

# Fundamental Research Corp.

Investment Analysis for Intelligent Investors

September 2, 2016

## Rogue Resources Inc. (TSXV: RRS) - Initiating Coverage – Silica project in Quebec with near-term production potential

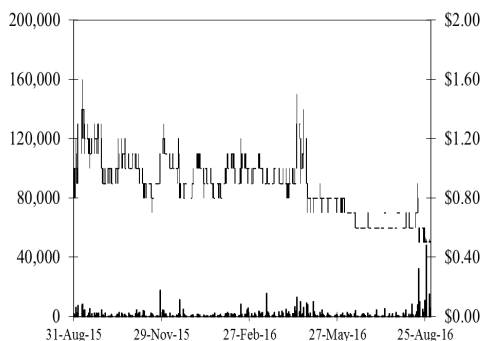
Sector/Industry: Junior Mining/Exploration

[www.rogueresources.ca](http://www.rogueresources.ca)

### Market Data (as of September 2, 2016)

Current Price	C\$0.50
Fair Value	C\$3.00
Rating*	BUY
Risk*	5 (Highly Spec)
52 Week Range	C\$0.50 - C\$1.60
Shares O/S	8,864,500
Market Cap	C\$4.43 mm
Current Yield	N/A
P/E (forward)	N/A
P/B	0.3x
YoY Return	-54.5%
YoY TSXV	46.4%

\*see back of report for rating and risk definitions



### Investment Highlights

- Rogue Resources Inc. (“company”, “Rogue”) is focused on advancing its 100% owned Silicon Ridge project into production.
- The project is 4km away from a privately owned silica mine which has been in production for over 50 years.
- An initial resource estimate was announced in July 2016. Measured and indicated resources total 9.7Mt at 98.6% SiO<sub>2</sub>, reflecting a potential mine life of 50 years.
- The results of a Preliminary Economic Assessment (“PEA”) are expected to be released this month.
- Metallurgical studies indicate product marketability for commercial applications. Management is in discussions with potential off-takers.
- The project is likely to be a relatively simple quarry and crushing operation, which has the potential to be put into production in the next 12 to 24 months, with a low \$10 million capital budget.
- The company has an impressive new management team and board of directors.
- Rogue currently has \$1.5 million in cash, or \$0.17 per share.
- We are initiating coverage on Rogue with a BUY rating and a fair value estimate of \$3.00 per share.

### Risks

- The value of the company is dependent on silicon related product prices.
- The company does not currently have any operating mines.
- Results of the upcoming PEA may not be favorable.
- Management’s ability to attract financing partners and off-takers will be contingent on the PEA results.
- Development risks.
- Access to capital and share dilution.

### Key Financial Data (FYE - Apr 30)

(C\$)	2015	2016
Cash	\$1,526,930	\$883,259
Working Capital	\$1,141,433	\$690,051
Mineral Assets	\$16,388,455	\$16,197,273
Total Assets	\$17,992,471	\$17,158,064
Net Income (Loss)	-\$766,535	-\$3,826,922
EPS	-\$0.02	-\$0.06

**Company  
History**

Rogue Resources was incorporated in 1985 in B.C., Canada. The company has undergone several name changes and management changes since inception. As per public records, which date back to the 1990s, the company was originally known as Chalice Mining Inc. Its name was subsequently changed to International Chalice Resources Inc. in 1998, to Golden Chalice Resources in 2003, and finally to the current name of Rogue Resources Inc. in 2010. At that time, the company held gold projects in Nevada and Ontario, VMS deposits in New Brunswick, the Radio Hill iron-ore project, and the Langmuir nickel project in Ontario. The company acquired the Silicon Ridge project (formerly called the Lac de la Grosse Femelle Silica project) in 2014.

**In February 2016, the company appointed a new CEO, Sean Samson.** Mr. Samson is a Harvard and Cambridge educated mining executive with more than 20 years of management and financial experience. His notable previous positions include management consultant at Bain & Company, and Vice President roles at First Nickel Inc. and Kinross Gold Corporation. The company also appointed Paul Davis as a Technical Advisor, who is a former VP of Exploration at First Nickel Inc., with 25 years of exploration and mine management experience. These two individuals currently form the senior management. The company also installed a new board, including two independent directors. **New management’s strategy is to quickly advance the 100% owned Silicon Ridge project to production.** The company has divested most of the non-core assets, except the Radio Hill iron-ore project, and the Langmuir nickel project in Ontario. Management’s strategy is to grow through acquisitions focusing on high rock value projects that have potential for near-term production.

**Silicon Ridge**

**Ownership**

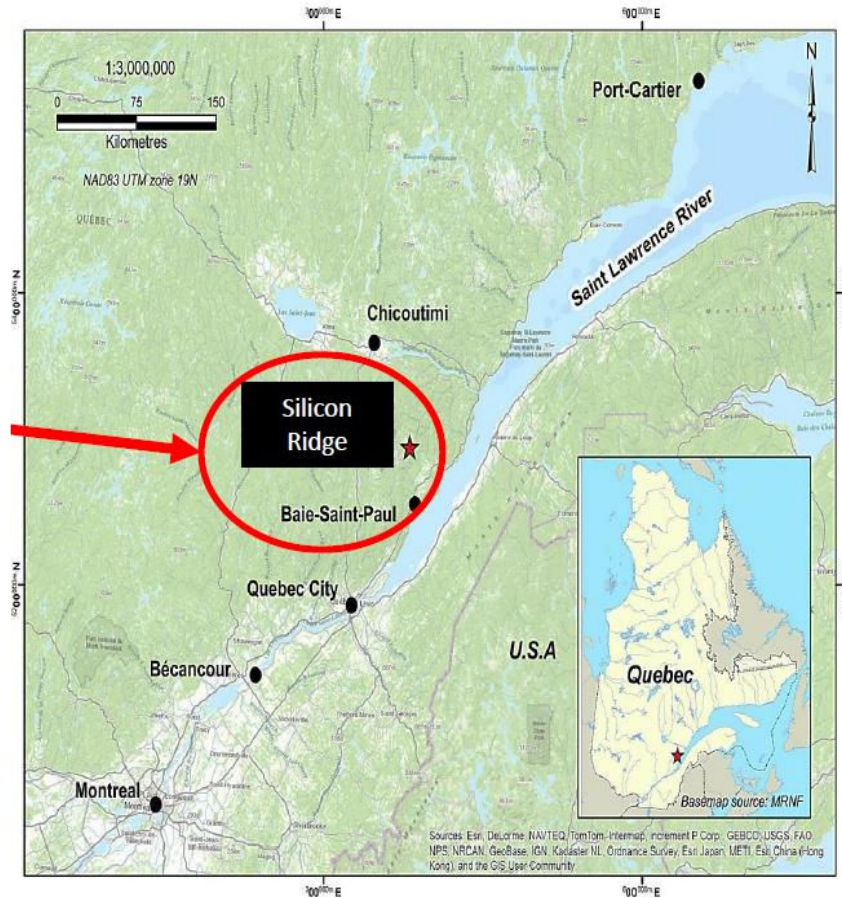
Prospect generator Globex Mining Enterprises Inc. (TSX: GSM) originally staked the property in April 2014, and subsequently sold the property (via a third party) to Rogue Resources in July 2014. **Rogue acquired a 100% interest in the project by issuing 8.5 million common shares and a 2% Net Smelter Return (“NSR”) royalty, of which, 1% may be purchased for \$0.50 million, and the remaining 1% for \$1 million.** In addition, the property has a royalty commitment of \$0.08 per tonne of material sold due to the Huron-Wendat Nation Council.

**Property Overview**

The property is located approximately 42 km north of the City of Baie-Saint-Paul, on the north shore of the Saint Lawrence River in Quebec. Baie-Saint-Paul is approximately 100 km northeast of Quebec City, and approximately 350 km northeast of Montreal. The location maps are shown below.



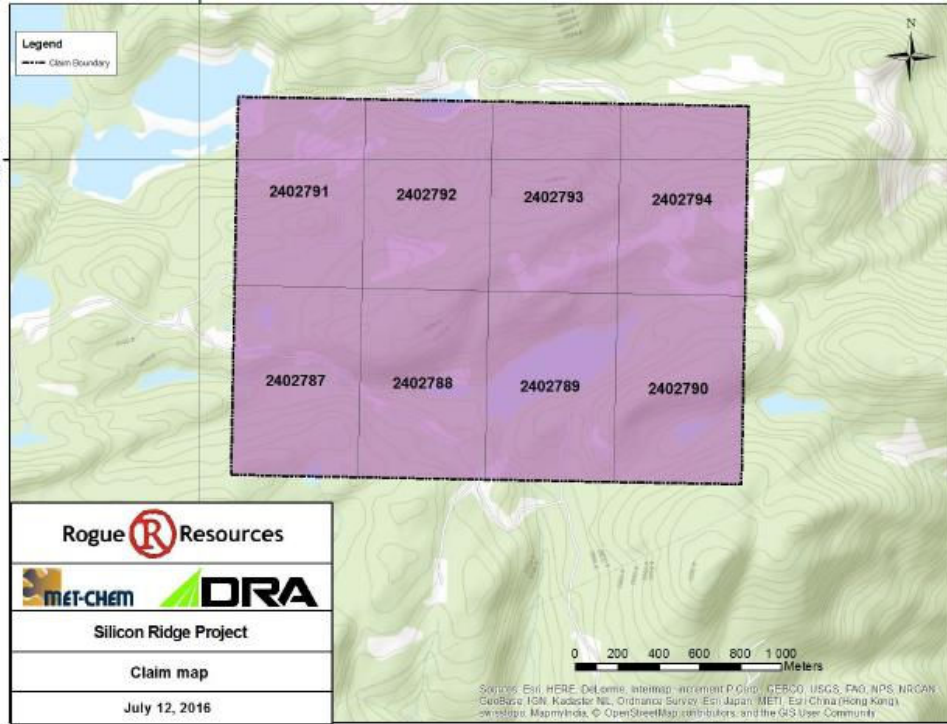
Source: 2014 NI 43-101 Technical Report by Geologica



Source: Company

The property is of rectangular shape comprising of eight contiguous mineral claims totaling 462.6 ha.

