

**Due Diligence and Valuation Report**

|                           |                  |
|---------------------------|------------------|
| Arrowhead code:           | 94-02-02         |
| Coverage initiated:       | 12/03/2018       |
| This document:            | 07/24/2019       |
| Fair share value bracket: | \$0.63 to \$0.78 |
| Share Price (23 July):    | \$0.23           |

**Analyst Team**

Ankit Gupta  
[ankit.gupta@arrowheadbid.com](mailto:ankit.gupta@arrowheadbid.com)

**Market Data**

|                       |                 |
|-----------------------|-----------------|
| 52-Week Range:        | \$0.21 – \$0.95 |
| Average Daily Volume: | 310,709         |
| Market Cap. on date:  | \$31.29 million |

**Fiscal Year (FY)** Aug 1 – July 31

MGX Minerals Inc. ("MGX" or "the Company") is a diversified company involved in the treatment and extraction of minerals from wastewater and brines, development of battery mass storage systems as well as in traditional exploration and development of mineral properties.

MGX Minerals' stock price has fallen significantly over the last year. The stock price continues to be volatile and has decreased from \$0.88 on July 24rd, 2018 to \$0.23 on July 23th, 2019. The major reason for the same can be attributed to the general market sentiment which has not been positive towards commodities and related stocks recently, and investors could be seeking safer or more attractive options than high risk ventures. The risky nature of the Company's business and the frequent issuances of shares might also have contributed to the decrease in share price.

MGX has invested in numerous mining projects and is also exploring several futuristic clean energy technologies.

Given due diligence and valuation estimations based on multiple methodologies including Sum of the Parts, Discounted Cash Flow and Comparable Companies Valuation, we believe that the fair share value of MGX lies between \$0.63 to \$0.78.



|                    |  |
|--------------------|--|
| Company:           | MGX Minerals, Inc  |
| Ticker:            | CSE: XMG / FKT: 1MG  |
| Headquarters:      | British Columbia, Canada                                     |
| Managing Director: | Jared Lazerson   |
| Website:           | <a href="http://www.mgxminerals.com">www.mgxminerals.com</a> |

***Focus on bringing cleaner technologies to conventional energy businesses***

MGX has a renewed focus towards identifying new age technologies which have the potential to revolutionize the clean energy industry. The Company has been somewhat successful so far in implementing this strategy. In line with this strategy, the Company has made two major acquisitions that show promising results. These are PurLucid, a wastewater treatment service company and ZincNyx Energy Solutions, a company developing battery mass storage system using zinc-air technology.

***Started revenue generation after successful commercialization of PurLucid technology***

MGX has successfully commercialized the Nanoflotation technology and generated its first revenue in November 2018, by treating evaporator blowdown wastewater ("EBD") for an oilsands operator.

MGX continues to develop Rapid Lithium Extraction technology jointly with PurLucid and has commercialized this proprietary technology. The Company has successfully concentrated lithium using this technology and expects to generate revenue from lithium extraction as well.

However, this technology is commercially viable only when treated brine has lithium concentration of over 200 ppm, limiting the types of brines that can be used for lithium extraction.

The Company is targeting to use this technology in various South American locations, where lithium brine deposits have relatively high lithium concentration. Other applications may include extraction from wastewater generated by some industries where the brine is rich in lithium, e.g. battery manufacturing.

### ***Technological superiority in water business continues to offer huge market potential***

The Company claims that it can treat EBD at a relatively lower cost using the PurLucid's Nanoflotation technology. MGX is amongst early movers to recognize the potential of oil wastewater and EBD treatment business. EBD is one of the byproducts of heavy oil produced during steam assisted gravity drainage ("SAGD") process. The Company believes itself to be the sole provider of wastewater handling solutions to the SAGD operators. The Company is focusing on EBD, as it allows MGX to charge a premium, since alternative disposal options are even more expensive for oil producers. Further, this wastewater contains mid-level concentrations of lithium, which can be monetized using the Company's proprietary Rapid Lithium Extraction technology.

### ***Promising future for zinc-air battery technology; commercialization potential to be established***

MGX sees huge potential in its battery mass storage business and has secured 20 patents for the zinc-air battery technology. We believe that the zinc-air battery storage systems are expected to have a competitive advantage over lithium-ion and other alternative battery storage systems in some specific applications because of their low manufacturing cost, flexible energy/power ratio and non-volatile nature.

However, zinc-air battery storage systems are cumbersome and require setting up the infrastructure for mechanical recharging when compared to lithium-ion batteries. Also, zinc-air batteries stop functioning properly due to repeated cycles of charging and discharging as the

zinc accumulates unevenly. The Company claims to have overcome this challenge and expects to commercialize the technology in the next few months.

### ***Going slow on mining business, with majority of theoretical value being trapped in a single mining asset***

MGX continues to be active in acquiring and exploring several magnesium, lithium, silicon, gold, niobium-tantalum-titanium properties. Most of these projects are still at exploration stage, and the Company appears to be going slow in developing them.

Most of the value in the mining comes from Company's flagship Driftwood Creek magnesium project. Although, development is underway for this project, the Company still has a long way to go before it can generate positive cash flows, as it requires significant upfront capital investment. Till the Company is able to successfully raise capital for the project, the value in this project remains theoretical.

### ***Continuing growth in demand for Lithium***

Lithium ion battery technology has been the energy storage technology of choice for several applications. Growing demand from various industries, including electric vehicles and grid level mass storage systems, is expected to continue to fuel demand for lithium. The Company is getting prepared to capitalize on this demand and successful development of the Rapid Lithium Extraction technology is a step in this direction.

### ***Diversification into multiple businesses pose execution challenges as they compete for management focus***

MGX's strategy of diversification beyond mining has helped in mitigating some of the risks inherent in junior mining companies. However, it appears that some of the businesses, like mining, face some execution challenges and delays due to lack of focus. Similar delays are not uncommon in deployment of wastewater treatment systems.

### ***Strategy to acquire technologies early and create value by commercializing them***

The Company has been successful in acquiring and commercializing PurLucid's exclusive Nanoflotation Technology. It also capitalized on the acquisition by jointly developing Rapid Lithium Extraction technology and commercializing it. Similarly, MGX Renewables has received material attestation from the Canadian Standards Association related to the use of system components in MGXR's energy storage systems, which are expected to enter the market soon.

Although, a lot is yet to be proven, the apparent success of the model suggests that MGX's strength lies in identifying promising technologies early in their life and then creating value by enabling their commercialization. One of the ways in which MGX can be looked at is an investment vehicle that creates value by providing a platform for clean technology startups.

### ***Muted financial performance till FY 2018***

For several years, MGX has been focusing on acquiring and exploring mining assets, with a promise of future cash flows. The Company had not generated any significant cash flows till FY 2018. However, it has been incurring substantial operating expenses over this period. The Company makes several of its payments by issuing stock, which can partly be attributed to cash shortfall. The major costs till recently have been towards exploration, however, now the Company spends a lot on business development, advertising and technology promotion, with the thought of creating a revenue pipeline.

### ***Water business to bring in much needed cash flows in the near term***

The North American region is expected to witness robust growth in the global Produced Water treatment market in the upcoming years, due to increased exploration and production activities across the region. Furthermore, the growing oil

and shale gas production in the US and Canada is expected to further boost this regional market in the coming years.

MGX's wastewater treatment business started generating revenue in November 2018. Additionally, the Company has deployed two NFLi-10 and plans to deploy NFLi-35 by the end of 2019. The Company expects to reach an operating capacity of 10,000 bpd and generate \$15 million in revenue from processing wastewater by the year end.

The water business is expected to bring in much needed cash flow in the near term, however, the Company has been relatively optimistic about its timelines regarding the deployment of wastewater systems in the past. Furthermore, the financial success of wastewater treatment systems is also dependent on the acceptance of the technology by the Oil and Gas ("O&G") industry, as well as the successful testing of the wastewater systems before deployment.

### ***Dependence on frequent fundraising to run and grow the business***

In FY 2018, the Company spent approximately \$4.1 million on exploration expenses and \$9.7 million in advertising and promoting. These are essential expenses, required to generate cash flows in the future. The Company will have to continue to invest in growth and will need capital, given limited revenue potential from operations in the near term.

Further, MGX's business model heavily relies on acquiring mineral properties or technology companies, which also needs capital. Raising funds through debt would be challenging, as the Company does not have significant cash flows and the cost would be on higher side due to risky nature of its ventures.

One of the ideas that the Company is exploring is to ringfence some of its projects into a special purpose vehicle to raise capital.

