VISTA MINE INITIAL PROJECT DESCRIPTION

Phase I Vista Test Underground Mine and Vista Mine Phase II Expansion

Prepared for:

Impact Assessment Agency of Canada - Prairie and Northern Region
Canada Place 9700 Jasper Avenue, Suite 1145
Edmonton, AB T5J 4C3

Prepared by:

Coalspur Mines (Operations) Limited
PO Box 6146
Hinton, AB T7V 1X5
+1(780) 740-2452

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Executive Summary

Coalspur Mines (Operations) Ltd. (Coalspur) is the holder of various regulatory approvals and required Management Plans to operate a surface coal mine (Vista Mine) located near the town of Hinton in western Alberta. The Vista Mine was first assessed for development in 1983 as part of the McLeod River Mine. Between 2010 and 2012, regional and local baseline assessments were completed covering the current operating footprint (Phase I) and the second phase of the Vista Mine (Phase II), respectively. The 2012 Environmental Impact Assessment (EIA) and Project Description focused on Phase I and the transportation corridor. Regional data collected during the 2012 EIA is being reviewed and updated when required as part of the baseline review for the local assessment of Phase II.

Development of the Vista Mine began in the second quarter of 2017 and coal production started in the first quarter of 2019. Coalspur is seeking an amendment to Mine Permit C 2011-5F and other regulatory approvals associated with the Vista Mine to proceed with the Vista Test Underground Mine (VTUM), located within the existing Phase I permit boundary, and the development of Phase II. The VTUM and Phase II are two completely independent development opportunities with different timelines and objectives and the VTUM will not impact Phase II, as it is entirely contained within the boundaries of the existing Phase I Vista Mine Permit C 2011-5F.

Total investment in the Vista Mine to date exceeds $700 million including surface infrastructure installed with the capacity to support Phase II and the VTUM. Annual spending with local industry in Alberta exceeds $200 million. Phase I of the Vista Mine provides employment to more than 300 individuals, many of whom are from local Indigenous groups in the area. Coalspur has met the requirements for First Nations consultations from the Alberta Aboriginal Consultation Office and has Impact Benefit Agreements (IBAs) with seven First Nations Métis. Taxes and other governmental payments are expected to exceed $16 million in 2020 and $21 million in 2021.

The VTUM will be an exploratory underground mine located wholly within the boundaries of the existing Phase I Vista Mine Permit C 2011-5F and thus simply represents an alternative mining method. The VTUM will test various safety and production methods to determine the feasibility of underground mining the Vista Mine's coal reserves. Given that underground mining uses electric machines powered by electricity rather than diesel, the VTUM represents an opportunity to reduce greenhouse gas emissions at the site. The VTUM will result in an additional investment of $100 million and create 98 additional full-time jobs. The VTUM will result in only 1.95 hectares of additional surface disturbance in the Phase I permit area which was previously assessed as part of the Phase I EIA. While the exact location of the VTUM surface facilities may change within the permit boundary due to the delay in timing caused by the federal review process, all facilities for the VTUM will remain within the approved Phase I permit area and the size of disturbance

will not increase. The VTUM will increase annual clean coal production by approximately 565,000 tonnes.

Phase II will be a westward expansion of the Vista Mine's currently operating open pit surface mine (Phase I). Phase II will require an additional investment of over $300 million and create 270 additional full-time jobs. The surface mine expansion would create an additional surface area disturbance of 633.6 hectares (44.2% of the existing Phase I permit) and increase annual production by approximately 4.5 million clean tonnes (75% of current planned production).

On November 8, 2018, the Canadian Environmental Assessment Agency determined that Phase II did not meet the criteria for designation under the Impact Assessment Act (IAA or Act). The Federal Minister of Environment and Climate Change Canada (Minister), on December 20, 2019, denied requests for designation received in May and June 2019 regarding Phase II. It was determined at that time that adverse effects to areas of federal jurisdiction, including effects to fish and fish habitat, migratory birds, and Indigenous peoples of Canada that may result from the Phase II project would be appropriately managed by comprehensive legislative mechanisms already in place within the provincial and federal review processes. The federal mechanisms include the review of any Application for Authorization under the *Fisheries Act* by the Department of Fisheries and Oceans Canada and the *Migratory Birds Convention Act, 1994*, which can be completed concurrent to the provincial environmental assessment and regulatory processes associated with the *Responsible Energy Development Act* (REDA). These processes provide mechanisms for consultation with Indigenous peoples, including addressing potential adverse effects and concerns raised by Indigenous peoples and members of the public.

On May 1, 2020, the Minister and Impact Assessment Agency (Agency) again received requests to designate the project. In response, an assessment report dated July 30, 2020 by the Agency concluded that the VTUM and Phase II activities did not warrant designation and that cumulative effects and the concerns expressed by the requesters would be addressed through existing legislative mechanisms. In this report, the Agency determined that even if the VTUM and Phase II are considered together as one project, they do not result in an increase in the area of mining operations by 50% or more compared with Phase I, which therefore does not result in designation. The Agency also concluded that the concerns expressed by various outside groups are known to the Agency and would be addressed by provincial processes, specifically processes required under the *Environmental Protection and Enhancement Act*, the *Coal Conservation Act*, the *Water Act* and First Nation and Métis consultations. The Agency further concluded that potential adverse effects within federal jurisdiction and related concerns can be appropriately managed through the provincial process and other existing mechanisms such as the review of any Application for Authorization under the *Fisheries Act* by Fisheries and Oceans Canada. On July 30, 2020, the Minister reversed the previous decisions and decided that the VTUM and Phase

II warrant designation despite the Agency's finding that these projects do not result in an increase in the area of mining operations by 50% or more compared with Phase I, and therefore did not meet the criteria for federal designation.

Although the Minister designated both the VTUM and Phase II, when determining whether federal impact assessment is warranted for the VTUM and Phase II, the two developments should not be considered together. The VTUM has been previously applied for and is under review by the AER and may proceed independently of Phase II. Phase II may also proceed independently of the VTUM. The VTUM has been applied for to determine if an alternative approach is economically and technically feasible for Phase I. The VTUM is occurring within the existing disturbance of Phase I and extracting resources under the existing mineral leases. The VTUM simply represents an alternative mining method within the existing and approved permit boundary. The VTUM does not represent additional disturbance beyond the boundaries of the existing Phase I permit area.

The VTUM and Phase II can be operated independently. Thus, they are not the same project as determined by the Minister in his July 30, 2020 decision. The VTUM and Phase II will utilize the existing infrastructure approved under Phase I which has the capacity to accommodate the growth and expansion plans of the Vista Mine. The VTUM will not impact Phase II in any way as it is entirely contained within the boundaries of the existing Phase I Vista Mine Permit C 2011-5F. The underground entries of the VTUM will be developed within the existing Pit License C 2014-5C. The VTUM, situated within Phase I, will be executed as part of the Phase I development and will not result in any changes to the components of the infrastructure or facilities currently operating in Phase I. Similarly, Phase II will not impact the VTUM as it is being developed west of Phase I.

The Courts have held that if two projects can be considered "connected actions" they should generally be assessed together. This "connected actions" test provides that two projects are connected when (1) one project is automatically triggered by another; (2) one project cannot proceed without the other; or (3) both are part of a larger whole and have no independent utility if considered separately. This sound legal principle has not only been applied with respect to the *Canadian Environmental Assessment Act* but also to other environmental assessment regimes. The VTUM and Phase II satisfy none of these requirements and thus are independent, unconnected actions.

In addition, joining the VTUM and Phase II together for the purposes of determining whether to designate these projects under the IAA creates policy implications. In the event of alternative pilot and test projects or changes to operational approaches within an approved area, future proponents would be encouraged to avoid the implementation of alternative mining techniques to avoid triggering a federal regulatory process; even though the alternative approach could provide long term benefits to the environment through the reduction of greenhouse gases and surface disturbance.

In the present case, it is evident that the timing of the VTUM and Phase II, including a decision by Coalspur on whether to sanction the projects, are proceeding on entirely different schedules. There is no policy justification to delay the VTUM, when it clearly is not subject to the *Physical Activities Regulations*, simply because Coalspur is also in the early stages of planning Phase II, engaging with Indigenous communities, and preparing an environmental impact assessment report.

Significant work on the Phase II expansion planning phase has been completed. The Phase II provincial EIA and application development was 70% complete when the federal Minister reversed the previous decisions that the project did not meet the criteria for federal designation and decided that the VTUM and Phase II warrant designation under the IAA. The provincial consultation process and EIA has continued and runs concurrent to this process to ensure commitments made with Indigenous partners and stakeholders are upheld. The provincial regulatory process, license amendments, and approvals will be required independent of any additional federal regulatory reviews completed by the Agency. Coalspur has entered into IBAs with five First Nations groups. The Minister's decision will significantly delay the review of Phase II and the benefits from the mine that those agreements will provide to Indigenous groups in the area.

The Minister's decision adds significant delay and expense to Coalspur's plans for the VTUM and Phase II. This is a major setback for Coalspur, given the considerable investments it has already made in plans to utilize existing infrastructure and mine footprint, together with proven mitigation strategies, to minimize any potential adverse impacts of its projects. The setback will also be felt acutely by Indigenous groups and local Albertan communities who stand to benefit from the jobs and investments brought by the VTUM and Phase II. A delay in the project means a delay to the jobs and economic benefits associated with the VTUM and Phase II. This delay comes at a time when Indigenous peoples and the Alberta public are in desperate need of economic stimulus. The Alberta government itself has released a Recovery Plan with an emphasis on sustainable resource development in response to the COVID-19 pandemic, which in combination with the collapse in global oil prices, "has resulted in the most severe contraction

of economic activity and jobs since the Great Depression" [Alberta's Recovery Plan: Economic Statement (2020)].

In response to the Minister's decision, the purpose of this document is to provide an overview of Coalspur's proposed Vista Mine's Phase II expansion and the VTUM. This Initial Project Description (IPD) was developed for the purposes of subsection 10(1) of the Act and contains the information set out in Schedule 1 of the *Information and Management of Time Limits Regulations* and is representative of the VTUM and Phase II projects as proposed at this time.

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DEFINITIONS AND ACRONYMS

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"ACO" – Aboriginal Consultation Office of Alberta
"AEP" – Alberta Environment and Parks
"AER" – Alberta Energy Regulator
"Act" – Impact Assessment Act
"ART" – Athabasca Rainbow Trout
"CCA" – Coal Conservation Act
"CEA" – Cumulative Effects Assessment
"CHPP" – Coal Handling and Processing Plant
"CMER" – Coal Mine Effluent Regulations
"CN" – Canadian National Railway
"Coalspur" – Coalspur Mines (Operations) Ltd.
"DFO" – Department of Fisheries and Oceans
"EA" – Environmental Assessment
"ECCC" – Environment Climate Change Canada
"EIA" – Environmental Impact Assessment
"EPEA" – Environmental Protection and Enhancement Act
"EPPs" – Environmental Protection Plans
"GHG" – Greenhouse Gas
"HRIA" – Historical Resource Impact Assessment
"IAA" – Impact Assessment Agency
"IBA" – Impact Benefit Agreement
"IPD" – Initial Project Description
"LSA" – Local Study Area
"MSL" – Mineral Surface Lease
"Phase I" – Currently operating Vista Mine
"Phase II" – Second Phase of Vista Mine
"ROM" – Run of Mine Materials Handling System
"RSA" – Regional Study Area
"SARA" – *Species at Risk Act*
"SEIA" – Socio-Economic Impact Assessment
"SOPs" – Standard Operating Procedures
"TEK" – Traditional Ecological Knowledge
"TLUS" – Traditional Land Use Studies
"VECs" – Valued Environmental Components
"VTUM" – Vista Test Underground Mine
"WA" – Water Act

Part A: General Information

A.1 Project Overview

The Vista Test Underground Mine (VTUM) and the Vista Mine Phase II expansion are coal mine projects located in Treaty 6 Territory, south of the Athabasca River in portions of Sections 9-16, Township 51, Range 24 W5M and portions of Section 7 and 18, Township 51, Range 23, W5M in Yellowhead County near Hinton, Alberta. A central latitude and longitude are 53° 23’ 28.77”N Latitude and 117° 20’ 20.53”W Longitude. Initial baseline data was collected in 2012 as part of the Regional Assessment to understand the ability of the region to support additional mining and the utilization of existing resources. The regional assessment aspects of the 2012 EA have been reevaluated with updated information including the current market conditions, the recent change in operating status of three nearby mines to non-operating status, and the proposed implementation of alternative mining techniques. **Figure A-1: Regional Area Map** below shows the project location within the region. **Figure A-2: Overview Map** shows the locations of the current operation, the VTUM, wholly within the Phase I permit boundary, and Phase II.

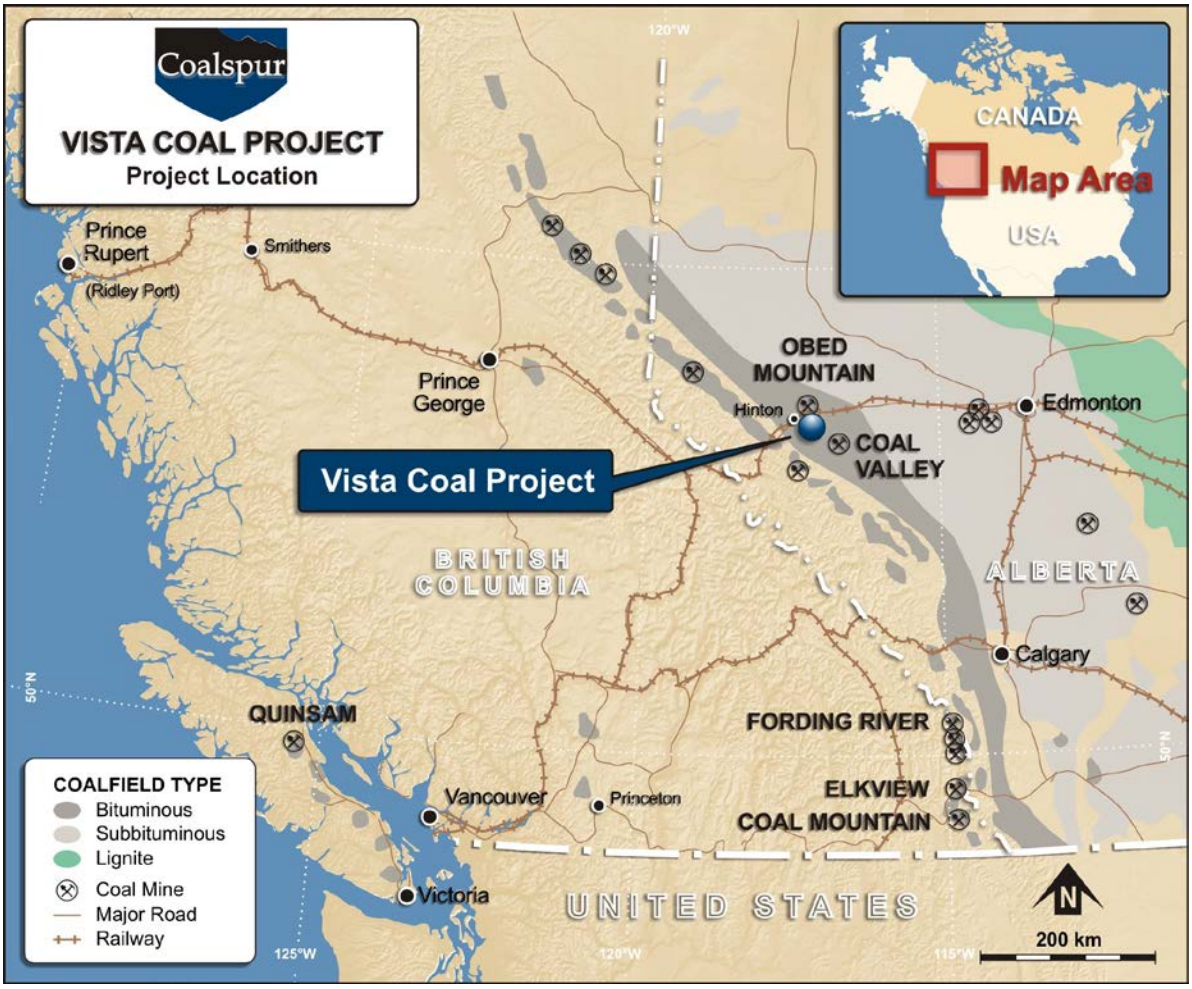

Figure A-1: Regional Area Map

ATHABASCA RIVER

TRAIL

CREEK

CREEK

Loadout

Gun Range

Clean Coal Storage Dome

Clean Coal Belt

Access Road

Communications Tower

Plant Area

Fresh Water Pond

Main Office

MRT 1

North Refuse Dump

CALYPSO POND

Phase 2 North Pit

Phase 2 Center Dump

Phase 2 South Pit

Phase 2 Subcrop Dump

ROM Sizer

ROM Dump

North Pit

Centre Dump

South Pit

McPHERSON

South Dump

Subcrop Dump

Subcrop Dump

CREEK

McPHERSON

CREEK

Vista Mine Substation

Alta-Link 138 kV

QUIGLEY

Legend

- Permit Boundary (Phase 1)
- MSL Boundary (Phase 1)
- Permit Boundary (Phase 2)
- MSL Boundary (Phase 2)
- Phase 1 Operations
- Highwall Mining Area (Phase 1)
- Local Roads
- Streams
- Power Lines

Phase II Components

- Spoil Dump
- Mine Pit
- Mine Roads
- Highwall Mining Area

VTUM Components

- Test Underground Mine Portal
- Test Underground Mine Projections

SCALE (m)

0 200 400 600 800 1000

Coalspur

Vista Mine

Figure: A-2 Overview Map

DATE: 2021/03/03	PROJ NO:		
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FIELD BOOK:		PS: 1:1	DWG SCALE: Scale Bar
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The VTUM demonstrates Coalspur's interest as an operator to investigate an alternative mining technique (underground mine versus surface mine) within the Phase I approved operating footprint. Underground mining results in less surface disturbance and allows the mining of coal that would be uneconomical using surface mining techniques. The VTUM will test the feasibility of alternative approaches to determine if future exploration of underground mining reserves is warranted.

Phase II will be a westward continuation of the existing Phase I surface mine and will utilize the existing infrastructure, facilities, and roads previously constructed. It is effectively an expansion of the open pit surface mine extracting coal in the Val d'Or, McLeod, and McPherson seams including additional highwall mining of the final highwall. Phase II can operate concurrently with existing operations and potentially increase average production from approximately 6.5 to 11 million clean tonnes per year.

After mining and processing, the coal from the VTUM and Phase II will be transported by the existing Phase I infrastructure including the covered conveyor to the rail siding south of the CN mainline. CN will transport the coal by train to west coast ports where it will be shipped via ocean vessels to international markets.

