Observations, Comments and Questions on Ajax Mine Proposal

Grasslands Conservation Council of BC

Overview of Application

The Grasslands Conservation Council of BC comments are focused on the direct and periphery impacts of the proposed mine, reclamation and associated site management activities on the natural grasslands, grazing lands and the associated habitat and species dependent on them.

This projects involves massive soil disturbance in a dry and windy, and dusty, environment. The project lies upwind of major human population and significant grassland areas. Given the duration of the project and the apparent lack of innovations for dust control, this is a significant concern over the impacts of fugitive dust.

KGHM has offered few specifics for revegetation beyond spreading seed to satisfy the reclamation requirements. This is an aspect of the application is very weak, lacking detail substance or innovation. This is a significant concern given how harsh the growing environment is. Scattering seed on subsoil or top soil will not stabilize the surface and prevent long term dust problems. The lack of a comprehensive approach and detail on invasive plant prevention and control is another example of the inadequacy of the application. The lack of detail on the presence of invasive plants, a control plan, and inadequate monitoring schedule is a recipe for explosive growth in invasive plants.

The Grasslands Conservation Council does not believe the current application provides enough information to provide the confidence and certainty required in the mitigation, reclamation restoration processes. The application does not provide offsets for losses grassland habitat and aquatic environments. The air quality thresholds require a very high standard of care to be consistently met. The consequences of failure to consistently meet a 90% mitigation are high for both humans and the receiving environment.

Should this project receive government approval, the Grasslands Conservation Council is requests government to establish conditions that meet the outcomes defined the provincial mitigation and offset policy to ensure avoidance, mitigation, restoration and offsets for species and habitats that are impacted over the life of the mine or that are lost. Standards and outcomes need to be commensurate with the fragility and rarity of the native grassland habitat and species that will be directly and indirectly impacted by this project. The proponent should be required to meet or exceed these standards.

We find the applications assessment of impacts to grasslands inadequate and confusing and in some areas misleading or inaccurate. Examples of this are as follows:

- 3.2: The "zero harm" definition is not reflected in the commitment to environmental protection and restoration outcomes for grasslands. The application acknowledges long term and in some cases permanent loss of native grasslands. This will result in the displacement or eradication of native species in this location as acknowledged in the application. The failure to commit to an adaptive management restoration program using local native species or providing offsets will result in permanent, long term harm to grasslands and the species dependent on them.
- 6.1.9: understates the environmental impact on grasslands and species occupying them i.e. Page 41 states "The primary effect of the Project on ecological communities at risk will be habitat loss. Limited amounts of rock outcrop habitats or old-growth forests will be lost as a result of Project Construction. The effect to these two sensitive ecosystems is considered a negligible effect." The project removes or alienates 1087 Ha of high value grasslands habit the majority of which will not be restored. Those portions that will be reclaimed will occur over a 25-year period or longer and will not have the same characteristics as the current native grasslands as stated in Appendix 11.26. This is a high impact.
- 6.1.10: The application is contradictory in it claims to restore grasslands (6.1.10) and its claim to reclaim grasslands as outlined on page 2 of appendix 11.26 A; Reclamation is possible however restoration is very unlikely and very long term as noted in 11.26 A. This challenges the assertion by the proponent that offsets are not required for lost grassland habitat. The habitat is lost or unusable for over 25 years.
- 6.9-7: Claims low impact on wetlands with only .4 % not being recovered. The application fails to recognize that wetlands in grasslands are drying up (documented by (TRU and BCWF) and fails to consider the cumulative effect of incremental wet land loss from other projects and natural occurrences making them more even more rare.
 - 6-9-13: cumulative effects rating guide definitions used for minor and medium effects are misleading and understates the impacts on rare and endangered species when losses exceed 10%.
 - Diagram 6-10-1 descriptions of the environmental components is simplistic and does not properly reflect the interactions between the components nor the compounding effects they have upon one another.

- 6.10.6.1 claims no cumulative impacts to grasslands habitat which is incorrect and is contrary to the finding in table 6.10-11. The outcome of the reclamation activity does not meet the definition used by the proponent (page 29 of the executive summary). The projects removal of high value grasslands habitat is permanent (as acknowledged in Appendix 11.26 A) and is in addition to the thousands of hectares of grasslands already lost in the Thompson Region. Grassland loss (3028 ha) in the Thompson in recent years is second provincially only to the Okanagan regions lost more.
- 6.10.6.1 fails to recognize the need for offsets for lost grasslands habitat during the life of the project and subsequent to the project moving in to reclamation and monitoring. The same finding holds to for rare plants and habitats.
- 6.10.4.3, 6.10.6.4.: suggests that the proponent will be working with the Grasslands Conservation Council in the reclamation of the grasslands however the Grasslands Conservation Council has neither been approached, requested or agreed to participate in this work at this time. The application is lacking in sufficient detail and certainty to make a determination if the Grasslands Conservation Council will agree to participate in grassland reclamation planning
- 6.10.4.3: states using lower stocking rates for cattle to reduce impact on grasslands in the area. During the February 18, 2016 Community Advisory Group meeting on the application, the proponent indicated they would keep the stocking rates the same. If it's the latter grasslands and other range lands have the potential to be over grazed. What are the facts on grazing planning?

