

# **Star-Orion South Diamond Project: Preliminary Economic Assessment Post-Tax & Royalty NPV of \$2.0 Billion and IRR of 19 Percent, 66 Million Carats Mined**

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SASKATOON, April 16, 2018 /CNW/ - [Star Diamond Corp.](#) ("Star Diamond" or the "Corporation"), is pleased to announce positive results of the independent Preliminary Economic Assessment ("PEA") on the Star and Orion South Kimberlites, or "Project", situated in the Fort à la Corne diamond district of central Saskatchewan, Canada. The Project is owned by Star Diamond. The PEA estimates that 66 million carats of diamonds could be recovered from a surface mine over a 38-year Project life, with a Net Present Value ("NPV") (7%) of \$2.0 billion after tax, an Internal Rate of Return ("IRR") of 19% and an after-tax payback period of 3.4 years after the commencement of diamond production.

The PEA Highlights Include <sup>1</sup>:

- Total potential plant feed of 470 million tonnes at a weighted average grade of 14 carats per hundred tonnes ("cpht") containing 66 million carats over the 34 year Life of Mine <sup>2</sup>: ("LOM");
- The Base Case scenario (Model diamond price) has an NPV (7%) of \$3.3 billion and an IRR of 22% before taxes and royalties, and an after-taxes and royalties NPV (7%) of \$2.0 billion with an IRR of 19%;
- The Case 1 scenario (High Model diamond price) has an NPV (7%) of \$5.4 billion for an IRR of 32% before taxes and royalties;
- Pre-production capital cost of \$1.41 billion with a total capital cost of \$1.87 billion (including direct, indirect costs and a contingency) over the LOM and an initial capital cost payback period of 3.4 years.

1. Cautionary note: The PEA was prepared in accordance with National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101"). Readers are cautioned that the PEA is preliminary in nature and includes the use of Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the results of the PEA will be realized.
2. Diamond-bearing kimberlite is produced from the mine and diamonds are recovered in the processing plant for 34 years. The overall project life is 38 years, which includes just over four years of pre-stripping activities.

The PEA was led by independent mining, processing and design consultants, with support from the Star Diamond technical team. The principal consultants include: SGS Canada Inc. - Geostat ("SGS"); DRA Americas Inc. ("DRA") and ENGCOMP Engineering and Computing Professionals Inc. ("ENGCOMP"). A number of other independent consulting firms and potential vendors provided their study results to Star Diamond for use in developing the PEA. All currency amounts are quoted in Canadian dollars unless otherwise stated.

President and CEO, Kenneth MacNeill, states: "The Corporation is very pleased with the positive results of the PEA. On the shoulders of more detailed drilling and the Revised Resource Estimate of 2015, the Corporation has taken a fresh look at the Project and has refined the mining and processing plans with exciting and positive results. The PEA describes a lean, professional, industry-leading plan. The Corporation's Management and Directors acknowledge the extensive and diligent work that has been performed by Star Diamond's technical team and associated consultants to reach this important milestone in the evaluation of the Star and Orion South Kimberlites."

Senior Vice President Exploration and Development, George Read, states: "The positive results of the PEA show that the Star and Orion South Kimberlites have the potential to be economically developed as a world class diamond mine. The PEA takes full advantage of improved economics using Bucket Wheel Excavators ("BWEs") and state-of-the-art diamond recovery processes."

## PEA Results

The PEA cash flow model is based on developing two open pits, initially on Orion South and subsequently on Star. The model assumes one processing plant and infrastructure that will serve both open pits and assumes the Project has a four-year pre-production development period followed by a 34 year production period. The economic criteria used in the cash flow model are listed in Table 1.

Table 1. Economic criteria used in PEA cash flow model

Area	Criterion	Value
Production Parameters	No. of operating days per year	350 days per year
	Process plant availability	87%
	Processing rate	45,000 tpd kimberlite
	Estimated LOM total plant feed	470 Mt mill feed at a weighted average 14 cpht grade
Diamond Price Escalation	Projected diamond price escalation	2%
Cost Assumptions	Exchange rate	\$1.00=US\$0.80
	Marketing costs	Average 1% of Revenue
	Royalties	Based on Saskatchewan royalty regime
Operating Costs	Mining (includes waste removal cost)	\$4.37 / tonne processed
	Mill Feed processing	\$2.30 / tonne processed
	General and Administration	\$2.47 / tonne processed
Contingency	Initial capital cost contingency	7% of Initial Capital Cost

Abbreviations: Mt &ndash; Million metric tonnes; tpd &ndash; metric tonnes per day.

#### Pre-production Capital Expenditure

The pre-production capital of \$1.4 billion is detailed in Table 2.