A.2 Proponent Information

A.2.1 Name of Designated Project

The Vista Mine is an existing and operating open pit surface coal mine with expansion opportunities through an extension of its existing surface operations (Phase II) and an underground test mine (VTUM) within its current permit boundary. The names of the designated projects are the *Phase I Vista Test Underground Mine and Vista Mine Phase II Expansion.*

A.2.2 Name of Proponent

Coalspur Mines (Operations) Limited (Coalspur) is the entity which holds all regulatory approvals, stakeholder agreements and assets for the Vista Mine. Coalspur is controlled by Vista Energy Resources, LLC

A.2.3 Primary Contact

The primary contact for the purposes of this Project Description is:

Simon Stepp, PEng
VP of Engineering – Vista Energy Resources
E-mail: sstepp@clinegrp.com

Business: 780-740-2462

A.2.4 Address of Proponent

Coalspur Mines (Operations) Limited
PO Box 6146
Hinton, AB T7V 1X5

A.2.5 Stakeholder Engagement

Stakeholder@bighornmining.com
Coalspur Mines (Operations) Limited
PO Box 6146
Hinton, AB T7V 1X5

A.3 Summary of Engagement

During preparation of the Phase II application, general project information was provided beginning in 2018 to:

- The Town of Hinton
- The Town of Edson
- Yellowhead County
- Alberta Aboriginal Consultation Office
- Fisheries and Oceans Canada
- Alberta Energy Regulator
- Impact Assessment Agency of Canada, formerly the Canadian Environmental Assessment Agency

Engagement activities included phone discussions, in person meetings and attendance at public open houses. In addition to general project information, fisheries offsetting requirements were discussed with Fisheries and Oceans Canada. As part of this process, genetic testing in the area was performed to determine the genetic purity of the Athabasca rainbow trout (ART). From the completion of the genetic testing, Coalspur was better equipped to develop strategic assessments and mitigation plans required under the *Fisheries Act* to proceed with the project.

Coalspur has established an effective public and stakeholder engagement process which is incorporated into the planning and operation of the proposed Phase II. The engagement process was initiated by identifying local and regional businesses, municipal governments, community groups, and special interest groups in the local and regional areas. Publication of open house events were announced online, in newspapers, and through direct distribution. Initial points of communication focused on newsletters, open houses, informal and formal drop-in opportunities at the Hinton project office, letter invitations, phone calls, meetings, and e-mail. Coalspur staff

were encouraged to participate in open houses and members of the public were encouraged to visit the project office in Hinton.

The Phase II public engagement open house series concluded in the fall of 2019. Information gathered during the open house series was applied to the Phase II application content in areas of economic impact, human health, employment, and environment.

The public engagement process was initiated in 2019, twelve months in advance of when the proposed provincial application was to be submitted. A lead time of one year has supported Coalspur's approach to active engagement, discussion, and review of concerns or potential impacts along with discussions on regional and local benefits.

Concerns regarding timeliness of reclamation, end land use planning, and early engagement regarding reclamation were some of the initial concerns raised by Hinton and Edson community members and First Nations. Concerns regarding noise and air were also recorded and commitments have been made to ensure copies of the noise and air modelling results are shared with concerned stakeholders including mitigation plans.

The majority of attendees at the open houses, held throughout 2019, were supportive of new development in the region as many of the long-term mining jobs and supporting technical and trades work were being reduced due to end of mine life at three nearby mines. The local municipal government further supported the expansion as it would help sustain regional employment and income.

With regards to the VTUM, due to the nature of the project within the confines of Phase 1, early engagement was undertaken with the Alberta Energy Regulator and the Aboriginal Consultation Office. There were no concerns raised during this process.

As the regulatory process and timeline have changed significantly, Coalspur is planning to distribute updates to the regional municipal governments and hold targeted sessions to ensure interested parties fully understand these impacts. Following the July announcement of federal designation, Coalspur provided First Nation, Métis and stakeholders with an update regarding impacts to the increased timelines.

A.4 Indigenous Consultation and Engagement

Coalspur has been actively engaging with First Nation and Métis communities regarding the Phase II application since February of 2019. The Phase II consultation is in addition to the ongoing consultation and engagement regarding the currently active mining operations of Phase I. As part of the formal process set out by the AER and the ACO, in addition to the proposed Phase II Consultation requirements, Coalspur must submit all proposed amendments or requests for changes to the active mining area to the ACO for pre-determination of consultation and level of engagement. The First Nation Consultation Plan for Phase II was submitted to the ACO for review and approval in late 2018 – early 2019. Upon approval of this plan, Coalspur has actively engaged with the following communities:

- Erminskin Cree Nation, including their remote community of Mountain Cree
- Whitefish Lake First Nation
- O'Chiese First Nation
- Kehewin Cree Nation
- Aseniwuche Winewak Nation
- Louis Bull Tribe
- Lac Ste. Anne Métis

The process has included the sharing of project plans, maps, and proposed development and access to the site for the completion of Traditional Land Use Studies (TLUS) to understand impacts and incorporate Traditional Ecological Knowledge (TEK) into reclamation and planning. Coalspur provides regular updates to all communities and submits bi-monthly reports to the ACO for review to ensure Consultation practices meet the defined requirements. Ongoing consultation will continue throughout the life of the project and will include meetings and discussions with leadership or delegated representatives, responding to site-specific issues and concerns, and field tours relating to both active operations and the future development of Phase II and the VTUM. Table **A-1** shows a summary of key issues raised Indigenous communities needing addressed through the Phase II consultations.

Table A-1: Topics raised by Indigenous groups related to the project include:

Summary of Issues raided by Indigenous	
Concern	**Concerns with reclamation timelines, schedule, and plan.**
Response	Coalspur implements a progressive reclamation plan in which reclamation activities are conducted at the same time as mining operations allowing for direct placement of overburden and soil. This allows for not only quicker reclamation but for higher quality and success of reclamation.
Concern	**Reclamation plan will not return Crown Lands to pre-existing conditions appropriate for traditional land use.**
Response	Coalspur is committed to continue working with Indigenous communities on its reclamation activities to ensure that the reclaimed landscape is returned to a condition and standard that best suits long term needs of people and wildlife.
Concern	**Impacts to future food security and medicines.**
Response	The reclamation plan includes species monitoring and targeting for both plants and animals. Coalspur remains committed to working with Indigenous communities on its reclamation activities to ensure reclamation activities provide the necessary future food security and needed medicines.
Concern	**Impacts to McPherson Creek and the Athabasca Rainbow Trout.**
Response	The mine plan was developed so direct impacts to the fish habitat would be avoided. Coalspur has implemented a fish toxicity program which includes ART. Coalspur monitors quality and quantity parameters throughout multiple locations south of the mine disturbance as well as before and after.
Concern	**Employment opportunities for members and contract work for Indigenous.**
Response	There are currently 16 Indigenous working at the mine. Several projects onsite have been completed by Indigenous owned businesses and contractors. Coalspur is continuously looking forward to working with the Indigenous peoples in the area.
Concern	**Return of Wetlands for medicine, habitat and timeliness of reclamation**.
Response	Coalspur is committed to continue working with Indigenous communities on its reclamation activities. Coalspur has a progressive reclamation plan that ensures the timeliness of reclamation completion.

As part of the bi-monthly process, concerns raised by communities are documented and submitted to the ACO along with mitigation plans. Mitigation plans are reviewed and discussed with the community members and incorporated into the mine planning phase. The Consultation process has highlighted concerns regarding the return of wetlands for medicines and habitat and the timeliness of reclamation. In response, Coalspur recently revised the post mining topography of Phase I to include a large wetland on the east end of the property. A lake and wetland area are proposed on the west end of the Phase II development. Coalspur has also developed a mining sequence that maximizes the amount of overburden placed back in the pit allowing for the reclamation of mined out areas as soon as possible. Since March 2018, Coalspur has hosted or attended 49 separate First Nation community meetings, supported TLUS and Traditional Ecological Knowledge (TEK) studies for inclusion and consideration in the mine plan and reclamation strategies.

In addition to the six communities listed above, Coalspur has established relationships with Alexis Nakota Sioux Nation as part of the Phase I EIA. These relationships remain active and viable today. As part of the Consultation process, Coalspur has provided the communities with an overview of the proposed Phase II project, summary of maps, and provided the opportunity to visit the location and contribute to the impact assessment through the completion of TLUS.

Coalspur has engaged Aseniwuche Winewak Nation, Whitefish Lake First Nation, Erminskin Tribe, Alexis Nakota Sioux, and Louis Bull Tribe to complete TLUS of the project area. The TLUS and TEK data, collected as part of the Phase II Consultation and engagement are incorporated into the Phase II application in areas of environmental, cultural, and economic impact of the project. Through the establishment of Joint Implementation Committees, Coalspur provides updates regarding existing operations, amendments to operations, and future development to communities. These meetings help foster the identification of business and employment opportunities at the Vista Mine.

Coalspur has engaged Aseniwuche Winewak Nation, Whitefish Lake First Nation, Erminskin Tribe, Alexis Nakota Sioux, and Louis Bull Tribe to complete TLUS of the project area. The information obtained by Coalspur through First Nation TLUS will be incorporated into the Phase II Application in addressing potential impacts and identifying mitigating measures.

The First Nation and Métis communities have been encouraged to participate in additional data collection in environmental assessment as outlined in **Table A-2** below.

Table A-2: Environmental Assessment Data Collection and Monitoring

Discipline	Field Program Description
Wildlife	Wildlife camera maintenance, bird/bat surveys and ungulate pellet counts
Fish and Fish Habitat	Backpack electrofishing, recording fish abundance and density in fish-bearing streams, spring/fall spawning survey
Vegetation and Wetlands	Sample collection
Groundwater Monitoring	Groundwater monitoring, well sampling (existing)
Hydrology and Surface Water Quality	Water quality sample collection and flow measurements, site observations
Benthic Invertebrate, Algae, and Calcite	Benthic invertebrate sample collection, collecting algae scrapings from rocks, pebble counts, site observations

Through the required pre-determination process, the ACO determined that consultation with Indigenous groups was not required specific to the VTUM application because it is simply an alternative mining method within the Phase I permit. The VTUM application was submitted independently of Phase II, as the operation of the underground mine will occur as part of the operations of Phase I. This finding is entirely consistent with the fact that the VTUM will not incrementally impact any Indigenous group's traditional activities because its footprint is located entirely within the boundaries of the existing Phase I Permit C 2011-5F.

A.5 Studies or Plans Relevant to the Project

There have been no studies or plans relevant to the project that have been conducted in the region under section 92 or 93 of the Act or by any jurisdiction, including by or on behalf of an Indigenous governing body, that is available to the public.

A.6 Strategic Environmental Assessment

Relevant strategic assessments, carried out under section 95 of the Act, include the Strategic Assessment of Climate Change which applies to all projects assessed under the *Impact Assessment Act*. The Strategic Assessment of Thermal Coal Mining was launched under the Act to provide guidance on how future projects will be assessed; currently the Draft Terms of Reference have been released with publication of the final assessment to be completed in fall

2021. Additional information on greenhouse gas emissions as they relate to the Strategic Assessment of Climate Change are included in **Section E.23**.

Part B: Project Information

B.7 Project Justification and Purpose

Coalspur's Vista Mine, near Hinton, Alberta, is an operating surface coal mine with the capacity to produce approximately 6 million tonnes of clean coal per year. The mine currently consists of an open-pit surface coal mine, coal processing plant, and associated infrastructure (Phase I). Clean coal is transported by a third-party rail carrier and exported to international markets. In 2018, Coalspur proposed to expand the Phase I footprint westward through an expansion called Phase II, which will utilize the existing coal processing plant, materials handling, and refuse disposal infrastructure with the purpose of increasing the annual volume of coal by approximately 4.5 million clean tonnes. Phase II is planned to run concurrently to Phase I, with construction proposed to commence in January 2022 and operations to commence in April 2022. The increased volume of coal for Phase II is necessary for the economic viability of the Vista Mine based on the decrease in coal prices since the economic feasibility studies and the start of operations.

In 2019, Coalspur proposed the VTUM. The VTUM is an exploratory underground mine located wholly within the boundaries of the existing Phase I permits and licenses. The VTUM is needed to determine whether the seams currently being mined from the surface in Phase I are suitable to be mined with underground mining methods as these seams have not been mined underground in Alberta. If successful, the VTUM will increase the coal production of Phase I by approximately 565,000 clean tonnes per year over three years of operation, however the purpose of the VTUM is to test various safety and production methods to determine the feasibility of a commercial underground mine within Coalspur's mineral reserves.

The VTUM and Phase II are two separate and distinct, but adjacent projects with different timelines and objectives. There is still a large global demand for thermal coal, which made up 27% of the world's energy supply in 2017 (NRCAN, 2020). The Vista mine produces high calorific value, low sulphur and moderate to low nitrogen coal mined in a responsible manner that helps to meet these demands. Current market projections show that Asian thermal coal imports are expected to grow by more than 270 million tonnes to more than one billion tonnes per year over the next 10 years. There are several fundamental factors driving this increased demand:

- High electricity demand growth across developing Asia, driven by strong economic

growth, increasing industrialization, and higher electrification rates

- High population growth across developing Asia, particularly India and South East Asia
- Significant coal-fired generation capacity commissioned in many countries
- In some regions, an inability of domestic coal production to keep pace with demand growth, amplified by an increasing demand for high quality thermal coal (i.e. high energy, low impurity), which the Vista Mine can provide

Coalspur's clients in Taiwan, Japan, and South Korea still desire responsibly sourced coal and the Vista Mine along with the VTUM and Phase II can provide a reliable source of this coal to help meet the increase in demand over the next 10 years, which is the purpose of developing these projects. If the Vista Mine were not able to supply the coal to meet this demand, the supply could be replaced with a lower quality coal from areas with less ethical mining practices.

With the VTUM and Phase II developments, Coalspur will:

- Provide a new source of jobs close to the Town of Hinton;
- Employ skilled employees in full-time, well paid positions;
- Support education and training initiatives applicable to the Vista Mine including the VTUM and Phase II;
- Continue to be an active member of the community by supporting local programs and charities;
- Provide opportunities to local, regional, and provincial contractors and retailers, including Indigenous groups, who will provide goods and services to the projects; and
- Provide revenue to municipal, provincial, and federal governments in the form of production royalties, license fees, and taxes.

Annual spending with local Vista Mine partners in Alberta exceeds $200 million annually. Based on a widely accepted economic formula developed by the Coal Association of Canada, for every direct job at the mine, three additional indirect jobs are supported. Therefore, an additional 900 people are employed as a result of the mine. Phase II will create an additional 270 direct full-time jobs and 810 indirect jobs and the VTUM will create an additional 98 direct full-time jobs and 294 indirect jobs. All told, at full development, the mine would support over 2,500 jobs in the region.

Table B-1 below shows the number of current jobs at the Vista Mine and the number of additional direct jobs created by the VTUM and Phase II as well as the number of indirect jobs supported.

- **Table B-1: Direct and Indirect Employment**

Jobs	Current Mine	VTUM	Phase II	Total
Direct	325	98	270	693
Indirect	975	294	810	2,079
Total	1,300	392	1,080	2,772

Employment opportunities at the local and community level are limited, especially the high paying types of jobs provided in the mining industry. Further, significant employment opportunities exist at the mine for women and minorities including Indigenous people. The region has recently seen a decline in resource sector employment. Between 2012 and 2020, the three adjacent mines have all moved to care and custody / suspension of operations resulting in a significant decrease in job opportunities for the existing skilled labour and operators. The decline in opportunity is estimated at greater than 15% based on 2019-2020 layoff notices and 2019 provincial employment statistics.

The VTUM and Phase II also benefit other areas throughout Alberta and Canada. The IBAs tied to Phase II provide direct financial support to First Nation and Métis communities within the region. Additionally, the third-party railroad that transports clean coal from the mine to terminals see a benefit from the operation of the mine. The VTUM and Phase II will provide additional employment in the railroad sector to transport the increased volumes that the Vista Mine would produce.

The Vista Mine's coal is transported and loaded on ocean going vessels at two terminals located in British Columbia. Ridley Terminals Inc.'s terminal is located in Prince Rupert, BC and is owned by Riverstone Holdings LLC, AMCI Group, and a limited partnership owned by the Lax Kw'alaams Band and the Metlakatla First Nation. Coal from the Vista Mine is also transported to Westshore Terminals Ltd located near Vancouver, BC. Employment opportunities that these terminals provide are benefited by increased supplies of coal.

B.8 Physical Activities Regulations

The relevant provision, Section 19 (a) of Schedule 2, to the Physical Activities Regulation is:

> *19) the expansion of an existing mine, mill quarry or sand or gravel pit in one of the following circumstances:*
>
> *a) in the case of an existing coal mine, if the expansion would result in an increase in the area of mining operations of 50% or more and the total coal production capacity of 5 000t/day or more after expansion*

As confirmed by the Agency in its Analysis Report dated July 30, 2020, the project does not meet the thresholds in the *Physical Activities Regulations*. On July 30, 2020, the Minister of Environment and Climate Change decided the Project warranted designation any way under subsection 9(1) of the Impact Assessment Act.

B.9 Activities and Infrastructure

The mining and processing of coal involves a number of inter-related development stages. For both surface and underground mining these stages include pre-construction, construction, operations, and reclamation. Activities within these stages differ between underground and surface mining and are further described below.

Activities associated with the VTUM development include pre-construction, construction, operations, decommissioning, closure, and reclamation as shown in **Table B-2** below.

Table B-2: VTUM Phases and General Activities

VTUM Stage	Mine Development Activities
Pre-Construction	Completed by surface mining activities within the existing Phase I permit boundary
Construction	Construction of mine yard which includes an office, bathhouse, parking and coal stockpile area and bench at highwall to allow underground access to the coal seam
	Construction of water management structures
Operations	Ventilation and electrical component installation

VTUM Stage	Mine Development Activities
	Development of mine entries
	Underground belt construction
	Mining and processing of raw coal using Phase 1 infrastructure
	Maintenance of components
	Transport to market
	Environmental Monitoring
Decommissioning and Closure	Removal of underground infrastructure
	Removal of components of mine yard
	Construction of mine seals
Reclamation	Haul material to reclaim exposed highwall
	Contouring of benches to an acceptable configuration
	Topsoil and revegetation for closure
	Topsoil and seed for closure

Activities associated with the Phase II development include pre-construction, construction, operations, and reclamation as shown in **Table B-3** below.

