

**REASONS FOR DECISION
MINISTERIAL APPROVAL
PURSUANT TO SECTION 15(1)(A)
THE ENVIRONMENTAL ASSESSMENT ACT**

**STAR DIAMOND CORPORATION
STAR-ORION SOUTH DIAMOND 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 prior to making a decision regarding the development.

In November 2008, the Environmental Assessment and Stewardship Branch, Ministry of Environment (hereinafter called “the ministry”) received a project proposal from Star Diamond Corporation (formerly Shore Gold Inc. and hereinafter called “the proponent” or “Star Diamond”) for the Star-Orion South Diamond Project (hereinafter called “the development” or “the project”). The proposal was sent to the Saskatchewan Environmental Assessment Review Panel (SEARP) for technical review. Following technical review of the proposal, the project was declared a development under section 2(d) of the Act and the proponent was therefore required to conduct an EIA and submit findings in an environmental impact statement (EIS).

The ministry provided public notice of the EIA in July 2009 pursuant to section 10 of the Act. In December 2014, Star Diamond submitted the final EIS seeking approval under clause 15(1)(a) of the Act. The EIS underwent both technical review and a 60-day public review.

Background

The project will be located in the Fort à la Corne Provincial Forest (FaC) in the rural municipality (RM) of Torch River No. 488, approximately 65 km east of Prince Albert, Saskatchewan. The proponent has proposed to construct and operate a new open pit diamond mine on a 10,879 ha surface lease. As proposed, the facility will be in operation for approximately 20 years.

Excavation will begin first on the Star pit and approximately 8 years later on the Orion South pit. Initial excavation of the pits will involve removal and stockpiling of organic materials, overburden and rock. Once the kimberlite deposits are reached, 45,000 tonnes/day of kimberlite rock will be excavated from the Star and Orion South pits and processed in on-site facilities to remove diamonds from the host rock. Inputs for processing consist of kimberlite, ferrosilicon, grease and water with all other materials released from the process occurring naturally in the kimberlite or water.

The processed kimberlite (PK) from ore processing will be stored long-term, on-site in separate piles from the overburden and unprocessed rock. The fine PK and process water resulting from the Star pit will be pumped to and stored in the fine processed kimberlite containment facility (PKCF) surrounded by a perimeter dyke. Any seepage of water from the fine PKCF will be pumped back to the fine PKCF or, if compliant with applicable permit conditions and *Surface Water Quality Objectives for the Protection of Aquatic Life*, discharged into the Saskatchewan River. Fine PK and process water from the Orion South pit will be disposed of in the Star pit. Coarse PK will be conveyed to a separate coarse PK pile. When Star pit is complete, all fine PK and process water from Orion South pit will be back-filled into the Star pit. Star Diamond may also consider back-filling Star pit with Orion South overburden.

Project infrastructure will include:

- Star and Orion South pits;
- processing plant;
- overburden and unprocessed kimberlite storage piles;
- coarse PK pile;
- fine PKCF;
- surface water management ditches;
- groundwater wells and associated pipelines for pit dewatering;
- water intake;
- potable water plant; and
- transportation infrastructure including roads and railway access.

Operation activities include:

- processing the kimberlite;
- operation of the surface infrastructure and support facilities;
- long-term process residue waste management;
- water and wastewater management; and
- transportation and storage of industrial, domestic, and hazardous materials.

Decommissioning and post-decommissioning activities include:

- returning lands disturbed by the development to a condition that is physically stable, safe and environmentally self-sustaining;
- reclaiming the overburden pile, coarse PK pile and PKCF;
- re-contouring and re-vegetating the site so that vegetation communities are similar to those naturally occurring in FalC; and
- ongoing monitoring activities.

Environmental Assessment

Public notice that an EIA was required for the project was given in July 2009, pursuant to section 10 of the Act. In seeking approval for their development, Star Diamond conducted an EIA in accordance with the Act, submitting the initial draft EIS, entitled *The Star-Orion South Diamond Project Environmental Impact Statement*, to the ministry in December 2010.

The draft EIS underwent technical review by provincial ministries and agencies. The technical review identified several areas where additional information was required. In response to technical reviewer comments, Star Diamond initiated additional modelling activities and redesigned the development, subsequently submitting a revised EIS in August 2012. Technical review of the revised EIS identified additional deficiencies which Star Diamond responded to by providing several additional documents in April 2013. The ministry requested that Star Diamond combine the multiple revised sections, addendums and supplemental reports into a revised EIS. Star Diamond submitted a revised EIS on August 2014. Following technical review of the revised EIS, Star Diamond addressed a number of information deficiencies and the final EIS was accepted in December 2014.

