

2.3 PROJECT SCOPING

Overview of Approach

The Act defines the "Environment" as:

- The components of the Earth, and includes:
 1. Land, water and air, including all layers of the atmosphere
 2. All organic and inorganic matter and living organisms, and
 3. The interacting natural systems that include components referred to in paragraphs (a) and (b) (Section 2(1)).

The Act defines "environmental effect", in respect of a project, as:

- a. Any change that the Project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in Subsection 2(1) of the *Species at Risk Act*;
- b. Any effect of any change referred to in paragraph (a) on
 - i. Health and socio-economic conditions
 - ii. Physical and cultural heritage
 - iii. The current use of lands and resources for traditional purposes by aboriginal persons, and
 - iv. Any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.
- c. Any change to the Project that may be caused by the environment whether any such change or effect occurs within or outside Canada.

The environmental assessment focuses on specific environmental components (called Valued Ecosystem Components) that are of particular value or interest to regulators and other stakeholders. Ecosystem components typically are selected for assessment on the basis of regulatory issues and guidelines, consultation with regulators and stakeholders, field reconnaissance, and professional judgement of the study team. Where a VEC has various components that may interact in different manners with the Project, the environmental assessment may consider the effects on individual Key Indicators (KIs), as well as VECs.

The term "impact" refers to the aspect of the Project infrastructure, action or activity that is likely to result in an environmental effect on the environment.

The environmental assessment methods address both project-related and cumulative environmental effects. Project-related environmental effects are changes to the biophysical or human environment that are caused by a project or activity arising solely as a result of the proposed principal works and activities, as defined by the scope of the Project. Cumulative environmental effects are changes to the environment that are caused by an action associated with the Project under review, in combination with other past, present and future projects and activities.

Project-related environmental effects and cumulative environmental effects are characterized sequentially. The Project-specific environmental effect is discussed first, having regard to mitigation measures proposed in this EIS or developed subsequently as a result of the EA process that help to

reduce or avoid Project impacts that could result in this environmental effect. A cumulative environmental effects screening is then conducted for any residual environmental effect to determine if there is potential for a cumulative environmental effect as referenced in CEA Act.

The significance of any residual adverse environmental effects for both project related and cumulative effects is then assessed having regard to the CEEA Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects - The Requirements of the *Canadian Environmental Assessment Act* (<http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=D213D286-1&offset=2&toc=show>) (CEAA, 2012). In addressing what might constitute a significant adverse effect the following factors are considered: magnitude, likelihood, geographic extent, duration and frequency, reversibility, ecological context, and likelihood.

More specifically, the environmental effects assessment approach used in this assessment involves the following four steps:

1. Scoping of the overall assessment. This is discussed in greater detail in the balance of Section 2.3.
2. Characterization of Project-related Environmental Effects. This is discussed in Section 2.7.1.1.
3. Characterization of Cumulative Environmental Effects. This is discussed in Section 2.7.1.4.
4. Assessment of Significance. This is discussed in Section 2.7.1.5.

2.3.1 Scope of Project

The Project as proposed would involve a large open pit mine development with a 20 year operating life. Typical large-scale open pit mining equipment and conventional copper porphyry flotation processing would be used. In addition to the mine and associated Tailings Storage Facility (TSF) and ore and waste rock storage areas, the Project includes development of an onsite mill and support infrastructure, a 125 km long power transmission line, a 2.8 km mine access road to connect to existing logging roads and highways and transport of concentrate to the existing Gibraltar Mine Concentrate Load-out Facility near Macalister, 54 km north of Williams Lake. A complete description of the Project is provided in Section 2.2.3.

The scope of project includes all four elements (mine site, transmission line, access road and concentrate load-out), the components, features and activities described in Section 2.2.3. As detailed in the EIS Guidelines while this EIS will assess the potential environmental effects of the Project and identify the significance of any adverse residual effects, the focus of this assessment will be on environmental effects associated with those aspects of the Project that have changed or are new from the previous project proposal and on corresponding changes to the environmental effects previously predicted.