Table B-3: Phases II Phases and General Activities

Phase II Stage	Mine Development Activities
Pre-Construction	Timber harvesting and clearing of vegetation
	Salvage and stockpiling of reclamation material in construction areas
Construction	Construction of mine and access roads connecting from Phase I access roads
	Construction of water management structures
	Construction of two additional plant modules
	Installation of groundwater management systems to prevent groundwater entering the active mine pit

Operations	Soil salvage of reclamation material
	Construction and operation of haul roads and access roads as mine progresses
	Extension of powerlines to support highwall miner and pumps
	Mine pit development
	Mine discard dump development
	Installation of waterlines for tailings and reclaim water
	Operation of tailings facilities in mined out pits within Phase II
	General maintenance i.e. equipment
	Progressive reclamation including backfilling, capping tailings cells, grading, topsoil placement, and revegetation on areas affected by the surface mine
	Mining though conventional truck and shovel and highwall mining and processing of raw coal
	Transport to market
	Environmental monitoring
Decommissioning	Removal of infrastructure which includes water pipelines, powerlines and associated pumping equipment
Reclamation	Contouring of pit walls to an acceptable configuration
	Capping of remaining tailings cells
	Complete backfilling, grading and topsoil placement on all remaining areas affected by the surface mine
	End pit lake development
	Revegetate all areas of disturbance
	Ongoing environmental monitoring

During the operations stage, the combined mining areas of Phase I, including the VTUM, and Phase II will share coal processing infrastructure such as production facilities, equipment parking, maintenance areas, and a rail loadout facility. This infrastructure is already installed and part of the currently operating Vista Mine. The general process of coal processing is the same for Phase I, Phase II and VTUM. After raw coal is excavated, it is dumped in the ROM Truck Dump where it

runs through a primary and secondary sizer and conveyed to the raw coal stockpile. From here, coal is transported through a reclaim tunnel to the CHPP (Coal Handling and Processing Plant) where impurities are removed. Clean coal is conveyed to the clean coal stockpile while coarse refuse material is conveyed to the North Refuse Dump and fine material conveyed through pipelines into a tailings cell, which is a former mined out pit, for dewatering. Water is recycled back to the plant from the tailings cells for re-use with supplemental water being sourced through groundwater and surface diversions.

Sections **B.9.1** through **B.9.4** below include lists of the currently installed infrastructure approved and operating at the Vista Mine that will also serve VTUM and Phase II projects. All components listed are existing and will not be modified except where explicitly stated in **Tables B-2** and **B-3**. The locations of the existing infrastructure as it relates to the current Phase I operation, the VTUM, and Phase II is shown on **Figure B-1: Infrastructure Map**.

B.9.1 Existing Mine Infrastructure

- Administration office building
- Operations trailer and ablution facilities
- Maintenance trailer
- Fueling station
- Warehouse and storage buildings and areas
- Explosives storage facility
- Mine wastewater pond (VTUM only)

B.9.2 Overall Project Site – Existing Infrastructure

- Security building
- Access road from public Highway to the mine infrastructure area (approximately 7 kilometers)
- Access road from the mine infrastructure area to the mine pit area
- Access road system from the mine infrastructure area to the CHPP infrastructure and facilities
- Water management structures including raw water wells for groundwater, CCHP reservoir, storage tanks, and distribution pipes
- Site-wide drainage civil works
- Power line and power sources
- Production wells, waterlines and lift stations

B.9.3 CHPP Facilities

- Truck dump
- Primary Sizer
- Covered crusher feed belt from truck dump to secondary sizer building
- Secondary sizer and building
- Covered ROM belt from sizer building to raw coal tripper belt
- Raw coal tripper belt with three support towers
- Raw coal stockpile with eight feeders feeding raw coal reclaim belt
- Raw coal reclaim belt
- Covered plant feed belt
- Plant feed surge bin inside coal processing plant building
- Two 1250 tph modules inside coal processing plant building
- Refuse belt and coarse refuse area
- Additional Tailings Cells in minued out McPherson Pits
- Clean coal tripper belt
- Clean coal stockpile with eight mass flow gates feeding clean coal reclaim belt
- Covered clean coal reclaim belt feeding dome feed belt
- 6.2 kilometre covered Dome Feed Belt
- 30,000 tonne Coal Storage Dome feeding Train Loadout Belt
- Train Loadout Belt feeding Train Loadout
- A road system that connects the main infrastructure items of the CHPP including overland conveyor service roads
- Power, water, and control facilities routed between the main CHPP infrastructure
- CHPP process flocculant, diesel, and magnetite storage facilities
- CHPP office trailer and ablution facilities

B.9.4 Existing Train Loadout Facilities

- Train Loadout
- Rail Siding Track off of the CN Mainline (all necessary agreements are in place with

CN for operations of rail siding for Phase I, Phase II, and VTUM activities

All activities for the construction, operation, decommissioning and reclamation of Phase II and the VTUM are in the care and control of Coalspur.

Covered Clean Coal Reclaim Belt

Clean Coal Stockpile

Covered Clean Coal Belt

Warehouse

Processing Plant

CHPP

Office

Fresh Water Pond

Covered Dome Feed Belt (~ 6.2km)

Thickners

Refuse Belt

Plant Feed Belt

Main Office

Raw Coal Stockpile

Raw Coal Reclaim Belt

Maintenance Office

Fueling Station

Covered ROM Belt

Operations Office

Phase 1

Phase 2

VTUM Underground Workings

VTUM Surface Workings

Sizer Building

Truck Dump

N

Legend

- Permit Boundary (Phase 1)
- Permit Boundary (Phase 2)
- Mine Pit (Phase 1)
- Mine Pit (Phase 2)
- Spoil Dump
- Plant Area
- Freshwater Ponds
- Mine Roads
- Power Lines
- Test Underground Mine
- Test Underground Mine Projections
- North Dump Refuse Area
- CHPP Infrastructure
- Other Infrastructure

SCALE (m)

0 60 120 180 240 300

Coalspur

Vista Mine

Figure B-1 Infrastructure Map

DATE: 2021/04/20			PROJ NO: Initial Project Description		
DWN BY:	TECH:	CHK BY:	DWG NAME: Infrastructure Map		
FIELD BOOK:			PS: 1:1	DWG SCALE: Scale Bar	
CONTOUR INTERVAL:				SHEET: 1 OF 1	

B.10 Production Capacity

B10.1 Phase II Production

Phase II of the Vista Mine will be an open pit surface coal mine with highwall mining very similar to the Phase I operation. Large mining shovels and dozer are used to remove overburden material, which is either used to backfill existing pits or transported by trucks to an external dump, to expose the coal. Additional coal is extracted by means of a highwall miner in the final highwall of the pit. Coal is loaded and transported via trucks to a slotted grizzly where it is sized and conveyed to the raw coal stockpile. From here, coal is conveyed to the coal processing plant where it is washed prior to being placed in the clean coal stockpile.

All raw coal, clean coal and coarse refuse infrastructure is existing and does not require additional infrastructure to support the increase of coal from Phase II production. There will not be the need for a complete build of a new processing plant. Two additional plant modules will be built directly next to plant modules A and B. These two additional modules will be designated C and D. These modules will be built in the already constructed plant building and will not require any additional footprint.

Additional tailings cells across the south boundary of Phase II will be required to manage the tailings discharge from plant modules C and D. The mined-out McPherson pits in Phase II will be used as tailing cells. The process used in Phase II for capturing tailings will be identical to the process used in Phase I.

The targeted production capacity of Phase II by itself is approximately 4.5 million clean tonnes per year with a maximum annual production of 5.8 million clean tonnes. Maximum daily production from Phase II is 50,000 raw tonnes.

The following is the complete production process for the Phase II operation:

- Merchantable timber is harvested inside the mine disturbance area.
- Topsoil inside the mine disturbance area is salvaged and placed in stockpiles for future placement, or placed directly, on reclaimed areas.
- Ponds and ditches are created to control water from any disturbed areas. Water discharged from the mine area is carefully controlled and treated in settling ponds to maintain quality, avoiding pollution of creeks and rivers.
- Till above the bedrock is removed with hydraulic shovels and placed in haul trucks where it is transported to designated stockpile locations.

- Rock (overburden) above the coal seams is drilled and blasted using explosives.
- Blasted rock is pushed into previously mined pit void space with bulldozers to reduce the amount of material that has to be hauled in trucks.
- Rock is also removed with hydraulic shovels, excavators, and/or loaders and placed in haul trucks.
- Haul trucks transport the waste rock to designated stockpile or pit backfill areas.
- Reclamation efforts, including backfilling, grading, topsoil placement, and revegetation on areas affected by the surface mine impacts will occur contemporaneously with the mining operations.
- The uncovered coal (raw coal) is mined by hydraulic excavators and/or loaders and hauled to the truck dump where it is then sized and belted to the raw coal stockpile area which is located near the CHPP.
- A highwall mining method is used to recover additional coal reserves. It involves advancing a machine called a continuous miner – along with a series of conveying cars – into the exposed coal seam of the final highwall. While the machine follows the coal seam underground, employees operating the machine and loading the coal remain on the surface.
- The purpose of the CHPP is to remove the impurities (e.g. rock, clay) from the raw coal to make it a clean marketable coal product. It takes 1.6 to 1.8 tonnes of raw coal to produce 1 tonne of clean coal.
- The majority of water used at the mine site is required for separating raw coal from rock in the CHPP.
- Coal fines are piped to an empty coal pit, where tailings cells are built to separate the fines from the water. These tailings cells will be reclaimed, along with the rest of the coal pit.
- A closed loop water management system is utilized onsite in which clarified water is recycled from the tailings cell and pumped directly back to the CHPP. This recycled clarified water makes up the majority of the water volume required by the CHPP and is supplemented with groundwater and some surface water. Clarified tailings water may only be placed in tailings cells or pumped to the CHPP. At no time is tailings water discharged to a pond not designed for this purpose.
- Coarse refuse, which is the rock separated from the coal in the CHPP, is sent to the refuse stockpile area via conveyor. Fine coal refuse is pumped from the CHPP to

the Tailings Cells.

- Clean coal will be reclaimed from the clean coal stockpile and sent to the Dome via covered conveyor.
- Clean coal is then sent to the loadout bin from the Dome via a covered conveyor.
- Trains will be loaded via a train loadout facility located on a side track south of the CN mainline.
- Trains will transport the coal to marine terminals located on the west coast of BC, where they will be loaded onto vessels destined for customers in international markets.

B.10.2 VTUM Production

The VTUM will operate wholly within the existing Phase I footprint and produce approximately 565,000 clean tonnes per year. This is less than an 8% increase of the total Phase I production. The VTUM is expected to be in operation for 3 years.

The underground operation will begin with a single continuous miner section. If successful, a second continuous miner section will be added achieving a maximum production rate of 635,000 clean tonnes per year and a nominal daily maximum production of 6,000 clean tonnes.

A full description of the production process for the VTUM is as follows:

- Raw coal will be mined from the loading face by electrically powered Joy 12-27 Continuous Miners which load the material into electric shuttle cars for haulage to the electric underground feeder. The feeder breaks up the raw coal and deposits it on the underground section belt where it is sent outside of the mine. The coal will then be hauled or belted to the existing Phase I surface mine ROM conveyor where the coal will be loaded onto the belt and combined with the surface mined coal. The combined coal will then be belted to the existing raw coal stockpile area.
- The combined coal will then be reclaimed and transported on the existing covered conveyor into the existing processing plant to remove the impurities (*e.g.* rock, clay) from the raw coal to make it a clean marketable coal product. The clean coal will be conveyed from the processing plant to the existing clean coal stockpile area. The overall processes of the CHPP will not be revised as part of the VTUM. The majority of water needed in the CHPP process will continue to be provided by water recycled from the tailings cells.
- Coarse refuse, which is the rock removed from the coal in the processing plant,

will be sent via the existing conveyor to the Phase I refuse disposal area where it is placed with track dozers. Fine coal refuse (the clay removed during the coal cleaning process) is pumped from the processing plant to the existing tailings cells.

- The combined clean coal from Phase I and the VTUM will be reclaimed from the existing clean coal stockpile and sent via the existing covered overland conveyor to the existing storage dome near the rail car loadout.
- From the storage dome, the coal will be transported to the existing rail car loadout where it will be loaded into rail cars on a side track adjacent to the CN mainline.
- The loaded trains will transport the coal to marine terminals located on the west coast of British Colombia, where they will be loaded onto vessels destined for customers in international markets.

As noted previously, the VTUM will be an exploratory underground mine within the boundaries of the existing Phase I Vista Mine Permit C 2011-5F, which will test various safety and production methods to determine the feasibility of underground mining the Vista Mine's coal reserves. If proven successful, the underground mine will create a unique advantage for the Vista Mine by employing an alternative means to extract Coalspur's mineral reserve. Underground mining creates significantly less surface disturbance than open pit mining with a reduced mining area footprint. Large volumes of overburden do not have to be removed to access the coal reserve. In underground mining, the coal extraction occurs underneath the overburden.

Underground mining allows the safe and environmentally friendly extraction of the coal that otherwise would not be economically recoverable by the open pit method. Coal is extracted from the underground face utilizing electric continuous miners where it is hauled to the belt loading point in electric shuttle cars. The material is then belted to the surface utilizing underground conveyor systems instead of hauled by diesel powered trucks. Large volumes of rock do not have to be removed and hauled to stockpile locations, thus reducing the number of trucks and transportation related GHG emissions. Underground mining further reduces greenhouse gas emissions by requiring significantly less disturbed area and reclamation activity than surface mining.

The purpose of the VTUM is to test this method of coal extraction within the reserve to determine if underground mining is feasible. If successful, the carbon footprint of the Vista Mine could be reduced by mining coal through underground mining rather than surface mining. This is further described in **E.23: Greenhouse Gas Emissions**. Underground mining has also been a request by many local stakeholders and environmental and Indigenous groups to lessen the surface

disturbance while providing employment.

B.11 Anticipated Schedule

The tables on the following pages show the anticipated schedules for both the VTUM and Phase II respectively, including expected timelines for permitting, construction, operation, decommissioning, and reclamation. Anticipated timelines are provided for the VTUM and Phase II with and without the anticipated time required to conduct a federal impact assessment should one be required.

Coalspur intends to commence construction of the VTUM in 2021. **Schedule 1: VTUM Project Schedule Provincial Process** shows the anticipated timelines for provincial permitting, construction, operation, decommissioning, and reclamation for the VTUM. Construction of Phase II is proposed to commence in April 2022 with operations to commence in July 2022. As shown on **Schedule 2: Phase II Project Schedule Provincial Process** below, these timelines are achievable under the provincial process.

Schedule 3: VTUM Project Schedule Federal and Provincial Process shows the anticipated timelines for provincial and federal permitting, construction, operation, decommissioning, and reclamation for the VTUM taking into account the anticipated time required to conduct the federal impact assessment. **Schedule 4: Phase II Project Schedule Federal and Provincial Process** indicates the extended timeline for approval for Phase II. It is anticipated that the federal review process would delay the VTUM and Phase II by five and a half years.

Under the federal process, construction, and production of Phase II and the VTUM would not occur, potentially, until 2027.

As shown on the schedules, First Nation, Métis and stakeholder engagement are integrated into the development and operation of the mine. Coalspur provides regular updates to First Nations and Metis groups through Joint Implementation Committee meetings, e-mails, and phone calls. Ongoing consultation and engagement is a continuous process throughout the life of the mine and reclamation activities.

Schedule 1: VTUM Project Schedule Provincial Process

	2019				2020				2021				2022				2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Completed Actions																																
Engineering and Design																																
Original VTUM Submittal																																
Pre-Application Meeting with AER																																
List of Deficiencies Received from AER																																
Application Preparation																																
Resubmittal of VTUM Application																																
VTUM Application Registered by AER																																
Public Notice and Comment Period																																
SIR 1 Received from AER																																
Provincial Permitting Items																																
Submittal of SIR Responses to AER																																
Anticipated AER Approval																																
Construction Activities																																
Pre-construction - completed by surface mine activities																																
Construction of underground mine portal																																
Construction of water management structures																																
Ventilation and electrical component installation																																
Development of initial mine entries																																
Mine Operations																																
Decommissioning and Closure																																
Removal of underground infrastructure																																
Construction of mine seals																																
Reclamation																																
Haul material to reclaim highwall																																
Contouring of benches																																
Topsoil and seed for closure																																

Schedule 2: Phase II Project Schedule Provincial Process

	2019	2020				2021				2022				2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4											
Provincial Permitting Items																								
Environmental Work																								
Stakeholder Consultation																								
Aboriginal Consultation																								
Aboriginal and Stakeholder Engagement																								
Provincial Regulatory Process:																								
• Environmental Assessment																								
• EPEA & Mine License																								
Detailed Engineering																								
Construction Activities																								
Secure Long Lead Items																								
Procurement, Bids, Contracts																								
Site Prep / Dewatering																								
Phase II Construction																								
Mine Operations																								
Decommissioning and Closure																								
Reclamation																								

Schedule 3: VTUM Project Schedule Provincial and Federal Process

	2019				2020				2021				2022				2023				2024				2025				2026				2027				2028				2028				2028				2028			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
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Environmental Assessment Development																																																
Stakeholder Consultation																																																
Aboriginal Consultation																																																
Federal EIA REVIEW																																															
Hearing Process																																																
Determination																																																
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Construction of mine seals																																																
Reclamation																																																	
Haul material to reclaim highwall																																																	
Contouring of benches																																																	
Topsoil and seed for closure																																																

Schedule 4: Phase II Project Schedule Federal and Provincial Process

	2019	2020				2021				2022				2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4																	
Provincial Permitting Items																														
Environmental Work																														
Stakeholder Consultation																														
Aboriginal Consultation																														
Aboriginal and Stakeholder Engagement																														
Provincial Regulatory Process:																														
• Environmental Assessment																														
• EPEA & Mine License																														
Detailed Engineering																														
Federal Permit Process (Estimated)																														
Initial Project Description																														
Expanded Project Description																														
IAA Determination																														
Environmental Assessment Dev																														
Stakeholder Consultation																														
Aboriginal Consultation																														
EIA REVIEW																														
Hearing Process																														
Determination																														
Detailed Engineering																														
EPEA Application and Approval																														
Mine License Application and Approval																														
Construction Activities																														
Secure Long Lead Items																														
Procurement, Bids, Contracts																														
Site Prep / Dewatering																														
Phase II Construction																														
Mine Operations																														
Decommissioning and Closure																														
Reclamation																														

B.12 List of Alternative Means – Technically and Economically Feasible

The primary factors of importance in determining the economic feasibility and mineability of a reserve are proximity to infrastructure, zoning (land use and regulatory), size, quality, and geological setting of the reserve. To be economically feasible, the development of a thermal coal mine requires an adequate and a skilled workforce located close to infrastructure that will provide it with the required support facilities.

Because the thermal coal is exported to international markets, proximity to rail lines to transport the coal to ports on Canada's west coast is essential.

The main surface infrastructure and materials handling systems required for the VTUM and Phase II are already installed and operating. This infrastructure, installed during Phase I operations, utilizes state of the art technology, and provides the most technically and economically feasible means to achieve the goals of the project. Phase II will utilize the same mining method and controls that are currently employed for Phase I. Coalspur is not considering any alternatives to the project, as they will be less economical and technically feasible.

The VTUM is in itself a test of an alternative means of resource extraction and demonstrates Coalspur's commitment to exploring technically and feasible alternatives at the Vista Mine. If successful, this alternative mining method may be utilized for the future mining of the coal within Coalspur's mineral leases that otherwise would not be able to be economically extracted. Underground mining results in less surface disturbance than surface mining to extract coal as its operations are beneath the surface. Less greenhouse gases from transportation are also emitted since electric machines powered by electricity rather than diesel are utilized. The VTUM will provide an opportunity to demonstrate alternative means for the purpose of resource extraction that will have a direct reduction in impact to surface lands and the environment.

