

6111 91 Street Edmonton, AB T6E 6V6 tel: 780.496.9048 fax: 780.496.9049

Suite 325, 1925 18 Avenue NE Calgary, AB T2E 7T8 tel: 403.592.6180 fax: 403.283.2647

#106, 10920 84 Avenue Grande Prairie, AB T8V 6H2 tel: 780.357.5500 fax: 780.357.5501

toll free: 888.722.2563 www.mems.ca

# **Grassy Mountain Coal Project**

## Land and Resource Use Assessment

Prepared for: **Benga Mining Limited** 

Prepared by:

Millennium EMS Solutions Ltd.
6111 91 Street
Edmonton, Alberta
T6E 6V6

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#### 1.0 INTRODUCTION

Millennium EMS Solutions Ltd. (MEMS) was retained by Benga Mining Limited (Benga) to undertake a Land and Resource Use Assessment for the proposed Grassy Mountain Coal Project (the Project). The Project is located in south-west Alberta near the Crowsnest Pass, approximately 7 km north of the community of Blairmore (Figure 1.0-1). The Project involves a surface (metallurgical) coal mine, a coal handling and preparation plant (CHPP), and associated infrastructure including an overland, covered conveyor system, a rail load-out facility, an access corridor, maintenance shops, and other pertinent facilities.

## 2.0 OBJECTIVES

The objectives of the Land and Resource Use Assessment are to identify land and resource uses that occur in the area proposed to be developed, identify how development of the proposed mine may impact those uses and recommend mitigation measures to reduce impacts to either existing or potential land and resource uses.

The specific requirements for the Land and Resource Use Assessment are outlined in the Final Terms of Reference (ToR) issued by the Alberta Energy Regulator (AER) on March 19, 2015, and the Canadian Environmental Assessment Agency (CEAA) *Guidelines for the Preparation of an Environmental Impact Statement for the Grassy Mountain Coal Project* (CEAA 2015). The requirements of the AER ToR as they relate to land and resource use are listed in Table 2.0-1. The requirements for the Land and Resource Use Assessment as identified in the Guidelines for the Preparation of an Environmental Impact Statement (EIS) issued by the Canadian Environmental Assessment Agency are listed in Table 2.0-2.

Table 2.0-1	Alberta Energy Regulator Terms of Reference Requirements related to Land Use and
	Management

## 4.10 Land Use and Management

#### 4.10.1 Baseline Information

- [A] Describe the existing land and resource uses and potential conflicts, considering oil and gas development, agriculture, forestry, tourism; and outdoor recreational activities.
- [B] Describe and map all Crown land and Crown reservations (Holding Reservation, Protective Notation, Consultative Notation).
- [C] Identify and map unique sites or special features such as parks and protected areas, heritage rivers, historic sites, environmentally significant areas, culturally significant sites, and other designations (World Heritage sites, Ramsar sites, internationally important bird areas, *etc.*).
- [D] Describe existing access control measures.



i.

## Table 2.0-1 Alberta Energy Regulator Terms of Reference Requirements related to Land Use and Management 4.10.2 **Impact Assessment** [A] Describe access corridors needed and/or planned by other resource development stakeholders, including those responsible for forest management areas and other timber quota holders, and describe a. how their needs are accommodated to reduce overall environmental impact from resource development; and b. opportunities for cooperation on access development. [B] Indicate where Crown land dispositions may be needed for roads or other infrastructure for the project. [C] Provide a description and timing of land-clearing activities. [D]Identify the potential impact of the project on land uses, including a. impacts to unique sites or special features; b. the results of consultation with Parks Canada Agency on potential impacts of the project to the lands, waters, air, and natural and cultural heritage resources of national parks, national historic sites, national marine conservation areas, Canadian heritage rivers, UNESCO World Heritage sites and Ramsar Convention Wetlands of International Importance. Where impacts are predicted, provide the results of the analysis and clearly identify the impacts to the special protected area; impacts caused by changes in public access arising from linear development, including secondary effects related to increased hunter, angler, and other recreational access; decreased access to traditional use sites; and facilitated predator movement; d. the implications of relevant land-use policies and resource management initiatives for the project, including any constraints to development. Discuss how the project will be consistent with the intent of these initiatives; e. potential impacts to aggregate reserves that may be located on land under the proponent's control and reserves in the region; f. the impact of development and reclamation on commercial forest harvesting in the project area. Include opportunities for timber salvage, revegetation, reforestation, and harvest for the reduction of fuel hazard: the amount of commercial and non-commercial forest land base that will be disturbed by the project. g. Compare the pre-disturbance and reclaimed percentages and distribution of all forested communities in the project area; h. how the project impacts annual allowable cuts and quotas within the forest management agreement

the potential impact on existing land uses of anticipated changes (type and extent) to the pre-

disturbance topography, elevation, and drainage pattern within the project area; and

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## Table 2.0-1 Alberta Energy Regulator Terms of Reference Requirements related to Land Use and Management j. impacts of the project on public access, regional recreational activities, aboriginal land use, and other land uses during and after development activities. [E] Identify any access restrictions, including, where appropriate, measures taken to control access to the project area while ensuring continued access to adjacent wildland areas. [F] Provide a fire control plan highlighting a. measures taken to ensure continued access for firefighters to adjacent wildland areas; b. forest fire prevention, detection, reporting, and suppression measures, including proposed firefighting equipment; measures for determining the clearing width of power line rights-of-way; and c. d. required mitigative measures for areas adjacent to the project area based on the FireSmart Wildfire Assessment System.

# Table 2.0-2 Federal Environmental Impact Statement Guideline Requirements related to Land and Resource Use

#### 6.1.10 Human Environment

## The EIS will contain baseline information on the following:

- The rural and urban settings likely to be affected by the Project;
- The current use of land in the study area, including a description of hunting, recreational, and commercial fishing, trapping, gathering, outdoor recreation, use of seasonal cabins, outfitters;
- Current use of all waterways and water bodies that will be directly affected by the Project, including recreational uses, where available; and,
- Location of and proximity of any permanent, seasonal, or temporary residences or camps;

#### 3.0 METHODOLOGY

## 3.1 Study Areas

The study areas to be utilized for the assessment were selected based on the area of potential for direct impact due to development of the Project. The local study area (LSA) for the Land and Resource Use Assessment includes the lands that may be directly impacted by Project development and the regional study area (RSA) includes the area within approximately 1.6 km of the LSA

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(Figure 3.1-1). The RSA boundary was chosen in order to identify adjacent land and resource users that may be indirectly impacted by development of the Project.

## 3.2 Valued Components

The Land and Resource Use Assessment focusses on a number of Valued Components (VCs) that have been identified based on a review of the existing land uses within the study areas. Existing land uses were identified through:

- a review of the Public Land Standing Report (LSAS Report) from Alberta Energy's Geographic Land Information Management and Planning System (GLIMPS);
- a review of dispositions included in Alberta Environment and Parks (AEP) Disposition Spatial Processing Tool;
- a review of the crown mineral dispositions from Alberta Energy's Alberta Mineral Information System (AMIS);
- a review of existing Land Title Certificates;
- a review of public information regarding land use planning initiatives; and
- Benga's public consultation program.

The land and resource use VCs chosen for the assessment are outlined in Table 3.2-1. In many instances an assessment of the impact to these VCs requires the undertaking of specialized technical assessments. Based on this, the assessment provided herein focusses on the potential impacts due to direct disturbance to existing land and resource use activities. Potential impacts to land use capability and the availability of biological and social resources is provided in other assessments undertaken for the Project such as:

- the Vegetation, Rare Plants and Wetland Assessment (Section E.8 and Consultant Report (CR) #8), which included an assessment on the impacts of the Project on forestry resources;
- the Wildlife Assessment (Section E.9 and CR #9), which included an assessment on fur bearers;
- the Socio-Economic Assessment (Section E.11 and CR #11), which included an assessment of the effects on regional infrastructure and services;
- the Traditional Ecological Knowledge and Land Use (Section H and Appendix 7c), which provided the impacts to traditional use of the area; and
- the Historical Resource Impact Assessment (Section E.13), which provided an assessment of the impacts to historical, archaeological and paleontological sites.

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Table 3.2-1 Summary of Valued Components and Indicator Parameters						
Valued Component	Key Indicator	Rationale for Key Indicator				
Land Use Policies and Resource Management	Land use policies (i.e., zoning)	Development of the Project will need to be consistent with the intent of the land management frameworks that				
Initiatives	Environmentally important areas	have been developed by the Province of Alberta.				
	Location of Coal Resource and Surface Facilities					
Resource Development	Location of Petroleum and Natural Gas Resource and Surface Facilities	The Project has the potential to impact the ability to develop other resources that currently exist in the				
	Location of Mines and Minerals Resource	area.				
	Location of Forestry & Agricultural Resources					
Hunting and Trapping	Accessibility of Wildlife to undertaking Hunting and Trapping Activities	Development of the Project has the potential to impact the ability to access trapping and hunting areas and the availability of resource necessary to undertake these activities.				
Access and Utilities	Location of Access Roads and Public Utilities	Development of the Project has the potential to disrupt public access to the land and disrupt public services such as utilities.				
Tourism and Outdoor Recreation	Accessibility of Camping and Outdoor Recreation Areas	Development of the Project has the potential to reduce opportunities for camping and other outdoor recreational activities.				
Unique Sites and Special Features	Location of Unique Sites and Special Features.	Development of the Project has the potential to disturb Unique Sites and Special Features which are none renewable in nature and once disturbed cannot be reclaimed.				

## 3.3 Assessment Methodology

The methodology followed for the Land and Resource Use Assessment is consistent with all other disciplines as provided in Section D. For each identified VC, an assessment of the potential impact is made using the attributes of direction, geographic extent, magnitude, duration, likelihood,



reversibility, and confidence in the relationships between cause and effect. An overall impact assessment rating for each VC is derived based on a prediction of the impacts remaining after mitigation and reclamation activities have been completed (*i.e.*, the residual Project impacts).

Each VC will be evaluated in the context of three assessment cases:

- Baseline Case which includes an identification of all existing land and resource uses in the study area;
- Application Case which includes an evaluation of the potential impacts of the Project on those existing land and resource uses identified for the Base Case; and
- Planned Development Case (or Cumulative Effects Assessment) which includes an evaluation of the potential impacts of the proposed Project, in conjunction with other reasonably foreseeable projects, on land and resource uses in the study area.

#### 4.0 BASELINE CONDITIONS

## 4.1 Land Ownership

The Project is located within the Municipal District of Rangelands No. 66 and within the Municipality of Crowsnest Pass. The closest communities to the Project are Blairmore and Coleman. The Project in situated on both Crown and freehold land (Figure 4.1-1). The private land with the LSA and RSA is owned by Benga, the Municipality of Crowsnest Pass, the Crowsnest Pass Golf and Country Club and other individual private land owners (Table 4.1-1).

There are seven properties within the LSA that have existing dwelling in the form of cabins. Access to these lands is currently provided by a road owned by Benga through Benga's privately owned land. The Historic Town of Lille and two additional dwellings are located just east of the LSA but within the RSA.

There are four surface dispositions found within the LSA and RSA that are in place to support activities occurring on private land (Table 4.1-2). One Department Licence of Occupation (DLO) for an access road, an Easements (EZE) for a water intake, an EZE for a water pipeline (Figure 4.1-1) and a recreational lease (REC) for portions of the Crowsnest Pass Golf & Country Club.

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		Legal Location				
Title No.	Owner	QTR	SEC	TWP	RGE	Meridian
161 002 147	Benga Mining Limited	NW	19	8	3	5
051 223 917*	Donkersgoed Feeders Ltd. & Berdina Farms Ltd.	SW	19	8	3	5
161 005 571	Benga Mining Limited	NW	30	8	3	5
041 017 188*	Private	SW	30	8	3	5
931 216 964*	Private	SW	31	8	3	5
131 243 634 +1	Benga Mining Limited	pt. NW	2	8	4	5
081 457 306	Crowsnest Pass Golf & Country Club	pt. NW	2	8	4	5
154O84*	The Municipality of Crowsnest Pass	pt. SE	2	8	4	5
921 297 189*	The Municipality of Crowsnest Pass	pt. SE	2	8	4	5
131 243 634*	Benga Mining Limited	pt. SE	2	8	4	5
131 235 727	Benga Mining Limited	pt. SW	2	8	4	5
021 022 477 +2	Crowsnest Pass Golf & Country Club	pt. SW	2	8	4	5
081 457 306	Crowsnest Pass Golf & Country Club	pt. SW	2	8	4	5
081 457 306	Crowsnest Pass Golf & Country Club	pt. NE	3	8	4	5
131 235 728 +13	Benga Mining Limited	pt. NE	3	8	4	5
131 235 727 +14	Benga Mining Limited	pt. NE	3	8	4	5
081 457 306 +1*	Crowsnest Pass Golf & Country Club	pt. SE	3	8	4	5
081 457 306	Crowsnest Pass Golf & Country Club	pt. SE	3	8	4	5
131 235 727 +13	Benga Mining Limited	pt. NW	3	8	4	5
131 235 728 +12	Benga Mining Limited	pt. NW	3	8	4	5
131 235 727 +3*	Benga Mining Limited	NE	10	8	4	5
131 235 728 +10*	Benga Mining Limited	NE	10	8	4	5
131 235 727 +3	Benga Mining Limited	SE	10	8	4	5
131 235 728 +10	Benga Mining Limited	SE	10	8	4	5
011 163 509	Private	pt. SW	10	8	4	5
131 235 727 +2	Benga Mining Limited	NW	11	8	4	5



Table 4.1-1 Freehold Titles within the Local Study Area						
		Legal Location				
Title No.	Owner	QTR	SEC	TWP	RGE	Meridian
131 235 728 +6	Benga Mining Limited	NW	11	8	4	5
131 235 727 +2	Benga Mining Limited	SW	11	8	4	5
131 235 728 +6	Benga Mining Limited	SW	11	8	4	5
131 236 676	Benga Mining Limited	NW	14	8	4	5
131 236 677	Benga Mining Limited	NW	14	8	4	5
131 236 676	Benga Mining Limited	pt. SW	14	8	4	5
131 236 677	Benga Mining Limited	pt. SW	14	8	4	5
131 235 727 +1*	Benga Mining Limited	SE	15	8	4	5
131 235 728 +9*	Benga Mining Limited	SE	15	8	4	5
131 236 674	Benga Mining Limited	NE	23	8	4	5
131 236 675	Benga Mining Limited	NE	23	8	4	5
131 236 674	Benga Mining Limited	SE	23	8	4	5
131 236 675	Benga Mining Limited	SE	23	8	4	5
151 261 447	Benga Mining Limited	NE	24	8	4	5
131 235 106	Benga Mining Limited	NW	24	8	4	5
131 235 107	Benga Mining Limited	NW	24	8	4	5
971 175 776	Private	SE	24	8	4	5
131 235 106	Benga Mining Limited	SW	24	8	4	5
131 235 107	Benga Mining Limited	SW	24	8	4	5
131 235 209	Benga Mining Limited	pt. NE	25	8	4	5
131 235 210	Benga Mining Limited	pt. NE	25	8	4	5
131 235 211	Benga Mining Limited	NW	25	8	4	5
131 235 212	Benga Mining Limited	NW	25	8	4	5
131 235 212	Benga Mining Limited	SE	25	8	4	5
131 235 211	Benga Mining Limited	SE	25	8	4	5
131 235 211	Benga Mining Limited	SW	25	8	4	5
131 235 212	Benga Mining Limited	SW	25	8	4	5



Table 4.1-1 Freehold Titles within the Local Study Area						
		Legal Location				
Title No.	Owner	QTR	SEC	TWP	RGE	Meridian
131 235 151	Benga Mining Limited	pt. NE	36	8	4	5
131 235 150	Benga Mining Limited	pt. NE	36	8	4	5
131 235 148	Benga Mining Limited	NW	36	8	4	5
131 235 149	Benga Mining Limited	NW	36	8	4	5
131 235 152	Benga Mining Limited	pt. SE	36	8	4	5
131 235 153	Benga Mining Limited	pt. SE	36	8	4	5
131 235 148	Benga Mining Limited	SW	36	8	4	5
131 235 149	Benga Mining Limited	SW	36	8	4	5

Private Names of individuals have been redacted.

pt. Denotes that title is only for a portion of the quarter section

Table 4.1-2 Surface Dispositions held by Private Land Owners in the LSA and RSA					
Disposition	Disposition Holder	Location			
EZE 940321	Crowsnest Pass Golf and Country Club (water pipeline)	SE-3-8-4 W5M			
EZE 950044*	Crowsnest Pass Golf and Country Club (water intake)	NE-3-8-4 W5M			
DLO 941640*	Private (access)	E1/2 7-8-3-W5M			
REC910007	Crowsnest Pass Golf and Country Club (non-commercial recreational development)	pt. LS09-03-008-04 W5M			

## Notes:

## 4.2 Land and Resource Use Planning

## 4.2.1 Coal Development Policy

A Coal Development Policy for Alberta was adopted in 1976 with the purpose of guiding the exploration and development of coal resources in the province (Alberta Energy 2015). Under the Coal

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<sup>\*</sup> Dispositions within the RSA but outside of the LSA (i.e. not directly impacted by Project development)



Development Policy, exploration and development of coal deposits are permitted only under strict control to ensure environmental protection and satisfactory reclamation of any disturbed land. The policy includes a land classification system that considers environmental sensitivity, alternate land uses, potential coal resources and infrastructure. Provincial lands fall into one of four categories with respect to coal exploration and development. The LSA and RSA contain areas in Category 1, Category 2, and Category 4 (Figure 4.2-1). A description of each pertinent category, as outlined by Alberta Energy, 2015, is provided below.