The final EIS (hereinafter called "the statement") and the Technical Review Comments (TRCs) document prepared by the ministry were released for public review pursuant to section 11 of the Act. Due to the high level of local interest in the project, a 60-day public review period was provided from January 17 to March 18, 2015 to ensure all interested parties had an opportunity to review the documents and provide comments.

Engagement Activities

Star Diamond conducted engagement and consultation activities from 2008 to submission of the final EIS in December 2014. Information about the development was provided through meetings, site tours, a workshop, telephone conversations, emails and open houses as documented in the statement. The Diamond Development Advisory

Committee, composed of Star Diamond, key Aboriginal communities and community stakeholders was also established as a forum for information and issue sharing. Feedback from the proponent's engagement and consultation activities has been incorporated into the EIS.

Comments received during the technical and public review of the statement allow an informed decision regarding the technical merits and potential environmental impacts of the development. The ministry received four review comments from the general public related to waste water quality, impacts to groundwater resources, reclamation of pit lakes and waste piles, fish habitat restoration and lake sturgeon, greenhouse gas emissions and energy consumption, and socioeconomic impacts to local communities.

Duty to Consult

The development triggered consultation with First Nations and Métis communities due to potential impacts to Crown lands and the resources required to hunt, fish and trap for food and carry out traditional uses. Although the project proposal was submitted prior to Saskatchewan's *First Nation and Métis Consultation Policy Framework's* (CPF), the consultation process for the project has been consistent with the policy's direction. Funding was provided from the *First Nations and Métis Consultation Participation Fund* to support consultation on the project. The ministry assigned procedural aspects of consultation to the proponent and, beginning in 2008, Star Diamond contacted First Nation and Métis communities through letters, emails, text messages and phone calls and arranged meetings to gather information on the potential of the project to adversely impact Treaty or Aboriginal rights. Additionally, as James Smith Cree Nation (JSCN) is the community in closest proximity to the project and would be the most adversely impacted by the project, the Minister signed a consultation agreement with JSCN in 2010 that outlined the consultative process and provided funding to facilitate JSCN's participation.

The public review period of the statement and TRCs provided an additional opportunity for First Nation and Métis communities to review the consultation record included in the statement. Comments were received from the Métis Nation Saskatchewan – Eastern Region II and Western Region II, Métis Locals #118 Wynyard and #222 Tisdale, Wahpeton Dakota Nation and James Smith Cree Nation. Comments indicated that island forests, including FalC, are important for the exercise of Treaty and Aboriginal rights and carrying out of traditional uses. Specific concerns included, but were not limited to, inaccurate identification of the area of impact of the project on the right of access, impacts to ecosystem components for hunting and gathering, access management, impacts to fisheries and the aquatic environment, and impacts to spiritual or cultural sites.

The ministry utilized the statement and comments received during the review period, as well as information from traditional use studies previously submitted by several communities, to understand the potential adverse impacts of the development on traditional uses and Treaty and Aboriginal rights and measures proposed to minimize them. In addition, as a component of the consultation agreement with JSCN, the ministry met with the community to discuss their comments and ensure a full understanding of community concerns. Based on information presented at this meeting and in comments from communities, it was determined that although many of the project-specific concerns raised during consultation activities were addressed by Star Diamond through mitigation measures identified in the EIS, the mitigation proposed was not adequate to meet the Crown's legal duty to consult and accommodate for potential adverse impacts to the exercise of Treaty and Aboriginal rights.

In order to fulfill the province's duty to consult obligations, a cross-ministry team with the Ministries of Environment, Justice and Government Relations was developed in 2015 to work with JSCN to identify accommodation options to address impacts to rights and traditional uses that had not been adequately addressed. Supported by knowledge gained through a series of meetings with JSCN and results of a supplemental study on preferred conditions and harvesting needs carried out by the community, a suite of accommodations consistent with the guidance provided in the CPF was developed. The ministry presented the draft accommodations proposal to JSCN in early 2018 for their response.