The purpose Phase II is to increase coal production using existing property and facilities, i.e. Phase 1, to supply overseas customers. Potential alternate means of carrying out the project include:

- Alternate mining methods
- Alternate tailings management and treatment
- Alternate reclamation methods

Coalspur has gained knowledge in the operation of Phase 1 which aided in determining the best methods of mining at this specific location. The Phase II project has utilized these learnings to

develop the most appropriate methods that are both technically and economically feasible. Coalspur will, however, continue to evaluate new technologies. Based on the location and proximity to Phase I and the mineability of Phase II, there are currently no surface mining alternatives to the project that could meet the production of Phase II that would be considered more technically or economically feasible.

The purpose of the test underground mine is to test the feasibility of an underground mine at this location. Potential alternate means of carrying out the project include:

- Alternate mining methods
- alternate tailings management and treatment
- alternate reclamation methods

There are no technical or economically feasible alternatives to the VTUM

Part C: Project Location

C.13 Description of Project Location

Coalspur's Vista Mine is located within the Rocky Mountain Foothills physiographic region in west-central Alberta (Pettapiece, 1986). The existing Phase I operation, proposed VTUM, and proposed Phase II are within Treaty 6 Territory and approximately, with the closest disturbance 5 km from the Hinton town boundary, the nearest community, and extend away from Hinton to the east. The closest permanent residence is approximately 6 km from closest disturbance associated with Phase II and there is one potential trapper cabin located within the Project. In surrounding areas, there are several mines (surface and underground) that were operated earlier in the 1900s. The project area lies largely within the Upper Foothills Natural Subregion (Beckingham *et al*, 1996), and, in the west, in the Lower Foothills Subregion.

The Athabasca River flows parallel to and north of Highway 16 and the town of Hinton corporate limits. Highway 40 runs north from Highway 16, approximately 7 km southwest of Hinton and connects to Grande Cache, 138 km to the northwest. The Canadian National Railway (CN) main line runs parallel to the Athabasca River and Highway 16, approximately 7 km north of the coal processing plant location. The railway provides direct access for coal delivery to the Ridley Island Terminal at Prince Rupert and the Westshore Terminal south of Vancouver.

The Coal Branch Sub-Regional Integrated Resource Plan (1990) presents the Government of Alberta's resource management policy for public lands within this region of the Eastern Slopes. In this Plan, the project area overlaps the Yellowhead Corridor and McLeod Resource Management Areas (RMA), which zone the area as #5 – Multiple Uses. The management intent for this RMA is to provide for a range of multiple use activities while recognizing the area's resource values.

A central latitude and longitude for the project are 53^0 23' 28.77" Latitude, 117^0 20' 20.53" Longitude. There are no changes proposed to the currently approved Vista Mine's permit legal descriptions which currently encompasses 5490 ha. **Figure C-1: Coal Lease Map** shows the surface lease and mineral ownership including Phase I and Phase II. **Figure C-2: Location Map** shows the distance of the project from Jasper National Park.

The Project is located in an area where Traditional Land Use is practiced. The closest reserve land is Alexis Cardinal River Reserve No. 234, located approximately 57 km to the south east. Alexis Elk River Reserve No. 233 is also located within a 100 km radius. No other reserves, First Nation Land, or land subject to a comprehensive land claim agreement or self-government was identified within a 100 kilometre radius of the project.

N

Obed

Obed Loadout

Carldale

Pedley

Hinton

Yellowhead

Tow

Mercoal

16

Legend

- Permit Boundary (Phase 1)
- MSL Boundary (Phase 1)
- Permit Boundary (Phase 2)
- MSL Boundary (Phase 2)
- Mine Pit (Phase 1)
- Mine Pit (Phase 2)
- Mined Out (Phase 1)
- Highwall Mining Area
- Spoil Dump
- Disturbance Area
- Plant Area
- Freshwater Ponds
- Roads
- Mine Roads
- Streams
- Power Lines
- Coal Lease Area
- North Dump Refuse Area

Coalspur

Vista Mine

Figure C-2 Coal Lease Map

DATE:		PROJ NO:		
DWN BY:	TECH:	CHK BY:	DWG NAME:	
FIELD BOOK:		PS: 1:1	DWG SCALE:	
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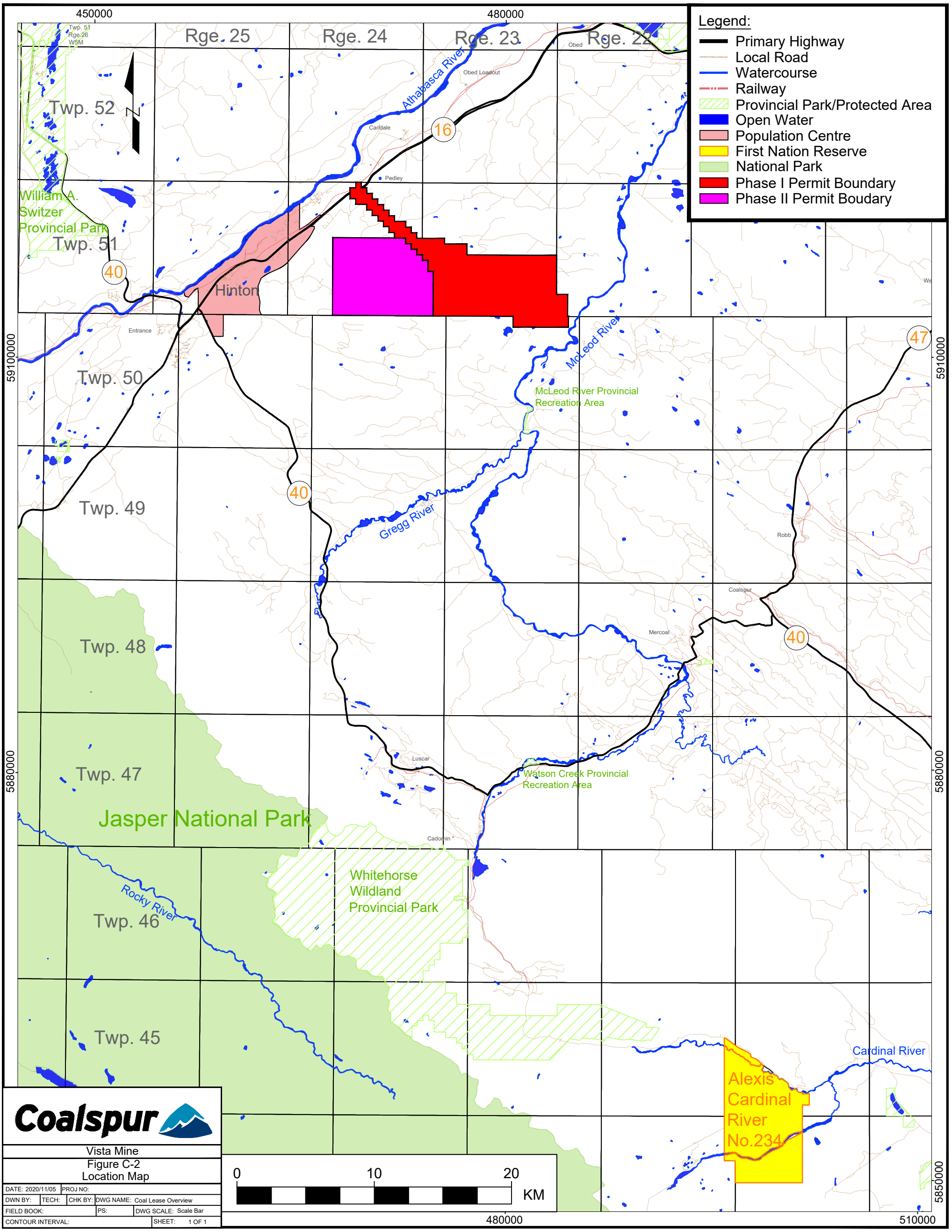
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Twp. 52
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Twp. 50
Twp. 49
Twp. 48
Twp. 47
Twp. 46
Twp. 45
Twp. 51 Rge.26 W5M
Athabasca River
Obed Loadout
Obed
Caroldale
Pedley
16
40
Hinton
Entrance
William A. Switzer Provincial Park
McLeod River
McLeod River Provincial Recreation Area
47
Gregg River
Robb
Coalspur
Mercoal
Luscar
Watson Creek Provincial Recreation Area
Cadomin
Jasper National Park
Whitehorse Wildland Provincial Park
Rocky River
Cardinal River
Alexis Cardinal River No.234
Legend:
Primary Highway
Local Road
Watercourse
Railway
Provincial Park/Protected Area
Open Water
Population Centre
First Nation Reserve
National Park
Phase I Permit Boundary
Phase II Permit Boudary
0
10
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KM
Coalspur
Vista Mine
Figure C-2
Location Map
DATE: 2020/11/05
PROJ NO:
DWN BY:
TECH:
CHK BY:
DWG NAME: Coal Lease Overview
FIELD BOOK:
PS:
DWG SCALE: Scale Bar
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C.14 Biological Environment

The Vista Mine expansion is situated within the Upper Foothills Natural Subregion of Alberta. The Upper Foothills (UF) occur at higher elevations than the Lower Foothills (LF); consequently, the climate of the UF is characterized by a stronger cordilleran influence compared to the more continental climate of the LF (Strong and Leggat 1992; Natural Regions Committee 2006). As elevation increases from LF to UF, more winter precipitation is received, and the length of the growing season becomes shorter.

The project is in the West Central Airshed Society which monitors data from 12 continuous air quality monitoring stations located throughout the Airshed region. Wind at the project site is predominantly from the west-southwest direction. High maximum particulate (PM2.5 and PM10) values have been observed as a result of forest fire activity. As stated by AEW (2009) “fine particulate matter levels in northern Alberta are largely driven by forest fire smoke influence”. Air quality surveys conducted by the Alberta Environment Mobile Air Monitoring Laboratory showed that concentrations of most air pollutants measured in the Edson and Hinton area were below Alberta’s Ambient Air Quality Guidelines. (Alberta Environment, 2002)

Topography in the area ranges from undulating or strongly rolling dissected plateaus to steep slopes. The parent material of the UF is composed of primarily sand and mudstone of Tertiary and Upper Cretaceous origin, the latter of which is associated with coal seams. Surface materials are predominantly medium textured and somewhat calcareous glacial till deposits that become thin on steep slopes, and may occur in association with exposed bedrock, tertiary gravels, and colluviums. At lower elevations, glaciofluvial sands and glaciolacustrine clays can be found. Upland soils include well to imperfectly drained Orthic Gray Luvisols and Brunisolic Gray Luvisols. Dystic Brunisols are characteristic of sandy areas, while Eutric Brunisols and Regosols are associated with calcareous and recently deposited aeolian and fluvial materials. Lowlands are associated with Terric and Typic Mesisols, and Peaty and Orthic Gleysols (Natural Regions Committee 2006).

Vegetation within the UF is limited in diversity due to the short and cool growing season which influences the growth of extensive closed canopy coniferous forests (Natural Regions Committee 2006). Additionally, due to the lack of large landscape level fire events over the past 110 to 120 years, most lodgepole pine forests remain uniform and even-aged (Landhausser et al. 2010). Mixed or pure lodgepole pine, aspen, white spruce, and subalpine fir forests occupy sites with moderate moisture and nutrient availability (Beckingham et al. 1996).

Common understory species on mesic medium-nutrient sites within the UF include tall bilberry and arnica. Lodgepole pine and black spruce forests, in association with feather moss and

Labrador tea, are found on mesic to sub-hygric sites with poor nutrient status. Dry sites support poor shrubby grasslands or lodgepole pine stands with an understory of bearberry, juniper, and hairy wild rye. Moist and rich sites have productive and diverse stands of lodgepole pine, balsam poplar, aspen and white spruce, with an understory of bracted honeysuckle, ferns, and cow parsnip. Depending on nutrient status, lowland areas are associated with pure or mixed white and black spruce (sometimes tamarack), with an understory of horsetail, sedges, Labrador tea, willow, and bog birch (Natural Regions Committee 2006).

Wetlands are relatively uncommon within the Foothills due to the steeply sloping terrain and are usually limited to seepages on northerly aspects and valley bottoms. The majority of wetlands are treed (tamarack and black spruce) and shrubby fens, with bogs and graminoid fens occurring less frequently. Organic accumulations are quite thin within the UF. Large rivers flowing east and north throughout the Foothills include the North Saskatchewan, McLeod, Athabasca, Smoky and Wapiti Rivers (Natural Regions Committee 2006).

McPherson Creek, which drains to the McLeod River, is the primary watercourse that drains the Project area. Several tributaries, mainly intermittent channels, drain to McPherson Creek from the proposed pit. 13 fish species have previously been identified within the project area, with Rainbow Trout being the most prolific (Coalspur, 2012). Surface water quality is characterized by high levels of dissolved oxygen, low levels of dissolved organic carbon and low concentrations of total suspended solids. Water is classified as hard to very hard (Coalspur, 2012b). Both Bull trout and Athabasca Rainbow are provincially listed under the Species at Risk Act as at risk and the spoonhead sculpin and Arctic Grayling are listed as may be at risk. The Athabasca Rainbow Trout is federally listed as endangered.

Three wildlife ecodistricts dominate the Phase II area and its surroundings including the Wolf Lake Upland, the Obed Upland, and the Ram River Foothills. Phase II will mainly be within the Wolf lake Upland ecodistrict of the UF subregion. A smaller portion occurs in the Obed Upland ecodistrict of the LF subregion. These lower elevation areas are associated with the McLeod and Athabasca River valley slopes. Typical landscapes in the Local and Regional Study Areas (LSA and RSA) include rolling morainal upland with conifer forest interspersed with organic terrain dominated by shrubby and treed fens. Based on known distributional range and habitat preferences, the Vista Coal Mine has the potential to harbor as many as 243 vertebrate wildlife species including 184 birds, 52 mammals, 5 amphibians and 2 reptiles. 60 of the 243 potential species are listed as species at risk by either provincial or federal authorities, including 45 birds, 10 mammals, 3 amphibians and 2 reptiles.

C.15 Health, Social and Economic Context in the Region

Hinton is the closest and largest population center to the Vista Mine, situated in Yellowhead County with a 2016 population of 9,882 (GOA, 2019), showing a growth of 5.1% since 2001, much lower than the provincial growth rate of 36.7%.

The Project is located in the Alberta Health Services North Zone, and health status indicators are available solely at the zone level. The North Zone ranks worse compared to Alberta in a variety of population health indicators such as obesity, physical activity, smoking and self-perceived mental health. For the local geographic area of Hinton, the most frequent cause of death reported between 2013 and 2015 was neoplasms and hypertension was the disease with the highest prevalence rate during this period, similar to the provincial rate (Alberta Health 2017).

Between 2011 and 2016, some industries showed declines in employment, such as mining and oil and gas, manufacturing, and wholesale trade, while others increased including health care and social services, accommodation, and food services.

The regional socio-economic analysis for the project consists of Yellowhead County, the Town of Edson, and the Town of Hinton. The key socio-economic considerations for the purpose of the analysis fall into the following categories:

- employment effects;
- regional and provincial economic benefits;
- population effects;
- effects on regional infrastructure and services; and
- traditional land use effects.

The economy of the region has historically been driven by the oil and gas, mining, and forestry sectors. Agriculture and tourism contribute to the regional economy albeit in a less prominent fashion. In general, the labour force participation rate was above the provincial average and the unemployment rate was below the provincial average for both the total and Indigenous working age populations (Statistics Canada, 2016).

Due to a declining oil and gas sector and the recent closure of several mining operations, Coalspur has completed additional regionally specific socio-economic interviews in the fourth quarter of 2020. These interviews will focus on the previous 12 months and will help to understand the impacts of the declining resource sector, COVID 19, and the proposed development of Phase II. As part of this assessment, development timelines of Phase II will be considered in response to employment and income opportunities.

Social infrastructure includes a diverse range of human services and infrastructure including health, education, social, recreation, policing, and emergency services. The town of Hinton, located approximately 10 kilometres from the Vista Mine plant site, is a fully established town with adequate medical, social, and support services infrastructure to support the community. Adequate medical, social, and support services infrastructure is important to a community as a means of:

- supporting the functioning of the community by sustaining the well-being of its residents and building social cohesion; and
- sustaining economic growth by making the community more attractive to those considering investing or relocating to the region.

The Vista Mine is currently established within the community and region and workers employed at the mine are members of the surrounding communities and other cities within the region. The region has a well-developed social infrastructure system. The majority of infrastructure and services are located in the Towns of Hinton and Edson, which also service Yellowhead County residents. Coalspur currently has mutual aid and service agreements in place with the local fire department, EMS, medical facilities, and STARS. Coalspur has developed relationships and provides donations to facilities within the community including donating masks and PPE to local schools to assist them during the COVID-19 pandemic.

Highway 16 spans the region from east to west and, as the main arterial road, is the road travelled by workers and supply transport vehicles to the Vista Mine. As Vista Mine's Phase I is currently operational, traffic safety is a priority which has been properly and effectively mitigated. Project representatives have met and will continue to meet with other industry representatives to develop plans for managing any potential conflicts.

Hinton had a similar proportion of Indigenous people compared to Alberta (2.8% vs 2.8%). In Alberta, from December 2019 to December 2020, the off-reserve Indigenous unemployment rate grew from 9.2%, which was only 0.2% higher than the national average, to 16.0%, 3.9% higher than the national average. The largest job decrease by sector was trades, transport and equipment operators and related occupations (GOA 2021).

Part D: Federal, Provincial, Territorial, Indigenous, and Municipal Involvement and Effects

D.16 Financial Support Provided by Federal Authorities

Coalspur has not received any financial support from the federal government for the execution of the current operations, the VTUM, or Phase II.

D.17 Federal Land Used for the Purpose of the Project

There are no federal lands included in Phase II or the VTUM.

D.18 Regulatory Jurisdictions – Environmental Assessments of the Project

The Phase II application was previously considered by the Minister in 2018 and 2019. With Agency confirmation that Phase II would not be subject to a federal impact assessment, Phase II has proceeded with the development of the Terms of Reference under the provincial jurisdiction of the AER. On July 30, 2020 the projects combined were designated by the Minister of the Environment Climate Change Canada and as such, are subject to the federal Impact Assessment Act.

Coalspur is in the last phase of preparing the required environmental impact assessment and associated technical assessments that examine the environmental and socio-economic effects of Phase II to meet the Terms of Reference completed with the AER and agreed to in 2018. Coalspur will reference the *Guide to Preparing Environmental Impact Assessment Reports in Alberta* published by Alberta Environment and Sustainable Resource Development (the Guide) and these agreed upon Terms of Reference when preparing the Environmental Impact Assessment Baseline Information.

The EIA report is being prepared in consideration of all applicable provincial and federal legislation, codes of practice, guidelines, standards, policies, and directives.

The EIA report will be prepared in accordance with these Terms of Reference and the environmental information requirements prescribed under the Alberta *Environmental Protection and Enhancement Act* and associated regulations, and the *Impact Assessment Act,* where applicable. The EIA report will form part of the Proponent's application to the AER.

A number of environmental aspects specific to the proposed development were identified during the review. A list of Valued Environmental Components (VECs) was developed for the various disciplines and environmental aspects investigated and identified as a concern by Coalspur, the public, government, and the professional community. VECs consider both biological (e.g., ecosystem) and socio-economic attributes because of the broad-based definition of environmental effect.

The EIA and Cumulative Effects Assessment (CEA) were focused on the effects that Phase II would have on the identified VECs, in combination with other activities in the region, over the projected life of the project.