Category 1, in which no exploration or commercial development will be permitted. This category includes National Parks, present or proposed parks, protected, recreation or research areas, or wildlife sanctuaries, settled urban areas and major lakes and rivers. These are areas for which it has been determined that alternative land uses have a higher priority than coal activity. Category 1 also includes most areas associated with high environmental sensitivity; these are areas for which reclamation of disturbed lands cannot be assured with existing technology and in which the watershed must be protected.

Category 2, in which limited exploration is desirable and may be permitted under strict control but in which commercial development by surface mining will not normally be considered at the present time. This category contains lands in the Rocky Mountains and Foothills for which the preferred land or resource use remains to be determined, or areas where infrastructure facilities are generally absent or considered inadequate to support major mining operations. In addition this category contains local areas of high environmental sensitivity in which neither exploration nor development activities will be permitted. Underground mining or in-situ operations may be permitted in areas within this category where the surface effects of the operation are deemed to be environmentally acceptable.

**Category 4**, in which exploration may be permitted under appropriate control and in which surface or underground mining or in-situ operations may be considered subject to proper assurances respecting protection of the environment and reclamation of disturbed lands. This category covers the parts of the Province not included in the other three categories.

## 4.2.2 Integrated Resource Planning

Integrated Resource Plans (IRPs) are put in place to assist proponents in land use planning and assessment. The LSA and RSA fall under two IRPs; the Livingstone-Porcupine Sub Regional IRP and the Crowsnest Corridor Local Sub-Regional IRP (Figure 4.2-2).

## 4.2.2.1 Livingstone- Porcupine Hills Sub-Integrated Resource Plan

The Livingstone- Porcupine Hills Sub-Integrated Resource Plan (IRP) provides a planning framework for the management and use of public land and resources within a planning area that stretches from

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northwest of Pincher Creek to west of Claresholm in the Eastern Slopes (Alberta Forestry, Lands and Wildlife, 1987). As stated in the IRP (Alberta Forestry, Lands & Wildlife, 1987) the primary intent for resource management is:

To achieve social and economic benefits by providing for the optimal use of all available resources, while maintaining the overall integrity of the natural environmental for which the area is known (pp. 9).

Within the IRP the seven land use zones identified in the Eastern Slopes Policy (Energy and Natural Resources 1984) were refined based on more specific objectives. Of these seven zones, two are located within the LSA and RSA including:

- Special Use Zone: where coal development is allowed but may require special conditions and controls; and
- Multiple Use Zone: where coal development is considered compatible under normal guidelines and compatible land use regulations.

The Livingstone-Porcupine Hills planning area is also divided into seven smaller Resource Management Areas (RMAs). The LSA and RSA are located within two of these RMAs, the West Livingstone RMA (RMA-B) and Crowsnest Watershed RMA (RMA-G) (Figure 4.2-2).

The primary intent of the West Livingstone RMA is to provide a full range of multiple use activities managed to prevent adverse environmental impacts on watershed, fisheries, wildlife and recreation values in the area (Alberta Forestry, Lands & Wildlife, 1987, pp. 37). This RMA is found within the northern most portion of the RSA. This portion of the RSA has also been zoned for Multiple Use.

The primary intent of the Crowsnest Watershed RMA is to provide a full range of multiple use activities managed to maintain high watershed quality, and to recognize the social and economic needs of Crowsnest Pass (Alberta Forestry, Lands & Wildlife, 1987, pp. 41). This RMA covers the majority of the LSA and RSA. A majority of this area is zoned for Multiple Use with a small portion on the southeast corner of the LSA zoned for Special Use.

#### 4.2.2.2 Crowsnest Corridor Local Integrated Resource Plan

The Crowsnest Corridor Local Integrated Resource Plan was completed in 1991 and includes all area within the Municipality of Crowsnest Pass (Alberta Forestry, Lands & Wildlife, 1991). As stated in the IRP (Alberta Forestry, Lands & Wildlife, 1991) the purpose of the IRP is:

To identify a comprehensive, coordinated approach to the management of public land and public resources that optimizes resource decisions in the public interest and

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provides social and economic benefits to Albertans, especially residents of the Municipality of Crowsnest Pass, while at the same time protecting the natural environment.

Within the IRP the land use zones identified in the Eastern Slopes Policy (Energy and Natural Resources 1984) were modified. Four land use zones are located within the LSA and RSA including:

- Prime Protection Zone: where coal development and exploration is not permitted;
- Critical Wildlife Zone: where coal development is allowed but may require special conditions and controls;
- Multiple Use Zone: where coal development is considered compatible under normal guidelines and compatible land use regulations; and
- Facility Zone: where coal development and exploration is not permitted.

## 4.2.3 South Saskatchewan Regional Plan

The Project falls within the southwest limits of the South Saskatchewan Regional Plan (SSRP). The SSRP was established in accordance with Alberta's Land Use Framework (LUF) and came into effect on September 1, 2014 (Alberta Government 2014). The SSRP identifies strategic directions for the region over the next 10 years and sets the stage for robust growth, vibrant communities and a healthy environment within the region for the next 50 years (Alberta Government 2014). The previously developed IRPs remain in effect and will continue to provide operational guidance until they are reviewed and incorporated into the SSRP implementation strategy.

Based on the regional vision for the South Saskatchewan region the following regional outcomes have been established as part of the SSRP:

- The region's economy is growing and diversified.
- One of the objectives of this outcome is maintaining opportunities for the responsible exploration, development and extraction of energy resources.
- Air quality is managed to support healthy ecosystems and human needs through shared stewardship.
- One of the existing strategies for achieving this outcome includes the implementation of the South Saskatchewan Region Air Quality Framework. This framework outlines specific air quality triggers and limits. Another strategy includes encouraging the participation in programs and initiatives to address emission sources.
- Biodiversity and ecosystem function are sustained through shared stewardship.

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- Strategies for achieving this outcome are currently under development. Some of the strategies include the implementation of the South Saskatchewan Regional Biodiversity Management Framework, development of a linear footprint management plan and expansion or creation of conservation areas. As a result of the planning process the Livingstone Range Wildland Provincial Park, just east of the Project, has been created (Figure 4.2-3).
- Watersheds are managed to support healthy ecosystems and human needs through shared stewardship.
- A key strategy for achieving this objective is the ongoing implementation of the Approved Water Management Plan for the South Saskatchewan River Basin, and the implementation of the South Saskatchewan Region Surface Water Quality Management Framework.
- Land is used efficiently to reduce the amount of area that is taken up by permanent or longterm developments associated with the built environment.
- Strategies to achieve this objective are currently in use and include a range of tools for efficient use of land and management of development footprints.
- The quality of life of residents is enhanced through increased opportunities for outdoor recreation and the preservation and promotion of the region's unique cultural and natural heritage.
- Strategies for achieving this objective are in progress and include development of the South Saskatchewan Regional Trail System Plan, completion of recreation planning, creation of recreation areas and development of a regional parks plan.
- Aboriginal peoples are included in land-use planning.
- Ongoing strategies to achieve this objective include the establishment of a South
   Saskatchewan Region Land Sub-Table with interested First Nations, engagement with First
   Nations on watershed management and tourism development initiatives, and encouragement
   and facilitation of information sharing.
- Community development needs are anticipated and accommodated.
- Strategies to achieve this objective include working with municipalities to implement land-use strategies.

## 4.2.4 South Saskatchewan River Basin Plan

The South Saskatchewan River Basin (SSRB) is comprised of four sub-basins; the Bow, Oldman, South Saskatchewan and Red Deer, inclusive of their tributaries (Alberta Environment 2006). The LSA and RSA fall within the Oldman River sub-basin. The Approved Water Management Plan for the SSRB (Alberta Environment 2006) was developed because the volume of water being withdrawn from the river basin was causing impacts to the aquatic environment. A condition of the plan is that no new

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surface water allocations are being issued from the Oldman River sub-basin but transfers of existing surface water allocations are permitted.

## 4.2.5 Environmentally Significant Areas

Environmentally Significant Areas (ESAs) have been identified throughout Alberta and are descripted in Environmentally Significant Areas in Alberta: 2014 Update Final Report (Fiera 2014). The ESAs that have been identified provide information important to maintaining the long-term integrity of biodiversity and physical features at both the local and regional landscape scales. The identification of ESA was undertaken in order to help inform land use planning for areas identified as having high environmental sensitivity.

The ESAs are identified based on environmental significance, as measured by a comprehensive list of selected criteria, sub-criteria and indicators, for every quarter section in the province. The four criteria used to rate each ESA quarter section are as follows (Fiera 2014):

- **Criterion 1.0** Areas that contain focal species, species groups, or their habitats.
- **Criterion 2.0** Areas that contain rare, unique, or focal habitat.
- **Criterion 3.0** Areas with ecological integrity.
- **Criterion 4.0** Areas that contribute to water quality and quantity.

Once the values for each Criterion were finalized and a total value was calculated, a cut-off value of >0.189 was used to designate a quarter section as an ESA. Based on this approach, a number of ESAs have been identified within the LSA and RSA (Figure 4.2-4). A majority of the ESAs in the area were classified as an area that contributes to water quality and quantity (Criterion 4.0) and as areas with ecological integrity (Criterion 3.0). Key features of these two criteria were related to the presence of rivers and streams (4a), wetlands and lakes (4b), habitat patch size (3a), and habitat intactness and connectivity (3b) (Fiera 2014).

## 4.2.6 Wildlife and Biodiversity Zones

The southern and eastern most portions of the RSA are located within a Mountain Goat and Sheep Range as identified by AEP 2015 (Figure 4.2-5). In ESRD 2010 it is stated that *Every effort should be made, within identified critical goat and sheep ranges, to: a) avoid land use disturbances that may have a direct or indirect adverse effect on the behaviour of the animals, and b) avoid permanent alteration of physical habitat conditions.* 

The northern portion of the RSA is located within a Grizzly Bear Zone (Figure 4.2-5) as identified by the AEP 2015. These zones are areas of core or secondary grizzly bear habitat and are characterized as having either high to good habitat value or low mortality risks.

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The Key Wildlife and Biodiversity Zones are found within the RSA along the Crowsnest River, Pelletier Creek and a tributary to Daisy Creek (Figure 4.2-5) and are a combination of key winter ungulate habitat and has a high potential for biodiversity (ESRD 2015). Key strategies for protection of these zones have been identified by ESRD 2015 and include minimizing vegetation clearing, minimizing activity in the winter, not creating new access and adhering to timing restrictions.

#### 4.3 Freehold Mines and Minerals

Subsurface resources found within the LSA and RSA can be both crown owned and freehold. The freehold titles within the area fall into the following categories:

- all Mines and Minerals (as outlined in this section);
- all Mines and Minerals other than Coal (as outlined in this section);
- all Coal (as outlined in Section 4.4.2);
- all Mines and Minerals other than Petroleum, Natural Gas and Sulphur (as outlined in Section 4.4.2); and
- all Petroleum Natural Gas and Sulphur (as outlined in Section 4.5.1).

There are a number of freehold mines and mineral rights within the LSA and RSA that are held by Exxon Mobil Resources Ltd., Ember Resources Inc., Saskatoon Lease Holder Ltd. and other individuals (Table 4.3-1 and Figure 4.3-1).

Table 4.3-1 Freehold Mines and Minerals within Local Study Area and Regional Study Area					
Title Number	Title Holder	Location	Purpose		
891 259 958*	Private	SE, L16 34-007-04 W5M	All mines and minerals		
891 259 958A*	Private	Parts of 34-007-04 W4M	All mines and minerals other than coal		
071 137 947*	Exxon Mobil Resources Ltd.	9-008-04 W5M;	All mines and minerals		
46Z105	Exxon Mobil Resources Ltd.	NW, SW 3-008-04 W5M	All mines and minerals		
11T36	Private	Railway Right of Way in SW 10- 008-04 W5M	All mines and minerals		
131N135*	Private	pt. NE-34-007-04 W5M ; SE-34- 007-04 W5M	All mines and minerals		
131 257 499	Ember Resources Inc.	NW, SW, SE 26-008-04 W5M	All mines and minerals other than coal		

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Table 4.3-1 Freehold Mines and Minerals within Local Study Area and Regional Study Area				
Title Number	Title Holder	Location	Purpose	
921 181 497*	Saskatoon Lease Holders Ltd./Private	NW, SW 22-008-04 W5M	All mines and minerals	
921 181 586*	Saskatoon Lease Holders Ltd./Private	NW, SW 15-008-04 W5M	All mines and minerals	
921 181 590	Saskatoon Lease Holders Ltd./Private	NW, SW 10-008-04 W5M	All mines and minerals	

## 4.4 Coal Development

## 4.4.1 Historic Coal Mining Activities

The Crowsnest Pass area is known for its extensive mining history, dating back to the 19<sup>th</sup> century. The first coal mine in the area opened in 1900. Historic mining activity that has occurred within the LSA and RSA is listed in Table 4.4-1 and shown on Figure 4.4-1.

## 4.4.2 Coal Resource Ownership & Rights

There is both Freehold and Crown-owned coal within the LSA and RSA (Figure 4.4-2). Leases for Crown-owned coal are held by Benga, Elan Coal Ltd and Peace River Coal Ltd (Table 4.4-2). Freehold coal within the LSA and RSA is owned by Benga, Carbon Development Corp. and Canpar Holdings Ltd. (Table 4.4-3).