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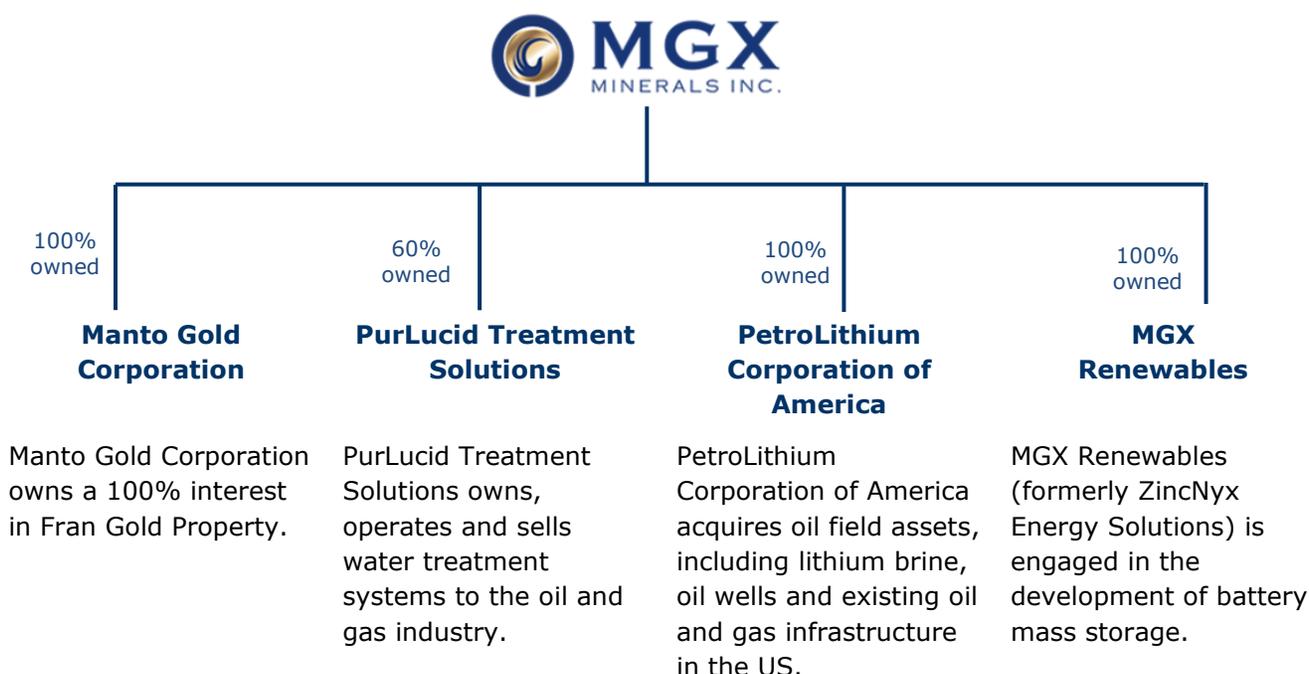
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## Company Presentation

MGX Minerals, Inc. (“MGX” or “the Company”) is a diversified company involved in the treatment of several categories of wastewater and brine, extraction of minerals from this wastewater and brine, development of battery mass storage technology, as well as traditional exploration and development of mineral assets.

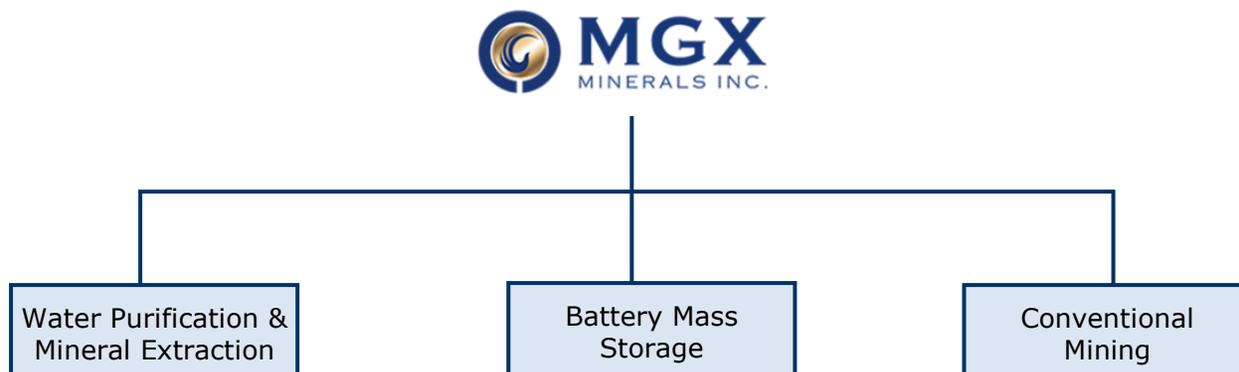
MGX was incorporated in 2012 as Defiant Mineral Corporation, a subsidiary of Gorilla Resources Corporation. In July 2014, Defiant Mineral Corporation was acquired by the shareholders of Manto Gold Corporation in a reverse takeover transaction. Subsequently, the name of Defiant Minerals Corporation was changed to “MGX Minerals Inc.” and Manto Gold Corporation became a wholly owned subsidiary of MGX Minerals.

Since 2014, MGX has been investing in mineral properties in Canada, Chile, and Argentina. In January 2017, the Company formed a 100% owned subsidiary, PetroLithium Corporation of America, to acquire petrolithium assets in the United States. In addition, the Company owns, operates and sells water treatment systems through its 60% owned subsidiary, PurLucid Treatment Solutions. The Company also owns a zinc-air battery technology through its wholly owned subsidiary, MGX Renewables. This technology is suitable for low-cost micro and grid-scale energy storage.



## Business Model

MGX has three business lines - Wastewater Purification and Mineral Extraction, Battery Mass Storage and Conventional Mining.



## Water Purification & Mineral Extraction

MGX owns and operates water treatment systems for the oil and gas industry producers through PurLucid. The Company has also developed a technology to extract minerals from the wastewater generated during oil and gas production. Following is a brief snapshot of the technologies developed / owned by the Company:

### **Wastewater Purification Technology**

In September 2016, MGX entered into an agreement to acquire up to 100% equity stake in PurLucid, an engineering company providing wastewater handling solutions to oilfield operators. PurLucid utilizes exclusively licensed Nanoflotation technology that separates impurities from oil and gas wastewater and produces clean water as a final product. The Company deployed its first system for an oilsands customer in November 2018 and has started generating revenue for the first time since FY 2014.

### **Rapid Lithium Extraction Technology**

MGX, together with PurLucid, has developed Rapid Lithium Extraction technology that concentrates lithium and other elements from natural brine; wastewater produced in oil & gas facilities, industrial plants, and lithium-rich mines; and other brine sources. The Company believes that this patent pending technology is quicker and more sustainable to recover lithium and will significantly reduce the time required for lithium extraction from 18-24 months to 2-3 days. It aims to replace the capital-intensive conventional lithium extraction process that involves solar evaporation and hard rock mining.

### **Gasification Technology**

In January 2018, MGX entered into a partnership with Highbury Energy Inc. to develop a technology that utilizes the gasification methods to concentrate metals from petroleum coke. The Company is developing this technology because petroleum coke contains high-grade vanadium, nickel and cobalt, all of which can be utilized in batteries.

## Mass Storage Battery

MGX's subsidiary, MGX Renewables, has developed modular energy storage systems that utilize patented regenerative zinc-air fuel cell battery technology to efficiently store energy in the form of zinc particles. The Company believes that the technology allows for low cost mass storage of energy and can be deployed into a wide range of scalable energy storage applications. MGX acquired ZincNyx and renamed it MGX Renewables in December 2017, as part of its strategy to seek out innovative technologies to provide clean energy resources. ZincNyx was a development-stage company that specialized in the development of zinc-air batteries and modular energy storage systems.

In October 2018, MGX announced that it has decided to spin-out 40% of the common shares of MGX Renewables Inc. to its shareholders. In June 2019, MGX Renewables closed the offering of subscription receipts for gross proceeds of \$2,005,000 through the sale of 8,020,000 subscription receipts. On July 19, 2019, MGXR has been conditionally approved to list its common shares on the CSE and has satisfied the requirements for listing on the CSE, which is expected to occur on July 22, 2019.

## Mining

MGX's mineral property portfolio consists of lithium, magnesium, silicon, niobium-tantalum, and gold properties. The Company has acquired these properties in Canada, US, Chile, and Argentina. A majority of these properties are petrolithium properties. Petrolithium is lithium extracted from petroleum brine that is produced as a by-product during oil and gas production. A snapshot of MGX's mining properties is given below:

### Lithium properties

| Asset / Project                    | Project Overview   | Area (Ha) | Working Interest | Stage  |
|------------------------------------|--|-----------|------------------|--|
| Alberta Petrolithium Portfolio     | Portfolio includes 20 projects. The most significant of which is Sturgeon Lake   | >600,000  | 100%             | Sturgeon Lake under Development. Rest under Exploration. |
| Utah Petrolithium Portfolio*       | Portfolio includes the Blueberry Unit and the Lisbon Valley Claims   |           | 75%-100%         | Exploration  |
| Kibby Basin Project*               | Option to acquire up to 25% interest from Belmont Resources  |           | Up to 25%        | Exploration  |
| Power Metals Portfolio*            | 20% working interest in Power Metal's portfolio of hard rock properties, which include Case Lake and three other properties. 100% interest in all petrolithium brine assets of Power Metal     |           | 20%-100%         | Case Lake under Exploration                              |
| Lithium Salars Spa (CLS) Portfolio | 50% interest in CLS's portfolio of projects, including a 100% interest in three prospective lithium exploration projects – Francisco Basin, Laguna Brava and Laguna Escondida Lithium Projects |           | 50%              | Exploration  |
| Salinitas Tenements                | Option agreement for 80% interest in the Salinitas lithium brine mining tenements  | 4,308     | Upto 80%         | Exploration  |

\* Properties owned by MGX's wholly owned subsidiary, Petrolithium Corporation of America

## Other Mineral Properties

| Mineral                   | Asset / Project   | Project Overview   | Area (Ha) | Working Interest | Stage   |
|---------------------------|---|--|-----------|------------------|---|
| Magnesium                 | Driftwood Creek and Prospects                             | Key mining claims include Driftwood Creek and seven other projects in British Columbia | 326       | 90%              | Driftwood Creek under Development. Rest under Exploration |
| Silicon                   | Silicon Portfolio – Koots, Longworth, Wonah and Gibraltar | Portfolio of four high-grade silicon projects in British Columbia                      |           | 100%             | All projects are under Exploration                        |
| Gold                      | Fran Gold project   | Fran Gold project located in central British Columbia                                  | 10,227    | 100%             | Exploration   |
| Rare Earth Elements (REE) | REN Mineral Claims  | REN Mineral Claims located in Southeastern British Columbia.                           |           | 90%              | Exploration   |

MGX has made several strategic acquisitions in recent years. The Company has majorly focused on lithium and petrolithium assets, however, it has also acquired some key magnesium, silicon and gold assets. A brief overview of the Company's major assets and projects across geographies is below:

### **Properties in Canada**

The Company has several properties in Alberta and British Columbia to extract lithium, magnesium, silicon, niobium-tantalum, and gold. The Company's flagship project is Driftwood Creek Magnesium, which is currently under development, and has an estimated after-tax NPV @ 5% of C\$316.7 million and an IRR of 19.3%, according to Preliminary Economic Assessment (PEA). MGX is also the largest holder of mineral permits covering lithium-bearing brine areas in Canada, with a land package encompassing nearly 1.7 million acres.

