

**Eagle Gold Project**

Project Proposal for Executive Committee Review

*Pursuant to the Yukon Environmental and Socio-economic Assessment Act*

Appendix 30: Conceptual Environmental Management Plans

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**APPENDIX 30**  
**Conceptual Environmental**  
**Management Plans**



# EAGLE GOLD PROJECT

## Conceptual Environmental Management Plans

### ***FINAL REPORT***



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# 1 INTRODUCTION

The purpose of the Eagle Gold Project (the Project) is to design, construct, operate, close, and reclaim a gold mine in central Yukon. The Project will create economic opportunity that will benefit Yukon and the First Nation of Na-Cho Nyäk Dun (FNNND) while meeting Victoria Gold Corp.'s (VIT) corporate objectives in an environmentally responsible way.

To meet these objectives VIT will employ a variety of environmental mitigation measures, Environmental Management Plans, and Project specific plans (e.g. Closure and Reclamation Plan) which will include comprehensive monitoring activities. Adherence to these commitments will ensure that sound environmental practices are incorporated into all aspects of the Project through all phases, and that the mitigation and regulatory requirements identified during the *Yukon Environment and Social Assessment Act* (YESAA) review and permitting processes are met. Project specific commitments to ensure protection of valued socio-economic and environmental components are provided in the Table of Commitments of the Project Proposal.

Summary descriptions of the EMP component plans are provided below. This information is intended to provide an outline of the key elements of EMPs and be read in conjunction with the information contained in the Project Proposal. Detailed EMPs with all required components will be developed for the Project, based on permitting and regulatory requirements; best management practices (BMPs), professional judgment, and expertise developed during previous mining projects. EMPs will describe measures and controls to avoid or minimize adverse environmental effects during Project-related activities, and risks to public and worker safety.

The implementation of practical and results-based EMPs to evaluate the actual effects of Project activities relative to those predicted in the Project Proposal is of critical importance. VIT will work with its design and construction contractors and environmental monitoring team to devise and implement practical adaptive management approaches to ensure appropriate and timely corrective action can be taken as soon as an issue is identified. To that end, EMPs will exist as living documents. As the Project progresses EMPs will be revised to reflect and document material changes in Project construction and/or operational procedures, the results of environmental monitoring, and the adaptive measures implemented in response to these findings.

EMPs will be prepared and provided to the appropriate regulatory agencies for review, input and approval at necessary stages of permitting and Project planning (construction through closure). A key element of all plans will be employee training which will be provided to ensure the highest level of safety and protection for workers, public, wildlife and the environment.

A conceptual Closure and Reclamation Plan (Appendix 24) and preliminary Emergency Response Plan (Appendix 33) have been developed as part of this Project Proposal for the purposes of assessment. A comprehensive Closure and Reclamation Plan and detailed Emergency Response Plan will be developed to support permitting and licensing requirements (under the *Quartz Mine Act* and *Waters Act*). These are considered to be part of the "suite" of plans which make up the EMP framework, but have been developed in conceptual form as required for assessment of the Project Proposal.

## **2 EROSION AND SEDIMENT CONTROL PLAN**

The erosion and sediment control plan will describe detailed measures to be used to protect fish and aquatic habitat, control run-off, minimize erosion on exposed slopes and substrates, and prevent inputs of silt, sediment or other deleterious materials into watercourses and wetlands during all clearing and site development activities. The plan will reflect BMPs and comply with applicable federal and territorial legislation, permits, licences, and approvals. It will set out the nature and frequency with which erosion and sediment control measures are to be inspected, relative to specific construction activities, weather conditions, and site-specific environmental conditions. The plan will also provide for the timely cleaning, repair, and removal and replacement of erosion and sediment control measures.