## 4.4.3 Existing Surface Development

Since 2013, Benga has conducted coal exploration programs to confirm the quality, quantity and delineation of the coal reserves for the Project. Coal Exploration Permit (CEP) applications and notifications were submitted to the AER, as required and approvals were granted. To access portions of Benga's private land two Licence of Occupation (LOC) dispositions that fall within the RSA and LSA, were obtained (Table 4.4-4 and Figure 4.4-3).

There are four Right-of-Entry Agreements (ROEs) in the LSA and RSA (Table 4.4-4 and Figure 4.4-3) that were disposed for the existing historical mining. These are currently held by Devon Canada Corp. (Devon) and are administered by the Surface Rights Board.

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<sup>\*</sup> Mines and Minerals Titles for resources within the RSA but outside of the LSA (i.e. not directly impacted by Project development)



M' C	Mine Name	Mine Number	Location	_	Lifespan		Production.
Mine Company				Type	From	То	(k tonnes)
West Canadian Collieries Ltd.	Greenhill	0396	02-008-04W5	Underground	1913	1968	14072
West Canadian Collieries Ltd.	Greenhill	0396/1	02-008-04W5	Underground	1945	1948	Unknown
West Canadian Collieries Ltd.	Greenhill Boisjoli	0396/6	23-008-04W5	Surface	1945	1960	Unknown
West Canadian Collieries Ltd.	Greenhill	0396/2	24-008-04W5	Surface	1951	1955	Unknown
West Canadian Collieries Ltd.	Greenhill	0396/3	24-008-04W5	Surface	1951	1955	Unknown
West Canadian Collieries Ltd.	Greenhill	0396/4	24-008-04W5	Surface	1951	1955	Unknown
West Canadian Collieries Ltd.	Greenhill	0396/5	24-008-04W5	Surface	1951	1955	Unknown
Consolidation Coal Company of Canada	Grassy Mountain	1776/E	24-008-04W5	Surface	1974	1976	None
West Canadian Collieries Ltd.	Grassy Mountain	1745	25-008-04W5	Surface	1956	1962	383
West Canadian Collieries Ltd.	Grassy Mountain	0396/7	25-008-04W5	Underground	1952	1954	Unknown
West Canadian Collieries Ltd.	Grassy Mountain	0396/8	25-008-04W5	Underground	1952	1952	Unknown
Scurry-Rainbow Oil Ltd.	Grassy Mountain No. 2	9073/2	25-008-04W5	Underground	1971	1971	< 0.1
Scurry-Rainbow Oil Ltd.	Grassy Mountain No. 3	9073/3	25-008-04W5	Underground	1971	1971	< 0.1
West Canadian Collieries Ltd.	Grassy Mountain	1745/1	36-008-04W5	Underground	1959	1960	Unknown
Scurry-Rainbow Oil Ltd.	Grassy Mountain No. 4	9073/4	36-008-04W5	Underground	1971	1971	None
Scurry-Rainbow Oil Ltd.	Grassy Mountain No. 6	9073/5	36-008-04W5	Underground	1971	1971	None
Scurry-Rainbow Oil Ltd.	Grassy Mountain No. 1	9073/1	06-009-03W5	Underground	1971	1971	None

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Table 4.4-2 Coal Leases within the Local Study Area and Regional Study Area				
Disposition	Disposition Holder	Location		
(AB)0131301120013	Benga Mining Ltd.	L10, L15- 25-008-04 W5M; L2. L7, L10, L15- 36-008-04 W5M		
(AB)0131304020413	Benga Mining Ltd.	NE 31- 008-03 W5M; L4, L5, L12, L13 32-008-03 W5M; L4, L5, L12, L13 05-008-03 W5M; NE, SE, L4, L5, L12, L13 06-009-03 W5M; NE, SE, L3, L4, L6, , L11, L14 -07-009-03 W5M; NW, L4, L5 -08-009-03 W5M; L2, L3, L6, L7 -18-009-03 W5M; NE, SE 01-009-04 W5M		
(AB)0131307030946	Benga Mining Ltd.	L5, L12, L13 07-009-03 W5M; 12-009-04 W5M		
(AB)0131307030965	Benga Mining Ltd.	35-008-04 W5M; NW, SW 01-009-04 W5M; 02-009-04 W5M; 11-009-04 W5M		
(AB)0131307080678	Benga Mining Ltd.	L3, L6 06-009-03 W5M		
(AB)0131308050906*	Benga Mining Ltd.	NW, SW 29-008-03 W5M; L3, L6, L11, L14 32-008-03 W5M		
(AB)0131308050907*	Benga Mining Ltd.	NE, SE, L3, L6, L11, L14 05-009-03 W5M; L3, L6 08-009-03 W5M		
(AB)0131308050908	Benga Mining Ltd.	L11, L14 06-009-03 W5M		
(AB)0131308050909*	Benga Mining Ltd.	L3, L6, NW-20-008-03 W5M		
(AB)0131314010344	Benga Mining Ltd.	NE -26-008-04 W5M		
(AB)A13 120019501*	Elan Coal Ltd.	13, 14 009-04 W5M		
(AB)A13 120019502*	Elan Coal Ltd.	NW, SW 17-009-03 W5M; NE, NW, L1, L4, L5, L8 - 18- 009-03 W5M		
(AB)A13 120211507*	Peace River Coal Inc.	27, 34 -008-04 W5M; 3, 10, 15-009-04-W5M		
(AB)0131302040120	Benga Mining Ltd.	L4, L5 24-008-04 W5M		
(AB)0131306120436*	Benga Mining Ltd.	L4, L5 -20-008-03 W5M		
(AB)0131306120437*	Benga Mining Ltd.	L3, L6, L11, L14 -17-008-03 W5M		
(AB)0131309090457	Benga Mining Ltd.	L2, L7 -23-008-04 W5M		
(AB)0131309110258	Benga Mining Ltd.	NW, SW L2, L7, L10, L15 -11-008-04 W5M		
(AB)0131312060346	Benga Mining Ltd.	NE, NW, SW, L1, L8 -23-008-04 W5M		
(AB)0131314010343*	Benga Mining Ltd.	NE, SE -22-008-04 W5M		
(AB)0131314010355*	Benga Mining Ltd.	NE -15-008-04 W5M		

\* Coal Leases within the RSA but outside of the LSA (i.e. not directly impacted by Project development)

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Table 4.4-3 Freehold Coal within Local Study Area and Regional Study Area			
Title Number	Title Holder	Location	
071 612 545 +1	Carbon Development Corp.	NW, SW-26-008-04 W5M	
131 236 876 +14*	Benga Mining Ltd.	NE-36-007-04 W5M; SE-36-007-04 W5M	
131 236 876 +31*	Benga Mining Ltd.	pt. NW-35-007-04 W5M; SW-35-007-04 W5M	
131 236 876 +32*	Benga Mining Ltd.	SE-35-007-04 W5M	
131 236 876 +33*	Benga Mining Ltd.	NE-35-007-04 W5M	
131 236 876 +49*	Benga Mining Ltd.	LSD 1-01-008-04 W5M	
131 236 876 +50	Benga Mining Ltd.	NW, SW, SE-31-008-03 W5M	
131 236 876 +51	Benga Mining Ltd.	30-008-03 W5M	
131 236 876 +53	Benga Mining Ltd.	18-008-03 W5M; 19-008-03 W5M	
131 236 876 +54	Benga Mining Ltd.	W½ NW-17-008-03 W5M; W½ SW-17-008-03 W5M	
131 236 876 +55	Benga Mining Ltd.	NW-08-008-03 W5M	
131 236 876 +56	Benga Mining Ltd.	E½ NW, NE-07-008-03 W5M	
131 236 876 +60	Benga Mining Ltd.	NW, SW, E½ NE, E½ SE 36-008-04 W5M	
131 236 876 +61	Benga Mining Ltd.	SE, SW, NW, E½ NE 25-008-04 W5M	
131 236 876 +62	Benga Mining Ltd.	NW, NE-24-008-04 W5M	
131 236 876 +63	Benga Mining Ltd.	SE-15-008-04 W5M	
131 236 876 +64	Benga Mining Ltd.	14-008-04 W5M	
131 236 876 +65	Benga Mining Ltd.	NE, SE-10-008-04 W5M	
131 236 876 +66	Benga Mining Ltd.	NE, SE-03-008-04 W5M	
131 236 876 +67	Benga Mining Ltd.	02-008-04 W5M	
821 218 047	Canpar Holdings Ltd.	SE-26-008-04 W5M	



Table 4.4-4 Surface Dispositions related to Coal Development in the Local Study Area and Regional Study Area

Disposition	Disposition Holder	Location
LOC 141938	Benga Mining Ltd.	NE-25-8-4 W5M; NE, SE-36-8-4 W5M
LOC 970943*	Benga Mining Ltd.	NW-7-9-3 W5M; NE-18-9-3 W5M; SE, SW-18-9-3 W5M; SE-19-9-3 W5M; NE, NW-12-9-4 W5M; SW-13-9-4 W5M
TFA 154961	Benga Mining Ltd.	NW-31-008-03 W5M; W-06-009-03 W5M; W-07-009-03 W5M; SW-18-009-03 W5M; SE-01-009-04 W5M
TFA 155858	Benga Mining Ltd.	NW-31-008-03 W5M; SW-06-009-03 W5M; SW-07-009-03 W5M; NE-13-008-04 W5M; W-13-008-04 W5M; SE-14-008-04 W5M; N-35-008-04 W5M; SE-35-008-04 W5M; W-01-009-04 W5M; E-02-009-04 W5M
TFA 162596	Benga Mining Ltd.	NW-06-009-03 W5M; SW-07-009-03 W5M; E-01-009-04 W5M; SE-12-009-04 W5M
TFA 162911	Benga Mining Ltd.	N-13-008-04 W5M
ROE 8751**	Devon Canada Corp.	NE-25-008-04 W5M; NE, SE 36-008-04 W5M
ROE 156**	Devon Canada Corp.	L10 25-008-04 W5M
ROE 324**	Devon Canada Corp.	pt. L12-6-009-03 W5M; NE, pt. L5 6-009-03 W5M
ROE 1169**	Devon Canada Corp.	L4, L5 6-009-03 W5M L1, L8 1-009-04 W5M

## 4.5 Oil and Gas Development

## 4.5.1 Petroleum and Natural Gas Ownership & Rights

Rights to the petroleum and natural gas resource in the area is owned by the Crown and leased or licenced to developers or it is held through freehold title (Figure 4.5-1). The petroleum and natural gas (PNG) licences and leases within the LSA and RSA are presented in Table 4.5-1. These are either wholly or partially owned by various companies such as; Direct Energy Marketing, Devon, Shell Canada Ltd. and Legacy Oil & Gas. The freehold titles to the PNG resource are held by Prairiesky Royalty (Table 4.5-2).

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<sup>\*</sup> Surface Dispositions within the RSA but outside of the LSA (i.e. not directly impacted by Project development)

<sup>\*\*</sup> Administered by the Surface Rights Board



Table 4.5-1	Petroleum and Natural Gas Leases and Licences within the Local Study Area and
	Regional Study Area

Disposition	Disposition Holder	Location
(AB)001 127718	Direct Energy Marketing Ltd. 10.252% Devon Canada Corp. 89.748%	01,02,12,13,14- 009-04 W5M
(AB)001 127718A	Direct Energy Marketing Ltd. 10.252% Devon Canada Corp. 89.748%	11-009-04 W5M
(AB)002 1417*	Direct Energy Marketing Ltd. 10.252% Devon Canada Corp. 89.748%	10, 15-009-04 W5M
(AB)0555596010065*	Shell Canada Ltd. 33% Legacy Oil and Gas 66%	29,32-008-03 W5M

Table 4.5-2 Freehold Petroleum and Natural Gas within the Local Study Area and Regional Study Area

Disposition	Disposition Holder	Location
161 011 974 +1*	Prairiesky Royalty Ltd.	W½ NW-17-008-03 W5M; W½ SW-17-008-03 W5M
161 011 974 +2	Prairiesky Royalty Ltd.	NE, NW, SE, E½ SW 18-008-03 W5M
161 011 974 +3	Prairiesky Royalty Ltd.	19-008-03 W5M
161 011 974 +4	Prairiesky Royalty Ltd.	30-008-03 W5M
161 011 974 +5	Prairiesky Royalty Ltd.	NW, SW, SE-31-008-03 W5M
161 011 971 +1*	Prairiesky Royalty Ltd.	W½ SE-35-007-04 W5M
161 011 971 +2*	Prairiesky Royalty Ltd.	NW, SW-35-007-04 W5M
161 011 971 +3*	Prairiesky Royalty Ltd.	NE-35-007-04 W5M
161 011 971 +4*	Prairiesky Royalty Ltd.	NE, SE-36-007-04 W5M

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<sup>\*</sup>Leases within the RSA but outside of the LSA (i.e. not directly impacted by Project development)



Table 4.5-2 Freehold Petroleum and Natural Gas within the Local Study Area and Regional Study Area			
Disposition	Disposition Holder	Location	
161 011 971 +5*	Prairiesky Royalty Ltd.	LSD 01-01-008-04 W5M	
161 011 971 +6	Prairiesky Royalty Ltd.	NW, SW, W½ SE, W½ NE 02-008- 04 W5M	
161 011 971 +7	Prairiesky Royalty Ltd.	NE, SE-03-008-04 W5M	
161 011 971 +8	Prairiesky Royalty Ltd.	NE, SE-10-008-04 W5M	
161 011 971 +9	Prairiesky Royalty Ltd.	NW, SW, W½ NE, W½ SE 14-008- 04 W5M	
161 011 972*	Prairiesky Royalty Ltd.	SE-15-008-04 W5M	
161 011 972+1	Prairiesky Royalty Ltd.	NW, NW 24-008-04 W5M	
161 011 972 +2	Prairiesky Royalty Ltd.	NW, SW, SE, E½ NE 25-008-04 W5M	
161 011 972 +3	Prairiesky Royalty Ltd.	NW, SW, E½ NE, E½ SE 36-008-04 W5M	

161 011 972 +6\*

Prairiesky Royalty Ltd.

## 4.5.2 Existing Surface Development

Within the RSA there are 12 mineral surface lease (MSL) dispositions, 11 pipeline leases, 1 powerline easement, 8 licences of occupation, and 2 miscellaneous leases (MLL), all of which are in place to support oil and gas development (Table 4.5-2, Figure 4.5-2). All of the wells that are associated with the MSLs are no longer producing and are either abandoned or in the reclamation process.