### **Properties in U.S.**

MGX acquired oil field assets (including lithium brine, oil wells and existing oil and gas infrastructure) through its subsidiary Petrolithium Corporation of America. The Company produces several valuable minerals at this property, including lithium carbonate.

The Company currently owns and operates one project each in Utah and Nevada. The Company also has working interests in Power Metals Corp.'s ("Power Metals") US petrolithium brine assets (100% interest) and hard rock assets (20% interest).

### **Properties in Chile and Argentina**

In 2018, MGX extended its mining operations to Chile and Argentina. In Chile, the Company acquired 50% shares of Chilean Lithium Salars SpA, which was a wholly owned subsidiary of Chilean Lithium Salars Pty Ltd. In Argentina, the Company entered into an option agreement with A.I.S. Resources to acquire an 80% interest in the Salinitas lithium brine mining tenements. The Salinitas tenements are located in the lithium triangle at the Salar de Salinas Grandes, in the Province of Salta.

## Corporate Strategy

The core focus of MGX has shifted from being a conventional mining company to a mining technology company. MGX has acquired various technology companies in the recent past with the intent to diversify its business and create more value for its shareholders. Till 2016, the Company focused on acquisition, exploration, and development of mineral properties. Since then, the Company has shifted its focus to acquiring/partnering with companies for the development of battery commodities, extraction processes, and clean technology for the oil, gas and mining sectors.

### Value creation through strategic acquisitions and technology partnerships

MGX is evolving as a platform for investments into technology companies, with the strategy to acquire technologies early in their life and create value by enabling commercialization. MGX's investment in PurLucid has proven to be effective as the Company has been able to build the Rapid Lithium Extraction technology. MGX also sees a huge potential in MGX Renewables' zinc-air battery technology, which is well on its way to the commercialization stage.

Additionally, the Company, with its partner Highbury Energy, is developing advanced gasification technology. The Company is also working on developing a hardrock lithium extraction technology, which would eliminate the need for chemical leaching during lithium extraction.

Furthermore, the Company's research partnership with the University of British Columbia has given desired results as it successfully developed a novel hybrid organic-inorganic material for use in engineering silicon interfaces.

### Strategy to focus only on high-grade mineral projects

MGX has consolidated key mining claims throughout the Driftwood mining district and controls the majority of significant known magnesite occurrences in British Columbia. Additionally, samples from the Company's silicon properties have shown high grades of approximately 99% SiO<sub>2</sub>. In addition to acquiring magnesium and silicon properties, the Company has acquired petrolithium properties with the highest reported levels of lithium-bearing brine in Alberta. The Company has also extended its operations to the US, Chile, and Argentina. The strategic thinking behind the acquisition of lithium properties in Chile and Argentina is that these locations form a part of lithium triangle with reportedly high lithium concentrate, where the Company can deploy its wastewater treatment systems to extract lithium.

### Keep diversifying beyond conventional mining

MGX has been successful to diversify beyond conventional mining by investing in various mineral properties and clean mining technologies. Going forward, the strategy is to continue focus on wastewater treatment business, which is expected to bring a steady cash flow in the near future. MGX also plans to develop several petrolithium properties that it owns and focus on monetizing the Rapid Lithium Extraction technology to produce lithium from petroleum brines. Additionally, the Company anticipates benefitting from the increased demand for lithium-ion batteries, while at the same time offering a lower-cost alternative to lithium-ion batteries such as the zinc-air batteries that uses much cheaper materials.

## News

### [Subsidiary MGX Renewables Inc. Approved to List on the Canadian Securities Exchange](#)

*July 19, 2019*

MGXR has been conditionally approved to list its common shares on the CSE and has satisfied the requirements for listing on the CSE, which is expected to occur on July 22, 2019. The MGXR Shares will trade under stock symbol "MGXR" and the Company's CUSIP number and ISIN are 59325P108 and CA59325P1080, respectively.

### [Completed Archaeological Impact Assessment for Driftwood Creek Magnesium Oxide Project](#)

*July 16, 2019*

Third-party engineering firm Tipi Mountain Eco-Cultural Services completed a comprehensive Archaeological Impact Assessment ("AIA") on the Driftwood Creek magnesium project. The AIA is part of a larger, ongoing work program to complete a N.I. 43-101 Pre-Feasibility Study ("PFS") at Driftwood. The PFS will build on the positive N.I. 43-101 Preliminary Economic Assessment ("PEA") completed in March 2018.

### [Closed Spin-Out of MGX Renewables Inc.](#)

*June 28, 2019*

The Company completed the spin-out of approximately 40% of the common shares of MGX Renewables Inc. pursuant to a plan of arrangement the Business Corporations Act (British Columbia). The Company retains approximately 18 million shares of MGXR.

### [Won 2019 Suzanne West Environmental Excellence Award at the Global Petroleum Show](#)

*June 13, 2019*

The Company was awarded the Suzanne West Environmental Excellence Award at the 2019 Global Petroleum Show being held in Calgary, Alberta for its project entitled "Powering the Cleantech Economy with Innovation Wastewater Treatment."

### [Wholly Owned Subsidiary MGX Renewables Inc. completed financing for gross proceeds of \\$2,005,000 for public listing and advancement of Zinc-Air flow battery production](#)

*June 12, 2019*

The Company announced that its wholly owned subsidiary MGX Renewables Inc. closed the previously announced offering of subscription receipts for gross proceeds of \$2,005,000 through the sale of 8,020,000 subscription receipts at \$0.25 per subscription receipt. Each subscription receipt represents the right to automatically receive, upon closing of the plan of arrangement, one unit of MGXR, each unit comprising one MGXR share and one-half of one MGXR share purchase warrant.

### [MGX Minerals and Eureka Resources Enter Joint Venture Agreement to Install World's First Commercial Rapid Petrolithium Recovery System in Pennsylvania](#)

*June 10, 2019*

The Company announced signing of a definitive Joint Venture Agreement which will initially focus on fast tracking deployment of the commercial rapid lithium recovery system at Eureka's Standing Stone advanced wastewater Treatment Facility. Terms of the JV provide that MGX will initially receive a disproportionate share of gross revenue proceeds until its petrolithium unit capital costs are recovered. Eureka will obtain and manage all necessary environmental permits related to each system installation as

well as day-to-day operational duties. MGX will fabricate and install each system, market the petrolithium, and provide ongoing system maintenance.

### [Announced CSA Attestation of Renewable Energy Mass Storage Components](#)

*May 29, 2019*

The Company announced that its wholly owned subsidiary MGX Renewables Inc. had received material attestation from the Canadian Standards Association related to the use of system components in MGXR's energy storage systems.

### [Announced Installation of Second Oilsands Wastewater Treatment System](#)

*May 16, 2019*

The Company reported that engineering partner PurLucid Treatment Solutions expected to complete installation of a second wastewater treatment system with full commissioning by June 7, 2019.

### [Announced Successful Generation of Dendritic Zinc Using Linear Regeneration Module; Zinc Regeneration Subsystem Development Completed](#)

*May 16, 2019*

The Company announced that its wholly owned subsidiary MGX Renewables Inc had successfully generated dendritic zinc fuel using its new "linear" regenerator module.

### [Announced Breakthrough in Development of High-Energy Lithium-Ion Batteries](#)

*April 18, 2019*

The Company reported today that its collaborative research partnership with the University of British Columbia ("UBC") has successfully developed a novel hybrid organic-inorganic material for use in engineering silicon interfaces. These interfaces will prove critical in achieving a highly efficient, long-lasting silicon anode that will aide in the development of next generation lithium-ion batteries capable of quadrupling energy density from the current standard of 100 Wh/kg up to 400 Wh/kg for use in long-range electric vehicles and grid-scale energy storage.

### [MGX Minerals Announces Conditional Exchange Approval for Listing of Zinc-Air Flow Battery Subsidiary](#)

*April 11, 2019*

The Company reported that its wholly owned subsidiary MGX Renewables Inc. ("MGXR"), a leader in the development of zinc-air flow batteries for applications requiring long duration, high capacity storage, has received conditional approval to list its shares on the Canadian Securities Exchange ("CSE").

### [MGX Minerals Provides Revenue Projections for Initial Contracted Wastewater Treatment Systems](#)

*March 29, 2019*

The Company and PurLucid anticipate generating revenue of C\$2.0 million in 2019 during the ramp up period from the first two contracted operations. Contracts are currently being negotiated for additional wastewater treatment systems and are expected to be finalized shortly.

## Listing Information

MGX Minerals Inc., headquartered in British Columbia, Canada, is listed on the Canadian Security Exchange – (CSE: XMG). The Company is also listed on U.S. OTCQB market (OTCQB: MGXMF) and Frankfurt Stock Exchange (FKT: 1MG).