VECs were assessed using three scenarios:

- Review of Phase I regional baseline case which includes existing environmental conditions and existing projects or "approved" activities
- Application case which starts with the baseline case and adds only Phase II and the VTUM
- Planned case which includes past studies, existing and anticipated future environmental conditions, existing activities, and planned activities within local and regional areas

Table D-1 below is a generalized summary of the technical and environmental assessments, that are nearing completion.

Summary of Technical and Environmental Assessments	Outcomes and Objectives
AIR QUALITY	• Identify components of the project that will affect air quality. • Describe the potential for reduced air quality (including odours and visibility) resulting from the project and discuss any implications of the expected air quality for environmental and public health. • Estimate ground level concentrations of appropriate air quality parameters.

Summary of Technical and Environmental Assessments	Outcomes and Objectives
AIR QUALITY	• Discuss any expected changes to particulate deposition, nitrogen deposition, or acidic deposition patterns. • Identify areas that are predicted to exceed Potential Acid Input critical loading criteria. • Discuss interactive effects that may occur resulting from co-exposure of a receptor to all emissions • Describe air quality impacts resulting from the project, and their implications for other environmental resources, including habitat diversity and quantity, soil resources, vegetation resources, and water quality. • Identify stages or elements of the project that are sensitive to changes or variability in climate parameters, including frequency and severity of extreme weather events and discuss the potential impacts over the life of the project. • Provide an updated Management Plan inclusive of mitigation and monitoring plan.
FISHERIES RESOURCE	• Describe and assess the potential impacts of the project to fish, fish habitat, aquatic and benthic invertebrates and key indicators, including, but not limited to: o habitat loss and alteration; o potential water quality and quantity changes; o potential impacts on riparian areas that could affect aquatic resources and productivity; o changes to benthic invertebrate communities; o increased fishing pressures in the region that could arise from the increased human

Summary of Technical and Environmental Assessments	Outcomes and Objectives
FISHERIES RESOURCE	activity and improved access from the project; o increased habitat fragmentation; o acidification and/or eutrophication; o groundwater and surface water interactions; o potential for thermal plumes to affect aquatic habitat; and o fish tainting, survival of eggs and fry, chronic or acute health effects, and increased stress on fish populations from release of contaminants, sedimentation, flow alterations, and/or changes in temperature. • Discuss the rationale for the selection of the key indicators. • Discuss the design, construction, and operational factors to be incorporated into the project to minimize effects to fish and fish habitat and protect aquatic resources. • Identify proposed plans to offset any loss in productivity as a result of the project. Indicate how environmental protection plans address applicable provincial and federal policies on fish habitat. • Describe the coordination between DFO Authorization, the AER, and Alberta Environment and Parks (AEP) as it pertains to SARA species and the protection of Aquatic Habitat under the *Fisheries Act*.
GROUNDWATER	• Describe project components and activities that have the potential to affect groundwater resource quantity and quality at all stages of the project.

Summary of Technical and Environmental Assessments	Outcomes and Objectives
GROUNDWATER	• Describe the nature and significance of the potential project impacts on groundwater with respect to: o inter-relationship between groundwater and surface water in terms of both groundwater and surface water quantity and quality; o implications for terrestrial or riparian vegetation, wildlife and aquatic resources including wetlands; o changes in groundwater quality, quantity, and flow; o conflicts with other groundwater users and proposed resolutions to these conflicts; o potential implications of seasonal variations; and o groundwater withdrawal for project operations, including any expected alterations in the groundwater flow regime during and following project operations. • Describe programs to manage and protect groundwater resources including: o the early detection of potential contamination; o groundwater remediation options in the event that adverse effects are detected; and o monitoring groundwater levels and associated changes due to production or dewatering impacts. • Provide an outline of the proposed changes and updates to the Groundwater Monitoring System and Associated Management Plans.

Summary of Technical and Environmental Assessments	Outcomes and Objectives
HISTORICAL RESOURCES	• Describe project components and activities that have the potential to affect historical resources at all stages of the project. • Describe the nature and magnitude of the potential project impacts on historical resources, considering: o effects on historical resources site integrity; and o implications for the interpretation of the archaeological, historical, and palaeontological records.
HUMAN HEALTH	• Describe aspects of the project that may have implications for public health or the delivery of regional health services. • Determine quantitatively whether there may be implications for public health arising from the project. • Document any health concerns raised by stakeholders during consultation on the project. • Document any health concerns identified by Indigenous communities or groups resulting from impacts of existing development and of the project, specifically on their traditional lifestyle. • Include an Indigenous receptor type in the assessment. • Describe the potential health impacts resulting from higher regional traffic volumes and the increased risk of accidental leaks and spills.
SURFACE HYDROLOGY AND WATER QUALITY	• Describe the extent of hydrological changes that will result from disturbances, including licensed

Summary of Technical and Environmental Assessments	Outcomes and Objectives
SURFACE HYDROLOGY AND WATER QUALITY	water diversions, to groundwater and surface water movement. • Include changes to the quantity of surface flow, water levels and channel regime in watercourses (during minimum, average, and peak flows) and water levels in waterbodies. • Assess the potential impact of any alterations in flow on the hydrology and identify all temporary and permanent alterations, channel realignments, disturbances, or surface water withdrawals. • Discuss the effect of these changes on hydrology (e.g., timing, volume, peak and minimum flow rates, river regime and lake levels), including the significance of effects for downstream watercourses. • Identify any potential erosion problems in watercourses resulting from the project. • Describe impacts on other surface water users resulting from the project. Identify any potential water use conflicts. • Discuss changes in sedimentation patterns in receiving waters. • Discuss the impact of low flow conditions and in-stream flow needs on water supply and water and wastewater management strategies. • Provide a proposed plan to update the Water Management Plan, Monitoring and Mitigation Plans.
SOCIO-ECONOMIC	• Describe the effects of construction and operation of the project on: o housing; o availability and quality of health care services;

Summary of Technical and Environmental Assessments	Outcomes and Objectives
	○ local and regional infrastructure and community services; ○ recreational activities; ○ hunting, fishing, trapping, and gathering; ○ First Nations and Métis (e.g., traditional land use and social and cultural implications); and ○ local training, employment, and business opportunities. • Describe Impacts to communities, stakeholders, and Indigenous partners if the project were delayed or did not proceed.
SURFACE WATER QUALITY **SURFACE WATER QUALITY**	• Identify project components that may influence or impact water quality. • Describe the potential impacts of the project on surface water quality, including: ○ changes in water quality that may exceed the *Environmental Quality Guidelines for Alberta Surface Waters* or the *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (where relevant Alberta guidelines do not exist); ○ seasonal and spatial variation; ○ project-related and cumulative impacts of acidifying and other air emissions; and ○ changes in surface runoff or groundwater discharge. • Provide an update to the Surface Water Management Plan, Monitoring, and Mitigation Strategies.

Summary of Technical and Environmental Assessments	Outcomes and Objectives
WILDLIFE **WILDLIFE**	• Describe and map the wildlife resources (amphibians, reptiles, birds, and terrestrial and aquatic mammals). • Describe species composition, relative abundance, distribution, seasonal movements, movement corridors, habitat requirements, key habitat areas, general life history and their use and potential use of habitats. Also identify any species that are: o listed as "at Risk, May be at Risk and Sensitive" in the *General Status of Alberta Wild Species* (AEP); o listed in Schedule 1 of the federal SARA o listed as "at risk" by COSEWIC; and o species of traditional and current use and cultural keystone species. • Describe, quantify, and map existing wildlife habitat and habitat disturbance including exploration activities. Identify habitat disturbances that are related to existing and approved projects. • Describe and assess the potential impacts of the project to wildlife populations and wildlife habitats, considering: o how the project will affect wildlife relative abundance, habitat availability, mortality, movement patterns, and distribution for all stages of the project; o how improved or altered access may affect wildlife, including potential obstruction of movements, increased vehicle wildlife collisions, and increased hunting pressure; o how increased habitat fragmentation may affect wildlife. Consider edge effects, the availability of core habitat and the influence of linear features and infrastructure on

Summary of Technical and Environmental Assessments	Outcomes and Objectives
	wildlife movements and predator-prey relationships; o the use of setbacks; o potential effects on wildlife resulting from changes to air and water quality, including both acute and chronic effects to animal health; o the spatial and temporal changes to habitat availability and habit effectiveness (types, quality, quantity, diversity and distribution); o the resilience and recovery capabilities of wildlife populations and habitats to disturbance; and o the potential for the project to be returned to its existing state with respect to wildlife populations and their habitats. • Identify the key wildlife and habitat indicators used to assess project impacts. Discuss the rationale for their selection. • Comment on the availability of species for traditional use considering, habitat loss, habitat avoidance, vehicle-wildlife collisions, increased non-Indigenous hunting pressure and other project related impacts on wildlife populations.
TRADITIONAL LAND USE	• Describe the concerns and issues expressed by Indigenous communities and the actions taken to address those concerns and issues, including how Indigenous community input was incorporated into the project, EIA development, mitigation, monitoring, and reclamation. • Describe consultation undertaken with Indigenous communities and groups with respect to traditional

Summary of Technical and Environmental Assessments	Outcomes and Objectives
	ecological knowledge and traditional use of land and water. • Describe plans to maintain the public engagement and Indigenous consultation process following completion of the EIA report to ensure that the public and Indigenous peoples will have an appropriate forum for expressing their views on the ongoing development, operation, and reclamation of the project. • Provide an outline of the intent and objectives of Joint Implementation Committees established and their impact to operational decisions.
GREENHOUSE GAS AND CLIMATE CHANGE **GREENHOUSE GAS AND CLIMATE CHANGE**	• Discuss the selection criteria used, options considered, and rationale for selecting control technologies to minimize air emission and ensure air quality management. • Provide emission profiles (type, rate, frequency/duration, and source) for the project's operating and construction emissions including point and non-point sources and fugitive emissions (including mine faces). Consider both normal and upset conditions. Discuss: o odorous and visible emissions from the proposed facilities; o annual and total greenhouse gas emissions for all stages of the project. Identify the primary sources and provide detailed calculations; o the project's contribution to total provincial and national greenhouse gas emissions on an annual basis; o Coalspur's overall greenhouse gas management plans;

Summary of Technical and Environmental Assessments	Outcomes and Objectives
	o Coalspur's plans to manage emissions from the mining fleet, including the types of equipment; o Coalspur's overall fugitive emissions management plans, o amount and nature of Criteria Air Contaminants emissions; and o the amount and nature of acidifying and particulate matter emissions, probable deposition patterns and rates.

D.18.1 Permits, Licences, Authorizations, Federal and Provincial Jurisdictions

The VTUM does not require any federal or municipal approvals. Since the VTUM is located entirely within the existing permit boundary of Phase I, only one new provincial mine license and several amendments to existing provincial approvals are required. The regulatory jurisdiction and requirements of the VTUM are summarized as follows:

- Pursuant to the Alberta *Coal Conservation Act*, a new mine license is required for the VTUM construction, methodologies, and operations.
- Pursuant to the Alberta *Coal Conservation Act*, an amendment to Mine Permit C 2011-5D 5F is required for increases to raw coal production, revised mine sequencing, and revisions to the reclamation of the site.
- Pursuant to the Alberta *Coal Conservation Act*, an amendment to Mine Permit C 2011-3D 3F is required to allow for the additional material that will be deposited to the North Dump. The additional material will not alter the current footprint of the North Dump as there is sufficient room to accommodate the extra material while staying within the confines of the previously approved footprint.
- Pursuant to the Alberta *Coal Conservation Act*, an amendment to Mine License C 2014-5C is required to accommodate changes to the surface area, sequencing and regrade configuration of the already approved mine.
- Pursuant to the Alberta *Coal Conservation Act*, an amendment to Mine Permit C 2014-7DC is required to allow for the additional material that will be deposited to

the North Dump. The additional material will not alter the current footprint of the North Dump as there is sufficient room to accommodate the extra material while staying within the confines of the previously approved footprint.

- Pursuant to the Alberta *Environmental Protection and Enhancement Act*, EPEA Approval 301345-00 will need to be amended to allow for the VTUM and to reflect changes in reclamation plans.

- Pursuant to the Alberta *Water Act*, Approval 00311969-00-02, and License 00311969-00-00 02 must be amended to allow for water management, groundwater diversion and surface water diversion.

The VTUM development resides within the MSL of the approved Phase I operational footprint. A slight increase in emissions and waste will be generated from the VTUM Development. The GHG and Emissions are described in more detail in **Part E.23: Greenhouse Gases**.

The process of extracting coal via the VTUM will not result in:

- Additional surface disturbance;
- Impact to fisheries, aquatic environment, or waterways; or
- Impact to wildlife, soils, or vegetation.

The VTUM will provide an opportunity to demonstrate alternative means for the purpose of resource extraction that will have a direct reduction in impact to surface lands and the environment.

Phase II

Phase II should not require a federal Impact Assessment. Potential adverse effects to areas of federal jurisdiction, including effects to fish and fish habitat, migratory birds, and Indigenous peoples of Canada that may result from Phase II will be appropriately managed by comprehensive legislative mechanisms already in place within the provincial and federal review processes. Phase II will require a DFO Authorization and an off-setting plan under the *Fisheries Act* Section 35(2) to offset or compensate for the loss of fish habitat resulting from the project. The DFO process, can run concurrent to a provincial application, ensuring coordination between the provincial and federal requirements.

Phase II will require a provincial mine license and several amendments to existing provincial approvals. The regulatory jurisdiction and requirements of Phase II are summarized as follows:

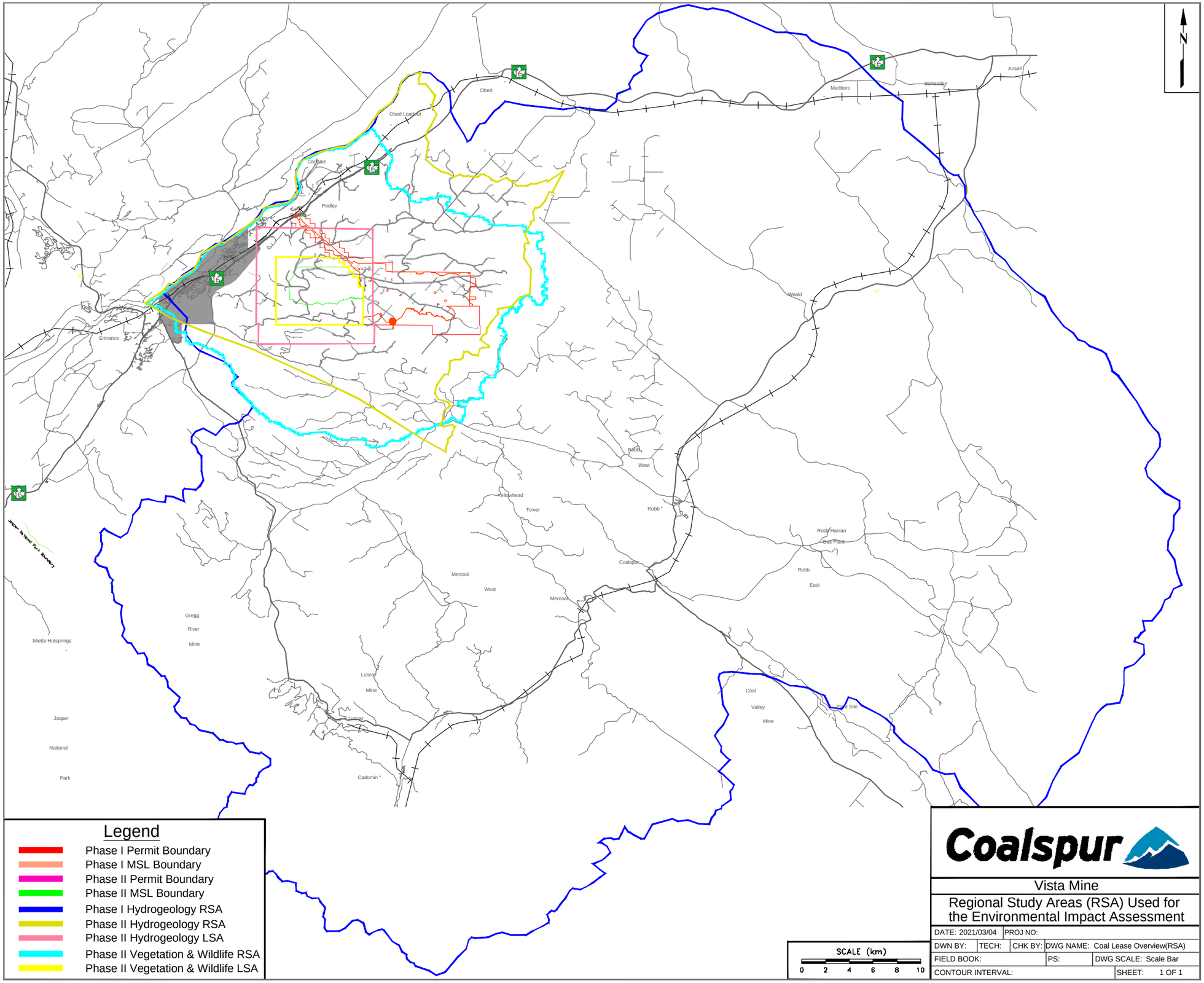
- Pursuant to the Alberta *Coal Conservation Act*, a new mine license is required for

the Pit Expansion, methodologies, and operations.

- Pursuant to the Alberta *Coal Conservation Act*, an amendment to Mine Permit C 2011-5D is required for increases to raw coal production, revised mine sequencing, and revisions to the reclamation of the site.
- Pursuant to the Alberta *Coal Conservation Act*, an amendment to Mine Permit C 2011-3F is required to allow for the additional material that will be deposited to the North Dump. The additional material will not alter the current footprint of the North Dump as there is sufficient room to accommodate the extra material while staying within the confines of the previously approved footprint.
- Pursuant to the Alberta *Coal Conservation Act*, an amendment to Mine License C 2014-5 is required to accommodate changes to the surface area, sequencing and regrade configuration of the already approved mine.
- Pursuant to the Alberta *Coal Conservation Act*, an amendment to Mine Permit C 2014-7C is required to allow for the additional material that will be deposited to the North Dump. The additional material will not alter the current footprint of the North Dump as there is sufficient room to accommodate the extra material while staying within the confines of the previously approved footprint.
- Pursuant to the Alberta *Environmental Protection and Enhancement Act*, EPEA Approval 301345-00 will need to be amended to allow for Phase II and to reflect changes in reclamation plans.
- Pursuant to the Alberta *Water Act*, Approval 00311969-00-06, and License 00311969-00-03 must be amended to allow for water management, groundwater diversion and surface water diversion.

D.18.2 Study Areas

The Phase II disturbance area will be 633.6 hectares in size which is 44.2% of the currently permitted Phase I development. The VTUM will result in only 2.85 hectares of additional surface disturbance wholly within the Phase I permit area which was previously assessed as part of the Phase I EIA. While the exact location of the VTUM surface facilities may change within the permit boundary due to the delay in timing caused by the federal review process, all facilities for the VTUM will remain within the approved Phase I permit area. The Local and Regional Study Areas (LSA and RSA) varied in geographic extent according to the needs of the different disciplines. **Figure D-1: Regional Study Areas (RSA)** presents the LSA and RSA for Phase II development and Phase I which includes the VTUM.