Table 2. Pre-production Capital

Area	Amount
Processing Plant	\$350 million
Site Facilities	\$250 million
Overburden Stripping	\$74 million
Overburden Stripping Equipment	\$410 million
Kimberlite Mining Equipment	\$64 million
Other Costs	\$156 million
Contingency	\$106 million
Total	

\$1,410 million



## Economic Analysis

The Base Case scenario uses the Model diamond price and 2% diamond price escalation, while Case 1 uses the High Model diamond price and 2% diamond price escalation. The economic model includes a \$106 million capital contingency. Pre-tax and after-tax results of the economic analysis are shown in Table 3 for comparison.

Table 3. Economic analysis results of discounted cash flow model for Base Case and Case 1.

Item	Base Case (Model Price) Pre-Tax & Royalty	Case 1 (High Model Price) Pre-Tax & Royalty	Base Case (Model Price) Post-Tax & Royalty
Undiscounted Net Cash Flow	\$18.0 Billion	\$26.1 Billion	\$11.4 Billion
NPV (5.5%)	\$4.6 Billion	\$7.3 Billion	\$2.9 Billion
NPV (6.0%)	\$4.1 Billion	\$6.6 Billion	\$2.6 Billion
NPV (6.5%)	\$3.7 Billion	\$6.0 Billion	\$2.3 Billion
NPV (7%)	\$3.3 Billion	\$5.4 Billion	\$2.0 Billion
NPV (7.5%)	\$3.0 Billion	\$4.9 Billion	\$1.8 Billion
NPV (8.0%)	\$2.7 Billion	\$4.5 Billion	\$1.6 Billion
NPV (8.5%)	\$2.4 Billion	\$4.1 Billion	\$1.4 Billion
IRR	22%	32%	19%
Simple Payback (years)*	3 years 3 months	2 years 4 months	3 years 5 months

\* After start of processing.

## Sensitivity Analysis

Economic risks were assessed using base case cash flow sensitivities to recovered grade, diamond prices, CDN\$/US\$ exchange rate, capital costs and operating costs. Each of the sensitivity items were independently adjusted up and down by 10%, 20% and 30% to project the impact on NPV (7%). The NPV (7%) value after each sensitivity item was adjusted are presented in Table 4. The sensitivity analysis shows that the PEA is most sensitive to CDN\$/US\$ exchange rate fluctuations on the positive side while grade and diamond price have the most significant negative effect.

Table 4. Base Case Sensitivity Analysis Results (pre-tax & royalty basis, NPV (7%))

Sensitivity Parameter	70%	80%	90%	100%	110%	120%	130%
Grade	\$1.6 B	\$2.2 B	\$2.7 B	\$3.3 B	\$3.9 B	\$4.5 B	\$5.1 B
Diamond Price	\$1.6 B	\$2.2 B	\$2.7 B	\$3.3 B	\$3.9 B	\$4.5 B	\$5.1 B
CDN\$/US\$ Exchange Rate	\$4.7 B	\$4.1 B	\$3.7 B	\$3.3 B	\$3.0 B	\$2.7 B	\$2.4 B
Capital Costs	\$3.6 B	\$3.5 B	\$3.4 B	\$3.3 B	\$3.2 B	\$3.1 B	\$3.0 B
Operating Costs	\$3.6 B	\$3.5 B	\$3.4 B	\$3.3 B	\$3.2 B	\$3.1 B	\$3.1 B

### Mineral Resource Estimate

The PEA is based on the Revised Mineral Resource Estimate as documented in the NI 43-101 Technical Report: Technical Report and Revised Resource Estimate for the Star & Orion South Diamond Project Fort a La Corne area, Saskatchewan, Canada December 21, 2015. This report is available on the Corporation's website ([www.stardiamondcorp.com](http://www.stardiamondcorp.com)) and on SEDAR ([www.sedar.com](http://www.sedar.com)).

### Diamond Prices

Diamond prices used in the PEA are based on price applications by WWW International Diamond Consultants Ltd ("WWW") in mid-April 2018 using their March 31, 2018 price book. The Base Case scenario uses the Model prices for each kimberlite unit within Star and Orion South. The Case 1 scenario uses High Model prices for comparative purposes. WWW has stated that per annum rough diamond price escalation of 2.5 per cent is a reasonable figure, given the future outlook for the rough diamond market over the next ten years. For the purpose of the PEA Star Diamond has elected to use a more conservative diamond price escalation of 2%. The details of the April 2018 valuation of the Star and Orion South diamond parcels are listed in Tables 5 and 6.