## Contacts

|                    |  |
|--------------------|--|
| <b>Head office</b> | 1080 Howe St., Suite 303, Vancouver, BC V6C 2T1                  |
| <b>Telephone</b>   | 604.681.7735   |
| <b>E-mail</b>      | <a href="mailto:jared@mgxminerals.com">jared@mgxminerals.com</a> |

## Major Shareholders as on 25 March 2019

| Equity Holder              | No. of ordinary shares held | % shareholding |
|----------------------------|-----------------------------|----------------|
| Jared Lazerson             | 5,850,647                   | 4.21%          |
| Lyndon Patrick             | 5,059,174                   | 3.64%          |
| Hugh David Read            | 2,876,460                   | 2.07%          |
| Michael A. Reimann, PhD    | 1,040,000                   | 0.75%          |
| Sprott Asset Management LP | 904,391                     | 0.65%          |
| Andris Kikauka             | 593,000                     | 0.43%          |
| Others                     | 122,745,521                 | 88.26%         |
| <b>Total</b>               | <b>139,069,193</b>          | <b>100%</b>    |

Source – [marketscreener.com](http://marketscreener.com)

## Management and Governance

### **Jared Lazerson**

*President, CEO and Director*

- Mr. Jared Lazerson has over 25 years of experience in the mining and technology industry.
- He has been working in this industry since 1994 and has worked with several leading companies, including Osprey Systems (GPS and Digital Mapping), United Helicopters, Copper Island Mines and Manto Resources.
- He is a graduate from the University of Pennsylvania with a BA degree in International Relations.

### **Michael Reimann**

*CFO and Director*

- Mr. Michael Reimann has over 45 years of senior corporate management experience with public and private companies.
- Mr. Reimann has served as CFO of Skana Capital (TSX.V: SKN) and PNG Gold (TSX.V: PNG).
- He graduated in Engineering Physics from the Royal Military College of Canada and obtained a Ph.D. in Physics from the University of British Columbia.

### **Randall Keller**

*VP of Business Development*

- Mr. Keller has over 35 years of experience in the Energy sector.
- He is formerly the Director of Business Development, Transmission and Land Assets at Berkshire Hathaway Energy Renewables, a holding company controlled by Berkshire Hathaway Inc. He was responsible for the development of large-scale renewable energy projects within the Berkshire holdings platform in southern California.

### **Andris Kikauka (P. Geo)**

*VP of Exploration and Director*

- Mr. Andris Kikauka is a Qualified Person under National Instrument 43-10 and has over 30 years of experience in the Mining sector.
- From 1996 to 2012, he was Project Geologist overseeing exploration programs at Goldrea Resources.
- Mr. Kikauka is a Project Geologist for Rio Minerals as well as a director of American Manganese Inc. (TSX.V: AMY), which is focused on mineral properties and commodities used in the steel industry. He holds a B.Sc. in Structural Geology, Mineralogy & Petrology from Brock University.

### **Christopher Wolfenberg**

*Director*

- Mr. Wolfenberg is a Partner with the law firm of Fasken Martineau LLP.
- Prior to his current role, he was a Partner with Norton Rose Fullbright.
- He provides practical advice to select clients active in the mining, technology and energy sectors and has acted as an officer and director of numerous public, private and non-profit entities.
- 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.

## **Assets and Technologies**

### **Technology**

#### **Rapid Lithium Extraction and Wastewater Treatment Technology**

##### **Overview**

MGX acquired PurLucid in November 2016 to build on PurLucid's Nanoflotation technology and develop the Rapid Lithium Extraction technology.

MGX and PurLucid jointly developed Rapid Lithium Extraction technology that concentrates lithium and other elements (magnesium, potassium and boron) from the wastewater that is produced as a by-product during oil and gas production. The technology is expected to provide superior treatment results when compared to conventional technology because it can treat wastewater brines without having to cool water first. This results in significantly less energy use for a SAGD facility when managing produced water.

This technology can be used to extract lithium from oil and gas wastewater, natural brine, geothermal brine and brine sources, such as lithium-rich mine and industrial plant wastewater. The Company claims that the technology will improve lithium recovery rates, reduce the environmental footprint and lower the investment requirement for evaporation ponds, compared to the traditional solar evaporation process.

The Nanofiltration process is the crux of the Rapid Lithium Extraction technology. This process involves the following steps.

- Proprietary chemicals are added to the petroleum brine to remove the Electric Double Layer ("EDL") surrounding solid particles. EDL refers to layers of charges surrounding certain solid particles that keep them suspended in liquid. The particles become unsuspended and separate from the surrounding liquid when the EDL is removed.
- Next, the Nanoflotation process removes all oil hydrocarbons as well as silica, magnesium and calcium from the wastewater. The water is then treated with a patented chemical treatment that increases the concentration of lithium in the water.
- Finally, the water goes through ultrafiltration using a patented replaceable skin layer ("RSL") membrane system to isolate lithium chloride.

MGX and PurLucid are jointly developing wastewater treatment systems that use PurLucid's Nanoflotation technology. The first such system is the NFLi-5, capable of processing 5m<sup>3</sup> of wastewater per hour and is 100% owned by MGX. The second system, which is a 10m<sup>3</sup> (1,500 bpd) system is already deployed and is owned by PurLucid. PurLucid also owns another 10m<sup>3</sup> system, which is in the process of being mobilized. MGX is planning to build another large 35m<sup>3</sup> system, which will be owned by PurLucid as well.

The revenue generated by wastewater treatment systems is shared between MGX and PurLucid based on terms agreed for respective projects. However, MGX owns global rights to the Rapid Lithium Extraction technology and the revenue generated from lithium extraction will go entirely to MGX.

##### **Recent Activities and Current Status**

- MGX has filed a patent for Rapid Lithium Extraction technology.
- MGX has entered into a Joint Venture with Eureka Resources that will focus on fast tracking deployment of the first commercial rapid lithium recovery system at Eureka's Standing Stone advanced wastewater treatment facility. The JV is working to commission the system in Q3 2019.

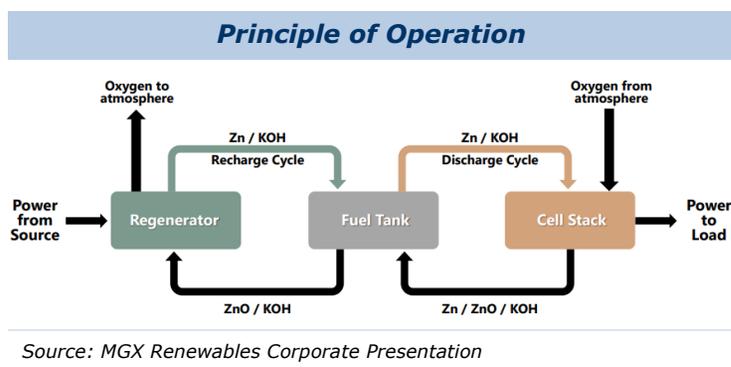
- The Company also plans to deploy additional systems to other Eureka Facilities.
- PurLucid deployed the second wastewater treatment system, capable of processing 10m<sup>3</sup> per hour, to an oil sands facility in Alberta. The Company expects to complete installation and commissioning of a second wastewater treatment system soon.
- The first contracted system is commissioned at an oilsands SAGD operation in Alberta to process evaporator blowdown water (EBD) and is expected to be operational shortly.

## Zinc-Air Battery Technology

### Overview

MGX's wholly owned subsidiary, MGX Renewables has developed regenerative zinc-air fuel cell battery technology that uses zinc and air to store energy in the form of zinc particles. The zinc-air technology comprises three main subsystems – Regenerator, Fuel Tank and Cell Stack.

- Regenerator – When the system is recharging, zinc particles are regenerated, and oxygen is returned to the surrounding air.
- Fuel Tank – zinc particles, thus generated, are stored in the Fuel Tank.
- Cell Stack – When the system is delivering power, the zinc particles are combined with oxygen drawn from the surrounding air.



MGX Renewables has secured over 20 patents to date and has received nearly \$15 million in financial support to develop the technology.

MGX Renewables has also developed modular Energy Storage Systems (ESS) that utilize patented zinc-air fuel cell battery technology. The ESS are designed to deliver power in the range 20kW - 50MW and energy storage in the range of 120kWh - 1GWh over extended periods of time. The Company believes that the energy storage systems would have various applications including:

- Utility-scale storage and power grid load stabilization
- Long term backup power for industrial, commercial, and military facilities
- Remote location off grid and micro grid applications
- Diesel generator replacement/hybridization

### Advantage of Zinc-air over Li-ion batteries

Li-ion batteries have a fixed power to energy ratio which limits flexibility and increases the cost of energy storage when limited output power is needed. Zinc-air flow battery technology works well in high capacity, long duration commercial and industrial applications. Zinc-air flow batteries do not use expensive commodities such as lithium or cobalt and has a much lower cost of storage. Energy storage cost of Zinc-air battery storage system is less than \$10 per kilowatt hour, which is quite low compared to the lithium-ion battery system for where energy storage cost is over \$250 per kilowatt hour.

### **Recent Activities and Current Status**

- In May 2019, MGX Renewables received material attestation from the Canadian Standards Association related to the use of system components in MGXR's energy storage systems.
- In May 2019, MGX Renewables generated dendritic zinc fuel using its new "linear" regenerator module. MGX Renewables completed the development of Zinc Regeneration Subsystem.
- MGX Renewables is currently focusing on optimization of energy storage systems and is in mass production tooling and testing phase. It has commenced development of a scaled-up modular 20Kw/120kwh system for use in commercial/industrial and grid-scale energy storage.

### **Gasification Technology**

#### **Overview**

In January 2018, MGX partnered with Highbury Energy Inc. for developing gasification technology to generate hydrogen gas and extract valuable metals such as nickel, vanadium and cobalt from petroleum coke. MGX and Highbury are co-developing a process to generate hydrogen gas and concentrate metals in the form of ash by-product. This partnership is in line with the Company's strategy to keep working on developing new technologies for mineral extraction.

#### **Recent Activities and Current Status**

- Highbury has completed a Phase I report on potential processes and markets for primary and secondary by-products. Having obtained encouraging results from the Phase I study, Highbury is currently conducting a Phase II study to analyze potential site locations and advanced design.

