

**REASONS FOR DECISION
MINISTERIAL APPROVAL
PURSUANT TO SECTION 15
THE ENVIRONMENTAL ASSESSMENT ACT**

**YANCOAL CANADA RESOURCES COMPANY LIMITED
SOUTHEY POTASH PROJECT**

Introduction

The Environmental Assessment Act (hereinafter called the Act) states that a person shall not proceed with a development (as defined in the Act), until ministerial approval has been received. It further sets requirements for a process of environmental impact assessment (EIA) intended to inform the Minister of Environment (hereinafter called “the Minister”) of the potential impacts of a development prior to making a decision regarding the development.

In February 2015, the Environmental Assessment and Stewardship Branch (EASB) received a project proposal and Terms of Reference (hereinafter called the “Application”) from Yancoal Canada Resources Company Limited (hereinafter called “the Proponent”, “Yancoal”) for the Southey Potash Project (hereinafter called the project). The Proponent subsequently self-declared the proposed project a development as defined in the Act and Yancoal was therefore required to proceed through the EIA process and obtain approval under Section 15 of the Act prior to proceeding with the development.

Public notice of the EIA was given in March 2015 pursuant to Section 10 of the Act. The Proponent submitted an environmental impact statement (EIS) to the EASB seeking approval under clause 15(1) (a) of the Act. The EIS underwent both technical review and an extended 45 day public review. The review process will be discussed in more detail in subsequent sections of this document.

Background

The project includes construction and operation of a new potash mine that will produce up to 2.8 million tonnes of potash per year for 100 years. The activities and components associated with the project include potash mining using a solution mining method, operation of a processing plant, surface infrastructure and support facilities,

construction and upgrades to mine access roads, brine and site water management, waste salt storage, and transportation of potash by rail.

The proponent has integrated environmental design features into the mine plan and mining methods for the project to reduce and/or limit effects on the biophysical and socio-economic environments.

Environmental Assessment Process

In seeking approval for the development, Yancoal conducted an EIA in accordance with the Act. Yancoal prepared and submitted the initial EIS to the Ministry of Environment (the ministry) in July 2015.

The EIS underwent technical review by Saskatchewan Environmental Assessment Review Panel (SEARP) reviewers and was found to be deficient in the information provided in various sections, which led to additional information being requested from Yancoal prior to the EIA proceeding to the public review phase.

Yancoal subsequently submitted a revised EIS that satisfied the requests for additional information and was accepted as final in March 2016. The final EIS and the technical review comments document prepared by the EASB were then made available for public review from April 23 until June 6, 2016 pursuant to Sections 11 and 12 of the Act.

The ministry received a significant number of responses (809 comments) during the public review period, which included comments from the Rural Municipalities of Longlaketon No. 219, McKillop No. 220 and Cupar No. 218; towns of Southey, Earl Grey and Bulyea; industry and industry associations; non-governmental organizations including the Havelock Special Project Committee; academia; and, the general public.

The ministry conducted detailed analysis of all information collected during the EIA for the project, including that received during public review and this information has been considered in the decision on the project.

Engagement Activities

Yancoal carried out engagement activities with municipal representatives and the local public, regulatory agencies, and First Nations and Métis communities beginning in November 2008 and continuing throughout the EIA process to inform potential stakeholders about the project through face-to-face meetings, informal discussions, site visits, and community information sessions. During the course of the EIA, Yancoal was directed to undertake additional and meaningful public engagement with local stakeholders. In response, Yancoal expanded their

engagement activities in order to effectively communicate project details to stakeholders and has committed to continue this engagement during subsequent permitting processes and throughout the development of the project.

The public review period for the EIA provided an additional opportunity for the public to review development details and provide comments for consideration in a decision on the project. During the public review period, 809 comments were received. Those submissions in support of the project cited the potential economic benefits of the project. Submissions in opposition expressed various concerns including potential impacts to groundwater; subsidence; water consumption; increased traffic; impacts to soil and surface water quality from salt deposition; and public engagement practices of the company.