Conservation of topsoil is very important and the erosion control measures outlined in the plan will focus on preventing soil loss from wind and water and gravity forces. Temporary reclamation of WRSAs, ditches, road cuts and embankments will begin during construction and continue throughout operations, involving seeding exposed soils with an erosion control seed mix and possibly hydroseeding with a mulch and tackifier. If required, additional soil erosion control measures such as erosion control blankets or the application of a bonded fibre matrix onto the soil surface could be employed. Silt fences may also be installed to contain sediments eroding off disturbed sites and into surrounding water bodies and watercourses. Slope stabilization techniques such as terracing or installation of bioengineering structures, such as wattle fences or modified brush layers, could also be used on highly erodible soils on slopes.

All necessary sediment and erosion control mitigation measures will be in place and operational prior to construction. These may include:

- Use of sediment and erosion control prevention techniques, material and equipment
- Control strategies for on-site water, and off-site water as it pertains to the construction area, for each mine feature including diversion ditch designs and sediment control ponds
- Sediment and erosion control procedures around fish-bearing waters
- Delineation of potential erosion control areas of concern
- Restoration of erosion control areas of concern
- Contingency plans for stream loading and sediment control
- Monitoring and surveillance program.

Additional information on erosion and sediment control, and soil stripping and salvage during closure and reclamation are provided in Appendix 24 of the Project Proposal as part of the conceptual closure and reclamation plan.



### **3 FUGITIVE DUST CONTROL PLAN**

The fugitive dust control plan will describe procedures to minimize Project-related fugitive dust emissions. These procedures will relate to the operation and maintenance of vehicles and equipment, and other general construction and operations activities.

Best management practices and mitigation measures to be described in the plan may include the following:

- Apply water as a dust suppressant using appropriate equipment (e.g. a tank truck with spray bars) to open surfaces and heavily used roads (in the summer months). The equipment will be kept on-site during construction and used as needed to maintain moist surfaces and suppress visible dust emissions.
- Control active open pit haul roads and active customer haul roads by periodically wetting surfaces using a water truck.
- Water inactive roads to suppress dust if there is visible evidence of fugitive dust emissions (e.g. dust clouds resulting from wind).
- Water active roads in hot, dry conditions, unless meteorological conditions (e.g. rain, frozen surfaces, etc.) are adequate to suppress dust to a degree that is equivalent to 3-hour periodic watering.
- Sweep paved routes adjoining unpaved traffic areas as required during construction.
- Conduct visual inspections, as required, to identify and address potential dust emissions.
- Provide timely response to complaints.
- Ensure procedures are implemented to document the inspections, complaints, responses, and actions taken.
- Minimize disturbances and manage all land clearings.
- Construct haul roads with low silt content material.
- Enforce low speed limits for all mobile mine equipment.
- Record fugitive dust suppression activities daily using a fugitive dust suppression log.
- Make available the fugitive dust suppression log to Yukon regulatory authorities as required.

### **4 COMBUSTION SOURCE CONTROL PLAN**

The combustion source control plan will describe procedures to minimize combustion-related Project emissions relating to the operation and maintenance of vehicles and equipment, and other general construction and operations activities.

The following best management practices to minimize combustion source emissions and impacts may be included in the plan:

- Utilize grid (rather than generator set) electrical power for on-site equipment during operations.
- Use Best Available Technology Economically Achievable (BATEA) measures and best practices to meet or exceed relevant regulatory emission standards for all mine equipment and practices.
- Use diesel fuel with low sulphur content following Canadian Tier 4 regulations.
- Enforce low speed limits for all mobile mine equipment.
- Ensure all mine equipment is properly tuned and maintained.
- Reduce vehicle idling times.

## **5 VEGETATION MANAGEMENT PLAN**

The vegetation management plan will outline strategies and procedures for avoiding vegetation loss, minimizing disturbance, mitigating against invasive species, and implementing site rehabilitation through the life of the Project and upon closure.

Activity-specific measures will be developed to minimize damage to vegetation during each of the Project phases. For example, to protect rare plants, known rare plant locations will be flagged and staked near the maximum disturbance boundary, and equipment operators will be instructed to avoid these areas. Rare plant locations will be monitored regularly during construction and operations.