### **High-Energy Lithium-Ion Batteries**

#### **Overview**

In December 2018, MGX partnered with University of British Columbia to develop a low-cost and scalable method for fabricating Silicon based anode to improve the energy density of Li-ion batteries.

#### **Recent Activities and Current Status**

- MGX, through its collaborate research partnership with University of British Columbia, developed a hybrid organic-inorganic material for use in engineering silicon interfaces.
- MGX and UBC are also currently conducting process optimization on metallurgical grade silicon.

## Assets

### Mineral Resource Properties

MGX is engaged in the acquisition, exploration and development of lithium, magnesium oxide, silica, niobium-tantalum-titanium, and gold properties located in Canada, the United States, Chile, and Argentina.

A mineral resource project typically goes through the following four stages before production is commenced:



Most of MGX's properties are at the Early Exploration stage. The Company currently has 14 projects. Out of these, Driftwood Creek Magnesium project, which is at PFS stage, is the closest to production. The lifecycle stages of all MGX projects are mentioned in the table below:

| Property                             | Mineral                       | Current Status       |
|--------------------------------------|-------------------------------|----------------------|
| <b>Driftwood Creek</b>               | Magnesium                     | Development - PFS    |
| <b>Sturgeon Lake</b>                 | Lithium                       | Resource Estimate    |
| <b>Gibraltar</b>                     | Silicon                       | Resource Estimate    |
| <b>Koots</b>                         | Silicon                       | Resource Estimate    |
| <b>Wonah</b>                         | Silicon                       | Resource Estimate    |
| <b>Fran Gold</b>                     | Gold                          | Advanced Exploration |
| <b>Prospects</b>                     | Magnesium                     | Exploration          |
| <b>Longworth</b>                     | Silicon                       | Exploration          |
| <b>Alberta Petroithium Portfolio</b> | Lithium                       | Exploration          |
| <b>Utah Petrolithium Portfolio</b>   | Lithium                       | Exploration          |
| <b>Power Metals</b>                  | Lithium                       | Exploration          |
| <b>Kibby Basin</b>                   | Lithium                       | Exploration          |
| <b>Salinitas</b>                     | Lithium                       | Exploration          |
| <b>Chilean Lithium Salars</b>        | Lithium                       | Exploration          |
| <b>REN Mineral Claims</b>            | Niobium-Tantulum-Titanium-REE | Exploration          |

**Driftwood Creek**

*Mineral: Magnesium*

*Stage: PFS*

**A. Asset Overview:**

The 326-hectare Driftwood Creek magnesium property is MGX's flagship property and one of the largest under-development magnesite properties in eastern British Columbia, Canada. MGX acquired this property in July 2014 and received approval of a 20-year (until January 2036) mining lease on it.

**Asset Snapshot**

|                  |          |
|------------------|----------|
| Lease            | 20 years |
| Area (hectares)  | 326      |
| Working Interest | 90%      |

**B. Regional Geology:**

The Driftwood Creek property is located in Driftwood mining district, approximately 164 kilometers north of Cranbrook, British Columbia and is located at 38 km northeast of Brisco, British Columbia.

**C. Recent Activities and Current Status:**

In April 2018, the Company released an independent N.I. 43-101 Preliminary Economic Assessment report on the Driftwood property. This independently prepared report estimated the project's post-tax NPV5 and IRR to be \$316.7 million and 19.3% respectively. The property is estimated to have a Measured and Indicated (M&I) resource of 7.8 million tons grading 43.27% magnesium oxide (MgO), and an Inferred resource of 0.06 million tons grading 42.95%.

**Preliminary Economic Assessment**

|                                       |                |
|---------------------------------------|----------------|
| Post-Tax NPV5                         | \$316.7million |
| IRR                                   | 19.3%          |
| Average annual MgO production         | 169,700 tons   |
| Measured and Indicated (M&I) resource | 7,848,000 tons |
| Inferred resource                     | 56,000 tons    |
| LOM Average Grade                     | 43.27%         |

The Company has engaged engineering firm Hatch Ltd. to conduct a comprehensive review and multi-phased work program for Driftwood Creek. The objective of the work program is to prepare Driftwood for completion of a N.I. 43-101 Pre-Feasibility Study (PFS). The Company is awaiting an update on the PFS.

**Sturgeon Lake**

*Mineral: Lithium*

*Stage: Resource Estimate*

**A. Asset Overview:**

Sturgeon Lake lithium brine property consists of 15 contiguous Industrial and Metallic Mineral Permits encompassing approximately 132,774 hectares. Devonian-aged oilfields at Sturgeon Lake produce significantly more brine than petroleum because these oilfields are mature. More pumping is required to produce oil in mature oilfields.

**Asset Snapshot**

|                  |         |
|------------------|---------|
| Area (hectares)  | 132,774 |
| Working Interest | 100%    |

**B. Acquisition Terms:**

MGX has 100% interest in Sturgeon Lake lithium brine property. Additionally, the property is subject to a 2% gross overriding royalty on future production of all minerals.

### C. Regional Geology

Sturgeon Lake lithium brine property is located directly south and west of the Town of Valleyview, approximately 85 km east of the city of Grande Prairie and 270 km northwest of the capital city of Edmonton, Alberta.

### D. Recent Activities & Current Status:

- In October 2016, MGX filed N.I. 43-101 Technical Report for Sturgeon Lake property.
- MGX undertook the testing of its pilot lithium extraction unit at Sturgeon Lake property in January 2017. MGX successfully concentrated lithium from heavy oil evaporator blowdown wastewater originating from the oilfield using its rapid recovery process.

### Gibraltar

*Mineral: Silicon Stage: Resource Estimate*

Gibraltar Claims are located approximately 95 kilometers northeast of Cranbrook, British Columbia. The Company has 100% interest in the project.

In November 2018, MGX completed two drill holes at the Gibraltar South Zone totaling approximately 2,100 feet, the results of which indicated a high initial purity of silicon dioxide (99.5%).

### Koots

*Mineral: Silicon Stage: Resource Estimate*

Koot Claims cover an area of 166 contiguous hectares and are located in the Golden mining district of southeastern British Columbia. The Company has a 100% interest in the Koot Claims. Additionally, the Koots Claims are also subject to a 1% Net Smelter Royalty (NSR).

#### Asset Snapshot

|                  |      |
|------------------|------|
| Area (hectares)  | 166  |
| Working Interest | 100% |

In August 2018, whole rock analysis of composite samples in six of seven shallow diamond drill holes returned values ranging between 98.7% and 99.3% SiO<sub>2</sub>.

### Wonah

*Mineral: Silicon Stage: Resource Estimate*

Wonah consists of two mineral claims located in the Fort Steele Mining Division in southeastern British Columbia. The Company has a 100% undivided interest in the Wonah Mineral Claims. Assays from the South and Central zones of the Wonah property averaged 99.4% SiO<sub>2</sub>, up to 99.9% SiO<sub>2</sub>.

### Fran Gold

*Mineral: Gold Stage: Advanced Exploration*

The Fran Gold property consists of 15 contiguous mineral tenures that are located within the Omineca mining district in British Columbia. The property is located 30km southwest of the Mount Milligan Gold-Copper Mine and encompasses 10,227 hectares. MGX has 100% undivided interest in the Fran property.

#### Asset Snapshot

|                  |        |
|------------------|--------|
| Area (hectares)  | 10,227 |
| Mineral Tenures  | 15     |
| Working Interest | 100%   |

Although this property has been a subject of significant exploration, no significant drilling below 150m was done at this site prior to 2018. New deep drilling by MGX has uncovered new potentially high-grade gold mineralization at depth.

## Prospects

Mineral: Magnesium

Stage: Exploration

MGX owns mineral claims covering seven known magnesite occurrences in British Columbia. All these claims are currently under exploration and the Company calls them "Prospects" collectively. Two of these seven claims, viz. Red Mountain and Topaz Lake, are in close proximity to the Driftwood Creek magnesite property. Preliminary field results show that the magnesite grades at these two locations are similar to the ones at the Driftwood Creek property.

### Mineral Claims

|              |             |
|--------------|-------------|
| Red Mountain | Topaz Lake  |
| Cleland Lake | Marysville  |
| Dunbar Creek | Bott's Lake |
| Pond         |             |

## Longworth

Mineral: Silicon

Stage: Exploration

The Longworth Claims are located approximately 85 kilometers east of Prince George in east-central British Columbia and cover an area of 1,198 contiguous hectares. MGX has 100% undivided interest in the Longworth property.

### Asset Snapshot

|                  |       |
|------------------|-------|
| Area (hectares)  | 1,198 |
| Working Interest | 100%  |

British Columbia Geological Survey lists Longworth as one of the top silica occurrences in the Province of British Columbia. Longworth features four zones of high purity silica – the Snow, Rain, Long and Doll zones. In July 2016, the Company filed a NI 43-101 technical report on the property. In July 2017, the Company commenced drilling at the Longworth property and found that the average assay samples from the Snow zone averaged 99.34% silicon dioxide (SiO<sub>2</sub>), going up to 99.9% SiO<sub>2</sub>.

## Alberta Petrolithium Portfolio

Mineral: Lithium

Stage: Exploration

MGX holds permits throughout the Province of Alberta totaling over 600,000 hectares (including 132,774 hectares of Sturgeon Lake property). The Company acquired these properties based on compilation of historic oil and gas well data and known geology.