**Property Claims Map**

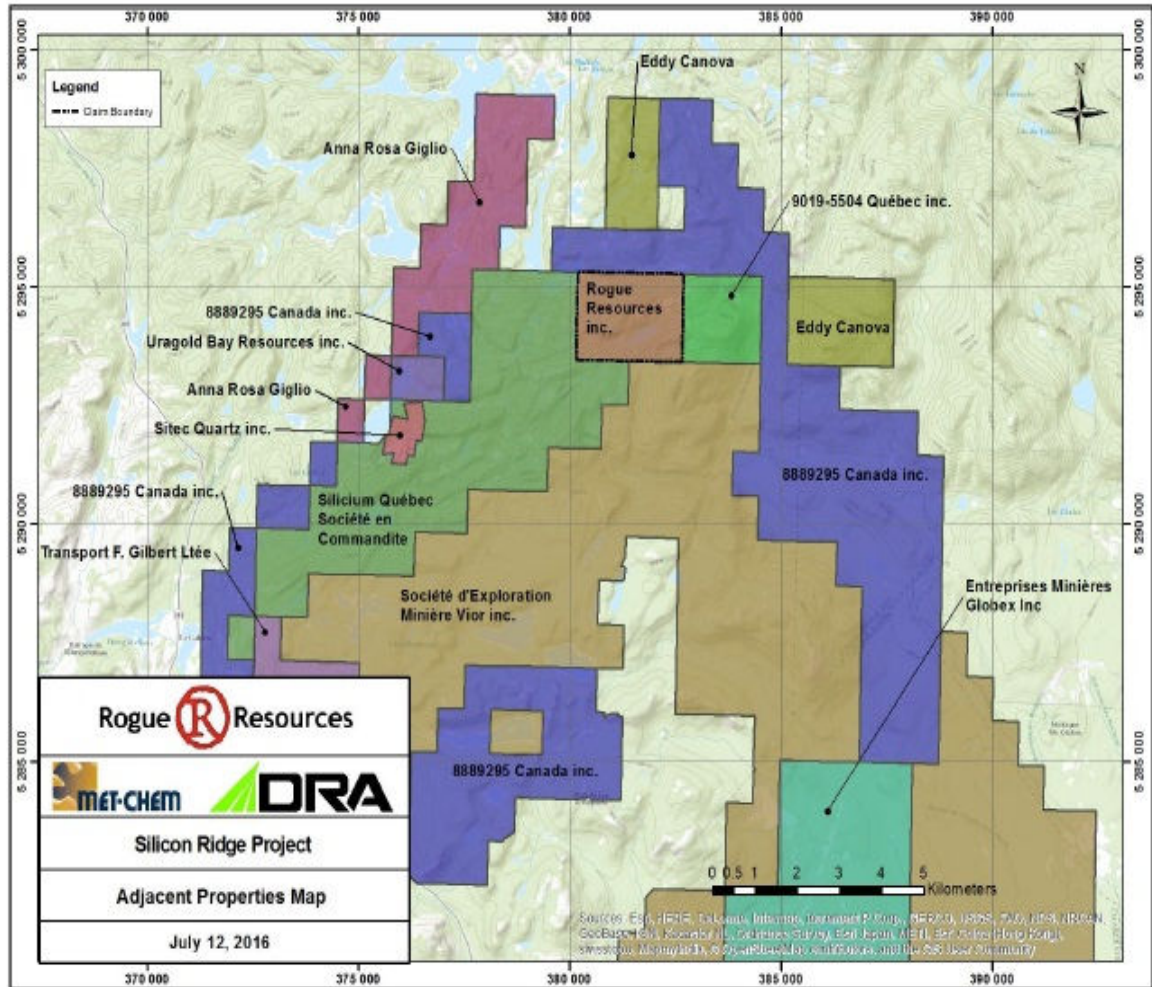


*Source: Met-Chem Technical Report (2016)*

The following map shows all the claims adjacent to the property. **Of particular note in the map is the Sitec Silica open pit mine, located approximately 4km southwest of the Silicon Ridge property.** The mine, which is held by privately owned Silicium Quebec SEC, and operated by Sitec Quartz Inc, is estimated to produce approximately 200,000 to 250,000 tons per year, and has been operating for over 50 years. The other claims in the area are owned by individuals, private mineral banks, and a publicly listed junior resource company HPQ Silicon Resources / formerly known as Uragold Bay Resources (TSXV: HPQ). All of those claims are in very early stages of development.



### Map of Adjacent Properties



Source: Met-Chem Technical Report (2016)

#### Accessibility and Infrastructure

The property is accessible from Baie-Saint-Paul via national highways and well maintained forestry roads. It is located within a relatively unpopulated area, and lies within the Zones d'exploitation contrôlée des Martres (“ZEC”). ZEC, located within 424 sq. km of public lands (mostly forested area), was set up in 1978 by the Government of Quebec to develop the region and make it available to the general public for recreational activities (hiking, camping, hunting, fishing, etc.). All of the claims in the region are affected by regulations for protecting wildlife habitat, where exploration activity is not allowed during certain periods. **According to a June 2016 Technical Report on the property by Met-Chem, a year-round mining operation may be possible except for the hunting season that stretches from September to mid - October, and during the period of caribou migration.** Although this may seem as a potential risk for the project, we do not consider this to be of significant concern considering that the neighbouring Sitec silica mine has been operating for over 50 years. In addition, Rogue maintains a close working relationship with the ZEC and other communities in the region.

The closest major power line is located 5.4 km east-southeast of the property. In 2015, the Government of Québec announced its plans to provide \$2 million in financial assistance to Sitec to build a 31 km hydro power line to the Hydro-Quebec power grid. This power line, which has since been completed, is within 4 km of Silicon Ridge. **We believe the opportunity to connect with Hydro-Quebec, either initially or at a future stage, is a significant benefit for Silicon Ridge as it not only results in lower costs, but also reduces the project's environmental footprint.**

### **Historic Exploration / Production**

A quartzite occurrence was originally discovered in the region in 1946, approximately 10 km southwest of the property, which triggered exploration work in area. Leeds Metals Company completed a drilling program and a resource estimate on the area in 1965. Subsequently, the Quebec Mine Ministry discovered new quartzite occurrences, and assigned resource estimates on several deposits during 1969 to 1974. This was followed by brief mining operations in 1975 / 1976 by GEX Silicium Limited and SOQUEM. The area has since been subject to sporadic exploration (resulting in the discovery of several new quartzite occurrences) by various parties. According to Rogue's management, the Sitec mine is estimated to have commenced production in 1963, under the name of Baskatong Quartz.

The region experienced renewed interest, followed by a staking rush in 2014 when FerroAtlantica (a leading global producer of silicon, manganese and ferrosilicon alloys based out of Spain) announced their plan to invest \$382 million on a new 100,000 tpa silicon metal plant in Port Cartier, Quebec. Recognizing the potential demand for feed (raw materials) from such a large plant, several parties started staking claims in the region. However, in late 2015, FerroAtlantica announced their intent to shelve the project citing unfavorable market conditions. We speculate this decision may have been a result of FerroAtlantica's upcoming merger with Globe Specialty Metals, Inc., another leading player in the silicon space. The merger was completed in December 2015, and a new company called Ferroglobe PLC (Nasdaq: GSM) was created. Globe Specialty operated 11 production facilities and three mining sites in six countries, with 90% of the revenues coming from North America. FerroAtlantica operated 15 production plants and five mining sites in five countries, with a majority of the revenues coming from Europe. **Ferroglobe is now the world's leading producer of silicon metal, and a leading silicon and manganese based specialty alloys producer, with consolidated revenues of \$2.0 billion in 2015.** The company currently has an enterprise value ("EV") of US\$1.88 billion.

Although the cancellation of the proposed Port Cartier plant was a setback for silica projects in Quebec, Rogue continued to stay active and aggressively advance Silicon Ridge. **With a new management team in place, and an upcoming PEA, we believe the company is well positioned to advance to production within the next 12 – 24 months.**

### **Work conducted by Rogue**

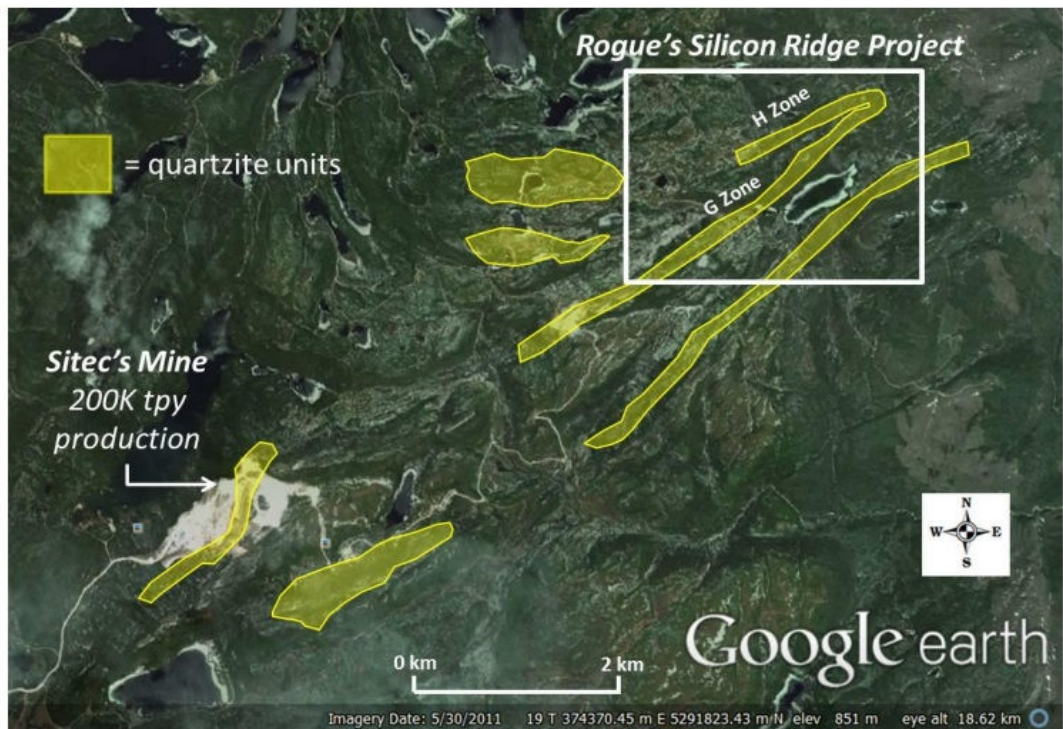
Silicon Ridge had not experienced any significant exploration work or production prior to Rogue's acquisition. Initial exploration work by Rogue began in September 2014, which

comprised the following:

- mapping and sampling quartzite units
- airborne helicopter Magnetics and VLF survey
- line cutting, mapping, trenching, and
- collecting quartzite samples for chemical analysis and testing

**These programs resulted in the selection of two quartzite units with high potential – “G” and “H”.** The company then decided to drill and gather sufficient data to prepare an initial NI 43-101 compliant resource estimate on the property.

Rogue completed a **drill program totaling 11,822m (71 holes)** over the G and H units from August to December 2015. This program confirmed a strike length of 1,950 m for the G unit (true widths between 31 m and 115 m and depth of at least 275 m), and approximately 500m for the H unit (true widths between 35m and 118m, and depths of at least 225 m), and both units are interpreted to remain open at depth and along the strike. **As shown in the map below, the G unit, which has a SW-NE orientation, is estimated to be an extension of a quartzite unit mined by Sitec.**



Source: Company

Another highlight of the 2015 drill program was that 80% of the samples indicated a grade of over 97% silica (SiO<sub>2</sub>).



## Geology and Mineralization

The quartzite on the property is of metamorphic type, and occurs as large amplitude folds. The property is underlain by quartz and garnet gneisses, and/or stratigraphic units of the De La Galette Formation, which is part of the Des Martres Group.

The quartzite on the property is typically coarse-grained, massive, locally fractured. It may contain traces of biotite, muscovite, hematite, magnetite, ilmenite, fuschite, and rutile, which are commonly associated with coloured quartzite. Unlike most of the other commodities, a preliminary knowledge of the quality of the quartzite is obtained through a visual inspection of the color imparted by the type and content of impurities.

Despite being in a seismically active region (187 micro-earthquakes were recorded from June 2015 to June 2016), no surface rupture has ever been reported in the region. However, the Met-Chem technical report stated that high-magnitude earthquakes may trigger landslides.

The following section provides a general overview of silicon, its various forms and applications. We believe it is essential for investors to understand these concepts prior to delving into additional details of Silicon Ridge.

### Primer on Silica

Silicon is the second most abundant element in the earth's crust after oxygen. It rarely exists on its own in nature, but in various forms of silicon dioxide ( $\text{SiO}_2$ ), commonly referred to as silica, or silicates (compounds containing silicon, oxygen, and one or more metals). Over 90% of the earth's crust is composed of silicates. Silicon is found in the form of sand, quartz, rock crystals, as an oxide, and in silicate materials such as granite, asbestos, feldspar, clay, and mica.

Most silicon is used commercially in its natural state (silicates or silica), without being separated into the element, in construction (cement and concrete), ceramics, specialty glasses, etc.

**Elemental silicon metal is used in the manufacture of aluminium alloys, chemicals / silicones (such as cosmetics, paints, coatings, and adhesives) and polysilicon (photovoltaic solar panels / semiconductor sectors).** For these applications, oxygen is removed from silica to produce metallurgical grade silicon (Mg-Si), which is at least 98% pure. Approximately 80% to 90% of the Mg-Si is used in the first two applications. The remaining 10% to 20% is used in the photovoltaic / semiconductor sectors. Mg-Si has to be further refined into hyper pure silicon (semiconductor grade silicon). Typically, HPQ (High Purity Quartzite; greater than 99.997%  $\text{SiO}_2$ ) is used for such applications. HPQ sells at a significant premium over other types of silicon. The Spruce Pine district in Western North Carolina, U.S., accounts for 90% of all HPQ used in the electronics industries. Mg-Si accounts for approximately 20% of the world's total elemental silicon production.

Elemental silicon is also used in the form of ferrosilicon (Fe-Si), which is an iron-silicon



alloy, and used in the production of steel. Ferrosilicon is estimated to account for approximately 80% of the world's total production of elemental silicon.

### Metallurgy of Silicon Ridge

Rogue retained Germany based Dorfner ANZAPLAN in October 2015 as a consulting and engineering partner to conduct an initial evaluation of the potential of Silicon Ridge's quartzite in various applications. ANZAPLAN is the consulting arm of Dorfner, which is a leading European industrial minerals producer. Approximately 250 kg of quartzite was selected and delivered to ANZAPLAN's Laboratory facilities in Germany for preliminary chemical composition analysis. Rogue also provided ANZAPLAN with three PQ diamond drill cores and three NQ diamond drill cores, weighing a total of 6,998 kg, in December 2015, and January 2016, for analysis.

In April 2016, ANZAPLAN provided the company with a report identifying a number of potential high value applications for materials from Silicon Ridge similar to the range of products manufactured at the Sitec mine. ANZAPLAN identified potential for use in ferrosilicon, high value applications (glass and ceramics) and a variety of fillers (such as paint and sealants). These applications typically use materials with grades of up to 99.5% SiO<sub>2</sub>.

Ferrosilicon and Silicon Metal	High Value Applications								Fillers (paint, coatings, sealants, silicone rubber and epoxy)
	Container Glass (coloured & clear), Float Glass (window, automotive)	Fibreglass (insulation & fabrics)	Borosilicate Glass, Pyrex	White Float Glass, Opal Glass, Crystal Glass	Solar Glass, Borofloat	Quartz Powder & Engineered Stone	Silicon Carbide, Fused Silica, Sodium/Potassium Silicate	Ceramics (body & glazes)	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Source: Company's summary of the ANZAPLAN study (April, 2016)

Encouraged by the positive results, the company initiated another bulk sampling program, and shipped another 1,500 kg of quartzite to Germany in May 2016. ANZAPLAN provided preliminary results from the crushing and optical sorting of the 1,500 kg bulk sample in June 2016. **The test work returned highly positive results as they indicated that 89.4% of the materials meet the required thresholds for ferrosilicon quality, and the remaining 10.6% meet the quality for further beneficiation (further ore processing to reduce impurities) to fulfill the requirements for high value applications.**

Size Fraction	SiO <sub>2</sub> (wt%)	Al <sub>2</sub> O <sub>3</sub> (wt %)	Fe <sub>2</sub> O <sub>3</sub> (wt%)	TiO <sub>2</sub> (wt%)	Mass (wt %)
Bulk Sample Feed 50 – 400 mm (calc.)	99.2	0.41	0.012	0.04	100.0
Crushed Fraction 20 – 120 mm (calc.)	99.2	0.40	0.011	0.04	89.4
Crushed Fraction <20 mm	99.0	0.50	0.020	0.04	10.6

Source: Company's summary of the ANZAPLAN study (April, 2016)

The tests conducted by ANZAPLAN showed that processing can significantly reduce the content of deleterious elements to achieve grades fit for generating various silicon products. ANZAPLAN indicated that low iron oxide contents are achievable for both Fe-Si and Mg-Si applications. Although low alumina and titania grades are achievable for Fe-Si applications, they are still elevated compared to typical quartz feedstock materials used for Mg-Si production.

The following table summarizes the company’s key target markets based on the tests conducted to date by ANZAPLAN.

	A- High Purity Quartz (HPQ)	B- Glass				C- Ceramics			D- Silicon Metal			E- Fillers (incl. eng. stone)	F- Building Materials
		Optical	Specialty (includes LCD, solar glass & Boro)	Float Glass (includes Auto& Window)	Container	Glazed	Sanitary	Tiles	Solar	MgSi	FeSi		
SiO <sub>2</sub> Purity for the Silica	Very High	High	Medium	Low	Lower	High	Medium	Lower	High	Medium	Low	Low	
Impurities of Concern	Al, Ti, Fe	Fe, Cr, No colour	Fe		Fe & Ti (cause discolouration)			Boron, Phosph.	Ti, Al, Fe	Ti, Al	No colour	None	
Market Size	Very Small	Small	Small	Large		Largest group by volume (with Fillers)			Small	Medium	Large volume	Large volume	
Typical price per Silica input/ MT (USD)	>\$5,000	\$200-500	\$40-80	\$20-40	<\$20	\$40-80 (up to \$300 if fully ground)			~\$70	~\$60	~\$50	\$30-100	Broad range

The focus for Rogue and confirmed by ANZAPLAN through metallurgical testing

Source: Company

### Resource Estimate

An initial resource estimate on the property, calculated by Met-Chem Canada, was announced in June 2016. The resource estimate was based on the 71 holes / 11,822m of drilling conducted on the property in 2015.