General mitigation measures to minimize effects to vegetation resources may include the following:

- Reduce vegetation loss in areas around the footprint perimeter by adhering closely to construction plans, and avoiding off-site machine use.
- Clear trees tall shrubs as necessary within the transmission line RoW during periods when the ground is frozen and snow covered to minimize the disturbance to low shrubs, the moss layer and topsoil.
- Minimize the extent of grubbing, stripping and the removal of shrubs and herbaceous species where possible.
- When clearing is required, retain the humus layer and vegetation root mat, when possible.
- Minimize disturbance in sensitive areas by implementing best management practices including the creation of buffer zones around riparian and wetland habitats.
- Follow guidelines for prevention of invasive plants introduction and spread as per the invasive plants management plan during the reclamation and closure phases.

Site clearing, grubbing, and soil handling (removal) are the primary mechanisms contributing to the direct loss of vegetation. Reclamation is the primary mitigation for the effects to vegetation and ecosystems. Further reclamation plan details are provided in the closure and reclamation plan (Appendix 24 of the Project Proposal) and its component plan, the soil material and handling plan. Appendix 24 also provides details concerning development of an invasive plant management plan.

## **6 WILDLIFE PROTECTION AND MANAGEMENT PLAN**

Measures and procedures to minimize risks to wildlife and humans will be developed for all phases of the Project. A detailed listing of specific mitigation measures related to wildlife is included in Section 6.9.8 of the Project Proposal; this includes the following commitments:

- Minimize Project footprint
- Minimize aircraft overflight disturbance
- Implement a progressive reclamation plan
- Share information to minimize the risk of vehicular collisions with wildlife
- Implement speed limits to minimize dust and reduce wildlife collisions
- Provide and encourage the use of personnel transportation (bussing) to the mine site
- Manage vegetation to reduce effects on wildlife.

The wildlife protection and management plan will be developed prior to construction and may also include:

- Driver education to minimize the risk of collisions with wildlife
- Road maintenance (such as snow ploughing) will account for safe passage of wildlife off the road to avoid traffic
- Implementation of work windows (see also the schedule of environmentally sensitive activity)
- Bird protection measures associated with development of the transmission line
- VIT will ensure that the presence and use of firearms are restricted on the Project site. The restrictions will extend to employees, management and contractors. In addition VIT will develop a policy restricting Project-related employees and contractors from hunting and fishing while on the job at any time throughout the life of the Project.

As part of the wildlife protection and management plan, VIT will also develop a problem wildlife prevention and response plan. When a problem wildlife issue arises, staff will immediately report the incident to the onsite designate, who will initiate an appropriate response.

This program will be designed with guidance from the Environment Yukon and with respect to the Yukon Government “Guidelines for Industrial Activity in Bear Country” as appropriate. The problem wildlife prevention and response plan will provide for key measures such as:

- Proper food handling/refuse disposal protocols, including use of bear-resistant trash bins
- Strict prohibition against the feeding of bears and other wildlife species
- Prohibition on littering on the mine site
- Reporting procedures in the event of bear encounters
- Other measures to be followed by work crews to minimize potential for wildlife-human conflicts.

The wildlife protection and management plan will also specify the need for a bear awareness training program to be delivered to all on-site personnel prior to and at regular intervals during construction. This provides for the health and safety of Project personnel and reduces the potential for bear-related disturbances and mortality during the life of the Project.

## **7 ENVIRONMENTAL MONITORING PLAN**

The environmental monitoring plan will describe the administrative roles and responsibilities of individual members of the environmental management team. The environmental management team will be responsible for reporting for compliance with regulatory permits, approvals and licences, and VIT's Commitments and Assurances.