6.10.5.3: suggests that Grasslands should be able to adapt to habitat loss with time. Grasslands exist on the edge of the vegetative spectrum in a hostile climatic regime. This is confirmed in Appendix 11.26 A. Areas that have experiences significant disturbance in the past have not shown an ability for native grasslands to adapt or even re-establish.

Experience suggest that successful restoration of grassland areas entails a significant investment of time, effort and funding to control ongoing invasive plants, re-vegetation using native species and enhancing soil conditions. All these factors are fundamental to recovery where the basic root stock remains in tact; it takes longer if the root stock is gone. The application makes no commitment to this level of mitigation or site restoration nor is it likely that any original root stock will remain in disturbed areas.

 6.10.7: The reference to the loss of 3% of priority grasslands misrepresents the intent of the priority grasslands analysis. The suggestion that there is suitable habitat else where is not supported by priority grasslands mapping nor the existence of priority grassland values in those areas. The absence of offsets does not support the proponents' conclusion of no cumulative impacts given the acknowledged long term nature of reclamation; that lack of a restoration commitment and measures and the displacement of migratory and resident species over the operating life of the mine .

Priority grasslands are the most significant grasslands values in the region. The intent of the mapping was to highlight these values to be avoided by disturbance. Removing 4% eliminates critical habitat for the species in that area which is in addition to the loss of other priority grassland areas in the region. The application contradicts itself as to whether the proponent intends to restore or reclaim grasslands. Its

6-10-50: Impact ratings and definitions of minor and moderate impact and the conclusion of "not "significant" category misrepresents the impacts and outcomes on rare species and habitats in grasslands. By definition the provinces grasslands are already defined as rare and endangered in BC and species that are listed are threatened nationally or provincially. Any looses need to be avoided compensated for. The cumulative effects rating confirm low resiliency for grasslands habitats and species. Any impact has a high probability of a very long term or permanent impact regionally.

Grasslands species exist in the locations they are in because of habitat suitability. Once destroyed the likelihood of recovery is extremely low. This represents a significant regional impact given the losses already occurring in the region. The applications failure to recognizes cumulative effects associated with this project and lack of adaptive management strategies will ensure species and habitat loss.

 11.26 the application fails to provide commitments to specific mitigation measures to be used on site for displaced species and their habitat over the life of the project. It is presented in a manner of applied science but does not direct mitigation on site

Specific Comments:

The following comments are provided in the context of *if the project is being considered for approval* the following consideration should be assessed and conditions included:

Grassland Habitat loss and reclamation:

1)6.10:The mine footprint will effect 1087Ha of high value native grasslands that is occupied by species at risk. The proponent is claiming no net cumulative impact to grasslands while admitting they cannot restore grasslands habitat that will be destroyed. They also acknowledge long term reclamation because of the nature of the climatic and site conditions.

Historical mapping by the GCC has determined that over 23,000 hectares of grassland has been removed from the Thompson Basin from Chase to Cache Creek. There has been an additional

loss of 3028 hectares from the mid 1990s to early 2010. Further permanent loss of 8,473 hectares is expected in the area, most notably around Kamloops. While the proponent cannot be expected to be held accountable for future losses in grasslands, they do need to account for grasslands already lost. The proposal will impact an additional 1087 ha, a full third of what been lost since the mid 1990's.

1) Requested action: Government create a condition requiring the proponent to avoid, substantially mitigate, restore or offset and compensate for direct and indirect impacts on native grasslands losses on a 2 to 1 basis.

2) 6.10-12: The application acknowledges the length of time (25 years plus) for a grassland ecological system to recover from significant disturbance. It also acknowledges that they will not be able to recover or replace the existing habitat in many instances (11.26 A). The proponent intends to reclaim the area as mine development permits however there are no definitive time frames for when or who long this will occur or whether the habitat will be suitable for occupation and use by native species. The potential is for much of the area to be unusable by native species for up a period of 23-25 years. This a long term impact with a high degree of uncertainty form a habitat availability perspective.

2-1 Question: The closure period is estimated to occur over a five year period while restoration of grasslands is acknowledged to take 25 years or more. After five years the proposal is to move to the monitoring phase. What happens if growing conditions change in year 7 and the reclamation fails?

2-2) Question: Will the proponent commit to actively managing the grassland reclamation areas for the 25 or more years there are expected to recover?

2-2-b) Question: Will government require a performance bond large enough with a long enough term to cover the period post closure to ensure adequate reclamation of grasslands habitat

2-3) Requested Action: Government establish an approval condition that establishes a "free to grow" standard for native grasslands before the monitoring phase begins.