	Measured	Indicated	Measured + Indicated	Inferred
Tonnes (Mt) - all zones	3.2	6.5	9.7	4.6
SiO <sub>2</sub> (%)	98.61	98.60	98.60	98.64
TiO <sub>2</sub> (%)	0.06	0.06	0.06	0.06
Al <sub>2</sub> O <sub>3</sub> (%)	0.56	0.56	0.56	0.53
Fe <sub>2</sub> O <sub>3</sub> (%)	0.10	0.12	0.12	0.13

The estimate includes resources from 3 zones referred to as the South West, North East and Centre North zones; a significant portion of the estimate is derived from the South West Zone. All zones are open along strike and down dip and have potential for

expansion. Only mineralization contained within a preliminary open pit shell was included in the resource estimate.

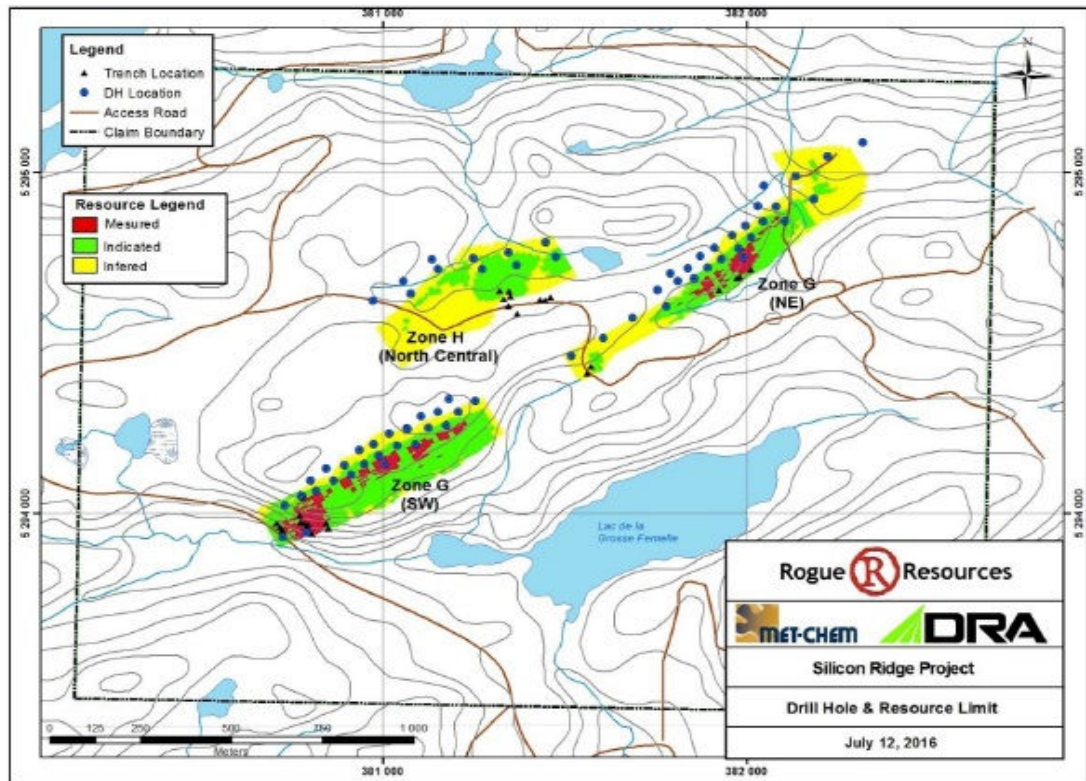
The estimate was based on the following cut-off grades, product prices and cost estimates for the open pit shell constraint.

$$\geq 98.1\% \text{ SiO}_2, \leq 0.8\% \text{ Al}_2\text{O}_3, \leq 0.075\% \text{ TiO}_2, \leq 0.24\% \text{ Fe}_2\text{O}_3$$

Optimized Pit Economic Parameters (\$)	Ferrosilicon (FeSi) Grade	High Value
Product Sale Price	\$100.00	\$200.00
Mining Cost	\$6.73	\$6.73
Processing Cost	\$16.84	\$45.84
G & A Cost	\$2.00	\$2.00
<b>Total Cost</b>	<b>\$25.57</b>	<b>\$54.57</b>

The following maps show the plan view and the vertical cross section of the estimated resources:

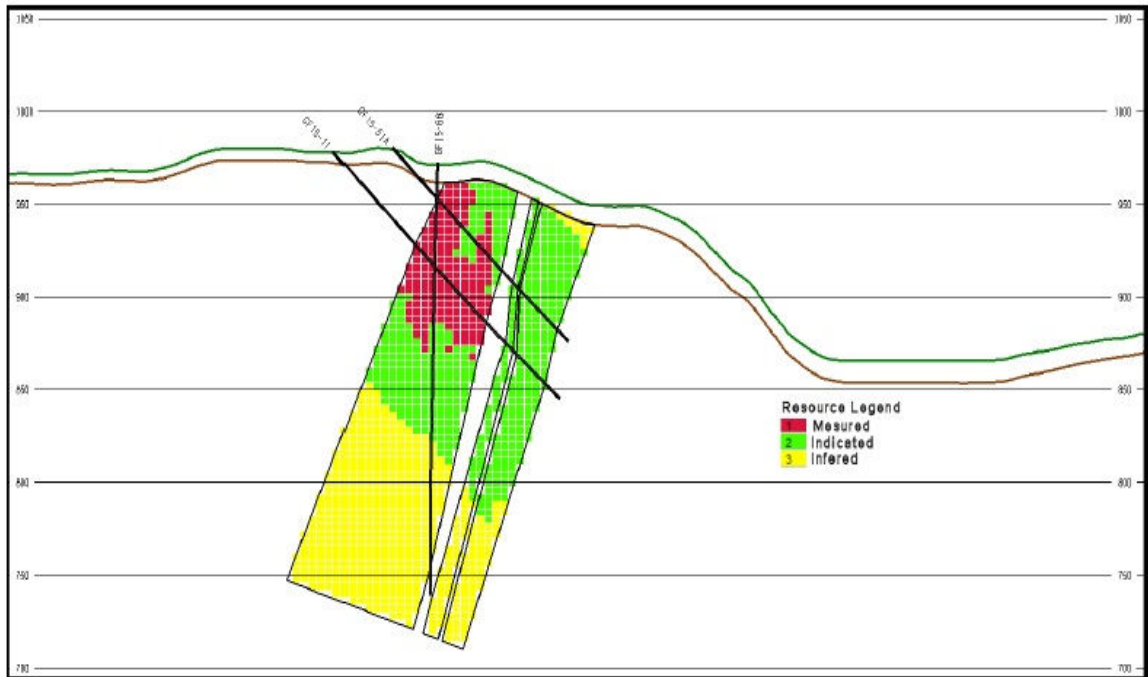
**Plan view of mineral resources**



Source: Met-Chem Technical Report (2016)



**Vertical cross section with classified blocks**

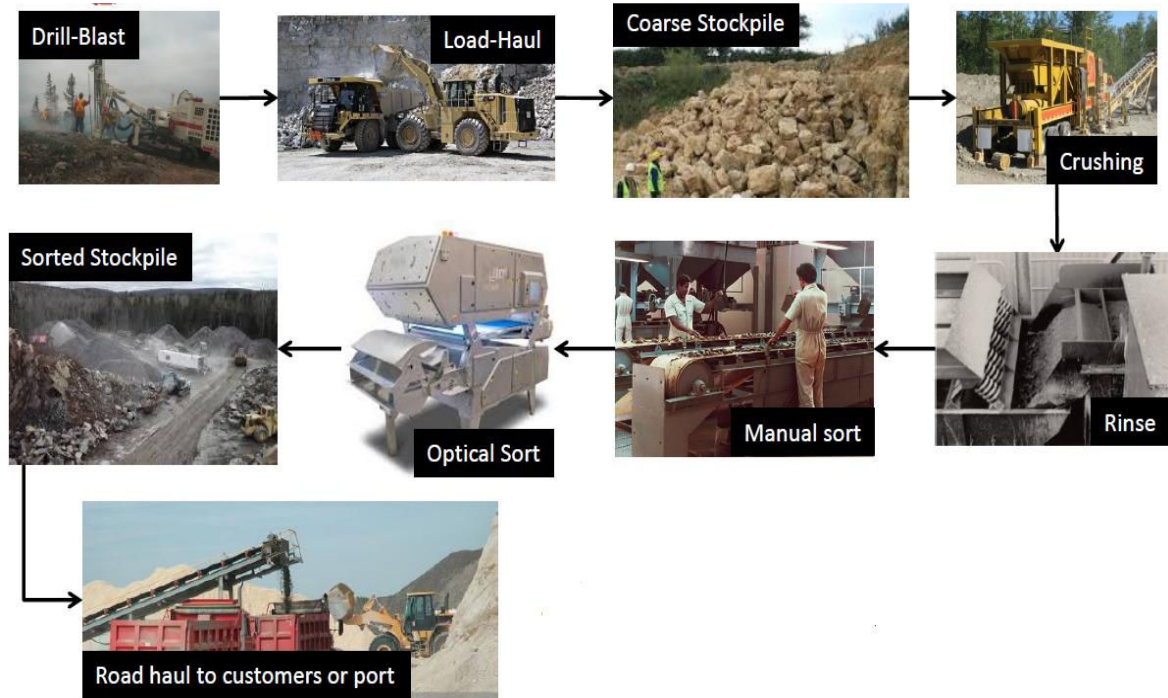


Source: Met-Chem Technical Report (2016)

Met-Chem did not disclose any operating cost or capital cost estimate for the project. They are currently completing a PEA on the project, which is expected to be released this month.

**Recovery / Production Process**

The project can be operated as a relatively **simple quarry and crushing operation**. The quarry operation is likely to include the following activities: drilling/blasting, excavation, stockpiling, crushing, rinsing, sorting, and stockpiling product for shipment to customers / port.