As stated in Section 2.2.3, there are no new or changed components, features or activities associated with the Transmission Line, Access Road and Transportation Corridor and the Gibraltar Mines Concentrate Rail Load-Out Facility. For those Project elements, this EIS makes use of existing relevant information generated as part of the 2009/2010 review process to provide a rationale stating why the previously predicted environmental effects remain the same.

Only at the mine site does the Project contain new or changed components, features and activities compared to the previously assessed project. Table 2.3.1-1 lists all the mine site components, features and activities for all Project phases and indicates whether or not there is a change from the previously reviewed project. Comments providing clarification are included where appropriate.

Table 2.3.1-1 Mine Site Components, Features and Activities Changed from Previous Project Proposal

Project Work (Elements, Components, Features) / Activities	Change from Previous Project Proposal	Comments
Construction and Commissioning		
Open Pit – Pre-production	N	
Non-PAG waste stockpile	Y	Location and timing only
PAG Stockpile	Y	Still subaqueous in TSF, just TSF location change
Non-PAG Overburden Stockpile	Y	Combined with Non-PAG (i.e. location and timing)

Project Work (Elements, Components, Features) / Activities	Change from Previous Project Proposal	Comments
Ore Stockpile	Y	Location only
Primary Crusher	N	This is considered in Construction: plant site and other facilities
Overland conveyor	N	This is considered in Construction: plant site and other facilities
Fisheries compensation works construction	Y	Scope and Timing
Water Management Controls and Operation	Y	
Construction sediment control	Y	
Access road construction and upgrades	N	
Camp construction	N	This is considered in Construction: plant site and other facilities
Site clearing (clearing and grubbing)	Y	Different areas related to moving of TSF, stockpiles, etc...
Soils handling and stockpiling	Y	Includes overburden removal
Construction: plant site and other facilities	N	
Explosives Plant	Y	Location only
Lake dewatering	Y	Fish Lake retained
Fish Lake Water Management	Y	Management of inflows and outflows
Starter dam construction	Y	Location and volume of material
Sourcing water supplies (potable, process and fresh)	Y	Fresh water sources and routing only as a result of reconfigured stockpiles
Site waste management	N	
Clearing of transmission line ROW	N	
Construction/Installation of transmission line	N	
Vehicular traffic	Y	Additional haulage trucks and 2 km of added haulage road as a result of TSF relocation.
Concentrate load-out facility near Macalister (upgrades to site)	N	
Operations		
Pit production	N	
Site clearing (clearing and grubbing)	Y	Area and relocation of TSF and stockpiles

Project Work (Elements, Components, Features) / Activities	Change from Previous Project Proposal	Comments
Soils handling and stockpiling	Y	Area, volume, and relocation of TSF and stockpiles; revised soil stockpile locations
Crushing and conveyance	N	
Ore processing and dewatering	N	
Explosive handling & storage	Y	Location only
Tailing storage	Y	Location and embankments changed
Non-PAG waste stockpile	Y	Location and timing only
PAG Stockpile	Y	Still subaqueous in TSF, just TSF location change
Overburden Stockpile	Y	Combined with Non-PAG (i.e. location and timing)
Ore Stockpile management and processing	Y	Location only
Potable and non-potable water use	N	
Site drainage and seepage management	Y	
Water Management Controls and Operation	Y	Includes management of flows in and out of Fish Lake
Wastewater treatment and discharge (sewage, site water)	N	
Water release contingencies for extended shutdowns (treatment)	N	
Solid waste management	N	
Maintenance and repairs	N	
Concentrate transport and handling	N	
Vehicle traffic	Y	Additional haulage trucks and 2km of added haulage road as a result of TSF relocation.
Transmission line (includes maintenance)	N	
Pit dewatering	N	
Fisheries Compensation works operations	Y	Scope and Timing
Concentrate load-out facility near Macalister	N	
Closure		
Water Management Controls and Operation	Y	