In October 2016, MGX filed N.I. 43-101 Technical Report for its Alberta petrolithium properties. The approximate area of the Company's petrolithium properties in Alberta is given below:

| Property           | Area (Hectares) |
|--------------------|-----------------|
| FBV / Stettler     | 8,408           |
| Stettler / Erskine | 4,699           |
| Wimborne           | 4,928           |
| Erskine            | 4,224           |
| Rimbey Homeglen    | 19,417          |
| Bonnie Glen        | 9,383           |
| Ludec              | 22,960          |
| Redwater           | 36,624          |
| Buck Lake          | 50,653          |
| Fox Creek East     | 25,430          |

| Property           | Area (Hectares) |
|--------------------|-----------------|
| Fox Creek West     | 17,021          |
| Swan Hills         | 183,498         |
| Lower Smokey River | 87,41           |
| Lesser Slave Lake  | 9,216           |
| Utikuma Lake       | 9,216           |
| Upper Smokey River | 9,216           |
| Pouce Coupe        | 9,216           |
| Sand Lake          | 33,923          |
| Clear Lake         | 7,136           |
| Nipisi             | 13,824          |

**Utah Petrolithium Portfolio**

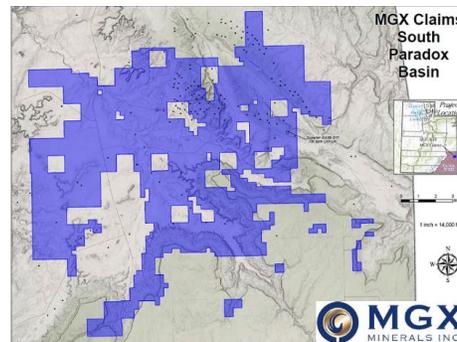
*Mineral: Lithium*

*Stage: Exploration*

MGX's Utah petrolithium portfolio includes the Blueberry Unit (oil, gas and lithium) and the Lisbon Valley Claims (lithium). The portfolio comprises approximately 115,000 acres of oil and gas leases and 118,000 acres of largely overlying and contiguous mineral claims.

The Blueberry Unit includes 80,380 acres of unitized Federal, State and Private lands where MGX controls 75% working interest. The remaining interest is primarily controlled by a private Utah corporation that MGX has engaged as a subcontractor to operate the project.

Utah petrolithium portfolio is being explored for oil, gas, lithium and other brine minerals to identify locations for deploying the Company's wastewater systems.



**Power Metals**

*Mineral: Lithium*

*Stage: Exploration*

In September 2017, MGX acquired all of Power Metal's US petrolithium brine assets and a 20% working interest in Power Metal's current hard rock assets and any future assets acquired by Power Metals for the following 36 months.

**Power Metals US Petrolithium Properties**

- Paradox Basin, Utah – The property covers an area of 13,520 acres. Power Metals has executed a joint venture with American Potash Corp. to explore and develop lithium brines in the region.
- Coyote Project Lisbon Valley, Utah – The project includes 150 placer mineral claims covering an area of 3,000 acres and are inclusive of lithium brine mineral rights.

**Power Metals Hard Rock Properties:**

- Case Lake – MGX and Power Metals are exploring the Case Lake pegmatite property located near established mining camps in the Abitibi Greenstone belt. To date, exploration has outlined five dykes measuring up to 1,200 metres in strike length and up to 35 metres wide.
- Paterson Lake
- Gullwing - Tot Lake
- Larder River

**Kibby Basin**

*Mineral: Lithium*

*Stage: Exploration*

MGX has partnered with Belmont Resources (TSX-V: BEA) on the Kibby Basin lithium project and has an option to acquire up to 25% interest with the goal of forming a 50/50 joint venture to utilize MGX's Rapid Lithium Extraction technology. Kibby Basin is located in the western portion of the Great Basin in Nevada. This 2,560-acre property is located in Esmeralda County. Belmont Resources plans to conduct up to 4,800 feet of additional drilling across four diamond drill holes at the property.

**Salinitas**

*Mineral: Lithium*

*Stage: Exploration*

---

MGX entered into an option agreement with A.I.S. Resources (TSX.V: AIS) to acquire an 80% interest in the Salinitas lithium brine mining tenements, located in the lithium triangle of Argentina, Salar de Salinas Grandes, Province of Salta. The 4,308-hectare contiguous land package is in the Puna region of northwest Argentina, near the Chilean border. The Company's joint-venture partner A.I.S. Resources commenced drilling at the Salinitas lithium location in November 2018.

**Chilean Lithium Salars SpA**

*Mineral: Lithium*

*Stage: Exploration*

---

MGX acquired 50% issued equity of Chilean Lithium Salars SpA (CLS), a wholly owned subsidiary of Chilean Lithium Salars Pty Ltd. Chilean Lithium Salars holds 100% equity interest in three prospective lithium exploration projects located in Chile – Francisco Basin, Laguna Brava and Laguna Escondida Lithium projects. The Company is planning to deploy its NFLi-5 in Chile for demonstrative purposes. CLS commenced drilling at the Francisco Basin project in December 2018.

**REN Claims**

*Mineral: Niobium-Tantalum-Titanium*

*Stage: Exploration*

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REN Mineral Claims are located in the northern Monashee Mountains of Southeastern British Columbia. In August 2017, MGX acquired 90% undivided interest in the REN Mineral Claims and entered an agreement whereby the Company has the option of purchasing the remaining 10% interest for \$200,000 at any time.

In December 2017, assay results from diamond drilling as well as field reconnaissance results from a regional geochemical sampling showcased 1,700 ppm Niobium at the property.

## **Industry Analysis**

### **Industry Outlook**

---

MGX has been investing in developing extraction processes and clean technologies to help the conventional energy businesses move towards more ecofriendly solutions. MGX operates in three industries – Energy Storage, Produced Water Treatment and Mining. We believe that the move towards sustainable and economically friendly solutions is likely to drive growth in these three industries.

#### **Energy Storage**

Energy Storage is expected to play a crucial role in aiding the next phase of the energy transition. The 2015 United Nations Climate Change Conference in Paris set the guidelines to shift to a sustainable energy system in order to avoid the risk of catastrophic climate change. The global rise in electricity generation from renewable sources has led to increased demand for advanced batteries that can be used to store this recurrent supply. The companies are investing more in these advanced batteries as energy storage is expected drive electricity decarbonization and help transform the energy sector.<sup>1</sup>

Minerals such as lithium and silicon are essential battery components that power electric vehicles and are used to store energy. Furthermore, recent advances in battery technologies, such as the development of zinc-air batteries, have substantially affected the industry and are expected to make energy storage business more competitive.

Zinc-air batteries are mainly used in energy storage systems and offer an alternative to traditional batteries as well as lithium-ion batteries. Demand for zinc-air batteries is expected to rise in the near future, due to increase in the demand for energy-efficient systems, especially in North America and Europe.

Zinc-air batteries have several advantages over lithium-ion and other alternative batteries. These advantages include their relatively low cost of manufacturing due to inexpensive raw materials, high energy density, flexible energy/power ratio, non-volatile nature and higher shelf life.

Zinc-air batteries have not been able to build a strong market in the past due to operational challenges. Rechargeability is one of the challenges with zinc-air batteries as they require setting up the infrastructure for mechanical recharging. On the other hand, it is much easier to supply electricity from the grid through a charging station to a lithium-ion battery. Another challenge for zinc-air battery storage system is that after repeated cycles of charging and discharging, the battery may no longer function if it dries or the zinc accumulates unevenly.

## Global Petroleum Brine (Produced Water) Treatment

Produced water is the water produced as a byproduct during the production of oil and gas. Produced water is acidic due to the presence of several chemical compounds and needs to be treated before being released back into the water bodies. There are several ways to treat produced water including media filtration, adsorption, ultrafiltration etc. The global Produced Water Treatment market was valued at approximately USD 5.9 billion in 2017 and is expected to grow to USD \$8.4 billion by 2024, implying a compounded annual growth rate ("CAGR") of 5.2%.<sup>ii</sup>

The increase in exploration and production activities and a growing sensitivity towards the environment have led to an increase in efforts towards the development of water treatment techniques. Increase in the produced water disposal and reinjection measures are also expected to have a positive impact on the Produced Water Treatment market as government regulations and norms are becoming more stringent to reduce the environmental impact of produced water.

A consistent increase in the production of shale gas in recent years has been another major contributor to the growth of the Produced Water Treatment industry since a larger amount of produced water is generated during the production of gas through shale compared to the production of gas through seawater.

### Industry in Numbers

|                     |                 |
|---------------------|-----------------|
| Revenue (2017)      | USD 5.9 billion |
| Revenue (2024)      | USD 8.4 billion |
| CAGR (2018 to 2024) | 5.2%            |

## Mining

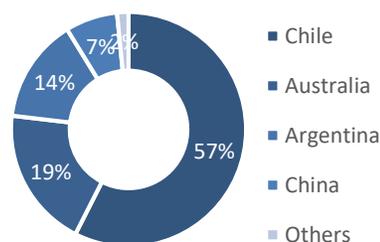
### Lithium

#### Global Lithium Supply & Demand Outlook

Traditionally, lithium was extracted from lithium brine deposits and hard rock spodumene deposits.<sup>iii</sup> Recently, oil and gas operators have also started extracting lithium from wastewater left in oil reservoirs. Chile, Argentina, and Bolivia form the 'Lithium Triangle', which has almost two-thirds of the world's lithium reserves. According to the U.S. Geological Survey, Chile has the highest lithium reserves in the world, amounting to approximately 57% of global lithium reserves. China and Australia have the next highest lithium reserves and account for 21% and 17% respectively of the world's total reserves.<sup>iv</sup>

In 2015, the global lithium production was 175,000 tons lithium carbonate equivalent ("LCE") which increased by 20% to 211,000 tons in 2017. According to the projections, it is estimated that the production levels will reach 330,000 tons LCE by 2020.<sup>v</sup> Newly developed technologies like Rapid Lithium Extraction technology are also expected to help in increasing lithium production going forward.