*Source: Company*

The capital cost of such an operation is expected to be very low as the company does not intend to construct a processing plant / mill. Materials are expected to be shipped directly to customers or to processing plants in the U.S. / Canada. The Sitec mine ships their quartzite (after crush, screening and sorting) to the following three facilities:

- **Elkem Metal Canada’s foundry in Chicoutimi, located 100km away** - Elkem’s processing plant has a capacity of 40,000 tonnes of ferrosilicon. Elkem is owned by China National Bluestar Group Co. Ltd.
- **Silicium Quebec, located 200km away in Becancour, Quebec** - this 47,000 tonne Mg-Si processing plant is owned by Ferroglobe PLC and Dow Corning Corporation. Ferroglobe, as mentioned earlier, is one of the world’s leading suppliers of silicon metal and silicon-based specialty alloys. Dow Corning (owned by Dow Chemical / NYSE: DOW) is the largest silicone product producer in the world.
- **Cambria Quartz Stone Surfaces in Minnesota, U.S.,** for quartz filler and engineered stone countertops.

Sitec has two seasons of operation: the quarry operating from May to November, and processing operating all year round. The project employs approximately 70 people in summer and 35 in winter.

**Assuming a 200,000 tpa operation, we estimate the initial measured and indicated resource of 9.7 Mt at Silicon Ridge is likely to support a 50 year mine life. The large**

resource estimate also allows them to selectively excavate higher quality zones to potentially direct ship the material to end users with minimal processing or beneficiation.

### **Permitting**

A mining operation on the property will require either a “Mining Lease” (BM) or a “Lease to Mine Surface Mineral Substances” (BEX). **Permitting is expected to be relatively straightforward as silica is classified as a non-metallic material, and falls under quarry guidelines.** In addition, no environmentally harmful chemicals / reagents are required during the recovery / production process on site.

Rogue has conducted community consultations in the past and presented its project to various local groups, such as the ZEC, and the Municipal Regional Offices of St. Urbain, Baie St. Paul and MRC de Charlevoix. In 2015, Rogue signed a Memorandum of Understanding (“MOU”) with the First Nations council of the Huron Wendake Nation. Our discussions with management indicated that they intend to continue to interact and work closely with the local communities as the project is advanced to production.

### **Environmental**

In their technical report, Met-Chem stated that they are not aware of any risks, environmental liabilities or other significant risks that may affect access or the ability to perform work on the property.

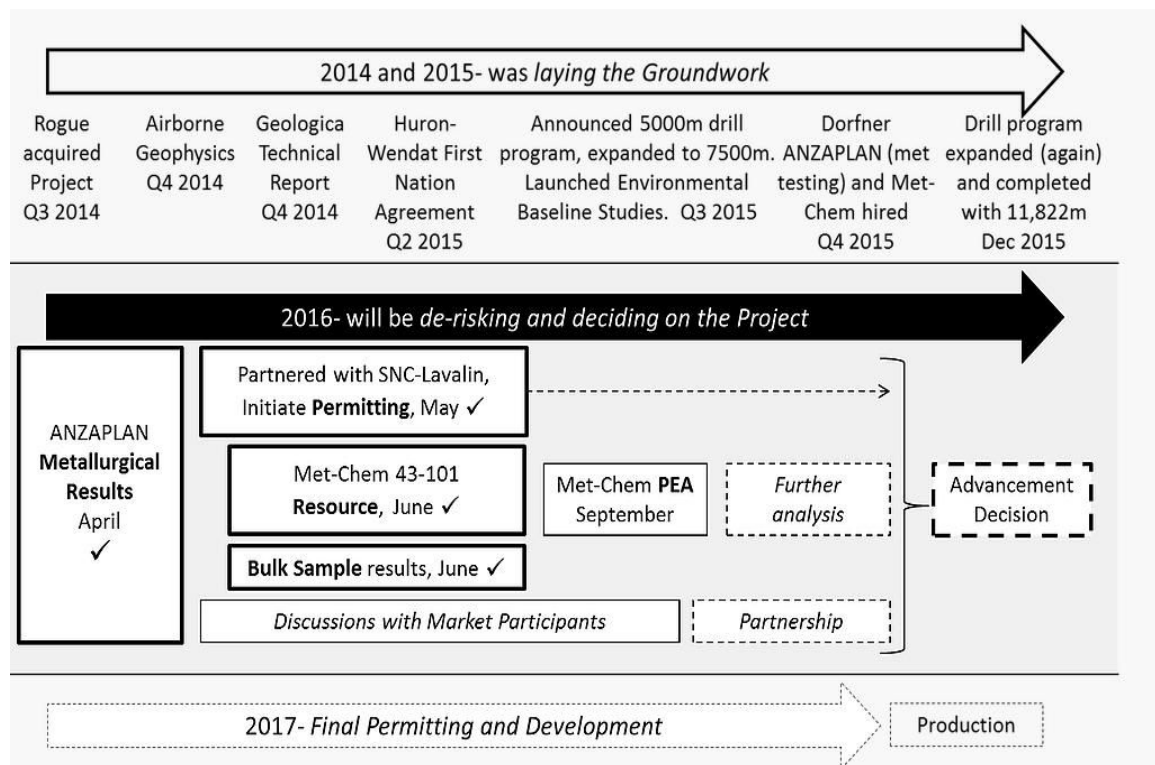
Engineering consulting firm, WSP Group plc (TSX: GNV), has provided the company a plan for a full environmental impact study report that would be required if and when the project is advanced to the permitting stage.

In May 2016, Rogue **retained SNC Lavalin (TSX: SNC)** to carry out a baseline environmental study towards the Certificate of Authorization (“CofA”) application for a quarry operation. The field work and reports are expected to be completed by November 2016, and the submission of the CofA form in December 2016.

### **Proposed Development Timeline**

The following chart outlines management’s development plan for Silicon Ridge.





Source: Company

**Near-term catalysts include:**

- A PEA to be completed by Met-Chem Canada in September 2016 (based on a 200,000 tpa scenario)
- Management is in discussions with potential buyers (such as manufacturers of ferrosilicon, glass, countertops and fillers). To date, samples of the product processed by ANZAPLAN have been sent for analysis to six customer labs in Canada, the U.S. and Europe.

**Rogue estimates the initial capital cost to get the project to production to be approximately \$10 million, which we believe is reasonable.** A recently completed PEA by Canadian Metals Inc. (CSE: MSE) on their Langis Silica property in Quebec included a capital budget of approximately \$4.13 million for a quarry operation, which includes \$2.61 million for a beneficiation plant, \$0.85 million for quarry equipment, and \$0.67 million for infrastructure. This silica production component was a small part of the overall budget, which includes a silicon processing plant. The following is a quick summary of the Langis project:

*The Langis Silica property is located in the eastern Matapedia Region of Quebec. Canadian Metals completed a PEA in April 2016, with plans to complete a feasibility study in 2017, and commence production by 2018/2019. The PEA proposes to construct a Mg-Si processing plant, with the flexibility to also produce Fe-Si. The PEA estimates*

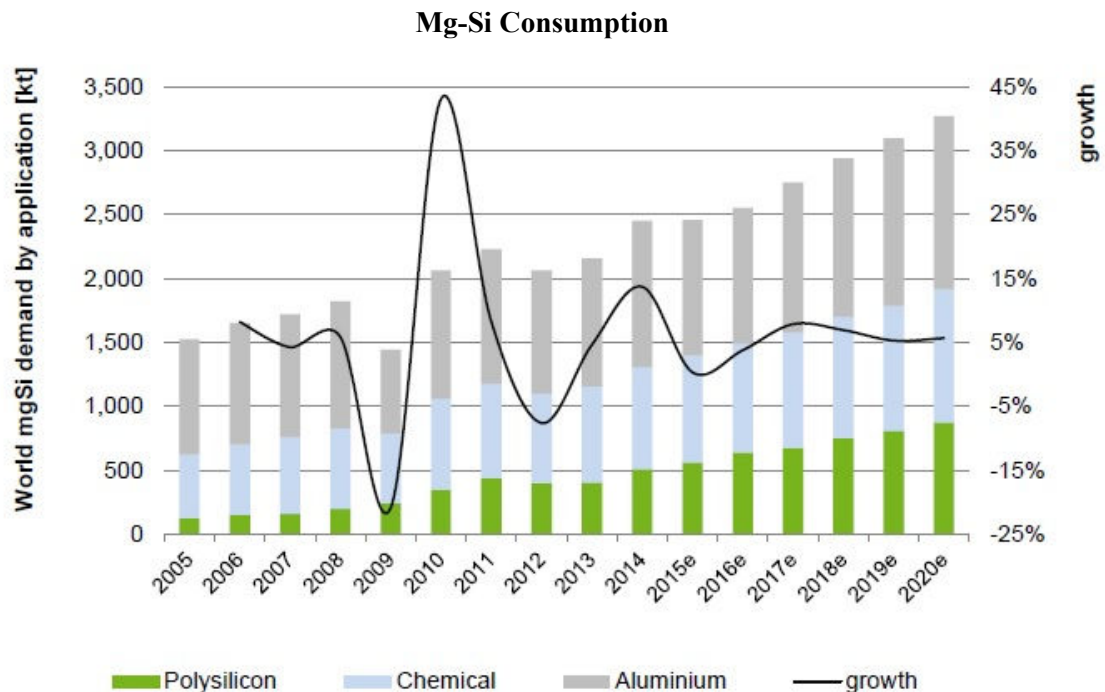
50,000 tpa of Mg-Si production and a 35 year mine life. The capital cost is estimated at \$303 million, with an after-tax net present value @ 7.3% of \$380 million and an after-tax internal rate of return of 20.7%. The after-tax payback period is estimated to be 4.2 years.

Our discussions with Rogue’s management indicated that, upon completing the PEA, they intend to do a detailed review of the production process and execution strategy. **Considering the simplicity, and low CAPEX nature of the project, management intends to directly advance the project to production without pursuing a prefeasibility or feasibility study.** The company will simultaneously seek project financing options, with a special preference for non-dilutive options such as debt, joint venture (JV) partnerships and off-take financing.