Project Work (Elements, Components, Features) / Activities	Change from Previous Project Proposal	Comments
Fisheries Compensation operations	Y	Scope and Timing
Site drainage and seepage management	Y	
Reclamation of ore stockpile area	Y	Location only
Reclamation of Non-PAG waste rock stockpile	Y	Location only
Tailing impoundment reclamation	Y	
Pit lake, and TSF Lake filling	Y	
Plant and associated facility removal and reclamation	N	
Road decommissioning	N	
Transmission line decommissioning	N	
Post-closure		
Discharge of tailings storage facility water	Y	
Discharge of pit lake water	N	Into Lower Fish Creek
Seepage management and discharge	Y	
Ongoing monitoring of reclamation	Y	

As with the other three Project elements, for those mine site components, features and activities for which there is no change, the EIS provides rationale and documentation as to why the environmental effects as previously determined remain the same. In instances where the implementation of the new MDP and mitigation measures leads to changes to previously predicted environmental effects they are described.

2.3.2 Scope of Assessment

This environmental assessment has been completed using a standard methodological framework to meet the requirements of CEA Act. The scope of assessment focusses on changes to on-site and off-site components and activities associated with the new MDP and reconfiguration of the mine site layout. The EIS also considers those components and activities associated with the Project that have not changed but may result in changes to the environmental effects determinations from the 2009/2010 review of the previously assessed project.

The environmental effects assessment method used is based on a structured approach that:

- Considers that mandatory and discretionary factors required under Section 16 of CEA Act
- Focusses on issues of greatest concern
- Affords consideration of key issues raised by the public, aboriginal people and public stakeholders
- Integrates engineering design and programs for mitigation and monitoring into a comprehensive environmental planning process, and
- Addresses project related and cumulative environmental effects (assessed sequentially).

For each of the components, features and activities listed in Table 2.3.1-1 for which there is a change indicated, interactions between key Project activities and the environment are ranked according to the potential for an activity to interact with one or more valued ecosystem components of the biophysical or human environment. Ranking of each interaction was assigned as follows:

“0” = Interaction is likely to decrease or stay the same (i.e. no changes to the significance conclusion) and there are no changes to previously proposed mitigation measures contemplated. No further assessment is warranted.

“1” = Interaction is likely to decrease or stay the same but some re-evaluation of effect is required due to changes in project design or proposed mitigation measures. All interactions listed as “1” are described and related information and justification is presented in the EIS.

“2” = Interaction is likely to increase therefore further assessment is warranted. All interactions listed as “2” are described and related information and assessment is presented in the EIS.

Ranking of the Project–environment interactions for each interaction is provided in the specific section of the environmental assessment for that interaction.

2.3.3 Factors to be Considered

As detailed in the EIS Guidelines the factors considered in this EIS are those required under Section 16 of the CEA Act. Consideration of the following factors is included:

- Environmental effects of the Project including environmental effects of malfunctions and accidents and any cumulative environmental effects that are likely to result from the Project in combination with other projects or activities that have been or will be carried out. See Section 2.7.
- The significance of the environmental effects referred to in the above paragraph. See Section 2.7.
- Comments from the public and Aboriginal groups that were received during this and the previously assessed project review. See Section 2.5.1.
- Measures that are technically and economically feasible that would mitigate any significant adverse environmental effects of the Project. See Section 2.7.2.
- The need for and purpose of the Project. See Section 2.2.1.
- Alternatives to the Project and alternative means of carrying out the Project that are technically and economically feasible and the environmental effects of any such alternative means. See Section 2.4.
- The need for and the requirements of any follow-up program in respect of the Project and the capacity of renewable resources which are likely to be significantly affected by the Project to meet the needs of the present and those of the future. See Sections 2.7.8 and 2.8.3.
- Community and Aboriginal traditional knowledge. Taseko has considered and included community and Aboriginal traditional knowledge in the EIS. In addition to the information included in the 2009 EIS submission in Volume 8, Section 2.4 (Traditional Knowledge and Traditional Land Use), Taseko has considered the Ethnography studies in Appendix 2.6.4-A, information provided during consultation and engagement since 1992 as documented in Appendices to Section 2.5.1, and conducted an extensive review of the transcripts of the previous panel review and incorporated all information related to community and traditional knowledge as noted in Sections 1.2.2, 2.5.1, 2.6.4.2 and throughout Section 2.7 (Impact Assessment), particularly in Sections 2.7.2.7 (Vegetation) and 2.7.2.8 (Wildlife).