Based on comments received from JSCN in March 2018, revised accommodations were sent to JSCN on September 20, 2018. On September 25, 2018, JSCN shared a proposal for harvest and support programs and, in response, the ministry further adjusted the accommodations. The final accommodations, summarized below, will be implemented should the proponent proceed with the project and apply for a surface lease for the mine.

As part of the accommodations, government commits to:

- i. establish and participate in a joint JSCN-Saskatchewan Fort à la Corne Forest Shared Stewardship Committee to inform use and management of the area; and
- ii. set aside approximately 19,648 hectares (ha) of Crown lands to establish a conservation area in the eastern portion of FaIC where Treaty and Aboriginal rights and traditional uses can continue to be carried out.

As part of the accommodations and as conditions of this approval, Star Diamond will be required to:

- i. develop Surface Lease and Human Resource Development Agreements with the Government of Saskatchewan;
- ii. provide financial support to train community environmental monitors;
- iii. fund moose and elk population surveys across the FalC every five years;
- iv. develop and implement a FalC access management plan;
- v. provide \$25,000 annually to support the JSCN's participation in the FalC Shared Stewardship Committee;
- vi. provide \$61,250 annually to JSCN, for a community harvest support program;
- vii. provide \$75,000 annually to JSCN, for community cultural programs;
- viii. involve JSCN in environmental monitoring programs for the project;
- ix. develop a notification and awareness plan for: use of dust suppressants other than water, timing of blasting and the materials to be used, intake pump shut-down, water withdrawal from the Saskatchewan River and weed management activities; and
- x. implement a Treaty and Aboriginal rights and cultural awareness program for all project staff.

Based on mitigation in the EIS, subsequent consultations with First Nation and Métis communities and the resulting accommodations proposed by the Province, I am satisfied that the Government of Saskatchewan has fulfilled its duty to consult and accommodate.

Reasons for Decision

I am satisfied that Star Diamond has met all the requirements of the Act, thereby requiring a decision to be made pursuant to subsection 15(1) of the Act. Having made my decision to issue a ministerial approval the Act requires me, pursuant to subsection 15(2), to state the reasons for the decision.

The statement submitted by Star Diamond describes the development and its potential adverse impacts on the environment. Potential impacts of the project to the environment in FalC include alteration of terrain, loss of upland and aquatic habitats within the mine site, alteration of habitats in the drawdown zone, displacement of wildlife, and changes in water quality and quantity. The following sections describe the key environmental impacts of the development, the proposed mitigation and analysis of the residual effects of those impacts.

Terrain

The excavation of the Star and Orion South pits and the storage of waste rock, overburden and processed kimberlite will permanently alter the topography and soils of

approximately 3,718.1 ha of FaIC. The Star pit will be partially backfilled with waste rock during excavation of the Orion South pit and, at mine closure, both pits will fill with groundwater and run-off forming two new lakes. The 45 and 60 m high overburden and processed kimberlite piles will undergo slope grading, contouring and erosion control and be covered with stockpiled soil and organic matter from the original site clearing augmented by additional organic materials sourced from outside of the development area.

Star Diamond undertook terrain stability mapping for the local study area (LSA) to determine the risk of landslide activity. Over 80% of the LSA has negligible to very low risk of landslide initiation in the absence of project activities. Risk of landslide on the slopes of the Saskatchewan River valley adjacent to the project may actually be decreased by the mass removed from Star pit during excavation. Stability risks within the pit excavation area will be assessed prior to construction during detailed geo-technical investigations. Any high risk areas identified may require additional risk mitigation.

The pit lakes and reclaimed waste piles will not be returned to pre-disturbance condition due to the large amount of material excavated during mining. However, through Star Diamond's proposed mitigation and the decommissioning and reclamation requirements of their approval to construct and operate, the site is expected to be capable of supporting functioning ecosystems similar to those found within the surrounding FaIC.

Groundwater

Groundwater drawdown will occur as a result of pit dewatering activities. Outside of the direct footprint of the mine site, the effects of groundwater drawdown will occur in a gradually diminishing manner for several kilometres. While it is possible that domestic water wells, especially deep wells, could experience reduced supplies, groundwater modelling carried out for the EIA indicates a lack of wells existing within the area of significant drawdown (> 2 m lower). Although impacts to most domestic wells should be minimal, the proponent has committed to ensure a continuous supply of drinking water to surrounding residents by implementing a water well monitoring and mitigation program until water levels demonstrate recovery following mine closure. Measures proposed include: providing above ground water storage; modifying or replacing pumps; and providing alternative water supplies or drilling new water supply wells. Residual effects to groundwater users are not expected to be significant.