During the public review, there were several requests for additional independent review or a public inquiry. Saskatchewan's long history of regulating the potash industry has provided a comprehensive understanding of both the technical issues surrounding potash mining as well as the socio-economic and cultural impacts that can result from this type of project. The well-established regulatory regime at both the provincial and municipal level provides the necessary oversight to ensure potash mines such as the Yancoal project proceed in an environmentally responsible manner and in consideration of socio-economic and cultural issues. Based on these factors, it was determined a public inquiry or additional independent review was not required in order to fully understand potential impacts of the project or identify appropriate mitigation measures.

Yancoal has sought to address public concerns throughout the EIA process and modified engagement practices in response to local interest. The population density in the area and number of residents in proximity to the proposed core facilities area (CFA) has generated concern and opposition by local residents which could not be fully addressed by Yancoal during engagement activities. However, the technical issues raised during public review have been effectively assessed as a part of the EIA process and impacts can be addressed by the commitments of the proponent, through terms and conditions of a ministerial approval under *The Environmental Assessment Act*, or during the subsequent permitting phase of the project. Additionally, many concerns raised by those opposed to the project can be addressed through empowerment of the local government to make important development decisions.

As a condition of approval, Yancoal is required to provide to the ministry a signed "Development Agreement" with the Rural Municipality (RM) of Longlaketon No. 219 prior to the commencement of construction activities for the project. Execution of this agreement, as required by the municipal government, will ensure participation of the RM in the subsequent planning stage of the development and help minimize impacts and maximize benefits for residents in the region.

Additionally, Yancoal is required to submit for approval by the Minister, a community involvement plan which includes commitments to establish a community advisory committee and a monitoring program in consultation with local communities. This plan will be required to outline measures Yancoal will undertake to effectively engage communities in the project area and provide access to information, including monitoring results, during project development.

Decision and Reasons

I am satisfied that the proponent has met all the requirements of the Act, thereby requiring a decision to be made pursuant to section 15 of the Act. My decision is to approve the development, for the following reasons.

Tailings Management Area

Ensuring protection of groundwater resources will be a critical component for this project. Comments received during the public review period expressed concerns about impacts to groundwater resources resulting from the operation of the tailings management area. Yancoal has considered multiple alternatives for the core facilities area location. Primary consideration was given to a location suitable for the tailings management area, so as to limit potential interactions with underlying aquifers. The proponent analyzed the potential effects of the project on groundwater for all phases of the project from construction through decommissioning and reclamation. The site characterization studies determined the proposed tailings management area (TMA) would be situated on primarily clay till deposits that would help to limit vertical migration of brine to underlying aquifers. This natural containment, coupled with engineered controls that will be integrated into the project (e.g. cutoff walls and recovery wells), will effectively mitigate brine migration and prevent impacts to underlying aquifers.

Yancoal will be required to conduct additional subsurface characterization in the mining area while pursuing the permits to construct and operate the facility under *The Environmental Management and Protection Act, 2010* to determine the detailed design requirements for engineered controls necessary to ensure groundwater protection. Engineered controls, such as those proposed as a part of the Yancoal project, have been widely used at other similar facilities and proven to effectively contain subsurface brine migration. These measures are expected to protect groundwater resources and prevent any impacts to other users of groundwater in the area surrounding the project.

Although discussion of measures proposed to protect groundwater was included in the EIS, the public review period identified remaining concern regarding potential impacts

of the project and the effectiveness of proposed mitigation measures. To improve transparency and encourage continued engagement, Yancoal is required to establish a community monitoring program to facilitate the ongoing involvement of local communities in the development and to present, and make publically available, results of monitoring including those related to groundwater protection. This will help confirm environmental protection measures are functioning appropriately and that the development is being operated in an environmentally-responsible manner.

Deep well Injection

Brine will be disposed of through deep-well injection wells into the Deadwood and Winnipeg formations (approximately 1200 m below surface) to reduce the amount of brine stored in the TMA. Deep well injection is a proven practice used to manage brine at multiple mines and facilities in Saskatchewan. The targeted zones are well separated from fresh water resources and have multiple intervening low permeability layers, which will provide effective containment of the injected brine. The injection wells will be required to include appropriate safeguards and leak-detection systems to help reduce the risks of accidents and prevent any impacts to fresh groundwater resources in the project area. Monitoring will be required to confirm the integrity of wells and ensure they are operating as designed.