2.3.4 Scope of Factors

As stated in Sections 2.3.2, 2.3.6 and 2.3.7, the EIS focusses the assessment on relevant issues and concerns, and by defining both the temporal and spatial boundaries, a frame of reference for the assessment of significant environmental effects and cumulative effects has been established. As indicated in Section 2.7.2, different boundaries are appropriate for some of the VECs and KIs.

2.3.5 Valued Ecosystem Components

Based on the requirements of Section 2.3.5 of the EIS guidelines, a review of the prior panel report, and input obtained from interested parties since the prior panel review, the following valued ecosystem components are assessed in this EIS.

- Atmospheric Environment including climate change
- Acoustic Environment
- Aquatic Environment including:
 - Water quality and quantity
 - Hydrology and hydrogeology
 - Fish and fish habitat, and
 - Aquatic ecosystems including benthos and sediment quality, federally and provincially listed species at risk, and species of Aboriginal importance including salmon populations and rainbow trout.
- Terrestrial environment including:
 - Terrain and soils
 - Vegetation including country food, old growth forests and wetlands, and
 - Wildlife and wildlife habitat including avifauna, migratory birds, federally and provincially listed species at risk, red and blue listed ecological communities and species of Aboriginal importance with particular reference to Grizzly Bear.

For each valued ecosystem component, this document assesses whether the Project is likely to cause any significant adverse effects, having regard to the CEAA Reference Guide: Determining Whether A Project is Likely to Cause Significant Adverse Environmental Effects - The Requirements of the *Canadian Environmental Assessment Act* (<http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=D213D286-1&offset=2&toc=show>) (CEAA, 2012). That document states, in part:

The concept of significance is extremely important in the Act. One of the stated purposes of the Act is: "to ensure that projects that are to be carried out in Canada or on federal lands do not cause significant adverse environmental effects outside the jurisdictions in which the projects are carried out" (Section 4 (c)).

The central test in the Act is whether a project is likely to cause significant adverse environmental effects. This determination is an objective test from a legal standpoint, which means that all decisions about whether or not projects are likely to cause adverse environmental effects must be supported by findings based on the requirements set out in the Act.

The definitions of "environment" and "environmental effect" are the starting point for this test. The Act defines the environment as:

- The components of the Earth, and includes:
 1. Land, water and air, including all layers of the atmosphere,
 2. All organic and inorganic matter and living organisms, and
 3. The interacting natural systems that include components referred to in paragraphs (a) and (b) (Section 2(1)).

Environmental effect means, in respect of a project:

1. Any change that the Project may cause in the environment, including any effect of any such change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes by aboriginal persons, or on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, and
2. Any change to the Project that may be caused by the environment, whether any such change occurs within or outside Canada (Section 2 (1)).

Only environmental effects as defined in the Act can be considered in determinations of significance and the related matters. It follows that the determination of significance and the related matters can consider only:

- Direct changes in the environment caused by the Project
- The effects of these environmental changes on:
 - Health and socio-economic conditions
 - Physical and cultural heritage
 - Current use of lands and resources for traditional purposes by aboriginal persons
 - Any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, or
- Changes to the Project caused by the environment.

For example, the socio-economic effects of a project may or may not be factors in determining significance and the related matters. If a socio-economic effect (such as job losses) is caused by a change in the environment (such as loss of fish habitat), which is in turn caused by the Project, then the socio-economic effect is an environmental effect within the meaning of the Act and must be considered when determining significance and the related matters. If the socio-economic effect is not caused by a change in the environment, however, but by something else related to the Project (for example, reallocation of funding as a result of the Project), then the socio-economic effect is not an environmental effect within the meaning of the Act and cannot be considered in the determination of significance and the related matters.

