Next of Kin. If NoK are to be contacted this must be discussed with the Alopex CEO before initiating contact.	
Missing Person Actions	If missing stay where you are. Erect emergency shelter where clearly visible. Attempt to establish contact via satphone or radio Assess supplies of water and food. If greater than 24 hours supplies available wait for assistance. If <24 hours supplies available or if injured and no contact can be made with other methods, activate PLB (if one is available) and await rescue. If transport arrives after activating, **turn off PLB immediately and notify authorities.**	

9.2.3 Transport Failure

Purpose: To ensure that all staff on an exploration project have the correct information to assist in the event of a Transport Failure resulting in being stranded in the field.

Aim: To sustain life, minimise injury while waiting for transport.

Equipment: Sat phone, radio, PLB, Emergency Logbook	**Project Details:** Nalunaq Project area – licence 2003/05.	**Project Leader:** VP Exploration
Qualifications/Training requirements: • Communications • Toolbox talk on this procedure prior entering the field	**Definition:** A transport failure could be due to a mechanical fault with the vehicle, poor weather hampering the operation of the vehicle or logistics failures resulting in the vehicle not operating. The result being the field team is unable to be picked up and returned to base. A transport failure must be assumed if the vehicle is 60 minutes overdue.	**Measures:** Get the team in a warm safe environment while awaiting pick up.

Stage	Steps	Hints
1. Upon noticing a potential transport failure	Assess the situation for Danger to yourself or others.	Log actions on any piece of paper if emergency logbook is not available.
2. Once a transport failure is identified	1. Attempt contact by satellite telephone or radio with operations base /other field party. 2. Attempt contact by satellite telephone or radio with Pilot/Captain/Driver. 3. Follow advice of operations base/pilot. If transport due to arrive shortly wait in sheltered area with clear view of pick up location. 4. If transport will be significantly delayed erect emergency shelter in sheltered location and advise base/pilot/captain/driver of your actions and location. 5. If delay with be extremely significant (>24 hours) assess food and water supplies. If supplies are not sufficient notify Project Leader who will arrange emergency evacuation using Air Greenland.	Air Greenland Operations: +299 343 366 (24 hour hotline) Nanortalik Heliport: +299 61 32 88
3. Transport failure in conjunction with field comms failure	1. Attempt to find source of comms failure and repair if possible 2. If still no comms, erect emergency shelter in visible location at planned pick up point. 3. Assess food and water supplies and condition of team members. 4. If team member is injured or transport has not arrived within 12 hours, activate PLB. 5. Do not attempt to walk out. Alopex will know that the team is stranded on account of having no contact, and will have initiated emergency procedures.	If transport arrives after activating PLB, **turn off PLB immediately and notify authorities.**

9.2.4 Major Oil, Fuel or Chemical Spills

A spill kit is located at fuel storage areas and motorised equipment. These are to be used in the event of spillage.

Threat Description	Significant spill (>1 litres) of oil, fuel, or chemicals on or off an exploration licence	
General Outline of Emergency Response	Follow the Four C's principle. **Check -** for danger (e.g. Fire or fume hazard) **Control** – the source of the spill if possible **Contain** – the spill **Clean-up** – the contamination	
Action Required	**Role Responsible**	**Comment**
1. Person who discovers the spill should eliminate any ignition sources	Person who discovers spill	Ignition sources can include vehicles, pumps, radio communications, welders, grinders etc
2. Person who discovers the spill should isolate the source of the spill if possible and safe to do so.	Person who discovers spill	Isolation can involve turning off a valve, closing a fuel container, shutting down a pump etc
3. Notify the Project Leader or his delegate of the spill location, type, approximate size and proximity to waterways, drains and other sensitive sites. Describe other hazards that may be present at the site of the spill.	Person who discovers spill	
4. Commence containment activities. Call for earthworks equipment other personnel in the area if they are required.	Senior Geologist/ Team Leader/ Individual	In the case of a major spill, containing the spill takes precedence over exploration activities
5. Construct an earthen bund around the spill to restrict the movement of the spill.	Senior Geologist/ Team Leader/ Individual	A small spill may be controlled using spill kits and absorbent matting.
6. If the spill has reached a waterway, use absorbent material to capture the spill. For chemical spills, construct a dam in the waterway or drain to minimise the movement of the contamination.	Senior Geologist/ Team Leader/ Individual	
7. Recover as much as possible free product from within bunds, waterways and the ground.	Senior Geologist/ Team Leader/ Individual	
8. Recover contaminated soil and clean-up materials. Contact the Regional HSEC Advisor if further information is required.	Senior Geologist/ Team Leader/ Individual	Contact MLSA for advice.
9. When immediate response is completed, the Project leader shall initiate the government notification process.	Project Leader Exploration Manager	
10. An incident report is to be completed detailing the event.	Project Leader	