Based on information in the EIS, commitments by Yancoal and the additional licence requirements for disposal wells as outlined in *Directive PNG008: Disposal and Injection Well Requirements*, negative impacts to groundwater resulting from the deep well injection of waste brine are not expected to occur.

Air Quality and Salt Deposition

Comments received during the public review period raised concerns related to air quality in the project area and the potential for salt deposition to impact soil and surface water quality. The Industrial Source (Air Quality) Chapter of the Saskatchewan Environmental Code will apply to the project and Yancoal will be required to submit an environmental protection plan for approval and include a description of measures to prevent and mitigate adverse effects to the environment. Yancoal has proposed engineered controls as a part of the project (e.g. baghouses, wet scrubbers, cyclones) which are expected to effectively limit airborne release of particulate matter during the processing of potash. These controls are standard in the potash industry and have been shown to effectively mitigate dust emissions from these facilities.

Waste material will be piped to the TMA in slurry form and once deposited, liquid will drain from the slurry and begin to dry and form a solid crust. Formation of this crust

has been shown to effectively inhibit mobilization of salt from the waste pile and prevent offsite impacts to soil or water quality.

The air quality assessment presented in the EIS indicates modelled air quality for all parameters is predicted to comply with ambient air quality standards and the effects on the atmospheric environment are not predicted to be significant. As a condition of approval, Yancoal will be required to monitor locations on agricultural land surrounding the facility and along Loon Creek to confirm there are no significant impacts to soil and surface water quality resulting from the deposition of airborne material such as salt. Should impacts be detected, Yancoal will be required to notify the ministry within 24 hours as per the Discharge and Discovery Reporting Chapter of the Saskatchewan Environmental Code and develop appropriate mitigations to address the issue.

Wildlife and Wildlife Habitat

The project area has been previously disturbed as a result of extensive agricultural activity. The project has been designed to avoid sensitive wildlife habitat (e.g. wetlands, native grasslands) to the extent possible, however where unavoidable impacts will occur, appropriate mitigation will be developed in consultation with the ministry. Yancoal has committed to adhering to the Saskatchewan Activity Restriction Guidelines to avoid potential impacts to sensitive species during critical periods.

Concern has been expressed regarding the potential for wildlife mortality to result from the project including from vehicular collisions or from interactions with project infrastructure (e.g. waterfowl usage of brine ponds). Although water bird mortality from utilization of brine ponds or TMAs has not been a significant issue in Saskatchewan, Yancoal has committed to installing deterrents in the TMA or ponds in the CFA should regular usage by water birds be detected. Yancoal has also committed to establishing speed limits in the project area to limit potential wildlife-vehicle collisions resulting from increased traffic. Measures proposed are consistent with those that have effectively protected wildlife in and around other similar facilities. Based on the highly disturbed nature of the project area and the mitigations proposed to help reduce the risks to wildlife from the project, no significant impacts to wildlife populations or wildlife habitat are expected to result.

Hydrology and Downstream Impacts

Concerns regarding the proposed water source and water consumption for the project were also expressed during public review. Buffalo Pound Lake was selected as the water source for the project as it was identified as the source with the capacity to provide the process water volumes required for the project. Diversion of water from

Buffalo Pound Lake for multiple industrial users, including the volume proposed for the Yancoal project, was assessed and approved in March 2015 under a separate environmental assessment application with SaskWater as the proponent. Maximum water volumes proposed as a part of mining for the Yancoal project (i.e. during initial cavern development) would constitute a small portion of the overall volumes assessed as a part of the SaskWater Buffalo Pound project. This assessment included a rigorous analysis of available historical hydrological data under various climatic conditions and conservative assumptions regarding water volumes to be diverted. Results of the assessment showed that the volumes of water potentially diverted for multiple industrial users, including Yancoal, would not result in significant impacts to water levels in Buffalo Pound Lake or downstream areas.

The Water Security Agency has confirmed the capacity and reliability of Buffalo Pound Lake to supply water to the project sustainably and without significant negative impact to downstream areas. Yancoal will be required to obtain a licence from the Water Security Agency for the volume of water required for the project prior to proceeding. This licence provides Water Security Agency the ability to limit water consumption for any industrial user should water availability change in the future.