Legend

- Phase I Permit Boundary
- Phase I MSL Boundary
- Phase II Permit Boundary
- Phase II MSL Boundary
- Phase I Hydrogeology RSA
- Phase II Hydrogeology RSA
- Phase II Hydrogeology LSA
- Phase II Vegetation & Wildlife RSA
- Phase II Vegetation & Wildlife LSA

SCALE (km)
0 2 4 6 8 10

Coalspur

Vista Mine

Regional Study Areas (RSA) Used for the Environmental Impact Assessment

DATE: 2021/03/04	PROJ NO:		
DWN BY:	TECH:	CHK BY:	DWG NAME: Coal Lease Overview(RSA)
FIELD BOOK:		PS:	DWG SCALE: Scale Bar
CONTOUR INTERVAL:			SHEET: 1 OF 1

Part E: Potential Effects of the Project

E.19 Environmental

E.19.1 Fish and Fish Habitat

The activities associated with the VTUM have no anticipated effects on fish and fish habitat as they reside within the existing operating footprint of Phase I. The LSA for Phase II was selected based on the permit area boundary and focuses on the EA aquatics component in the spatial area where specific effects may occur. Waterbodies within the LSA include McPherson Creek, several tributaries to McPherson Creek, a tributary to the McLeod River, a tributary to the Athabasca River, Trail Creek, and a tributary to Trail Creek.

The RSA for the aquatics assessment encompasses the geographic extent of any potential impact to aquatic resources associated with the development of Phase II (**Figure D-1: Regional Study Areas (RSA)**). The RSA for the Phase II encompasses the LSA and also includes a portion of the McLeod River extending from its confluence with McPherson Creek downstream approximately 16 km (consistent with the RSA boundary for the water quality assessment) and a portion of the Athabasca River extending from the confluence with Athabasca River Tributary #1, 12 km downstream to near the confluence with Roundcroft Creek (consistent with the RSA boundary for the water quality assessment).

Information obtained during baseline aquatic field programs is the primary source of information for assessing impacts to the aquatic ecosystem potentially arising from construction and operational activities associated with the Phase II development area. In addition, the conclusions from the surface water quality assessment and hydrology assessment will be used for the cumulative impact assessment.

In accordance with this strategy and in support of the fisheries and aquatic resources component of the EIA for Phase II, key to baseline investigations was the identification of fish habitat locations within the Phase II area. Existing (baseline) aquatic resources in watercourses on and adjacent to Phase II have been assessed using both historical information and field investigations.

The VECs selected for assessment include arctic grayling, bull trout, rainbow trout, and benthic invertebrates. Information obtained during baseline aquatic field programs for Phase II and information from Phase II's surface water quality assessment and hydrology assessment were used extensively for the fisheries assessment.

- Provincially and federally, there is one species listed federally as Endangered (rainbow trout (Athabasca)); federally, one species listed as Threatened (bull trout); provincially, there is one species listed as May be at Risk (spoonhead sculpin);
- Provincially, two species that are listed as Sensitive (arctic grayling, bull trout); provincially, two species listed as Undetermined (pearl dace, finescale dace); and one species listed as Exotic/Alien (brook trout). The remaining species are listed as Secure.

Coalspur has been working with regional qualified aquatic environmental specialists, QUAES, to determine the presence of the Athabasca Rainbow Trout (ART) in the RSA. Genetic testing was completed in 2019 and confirms the presence of pure strain ART. Coalspur recognizes that a federal offsetting plan may be required and is working with DFO to determine the appropriate path forward. An ART offsetting program has been established in the region an provides insight and opportunity to work with and expand the existing program. Effects to aquatic species, as defined in subsection 2(1) of the Species at Risk Act, are not anticipated as marine plants are not found in the Project Area.

Coalspur is working closely with a regional recovery and offsetting plan for the protection of genetically pure ART. The project and monitoring program provide real time feedback and opportunity to work collaboratively with an established and regionally significant provincial and federal joint protection program. Information learned from the program may help define future closure and reclamation plans in support of ART recovery plans.

The issues identified as potentially affecting fish habitat potential, the abundance of fish, the health and survival of fish populations (in general) and the abundance, health, and survival of VEC aquatic life within the RSA and LSA are principally related to:

- potential changes to physical habitat components;
- potential changes to flow regime;
- potential changes to water quality (sediment and other chemical contaminants); and
- potential changes to the fisheries resource access and utilization.

E.19.2 Migratory Birds

Based on known distributional range and habitat preferences, the Phase II permit area has potential to harbour as many as 243 vertebrate wildlife species including 184 birds, 52 mammals, 5 amphibians and 2 reptiles. **Table E-1: Migratory Birds – Federally Listed** below lists the

federally listed migratory birds that are present in the Area. Potential impacts to migratory birds include habitat alteration, increased mortality, effects to health through exposure to deleterious substances, sensory disturbance, habitat fragmentation and movement obstruction.

Table E-1: Migratory Birds – Federally Listed

Common Name	Scientific Name	Federal SARA
Harlequin Duck	Histrionicu histrionicus	Special Concern
Horned Grebe	Podiceps auritus	Special Concern
Great-blue Heron	Ardea herodias	Special Concern
Northern Goshawk	Accipiter gentilis	Threatened
Peregrined Falcon	Falco peregrinus	Special Concern
Yellow Rail	Coturnicops noveboracensis	Special Concern
Northern Saw-whet Owl	Aegolius acadicus	Threatened
Common Nighthawk	Chordeiles minor	Threatened
Olive-sided Flycatcher	Contopus cooperi	Threatened
Bank Swallow	Riparia riparia	Threatened
Barn Swallow	Hirundo rustica	Threatened
Savannah Sparrow	Passerculus sandwichensis	Special Concern
Rusty Blackbird	Euphagus carolinus	Special Concern
Evening Grosbeak	Coccothraustes vespertinus	Special Concern

There are approximately 450 species of migratory birds that can be found in Canada. Most of these birds are list under the Migratory Birds Convention Act or MCBA. There are 134 of these species that could potentially be within the project area. **Table E-1b: Birds Listed under MCBA** below list these 134 species.

Table E-1b: Birds Listed under MCBA

Common Names	Scientific Name
Canada Goose	Branta canadensis
Trumpeter Swan	Cygnus buccinator
Gadwall	Anas Strepera
American Wigeon	Anas americana
Mallard	Anas platyrhynchos

Blue-winged Teal	Anas discors
Northern Shoveler	Anas clypeata
Northern Pintail	Anas acutana
Green-winged Teal	Anas crecca
Canvasback	Aythya valisineria
Redhead	Aythya americana
Ring-necked Duck	Aythya collaris
Lesser Scaup	Aythya affinis
Harlequin Duck	Histrionicus histrionicus
Surf Scoter	Melanitta perspicillata
White-winged Scoter	Melanitta fusca
Bufflehead	Bucephala albeola
Common Goldeneye	Bucephala clangula
Barrow's Goldeneye	Bucephala islandica
Hooded Merganser	Lophodytes cucullatus
Common Merganser	Mergus merganser
Ruddy Duck	Oxyura jamaicensis
Common Loon	Gavia immer
Pied-billed Grebe	Podilymbus podiceps
Horened Grebe	Podiceps auritus
Red-necked Grebe	Podiceps grisegena
Eared Grebe	Podiceps nigricollis
American Bittern	Botaurus lentiginosus
Great-blue Heron	Ardea herodias
Yellow Rail	Coturnicops noveboracensis
Sora	Porzana carolina
American Coot	Fulica americana
Sandhill Crane	Grus canadensis
Killdeer	Charadrius vociferus
Spotted Sandpiper	Actitis macularius
Solitary Sandpiper	Tringa solitaria
Greater Yellowlegs	Tringa melanoleuca
Lesser Yellowlegs	Tringa flavipes
Wilson's Snipe	Gallinago delicata
Wilson's Phalarope	Phalaropus tricolor
Franklin's Gull	Larus pipixcan
Bonaparte's Gull	Larus philadelphia
Ring-billed Gull	Larus delwarensis
California Gull	Larus californicus
Black Tern	Chlidonias niger
Mourning Dove	Zenaida macroura
Common Nighthawk	Chordeiles minor

Ruby-throated Hummingbird	Archilochus colubris
Calliope Hummingbird	Stellula calliope
Rufous Hummingbird	Selasphorus rufus
Yellow-bellied Sapsucker	Sphyrapicus varius
Red-naped Sapsucker	Sphyrapicus nuchalis
Downy Woodpecker	Picoides pubescens
Hairy Woodpecker	Picoides villosus
American Three-toed Woodpecker	Picoides dorsalis
Black-backed Woodpecker	Picoides arcticus
Northern Flicker	Colaptes auratus
Pileated Woodpecker	Dryocopus pileatus
Olive-sided Flycatcher	Contopus cooperi
Yellow-bellied Flycatcher	Empidonax flaviventris
Alder Flycatcher	Empidonax alnorum
Least Flycatcher	Empidonax minimus
Hammond's Flycatcher	Empidonax hammondii
Dusky Flycatcher	Empidonax oberholseri
Cordilleran Flycatcher	Empidonax occidentalis
Eastern Kingbird	Tyrannus tyrannus
Blue-headed Vireo	Vireo solitarius
Warbling Vireo	Viero gilvus
Philadephia Vireo	Vireo philadelphicus
Red-eyed Vireo	Viero olivaceus
Horned Lark	Eremophila alpestris
Tree Swallow	Tachycineta bicolor
Violet-green Swallow	Tachycineta thalassina
Northern Rough-winged Swallow	Stelgidopteryx serripennis
Bank Swallow	Riparia riparia
Cliff Swallow	Petrochelidon pyrrhonota
Barn Swallow	Hirundo rustica
Black-capped Chickadee	Poecile atricapillus
Mountain Chickadee	Poecile gambeli
Boreal Chickadee	Poecile hudsonica
Red-breasted Nuthatch	Sitta canadensis
White-breasted Nuthatch	Sitta carolinensis
Brown Creeper	Certhia americana
House Wren	Troglodytes ardon
Winter Wren	Troglodytes troglodytes
Marsh Wren	Cistothorus palustris
American Dipper	Cinclus mexicanus

Golden-crowned Kinglet	Regulus Satrapa
Ruby-crowned Kinglet	Regulus calendula
Mountain Bluebird	Sialia currucoides
Townsend's Solitaire	Myadestes townsendi
Veery	Catharus fuscescens
Hermit Thrush	Catharus guttatus
American Robin	Turdus migratorius
Varied Thrush	Ioxreus naevius
Bohemian Waxwing	Bombycilla garrulus
Cedar Waxwing	Bombycilla cedrorum
Tennessee Warbler	Vermivora peregrina
Orange-crowned Warbler	Vermivora celata
Yellow Warbler	Dendroica petechia
Magnolia Warbler	Dendroica magnolia
Cape May Warbler	Dendroica tigrina
Yellow-rumped Warbler	Dendroica coronata
Black-throated Green Warbler	Dendroica virens
Townsend's Warbler	Dendroica townsendi
Palm Warbler	Dendroica palmarum
Blackpoll Warbler	Dendroica striata
Black-and-White Warbler	Mniotilta varia
American Redstart	Setophaga ruticilla
Northern Waterthrush	Seiurus noveboracensis
Connecticut Warbler	Oporornis agilis
Mourning Warbler	Oporonis philadelphia
MacGillivray's Warbler	Oporonis tolmiei
Common Yellowthroat	Geothlypis trichas
Wilson's Warbler	Wilsonia pusilla
Western Tanager	Piranga ludoviciana
Chipping Sparrow	Spizella passerina
Clay-colored Sparrow	Spizella pallida
Brewer's Sparrow	Spizella breweri taverneri
Savannah Sparrow	Passerculus sandwichensis
LeConte's Sparrow	Ammodramus leconteii
Fox Sparrow	Passerella iliaca
Lincoln's Sparrow	Melospiza lincolnii
Swamp Sparrow	Melospiza georgiana
White-throated Sparrow	Zonotrichia albicollis
White-crowned Sparrow	Zonotrichia leucophrys
Dark-eyed Junco	Junco hyemalis
Rose-breasted Grosbeak	Pheucticus ludovicianus
Pine Grosbeak	Pinicola enucleator

Purple Finch	Carpodacus purpureus
Red Crossbill	Loxia curvirostra
White-winged Crossbill	Loxia leucoptera
Pine Siskin	Carduelis pinus
American Goldfinch	Carduelis tristis
Evening Grosbeak	Coccothraustes vespertinus

E.20 Federal Lands and Transboundary Effects

The VTUM and/or Phase II are not expected to have any environmental effects to federal lands as no portion of the Project development will occur in these locations. It is not anticipated the Project will impact air quality or hydrology and water quality to other provinces and assessments will evaluate this potential to impact interprovincial borders. Both parameters in the Phase I assessment were deemed to be at most regional in geographic extent, which may affect areas outside of the local study area, but within the regional study area. The Project is not expected to result in changes outside of Canada.

E.21 Impact to Indigenous Peoples of Canada

Mining activities will limit the use of the area for traditional land use, hunting, and gathering. The comprehensive Consultation plan established by Coalspur and developed with its Indigenous partners focused on a means to lessen the impact, protect important traditional sites, and implement land use strategies. This is accomplished through timely reclamation, including seed and medicine collection, to minimize the impact of re-establishment in the reclamation and closure stages. Upon completion of an area TEK and TLUS, information is integrated into the closure plans to support traditional use of the land. Engagement with the communities is instrumental in reducing impacts after the mining phase is complete. Through the establishment of Joint Implementation Committees, Coalspur will continue to provide updates regarding existing operations, amendments to operations, and future developments to communities.

Coalspur recognizes that ensuring business development opportunities and active participation in the resource sector help support the retention and sharing of traditional land use and values. Through the establishment of IBAs, Coalspur and its Indigenous partners hope to develop and demonstrate a process by which employment opportunities can be balanced with traditional land use, lessening the impacts during the active mining phase. Coalspur continues to actively engage with the First Nations and Métis by sharing development plans and monitoring data to develop meaningful and timely strategies.

E.21.1 Physical and Cultural Heritage

In the Province of Alberta, historical resources are defined and regulated under the Alberta *Historical Resources Act*. Historical resources include historical, archaeological, and paleontological resources. These resources include sites, artifacts, fossils, and certain types of traditional use sites identified by First Nations and Métis. The project area is near Hinton and the historical Coal Branch towns, resulting in elevated potential for the presence of historic period sites.

A regional physical and cultural heritage assessment has been completed, which included the original Phase I, where the VTUM is proposed and was inclusive of an additional 20 kilometres beyond the boundaries of Phase I, including Phase II. Standard field procedures followed for the Historical Resource Impact Assessment (HRIA) field program included surface reconnaissance, inspection of exposures, and shovel prospecting in areas of elevated site potential. The HRIA programs recorded 45 precontact and historical sites associated with the project area.

The paleontological field assessment for this project involved inspecting bedrock exposures for fossil material. There were no paleontological remains identified in the development zones during the archaeological HRIA program.

Of the total of 45 historical resource sites recorded during the HRIA, 38 were located within existing Phase I. The remaining sites have been identified and reviewed as part of Phase II and, where required, setbacks and protection and mitigation plans have been established. Protection, mitigation, and buffer distances support the protection of the high value sites in the field. Due to the public nature of this document, the level or nature of the artifacts found will not be disclosed in the IPD. A more detailed response will be provided in the Detailed Project Description. No sites intersect within the surface disturbance of VTUM.

E.21.2 Historical Resources

A total of four significant historical resource sites were recorded within the regional area that lies within the existing Phase I area or directly adjacent to the currently proposed disturbance footprint for Phase II. These sites are of high local or regional archaeological significance and no impact to these sites from the mining operations are proposed.

Figure E-1: Historical Resource Impact Assessment below shows the areas assessed as part of the HRIA. Overlapping the HRIA area, Coalspur has supported the completion of TLUS and TEK assessments with its First Nations partners.

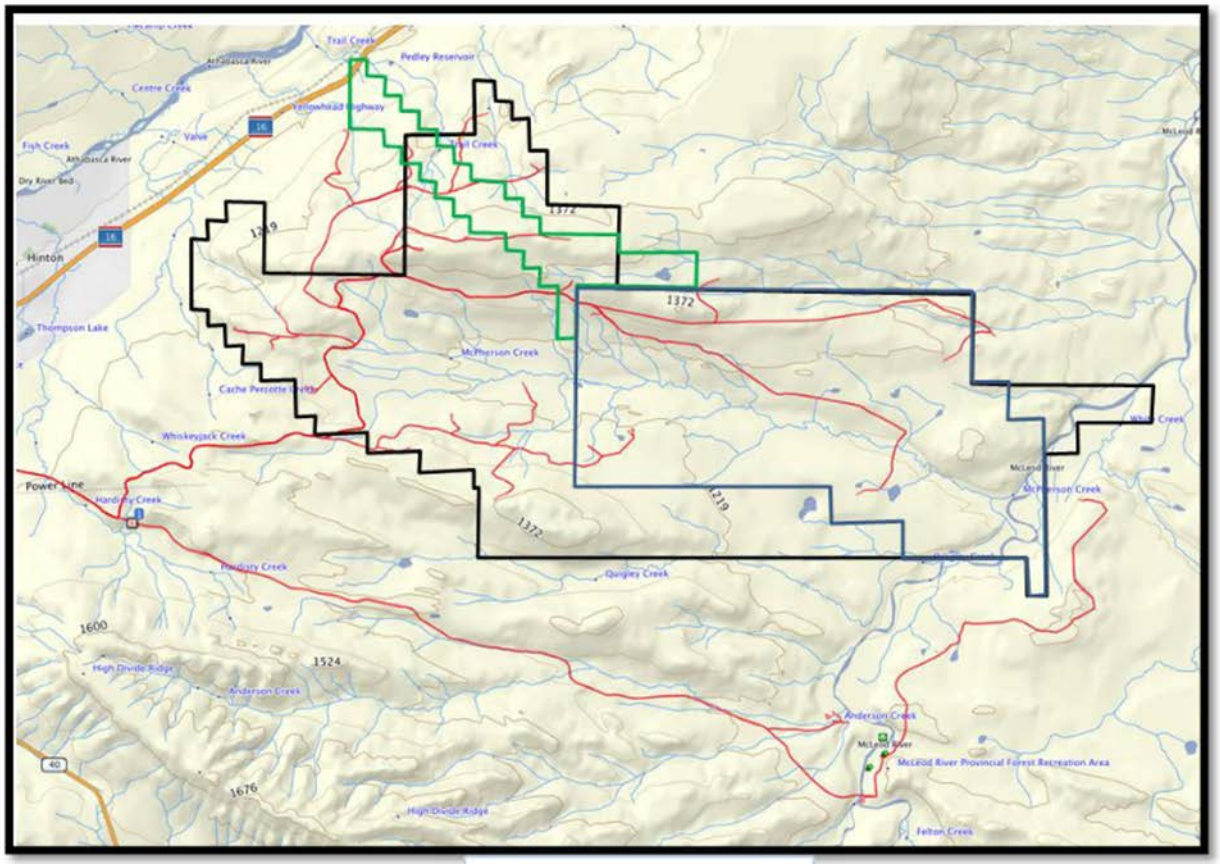


Figure E-1: Historical Resource Impact Assessment

Within the regional area, a total of 179 archaeological sites have been discovered. Of these sites, 143 are precontact sites, 34 are historic period, and two are known to have both precontact and historical components. 39% of the previously recorded sites were, or are, worthy of additional investigation for data recovery prior to disturbance. Following development of the project, 67% of the known significant historical resources in the surrounding region will be extant and available for future study of both precontact and historic periods. Many of the sites already removed have been appropriately studied and information collected prior to removal. Therefore, it can be expected that implementation of the *Historical Resources Act* on any future developments will result in an appropriate balance between information loss, information gain from mitigation, and preservation of a large sample of sites for future research. The development of the project will leave 74% of the known significant historical resources within the Mine Permit area intact, including several sites with some of the highest research potential currently known in the region.