**Global Demand**

The **global demand for Mg-Si** is expected to have increased from 1.5Mt in 2005 to just under 2.5Mt by 2015. China accounts for approximately. 25% to 35% of the consumption of Mg-Si, where demand grew by 17% p.a. from 2005 to 2013 (Source: Roskill).

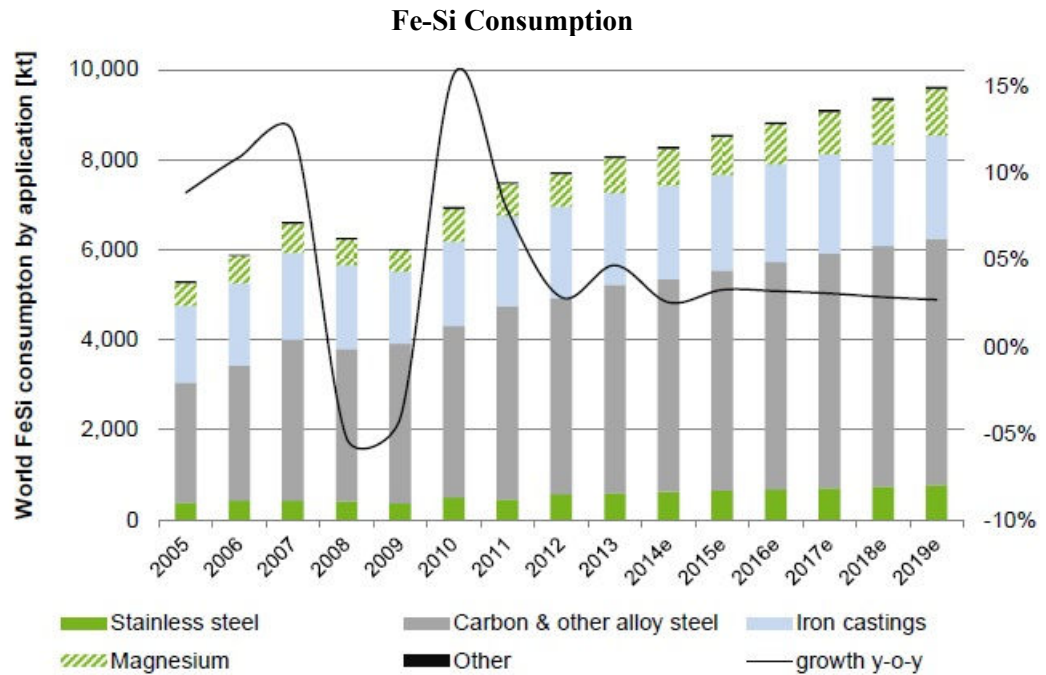
Aluminium is estimated to have accounted for approximately 45% of the total demand, while chemicals are estimated at 35% and polysilicon at 20%. Polysilicon demand is expected to be the key demand driver going forward (see chart below). CRU estimates the global demand of Mg-Si will grow at 5% p.a. though 2020.



Source: CRU (Nov 2015), Viridis.iQ GmbH estimates / Technical Report on the Langis deposit

The following chart shows the **global demand for Fe-Si**. The major drivers for FeSi demand are the steel, iron casting and magnesium industries. Total global consumption is

expected to have been approximately 8.2MT in 2015; China is estimated to have accounted for 55% to 60% of the total demand. According to Roskill, global consumption is estimated to have increased at a rate of 6.1% from 2000 to 2013, and is expected to grow at 3% p.a. from 2013 to 2019. The slower growth rate estimate is primarily because of the moderate growth of steel production in China.



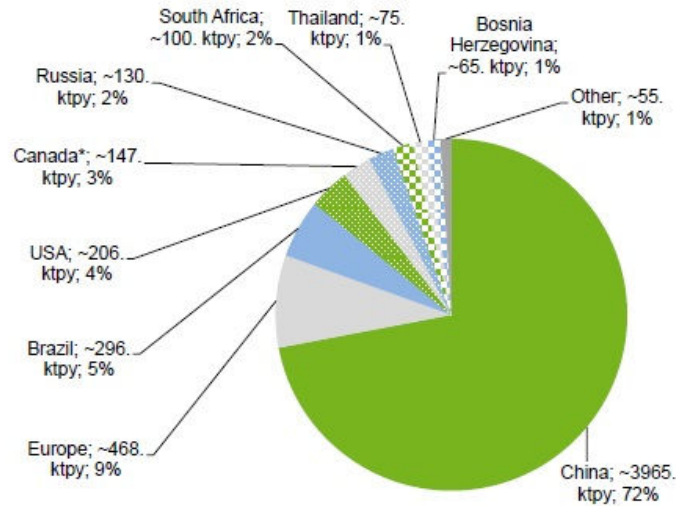
Source: Roskill Information Services Ltd. (2014), Viridis.iQ GmbH / Technical Report on the Langis deposit

**Global Production Capacity**

Mg-Si and Fe-Si are typically located in regions which have easy access to low-cost electricity and ore, and to local off-takers. Roskill estimates there are approximately 240 **Mg-Si smelters** sites in the world, of which, over 80% are based in China. China accounts for 72%, or 3,965 ktpy of the total global capacity of 5,581 ktpy. The three leading Mg-Si producers (not by capacity) are Ferroglobe PLC (458 ktpy), Elkem / Bluestar (205 ktpy) and Dow Corning Inc. (192 ktpy). Canada and the U.S.s are estimated to have capacities of 147 ktpy and 206 ktpy, respectively. Canada's main producers of silica are in Québec, Ontario and Alberta.



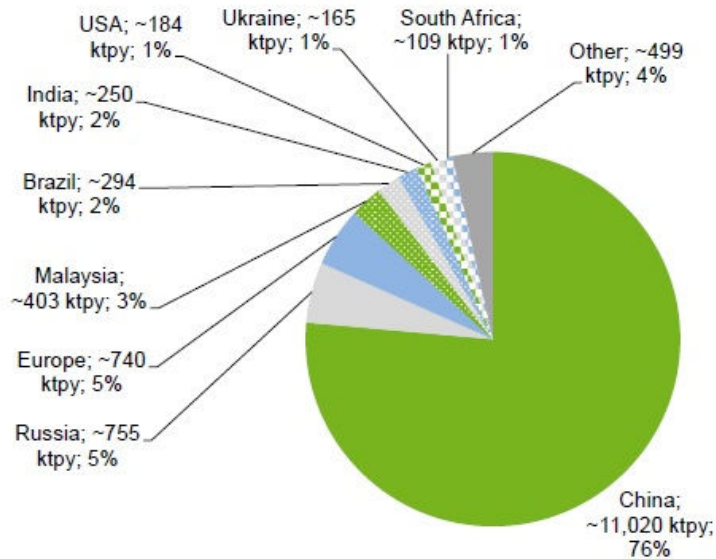
### Mg-Si Production Capacity (2013)



Source: Roskill Information Services Ltd. (2014), Viridis.iQ GmbH / Technical Report on the Langis deposit

Roskill and CRU estimate there are 1,110+ **Fe-Si smelters** in the world of which, 1,020+ are located in China.

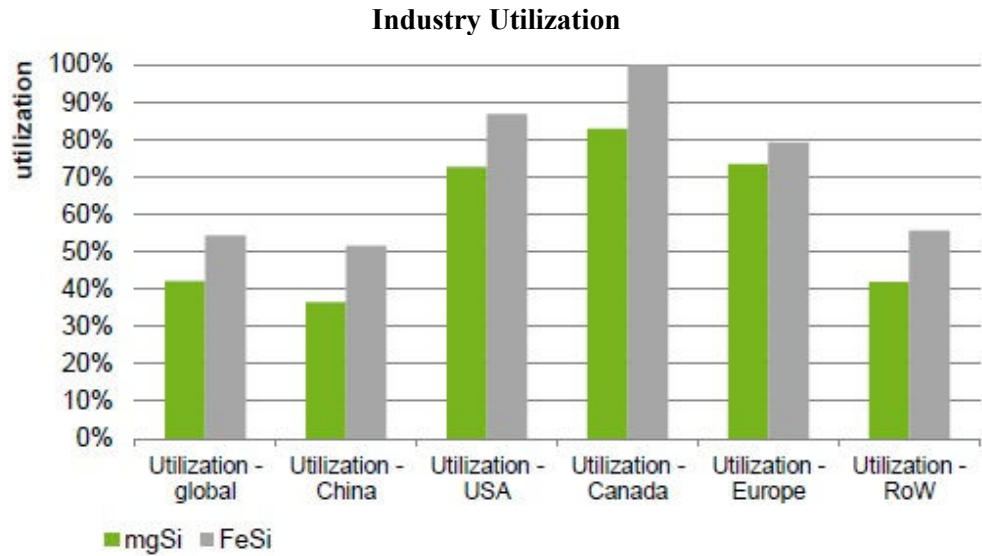
### Fe-Si Production Capacity (2013)



Source: Roskill Information Services Ltd. (2014), data compiled by Viridis.iQ GmbH / Technical Report on the Langis deposit

The following chart shows the industry utilization rates by region. The average global capacity utilization level is estimated to be approximately 42% for Mg-Si and approximately 55% for Fe-Si. **The high utilization rates in the U.S. and Canada indicate that there is high potential for the opening of new processing plants in the**

region, which is beneficial for ore providers such as Rogue.