The environmental management team will consist of experienced, independent monitors or inspectors, including specialists who are qualified to conduct water quality, archaeological, erosion and sediment control, site restoration, and other on-site monitoring programs as required. Since work on different Project components will proceed concurrently, the plan will provide for a sufficient number of monitors and back up monitors to ensure adequate coverage throughout the Project area.

Members of the environmental management team will have the authority to issue a stop work order when continued activity poses an immediate detrimental risk to the environment and/or contravenes the intent of the EMP regulatory requirements, or VIT's Commitments and Assurances. The team will also have the authority to direct site-specific corrections, as warranted, and in consultation with the construction manager.

Consistent with regulatory and permitting requirements, VIT will develop a detailed long-term monitoring program to be used to verify the accuracy of the Project Proposal's environmental assessment and determine the effectiveness of measures taken to mitigate any adverse effects on the environment. The monitoring program will consist of a series of plans to address compliance, response, and habitat compensation monitoring. Details of the program and individual monitoring plans will also be revised in response to input from regulatory agencies, and any new relevant information obtained during Project review, as well as to ensure sufficient statistical power to detect an effect. Monitoring results will be used to verify the accuracy of the Project's environmental assessment, determine the effectiveness of mitigation measures, and facilitate timely adaptive management responses to address adverse effects. Results, as well as the measures taken to address any adverse effects, will be reported to regulatory agencies as required.

## **8 SCHEDULE OF ENVIRONMENTALLY SENSITIVE ACTIVITY**

The schedule of environmentally sensitive activity will describe periods of environmental sensitivity as they relate to weather, fish, and wildlife specific to the Project area. These are periods during

which construction and operational activities may have to be modified or avoided. Observance of this schedule will help ensure compliance with territorial and federal regulations and BMPs.

Seasonal consideration involves timing of specific construction activities to take place at the time of year when the temperature, wind, and precipitation regime will provide a high probability of environmental success. In some cases, the timing decisions for particular activities will be made prior to construction, and, in special circumstances, the timing decisions may be made during construction. It is anticipated, for example, that major construction activities will not be undertaken during the winter period from approximately October 29, 2012 through March 15, 2013.

Fish considerations include conducting instream works during least risk periods and minimizing the time over which these occur. Instream and riparian construction activities will be timed to avoid high-risk weather and flow conditions and to avoid key migration periods and any timing requirements set out in regulations.

Wildlife considerations include designing aircraft flight paths to avoid sensitive habitats during specific times of year, and clearing natural vegetation outside of breeding bird windows. Where clearing during the breeding bird windows cannot be avoided, VIT will consult with the appropriate regulators (Environment Yukon, CWS) and develop appropriate management strategies. These strategies are likely to include surveying the area to be cleared for nests a maximum of one week prior to clearing, identifying bird nests in the affected area, and protecting (buffering) the nest until nesting has completed.

## **9 HERITAGE RESOURCES PROTECTION PLAN**

The heritage resources protection plan will describe methods for the protection of known heritage resources and preservation of site integrity. Protection methods will recommend avoidance where possible, procedures for mitigation and recovery where avoidance is not feasible, and procedures for any newly discovered sites that ensure work is halted and sites are appropriately managed.

The heritage resources protection plan will be prepared based on input provided by a professional consulting archaeologist who is knowledgeable regarding the potential archaeological resources in the Project area and in consultation with the Yukon Department of Tourism and Culture (Heritage Branch). The plan will be consistent with applicable regulation and policies for identifying, marking, and reporting any heritage or historic resources found in the course of Project works and operations.

VIT is committed to the protection of heritage resources and the heritage resources protection plan will include a discovery protocol to recover and quickly report the chance discovery of heritage resources during Project activities. In addition, employee training will include instructions and procedures for identification and protection of heritage and historic resources.

## **10 TRAFFIC AND ACCESS MANAGEMENT PLAN**

Prior to mobilization, VIT will prepare a traffic and access management plan that will describe traffic mitigation and safety measures, ensure effective traffic control and access, and minimize Project-related transportation effects. The plan will describe policies and procedures addressing all traffic and access issues within VIT's control on and around the mine site.