E.22 Socio-Economic Impact

The Socio-Economic Impact Assessment (SEIA) addresses the human environment with and without the project. The key socio-economic issues considered in the analysis fall into the following categories:

- employment effects;
- regional and provincial economic benefits;
- population effects;
- effects on regional infrastructure and services; and
- traditional land use effects.

Key indicators used to assess the effects of the project on communities in the RSA are:

- workforce;
- population change;
- income;
- effects of population changes on service providers and physical infrastructure;
- effects of increased traffic on the regional road network; and
- traditional land use and culture.

The key indicators used to assess the project's income and taxation consequences for governments are:

- municipal taxes;
- provincial corporate tax and resource royalty income; and
- federal corporate tax income.

For the purpose of the socio-economic analysis, the RSA consists of Yellowhead County, the Town of Edson, and the Town of Hinton and includes information collected during Consultation with First Nation and Métis communities.

The Socio-Economic assessment currently under development includes:

- Economic and Fiscal Analysis;
- Population Effects Analysis;
- Service Provider and Infrastructure Effects Analysis; and

- Socio-Economic Effects on Indigenous communities.

Phase II has resulted in multiple IBAs that are currently in place with Indigenous stakeholders. In accordance with these IBAs, significant portions of the funds to be paid to many of Coalspur's Indigenous stakeholders are dependent upon the timely production from Phase II. Such IBAs may contain provisions with respect to training, employment, and business opportunities; support for social, cultural and community initiatives; and financial provisions and cash payments. A prolonged delay in the Phase II project will result in direct and negative impacts to these partners and their communities. This delay comes at a time when Indigenous peoples and the Alberta public are in desperate need of economic stimulus.

Coalspur has continued to work with First Nations and Métis peoples to address the health and social impacts of Indigenous peoples as a result of the project. Through IBAs and the establishment of working groups, Coalspur works directly with stakeholders to provide the needed support to address these concerns. Coalspur also addresses concerns raised by all stakeholders during the application process to ensure that health and social impacts to First Nation and Métis people are mitigated.

E.23 Greenhouse Gas Emissions

E.23.1 Executive Summary

Coalspur recognizes Canada's goal for net-zero emissions by 2050 as well as Canada's current target under the Paris Agreement to reduce GHG emissions by 30% below 2005 levels by the year 2030. The Vista Mine incorporates GHG emission reduction strategies that aim to reduce and minimize the different emission sources that exist within and that are associated with the mining operations. These opportunities include the consideration and use of best available technologies (BATs) and best environmental practices (BEPs) for reducing GHG emissions including emissions from the proposed VTUM and Phase II.

This section describes how the VTUM and Phase II projects would reduce global GHG emissions when compared to the alternative, which is a continuation of existing high GHG emission operations with less rigorous environmental regulation elsewhere in the international market.

The Vista Mine was developed from a greenfield site that is now the most modern thermal operation servicing the Asia-Pacific (APAC) thermal markets. It was designed and constructed to minimize its carbon impact. In comparison, existing domestic and international coal mining operations that serve the region are typically antiquated in design, more expansive (spread out), and further from the market, which makes them unable to reduce GHG emissions to levels achieved at the Vista Mine.

Outlined herein, Coalspur's Vista Mine is truly best-in-class internationally when evaluated by carbon (GHG) intensity.

Table E-2: Vista GHG Advantages

Emissions	Detail	Advantages
	Fugitive Methane	Low methane emission factors
	Diesel Use	New equipment, Tier 4 standards
Scope 1	Explosives Use	Emulsions reduce emissions
	Electricity Use	New equipment, central location, product conveyed downhill
	Construction	Infrastructure already in place, port(s) and rail as well.
Scope 2	Emissions from purchased electricity	Alberta has rapidly tranistioned to natural gas
	Purchased Goods	Located on CN mainline, ability to receive goods via rail
	Rail Transport	220 car rail sets. Longer than most coal rail sets. Higher volumes per locamotive.
Scope 3	Marine Transport	Service largest bulk carriers via existing port facilites, shorter distance to end markets
	Business Travel	Minimal corporate overhead
	Power Generation	Access to High Efficiency Low Emmissions stations in APAC

Table E-2 above lists three categories of emissions that are further described below:

- Scope 1 Emissions: All direct GHG emissions from the activities of the operation that are under the control of the operation. These emissions include emissions from GHG sources such as fuel combustion, fleet vehicles, and fugitive sources at the site.
- Scope 2 Emissions: Indirect GHG emissions from electricity purchased or used by the operation. These emissions are created during the production of energy used by the operation.
- Scope 3 Emissions: All other indirect GHG emissions from activities of the operation, occurring from sources that the operation does not own or control.

As discussed in detail in this section, the Vista Mine has an advantage over other domestic and international mines in every category when it comes to GHG emission reductions. Development of the Vista Mine is consistent with Canada's GHG reduction targets, where new highly efficient, responsibly developed projects replace aging, less efficient projects.

Coalspur's market in Japan, Korea, and Taiwan will continue to rely on coal and these nations have taken steps to mitigate and reduce their emissions. They will import the coal from elsewhere but desire the higher calorific value (CV) coal that the Vista Mine provides. This allows them to reduce the amount of coal burned to produce the same heat, thus reducing emissions. The development of new high CV projects such as the VTUM and Phase II reduces carbon emissions by replacing lignite and/or low-grade suppliers that contribute to higher carbon emissions in all GHG emission categories. Coal from the Vista Mine goes to supercritical plants which are High Efficiency – Low Emissions (HELE) generating assets that have

implemented additional GHG mitigation and reduction strategies. In addition to lower carbon emissions, these units also employ mitigation technology for NOx, SO_2 and PM to address air quality and health concerns.

Coal produced at the Vista Mine is closer to the APAC markets than other coal suppliers, reducing GHG emissions emitted during transportation. Unit-train movements to transport coal from the Vista Mine are among the lowest carbon (GHG) intense in the world and are half the rail distance to Canadian port(s) than that of U.S. coal that is exported via Western Canada. Vista coal is loaded into vessels that are among the largest bulk carriers in the world further reducing the carbon intensity.

The development of the VTUM and Phase II would replace a higher GHG emission coal sourced elsewhere. Coal will be burned in these markets even if they are not served by coal mines in Canada. The Vista Mine, along with the VTUM and Phase II developments, will provide the economic benefit to Canada as well as the economic benefit to local, regional, and Indigenous communities while reducing global GHG emissions.

E.23.2 Transportation

GHG reductions are realized in the responsible transportation of coal produced from the Vista Mine. Vista significantly benefits from advantages in Scope 3 or indirect sources of GHG emissions via a carefully engineered supply chain and favorable proximity to end markets.

Railroads are the most environmentally responsible movement of freight over land. Through decarbonization efforts with CN, Coalspur has recently completed an extension on its rail siding track off of CN's mainline. This extension has expanded the capacity of the siding to facilitate the loading of 220 car trains (or 24,000 tonnes per unit train). These are among the largest coal unit trains in the world. By comparison, a typical unit coal train is 120 cars. This is a great success story that translates to significantly lower carbon intensity than other coal mining operations. The extension allows the CN to move more of Vista Mine's coal per train load reducing the GHG emissions during transport to the terminals on the West coast where it will be shipped via ocean vessels to international markets. CN is an ideal (publicly traded) partner, committed to mitigating the impact of climate change through a low-carbon transition plan.

Like the previously addressed rail advantages, Coalspur's ocean freight is well positioned compared to other international mining operations. Coal transported by CN is unloaded at existing Western Canadian terminal(s) (Ridley Terminals and Westshore Terminals) with no new construction or expansions required. The coal is stockpiled and loaded by conveyor onto ocean-going vessels for export to APAC. Western Canadian ports export nominal volumes of thermal coal in comparison to Australia, Indonesia, and Russia. As a result, these Canadian port facilities

do not have the long vessel idle times that require excessive marine fuel usage and correspondingly higher GHG emissions that are common in ports in other countries.

These deep-water ports can also accommodate some of the largest bulk carriers in the world. Capesize vessels with a capacity to transport 165,000 tonnes per vessel are utilized. Utilizing larger vessels translates to lower GHG emissions per tonne of coal transported. The West coast terminals are also strategically located to end markets providing an advantage for export into the Pacific Basin and reducing GHG emissions from the diesel-powered ocean-going vessels that would otherwise transport coal from Australia. The distance traveled from the West coast of Canada to Fukuyama, Japan is 7,700 kilometers versus 8,200 kilometers from Newcastle, Australia. This is demonstrated on **Figure E-2: Coal Export Map** below.

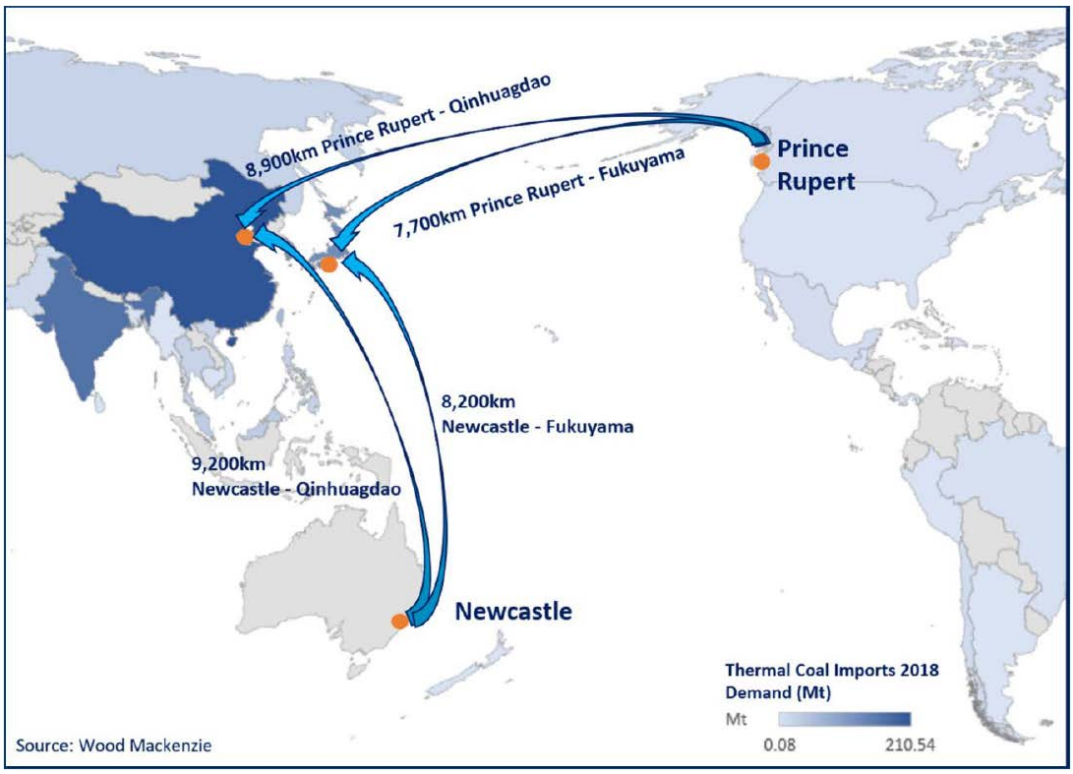


Figure E-2: Coal Export Map

The transportation advantages outlined in this section have allowed Coalspur to displace higher carbon intensity producers in 2020. The VTUM and Phase II will further displace higher carbon intensity producers, thus reducing global GHG emissions.

E.23.3 GHG Emissions from Coal Production

Canada's contribution to global GHG emissions is declining and represents about 1.6 percent of the global total (CAIT 2017). This decline is anticipated to continue due to its reduction efforts

and the expected rapid increase in emissions from developing and emerging countries, particularly China, India, and Indonesia.

Coal production is an important economic contributor in Canada, but only accounts for 0.4% of the country's total greenhouse gas (GHG) emissions. By comparison, emissions from the oil and gas sector account for 26.5% of the country's GHG emissions. Environment and Climate Change Canada (ECCC) annually submits its National Inventory Report on GHG emission sources and sinks to the United Nations Framework Convention on Climate Change. The most recent report submitted in 2020 presents sources and trends from data collected between 1990 and 2018. GHG emissions are expressed in carbon dioxide equivalents (CO_2e). In 2018, GHG emissions from coal production (including emissions from thermal dryers, heaters, onsite transportation, and fugitive emissions from underground and surface mines) accounted for 3 Mt CO_2e of Canada's 729 Mt CO_2e of total emissions. **Figure E-3** below shows the breakdown of Canada's emissions by economic sector including coal production. **Figure E-4** shows a comparison between GHG emissions from coal production and major contributors of GHG emissions in Canada.

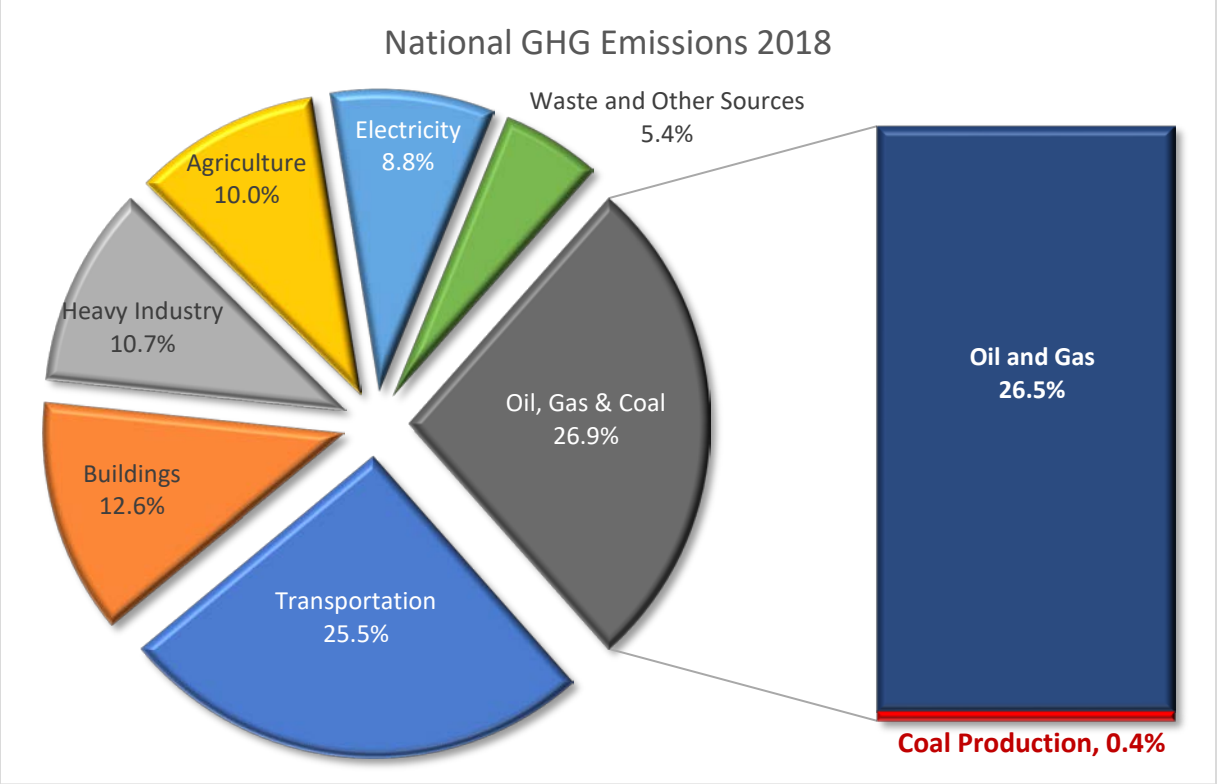


Figure E-3: Canada's GHG Emissions by Economic Sector

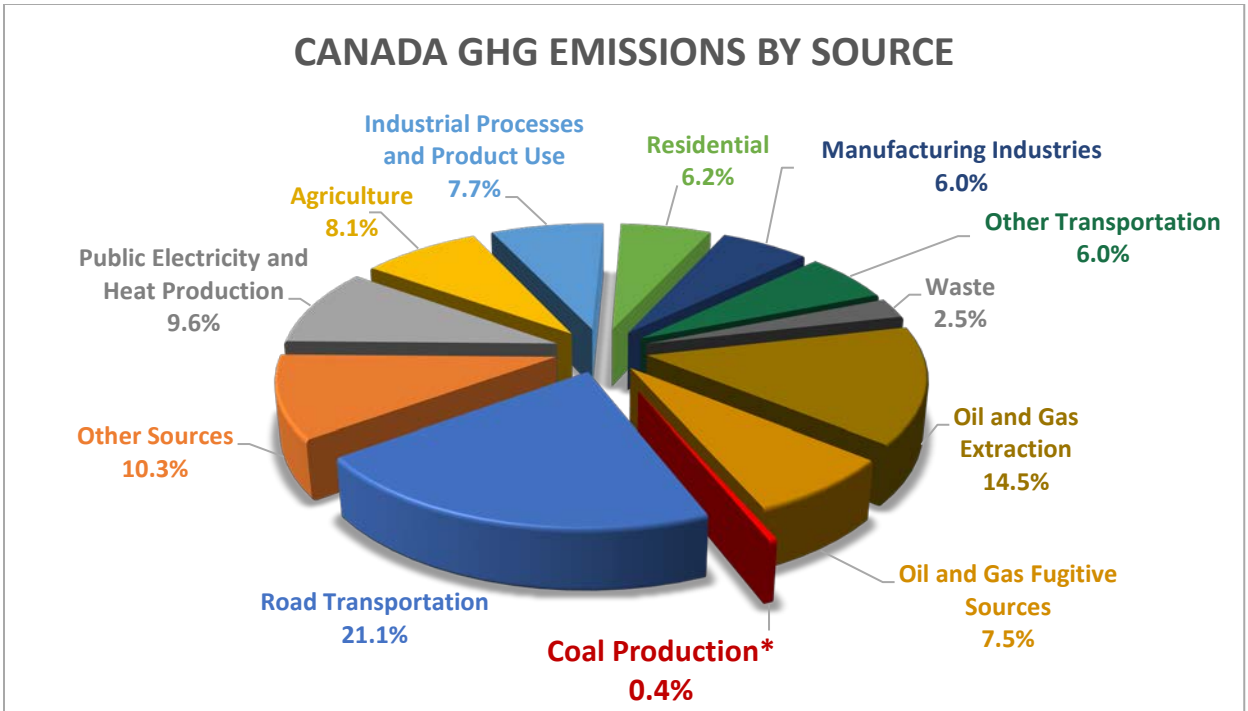


Figure E-4: Canada GHG Emissions by Source

The effectiveness of a coal mine's GHG reduction strategy is measured by the GHG intensity of the operation. GHG intensity refers to the total amount of GHG emitted per tonne of coal mined ($kgCO_2e/t$). A 2017 study of the operating bituminous surface coal mines in Canada indicates that the GHG intensities range from 40 – 192 $kgCO_2e$ per tonne mined. An analysis of the current and projected GHG emissions at the Vista Mine shows a maximum scope one GHG intensity of 45 $kgCO_2e$ for Phase I activities and a GHG intensity of 48 $kgCO_2e$ when Phase I activities are combined with the VTUM and Phase II. A comparison of the GHG intensities of the Vista Mine with other operating mines in the study is shown below in **Figure E-5**. It is important to note that several of the mines listed in the chart below are no longer operating. Coal Valley and Cardinal River located near the Vista Mine are currently idled.