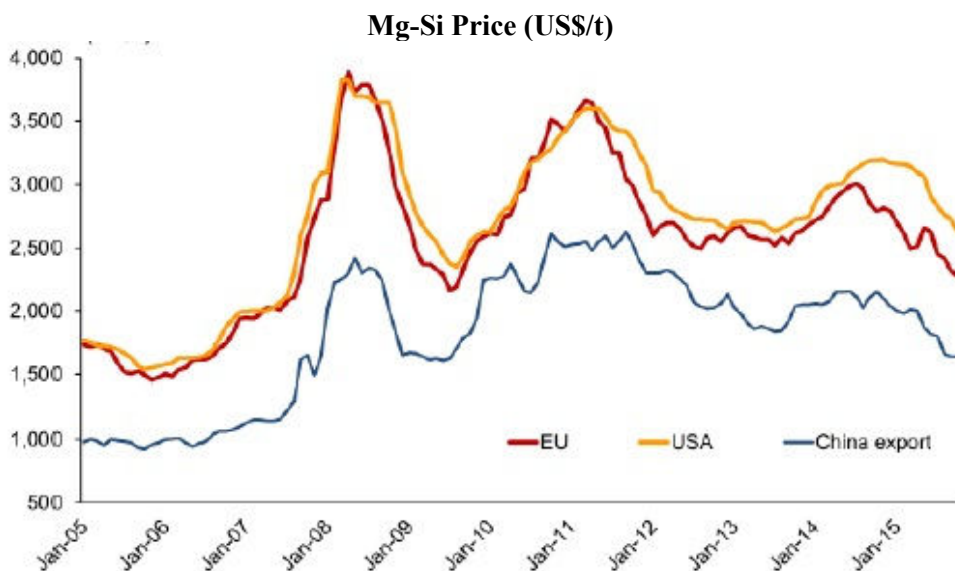


Source: Roskill Information Services Ltd. (2014), Viridis.iQ GmbH estimates / Technical Report on the Langis deposit

Also, the U.S. has been importing approximately 50% of its consumption; i.e. 150 ktpy of Mg-Si (10% - 15% of which is from Canada) and 200 ktpy of Fe-Si (15% to 20% from Canada). This is another encouraging indicator for Rogue.

**Pricing**

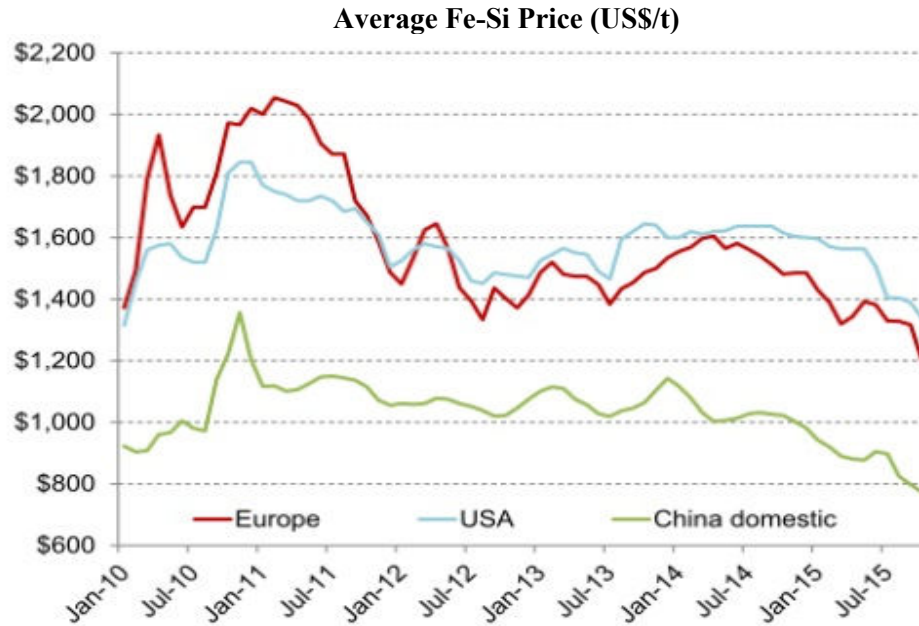
Mg-Si and Fe-Si are not traded on metal exchanges, and therefore, their markets are less transparent than conventional commodities, such as gold, copper, silver, etc. Typical off-take contract durations are for two to three years. The following chart shows Mg-Si prices.



Source: AlloyConsult (Nov. 2015) / Technical Report on the Langis deposit

Like most commodities, Mg-Si prices have been on a downward trend in the past 2 years. The decline in prices is primarily a result of the stronger US\$ and the overall weakness in the Chinese economy. **Roskill estimates prices in the U.S. will stay between US\$2,500 to US\$3,000 / t through 2019.**

The following chart shows Fe-Si prices.



Source: AlloyConsult (Nov. 2015) / Technical Report on the Langis deposit

Average Fe-Si prices have ranged between US\$1,400-1,600 / t over the past few years in the U.S. The recent decline is primarily attributed to the softness in the global steel industry. **Roskill estimates prices in the U.S. will stay between US\$1,500 to US\$1,600 / t through 2019.**

The following, we believe, will keep prices at reasonably healthy levels:

- Increasing electricity prices and labor cost is narrowing the gap between production prices in China and Europe / North America.
- There is speculation that real Chinese capacity may be much lower than what are currently reported.
- CRU recently stated that there is a strong need for additional production capacity to meet demand growth.
- China maintains a 25% export tax
- Anti-dumping duties on Chinese imports

*Other Projects*

**Langmuir Nickel Property**

The Langmuir property is 100% owned by the company. It was acquired in 2004 with a group of six other properties in Northern Ontario. The underlying owner retains a 2% net smelter return royalty of which, 0.5% can be purchased for \$500,000.

The property is located 35 km southeast of Timmins, Ontario. It is accessible by road and is surrounded by producing mines and exploration projects. Regal Silver Investments Inc.'s Redstone (nickel) Mill is located 7km to the east. Glencore's (LSE: GLEN) Timmins processing plant is only 32 kilometers to the northwest.

The company has identified Kambalda style nickel mineralization at Langmuir. The name comes from the Kambalda mining district in Western Australia, where these deposits have produced approximately 35 million tonnes of ore grading 3% nickel from 25 mines since the 1960s. Kambalda style deposits are characterized by nickel mineralization, but also have potential for copper, cobalt, and platinum group elements.

The following table shows the resource estimate calculated by SRK Consulting (Canada) Inc. in 2010.

Category	Quantity	Grade		Metal	
		Tonnes	Ni %	Cu %	Ni lbs 000's
<b>Open Pit**</b>					
Indicated	590,000	0.99	0.06	12,816	840
Inferred	125,000	0.88	0.06	2,437	157
<b>Underground **</b>					
Indicated	87,000	1.04	0.08	1,997	149
Inferred	46,000	0.91	0.05	923	53
<b>Combined</b>					
Indicated	677,000	1.00	0.06	14,813	989
Inferred	171,000	0.89	0.06	3,360	210

*Source: SRK (Canada) Inc. Resource (2010)*

### **Radio Hill Iron Ore Property**

This property, located west of Timmins, Ontario, covers portions of a historically explored iron formation consisting of the Radio Hill iron deposit, and the unexplored Nat River iron deposit 6 km to the east.

The company entered into an option agreement in 2007 to acquire a 100% interest. The property is subject to a 3% NSR, 2% of which may be purchased for \$3 million. The company is required to make an annual payment of \$50k or 100k shares until commencement of commercial production, at which time a \$7 million payment is required.

According to the company, approximately \$10 million (inflation adjusted) has been spent on the property between 1959 and 1965. There was no significant exploration on the property again until 2011. In 2011 and 2012, Rogue completed a 10,000+ m / 24 hole drill program.

Rogue currently has no plans to allocate any capital / resources to either the Langmuir property or the Radio Hill property because of the soft nickel and iron markets. We



*Management*

believe management is likely to divest these properties if they are able to attract potential buyers.

**We believe that it is typically a good sign when management and the board have a significant ownership of the company’s shares. In the case of Rogue, as management and board are brand new, none of the members currently have any significant ownership.**

The company’s board has three members, of which two are independent. Brief biographies of the management team, as provided by the company, follow:

**Sean Samson, President, CEO & Director**

Mr. Samson is a mining executive with more than 20 years of management and financial experience. He was most recently Vice President & Head of Corporate Development at First Nickel Inc. for four years, including a period of six months as interim COO, responsible for safety, mine development and operations at the 250 person Lockerby underground mine (Sudbury, Ontario). In 2012, he won the Canadian Young Mining Leader award from the Canadian Institute of Mining, Metallurgy and Petroleum. Prior to First Nickel Inc., he was Vice President Commercial Development at Kinross Gold Corporation for five years where he had diverse, multi-functional responsibilities including: supply chain, energy, merger integration, enterprise risk and capital approvals, leading a team of more than 300 people across eight countries. Before Kinross he was a management consultant at Bain & Company and traded for investment banks in New York and Europe. Mr. Samson received his A.B. from Harvard University and an MBA from Cambridge. He is currently a PDAC board member and a Cleantech advisor at MaRS, a Toronto based Innovation Centre.

**Paul Davis, BSc Honours Geology, MSc Economic Geology, Technical Advisor**

Mr. Davis has more than 25 years of exploration and mine management experience in base metals, precious metals and industrial minerals. Most recently, Mr. Davis was VP Exploration at First Nickel Inc. and over his career he has discovered , built and operated mines, including raising more than \$150M in equity and debt financing. Mr. Davis graduated from the University of Western Ontario (BSc- Honours Geology) and the University of Alabama (MSc- Economic Geology).

**Angela Yap, BComm, CA, CFO**

Ms. Yap is a Chartered Accountant with 20 years of accounting, taxation and management experience. After starting her career at KPMG in the mining and forestry sector, she held senior positions in various industries including mining, oil and gas, information technology and real estate. She is an instructor at BCIT and served on the Financial Executives International board for several years. Ms. Yap graduated from the University of British Columbia (B.Comm.).