- 2) The proposed seed mixture for restoration contains a few of the native species however there is no indication of whether the seed is from local stock. Research elsewhere has shown some wildlife have a preference for local species and not utilize areas with non native forage. The seed mix introduces some non native species which will form a good cover crop for ground cover and grazing but wont replace native plant species depended on by native fauna.
 - **3-1)** Question: Will the proponent commit to use native seed stock and plugs in mitigation activities for reclaiming native grassland areas

3-2) Requested Action: As per #1 government to establish a condition requiring the proponent to avoid, substantially mitigate restore or offset and compensate for direct and indirect impacts on native grasslands losses.

4) 6:18: Mitigation and Offsetting: The proposed mitigation in the 6.18 summary table contains considerable soft language and lacks firm commitments for actions. It also lacks references for substantive detail on how the mitigation will be accomplished in some instances.

Examples include:

- "Avoid use of herbicides "What actions will take the place of them for control measures? Is it appropriate or effective for controlling invasive plants for up to 50 years?

- "Invasive species management..." What does the Invasive plant strategy consist of and what is the management and monitoring frequency; is it enough and for how long? Invasive plants will continue to be introduced to the site after the reclamation period has ended

- "Wetland compensation/enhancement...." Where, how much and what is it, Is it enough enough?

- "Contribute to existing programs on spadefoots..." contribute what, how much and how long? is it enough?

Offsetting in the context of resource management is defined as creating "additionality" to biodiversity. In this context, the Inks Lake proposal is not an offset, rather it is destroying one functioning aquatic system and creating another. Both Inks and Jacko lakes have biological value as they are today and species that are dependent on them. Introducing fish and dredging Inks lake will destroy that ecosystem. Creating a new man made lake would be an offset however it would be traded off against the ecosystem you are destroying. Another approach would be to enhance an existing fish bearing lakes habitat or alternately avoid disturbing Jacko Lake.

4-1: Question: Where is the offset for the loss of Goose Lake considered?

4-2) Requested Action: Approval conditions require the proponent to make clear, firm mitigations commitments in all areas of environmental mitigation that meet or beat provincial requirements.

4-3) Requested Action: Government provide a mitigation and offset framework complete with definitions and thresholds for meeting the requirements of the framework for the proponent to use where offsetting ir required.

5) Air Quality

10.1-45: The air quality modeling shows that total dustfall, PM 10 and PM 2.5 in the base, project and application scenarios exceed guideline (10.1-45). The application goes to some lengths pointing out that the project is not the cause of the exceedance but fails to note in the explanation that it builds on levels that already exceed provincial standards. The application

also notes that some of the heaviest dust falls lands on unoccupied areas. While this limits human exposure to the negative impacts the increased dust fall on other species is very negative.

5-1 What is the impact of the increased dust fall deposition on native species in the identified uninhabited areas over the life of the project?.

5-2 The predicted impacts from fugitive dust is based on a control regime of 90% mitigation effectiveness.

- At what level of effectiveness control does human and health become at risk (i.e. is human health effected at 80% mitigation)?
- What redundancies are in the dust control mitigation systems to prevent levels reaching harmful levels for humans and other species?

6) Invasive Plant Management

11.17-The section on Invasive plants appears to be written from a hypothetical perspective rather than having a confirmed approach to controlling invasive plants. The lack of specific reference and action plan to address known invasive plants in the region and specifically on the project site is a significant analysis information and knowledge gap for managing grasslands and rare plant communitie .

The application acknowledges that soil disturbance is the leading cause of allowing invasive plants to establish. By definition an open pit mine and associated infrastructure and activities is a significant on going disturbance for a period of 25 years. The lack of a specified action plan is a significant gap as the site already has invasive plants on it.

The lack of knowledge and appreciation of the problem of invasive plants in grasslands and an active mine site is further evidenced by the conflict between the stated objectives (11.2); preventing the introduction of invasive plants by maintaining biological integrity, resiliency and composition; juxtaposed to the nature of the activities of the mine construction operation which will remove all biological values in the development area. The nature of the activity causes significant soil disturbance and removal, introduces many new vectors for seed introduction

The lack of comprehension of how quickly invasive plants establish themselves is underscored by the monitoring plans during construction and operation. The proposed monitoring schedule for invasive plants on an annual or bi annual basis is both contradictory to the stated objectives of successfully preventing the introduction and spread of invasive plants.

An active mine site provides the potential for daily introduction of seed source. In addition, there is already a seed bank on site that will have a longevity of at least 25 years. A more frequent systematic monitoring and control program is required to prevent

introduction and spread inside the site and off site. The company will need to use the full range of control tools avaible to have effective invasive plant control on a disturbance of this scale.

A pesticide management plan should have accompanied the application to demonstrate competency in this area of management.

6-1: Requested action. The province require a comprehensive invasive plant management and monitoring program that will prevent the introduction and spread of invasive plants over the life of the mine including the restoration and monitoring phases prior to issuing a certificate.

6-2 The Province hold the company to be responsible for all edge effect infestations and control on and off site for 50 years.

Community Advisory Group

7) The community advisory group member ship is largely a government advisory group as currently confirmed.

7-1-Suggest expanding the community advisory group to include a range of public interests including community associations, downtown business associations, conservation organizations in addition to those already listed.