All occurrences of spills are to be reported to the MLSA with a summary report and photos if possible.

9.2.5 Fire

On discovering a fire:

- Sound the alarm (shout Fire-Fire-Fire) and then proceed to extinguish the fire if safe to do so.
- Notify the Project Manager as soon as possible.
- If the fire cannot be extinguished, assemble at the **EMERGENCY MUSTER POINT OUTSIDE THE 300 LEVEL PORTAL**
- Check that all persons are present using the personnel list.
- Any fire fighting attempts will be directed by the Project Leader.
    - Fire underground:
        - Put on self-rescuer respiratory equipment
        - Start fire-fighting in order to maintain an escape route if necessary
        - **GET OUT:** Exit the mine as quickly and safely as possible and assemble at the muster point
    - Fire in vegetation:
        - Attempt fire control using extinguishers or improvised fire beaters.
        - If fire cannot be controlled dig fire break by removing vegetation and soil and inverting it to form a bank of earth on the windward side of the fire.
        - Evacuate area
        - Call Police and Fire Crew.

All occurrences of fire are to be reported to the MLSA with a summary report and photos if possible.

10 Preparing a report of incidents

The Project Leader has the responsibility to prepare a report of the accident. The report shall contain all relevant information about the accident, who was involved, how and why the accident happened. The report has to be sent to the MLSA and Nalunaq A/S.

11 Evaluation of Management Plan Compliance

The implementation of this Management Plan is to be evaluated during the project. During these assessments, the assessor shall determine if the risks are being mitigated as described and whether the measures of success are being achieved. If necessary the plan must be amended.

An evaluation of the plan must be carried out if there are to be any changes to the work programme. If necessary, the plan must be updated to account for these changes.

The Exploration Manager, or Project Leader, should conduct the evaluation. Where practicable, the assessment should be as independent as possible, however, it is recognised that this will not be possible for every assessment. The following table outlines when the plan will be audited and by whom.

Evaluation Round	Who will audit the plan?	When is it scheduled for?
1	Project Leader	Immediately prior to exploration programme
2	Project Leader	Half way through work programme
Project Close	Project Leader	Following demobilisation

12 Distribution

The Contingency plan will be sent to the highlighted authorities prior to the commencement of fieldwork:

1. **MLSA**
2. **Nalunaq A/S/Alopex Gold Inc**
3. Marine Rescue Coordination Centre (MRCC) and Arctic Command
4. Air Greenland Charter
5. Police in Nanortalik
6. Hospital/Medical Centre in Nanortalik and Qaqortoq

13 APPENDIX A Detailed Underground Risk Assessment

[SPECIFICALLY FOR GEOLOGICAL, GEOTECHNICAL AND OTHER INSPECTION WORK]

This part of the overall risk assessment has been produced by SRK and is specifically designed to cover underground technical investigations and sampling in a previously operational but now closed metalliferous mine by a suitably qualified team of specialists. It has been written in June 2016.