### Lithium Reserves by country



Source: USGS 2019

### Global Lithium Production (LCE)

|       |              |
|-------|--------------|
| 2015  | 175,000 tons |
| 2017  | 211,000 tons |
| 2020* | 330,000 tons |

\*Projected

Lithium demand has constantly grown from 65,000 tons LCE in 2000 to 184,000 tons LCE in 2015. The demand is expected to continue growing and cross 530,000 tons LCE by 2025.<sup>vi</sup>

Lithium is primarily used in lithium-ion batteries, which are used in electric vehicles, portable consumer electronics, and large-scale storage systems (such as grid storage systems). Lithium-ion batteries are ideal for these uses because of their high energy density and high safety level.

The global lithium-ion battery market size is expected to reach USD 93.1 billion by 2025.<sup>vii</sup> We believe that the market dominance of lithium-ion batteries in the large-scale power storage will fall because of the advances in zinc-air batteries and other alternatives to lithium-ion batteries. However, in the electric vehicle and portable consumer electronics spaces, where lithium-ion batteries are majorly used, the demand is expected to rise.

In addition to lithium-ion batteries, lithium is also used in the ceramics, glass, polymers, and alloys. The demand for lithium other than for lithium-ion batteries is expected to grow stably.

### Commodity Prices

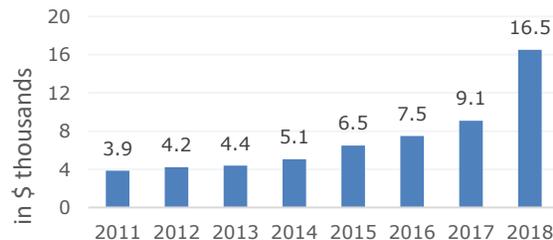
Lithium prices have increased sharply from USD 3,900 per metric ton in 2011 to USD 16,500 per metric ton in 2018.<sup>viii</sup> Prices are expected to decline to \$10,000 per metric ton by 2020 since lithium supply is expected to outgrow demand. Thereafter prices are expected to recover due to the increasing popularity and rising demand for electric vehicles. By 2022, lithium carbonate prices are expected to return to the long term forecasted price of \$12,000 per metric ton.<sup>ix</sup>

### Global Lithium Demand (LCE)

|       |               |
|-------|---------------|
| 2000  | 65,000 tons   |
| 2015  | 184,000 tons  |
| 2025* | >530,000 tons |

\*Projected

### Lithium Price – LCE USD/ton



Source: Metalary

## Silicon

### Global Silicon Supply & Demand Outlook

The global Silicon metal market is estimated to register a CAGR of 5.2% during the forecast period of 2016-2024 and attain a value of USD 3.4 billion by the end of 2024.<sup>x</sup>

The demand for silicon is primarily driven by the production of solar energy. The growth in the Solar Energy industry offers an opportunity to the silicon market since silicon metals are used in manufacturing solar panels. The global Solar Energy industry size is expected to grow from \$115 billion in 2016 to reach \$422 billion in 2022, translating to a CAGR of 24.2% during the period.<sup>xi</sup>

Furthermore, silicon is used as an alloying agent in the aluminum industry and has various other applications in plastics, personal care, textile, building and construction industry. The growing market size of these industries will positively affect the demand for silicon. Additionally, the demand for electronic goods has been continuously increasing over the years which in turn increases the demand for semiconductors. Silicon used for making semiconductors for electronic goods further drives the growth for silicon.

## **Magnesium**

### Global Magnesium Supply & Demand Outlook

According to the US Geological Survey, global magnesium reserves are highly concentrated in Russia (35%), North Korea (28%) and China (15%). The Asia Pacific holds 65% of the world's total magnesium reserves, with North Korea and China together making up 43% of the global reserves and many other countries in the Asia Pacific region having major reserves.<sup>xii</sup>

North America is anticipated to contribute substantially to the market growth owing to its vast reserves of well and lake brines and seawater.

The Steel industry is currently the highest demand generator for magnesium since magnesium is used for improving the brittleness of steel and reducing its weldability and corrosion resistance. The Steel industry is expected to continue driving magnesium demand since magnesium is a lightweight material, which makes it suitable for manufacturing automobile, aviation, and telecom components. The demand for magnesium is on a rise as automakers are constantly trying to make their cars lighter. The demand for magnesium is also expected to grow with the growing demand for eco-cars since eco-car manufacturers are beginning to use new magnesium-based batteries instead of lithium-ion batteries.

### Commodity Prices

Magnesium prices are rising due to the increasing demand for the metal in the automobile industry and decreasing supply from China. China, which accounts for about 80% of the global magnesium output, has restricted magnesium supply due to the stringent environmental regulations around the country's mining and extraction sectors. Prices for magnesium produced in China are currently around \$2,630 per ton.<sup>xiii</sup>

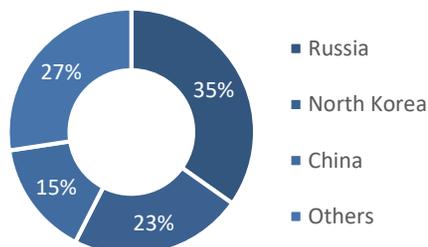
## **Gold**

### Gold Supply & Demand Outlook

According to the U.S. Geological Survey, world reserves of gold ore were estimated at 54,000 tons in 2017, with 2,400 tons (4.4%) of these reserves being in Canada. Canada produced an estimated 176 tons of gold in 2017. In 2017, Ontario and Quebec produced more than 75% of the gold mined in Canada during the year.<sup>xiv</sup>

Approximately 90% of the global demand for gold is for making jewelry. The remaining 10% is for technology applications, mostly for a component of micro circuitry in several electronic products. Financial market instability, monetary policy and the US dollar, and structural economic reforms are expected to continue driving gold prices in the future.

### **Magnesium Reserves by country**



Source: USGS, Statista 2018

## Risk Profile Analysis

### SUMMARY

| Key Risks          | Risk Rating | Rationale   |
|--------------------|-------------|---|
| Operational Risk   | High        | MGX's investments in developing new technologies are associated with high risk as the success of these projects depend on acceptance of the technology by the target customers. Most of the mining projects of the Company are at an exploration stage, which makes the Company susceptible to higher operational risk till the economic viability of producing minerals in these properties is established. MGX operates in various different geographies, which exposes the Company to various regulatory and geopolitical risks. |
| Financing Risk     | High        | Although the Company has a sound track record and has secured funding through private placements, the Company has no significant operating sources of cash and little revenues from operations. The Company may find it challenging to keep on raising funds without showing cash flows.  |
| Environmental Risk | Medium      | Exploration and development activities are subject to state and federal environmental laws. MGX is exposed to medium environmental risks.   |
| Key Personnel Risk | High        | MGX currently has only one full-time employee and all the other leadership positions are occupied by experts on a contractual basis.  |
| <b>Overall</b>     | <b>High</b> |   |

### 1. OPERATIONAL RISKS

#### A. Risk Definition:

Following are the parameters considered to measure the operational risk of the Company:

- **Regulatory factors:** The location of projects and their regulatory environment are key factors that affect the acquisition of licences and the subsequent development of the project. Obtaining necessary approvals can be time consuming, and any delay could impact operations significantly. Other regulatory risks include non-renewal of licenses, leases, permits etc.
- **Equipment failure:** Smooth functioning of machinery and equipment is essential for efficient mining operations. Any failure in the maintenance and integration of technical systems in mining may significantly affect the production levels and profitability of the companies.

- **Competitive risk:** The potential actions of a competitor can negatively impact the business. The extent of competition along parameters like pricing, innovation, distribution channels and intellectual property, is analysed to gauge a company's overall competitive risk.
- **Litigation:** Litigation risk is the possibility that legal action will be taken against a company or its key individuals because of their actions, inactions, products, services etc.
- **E&P techniques:** The development plan for the assets, including resource determination, extraction and production methodology, and the corresponding capex estimates, together define the operational efficiency of the project. The high quality of reserves and the ease of extraction provide higher return on investment and reduce the operational risk involved.
- **Project stage:** There are various stages of a project starting from early stage exploration followed by Pre-feasibility study, Feasibility study, Detailed engineering, site construction, Commissioning and start of operations. A project is likely to have higher risk when it is in the initial stages of exploration and is yet to report a resource estimate on the prospect.
- **Other operating factors:** Technical ease, implementation of new technologies for operations, and availability of operators also determine the operational risk of projects.

We consider a project based on all the above parameters and assign high/medium/low risk profiles in comparison with their peers. Also, as the company matures, the operational risk gets reduced considerably.

**High risk:** A company is considered as having a high operational risk profile when its assets are in early stage of development and are located in regions with regulatory uncertainties.

**Medium risk:** A company is considered as having medium operational risk, if it has already made some progress progresses towards the acquisition of necessary licenses and environmental clearances. Also, depending on the reserve and the possible methodologies of extraction and development, an operational risk profile is assigned in comparison with peers.

**Low risk:** A company that is in the advanced stages of development has attractive project characteristics such as high percentage of measured & indicated reserves, healthy cash flows, and low opex etc. Such a company has a low operational risk profile.

## **B. Risk Analysis:**

- **Regulatory risk:** The Company's profitability relies heavily on acquiring and maintaining appropriate leases, claims and permits. These may be withdrawn or subjected to limitations on short notice, at any point. The Company is also exposed to many regulatory and geopolitical risks because it has mining interests in several countries. Furthermore, maintaining licenses and contracts, obtaining renewals, or getting them granted may depend on MGX being successful in obtaining required statutory approvals for its proposed activities. MGX is exposed to the risk that such renewals are not granted or are revoked. Overall, the Company's Operational Risk due to regulatory factors is MEDIUM.