**Christopher Wolfenberg, Lawyer, Independent Director**

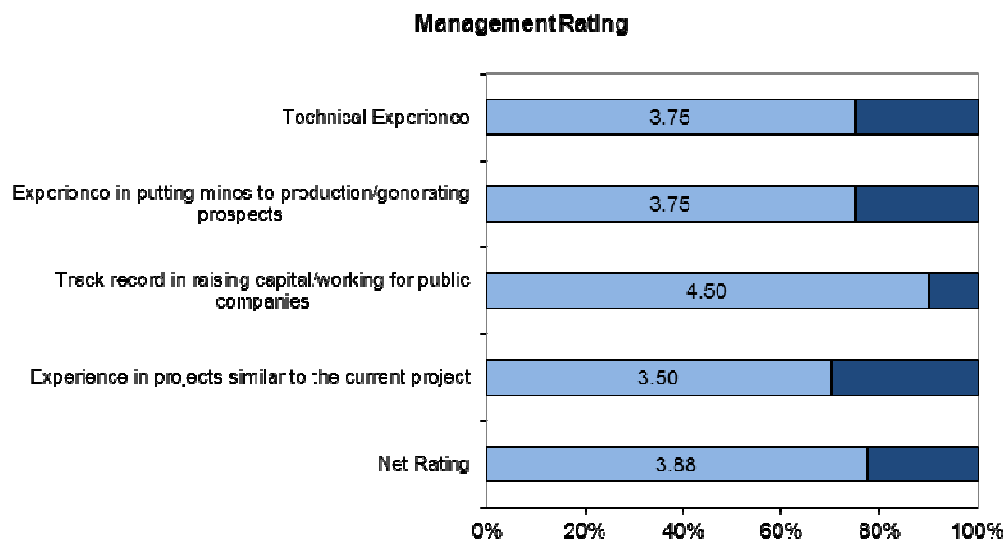
Mr. Wolfenberg is a Partner with the law firm of Fasken Martineau LLP since 2015 and prior thereto a Partner with Norton Rose Fullbright since 2010. Mr. Wolfenberg holds a

Bachelor of Social Sciences from the University of Ottawa, a Bachelor of Laws from Queen's University and a Master of Laws from Cornell Law School. Mr. Wolfenberg is a member of the Law Society of Alberta.

**Christopher Berlet, CFA, Independent Director**

Mr. Berlet is a graduate of Mining Engineering from Queen’s University (1990) and holds a Diploma in Accounting & Finance from the London School of Economics and Political Science (1991). Mr. Berlet is a CFA Charter Holder (2004) and has business experience in both finance and the mineral industries. Mr. Berlet is also President, CEO and Director of Stakeholder Gold Corp and a Director of Canuc Resources Corporation.

**Our net rating on Rogue’s management team is 3.9 out of 5.0 (see below).**



We believe that the Board of Directors of a company should include independent or unrelated directors who are free of any relationships or business that could materially interfere with the director’s ability to act in the best interest of the company. An unrelated/independent director can be a shareholder. The following table shows our analysis of the strength of Rogue’s board.

*Financials*

	Poor	Average	Good
Two out of three directors are independent			X
All three directors hold shares of the company (none significant)		X	
The Audit committee is composed of three board members, two are independent			X
The Compensation committee is composed of two board members, two are independent			X

At the end of FY2016 (ended April 30, 2016), the company had cash and working capital of \$0.88 million and \$0.69 million, respectively. We estimate the company had a burn rate (cash spent on operating and investing activities) of \$0.32 million per month in FY2016. The following table summarizes the company’s liquidity position:

(in C\$)	2015	2016
Cash	\$1,526,930	\$883,259
Working Capital	\$1,141,433	\$690,051
Current Ratio	3.62	4.02
LT Debt / Assets	-	-
Monthly Burn Rate (incl. investing activities)	(75,027)	(323,105)
Cash from Financing	\$2,012,990	\$3,233,588

Subsequent to the year-end:

- In July 2016, the company **completed a \$0.88 million private placement** by issuing 8.80 million flow-through shares at a unit price of \$0.10. Each unit consists of a common share and a share purchase warrant (exercise price of \$0.12; expiry date of July 18, 2018).
- In July 2016, the company announced that it **completed the sale of its Pen South property** to Rapier Gold Inc. (TSXV: RPR) for \$325k and 1.50 million shares of Rapier.
- In August 2016, the company completed a **10:1 share consolidation**, and brought the number of outstanding shares to 8.87 million.

Rogue currently has \$1.5 million in cash, or \$0.17 per share.

*Stock Options and Warrants*

We estimate the company currently has 0.61 million options outstanding (weighted average exercise price of \$0.88) and 3.69 million warrants outstanding (weighted average exercise price of \$1.23). At this time, none of the stock options or warrants are ‘in-the-

**Valuation and Rating**

money’.

The following table shows a summary of our valuation model on the Silicon Ridge project.

<b>DCF Valuation</b>	
Tonnes per year	200,000
Ore loss	5%
Net tonnes per year	190,000
Average Product Price (\$/t)	\$110.6
Operating costs (\$/t)	\$70.0
NSR	n/a
Other Royalties	\$0.08
Mine Life (years)	20
Capital Cost (\$)	\$10,000,000
Discount rate	13.5%
Tax	26.9%
<b>Net Asset Value (C\$)</b>	<b>\$23,874,678</b>
Current Working Capital	\$1,250,000
Book Value of Other Assets (discounted by 90%)	\$1,178,116
<b>Fair Value of RRS</b>	<b>\$26,302,794</b>
No. of Shares	8,864,500
<b>Fair Value per Share (\$)</b>	<b>\$2.97</b>

Note that we have used conservative estimates as most of our assumptions are very preliminary. The upcoming PEA will give us more clarity on each input.

We used the following key assumptions:

- Annual production of 190,000 tonnes, net of ore loss, for a 20 year mine life
- We used an average product price of \$110/t; this is based on ANZAPLAN’s test results which indicated that 89.4% of the materials meet the required thresholds for Fe-Si quality, and the remaining 10.6% for high value applications. Met-Chem used an average price of \$100/t for Fe-Si and \$200/t for high value applications.
- Initial capital cost of \$10 million and total operating cost of \$70/t reflecting a gross profit of approximately 35%, which we believe is in line with the industry average. For example, Ferroglobe had a gross margin of 38% in 2015.
- The company will repurchase the outstanding 2% NST for \$1.5 million as we estimate that the present value of cash flows on the NSR is higher than the purchase price.



- We have applied a discount rate of 13.5%; we typically assign a discount rate between 10% and 15% to juniors based on their risk profile, stage of development and location.
- As we believe that management is likely to divest its other non-core assets (Radio Hill and Langmuir Nickel), we applied a 90% discount to their combined book value of \$11.78 million, and assigned a value of \$1.18 million on the two projects.

The following table shows their sensitivity of our fair value to changes in product prices and discount rates.

		Weighted Average Product Price (\$/t)				
		\$70	\$90	\$111	\$150	\$200
Discount Rate	7.5%	-\$0.78	\$2.14	\$5.16	\$10.90	\$18.19
	10.0%	-\$0.76	\$1.61	\$4.06	\$8.71	\$14.63
	13.5%	-\$0.74	\$1.09	<b>\$2.97</b>	\$6.56	\$11.12
	15.0%	-\$0.73	\$0.92	\$2.63	\$5.86	\$9.98
	17.0%	-\$0.71	\$0.74	\$2.24	\$5.09	\$8.71

**Based on our review of the company’s projects, management quality and execution strategy, and our valuation models, we are initiating coverage on Rogue with a BUY rating and a fair value estimate of \$3.00 per share.**

**Risks**

We believe the company is exposed to the following key risks (not exhaustive):

- The value of the company is dependent on silicon related product prices.
- The company does not currently have any operating mines.
- Results of the upcoming PEA may not be favorable.
- Management’s ability to attract financing partners and off-takers will be contingent on the PEA results.
- Development risks.
- Access to capital and share dilution.

As with most junior exploration / development companies, we rate Rogue’s shares a risk of 5 (Highly Speculative).

**Fundamental Research Corp. Equity Rating Scale:**

**Buy** – Annual expected rate of return exceeds 12% or the expected return is commensurate with risk

**Hold** – Annual expected rate of return is between 5% and 12%

**Sell** – Annual expected rate of return is below 5% or the expected return is not commensurate with risk

**Suspended or Rating N/A**— Coverage and ratings suspended until more information can be obtained from the company regarding recent events.

**Fundamental Research Corp. Risk Rating Scale:**

**1 (Low Risk)** - The company operates in an industry where it has a strong position (for example a monopoly, high market share etc.) or operates in a regulated industry. The future outlook is stable or positive for the industry. The company generates positive free cash flow and has a history of profitability. The capital structure is conservative with little or no debt.

**2 (Below Average Risk)** - The company operates in an industry where the fundamentals and outlook are positive. The industry and company are relatively less sensitive to systematic risk than companies with a Risk Rating of 3. The company has a history of profitability and has demonstrated its ability to generate positive free cash flows (though current free cash flow may be negative due to capital investment). The company’s capital structure is conservative with little to modest use of debt.

**3 (Average Risk)** - The company operates in an industry that has average sensitivity to systematic risk. The industry may be cyclical. Profits and cash flow are sensitive to economic factors although the company has demonstrated its ability to generate positive earnings and cash flow. Debt use is in line with industry averages, and coverage ratios are sufficient.

**4 (Speculative)** - The company has little or no history of generating earnings or cash flow. Debt use is higher. These companies may be in start-up mode or in a turnaround situation. These companies should be considered speculative.

**5 (Highly Speculative)** - The company has no history of generating earnings or cash flow. They may operate in a new industry with new, and unproven products. Products may be at the development stage, testing, or seeking regulatory approval. These companies may run into liquidity issues, and may rely on external funding. These stocks are considered highly speculative.

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