There is potential for infiltration from the PKCF and from brackish groundwater to shallow aquifers in the area surrounding the mine, but the amount of water is expected

to be very small and impacts to groundwater quality are not anticipated to be significant. The effects are also expected to be reversible following mine closure and pit filling.

Star Diamond will be required by conditions of their drainage approval to inventory all wells in the potential drawdown area and provide water to any users whose water supply becomes impacted by mine activities. Groundwater levels and quality will be monitored throughout the site to ensure they are within the expected range and reported to the ministry as required by the project's construction and operating permits.

Surface Water

The development is located in an area interspersed with many poorly-drained wet areas with several small watercourses that drain southward into the Saskatchewan River. The mine layout was designed, where possible, to avoid or minimize impacts to small wetlands and drainages, as evidenced by a redesign of the original project to preserve an additional fish-bearing stream. However, flow in 11 local stream tributaries will either increase or decrease as a result of changes in base flow from pit dewatering, changes in runoff resulting from waste pile development, or decreases in runoff from reduced catchment areas. Modelling predicts the potential for a 90% reduction of the East Ravine catchment area, which will essentially cause it to cease flowing, while runoff diversion contributes to an estimated 3-fold increase in flow from Duke Ravine.

The development will use up to 68,900 m³/day of water to process the kimberlite excavated from the Star and Orion South pits. Water will be sourced from the Saskatchewan River, East Ravine runoff collection and recycled water from the PKCF. Star Diamond will consult with regulatory agencies to determine if the intake may be used to actively fill the pits when mining is complete. The water intake will consist of an intake pipe, cement pier intake, on-shore pump house and raw water reservoir.

Up to 150,000 m³/day of water from processing, pit dewatering, tailings seepage and runoff will be discharged into the Saskatchewan River immediately downstream of the intake, more than compensating for the quantity of water withdrawn for processing. To mitigate any potential impacts to the river during periods of low flow, Star Diamond will be able to recycle up to 100% of the water required for processing from the mine's waste water stream for a period of up to 150 days. The discharge will flow through a diffuser to reduce disturbance to sediment on the bottom of the river. According to dispersion modelling, all federal and provincial water quality guidelines will be met 40 m downstream of the discharge point, except for parameters that naturally exceed the guidelines in baseline conditions. Star Diamond will be required, and has committed, to

monitor surface water quality on a regular basis and implement additional mitigation as needed to meet water quality guidelines.

Mitigations will be employed during installation of the water intake and discharge/diffuser infrastructure to avoid significant adverse impacts. A coffer dam will be in place during construction to minimize obstruction to river flow, temporary silt fencing will be installed and inspected regularly to limit sediment and debris from entering the river and trenchless methods (e.g. directional drilling) will be used to install pipelines.

Residual impacts on surface water quantity will be local in nature with flow increasing in some tributaries and decreasing in others. Erosion control and monitoring will be used to mitigate the effects of sedimentation in surface water flow from the site. Given the proximity of the water intake and diffuser, outcomes of discharge water quality modeling and mitigation proposed by the proponent, no significant adverse impacts to the flow, quantity or quality of water in the Saskatchewan River are expected.

Aquatic Environment

Aquatic investigations were undertaken to characterize the fish habitat, communities and water quality in streams likely to be effected by the project. The Saskatchewan River supports a diverse and abundant fish community, including lake sturgeon (*Acipenser fulvescens*). Suitable lake sturgeon spawning habitat was identified in two drainages within the local study area; however, no lake sturgeon were observed during surveys. Similarly, the larger streams may support spawning habitat for other large body fish, but are too small and shallow to provide year-round habitat for adults. Several other sensitive fish species are known to exist in the Saskatchewan River and other streams in the local study area, but only three uncommon species (flathead chub (*Platygobio gracilis*), northern redbelly dace (*Phoxinus eos*) and river shiner (*Notropis blennioides*) were identified during field surveys conducted for the EIA.

Direct loss of fish habitat resulting from the project will include: portions of East and West Ravines, due to development of the Star pit; areas where culverts will be placed in East, Duke and 101 Ravines; and water intake and diffuser locations in the Saskatchewan River.