Exploration or Project Activity	HSEC Issue / Hazard	Impact Briefly describe the outcome of the hazard	Inherent Risk			Existing Controls (For projects, list both existing and "planned" controls)	Residual Risk		
			Probability / Health Exposure	Result / Health Effect	Risk Rating (High & Critical risks are shaded red)		Probability / Health Exposure	Result / Health Effect	Risk Rating (High & Critical risks are shaded red)
SUMMARY									
Field Operations. Underground activities.	Underground site work.	Fatalities, multiple trauma injuries, injuries resulting from uunderground rock collapse, entrapment, falls into stopes, poor ventilation	**Possible**	**Critical**	**HIGH**	**Physical:** Use appropriate PPE, use air quality sensors, qualified Mining Engineer to conduct underground stability inspection prior to work, Check-In Check-Out system, self-rescuer breathing apparatus, underground-capable radio systems **Procedural**: Agree working areas and timings in advance, Worker Identification and Check-In Check-Out system, wear air quality sensors and alarms, wear harnesses and suitable tethers (fall protection) if working near open stopes, Follow handling procedures defined in MSD sheets. **Behavioural:** Inductions, wearing and training in correct PPE, communications training, awareness to hazards.	**Unlikely**	**Critical**	**MODERATE**
DETAIL									
Planning	Whether it is done or is adequate	If not done it could be catastrophic	**Unlikely**	**Critical**	**LOW**	Ensure that planning is exhaustive and must include rehearsal and scenario planning in order to test procedures The most up to date mine plans of adequate scale,(1:1000 development and general layout and 1:200 for stopes) must be obtained and a basic route agreed with alternatives highlighted. Location of Refuge Bays, Second escape exits and any information on ventilation must be put on the plan. Survey peg numbers along the route must be noted down. Nominated members of the team will record observations underground. Locations must be photographed or videoed (with commentary) for recording purposes. The Surface Team must be equally involved with this planning process along with the Underground Team so that they are fully familiar with the route and potential hazards	**Unlikely**	**Critical**	**LOW**

						should they need to enter in a rescue capacity. All equipment to be taken underground must be inspected beforehand and declared serviceable. All team members should know who is carrying what equipment. Spare batteries and bulbs for headlights must be carried.			
Underground and Surface Team Composition	Whether it is experienced, competent and properly led and managed	Could have a direct impact on health and safety of the visit	**Unlikely**	**Critical**	**LOW**	Ensure that the team is familiar with each other, can communicate and has a clearly defined leadership/command structure. The team must include a sufficiently big sub-team that will remain on surface and be prepared to conduct a rescue should the underground team sustain an injury or an incident or fail to readch surface at the agreed time. The surface team must have communications not only with the underground team whilst in the mine but also with the national authorities via telephone or radio. They will also have a substantial first aid kit including a stretcher. Planning will include the CASEVAC arrangements should one be required. The team will include members who have extensive underground experience (5 years +) as well as a Mining Engineer who holds an Australian Mine Managers Certificate. It will also include members who have been members of Mine Rescue Teams.	**Unlikely**	**Critical**	**LOW**
Portal and entering mine	Condition of portal and the surrounding ground particularly the stability of ground immediately above	Injury/fatalities in a fall of ground (FOG)	**Possible**	**Critical**	**HIGH**	**Physical:** qualified Mining Engineer to conduct inspection prior to work **Procedure:** Inspect support type and its condition Make safe/clean and install new support if necessary. Ensure door is not locked when team is inside. Check ventilation conditions at entrance. **Behavioural:** Hold briefing where equipment checked and procedures are communicated. Orientate all team members as to the map and brief the surface team on route, communications check in and likely exit time.	**Periodic dependent on weather conditions and time interval**	**Critical**	**MODERATE**