Table 5. The Parcel and Model Price Details for the Star Kimberlite (March 31, 2018)

Star Kimberlite Unit	Carats	Parcel Price (US\$/carat)	Model Price (US\$/carat)	Minimum Model Price (US\$/carat)	High Model Price (US\$/carat)
Cantuar	1,667.96	281	303	253	438
Pense	1,410.47	141	162	126	203
EJF	7,124.74	162	207	172	265
MJF-LJF	91.28	170	173	131	249

Table 6. The Parcel and Model Price Details for the Orion South Kimberlite (March 31, 2018)

Orion South Kimberlite Unit	Carats	Parcel Price (US\$/carat)	Model Price (US\$/carat)	Minimum Model Price (US\$/carat)	High Model Price (US\$/carat)
EJF	1,400.01	126	173	118	242
Pense	581.47	81	144	101	199

## Mining

Mine plan optimization determined that the optimal economic approach to the mining of the combined Star - Orion South resources is to commence with mining Orion South, followed by mining on Star, for a total LOM of 34 years. The pit plans incorporate the geotechnical and hydrogeological design criteria developed prior to 2011.

Mining of the kimberlite is by conventional open pit. Conventional hydraulic excavators and haul trucks create a starting "key" for three BWEs to remove the sand and clay overburden from the kimberlite. Conveyor belts transfer the sand and clay from the BWEs to the nearby overburden waste area. The exposed kimberlite is lightly blasted and conventional hydraulic shovels load the rock into trucks. These trucks transfer the rock to an in-pit feeder and the kimberlite is delivered to the processing plant via conveyor belt.

## Processing Plant and Infrastructure

The processing facility is favourably located near the Star and Orion South pit edges. The processing rate is 45,000 tonnes of kimberlite per day employing autogenous milling followed by screening, X-ray Transmission ("XRT") diamond recovery and dense media separation of heavy mineral concentrate. The recovery section employs X-ray technology with grease as the scavenging technology to recover the low-luminescence diamonds. The diamonds would be sorted into parcels within the on-site sorting facility.

## Environment Assessment

The Environmental Impact Statement ("EIS"), which describes the potential environmental and socio-economic effects of the Project, was previously submitted to provincial and federal regulators. In December 2014, the Canadian Environment Assessment Agency announced an Environmental Assessment Decision for the proposed Project (See News Release dated December 3, 2014). The Federal Environment Minister announced that the Project "is not likely to cause significant adverse environmental effects when the mitigation measures described in the Comprehensive Study Report are taken into account." The Corporation is presently awaiting a decision on the EIS from the province.

Final site reclamation and closure, including the removal of site facilities, will be performed at the end of the LOM in accordance with regulatory requirements. The conceptual closure plan will be based on a target end land use of self-sustaining forest.

## Community Relations

Since 2007, the Corporation has engaged with local communities and provided information updates at meetings of the Diamond Development Advisory Committee ("DDAC"). The DDAC is a community-based committee comprised of approximately two dozen representatives of cities, towns, villages, rural municipalities and Indigenous parties in the vicinity of the Fort à la Corne forest. Additionally, the general public has been widely consulted through forums such as community open house meetings conducted by the Corporation, with local communities showing overwhelming support for the Project. A description of extensive community engagement activities forms part of the EIS. Development of a mine will bring substantial economic development to communities in the surrounding region. The proposed Project is



expected to provide direct employment for hundreds of people throughout the construction phase and in excess of 500 people continuously over its 38 year life.

## Technical Report

For readers to fully understand the information in this news release, they should read the PEA technical report in its entirety. The Corporation expects to file the report on SEDAR ([www.sedar.com](http://www.sedar.com)) in accordance with NI 43-101, within 45 days from the date of this news release. The report will be available at that time on the Corporation's website, including all qualifications, assumptions and exclusions that relate to the PEA. The technical report is intended to be read as a whole, and sections should not be read or relied upon out of context.

## Qualified People

The PEA was authored by the following independent qualified people: W. Douglas Roy, Senior Associate Mining Engineer for SGS, a registered Professional Engineer in the Province of Nova Scotia; Daniel Leroux, Global Business Manager &ndash; Geological and Mining Services for SGS, a registered Professional Geoscientist in the Provinces of Ontario and Saskatchewan; Lehman van Niekerk, Senior Process Engineer, DRA Projects SA (Pty) Ltd, a registered Professional Engineer with the Engineering Council of South Africa and member of The Southern African Institute of Mining and Metallurgy; and Geoffrey Wilkie, Senior Cost Consultant ENGCOMP, a registered Professional Engineer in the Province of Saskatchewan.

## Risks and Opportunities

As with all mining ventures, a large number of risks and opportunities can affect the outcome of the Project. Most of these risks and opportunities are based on uncertainty, such as less detailed scientific information (test results, drill results, etc.) or the lack of control over external factors (diamond prices, exchange rates, etc.). Subsequent higher-level engineering studies would be required to further refine these risks and opportunities, identify new risks and opportunities, and define strategies for risk mitigation or opportunity implementation.