Star Diamond redesigned the project layout to avoid habitat loss in Caution Creek and 101 Ravine. Mitigation for streams that will be impacted by the development of Star pit will include fish salvage prior to construction. Flow supplementation will be provided from runoff, and sediment and erosion control structures will be installed as necessary. Ongoing monitoring of stream flow levels and water quality throughout the life of the

project will help to minimize impacts to aquatic life. Clear span bridges and appropriately sized culverts that allow fish passage will be installed using accepted best practices. Stream restoration will be undertaken wherever possible during decommissioning.

The intake for raw process water has been designed to minimize the possibility of entrapment to individual fish and the diffuser has been located in the deeper mid-channel to improve mixing. Other mitigation measures to reduce adverse effects to fish and fish habitat include timing construction to avoid spring and fall spawning, and burying intake and discharge pipes to reduce impacts to near-shore habitat.

Although fish populations are not expected to be impacted by the development, the project will result in residual adverse effects on fish habitat that will be offset through the proponent's application of best management practices near fish habitat as described above and by measures proposed in the *Fish Habitat Compensation Plan*. A conceptual plan is provided in section 6 of the EIS and submission of a final plan for approval by the ministry will be required prior to construction of the development. The conceptual plan proposes mitigation for the permanent loss of East Ravine by improving habitat elsewhere. Star Diamond has proposed to improve water quality on Pehonan Creek by using fencing to exclude livestock and cultivation from the riparian zone, revegetating disturbed areas and constructing a backwater channel to provide new, high quality fish habitat. Star Diamond will conduct monitoring to ensure all aspects of the plan remain effective and create or improve fish habitat. The plan will be in place for the life of the project and be considered as part of the project's Mine Closure Plan.

Vegetation

Many plant species found in FalC are valued as traditional foods and medicines or used in spiritual ceremonies. Berry and mushroom picking are common recreational uses of the forest. A network of trails and forestry roads fragment the forest, although in recent years commercial logging only occurs on a very limited scale. Several years of fire suppression activities in FalC have exacerbated an infestation of dwarf mistletoe.

Approximately 3,936 ha of upland forest and wetland vegetation will be directly impacted as a result of pit development, waste rock storage and other mine infrastructure. Groundwater drawdown from pit dewatering may potentially cause some vegetation within the local and regional study areas to shift to drier upland vegetation types. Modelling indicates that while drawdown in shallow aquifers could be up to 10 m near the pits, it will likely be less than 0.5 m outside of much of the local study area in most years. Drawdown effects on vegetation, if they occur, will persist

beyond mine closure, however levels will eventually stabilize as groundwater and runoff continue to fill the pits.

Star Diamond designed the layout of the mine to avoid or minimize disturbance to sensitive vegetation types, such as wetlands and riparian areas. Where impacts to these areas cannot be avoided, the proponent has proposed to mitigate by monitoring water levels and supplementing wetlands with runoff and seepage water, provided water quality standards are met.

The project footprint will be minimized by using existing roads, where feasible, and carrying out progressive clearing and reclamation. Additional mitigation for impacts to vegetation will include: stockpiling topsoil and other suitable reclamation materials for future revegetation efforts; reclaiming a variety of ecosites to maintain a diversity of vegetation communities; maintaining or re-establishing natural soil moisture regimes and drainage patterns where possible; and implementing erosion control.

Given the permanent changes to the terrain within the mine footprint, residual impacts to vegetation will remain after mine decommissioning, as vegetation around pit lakes and on waste piles is established. During operation of the mine, Star Diamond will be required to monitor and report annually on the health of representative upland and wetland vegetation within the groundwater drawdown area. Following decommissioning and reclamation, monitoring will continue on the revegetated sites until all requirements of the ministry-approved Decommissioning and Reclamation Plan are achieved.

Wildlife

FaC is home to a diversity of wildlife species important for their cultural, traditional, recreational and ecological value. Ungulates, such as elk and moose, are highly valued as country foods by First Nation and Métis people and as game species by licensed hunters. Due to its location in the agricultural zone of the province, FaC and its resident wildlife, have been altered through logging, grazing, all-terrain vehicle and snowmobile use, and trail and road construction.

The project has the potential to impact wildlife through: sensory disturbance caused by blasting and daily activities; habitat loss; disruption of movement from infrastructure and traffic; and increased mortality from site clearing, vehicle collisions and increased predation along new roads.