General ground Conditions Development **On lode/reef: raises, winzes, drives**	Unstable unsupported HW leading to FOG. Ore zone may be intrinsically weak. May contain broken ore piles that hide holings or ore passes. Sulphide ore may have broken down Dead end raises or drives may be very poorly ventilated leading to bad air	Crushing Injuries/fatalities due to a fall of ground (FOG) or the failure of broken ore pile Slip and fall in inclined development especially if no ropes/chains or ladders have been installed Water accumulations in Winzes	**Possible**	**Critical**	**HIGH**	**Physical:** inspection of ground by qualified Mining Engineer before entering. Safety of accessways (ropes/chains/ladders) is critical especially in raises. **Procedure:** assess and bar down loose material. If necessary install temporary support (active or passive) and renew accessways before proceeding. **Behavioural:** Access to these excavations is useful in order to re-sample but team must appreciate that support may not have been installed to the level of permanent long term mine development. Do not enter areas if there are any doubts.	**Possible**	**Critical**	**MODERATE**
General ground conditions: (development (footwall and Hanging wall) **Adits, cross cuts, roadways ramps (spiral or straight) access raises and winzes. Raise bore holes**	FOG (old and potential for new ones) form Hanging Wall and Sidewall Footwall may contain hidden holings, ore passes and winzes	Injury/fatalities in a fall of ground (FOG) of falling through holings or into water filled excavations	**Possible**	**Critical**	**HIGH**	**Physical:** inspection of ground before entering. **Procedure:** assess and bar down loose material, if necessary install temporary support (active or passive) before proceeding. **Behavioural:** allow only trained and experience personnel to make decisions on the safety of ground conditions. Assess implications of changing from planned route. If in any doubt do not procede and turn back.	**Possible**	**Critical**	**MODERATE**
Stopes	Unpredictable 3D shape. Ore zone may be weak, making FOGs likely. HW may not be bolted or supported because it was a stope, Ore piles on FW may be unstable, hide holings and ore passes that are 'held up' and sulphide ore may have broken down	Crushing Injuries/fatalities due to a fall of ground (FOG) or the failure of broken ore pile	**Probable**	**Critical**	**HIGH**	**Physical:** Inspect the state of support in stopes especially the condition of pillars Stopes may not appear as on the plans due to subsequent FOGs and un-surveyed mining. **Procedure:** allow only trained and experience personnel to make decisions on the safety of ground conditions. Making safe with the installation of support (active or passive), ventilation conditions and second outlet must be considered before any access is allowed. . **Behavioural:** Extreme care must be taken in stope areas. Access must be justified and proceed with a 'least disturbance principle' If in any doubt do not procede and turn back.	**Possible**	**Critical**	**MODERATE**