The traffic and access management plan will include detailed drawings depicting all proposed traffic control measures, including temporary signage, pavement markings, and barriers. It will describe measures to mitigate potential traffic effects associated with construction-related truck movements, including any oversized loads. Procedures will also be included for road maintenance requirements and monitoring. The plan will include a description of site security measures, as required to protect public safety and prevent vandalism.

As part of traffic and access management, VIT will work with Yukon Government Highways and Public Works to develop a plan and procedures for maintenance and traffic safety measures for use of the access road, consistent with Yukon regulatory and policy requirements.

## **11 OCCUPATIONAL HEALTH AND SAFETY PLAN**

The objective of the occupational health and safety plan will be to promote safety awareness to all Project personnel, public, and area stakeholders. The plan will describe specific procedures and protocols to be followed by Project personnel to mitigate health and safety hazards, with reference to applicable territorial regulations.

Health and safety procedures, including specific instructions regarding the use of personal safety devices, will be identified and communicated to Project personnel during mandatory site orientation sessions. The plan will incorporate guidance provided by the National Institute for Occupational Health & Safety on matters such as personal protective equipment, designation of evacuation and isolation areas, and decontamination procedures. Health and safety will be a key element of all Project operations, and will be addressed as appropriate throughout all component plans.

## **12 CYANIDE TRANSPORTATION MANAGEMENT PLAN**

Transportation of sodium cyanide will be conducted according to the cyanide transportation management plan. This plan will be developed in consultation with the "International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold".

Mitigation measures to prevent cyanide release to the environment during transportation include the following:

- Transport the briquettes in sealed bulk bags which protect them from moisture.
- Place bags in a box with a wooden pallet base and braced wooden sides and top to protect the bulk bag during handling and transport.

- Use cyanide transporters with proper training, radios, and emergency clean-up kits.
- Train Project staff in emergency response measures.
- Pilot vehicle to escort cyanide shipments from Mayo to the Project site in inclement weather when necessary.
- GPS tracking of cyanide shipments so that a centralized dispatch will be notified immediately of any potential accidents or malfunctions during shipment and can respond as quickly as possible.
- Road inspections, maintenance, enforced speed limits.

## **13 SPILL CONTINGENCY PLAN**

The spill contingency plan will include the required procedures and steps for response and remediation of any spills of fuel or other hazardous materials. Preliminary information on approaches and procedures with respect to spills is provided in Appendix 33 (Emergency Response Plan [ERP]) of the Project Proposal. The detailed plan will be developed in accordance with regulatory and permitting requirements and will contain:

- Listing of products and potential dangers
- Emergency action plans
- Staff Individuals responsible for spill response
- Reporting requirements and contact information (e.g. applicable territorial and federal government agencies)
- List of available (on-site and off-site) materials and equipment (and response time)
- Initial response procedures
- Spill containment procedures
- Specific measures for dealing with spills into or adjacent to a body of water
- Spill reclamation procedures
- Other site specific information relevant to responding to or addressing a spill.

Preliminary information on the above elements are addressed in the preliminary ERP attached as Appendix 33. As noted, a comprehensive and detailed ERP will be developed to meet permitting requirements based on detailed design and operational information.

## **14 NOISE ABATEMENT PLAN**

The noise abatement plan will outline environmental management practices for reducing the level of Project noise, and will include specific measures for blast management.

A number of standard mitigation measures have been incorporated into the Project design to minimize Project noise effects. Mitigation measures that will be incorporated into the noise abatement plan may include the following:

- Apply British Columbia Occupational Health and Safety Regulations Parts 7 for employees and restrict public access to the mine site (Yukon specific guidelines are not available).
- Locate all stationary construction or mining equipment (i.e., crushers, compressors, and generators) as far as practicable from the Project boundary.
- Locate major crushing equipment and other noise-generating equipment (e.g. blowers and air compressors, etc.) inside buildings wherever possible.
- Perform regular inspection and maintenance of vehicles and equipment to ensure that they have high quality mufflers installed and worn parts replaced.
- Follow posted vehicle speed limits.
- Maintain Project roads to minimize vehicle noise associated with vibration.
- Turn off equipment when not in use and practical to do so.
- Ensure, by restricting access to the mine site, that recreational land users are not present in the vicinity of the mine during blasting operations.