	Table 4.5-3 Surface Dispositions related to Oil and Gas Development within the Local Study Area and Regional Study Area		
Disposition	Disposition Holder	Location	
MLL 1948	Devon Canada Corporation	LSD 02, 07, 10, 15-14-008-04 W5M	

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NW-08-008-03 W5M

<sup>\*</sup> Leases within the RSA but outside of the LSA (i.e. not directly impacted by Project development)



# Table 4.5-3 Surface Dispositions related to Oil and Gas Development within the Local Study Area and Regional Study Area

Disposition	Disposition Holder	Location
MLL 930010	Devon Canada Corporation	NE-11-009-04 W5M; NW-12-009-04 W5M
MSL 7025	Devon Canada Corporation	SW-11-9-4 W5M
MSL 9209*	Canadian Natural Resources Limited	SW-14-9-4 W5M
MSL 12533	Canadian Natural Resources Limited	NE-11-9-4 W5M; SE-11-9-4 W5M
MSL 011735	Canadian Natural Resources Limited	NW-31-8-3 W5M
MSL 021309	Canadian Natural Resources Limited	NW-31-8-3 W5M
MSL 043285	Devon Canada Corporation	SE-11-9-4 W5M
MSL 081840	Devon Canada Corporation	NE-18-9-3 W5M
MSL 801502	Devon Canada Corporation	NW-1-9-4 W5M; NE-2-9-4 W5M; SE- 11-9-4 W5M; SW-12-9-4 W5M
MSL 890948	Taqa North Ltd.	SE-35-8-4 W5M
MSL 900518*	Canadian Natural Resources Limited	NE-14-9-4 W5M
MSL 941235	Canadian Natural Resources Limited	SE-14-8-4 W5M
MSL 852428	Devon Canada Corporation	SE-14-9-4 W5M
PLA 052764	Devon Canada Corporation	SE-11-9-4 W5M
PLA 5009	Lonlife Resources Ltd, Canadian Natural Resources Limited, Norco Resources Limited, Opinac Exploration Limited	11-009-04 W5M
PLA 5796	Canadian Natural Resources Limited	NE, SE, SW-3-009-04 W5M; SE 10-009- 04 W5M; 11-009-04 W5M
PLA 5901*	Canadian Natural Resources Limited	SW-34-008-04 W5M
PLA 800692	Lonlife Resources Ltd, Canadian Natural Resources Limited, Norco Resources Limited, Opinac Exploration Limited	NE 11-009-04 W5M; NE 2-009-04 W5M; NW 1-009-04 W5M; SE 11-009- 04 W5M; SW 12 -009-04 W5M
PLA 920136	Devon Canada Corporation	11-009-04 W5M
PLA 800809	Lonlife Resources Ltd, Canadian Natural Resources Limited, Norco Resources Limited, Opinac Exploration Limited	NE, SE 11-009-04 W5M
PLA 880413*	Canadian Natural Resources Ltd.	SE 14-009-04 W5M



Table 4.5-3	Table 4.5-3 Surface Dispositions related to Oil and Gas Development within the Local Study Area and Regional Study Area		
Disposition	Disposition Holder	Location	
PLA 900471*	Canadian Natural Resources Ltd.	NE 14-009-04 W5M	
PIL 276	Lonlife Resources Ltd., Norco Resources Ltd., Canadian Natural Resources Ltd. Opinac Exploration Ltd.	LSD 4-13-9-4 W5M	
PIL 050504	Devon Canada Corp.	SE-11-9-4 W5M	
EZE 990090	Devon Canada Corp.	NE-33-8-4 W5M; NW-34-8-4 W5M; NW-2-9-4 W5M; NE, SW, SW-3-9-4 W5M; SE-10-9-4 W5M; SE, SW-11-9-4 W5M; NW, SW-12-9-4 W5M	
LOC 3613	Canadian Natural Resources Limited	NE-33-8-4 W5; NW-34-8-4 W5M; NW- 2-9-4 W5M; NE, SE, SW-3-9-4 W5M; SE-10-9-4 W5M; SW-11-9-4 W5M	
LOC 4111	Canadian Natural Resources Limited	SE, SW-11-9-4 W5M; NW, SW-12-9-4 W5M; NW, SW-13-9-4 W5M; NE, NW-14-9-4 W5M; SW-23-9-4 W5M	
LOC 4917	Canadian Natural Resources Limited	NW, SW-11-9-4 W5M; SW-14-9-4 W5M	
LOC 5904*	Canadian Natural Resources Limited	SW-14-9-4 W5M	
LOC 851435	Devon Canada Corporation	NE-11-9-4 W5M; SW-13-9-4 W5M; SE- 14-9-4 W5M	
LOC 890772	Taqa North Ltd.	NE, NW, SE-35-8-4 W5M; SW-2-9-4 W5M; NE, SE-3-9-4 W5M	
LOC 940867	Canadian Natural Resources Limited	SE-14-8-4 W5M; SW-14-8-4 W5M	
LOC 040585*	Legacy Oil & Gas Inc.	NW-29-8-3 W5M; NE-30-8-3 W5M; SE, SW-32-8-3 W5M	

## 4.6 Forestry and Agriculture

The LSA and RSA fall within both green and white zones of Alberta. The green zone area consists of Forest Management Units (FMU) C5 which covers approximately 3,522 km<sup>2</sup> of forested land (Figure 4.6-1). Within FMU C5 there are currently five quota holders. The current approved

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<sup>\*</sup> Surface Dispositions within the RSA but outside of the LSA (i.e. not directly impacted by Project development)



Coniferous Allocations and Annual Allowable Cut (AAC) for each of the five quota holders are shown in Table 4.6-1 (Government of Alberta, 2014).

Table 4.6-1 Approved FMU C5 Annual Allowable Cut (AAC)			
	p: ::	C5 FMU	
Company Name	Disposition Number	Primary Disposition Allocation (%)	Total Approved AAC (m3)
793128 Alberta Ltd.: Private	CTQC050002	1.65	3,254
770538 Alberta Ltd.: Forest Resource Improvement Association of Alberta	CTQC050005	4.38	8,638
Spray Lakes Sawmills (1980) Ltd.	CTQC050008	29.07	57,334
Crowsnest Forest Products Ltd.	CTQC050009	58.69	115,752
Community Timber Permit Program (CTPP)	СТРР		12,248
TOTAL			197,226

There are also five privately owned Coniferous Timber Permits within the RSA (Table 4.6-2) and one Coniferous Timber Licence (CTLC 050016). These permits and licenses are shown on Figure 4.6-1.

Table 4.6-2 Coniferous Timber Permits and Licences within the Local Study Area and Regional Study Area		
Disposition Holder Location		Location
CTPC050115*	Private	pt. 03-009-04 W5M; L1, pt. L2, L3-10-009-04 W5M; pt. 10-009-04 W5M; pt. 15-009-04 W5M;
CTPC050121	Private	pt. 02-009-04 W5M; pt. 03-009-04 W5M;
CTPC050104*	Private	pt. 03-009-04 W5M;
CTPC050124	Private	NW-01-009-04 W5M; L09, L16-02-009-04 W5M; L01-11-009-04 W5M; 04- 12-009-04 W5M
CTPC050125	Private	L08-11-009-04 W5M; L05-12-009-04 W5M

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Table 4.6-2 Coniferous Timber Permits and Licences within the Local Study Area and Regional Study Area			
Disposition	Disposition Holder	Location	
CTLC 050016*	Crowsnest Forest Products Ltd.	04, 5, 12, 13-22-008-04 W5	

AEP holds a Consultative Notation disposition (CNT 860041) that is described as being in place to determine volumes and establish animal unit carrying capacity within the McGillivray Creek Miscellaneous Timber Use Area (Figure 4.6-1). This is a potential timber disposal area and does not have any restrictions (see Section 4.11).

There are also five grazing leases and one grazing permit within the RSA (Table 4.6-3 and Figure 4.6-1).

Table 4.6-3	Grazing Leases within the Local Study Area and Regional Study Area	
Disposition	Disposition Holder	Location
GRL 36801	Private	NW, SW-20-008-03-W5; NW, SW-29-008-03-W5; NE-31-008-03-W5; NW, SW-32-008-03-W5
GRL 38170*	Gold Creek Grazing Co-op Ltd.	NE-07-008-03-W5
GRL 38471*	Private	NE-16-008-04-W5
GRL 39324*	Private	NE, NW, SW-15-008-04-W5; NE-16-008-04-W5
GRL 960066	Private	NE-30-008-03-W5; NW, SE-31-008-03-W5
GRP 870052	Gold Creek Grazing Co-op Ltd.	NW, SW-17-008-03-W5; 18-008-03-W5; 01, 08, 09, 16 - 14-008-04-W5; NW, SW-23-008-04-W5; 26-008-04-W5

#### Notes:

## 4.7 Trapping & Fur Harvesting

There are three Trapping Area (TPA) dispositions within the northern portion of the LSA and RSA (Table 4.7-1). Two of these of these overlap a portion of the LSA and the third is within the RSA boundary (Figure 4.7-1).

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<sup>\*</sup> Permits and Licences within the RSA but outside of the LSA (i.e. not directly impacted by Project development)

<sup>\*</sup> Grazing Leases and Permits within the RSA but outside of the LSA (i.e. not directly impacted by Project development)



Table 4.7-1 Trapping Areas in the Local Study Area and Regional Study Area		
Disposition	Disposition Holder	Location
TPA 1882*	Private	pt. SE, pt. SW, NE, NW 15-09-04 W5; pt. NW, pt. SW 14-09-04 W5
TPA 2426	Private	pt. NW, pt, SW, E 11-09-04 W5; pt. SW, pt NE, NW 12-09-05 W5; 13-09-04 W5; pt. NW, pt, SW, E 14-09-04 W5; pt. SW, pt, SE, N 18-09-03 W5; pt SW, NW 18-09-03-W5M
TPA 1677	Private	01, 02, 03, 10, pt. 11, pt. 12, pt. 13, pt. 14, 09-04 W5M; 05, 06, 07, pt. 08 09-03 W5M; 24, 27, 32, 35 09-04 W5M

## 4.8 Access and Utilities

## 4.8.1 Transportation Corridors

Provincial Highway 3 and a main line of the Canadian Pacific Railroad are located along the southern edge of the proposed Mine Permit Boundary (Figure 4.8-1). The main line of the Canadian Pacific Railway line runs adjacent to Highway 3, and transports goods to the west coast and back. The railroad will be used to transport coal from the Project to the ports on the west coast.

The southern portion of the proposed Mine Permit Area is accessible by a secondary access road off Highway 3, while the northern portion of the Mine Permit Area is accessed by an access road *via* secondary Highway 40 (Forestry Trunk Road).

There are also a number of dispositions held by Alberta Transportation and the Municipality of Crowsnest Pass that run through the RSA (Table 4.8-1 and Figure 4.8-1).

Table 4.8-1 Registered Roadways within the Local Study Area and Regional Study Area		
Disposition	Disposition Holder	Location <sup>1</sup>
RRD 2960JK*	Municipality of Crowsnest Pass (HWY 40)	NE-16-008-04 W5M; SE-17-008-04 W5M
RRD 4074JK*	Alberta Transportation (HWY 40)	NE, SE-4-009-04 W5M; NW-10-009-04 W5M; NW, SW-15-009-04 W5M
RRD8711435	Alberta Transportation	NE-3-008-04 W5M
RRD9011129*	Alberta Transportation	SE-3-008-04 W5M

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<sup>\*</sup> Trapping Area Dispositions within the RSA but outside of the LSA (i.e. not directly impacted by Project development)



Table 4.8-1 Registered Roadways within the Local Study Area and Regional Study Area		
Disposition Disposition Holder Location <sup>1</sup>		
RRD9310501*	Alberta Transportation	NE, SE-36-007-04 W5M
RRD5524O*	Municipality of Crowsnest Pass	NW-08-008-03 W5

#### 4.8.2 Utilities

Surface dispositions associated with various public utilities are found within the LSA and RSA (Figure 4.8-1). These include pipeline lease agreements (Table 4.8-2) and easements for power lines (Table 4.8-3). In addition, there are several departmental licence of occupation (DLO) dispositions within the LSA and RSA that are associated with access requirements for the power line easement (Table 4.8-4). There is also a powerline operated by AltaLink, that is located on land owned by Benga and will be crossed by the proposed conveyor, access road and powerline right-of-way and the proposed golf course development (Figure 4.8-1).

Table 4.8-2	ble 4.8-2 Pipeline Lease Agreements within the Local Study Area and Regional Study Area		
Disposition	Disposition Holder	Location	
PLA 000472	Atco Gas and Pipelines Ltd. (South)	SW-2-8-4 W5M	
PLA 486*	Nova Gas Transmission Ltd.	NE, SE, L5 36-007-04 W5M	
PLA 979*	Atco Gas And Pipelines Ltd. (South)	SW-3-008-04 W5M	
PLA 642*	Nova Gas Transmission Ltd.	NW 34-07-04 W5M; SE 35-007-04 W5M;	
PLA 917*	Atco Gas and Pipelines Ltd. (South)	NE 35-007-04 W5M	
PLA 941*	Atco Gas and Pipelines Ltd. (South)	NE 36 -007-04 W5M	
PLA 920743*	Nova Gas Transmission Ltd.	SE 36-007-04 W5M	
PLA 4479*	Nova Gas Transmission Ltd.	SE 36-007-04 W5M	

#### Notes:

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<sup>&</sup>lt;sup>1</sup> Dispositions within portions of areas indicated

<sup>\*</sup> Dispositions within the RSA but outside of the LSA (i.e. not directly impacted by Project development)

<sup>\*</sup> Dispositions within the RSA but outside of the LSA (i.e. not directly impacted by Project development)



Table 4.8-3	Table 4.8-3 Easements in the LSA and RSA		
Disposition	Disposition Holder	Location	
EZE 830147	AltaLink Management Ltd.	NW-13-8-4 W5M; NE-14-8-4 W5M; NE-15-8-4 W5M; NW-15-8-4 W5M; NE-16-8-4 W5M; SE, SW-19-8-4 W5M; SE, SW-20-8-4 W5M; SE, SW-21-8-4 W5M	
EZE 930059*	Fortis Alberta	04-02-008-04 W5M	
EZE 950215*	Fortis Alberta	NE-31-7-3 W5M; NW-5-8-3 W5M; NE-7-8-3 W5M; NE, SE-18-8-3 W5M	
EZE 830146*	AltaLink Management Ltd.	NE, SE, SW-4-8-3 W5M; NE, NW, SE-5-8-3 W5M; NE-7-8-3 W5M; NW-8-8-3 W5M, SE-9-8-3 W5M; NE, NW, SW-10-8-3 W5M; NE, SE-15-8-3 W5M; NE, SE-18-8-3 W5M; NE, SE-22-8-3 W5M	

<sup>\*</sup> Disposition within the RSA but outside of the LSA (i.e. not directly impacted by Project development)

Table 4.8-4 Licenses of Occupation Dispositions in the Local Study Area and Regional Study Area		
Disposition	Disposition Holder	Location
DLO 962957*	AltaLink Management Ltd.	NE, NW-15-8-4 W5M
DLO 379*	AltaLink Management Ltd.	NW-36-7-4 W5M; SW-15-8-4 W5M;
DLO 1479*	Fortis Alberta	NE-16-8-4 W5M
DLO 140170**	1653488 Alberta Inc.	7-8-3 W5M; 18-8-3 W5M; NW, SW-19-8-3 W5M; 12-8-4 W5M; 13-8-4 W5M; N, SE-14-8-4 W5M; NE, SE-24-8-4 W5M
DLO 860896*	Municipality of Crowsnest Pass (Bed and Shore)	NE-35-7-4 W5M; SE-3-8-4 W5M
DLO 961634*	AltaLink Management Ltd.	NE-7-8-3 W5M; NW-8-8-3 W5M; NE, NW, SE-18-8-3 W5M

#### Notes

## 4.9 Tourism & Outdoor Recreation

The Crowsnest Pass is well known for its opportunities for tourism and outdoor recreational activities. There are no provincial or national parks within the RSA. The nearest national park is

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<sup>\*</sup> Disposition within the RSA but outside of the LSA (i.e. not directly impacted by Project development)

<sup>\*\*</sup> Disposition is currently in "Application" phase.



Waterton Lakes which is located approximately 55 km south of the Project. There are several provincial parks and recreation areas found within 20 km of the project including:

- Chinook Provincial Park;
- Coleman Provincial Recreation Area;
- Crowsnest Lake Provincial Recreation Area;
- Island Lake Provincial Recreation Area;
- Lundbreck Falls Provincial Recreation Area;
- Livingstone Range Wildland Provincial Park (see Section 4.2.3);
- Castle Wildland Provincial Park;
- High Rock Wildland Provincial Park; and
- Crowsnest Provincial Park (a BC Provincial Park).