The PEA identified principal risks for the Project which are summarized below:

- Geological interpretation and mineral resource classification (17% of the mineral resources used in the mine plan mineral resources);
- Geotechnical and hydrogeological considerations;
- Construction management and cost containment during development of the Project;
- Increased operating cost and/or capital cost; and
- Reduced diamond prices.

Several potential opportunities to improve the accuracy of the results of the Project contemplated under the PEA have been identified. Examples include, but may not be limited to:

- Expansion of the Star and Orion South resources through drilling. Addition of further resources through drilling has potential to add resources and increase LOM and economics;
- More refined pit optimization parameters could result in better optimized open pit limits than the pit shell selected;
- Improved hydrogeological and geotechnical understanding may increase pit slope angles over those used in the PEA;
- Investigate other mining methods that would lead to a decreased cost;
- Further metallurgical testing and refining milling processes may result in improved recoveries;
- The potential to upgrade the mineral resource classification of the deposit; and
- Improved diamond prices.

## About Star Diamond Corporation

[Star Diamond Corp.](#) is a Canadian based corporation engaged in the acquisition, exploration and development of mineral properties. Shares of the Corporation trade on the TSX Exchange under the trading symbol "DIAM." The Corporation's Star - Orion South Diamond Project is located in central Saskatchewan some 60 kilometres east of the city of Prince Albert. The Project is in close proximity to established

infrastructure, including paved highways and the electrical power grid, which provide significant advantages for future mine development.

All technical information in this press release has been prepared under the supervision of George Read, Senior Vice-President of Exploration and Development, a registered Professional Geoscientist in the Provinces of Saskatchewan and British Columbia; Mark Shimell, Project Manager, a registered Professional Geoscientist in the Province of Saskatchewan; and William van Breugel, Mine Project Engineer, a registered Professional Engineer in the Province of Saskatchewan, who are the Corporation's "Qualified Persons" under the definition of NI 43-101.

Star Diamond commissioned the PEA and related Technical Report for the Star and Orion South Kimberlites and, as such, the PEA and Technical Report are the sole responsibility of the Corporation. The PEA is based on exploration and evaluation work conducted up to and including March 2017.

#### Caution Regarding Forward-Looking Statements

This news release contains forward-looking statements as defined by certain securities laws, including the "safe harbour" provisions of Canadian securities legislation and the United States Private Securities Litigation Reform Act of 1995. Forward-looking information is often, but not always, identified by the use of words such as "anticipate", "believe", "expect", "plan", "intend", "forecast", "target", "project", "guidance", "may", "will", "should", "could", "estimate", "predict" or similar words suggesting future outcomes or language suggesting an outlook. In particular, statements regarding the Corporation's future operations, future exploration and development activities or other development plans constitute forward-looking statements. By their nature, statements referring to mineral reserves, mineral resources, PEA or TFFE constitute forward-looking statements.

Forward-looking statements in this press release include, but are not limited to, disclosure regarding the economics and project parameters presented in the PEA, including, without limitation, IRR, NPV and other costs and economic information, carats of diamonds to be recovered, pre-tax payback period, tonnes of kimberlite to be mined, carats per tonne to be recovered (grade), diamond prices, life of mine, capital costs, length of pre-production period and all data in Tables 1 through 6, possible events, conditions or financial performance that is based on assumptions about future economic conditions and courses of action; the timing and costs of future development and exploration activities on the Corporation's projects; success of development and exploration activities; permitting time lines and requirements; time lines for further studies; planned exploration and development of properties and the results thereof; and planned expenditures and budgets and the execution thereof as well as statements with respect to the Corporation's objectives for the ensuing year.

These forward-looking statements are based on the Corporation's current beliefs as well as assumptions made by and information currently available to it and involve inherent risks and uncertainties, both general and specific.

Risks exist that forward-looking statements will not be achieved due to a number of factors including, but not limited to, developments in world diamond markets, changes in diamond prices, risks relating to fluctuations in the Canadian dollar and other currencies relative to the US dollar, changes in exploration, development or mining plans due to exploration results and changing budget priorities of the Corporation or its partners, the effects of competition in the markets in which the Corporation operates, the impact of changes in the laws and regulations regulating mining exploration, development, closure, judicial or regulatory judgments and legal proceedings, operational and infrastructure risks and the additional risks described in the Corporation's most recently filed Annual Information Form, annual and interim MD&A. The Corporation's anticipation of and success in managing the foregoing risks could cause actual results to differ materially from what is anticipated in such forward-looking statements.

Although management considers the assumptions contained in forward-looking statements to be reasonable based on information currently available to it, those assumptions may prove to be incorrect. When making decisions with respect to the Corporation, investors and others should not place undue reliance on these statements and should carefully consider the foregoing factors and other uncertainties and potential events. Unless required by applicable securities law, the Corporation does not undertake to update any forward-looking statement that is made herein.

SOURCE [Star Diamond Corp.](#)

## Contact

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