Ore Passes	Steep/vertical excavations which may be open or, if hung up, may contain water/mud	Slip and fall, crushing, burial, drowning	**Probable**	**Critical**	**HIGH**	**Physical:** Under no circumstance must any team members enter any ore passes from below or above **Procedure:** Qualified Mining Engineer to assess condition and safety of ore pass fronts. Particular care must be taken near to ore passes that have water issuing from them. The potential for a mud rush can be high. Ore passes that look open may not be – ore could be 'hung up' out of sight.	**Possible**	**Critical**	**MODERATE**
Infrastructure	Infrastructure that is collapsed or in poor condition or still connected to the power source (ore pass fronts, ladders/steps, machinery, ventilation pipes, fans, Vehicles, winches, cable, pulleys, water & air pipes) Rotten wood/ rust nails /jagged metal	Electrocution, puncture wounds, crush injuries	**Unlikely**	**Critical**		**Physical:** Visual inspection and assessment of wooden and metal infrastructure for stability and safety. Special note must be taken of anchor points. The condition of compressed air lines water lines and electricity (if connected) must be inspected by suitably qualified team members **Procedure:** machinery, vehicles and electrical installations must be assumed to still connected to power sources or have batteries and must be inspected by a qualified team member in order to assess their condition and risk. **Behavioural:** Do not assume something is safe because it may look in good condition. Hazard tape to be carried and message bards left which can warn future visits. Infrastructure must be noted in terms of location and its condition. A remediation plan must be discussed for infrastructure that requires it.	**Possible**	**Low**	**LOW**
Ventilation Poor Quality air Lack of circulation	Black Damp = CO_2 + N_2 = No O_2 (oxygen deficit). Caused by oxidation of ore sulphides, rusting of metals or rotting of wood. SO_2 can be produced by oxidation of sulphide ore. H_2S produced by acidic water interacting with sulphide ores and hence can be present in stagnant waters in in old workings Methane is unlikely to be present in large	6% drop in O_2 = dizziness, increase in pulse, headache, blurred vision, impaired muscle movement. Suffocation eventually results	**Probable**	**Critical**	**HIGH**	**Physical:** Safe levels of all likely gases will be communicated to all team members. Gases will be continually monitored by multi-gas detectors. Whirling Hygrometers and anemometers will be used to measure temperature and relative humidity. Airflow must be also be measured and recorded. Clean, fresh and strong ventilation must be noted when encountered. **Procedure:** During the underground visit ventilation readings will be taken at planned points so that the original ventilation map (if in existence) can be updated. Ventilation doors and seals must not be propped open. Their locations must be noted. Ventilation fans must be checked for condition and safety. NOTE if the mine's ventilation system is such that it can be switched back on or	**Possible**	**Critical**	**MODERATE**

	quantities but can be produced by decaying wooden support. Carbon Monoxide (white damp) is possible through accumulations due to incomplete combustion poorly ventilated diesel/petrol engine or U/G fires Poor circulation keeps bad air in a mine and increase temperature due to lack of cooling effect.					reactivated prior to the visit then the possibility of venting the mine for a period of time before the visit should be investigated. This will create its own monitoring regime. **Behavioural:** Appropriate self-rescuers must be carried by each member of the underground inspection team. Spare batteries for the multi-gas detectors must be carried. Multi-gas detectors must be tested on surface before entering the mine. Any alarm must be investigated and acted upon. The team MUST evacuate the mine should they encounter continual oxygen deficiency or any other hazardous gas in such quantities that the alarms are activated. No smoking or naked flames will be allowed underground.			
Holings Created by FOG or by blasting	Meeting of one excavation with another. Dangerous if unmarked or one excavation is steep or full of water. Holing may not have been made safe and may be under stress Holings may be unmarked on plans or obscured by water or broken rock accumulations	Slip and fall – there may be no support or access way installed in 2nd excavation especially if it is an ore pass. The potential distance for falling may be many metres.	**Probable**	**Critical**	**HIGH**	**Physical:** Careful inspection by Mining Engineer. Holing may have warning signs or barricades. Inspection will focus on holing and surrounding ground for stability. Make safe by barring/support if necessary. **Procedure:** Examine plans prior to underground visit to predict where potential holing may exist. Install hazard tape on those encountered. Do not enter holings and do not spend any time at the holing. **Behavioural:** Do not ignore warning signs and barriers. Do not use holings as a shortcut access ways unless permanent ropes chains/ladders have been installed and the excavation has been inspected to the bottom, made safe and supported.	**Possible**	**Critical**	**MODERATE**
Explosives	Abandoned explosives, blasting cord and detonators	Explosives can still be potentially lethal and may have deteriorated over time making them unstable	**Possible**	**Critical**	**HIGH**	**Physical:** Explosives must not be handled or moved until their extent and condition has been assessed**.** **Procedure:** Carefully record the location of explosive materials. Only a team member who has a blasting qualification and has experience with using explosives will handle, carry or store and dispose of abandoned explosive. **Behavioural:** Extreme care must be taken with this primary hazard especially if their packaging /casing has been broken or chemicals are seen to have leaked	**Possible**	**Critical**	**MODERATE**