Some of the recreational areas and facilities found in the immediate vicinity (Figure 4.9-1) include:

- Crowsnest Pass Golf and Country Club, which is located on the southern end of the proposed Project, owns land that will be impacted by development of the Project (Table 4.1-1) and also holds REC910007 located on the east end of the rail loop;
- the Crowsnest Trail;
- All-Terrain Vehicle (ATV) trails and staging areas, including a number of recreational trails
  that are utilized and maintained by the Crow Snow Riders Snowmobile Club that fall under a
  consultative notation (CNT 980012) held by AEP; in addition an ATV club (Quad Squad)
  utilize a number of recreational trails in the Crowsnest Pass area;
- Lost Lemon Campground and Cabins;
- Pass Powderkeg Ski Resort, which is a family ski area located on land leased from the Municipality of Crowsnest Pass (disposition REC 830018); and
- Mountain bike trails, including those created by the United Riders of Crowsnest found throughout the Crowsnest area and the Pass Powderkeg Mountain Bike Trails.

Several Temporary Field Authorizations (TFA's) related to recreational activities are present within the LSA and RSA. These dispositions are presented in Table 4.9-1.

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Table 4.9-1 Recreational Temporary Field Authorizations in the Local Study Area and Regional Study Area			
Disposition	Disposition Holder Location		
TFA 161826*	Municipality of Crowsnest Pass	SE-34-007-04 W5M	
TFA 162901*	United Riders of Crowsnest Club	NW-34-007-04 W5M	
TFA 163102*	Crowsnest Pass Quad Squad	E-18-008-03 W5M	

#### Notes:

## 4.10 Unique Sites & Special Features

Within the Crowsnest Pass, there are historical underground mines such as the Bellevue Mine which is now used as a tourist attraction, the Grassy Mountain Mine open pits, the Greenhill Mine and the historical surface mine that was operated by the Coke and Coal Company which built the town of Coleman.

There is one protective notation (PNT900426) that is held by the Government of Alberta for the Greenhill Mine Complex (Section 4.11). The Department of Culture holds a Consultative Notation (CNT 880242) for the Green Creek Wintering site, which is described in the LSAS report as a significant historical resource. They also hold a Designated Historical Resource disposition (DHR010001) for the village of Lille, which has been designated as a provincial historic resource since January, 1978.

The village of Lille is located just east of the LSA and Frank Slide which is located southeast of the Project (Figure 4.10-1). Frank Slide was designated a Provincial Historic Resource in 1977. The slide occurred in 1903 and destroyed most of the former town of Frank. Now there are walking trails built into the rubble for tourists to visit and an interpretive centre that provides more information about the history of the slide.

A Historical Resource Impact Assessment has been undertaken for the Project (Section E.13). In the HRIA, 32 recorded archaeological or historic era resources were identified and are listed in Table 4.10-1. The location of these sites is protected under the *Historical Resources Act* and, therefore, not provided in this report.

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<sup>\*</sup> Disposition within the RSA but outside of the LSA (i.e. not directly impacted by Project development)



Period	Classification	Borden Site	Historical Resource
		Number	Value
Historic	residential remains	DjPo-99	4
Historic	Boisjoli mine structures	DjPo-101	4
Historic	Lille townsite	DjPo-112	1
Historic	Grassy Mountain Campsite	DjPo-116	4
Historic	Frank to Lille Railway	DjPo-124	4
Historic	Cougar Valley mine remains	DjPo-133	4
Historic	Frank to Lille wagon road	DjPo-136	4
Historic	dump, campsite	DjPo-176	4
Historic	residential remains/cabin	DjPo-180	4
Historic	bridge remains	DkPo 30	4
Historic	bridge remains	DkPo 31	4
Historic	mine remains	DkPo 41	4
Historic	Blairmore dairy building remains	DjPo-37	4
Historic	Greenhill Mine site	DjPo-38	2
Precontact	campsite	DjPo-98	4
Precontact	campsite	DjPo-100	4
Precontact	campsite	DjPo-130	4
Precontact	campsite	DjPo-146	4
Precontact	campsite	DjPo-179	4
Precontact	campsite	DjPo-181	4
Precontact	campsite	DjPo-184	4
Precontact	stone feature	DkPo 7	4
Precontact	campsite	DkPo 8	4
Precontact	campsite	DkPo 14	4
Precontact	campsite	DkPo 37	4
Precontact	campsite	DkPo 38	4
Precontact	campsite	DkPo 39	4



Table 4.10-1 Historical Resources Identified <sup>1</sup>			
Period	Classification	Borden Site Number	Historical Resource Value
Precontact	lithic scatter	DkPo 42	4
Precontact	campsite	DkPo 43	4
Precontact	campsite	DkPo 44	4
Precontact	campsite	DjPo-10	4
Precontact	campsite	DjPo-63	4

Notes:

# 4.11 Municipal, Provincial and Federal Reservations

There are seven Disposition Reservations (DRS) within the LSA and RSA (Table 4.11-1, Figure 4.11-1). These DRS provide authorization for government use of public land for public works (SRD 1997).

Table 4.11-1 Disposition Reservations within the Local Study Area and Regional Study Area			
Disposition	Disposition Disposition Holder		Description from LSAS Report
DRS150007*	Smoky Lake Office – Lands Division Alberta Tree Improvement and Seed Centre	NW-10-009-04 W5M; SW-15-009-04 W5M	Research or Sample Plot
DRS850045	Blairmore Office – Land Use Area – Land Division Department of Sustainable Resource Development	NE-03-008-04 W5M	Ranger Station – disposition listed as expiring in 2015/08/07
DRS970014*	Alberta Transportation	NE 4-008-04 W5M	Fisheries Enhancement Area
DRS860152*	Department of Public Works and Government Services Canada	NE 16-008-04 W5M	Remote Device
DRS880092*	Department of Environment and Water (now AEP)	SE 36-007-04 W5M	Stream Bank Habitat Enhancement Area (Frank Disaster Area Access Road)

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 $<sup>^{1}</sup>$  as identified in the Historical Resource Impact Assessment undertaken for the Project (Section E.13)



Table 4.11-1 Disposition Reservations within the Local Study Area and Regional Study Area			
Disposition	Disposition Holder	Location	Description from LSAS Report
DRS890056*	Department of Environment and Water (now AEP)	NE, NW 35-007-04 W5M; NE, NW 36-007- 04 W5M; SW 02-008-04 W5M; SE 03-008-04 W5M	Fisheries Habitat Protection Area
DRS900007*	Transportation Property Development	SW-09-008-04 W5M	Stream Bank Habitat Protection Area

### Notes:

In addition to the DRS, there are a number of consultative and protective notations on the lands found within the LSA and RSA (Figure 4.11-1, Figure 4.11-2 and Table 4.11-2). Consultative notations (CNTs) are used to show and interest in the land but do not provide any restrictions on use, while protective notations (PNTs) identify land and resources that are managed to achieve particular land use or conservation objectives (ASRD 1997).

<sup>\*</sup> Disposition within the RSA but outside of the LSA (i.e. not directly impacted by Project development)



Disposition	Disposition Holder	Location	Description
CNT090027	Calgary Office- Forestry and Emergency Response Division of Environment and Sustainable Resource Development, Wildlife Management Branch, Calgary Wildlife Management Area	NE, NW-7-008-03 W5M; NW-8-008-03 W5M; NW, SW-17-008-03 W5M; 18-008-03 W5M; 20-008-03 W5M; 29-008-03 W5M; NE 31-008-03 W5M; NE, NW, SE-31-008-03 W5M; 32-008-03 W5M; 5-009-03 W5M,; 6-009-03 W5M; 7-009-03 W5M; NW, SW-08-009-03 W5M; SW-17-009-03 W5M; 18-009-03 W5M; SE, SW-34-007-04 W5M; NW-35-007-04 W5M; NW, SE-36-007-04 W5M; NI, SE-36-007-04 W5M; NE, SW-2-008-04 W5M; NE, SE-03-008-04 W5M; 12-008-04 W5M; 13-008-04 W5M; NE, SE-14-008-04 W5M; NE, NW, SW-15-008-04 W5M; NE-16-008-04 W5M; NE, SE-22-008-04 W5M; NW, SW-23-008-04 W5M; NE-25-008-04 W5M; NW, SW-23-008-04 W5M; NE-25-008-04 W5M; 35-008-04 W5M; NE, SE-36-008-04 W5M; NE, SE-36-008-04 W5M; 10, 11, 12, 13, 14-009-04 W5M;	Firesmart Zone
CNT 860041	Lands Division of Department of Sustainable Resource Development – Blairmore Office – Land Use Area	01-009-04 W5M; 02-009-04 W5M; NW, NE, SW 03- 009-04 W5M; 11-009-04 W5M; 12-009-04 W5M; 13- 009-04 W5M; 14-009-04 W5M; 15-009-04 W5M	Potential Timber Disposal – to determine volumes and establis AU A.A.CC. within the McCrillivary Creek Misc. timber use area of the CS M.U.
CNT 880242*	Department of Culture	NE07-008-03 W5M	Green Creek Wintering Site. Significant Historical Resource

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Table 4.11-2 Consultative and Protective Notations within the Local Study Area and Regional Study Area			
Disposition	Disposition Holder	Location	Description
CNT980012	Lands Division of Department of Sustainable Resource Development – Blairmore Office – Land Use Area	NE, SE22-008-04 W5M; NE27-008-04 W5M; SW, SE34-008-04 W5M; NW, SW-35 -008-04 W5M; SW02-009-04 W5M; SW, NE, SE-03-009-04 W5M; SE10-009-04 W5M; 11-009-04 W5M; NW12-009-04 W5M; SW13-009-04 W5M; NE, SE14-009-04 W5M; SE, SW, NW06-009-03 W5M; NW, SW07-009-03 W5M; NW, SW18-009-03 W5M;	Snowmobile Trails – managed/maintained by Crowsnest Economic Development Board
DHR010001	Department of Culture	NE & NW 18-008-03 W5M	Village of Lille designated as a historic site.
PNT 900430**	Department of Environment and Water	L03, L04 14-008-04 W5M	Waste Disposal/Reclamation Site
PNT900426**	Department of Culture	pt.L03, pt.L06 – 02-008-04 W5M	Registered Historic Resource – Greenhill Mine Complex
PNT090084	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	SW-20-008-03 W5M; NW, SW-23-008-04 W5M; 26-008-04 W5M; SE, SW-34-007-04 W5M; NW-35-007-04 W5M; NW-36-007-04 W5M; NE, NW-7-008-03 W5M; NW-8-008-03 W5M; NW, SW-17-008-03 W5M; 18-008-03 W5M; NW, SE, SW-1-008-04 W5M; NE, SW-2-008-04 W5M; NE-3-008-04 W5M; SE, SW-9-008-04 W5M; NE, NW-13-008-04 W5M; NE, SE-14-008-04 W5M; NE, NW, SW-15-008-04 W5M; NE, SE-14-008-04 W5M	Potential for foothills fescue grassland

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Table 4.11-2 Consultative and Protective Notations within the Local Study Area and Regional Study Area			
Disposition	Disposition Holder	Location	Description
PNT090087	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	SE-35-008-04 W5M; NW, SW 05-009-03 W5M; 6-009-03 W5M; 7-009-03 W5M; NW, SW 08-009-03 W5M; NE, SE, SW-17-009-03 W5M; 18-009-03 W5M; NW, SE-01-009-04 W5M; 02-009-04 W5M; 03-009-04 W5M; NE, NW, SE-10-009-04 W5M; 11-009-04 W5M; SE, SW-12-009-04 W5M; NW, SE, SW-14-009-04 W5M; NE, NW, SE-15-009-04 W5M	Potential for foothills fescue grassland
PNT700566*	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	SE-34-007-04 W5M	No agricultural dispositions.
PNT776398*	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	L9 , 16-2-008-04 W5M	No agricultural dispositions. Mountainous topography
PNT810769*	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	07-008-03 W5M	Mountainous terrain rock outcrops
PNT880617	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	26-008-04 W5M	Unimproved grazing
PNT880618	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	L10, 15-25-008-04 W5M; L2, 7, 10, 15- 36-008-04 W5M	No agricultural dispositions.

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able 4.11-2 Consultative and Protective Notations within the Local Study Area and Regional Study Area			
Disposition	Disposition Holder	Location	Description
PNT880619*	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	L1, 8, 9, 16-008-04 W5M	Unimproved grazing
PNT880625*	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	L11, L14, L15-17-008-03 W5M	Unimproved grazing
PNT890351*	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	L3, 6-17-008-03 W5M	Grazing Permit only. Land to be transferred to the green area.
PNT890378	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	NW, SW-23-008-04 W5M	Grazing permit only.
PNT930299	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	W17-009-03 W5M; 18-009-03 W5M; NE, NW-1-009-04 W5M; NE, NW, SE-11-009-04 W5M; 12-009-04 W5M; 13-009-04 W5M; 14-009-04 W5M; 15-009-04 W5M	Grazing allotment area.

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Table 4.11-2 Consultative and Protective Notations within the Local Study Area and Regional Study Area			
Disposition	Disposition Holder	Location	Description
PNT940130	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	22-008-04 W5M; 27-008-04 W5M; 34-008-04 W5M; 35-008-04 W5M; W05-009-03 W5M; 06-009-03 W5M; 07-009-03 W5M; W08-009-03 W5M; W17-009-03 W5M; SE, SW-18-009-03 W5M; 01-009-04 W5M; 02-009-04 W5M; 03-009-04 W5M; 10-009-04 W5M; 11-009-04 W5M; NE, SE, SW -12-009-04 W5M; SE-13-009-04 W5M; NW, SW-14-009-04 W5M; 15-009-04 W5M	Grazing allotment area.
PNT960092	Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	NE-30-008-03 W5M; NW, SE-31-008-03 W5M	These land best suited for grazing due to steep slopes ranging from 15% to >30%. Prime watershed protection along gold creek and fish habitat potentially valuable for ungulat habitat and potential for reforestation under a multiple use plan.

### Note:

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 $<sup>\</sup>ensuremath{^*}$  Not included in LSAS Report but shown on AEP's Disposition Spatial Processing Tool.



The Municipality of Crowsnest Pass holds two non-recreational TFAs within the LSA and RSA (Table 4.11-3).

Table 4.11-3 Non-Recreational Temporary Field Authorizations within the Local Study Area and Regional Study Area

Disposition	Disposition Holder	Location	Description
TFA 156470*	Municipality of Crowsnest Pass	SE-34-007-04 W5M	Access Route – Access Trail
TFA 163084*	Municipality of Crowsnest Pass	SE-03-008-04 W5M; S- 09-008-04 W5M	Bed and Shore Water crossing Bank Protection/Stabilization

#### Notes:

#### 5.0 APPLICATION CASE ASSESSMENT

# 5.1 Project Overview

The Project will consist of an open pit metallurgical coal mine, waste rock disposal areas, a CHPP, and a product coal overland conveyor that will connect the CHPP area to a train load out facility (Figure 5.1-1). For the mine, rock above the coal will be drilled/blasted, then excavated and hauled to both in-pit and ex-pit waste rock disposal locations. Coal from the open pit mining operations will be trucked to the run of mine (ROM) raw coal dump station at the CHPP using large scale mining trucks.

At the CHPP, excess rock and impurities will be removed from the raw coal. The reject material from the CHPP will be trucked back into the mine for proper disposal. There is no requirement for a tailings pond for this Project. The final coal product will be sent to the product coal stockpiles, where it will then be conveyed overland (*via* a covered conveyor) to the load out facility which will be located on the existing golf course. The coal will then be transported to marine terminal facilities located on British Columbia's west coast.