For these reasons, impacts of the following valued ecosystem components in relation to socioeconomic matters, physical and cultural heritage resources, and aboriginal interests referenced in the Canadian environmental assessment act (other than established or asserted aboriginal rights and title) are assessed only to the extent that they are affected by a direct change to the environment caused by the Project.

- Socio-economic environment including:
 - Community services, infrastructure and population
 - Resource uses
 - Navigable waters, and
 - Human health.

- Physical and cultural heritage resources including:
 - Archaeology
- Aboriginal interests including:
 - Aboriginal communities
 - Current uses of lands and resources for traditional purposes, and
 - Archaeology resources.

Further, it should be noted that the analysis of potential social and economic impacts is divided into parts. The first assesses potential adverse social and economic impacts" in accordance with the framework described above. The second part describes expected social and economic benefits of the Project – and information in that part is not limited to benefits that are derived from a direct change to the environment. This is because that information is provided not for the purposes of assessing adverse impacts, but rather to help inform government's ultimate decision making as to whether to approve the Project even if the panel were to find it likely to cause any significant adverse effects.

With respect to potential or established Aboriginal rights or title, aboriginal rights and title are subject to constitutional protection and related legal duties and, as such are subject to a different framework of analysis than the one that applies to environmental effects. As such, issues related to the established or potential aboriginal rights or titles are addressed in Section 2.7.5 of the EIS, with cross referencing to other relevant sections as appropriate.

For each VEC or KI, one or more measurable parameters were selected to facilitate quantitative or qualitative measurement of potential project environmental effects and cumulative environmental effects. Measurable parameters provide a means to determine the level or amount of change to a VEC or KI as a result of an environmental effect. For example, a measure of total suspended solids might be chosen as the measurable parameter for change in habitat quality (the environmental effect) for the VEC Aquatic Environment or KI Fish and Fish Habitat. Other examples of measurable parameters include specific water quality measurements; changes in the seasonal distribution of fish, the presence of residential birds or terrestrial mammals; employment rates; demand for various land and resource uses; demand for infrastructure; and the number and type of archaeological sites.

The degree of change in these measurable parameters was used to characterize Project-related and cumulative environmental effects, and evaluate the significance of the potential environmental effects. Thresholds or standards were identified for each measurable parameter to assist, where possible, in determining the significance of a predicted environmental effect.

2.3.6 Spatial Boundaries

Spatial boundaries were primarily established based on the zone of the Project Influence, beyond which the potential environmental, cultural and socio-economic effects of the Project are expected to be non-detectable. They include a Local Study Area (LSA), for project-specific effects, and a Regional Study Area (RSA), for cumulative effects. For most biophysical components of the environmental assessment, the LSA consists of the Project footprint called the Maximum Disturbance Area (MDA). This is the area within which the direct effects of the Project on the environment are detectable. For some disciplines, LSAs and RSAs were defined for the mine site, the transmission line, and the access road. Some disciplines also defined a study area for the load-out facility.

RSAs for cumulative effects assessment are defined by the furthest extent that measurable or demonstrable project-specific effects may act in combination with similar effects from other projects on VECs.

As directed by the EIS Guidelines spatial boundaries were established taking into consideration amongst others, the physical extent of the Project, the extent of cultural heritage resources, aquatic and terrestrial ecosystems, species of conservation concern, land use and traditional land use that may be affected by the Project. When considering the assessment of cumulative effects, the size nature and location of past, present and reasonably foreseeable projects and activities were considered.