Population estimates derived from surveys conducted for the project showed that moose, deer and elk numbers were within the natural range of variation when

compared to previous years' surveys, indicating stable ungulate populations. The numbers of ungulates are expected to decline within the project footprint, and for some distance from the footprint, due to the vegetation clearing and high level of activity. However, most individuals are expected to move into adjacent areas where suitable habitat is available.

During field surveys carried out in the regional study area, ten sensitive species were identified during surveys conducted from 2008-2009 and an additional 18 species were identified in historical surveys. Mitigation for wildlife species will include initiating construction activities in areas of higher quality habitat primarily during winter to avoid sensitive periods for ungulates and birds, whenever possible and using the existing main access route to minimize further habitat fragmentation.

Residual effects of the project on wildlife outside of the project footprint are not expected to be significant. Within the footprint, some individuals will be displaced; however, populations should not be negatively impacted given the mitigation proposed by the proponent, the terms and conditions of this approval and subsequent permitting.

Sensory Environment

Noise modelling and assessment was completed in order to predict potential impacts from noise as a result of the development. Although Saskatchewan does not currently have environmental noise standards, the proponent has used Alberta's *Directive 038: Noise control* as a guideline for evaluating noise. Based on the guidelines, permissible noise levels 15 m from the nearest dwelling or 1500 m from the development fence line are 55 A-weighted decibels (dBA) for daytime and 45 dBA for night time. Based on the modelling, continuous noise, excluding blasting, will not exceed 45 dBA outside the fence line. Blasting noise will exceed the guidelines for several km outside the fence line, but will occur very infrequently (every two days, on average) and for very short duration (one or two seconds).

Other sensory disturbances will include movement of humans and machinery, lights and odours (e.g., oils, solvents, sewage, garbage, etc.). These disturbances may alter the behaviour of some species or attract scavenging wildlife.

Star Diamond's mitigation will include: scheduling noisy activities such as blasting for daytime hours; ensuring equipment is in good working order; fencing areas attractive to wildlife; using low pressure sodium lights to minimize insect attraction; prohibiting staff from harassing or feeding wildlife; minimizing work done during sensitive periods for wildlife; maintaining right-of-ways for visibility; and monitoring to ensure mitigation is

effective. Additionally, the proponent will notify potentially affected communities prior to blasting and monitor staff compliance with guidelines.

Given the absence of human residences within 10 km of the centre of the project site, the proponent's proposed mitigation, and the ability of many animals to become habituated to certain levels of noise, light, movement and odours, the residual impacts of sensory disturbance should not be significant.

Atmospheric Environment

Primary emission sources will be diesel exhaust from vehicles and equipment, fugitive dust from blasting, ore handling, crushing and vehicles, and natural gas combustion from an incinerator and building heaters.

The proponent evaluated the potential impacts of kimberlite dust deposition on country foods based on naturally occurring concentrations of metals in the soil and modelled potential dust fall from the project. The study indicated that heavy metals will not be detectable above background levels in soils or plant materials and will pose no threat to country foods or animal and human health.

The effect of dust beyond the project footprint will be negligible as the main access road will be paved. Additional mitigation proposed to reduce fugitive dust will include using rocky aggregate on unpaved roads, limiting vehicle speed, suppressing dust with water, using delay blasting techniques to limit dispersion, adding vegetation cover to stripped areas and keeping the fine kimberlite waste pile wet enough to avoid wind erosion.

The maximum concentrations of air quality parameters are predicted to comply with the *Saskatchewan Ambient Air Quality Standards* (SAAQS). Only the 1-hour average concentrations of nitrogen dioxide (NO²) are likely to have residual air quality impacts in a small area adjacent to the project fence line. NO² concentrations at longer averaging times are predicted to meet SAAQS.

Total annual greenhouse gas (GHG) emissions resulting from combustion of natural gas and diesel fuels are estimated to be 32.1 kilotonnes (kt) of carbon dioxide equivalent (CO₂e). At this level, the project's contribution would be 0.15% of the total provincial GHG emissions. As an emitter of over 10 kt/year, Star Diamond will be required to report annually to the province and Canada and, if CO₂e production is greater than 25 kt/year, will also be subject to output-based performance standards for managing GHG emissions. During mine operations, Star Diamond will review initiatives to manage GHG emissions including development and implementation of energy saving plans and purchasing energy efficient equipment, land reforestation.