Pending all necessary approvals and permits, the current development schedule for the Grassy Mountain Project is:

Construction: 2018 - 2019;

Commissioning & Operation: 2019;

• Full Operations: 2019 – 2041;

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<sup>\*</sup> Disposition within the RSA but outside of the LSA (i.e. not directly impacted by Project development)



- Decommissioning: 2042 2045; and
- Conservation and Reclamation: On-going through life of mine.

A comprehensive Project Description is provided in Section C of the EIA.

## 5.1.1 Land Disposition Requirements

The majority of the project components, such as the CHPP, access/conveyor corridor are located on a mix of both Crown and private land. The area that falls on Crown land will require surface dispositions in accordance with the *Public Lands Act*. Benga plans to capture the entire mining infrastructure in a single mineral surface lease (MSL), the construction camp and conveyor/access/powerline in a single miscellaneous lease (MLL) and the rail loop and loadout in a licence of occupation (LOC). The location of these dispositions is provided in Figure 5.1-1. Applications for these surface dispositions required in accordance with *the Public Lands Act* will be submitted under separate cover.

### 5.1.2 Incidental Physical Activities

Due to development of the Project, some of the existing facilities associated with the Crowsnest Pass Golf and Country Club will need to be moved. In addition, the existing access to the helipad operated by Alberta Environment and Parks will need to be rerouted. These changes are required in order to accommodate construction of the rail loop and are shown on Figure 5.1-2.

Overall impact on the current golf course infrastructure will include full or partial obstruction of Fairways #1, #2, #3, #14, #15, #16, #17 and #18, as well as the club house, car park and maintenance buildings. All affected golf course infrastructures will be re-located to the west of the existing golf course, onto land currently owned by Benga.

Although not part of the proposed Project, the development of these facilities is included in the assessment on the potential impacts of the Project on Land and Resource Use.

### 5.1.3 Access Control

Benga has developed a policy that will be used to facilitate access to the Project site by authorized users. Access control will be undertaken to both allow and restrict access to the Project area. The appropriate level of access control will be based on the level of risk to public safety and need to protect Project infrastructure.

In low risk areas, such as properties owned by Benga but not in use, access control will include signage indicating property boundaries. In medium risk areas, such as lands owned and accessed on a regular basis by Benga, access will be controlled by placing signage at the property boundaries

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advising that use is at own risk and that no hunting, camping or fishing is allowed. In high risk areas, such as areas part of the Project site, signage will be placed at the property boundaries advising that no unauthorized personnel are allowed and there is no hunting, camping or fishing allowed. Locked gates with signage will also be placed at all points of access to the high risk areas.

### 5.1.4 Fire Control

Benga has developed a Wildfire Emergency Response Plan that follows the guidelines set forth in the *FireSmart Guidebook for the Oil & Gas Industry* (ESRD 2008). The plan has incorporated the specific criteria that pertains to the coal industry (*e.g.*, enhancing personnel safety during a wildfire event, enhancing emergency response capability, mitigating economic impact during the shutdowns, mitigation infrastructure loss of damage and reducing liability for industry-caused ignitions). The Wildfire Control Plan is included in Section C.7.6 of the EIA.

### 5.1.5 Conservation & Reclamation

The goal of reclamation in Alberta is to achieve a land capability that is equivalent to what existed prior to disturbance. Reclamation targets are determined by the regulatory requirement to return the lands to equivalent land capability that will be supportive of the stated end land use objectives. The return of equivalent land capability does not mean that the reclaimed landscape will be identical to pre-disturbance condition but provides for flexibility.

Reclamation activities will be undertaken throughout the life of the mine as mining in each pit is competed. During this process, Benga will ensure that end land use objectives are developed in consultation with stakeholders, building on the existing consultation process and adaptive management of the Conservation & Reclamation and Closure plan will be pursued through the incorporation of the results of the site wide environmental monitoring programs and through regional research initiatives. The details of the reclamation plan are provided in Section F of the application.

### 5.2 Potential Effects on Private Land Owners

The potential impacts of the Project on private land owners can occur directly due to development of the Project on privately owned land or indirectly due to changes to regional socio-economic conditions. The impacts due to changes in socio-economic conditions are discussed in the Socio-Economic Impact Assessment completed for the Project (Section E.11 and CR #11).

A majority of the Freehold land directly impacted by the Project is owned by Benga. Private landowners, other than Benga, that own land within the LSA and may be directly impacted by development of the Project are outlined in Table 5.2-1. There are two owners of land that will be directly impacted by development of the Project. Benga has agreements in place with both owners in

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order to obtain access to these areas. Benga is consulting with the landowners located directly to the east of the LSA in order to identify appropriate measures to mitigate indirect impacts. Consultation with these private land owners is progressing and it is anticipated that all outstanding issues can be resolved. The status of these consultation activities is provided in Section A.7 and Section G.4.

Table 5.2-1 Private Landowners that May be Directly Impacted by Project Development				
Owner	Location	Purpose	Mitigation Required	
Donkersgoed Feeders Ltd. & Berdina Farms Ltd.	SW19-008-03 W5M	Freehold Land	None - No overlap with Project footprint, continued consultation required to address concerns as they arise.	
Private	SW30-008-03 W5M	Freehold Land	None - No overlap with Project footprint, continued consultation required to address concerns as they arise.	
Private	SW31-008-03W5M	Freehold Land	None - No overlap with Project footprint, continued consultation required to address concerns as they arise.	
The Municipality of Crowsnest Pass	pt. SE02-008-04 W5M	Freehold Land	None - No overlap with Project footprint, continued consultation required to address outstanding concerns.	
Crowsnest Pass Golf & Country Club	pt. NW, pt. SW, 02-008-04 W5M; pt. NE, pt. SE 03- 008-04 W5M	Freehold Land	Relocating portions of the existing golf course as described in Section 5.1.2.	
Private	pt. SW10-008-04 W5M	Freehold Land	None - No overlap with Project footprint but small portion of rerouted helipad access may fall in this area depending on the final surveyed location.	
Private	SE-24-008-04 W5M	Freehold Land	Benga currently has an agreement in place with this landowner to access the land for mine development.	
Crowsnest Pass Golf and Country Club	SE-3-8-4 W5M	Water pipeline (EZE 940321)	None – No overlap with Project footprint.	
Crowsnest Pass Golf and Country Club	pt. LS09-03-008-04 W5M	Golf Course (REC910007)	Relocation of a portion of the golf course to land owned by Benga as described in Section 5.1.2.	

Note:

Private Names of individuals have been redacted.

pt. Denotes that title is only for a portion of the quarter section

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## 5.3 Potential Effects on Land Use Policies and Regional Planning Initiatives

## 5.3.1 Coal Development Policy

A majority of the LSA is located in an area that has been classified as Category 4 in accordance with the Coal Development Policy for Alberta, with small portion to the south within Category 1 and a small area in the northwest that is Category 2 (Figure 4.2-1). With appropriate conservation and reclamation measures coal mining is permitted in the Category 4 areas. Surface mining is not traditionally considered in Category 2 areas either because it is an area where infrastructure is inadequate to support mining activities or it is an area associated with high environmental sensitivity. Only a very small portion of the Project footprint is located within an area classified as Category 2, in addition, this same area has not been designated as an Environmentally Significant Area (Figure 4.2-4); subsequently, the small area of development proposed within the Category 2 area does not conflict with the intent of the Coal Development Policy for Alberta. Coal development is not permitted in Category 1 areas as they are either areas where alternative land uses have a higher priority or areas with high environmental sensitivity. The proposed development within Category 1 areas does not include active open pit mining but are associated with the access road, overland conveyor and rail loadout. In addition, a majority of the Category 1 area found within the proposed Project footprint has not been identified as an Environmentally Significant Area (Figure 4.2-4). For these reasons the development of the access road, overland conveyor and rail loadout within the Category 1 area does not conflict with the intent of the Coal Development Policy for Alberta.

## 5.3.2 Integrated Resource Planning

The proposed Project footprint is located on lands zoned as Special Use and Multiple Use within an area covered by the Livingstone- Porcupine Hills Sub-Integrated Resource Plan. Development of the Project is consistent with the management intent of these zones. The proposed rail loop, and portions of the access road/conveyor/power line are located on lands zoned for Multiple Use, Facility and Critical Wildlife within an area covered by the Crowsnest Corridor Local Sub-Regional Integrated Resource Plan. The proposed development for this area is consistent with the management intent of the area zoned for Multiple Use and Facility. There is one very small area zoned as Critical Wildlife that could potentially be crossed by the conveyor. A Wildlife Assessment has been undertaken for the Project that provided specific mitigations and recommendations to engineering mine planning team to minimize potential impacts to wildlife migration as it relates to the overland conveyor and access road (Section E.9.5.1 and CR #9, Section 7). In addition, this assessment also assessed the potential impacts to the wildlife within the area zoned as Critical Wildlife was undertaken and measures to be utilized to reduce potential impacts identified. With implementation of these mitigation measures and reclamation to equivalent capability after mining has been completed, the impacts to this zone will not be significant.



## 5.3.3 South Saskatchewan Regional Plan

The Project falls within the southwest limits of the South Saskatchewan Regional Plan (SSRP). The SSRP outlines the vision for the South Saskatchewan Region and identifies a number of regional outcomes and strategies for achieving these outcomes. Implementation of the strategies outlined in the SSRP is in progress and will be rolled out over time. Some of the strategies currently in place that have been considered by Benga include:

- potential impacts of the Project on the newly created Livingstone Range Wildland Provincial Park;
- the ambient air quality limits and triggers outlined in the South Saskatchewan Region Air Quality Management Framework; and
- ambient surface water quality triggers and limits outlined in the South Saskatchewan Region Surface Water Quality Management Framework.

The proposed expanded Castle Wildland Provincial Park and new Castle Provincial Park are located over 5 km south of the regional study area; therefore, are not directly impacted by development of the Project.

Benga will continue to keep up to date with the implementation of the SSRP and, through their adaptive management program, will incorporate changes to their development and operation as the need is identified.

### 5.3.4 South Saskatchewan River Basin Plan

As a result of the Approved Water Management Plan for the SSRB, no new surface water allocations are being issued from the Oldman River sub-basin; however, transfers of existing allocations are permitted.

The Grassy Mountain Coal Project has developed a water management strategy that facilitates both the management and use of water from the Project. There will be interaction with both surface water and groundwater resources during the construction, operation and reclamation of the Project. The Project has been designed to manage the surface water and groundwater efficiently and to minimize the impact on the environment. Benga has considered various sources of surface water and groundwater to supply the Project's water needs. Details on the Project's Water Management Plan and Policies are outlined in Section C.5 of the EIA, with impact assessments associated with hydrology and water quality provided in Section E.4 and CR #4 (Hydrology) and Section E.5 and CR #5 (Water Quality).



# 5.3.5 Environmentally Significant Areas

A number of ESAs have been identified within the LSA and RSA (Figure 4.2-4). A majority of the ESAs in the area were classified as an area that contributes to water quality and quantity (Criterion 4.0) and as areas with ecological integrity (Criterion 3.0). Key features of these two criteria were related to the presence of rivers and streams (4a), wetlands and lakes (4b), habitat patch size (3a), and habitat intactness and connectivity (3b) (Fiera 2014). Development within ESA's is not restricted, rather the identification of ESA's was undertaken in order to help inform land use decisions. Environmental assessment of aquatic and terrestrial resources have been undertaken to determine the potential environmental impacts of the Project and mitigation measures to reduce potential impacts developed in the Project EIA (Section E.6.5 and CR #6 [Fisheries], Section E.8.5 and CR #8 [Vegetation] & Section E.9.5 and CR #9 [Wildlife]).

## 5.3.6 Wildlife and Biodiversity Zones

The southern and eastern most portions of the RSA are located within a Mountain Goat and Sheep Range as identified by AEP 2015 (Figure 4.2-5). As stated in Section 4.2.6, in these areas efforts should be made to avoid disturbances that may have a direct or indirect adverse effect and to avoid permanent alteration of habitat.

An assessment of the potential impacts to mountain goats has been undertaken (Section E.9 and Section 5.4.6 of CR #9 [Wildlife]). During the field assessments, it was determined that there is no quality mountain goat habitat within the local study area and no mountain goats were detected during the surveys conducted in 2014 or 2015. The primary effect of Project development on mountain goats is likely to be increased habitat fragmentation; however, this problem may be mitigated by the wildlife crossings that will be built along the proposed coal conveyor and access road. In the Wildlife Assessment, it was predicted that the effects would be reversible in the long term, as affected areas will be reclaimed to equivalent capability upon mine closure.

An assessment of the potential impacts to bighorn sheep was also undertaken (Section E.9 and Section 5.4.7 of CR #9 [Wildlife]). Bighorn sheep were not identified during any of the wildlife surveys undertaken for the Project but are known to occur along Highway 3. Bighorn sheep may move through the area while travelling between winter and summer ranges, and therefore movement could be altered by the development of the overland conveyor. To mitigate this potential impact on sheep movements, wildlife crossings will be placed at suitable locations along the coal conveyor.

The northern portion of the RSA is located within a Grizzly Bear zone (Figure 4.2-5) that is an area that provides either core or secondary grizzly bear habitat. An assessment of the potential impacts to grizzly bears has been undertaken (Section E.9 and Section 5.3.8 of CR #9 [Wildlife]) and mitigation measures to reduce the potential impacts are identified.



The Key Wildlife and Biodiversity Zones are found within the RSA along the Crowsnest River, Pelletier Creek and a tributary to Daisy Creek (Figure 4.2-5). Only the portion along the Crowsnest River will be intersected by the project footprint and is required for construction of the rail load out.

## 5.3.7 Impact Summary

Various land use policies and regional planning initiatives have been developed for the area within the LSA and RSA. The intent of these policies and planning initiatives are to help inform land use decisions. Through a review of regional policies and initiatives, environmental issues and concerns have been identified and appropriate mitigation measures included in the design, construction, operation and reclamation plans for the Project. Any conflict with existing land use policies and regional planning initiatives due to the Project will be local in nature, extended but reversible in nature as they will diminish over time after reclamation and will occur throughout the life of the Project. Therefore, development of the Project does not conflict with the intent of these policies and initiatives in a significant manner.

# 5.4 Potential Effects on Resource Development

#### 5.4.1 Mines and Minerals

There are a number of freehold mines and mineral rights within the LSA and RSA that are held by Exxon Mobil Resources Ltd., Ember Resources Inc. and Saskatoon Lease Holder Ltd. and other Private owners (Table 4.3-1 and Figure 4.3-1). Of these, only the titles held by Exxon, Ember Resources, Saskatoon Lease Holders Ltd. and one Private Owner may be directly impacted as they are located within the LSA (Table 5.4-1).

Ember Resources holds a title on the western edge of the LSA for Mines and Minerals (other than coal). A small portion of the lands included in this title overlap with the Project footprint. The title held by Exxon includes small area of land along the existing highway that overlaps with the proposed railway loop development. Benga has notified the holders of these titles of the proposed Project and will work with these companies to identify measures required to mitigate impact to potential future development of the mineral resources located in these areas.

The title held by the Private owner is from 1915, and is for a 2.1 ha area located within the existing railway right-of-way; therefore no impact from the Project is anticipated. The title held by Saskatoon Lease Holders excludes the area within the railway right-of- way where most of the surface development in this area is occurring. The re-routing of the helipad access is also proposed to occur over this title but will not impede potential development of the subsurface resource.