Hazardous Chemical	Hazardous chemicals may be present and may include reagents used for milling, separation processes or fuelling or lubricating old equipment.	If absorbed by skin or lungs or eyes of ingested they can cause irritation, burning and a severe toxic reaction	**Probable**	**Critical**	**HIGH**	**Physical:** Visual inspection only of any dry or wet chemicals to establish condition of container. Only do this if it is necessary to. Be aware of odours and that fact that some chemicals can nullify the sense of smell. **Procedure:** Seek immediate medical attention if any team member feels ill. Record the location of potentially hazardous materials. **Behavioural:** Assume all chemicals are toxic whether labelled or not. Plan the safe removal of chemicals at a later date.	**Possible**	**Critical**	**MODERATE**
Water and Ice	Running water ingress from geological formation. Accumulations of water. Water issuing from installed infrastructure. Ice accumulations	Water ingress can lead to mine flooding which may cut of escape routes. (Risk of drowning) Accumulated water may hide other hazards, ore passes and other excavations. Water can be contaminated and may be very cold. Ice accumulations have slip and fall implications and will also significantly reduce air temperature. Ice may also hold together and may have contributed to the formation of friable ground and give a false impression of stability	**Probable**	**Critical**	**HIGH**	**Physical:** Inspection of volume, clarity odour, temperature and depth must be conducted at places where water is encountered. Accumulations of ice must be located and noted. **Procedure:** All water ingress should be noted and located and an estimation of volume made (hat fills per minute is a tried and tested method). Leaking water pipes may be switched off if the valve is deemed to be serviceable. Accumulations of water should be located but not forded unless it is clear that the bottom is visible and solid. Generally anything deeper than knee height should not be forded. Avoid ice accumulations in the hanging wall, especially if the ice is thawing. Do not attempt to cross areas of ice on the floor without appropriate footwear e.g. crampons **Behavioural:** Do not assume the depth of any accumulation of water; a 'puddle' may be a flooded ore pass. Assume all water is not potable. Under no circumstances must any team member attempt to swim across bodies of underground water.	**Possible**	**Critical**	**MODERATE**
Animal Infestation	Bears	Bears that may have gained entrance to the mine and used it for shelter or hibernation	**Possible**	**Critical**	**LOW**	**Physical:** Inspection of entrance and footwall for bear tracks or spoor. If all portals have been properly sealed on closure then the likelihood of bears being present is low.	**Rare**	**Critical**	**LOW**

						Procedure: At least one member of the team is to carry flares/flash bangs or bear bangers in the event of encountering a bear **Behavioural:** Remember that mine is a readymade cave for a bear which may react aggressively is startled / cornered. Careful observation of evidence will allude to the presence of bears			
Shafts **Vertical/sub-vertical used for access/ ventilation or the movement of workers**	Fall and crush injuries		**Possible**	**Critical**	**HIGH**	The investigation team should never enter old or abandoned vertical or sub-vertical shafts without them first being examined and safety determined by appropriate mine engineers and safety personnel. Any vertical shafts with a mechanical conveyance will not be used as that conveyance would need to be re-commissioned. This includes cable cars or ski lift conveyances. Decline ramps and roadways may be accessed on foot after they have been deemed safe.	**Unlikely**	**Low**	**LOW**
Post visit De-Brief						A meeting will be held in order to collate all the information gathered and where possible update the necessary plans. Peg numbers will be checked on plans and with survey peg books to confirm the route taken. A post visit report will be compiled where the route will be described. All hazards encountered will be highlighted and condition of infrastructure, ventilation and ground conditions in development and stopes will be described in detail.			

Post-visit Debrief

A meeting will be held in order to collate all the information gathered and where possible update the necessary plans. Peg numbers will be checked on plans and with survey peg books to confirm the route taken. A post visit report will be compiled where the route will be described. All hazards encountered will be highlighted and condition of infrastructure, ventilation and ground conditions in development and stopes will be described in detail.