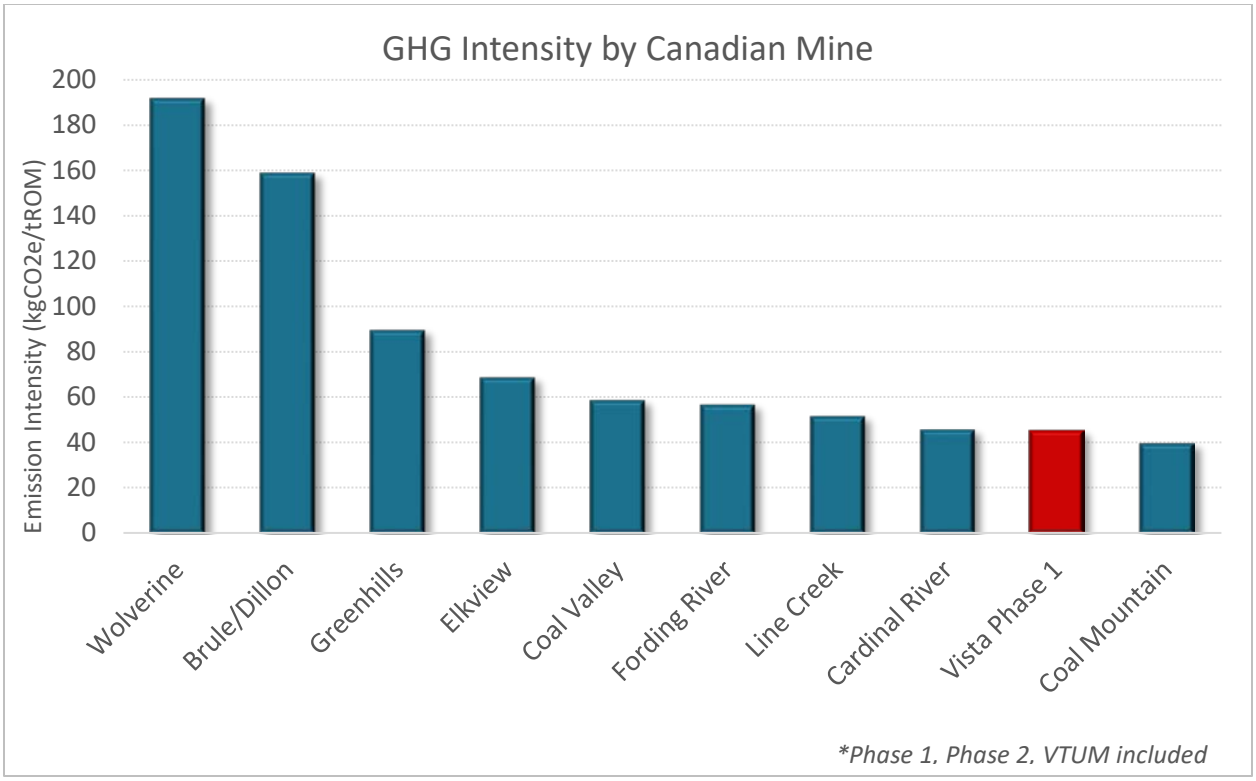


Figure E-5: Vista GHG Intensity Comparison to Other Canadian Mines

A study was published by the International Council on Mining & Metals (ICMM) in 2013 which reviewed 2010 submissions to the Carbon Disclosure Project (CDP) from five ICMM member companies. The study indicated that the GHG intensity of coal mines from the global ICMM member companies had a weighted average of 75 $kgCO_2e$ of direct emissions per tonne mined. The ICMM report showed a weighted average of approximately 165 $kgCO_2e$ per tonne mined for global coal mines based on a literature review. The emissions intensity of coal varies by location and production methods. The geological characteristics of coal mines are a key factor to determine emissions intensity. Mines with high levels of fugitive methane emissions will have higher GHG emissions. For example, a gassy mine with high levels of fugitive methane emissions can have a GHG intensity as high as 300 $kgCO_2e$ per tonne mined. Due to the GHG reduction methods utilized and the lower emission factor of the coal, the GHG intensity of the coal mined at the Vista Mine is significantly lower. The increased coal production from the VTUM and Phase II at the Vista Mine will reduce Canadian and global GHG emissions by potentially replacing the production from the more GHG intense operations in other areas while supporting and growing the local economy at a time when it is desperately needed.

E.23.4 Best Available Technologies and Best Environmental Practices

Coalspur has been able to minimize the GHG intensity of the coal mined at the Vista Mine and further reduce GHG emissions by incorporating GHG reduction concepts in the design and

operation of the mine. These concepts present emission reduction strategies to reduce and minimize the emission sources that exist within the mining operations. Utilizing BATs and BEPs the Vista Mine has reduced GHG emissions and will incorporate similar strategies in the proposed VTUM and Phase II.

The following BAT/BEPs are utilized at the Vista Mine and are further described below:

- Use of an electrically powered overland conveyor transporting raw coal to the CHPP – eliminating diesel emissions from diesel powered trucks.
- CHPP – removes impurities, transporting less overall material of higher calorific value coal to end users.
- Use of electrically powered overland conveyor to transport coarse coal refuse (CCR) from the CHPP to the coarse refuse disposal area versus using a truck fleet, eliminating diesel emissions from the transport of the material.
- Processed coal conveyed downhill to loadout, minimizing electrical energy usage.
- Central location of raw coal handling infrastructure minimizing haul distances traveled by diesel powered trucks. The VTUM and Phase II will utilize the existing infrastructure.
- Mine design that minimizes haul distances traveled by diesel powered trucks to out of pit dump locations.
- Use of dozers instead of shovels/trucks to move overburden into previously mined out areas.
- Optimization of the Drill & Blast Program to minimize energy consumption during material movement.
- Engineering design of haul ramps to minimize grades reducing fuel consumption.
- Utilizing a newer equipment fleet that predominately meets Canadian Tier 4 standards.
- Idle equipment policy that minimizes run time on equipment not utilized in a productive capacity.
- No utilization of thermal coal dryers.

A preliminary estimate of maximum annual net greenhouse gas emissions associated with Phase II and the VTUM are presented in **Table E-3**. Canada's Greenhouse Gas Quantification Requirements, 2019, was used for emission factors and quantification methodologies. Acquired

emission are based on Alberta's electricity emissions from 2018 as published, however grid electricity emissions in Alberta are expected to decrease dramatically.

Table E-3: Net Tonnes of GHG CO_2e Emissions

	Phase II	**VTUM**
Direct Emissions	288,000	28,000
Acquired Emissions	66,000	6,000
Total Net Emissions	354,000	34,000

Figure E-6 below provides a graph showing the annual estimated net emissions for Phase I, Phase II, and the VTUM with the anticipated permitting timelines under the provincial process and the operational timelines shown in **Schedule 1** and **Schedule 2**. The baseline information reflects the information reported to ECCC in year 1 of the current operation and extends through the end of the mine life based on production and equipment estimations.

A delay in the permitting timelines for the VTUM and Phase II would subsequently delay the emissions beyond 2030 and deter from Canada's current goal under the Paris Agreement to reduce GHG emissions by 30% below 2005 levels by the year 2030. The technologically advanced, world class GHG reduction strategy implemented at the Vista Mine makes it among the lowest GHG intense coal mining operations in the world. Coal produced at the Vista Mine replaces coal previously produced at now idled and depleted mines in Canada as well as much more GHG intense coal mining operations in developing countries with much less stringent environmental regulations and policies.

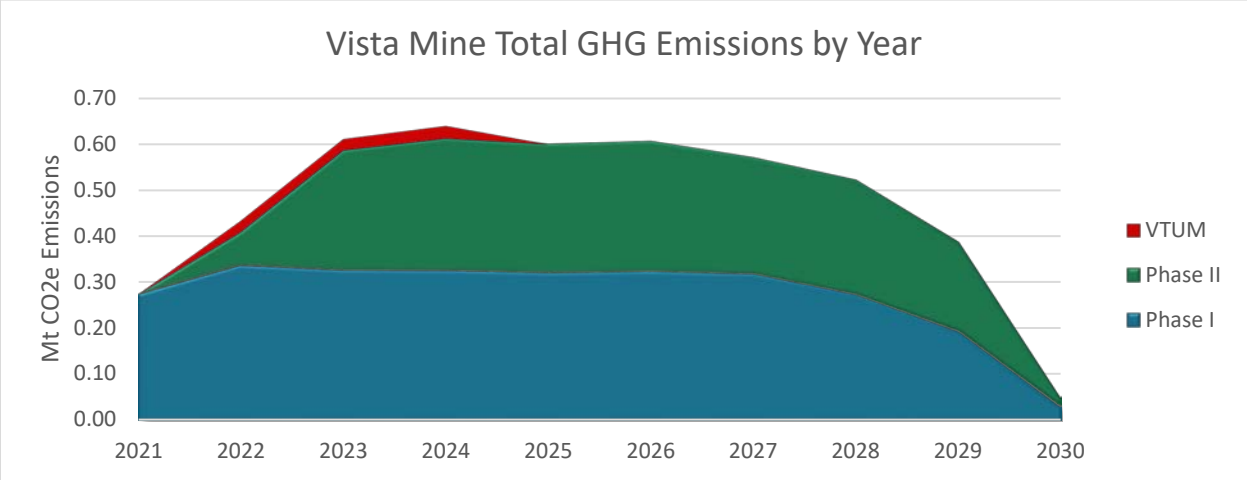


Figure E-6: Vista Mine Total GHG Emissions by Year

E.23.5 Coal Mine Methane (CMM)

For a surface mine, the most significant contributors to GHG emissions are emissions from methane in the coal seam released during the mining process and emissions from the operation of the mobile fleet of equipment used to mine the coal. Methane released from the coal seam during the mining process is typically the highest source of emissions from an underground mine as the equipment used in the mining process is typically electric powered and does not generate direct emissions.

CMM is one of the largest sources of GHG emissions in coal mining. Methane gas trapped in the coal seam and surrounding strata is released through the extraction of coal. The rate of methane gas release depends on the geology and characteristics of the coal deposit and varies between different regions and coal types. **Table E-3: Methane Emission Factors for Coal** below shows the most recently published emission factors from Canada's National Inventory Report. These factors are shown by province, coal type, and mine type (surface or underground) and were developed from studies that relied on measured samples to develop the weighted emission factors.

Table E-4: Methane Emission Factors for Coal

Province	Coal Type	Mine Type	Emission Factor (tCH_4/ktROM)
Nova Scotia	Bituminous	Surface	0.07
Nova Scotia	Bituminous	Underground	14.49
New Brunswick	Bituminous	Surface	0.07
Saskatchewan	Lignite	Surface	0.07
Alberta	Bituminous	Surface	0.55
Alberta	Bituminous	Underground	1.69
Alberta	Sub-bituminous	Surface	0.2
British Columbia	Bituminous	Surface	0.86
British Columbia	Bituminous	Underground	2.78

It is evident from the table above that Alberta bituminous surface coal has a significantly lower emission factor at 0.55 tonne methane per 1,000 tonnes mined (CH_4/kt) than bituminous surface coal mined in British Columbia that has an emission factor of 0.86 t CH_4/kt mined. This is important considering that the Vista Mine (located in Alberta) has a lower emission factor than surface mines in British Columbia where most future coal developments in Canada are anticipated.

While underground mining has a higher emission factor than surface mining (due to the exposure of the underground coal seam to higher pressures), there is the potential for capture, which will

be explored based on observed conditions in the VTUM. The utilization of electrically powered units powered through a trailing cable as an alternative to a diesel-powered mobile fleet is a BAT/BEP that Coalspur will employ in the VTUM. Raw coal will be conveyed underground using electric conveyors from the active mining location to the surface where it will be deposited on the existing ROM belt described above. Other BAT/BEPs exist for underground mining that Coalspur will consider during development of the VTUM. These may include CMM pre-drainage and ventilation air methane (VAM) abatement technologies. Electrification of material movement and methane emission management are key strategies in GHG reductions in underground mines and will be further explored with the development of the VTUM.

It is important to note that fugitive emissions from coal mining represent a small percentage of the total GHG emissions from fugitive sources in Canada. Oil and natural gas venting originating mainly from conventional wells represent by far the largest percentage of GHG emissions from fugitive sources followed by natural gas, flaring, and emission from oil. This is demonstrated in **Figure E-7** which was included in the 2020 National Inventory Report prepared by ECCC.

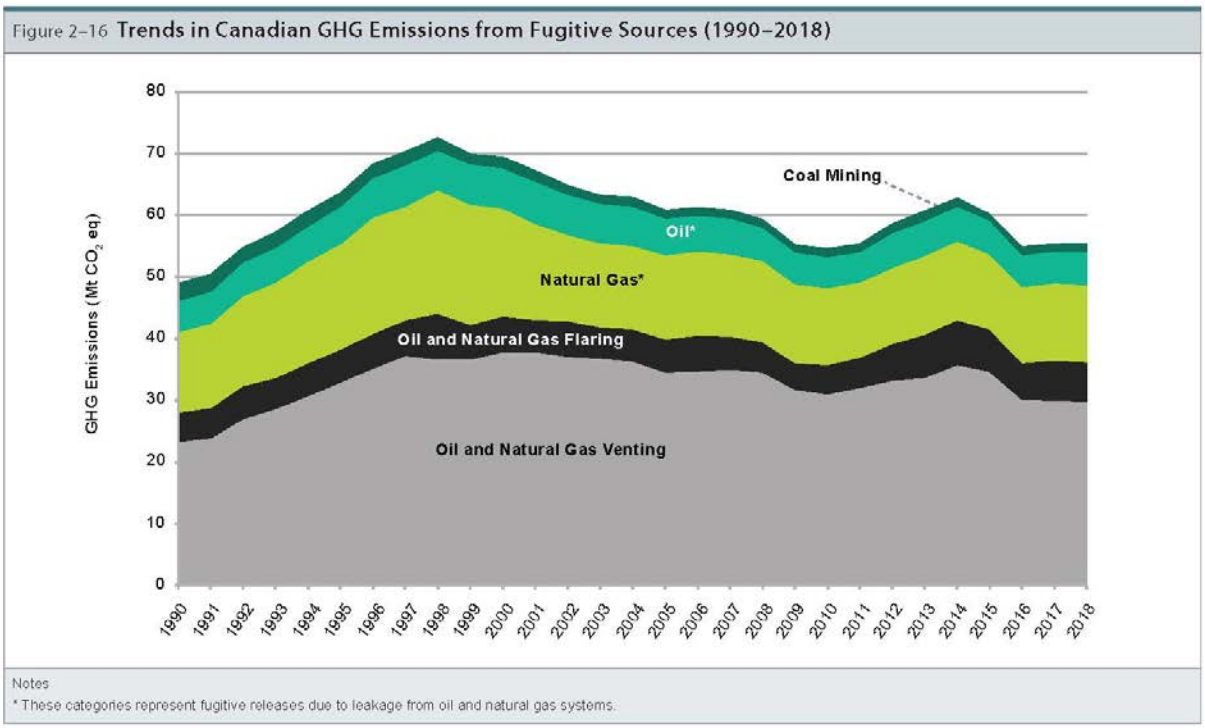


Figure E-7: Trends in Canadian GHG Emissions from Fugitive Sources

E.23.6 Goals

Coalspur's business success is contingent on responsible resource development which requires dedicated stewardship of air issues and air emissions in conjunction with maintaining a competitive export coal operation. Coalspur is committed to responsible environmental

management and continues to do their part to minimize impacts. Coalspur will continue to develop effective management and operational approaches to comply with regulations designed to reduce GHG emissions. Coalspur's greenhouse gas emission goals are:

- to continually improve efficiencies in energy use, thus reducing the GHG footprint in an economically viable way; and
- to deliver on a long-term plan that meets industry standards and enhances economic competitiveness.

Coalspur believes that execution of the GHG management programs can be achieved with proactive preparation, planning and continued cooperation with industry regulators and in the communities where they operate. Coalspur's long-term GHG management options fall into two broad categories. These categories are:

- continuous improvement in demonstrated, cost-effective technologies (particularly combustion technologies) during the operational phase;
- alternative mining techniques that reduce fugitive and GHG emissions through lower surface disturbance; and
- Mitigation and Sustainability – technology and path to net-zero carbon emissions by 2050.

E.24 Waste Generated

E.24.1 Air Emissions

Air emissions associated with Phase II include:

- Oxides of nitrogen and sulphur dioxide emission from the mine fleet, combustion sources and blasting operations;
- Carbon monoxide, volatile organic compound and other hydrocarbon emissions from the mine fleet and combustion sources;
- Particulate matter from road dust, material movement of soil and coal, and combustion sources;
- Greenhouse gas emission from combustion sources and fugitive releases from coal;
- Metals released from diesel combustion and present in dust from soil and overburden.

Emissions from the VTUM are the same, however, in much lower quantities.

E.24.2 Water

Sediment loading or increase in Total Suspended Solids (TSS) from runoff of disturbed areas is the primary risk to surface water quality associated with mining. Acid rock drainage is not a

concern and all testing results show acid rock drainage will not occur under conditions present at the mine. Phase II will continue to use the established closed loop system associated with the McPherson Tailings cells which does not discharge processed water to the environment.

Surface water upstream of Phase II activities will be diverted around disturbance areas and returned to the downstream watercourse and reclamation activities and will be phased such that they commence before the entire area is developed. Affected waters will be diverted to a series of settling ponds and treated prior to offsite release. All release points are inspected daily to ensure water quality meets regulatory approvals.

E.24.3 Land

Waste generated on site are disposed of at approved facilities. Non-regulated domestic waste products are disposed of at approved landfills. Regulated waste products, which include batteries, aerosols and various waste oil products are disposed of through third-party waste management facilities. Recyclable material includes scrap metal, cardboard, paper, plastics, and tires. Coarse and fine coal refuse is generated by the CHPP and later reclaimed onsite.