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<b>Table 5.4-1</b>	Freehold Mines and Minerals Holders that may be Directly Impacted by Project
	Development

Title Holder	Location	Follow Up or Mitigation Required
Exxon Mobil Resources Ltd.	NW, SW 3-008-04 W5M	None - Exxon was notified of the Project, no concerns have been raised to date.
Private	Railway Right of Way in SW 10- 008-04 W5M	None – resource is located within 2.1 ha area within the existing railway right of way. Title has not been updated since 1915.
Ember Resources Inc.	NW, SW, SE 26-008-04 W5M	None - Ember was notified of the Project, no concerns have been raised to date.
Saskatoon Lease Holders Ltd./ Private	NW, SW 10-008-04 W5M	None – no impact anticipated as the title excludes areas within the railway right of way where most of the surface development in this area is occurring. The re-routing of the helipad access will also overlap with this lease but will not impact potential for development of the subsurface resources.

### 5.4.2 Coal Resource Development

Developers, other than Benga, with rights to the coal resource in the LSA and that may be directly impacted by development of the Project are listed in Table 5.4-2. A majority of the coal leases and freehold coal located in the LSA is held by Benga (Table 4.4-2, Figure 4.4-2 and Figure 4.3-1). Although located within the proposed Mine Permit Area (and LSA), the coal owned by the Carbon Development Corporation is not within the mining area and therefore will not be impacted by development of the Project. The coal currently owned by Canpar Holdings is on the western edge of the pit area. Benga has a signed agreement with Canpar to obtain access to the coal in this area.

Surface facilities that have been constructed to support exploration and development of coal resources are found within the LSA and will be disturbed by development of the Project. The dispositions for these facilities are held by Benga and Devon. The disposition held by Benga that is located within the Project footprint (LOC141938) will be incorporated into the surface disposition applications required under the *Public Lands Act* for development of the Project (see Section 5.1.1). Benga has an agreement in place with Devon to obtain the existing ROE dispositions that are administered by the Surface Rights Board. The Surface Rights Board has indicated that the transfer of the ROE's from Devon to Benga cannot occur until the Project's *EPEA* and *Coal Conservation Act* applications are approved and issued by the AER.



Table 5.4-2 Coal Developers that may be Directly Impacted by Project Development					
Holder	Location	Purpose	Follow Up or Mitigation Required		
Carbon Development Corp.	NW, SW-26-008-04 W5M	Freehold Coal	None – coal resource is not located within the Project footprint.		
Canpar Holdings Ltd.	SE-26-008-04 W5M	Freehold Coal	None - Agreement between Canpar and Benga is in place. No further mitigation is required.		
Devon Canada Corp	NE-25-008-04 W5M; NE, SE 36-008-04 W5M; pt. L5, pt. L12-6-009-03 W5M; L4, L5 6-009-03 W5M; L1, L8 - 01-009-04 W5M	ROE8751, ROE156, ROE324, ROE1169	Administered by the Surface Rights Board. Devon and the Surface Rights Board have agreed that these will be transferred to Benga once development of the Project has been approved. Benga will then include these dispositions within the proposed MSL boundary.		

## 5.4.3 Oil and Gas Development

Rights to the petroleum and natural gas resource in the area is owned by the Crown and either leased/licensed to developers or it is held through freehold title (Table 4.5-1, Table 4.5-2 and Figure 4.5-1). In addition, there are various surface dispositions in place to support petroleum and natural gas development (Table 4.5-3, Figure 4.5-2). Petroleum and natural gas developers with interest in land within the LSA that may be impacted by development of the Project are listed in Table 5.4-3.

Two mineral surface leases for well sites are located within the Project footprint, but are no longer producing. These well site dispositions are held by Devon. Two pipeline leases and one pipeline installation lease are currently in place for infrastructure used to support these wells when they were producing. These leases are also held by Devon and use of these facilities has been discontinued. All of the surface dispositions supporting oil and gas activity, which are found within the Project footprint, are located under a future rock disposal area. Prior to development of the rock disposal area, Benga will work with Devon to ensure that the facilities are abandoned and any contamination remediated in accordance with applicable AER guidelines.

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Table 5.4-3 Petroleum and Natural Gas Development that may be Directly Impacted by the Project.				
Disposition Holder	Location	Purpose	Follow Up or Mitigation Required	
Direct Energy Marketing Ltd./Devon Canada Corp.	01,02,12,13,14- 009-04 W5M; 11-009- 04 W5M	Petroleum Natural Gas leases	None - Devon has provided Benga with a letter stating that they have no objection to the proposed development.	
Devon Canada Corp.	Various	MLL1948, MSL 043285, MSL 801502, PIL 050504; PLA 052764	None - Devon has provided Benga with a letter stating that they have no objection to the proposed development.	
Bevon Canada Corp.		EZE 990090, MLL 930010, MSL 7025, MSL 081840, MSL 852428, LOC 851435, PLA 920136	None – dispositions are not within the Project footprint or the proposed MSL boundary	
Prairiesky Royalty Ltd.	18, 19, 30-008-03 W5M; NW, SW, SE-31-008-03 W5M; 02-008-04 W5M; NE, SE-03-008-04 W5M; NE, SE-10-008-04 W5M; 14, 25, 36-008-04 W5M;	Freehold Petroleum Natural Gas	These titles were purchased in January 2016. Benga has initiated contact with Prairiesky and will work with them to resolve issues as they are identified.	
Canadian Natural Resources Limited	Various	MSL 12533, MSL 011735, MSL 021309, MSL 941235, PLA 5796, LOC 3613, LOC 4111, LOC 4917, LOC 940867	None – none of the existing dispositions are intersected by the Project footprint or proposed MSL boundary.	
Lonlife Resources Ltd, Canadian Natural Resources	Various	PLA 5009, PLA 800809, PIL 276	None – none of the existing dispositions are intersected	

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Table 5.4-3 Petroleum and Natural Gas Development that may be Directly Impacted by the Project.				
Disposition Holder	Location	Purpose	Follow Up or Mitigation Required	
Limited, Norco Resources Limited, Opinac Exploration			by the Project footprint or proposed MSL boundary.	
Limited	NE, SE 11-009-04 W5M; NE 02-009- 04 W5M; NW 01-009-04 W5M; SW 12 -009-04 W5M	PLA 800692	Devon has confirmed that they are the holder of this disposition. Devon has provided Benga with a letter stating that they have no objection to the proposed development.	
Taqa North Ltd.	Various	MSL890948, LOC890772	None – none of the existing dispositions are intersected by the Project footprint or proposed MSL boundary.	

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## 5.4.4 Forestry and Agricultural Resources

The Project falls within both green and white zones of Alberta, with a majority of the development footprint located within the white zone. The green zone portion of the LSA is also within Forestry Management Unit C-5. In addition, there are three privately owned coniferous timber permits within the LSA that may be impacted by Project development (Table 5.4-5). Within the LSA, there is also a consultative notation that is held by AEP for establishing animal unit carrying capacity within the McGillivray Creek Miscellaneous Timber Use Area, but no development restrictions are associated with this notation.

An assessment of the potential impacts of the Project on forestry resources has been undertaken (Section 4.4.1 of CR #8 [Vegetation]). It was determined that the effects on Annual Allowable Cut will be minimal because all merchantable timber salvaged from the Project will be made available to local timber rights holders and approximately 61.4% of the Project Footprint will be reclaimed to closed conifer forests with another 8.8% reclaimed to moderate mixed forest, including the historically disturbed barren land. The timber management plan for the Project is included in Conservation and Reclamation Plan located in Section F.3.3 of the EIA.

Within the white zone portion of the RSA there are five grazing leases and one grazing permit (Figure 4.6-1). Grazing permits and licences that may be impacted by Project development are outlined in Table 5.4-5. Two grazing leases within the footprint are privately held and will be impacted by the development of a settling pond. The grazing permit is held by Gold Creek Grazing Co-op Ltd. and is located on the west and southeast edges of the LSA. Grazing in this permit area will be impacted by development of ponds and ditches required to manage water and by development of a small portion of the pit and a topsoil stockpile.

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Table 5.4-5	Coniferous Timber Permits and Licences within the Local Study Area and Regional Study Area				
Disposition Holder	Location	Purpose	Follow Up or Mitigation Required		
Private	pt. 02-009-04 W5M; pt03-009-04 W5M; NE, SE, SW-L9-03-009-04 W5M; SE, SW-L10-03-009-04 W5M	Coniferous Timber Permit (CTPC050121)	None – located to the west of the Project footprint.		
Private	NW-01-009-04 W5M; L09, L16-02- 009-04 W5M; L01-11-009-04 W5M; 04-12-009-04 W5M	Coniferous Timber Permit (CTPC050124)	Impacted by development of the North Rock Disposal Area. Benga has been consulting with the holder of this permit and is in the process of obtaining an agreement to access these areas. A letter of consent will be provided as part of the <i>Public Lands Act</i> Application to be submitted under separate cover.		
Private	L08-11-009-04 W5M; L05-12-009-04 W5M	Coniferous Timber Permit (CTPC050125)	None – located to the north of the north dump area.		
Private	NW, SW-20-008-03-W5; NW, SW-29-008-03-W5; NE-31-008-03-W5; NW, SW-32-008-03-W5	Grazing Lease (GRL 36801)	Impacted by development of the east edge of one settling pond. Benga has been consulting with the holder of this lease and is in the process of obtaining an agreement to access these areas. A letter of consent will be provided as part of the <i>Public Lands Act</i> Application to be submitted under separate cover.		
Private	NE-30-008-03-W5; NW, SE-31-008- 03-W5	Grazing Lease (GRL 960066)	Impacted by development of settling pond. Benga has been consulting with the holder of this permit and is in the process of obtaining an agreement to access these areas. A letter of consent will be provided as part of the <i>Public Lands Act</i> Application to be submitted under separate cover.		
Gold Creek Grazing Co- op Ltd.	NW, SW-17-008-03-W5; 18-008-03-W5; 01, 08, 09, 16-14-008-04-W5; NW, SW-23-008-04-W5; 26-008-04-W5	Grazing Permit (GRP 870052)	Impacted by development of ponds and ditches required to manage water, a small portion of the pit and a topsoil stockpile. Benga has been consulting with the holder of this permit and is in the process of obtaining an agreement to access these areas. A letter of consent will be provided as part of the <i>Public Lands Act</i> Application to be submitted under separate cover.		

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## 5.4.5 Aggregate

There is currently no aggregate resource development or exploration within the LSA.

There are several freehold titles for "stone suitable for building purposes" within the RSA but not within the LSA. These titles are for areas within Sections 34, 35 & 36, Township 7, Range 4, West of the 4<sup>th</sup> Meridian. All of these titles are for resources located south of Highway 3; therefore, will not be impacted by Project development.

## 5.4.6 Impact Summary

It is predicted that the impacts to other resource developers in the area will not be significant. Benga currently has access to all of the coal rights within the proposed mining area and there is no known subsurface resource development occurring in the area other than coal. If the holders of the other leases in the area decide to progress with development of these subsurface resources, Benga will work with the lease holders to develop plans to coordinate activities.

The impact to forestry and agricultural resources is also predicted to be not significant. The impact will be extended in duration, occasional in frequency and reversible in the long-term. Mine development and reclamation will be progressive over the life of the Project; therefore, all resource areas will not be impacted at the same time. Once mining areas are no longer required, they will be reclaimed to a land use equivalent to what existed prior to development of the Project. This includes areas for both timber production and grazing.

## 5.5 Potential Effects on Hunting and Trapping

Development of the Project has the potential to impact access to hunting and trapping areas and the potential to impact the availability of wildlife resources required to undertake these activities. The potential impacts to the availability of wildlife are discussed in the Wildlife Assessment conducted for the Project (Section E.9 and CR #9 [Wildlife]).

A majority of the land within the proposed development footprint is privately owned by Benga. Within Crown land there are three trap line dispositions that overlap with the RSA, of which two overlap with the development footprint (Figure 4.7-1, Table 5.5-1). TPA #1677 is found along the northern portion of the proposed mining area and may be impacted later on in the life of the Project. TPA #2426 is adjacent to the northern most extent of the proposed development footprint; a small portion of this trapping area will be impacted towards the end of the life of the Project. Benga has consulted with each of the trap line holders to discuss potential concerns and opportunities to mitigate impacts of the proposed Project.



It is predicted that the impact of the Project on the access to hunting and trapping areas will not be significant. The impact will be extended in duration, occasional in frequency and reversible in the long-term. The lands will be progressively developed and reclaimed to an equivalent capability. Benga will continue to consult with holders of the trapping areas in order to identify further mitigation measures.

Table 5.5-1	Trapping Areas that may be Directly Impacted by Project Development			
Holder	Location	Purpose	Mitigation	
Private	pt. 14-09-04 W5; pt. 11-09-04 W5; pt. 12- 09-05 W5	TPA 2426	Benga has consulted with the holder of this trapline. There are no outstanding concerns to date.	
Private	pt. 09-4 W5; pt. 11-09-04 W5; pt. 12-09-04 W5; pt. 7-09-03 W5	TPA 1677	Benga has consulted with the holder of this trapline. There are no outstanding concerns to date.	

### 5.6 Potential Effects on Access and Utilities

A majority of the public access roads and utilities located within the RSA will not be disrupted by development of the Project. Surface dispositions within the LSA that may be directly impacted by development of the Project are summarized in Table 5.6-1.

Development of the Project will encroach upon two existing power lines that are currently owned by AltaLink Management Inc. One powerline is on privately owned land and the other is authorized by surface disposition EZE830147.

There is also one licence of occupation (DLO140170) listed in the LSAS report as a water intake which is currently under review but not yet approved. This proposed disposition is partially located within the south rock disposal area and will be impacted by development of the Project.

In addition, the proposed conveyor and loadout are located north of Highway 3 and the existing railway (that the proposed Project rail will tie into) is located south of Highway 3. An underpass on Highway 3 will need to be developed in order to transport coal from the loadout to the existing rail line. The current location of the underpass has been selected based on discussions with various stakeholders including Alberta Transportation, the Municipality of Crowsnest Pass and members of the local community.

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In summary, the impact on access and utilities in the area due to development of the Project will not be significant. The project will encroach upon two existing power lines operated by Altalink, located on land owned by Benga and the crown (Figure 4.8-1). Benga is currently working with AltaLink to develop a strategy to ensure operation of these lines is not disrupted. Benga has also been consulting with stakeholders on the construction of the rail loadout and associated underpass on Highway 3 in order to ensure that the final location and design takes into consideration issues raised by stakeholders therefore minimizing potential impacts.

Table 5.6-1 Access and Utilities that may be Directly Impacted by Project Development				
Disposition Holder	Location	Purpose	Follow Up or Mitigation Required	
Atco Gas and Pipelines Ltd. (South)	SW-2-8-4 W5M	Gas Line (PLA 000472)	ATCO has indicated that a majority of this line has been abandoned. If any portion intersected by the Project remains active it is to be abandoned in consultation with the local ATCO engineers. ATCO has provided Benga with a letter indicating that they have no objections to the development in this area.	
AltaLink Management Ltd.	NW-13-8-4 W5M; NE-14-8-4 W5M; NE-15-8-4 W5M; NW-15-8-4 W5M; NE-16-8-4 W5M; SE, SW-19-8-4 W5M; SE, SW-20-8-4 W5M; SE, SW-21-8-4 W5M	Powerline (EZE 830147)	Altalink has provided Benga with a letter indicating that they have no objection to the development in this area.	
Alberta Transportation	NE-3-008-04 W5M	HWY 3 Rerouting (RRD8711435)	Benga has been in contact with Alberta Transportation as part of the rail loop development planning. This disposition is for the HWY 3 rerouting which is not planned for the near term. There are no outstanding concerns. The RRD will need to be amended in order to accommodate the LOC for the rail line.	