Given the low population density in the project area, compliance with SAAQS and proposed mitigation, the project is not expected to result in significant impacts to the atmospheric environment.

Heritage Considerations

During baseline studies, 108 heritage resource sites were identified. Heritage resources identified at the development site confirms that FaIC has been used by Aboriginal people to carry out traditional activities for thousands of years. Star Diamond worked with the Ministry of Parks, Culture and Sport's Heritage Conservation Branch (HCB) to mitigate sites through excavation, collection, mapping and assessment. Star Diamond has committed to conduct excavation and preservation of cultural artifacts under the guidance of JSCN elders during mine development. Clearance letters under section 63 of *The Heritage Property Act* were issued for the project. Due to subsequent alterations to the development footprint, additional sites will require further assessment and clearance from HCB prior to construction.

Socio-Economic Considerations

When developed, the mine will contribute to the local and provincial economies through taxes, royalties and business opportunities. Star Diamond estimates the pre-production capital costs for development of the mine at \$1.41 billion with a total capital cost of \$1.87 billion over the life of the mine. Initial capital cost payback is expected to take 3.4 years and estimates of royalties and provincial income tax over mine life are \$802 million and \$865 million, respectively.

The mine is expected to employ an average of 669 workers annually for the five-year construction period and 730 people during full operation. As a consequence of the economic growth attributable to a large long-term mining operation, the local skilled labor pool may be strained. Star Diamond has proposed to mitigate for this through support for local training institutions and programs to develop a representative workforce. Additionally, Star Diamond will be required to develop Surface Lease and Human Resource Development Agreements to ensure local benefits and opportunities are maximized.

Adverse impacts to local infrastructure from an increase in heavy traffic and influx of workers will be minimized by establishing a work camp during construction of the project, staggered shift changes, development and implementation of an access management plan and through cooperation with local emergency response officials.

Recreational use of FaIC will be excluded within the mine surface lease area. Access will be restricted for safety and security reasons and increased industrial infrastructure and activity will impact the aesthetics of the immediate project area. Upon issuance of a surface lease for the mine, government will establish a conservation area east of Highway No. 6 over approximately 19,648 ha which will allow for hunting by Treaty and Aboriginal rights-holders. Opportunities for licensed hunting will remain in FaIC in wildlife management zones outside of the project area and newly-established conservation area.

With implementation of the mitigations proposed by Star Diamond in the EIS, the accommodations offered by the province and terms and conditions of this approval, significant adverse impacts to the heritage and socio-economic environments are not anticipated.

Decommissioning and Reclamation

A conceptual decommissioning and reclamation plan was included in the statement. These activities will include removing facility infrastructure, capping and revegetating tailings piles, partially back-filling the Star pit, allowing both pits to fill with groundwater and precipitation, and conducting ongoing monitoring activities. Star Diamond has also proposed the possibility of actively filling pits with water from the Saskatchewan River, but this option will require further examination of its potential impacts once decommissioning is underway.

Decommissioning plans will be refined during permitting and will be reviewed and revised every five years as new information becomes available. An appropriate financial assurance will be developed in consultation with the Ministry of Environment's Environmental Protection Branch and will be in place prior to construction of the facility. This financial assurance will ensure there is no long-term liability associated with project decommissioning, reclamation or the ongoing environmental management of the site. Through the province's institutional control program and as a part of licensing, a post-closure monitoring plan will also be developed and implemented until it can be demonstrated that the facility is performing as expected.

Conclusion

The ministry and reviewing agencies are satisfied that, if the mitigation and environmental protection measures outlined in the statement are implemented, and terms and conditions are imposed as presented in my approval, adverse effects can be minimized and benefits enhanced. This conclusion is based on Star Diamond's commitments as documented in the statement; on my ability as Minister of

Environment to impose specific conditions; and on the knowledge that additional environmental protection requirements can be imposed through terms and conditions forming part of permits and licences required by provincial legislation.

I have concluded that any adverse environmental effects associated with the Star Diamond Star - Orion South Diamond Project can be eliminated or minimized. Approval under the Act, therefore, has been granted to Star Diamond for the development as described in the statement.

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

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

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

Dated at Regina, Saskatchewan this 19 day of October, 2018.

ISSUED BY: Original Signed By:

Dustin Duncan
Minister of Environment