Yancoal has committed to preventing surface water from the CFA from interacting with the surrounding natural drainage system during all phases of the project. Although this isolation will result in a minor decrease in runoff reporting downstream of the CFA, it will effectively protect downstream areas from water potentially impacted by the core facilities area and prevent any contamination of aquatic or fish habitat in Loon Creek or other downstream areas such as the Qu'Appelle River or lakes.

Subsidence

Subsidence will likely result in changes to local topography, although the overall effects of ground subsidence are expected to be very gradual and take in excess of 100 years. The modeling results in the EIS indicate subsidence may range up to approximately 6.7 m with a gradual gradient spread over several kilometers. However, no measurable effect to regional groundwater flow patterns or quantities are expected to result. The solution mining method will leave unmined pillars of the existing geological formation between caverns to increase stability during mining and reduce the potential effects of subsidence.

Yancoal will implement a subsidence monitoring and reporting program as well as adaptive management measures should issues be identified during operations and through the decommissioning and reclamation phases of the project. Details of the subsidence monitoring plan will be further developed during the permitting process under *The Environmental Management and Protection Act, 2010* and will be outlined in

the required environmental protection plan. Reporting of monitoring results will also be required as a condition of this approval. Based on the mitigation measures presented in the EIS, additional monitoring activities and requirements of the approval to operate and environmental protection plan, impacts of subsidence will be minimized which will help to ensure the long term protection of the landscape in the project area.

Local Infrastructure

Yancoal intends to build a construction phase work-camp close to the Project and transport workers in multi-passenger vehicles. These plans will help to minimize impacts to local infrastructure and traffic volumes during construction. Yancoal has committed to work with local municipalities and the Ministry of Highways and Infrastructure regarding access road construction and maintenance as well as traffic management. As a condition of approval, Yancoal will be required to submit to the Minister a signed Development Agreement with the RM of Longlaketon No. 219 prior to the onset of construction activities for the project. This will ensure the RM is engaged in selection of final design details for the project to help minimize the negative impacts on infrastructure and maximize the overall benefits of the project for residents in the project area.

Conclusion

The Ministry of Environment and other regulatory agencies have significant experience regulating the potash industry in Saskatchewan, and the Yancoal Southey project will be required to meet the same stringent regulatory requirements as other similar facilities. Conditions of this approval have been developed in consideration of the comments received during the public review and are designed to encourage transparency during development of the project and enhance community involvement in monitoring environmental performance. A condition of approval also recognizes the local government's authority to make important development decisions subsequent to this approval which will help ensure local interests are being fully considered during project planning and development.

The Ministry of Environment and review agencies are satisfied that, if the mitigative and environmental protection measures outlined in the EIS are implemented, adverse effects can be minimized and benefits enhanced. This conclusion is based on Yancoal's commitments as documented in the EIS; on my ability as the Minister of Environment to impose specific conditions at this time; and on the knowledge that additional environmental protection requirements will also be imposed through terms and conditions forming part of permits and licences required by provincial legislation.

Key regulatory oversight by the Ministry of Environment for the project will be provided by approvals issued under *The Environmental Management and Protection Act, 2010*; *The Mineral Industry Environmental Protection Regulations, 1996*; and *The Hazardous Substances and Waste Dangerous Goods Regulations*. Approvals issued by other ministries, agencies and levels of government including the Ministry of the Economy, Water Security Agency and the Rural Municipality of Longlaketon will also be required prior to the project proceeding. In addition, at the permitting stage of the project, a financial assurance will be required from Yancoal which will provide sufficient funding to address any environmental issues that could result from the project and ensure there is no financial or environmental liability for Saskatchewan or its residents associated with the project.

I have concluded that any adverse environmental effects associated with Yancoal's Southey Potash Project can be eliminated or minimized. Approval under the Act, therefore, has been granted to Yancoal for the development as described in the EIS.

The ministerial approval for the development includes terms and conditions designed to promote the elimination and control of adverse environmental effects associated with the development. Included are requirements that Yancoal:

- (a) proceed with the development in accordance with the EIS;
- (b) provide notification of any change;
- (c) follow the requirements of other applicable laws and regulations.

These conditions, plus the measures proposed in the EIS and the regulatory framework applicable to the development, now and in the future, will address all issues related to the development.

Dated at Saskatoon, Saskatchewan this 9th day of August, 2016

ORIGINAL SIGNED BY:

Herb Cox
Minister of Environment