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Table 5.6-1 Access and Utilities that may be Directly Impacted by Project Development					
Disposition Holder  Location Purpose Follow Up or Mitigation Required					
1653488 Alberta Inc.	7-8-3 W5M; 18-8-3 W5M; NW, SW-19-8-3 W5M; 12- 8-4 W5M; 13-8-4 W5M; N, SE-14-8-4 W5M; NE, SE- 24-8-4 W5M	Water Intake (DLO 140170)	None – currently under application and has not yet been approved.		

### 5.7 Potential Effects on Tourism & Outdoor Recreation

The Crowsnest Pass is well known for its opportunities for tourism and outdoor recreational activities. Through their consultation activities Benga has identified potential concerns associated with recreational use of the proposed Project area. The main direct impacts to tourism and outdoor recreation due to the Project will be the development of the rail loadout within lands owned by the Crowsnest Pass Golf and Country Club and the potential disruption of trails found within the proposed development footprint. Consultation with various individuals and interest groups that may be impacted from the Project took place through one on one meetings, phone calls, open houses and emails. Private campgrounds, residents, landowners and recreational groups as well as other types of interest groups were included. The summary of these consultation activities is provided in the Project application (Section A.7 and Section G).

It is predicted that the direct impact to tourism and outdoor recreation due to development of the Project will not be significant. A majority of the land to be developed is owned by Benga. Benga has been working closely with the Crowsnest Pass Golf and Country Club (CPGCC) to mitigate impacts to the golf course due to development of the rail loadout. Benga and the CPGCC have agreed that the land title for the existing land owned by CPGCC, that will be impacted by the rail loop, will be amended and the southern portion transferred to Benga. The title for the portion of land to the northwest currently owned by Benga, and required for relocating the golf course facilities, will be amended and transferred to the CPGCC. As shown on Figure 5.1-2, the rail facilities will also encroach on a recreational lease held by the CPGCC (REC 910007), and two Crown dispositions (DRS850045 and RRD8711435). The CPGCC has agreed to amend the southern portion of REC910007, once this is completed Benga will apply for a surface disposition to accommodate the rail development. The potential impacts and proposed mitigation associated with the two Crown dispositions is discussed in Section 5.6 and Section 5.9.

Benga has also been consulting with recreational users such as the Crowsnest Pass Quad Squad, the United Riders of Crowsnest and the Crow Snow Riders in order to gain further understanding on



recreational use of the proposed mining area. A majority of the known trails in the area are along the north and west sides of the proposed development. Benga will continue to work with these groups in order to develop measures to mitigate potential impacts of the Project on outdoor recreation in the area. In addition, at the completion of mining, the area will be reclaimed to a land use equivalent to what existed prior to development including recreational use.

## 5.8 Potential Effects on Unique Sites & Special Features

Within the Crowsnest Pass, there are historical underground mines such as the Bellevue Mine which is now used as a tourist attraction, the Greenhill Mine, and the historical surface mine that was operated by the Coke and Coal Company, whom were key contributors to the development of the Town of Coleman. Other unique features that occur in the area are the historic Town of Lille, which is located just east of the LSA, Frank Slide which is located southeast of the Project, and the Green Creek Wintering site located just outside the eastern edge of the LSA (Figure 4.10-1).

Development of the Project has the potential to impact the historic Greenhill Mine area. The historic Town of Lille, Frank Slide, Bellevue Mine and the Green Creek Wintering site are all located outside of the proposed Project footprint and therefore will not be impacted by development of the Project.

A Historical Resource Impact Assessment has been undertaken for the Project (Section E.13) to record archaeological or historic area resources including those associated with past mining activities such as the Greenhill Mine. In the HRIA 32, recorded archaeological or historic era resources were identified (Table 4.10-1) of which ten are located within or directly adjacent to the proposed Project footprint. Benga will continue work to fully document these resources as directed by Alberta Culture and Tourism and will obtain clearance under the *Historical Resources Act* prior to undertaking any development that may impact these known historic resources.

In summary, development of the Project will not impact a majority of the unique sites or special features identified as they are located outside of the Project footprint. Impact to those historical resources identified within or adjacent to the Project footprint will be mitigated by undertaking additional study, where required, and obtaining clearance in accordance with the *Historical Resources Act* prior to development of the Project.

### 5.9 Potential Effects on Municipal, Provincial and Federal Reservations

Within the LSA there is one Disposition Reservations (DRS) three consultative notations (CNTs), ten protective notations (PNTs) and one designated historical resource (DHR) (Figure 4.11-1, Figure 4.11-2 and Table 4.11-2). These reservations within the LSA that may be directly impacted by Project development are listed in Table 5.9-1.

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The reservations that are found within the Project footprint have a variety of purposes such as providing authorization for the government to use the land for public works, showing that there is special interest in the land or identification of areas where the land and resources are managed to achieve particular objectives. Benga has taken these purposes into consideration and identified mitigation measures required to achieve similar objectives to those identified for each reservation. Overall impact to these reservations due to development of the Project will be local in extent, extended in duration but reversible in the long term and not significant.



Table 5.9-1 Reservations that may be Directly Impacted by Project Development				
Disposition Holder	Location	Purpose	Mitigation Required	
Blairmore Office – Land Use Area – Land Division Department of Sustainable Resource Development	NE-03-008-04 W5M	Ranger Station (DRS850045)	Impacted by development of the rail line and relocation of the golf course facilities. Benga has consulted with the local lands office and it was agreed that the access to the helicopter pad within the DRS would be rerouted as shown on Figure 5.1-2.	
Calgary Office- Forestry and Emergency Response Division of Environment and Sustainable Resource Development, Wildlife Management Branch, Calgary Wildlife Management Area	Various	Firesmart Zone (CNT090027)	Benga has prepared a Development of a fire control plan in accordance with the FireSmart Wildfire Assessment System. (Section C.7.6)	
Lands Division of Department of Sustainable Resource Development – Blairmore Office – Land Use Area	01-009-04 W5M; 02-009-04 W5M; NW, NE, SW 03-009-04 W5M; 11- 009-04 W5M; 12-009-04 W5M; 13- 009-04 W5M; 14-009-04 W5M; 15- 009-04 W5M	Potential Timber Disposal – to determine volumes and establish AU A.A.CC. within the McCrillivary Creek Misc. timber use area of the CS M.U. (CNT860041).	There are no restrictions with use of this area. Main mitigation is to reclaim the area to equivalent capability as described in Section F.	

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Table 5.9-1 Reservations that may be Directly Impacted by Project Development				
Disposition Holder	Location	Purpose	Mitigation Required	
Lands Division of Department of Sustainable Resource Development – Blairmore Office – Land Use Area	NE, SE22-008-04 W5M; NE27-008-04 W5M; SW, SE34-008-04 W5M; NW, SW-35 -008-04 W5M; SW02-009-04 W5M; SW, NE, SE-03-009-04 W5M; SE10-009-04 W5M; 11-009-04 W5M; NW12-009-04 W5M; SW13-009-04 W5M; NE, SE14-009-04 W5M; SE, SW, NW06-009-03 W5M; NW, SW07-009-03 W5M; NW, SW18-009-03 W5M	Snowmobile Trails – managed/maintained by Crowsnest Economic Development Board (CNT980012)	Mitigation measures to be determine in consultation with local trail users such as the Crow Snow Riders Snowmobile Club.	
Department of Culture	NE & NW 18-008-03 W5M	Village of Lille designated as a historic site (DHR010001)	None – will not be disturbed by development of the Project footprint.	
Department of Environment and Water	LS03, LS04 14-008-04 W5M	Waste Disposal/Reclamation Site (PNT 900430)	Construction and Reclamation processes to return the land to equivalent capability (Section F). Utilization of waste storage (see Section C.6.17) and spill response procedures (see Section C.7.6) that will reduce potential for contamination to enter the adjacent drainage.	
Department of Culture	pt.L03, pt.L06 – 02-008-04 W5M	Registered Historic Resource – Greenhill Mine Complex (PNT900426)	A Historical Resource Impact Assessment has been undertaken (see Section E.13 and Section 5.8).	

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Table 5.9-1 Reservations that may be Directly Impacted by Project Development				
Disposition Holder	Location	Purpose	Mitigation Required	
Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	Various	Multiple Resource Concerns - This location may fall within an area of foothills fescue grassland, a very valuable native grassland type that is limited in remaining area. (PNT090084, PNT090087)	Mitigation measures as described in Section 4.3.4 of CR #8 and Section E.8.5.1 of the EIA.	
Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	Various	Steep rolling topography. No agricultural dispositions are permitted with the exception of unimproved grazing. (PNT880617 PNT880618)	In order to mitigate the concern associated with potential instability Benga has developed mine design criteria based on the results of the geotechnical investigation and geological modelling (Section B.8.6 of the EIA).  A Conservation and Reclamation Plan has been developed for the Project (Section F of the EIA), which outlines measures that will be utilized to return the land to equivalent capability.	

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Table 5.9-1 Reservations that may be Directly Impacted by Project Development									
Disposition Holder	Location	Purpose	Mitigation Required						
Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	Various	Grazing allotment area, no agricultural dispositions, grazing permits only (PNT930299, PNT940130, PNT890378)	Consultation has been undertaken with the grazing lease holders in the area (Section G of the EIA). A Conservation and Reclamation Plan has been developed for the Project (Section F of the EIA), which outlines measures that will be utilized to return the land to equivalent capability.						
Pincher Creek Office- Rangeland District- Land Division Department of Sustainable Resource Development	NE-30-008-03 W5M; NW-31-008-03 W5M; SE-31-008-03 W5M	Steep rolling topography. No agricultural dispositions are permitted with the exception of "Grazing Haying" - These lands best suited for grazing due to steep slopes ranging from 15% to >30%. Prime watershed protection along gold creek and fish habitat; potentially valuable for ungulate habitat and potential for reforestation under a multiple use plan (PNT960092).	In order to mitigate the concern associated with potential instability Benga has developed mine design criteria based on the results of the geotechnical investigation and geological modelling (Section B.8.6 of the EIA).  A Conservation and Reclamation Plan has been developed for the Project (Section F of the EIA), which outlines measures that will be utilized to return the land to equivalent capability.						

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### 6.0 MITIGATION & MONITORING RECOMMENDATIONS

In order to minimize the potential direct impacts of the proposed Project development on other land and resource users in the area, Benga will undertake the following:

- continue to consult with local stakeholders, through the life of the Project, in order to identify concerns and proactively address issues when they arise;
- undertake progressive reclamation, and reclaim the area to a landscape that includes
  provisions for a variety of land uses, including forestry, wildlife habitat, grazing, recreational
  use etc.; and
- monitor changes in land use policies and initiatives and, through adaptive management, incorporate new requirements into the ongoing development, operation, and reclamation plans.

### 7.0 CUMULATIVE EFFECTS ASSESSMENT

There are no other planned developments within the LSA. The only planned project located in the RSA is the twinning of Highway 3, which occurs in the southwestern portion of the RSA. The potential twinning of Highway 3 has been contemplated during the discussions with Alberta Transportation and the Municipality concerning the location of the highway underpass. Therefore, the results of the Cumulative Effects Assessment will be the same as for the Application Case Assessment.

### 8.0 SUMMARY OF EFFECTS

The Land and Resource Use Assessment focussed on a number of VCs that have been identified based on a review of the existing land uses within the study areas (Table 3.2-1). In many instances an assessment of the impact to these VCs requires the undertaking of specialized technical assessments that were undertaken for the Project. Based on this, the Land and Resource Use Assessment focussed on the potential impacts due to direct disturbance to existing land and resource use activities. Potential impacts to land use capability and the availability of biological and social resources is provided in other assessments undertaken for the Project. Characterization of the residual and cumulative effects of the Project on land use and management are presented in Table 8.0-1.

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Table 8.0-1 Summary of Significance Rating on Land and Resource Use Valued Components											
Nature of Potential Impact or Effect	Mitigation/	Type of Effect	Geographic Extent <sup>(1)</sup>	Duration <sup>(2)</sup>	Frequency(3)	Reversibility <sup>(4)</sup>	Magnitude <sup>(5)</sup>	Project Contribution <sup>(6)</sup>	Confidence Rating <sup>(7)</sup>	Probability of Occurrence <sup>(8)</sup>	Significance <sup>(9)</sup>
1. Conflic	et with Land U	Jse Policies a	nd Resource	Manageme	nt Initiatives						
		Application	Local	Extended	Continuous	Reversible – long term	Nil	Neutral	High	High	Not Significant
		Cumulative Effects	Regional	Extended	Continuous	Reversible – long term	Nil	Neutral	High	High	Not Significant
2. Resour	ce Developmo	ent									
		Application	Local	Extended	Occasional	Reversible – long term	Nil	Neutral	High	High	Not Significant
		Cumulative Effects	Regional	Extended	Occasional	Reversible – long term	Nil	Neutral	High	High	Not Significant
3. Huntin	g and Trappi	ng									
		Application	Local	Extended	Occasional	Reversible – long term	Nil	Neutral	High	High	Not Significant
		Cumulative Effects	Regional	Extended	Occasional	Reversible – long term	Nil	Neutral	High	High	Not Significant
4. Access	and Utilities										
		Application	Local	Extended	Continuous	Reversible – long term	Nil	Neutral	High	High	Not Significant
		Cumulative Effects	Regional	Extended	Continuous	Reversible – long term	Nil	Neutral	High	High	Not Significant



Table 8.0-1 Summary of Significance Rating on Land and Resource Use Valued Components											
Nature of Potential Impact or Effect	Mitigation/	Type of Effect	Geographic Extent <sup>(1)</sup>	Duration <sup>(2)</sup>	Frequency <sup>(3)</sup>	Reversibility <sup>(4)</sup>	Magnitude <sup>(5)</sup>	Project Contribution <sup>(6)</sup>	Confidence Rating <sup>(7)</sup>	Probability of Occurrence <sup>(8)</sup>	Significance <sup>(9)</sup>
5. Tourisn	5. Tourism and Outdoor Recreation										
		Application	Local	Extended	Continuous	Reversible – long term	Nil	Neutral	High	High	Not Significant
		Cumulative Effects	Regional	Extended	Continuous	Reversible – long term	Nil	Neutral	High	High	Not Significant
6. Unique	6. Unique Sites and Special Features										
		Application	Local	Extended	Continuous	Irreversible – Rare	Nil	Neutral	High	High	Not Significant
		Cumulative Effects	Regional	Extended	Continuous	Irreversible – Rare	Nil	Neutral	High	High	Not Significant
5. Municipal, Provincial and Federal Reservations											
		Application	Local	Extended	Continuous	Reversible – long term	Nil	Neutral	High	High	Not Significant
		Cumulative Effects	Regional	Extended	Continuous	Reversible – long term	Nil	Neutral	High	High	Not Significant

<sup>(1)</sup> Local, Regional, Provincial, National, Global

(4) Reversible in short term, Reversible in long term, Irreversible – rare

(7) Low, Moderate, High

(5) Nil, Low, Moderate, High

(8) Low, Medium, High

(6) Neutral, Positive, Negative

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<sup>(2)</sup> Short, Long, Extended, Residual

<sup>(3)</sup> Continuous, Isolated, Periodic, Occasional (Accidental, Seasonal)

<sup>(9)</sup> Not Significant, Significant



## 9.0 REFERENCES

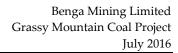
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**FIGURES** 