## **15 WASTE MANAGEMENT PLAN**

The waste management plan will outline the storage, handling, and disposal procedures for all forms of Project-generated waste (hazardous, solid and special waste) through all Project phases. Waste management practices will comply with all applicable territorial and federal regulations.

The waste management plan will detail the specific treatment of all forms of waste as well as general guidelines to reduce potentially negative effects associated with waste materials. For example:

- Materials will be used efficiently and effectively to minimize waste generation.
- Materials will be selected that are less harmful to the environment or personnel.
- All staff and contractors will receive training on waste management on-site.
- All construction waste and any other refuse associated with the Project will be segregated as recyclable and non-recyclable and transported off site as required.
- Food waste and recyclable waste will be handled to avoid attracting animals and insects.
- Non-recyclable non-hazardous waste will be remediated on site or removed from site for disposal at an approved waste disposal site on an as-required basis.

The waste management plan will be developed in consultation with the Village of Mayo, as the project is proposing to transport all waste off-site and potentially to the Mayo community solid waste disposal facility following further planning and discussion with the community.

Waste types, volumes, and handling and disposal methods are also summarized in Table 5.4.3 of the Project Proposal.



## **16 WATER MANAGEMENT PLAN**

A Water Management Plan (WMP) has been developed for the Project (Appendix 18 of the Project Proposal). The WMP was prepared on behalf of VIT for the Eagle Gold Project in support of the requirements of environmental assessment and water licensing processes in the Yukon. The WMP establishes the protocol for the control and management of non-contact (i.e., from undisturbed basins or areas) and contact (i.e., from areas or facilities developed for the Project) water during construction, operations, and reclamation activities.

The objective of the WMP is to provide specific strategies for addressing water requirements in all phases of the Project in the lower Dublin Gulch valley of central Yukon. The WMP considers the environmental and engineering challenges and the effects of mining on water availability and conveyance for the Project.

The WMP was developed with an understanding of the sequence of development and operation of mine-site facilities and integrated with the results of a detailed surface water balance model (SWBM) (Appendix 21 of the Project Proposal), a water quality model (WQM) (Appendix 25 of the Project Proposal), and a groundwater model of the Dublin Gulch basin (Appendix 22 of the Project Proposal). The SWBM provided detailed water-balance accounting for water conveyance and storage facilities associated with the project. The results of the SWBM provided the basis for decisions regarding the routing and storing of water, and with the results of the WQM for the assessment of potential effects from these facilities on water quality and aquatic habitat.

## **17 CLOSURE AND RECLAMATION PLAN**

A Conceptual Closure and Reclamation Plan (CCRP) has been developed for the Project Proposal, based on the YESAB “Proponents Guide to information Requirements for Executive Committee Project Proposal Submissions” and in consideration of the Yukon Government “Reclamation and Closure Policy”. The CCRP (Appendix 24 of the Project Proposal) outlines the closure and reclamation methods, criteria and objectives proposed for the Project. It describes key mitigation for many environmental valued components, including terrain, soils, vegetation, wildlife, and aquatic ecosystems. The CCRP has been developed to provide the level of detail necessary for the assessment stage. A comprehensive, detailed Closure and Reclamation Plan (CRP) will be prepared as required to meet all Yukon regulatory, permitting and policy requirements, including determination of security.

The CCRP includes the following components:

- Soil handling plan
- Invasive plant management plan
- Temporary closure plan
- Post-closure water management plan
- Outlines operation and post-closure environmental monitoring and surveillance.