For those aspects of the Project that have not changed the spatial boundaries and study areas were based upon the local and regional boundaries utilized in the 2009/10 review. For convenience of the reader these may be found for Air Quality in Volume 4 Section 2.1.5, for the Acoustic environment in Volume 4 Section 3.1.4, Hydrology/Hydrogeology in Volume 4 Section 4.1.6, for Water Quality and Aquatic Ecology Volume 5 Section 2.1.5, Fish and Fish Habitat in Volume 5 Section 3.1.5, Terrain and Soils Volume 5 Section 4.1.5, Vegetation Volume 5 Section 5.1.6, Wildlife Volume 5 Section 6.1.5 and Socio-Economic Volume 6 Section 3.1.5.

For New Prosperity only the mine footprint has changed and this results in changes to the LSA but not the RSA for all but one VEC and KI. For both the Acoustic and Atmospheric environment, as effects previously predicted to occur within the mine site are now offsite, re-analysis of the acoustic and atmospheric modelling was undertaken. The new LSA's established for these analysis are detailed in Section 2.7.2.2 and 2.7.2.3. As the mine footprint and MDA has changed, for Terrain and Soils, Vegetation, Wildlife, Water Quality, and Fish and Fish Habitat the changes to the LSA are described in Sections 2.7.2.6, 2.7.2.7, 2.7.2.8, 2.7.2.4B, and 2.7.2.5 respectively. As detailed further in Section 2.7.2.8 for Grizzly Bear a new RSA was established for the assessment of cumulative effects as new data has been provided by regulatory agencies which provide a population unit based area for assessment of potential cumulative effects.

A detailed description of the Project boundaries, current infrastructure, and land use is provided in Section 2.2.3 (Project Description), in particular figures 2.2.3-1 and 2.2.3-2. Potential development projects are discussed in Section 2.7.1.4 (Cumulative Effects). Discussion of land use for traditional purposes is found in Sections 2.6.4 (Existing Environment) and 2.7.5 (Impact Assessment); and consideration of aboriginal rights is found in Sections 2.5.1.1 (Engagement and Consultation) and in 2.7.5 (Impact Assessment).

Sensitive areas are discussed within the baseline studies (Section 2.6) for applicable VECs.

2.3.7 Temporal Boundaries

The temporal boundaries for the assessment were defined based on the timing and duration of Project environmental effects in relation to each VEC or KI. The purpose of a temporal boundary is to identify when an environmental effect may occur in relation to specific Project phases and activities. Temporal boundaries for most projects typically include:

- Baseline: the biophysical characteristics of the environment, at the time of the assessment, including all existing disturbances and past and present projects
- Construction and commissioning
- Operations (maximum active footprint⁵), and
- Decommissioning.

New Prosperity includes four primary phases of the Project: construction, operation, closure, and post-closure.

The construction phase starts with the issuance of appropriate permits to start development and ends at that point at which the concentrator reaches commercial production. This spans a period of roughly two years.

The operations phase begins at this point and continues for approximately 20 years until no tailings are generated by the concentrator.

The closure phase begins at the cessation of tailings production and continues until the open pit begins to discharge water to Lower Fish Creek approximately 28 years later.

The post-closure phase begins when the open pit has filled with water and begins to discharge to Fish Creek.

For purposes of water quality modelling that reflects changes in project activities through operations and closure, these phases have been further subdivided as follows:

- Construction (Years -2 and -1)
- Operations Phase I (Years 1 through 16)
- Operations Phase II (Years 17 through 20)
- Closure Phase I (Years 21 through 30 for purposes of water quality modelling)
- Closure Phase II (Years 31 through 47 for purposes of water quality modelling), and
- Post-Closure (Years 48 onwards).

Descriptions of the phases related to water management and water quality are further detailed in Section 2.7.2.4A.

Note that the specific years and durations associated with Closure Phases I and II have been assigned for purposes of modelling of water quality predictions.

It will be clear to the reader from the Project description and the water management discussion that the Project as proposed contains the entire water management infrastructure to accommodate changes in timing of water management activities in order to achieve water quality objectives. These adaptive management changes can be made at any time dependant on monitoring of actual water quality during operations, closure, and beyond if required.