- **Equipment failure:** MGX had underestimated the time required for manufacturing and deploying the wastewater treatment systems in the past. New wastewater treatment systems, currently under development, may face integration issues with the existing oil and gas infrastructure. Overall, the Operational Risk due to equipment failure is HIGH for the Company.
- **Competitive risk:** MGX claims to be the only company to have showcased its Rapid Lithium Extraction technology to treat oil and gas wastewater and extract lithium from it. The Company's Wastewater Treatment & Mineral Extraction division may face challenges as other companies are developing similar technologies to extract lithium. The risk of a similar technology being developed by another company cannot be understated even though no other company has developed a similar technology that can be utilized at the commercial scale until now. Overall, the Operational Risk due to competition is LOW for the Company.
- **Litigation:** The Company recently faced a compensation dispute where its former chairman, Marc Bruner, filed a petition against the Company claiming full compensation for his services. Although, his petition was rejected by the court and the Company believes it is unlikely that he would be awarded full compensation. Awarding share-based compensation to the Company's executives makes it susceptible to litigation risks. Overall, the Operational Risk due to litigation is MEDIUM for the Company.
- **Project stage:** All of the Company's properties except for the Driftwood Creek project, are in exploration or resource estimate stage. Overall, the Operational Risk due to project stage is HIGH for the Company.
- **Risk in reserve & resource determinations:** Reserve and resource determination involves significant management and third-party judgement and carries the risk of being misstated. Reserve and resource determinations may change as new techniques or information becomes available or as analysis changes. Any alterations to exploration, development and production plans may adversely affect MGX's operations. Additionally, the Company stated that it might advance into production of some of its lithium properties without first establishing mineral resources supported by an independent report. The absence of an independent technical report on reserves or resources estimates make a project susceptible to higher risk of economic and technical failure. The Operational Risk due to reserve and resource determinations is HIGH for the Company.
- **Risk in exploration, development and production:** The profitability of MGX's mining division depends on the results of exploration, development and production. However, investments in exploration assets does not guarantee revenue and profit growth since the probability of converting exploration assets into production assets is very low. Drilling activities are subject to risks of curtailment/ cancellation due to weather conditions, mechanical difficulties, shortages or delays in the delivery of rigs etc. Although MGX has sector experience and a highly-qualified team of engineers and geologists, it has not yet established itself as a successful operator. The Operational Risk due to exploration, development and production is HIGH for the Company.
- **Other risks in project execution:** MGX depends heavily on the efficiency and capability of an outside operator, who may at times be a JV partner, for mining projects where it is not the lease operator. Any failure by JV partner to meet its commitment (to drill and operate wells etc.) by due date will expose MGX to project execution risk. The Operational Risk due to this parameter is HIGH for the Company.

**C. Risk Rating:**

We believe MGX has a **HIGH** operational risk profile based on all the above parameters.

**2. FINANCING RISK**

**A. Risk Definition:**

Initial stages of project development, including exploration and resource estimation, require higher capital investment. Investments in the exploration stage can be riskier, as the economic viability of region/project is not established. The risk level of the obtaining finances reduces as it advances through various exploration stages. As the project stages proceed, a company has varied options such as equity and debt financing, among others.

**High risk:** Companies in the initial stages of project development without proper estimates on funding requirements and a clear view on financing options are considered to have high financing risk.

**Medium risk:** When a company has established reasonable estimates on funding requirements and has visibility on early funding for planned project milestones, it is estimated to have medium financing risk.

**Low risk:** When a company's funding requirements are clearly stated and has already secured adequate funding, the company has low financing risk.

**B. Risk Analysis:**

- Capital is essential for MGX as its business model relies heavily on acquiring / investing in mineral resource properties and other technology companies.
- The Company has decent track record of raising capital in the past. The Company relies on fresh issue of equity to investors for funding property acquisitions and exploration expenses. The Company also issues equity to acquire and develop industrial technologies. The Company also depends on equity issuance to cover administrative expenses and to pay for executive compensation. Although MGX has been successful in raising equity from public and private placement, the Company may struggle to keep raising additional funds unless it is able to show significant cash flows.
- The cash flow from operations is low and the Company is yet to generate significant revenue from any of its business lines. However, the Company started generating revenue from its wastewater treatment system in November 2018. The Company expects to generate consistent cash flows from the deployment of wastewater systems going forward.
- MGX Renewables completed financing and received gross proceeds of \$2,005,000 for Public Listing. The financing proceeds are expected to be used for further advancement of MGXR's renewable energy mass storage technology as well as general working capital purposes.

- The Company believes that its flagship Driftwood Creek project would require an initial investment of approximately \$250 million. The Company plans to ringfence the property and raise capital through a special purpose vehicle.

**C. Risk Rating:**

Although MGX has a successful track record of raising capital, it may find it difficult to keep raising additional funds through debt or equity. We believe MGX has a **HIGH** financing risk profile.

**3. ENVIRONMENTAL RISK**

**A. Risk definition:**

Exploration and development of mines are subject to state and federal environmental laws. Production on mineral properties can adversely impact the environment due to the emission of toxins into the air and water, improper waste disposal etc. The potential environmental damage caused by mining activities and its financial cost to the company are considered while assessing the economic viability of a project.

**B. Risk Analysis:**

We believe that MGX is exposed to environmental risks and potential liabilities that could affect MGX's operations and future explorations and developments. MGX is also exposed to the regulatory aspects of environmental risk because its mineral extraction operations are spread across several countries and environmental regulations may change in any of these countries. The Company is also planning to commence oil production in future. It may get further exposed to uncertainties regarding environmental regulations if its sets up multinational oil production operations.

**C. Risk Rating:**

We believe MGX's risk environmental risk profile is MEDIUM due to the abovementioned reasons.

**4. KEY PERSONNEL RISK**

**A. Risk Definition:**

A company is considered to have a low-key personnel risk profile if its management team is highly qualified, has strong industry experience and the company is not overdependent on a few people. Better the quality and profile and higher the number of independent directors on the board, lower is the key personnel risk for a company.

**B. Risk Analysis:**

MGX's leadership team is knowledgeable and has decades of experience in the mining and technology industry. The Company operates with a small core team and contracts engineers and operational staff from outside. The fallout of this model is that the Company does not have a large employee base and is excessively dependent on a few individuals. The CEO is the only full-time employee of the Company and the other management team members have been hired on a contractual basis, in exchange for share-based compensation. The Company neither has a chairman of the board of directors nor any independent directors. Most of the Company's directors hold key executive positions with the Company.

**C. Risk Rating:**

We believe that MGX Minerals has a **HIGH** key personnel risk profile.

**MGX Minerals is also exposed to the following additional risks:**

Commodity price risk:

The Company's revenue is highly sensitive to external factors, such as fluctuations in the prices of lithium, magnesium, silicon and other commodities. The Company's ability to raise capital to fund exploration and development activities is subject to risks associated with fluctuations in the market price of commodities.

Economic risks:

General economic conditions, such as inflation and movements in interest rates and currency exchange rates may have an adverse effect on MGX's acquisition, exploration and development activities; and impact its stock price. Stock market conditions also affect the value of MGX's shares. Equity markets are also affected by general economic outlook, demand for capital etc.

Interest rate risk:

Financial assets and liabilities with variable interest rates expose the Company to cash flow interest rate risk. The Company does not hold any financial liabilities with variable interest rates and has minimal debt in its Balance Sheet. We believe that the Company is not exposed to any significant interest rate risk.

Credit risk:

MGX's cash is largely held in large Canadian financial institutions. The Company does not have any asset-backed commercial paper. The Company's receivables consist of GST receivable due from the Federal Government of Canada. The Company has not experienced any significant credit losses and we believe that it is not exposed to any significant credit risk.

Foreign currency exchange rate risk:

The Company's functional and reporting currency is the Canadian dollar and major acquisitions are transacted in Canadian dollars. As a result, the Company's exposure to foreign currency risk is nominal. However, the Company is exposed to increased foreign currency risk relating to US dollar transactions as it incurs exploration expenses related to the Lisbon Valley, Paradox Basin and Blueberry Unit properties.

## Financial Analysis

For several years, MGX has been focusing on acquiring and exploring mining assets, with a promise of future cash flows. The Company had not generated any significant cash flows till FY 2018. However, it has been incurring substantial operating expenses over this period. The major costs till recently have been towards exploration, however, now the Company spends a lot on business development, advertising and technology promotion, with the thought of creating a revenue pipeline.

MGX's wastewater treatment business started generating revenues in November 2018. The Company expects to generate \$15 million in revenue from processing wastewater by the year end. However, based on capacity, pipeline and potential delays, we have considered around \$5.2 million from this business in FY 2020 in our model.

In FY 2018, the Company spent approximately \$4.1 million on exploration expenses and \$9.7 million in advertising and promoting. These are essential expenses, required to generate cash flows in the future. The Company will have to continue to invest in growth and will need capital, given limited revenue potential from operations in the near term.

Further, MGX's business model heavily relies on acquiring mineral properties or technology companies, which also needs capital. Raising funds through debt would be challenging, as the Company does not have significant cash flows and the cost would be on higher side due to risky nature of its ventures.

One of the ideas that the Company is exploring is to ringfence some of its projects into a special purpose vehicle to raise capital.

### 1. Liquidity Position

- MGX's Cash position had been highly volatile from FY 2014 to FY 2016 but has been relatively stable since FY 2017. The Company had a low cash ratio of 0.3x and almost zero in FY 2015 and FY 2016 respectively, which indicates that it did not have sufficient cash to fund its current liabilities. The Company's cash ratio increased from almost zero in FY 2016 to 2.1x in FY 2018 due to fresh equity infusion through private placement.
- MGX has been using its equity as a currency, to fund some of its expenses, such as consulting fees. We believe that it will be hard for MGX to maintain a stable cash position in the future unless it finds a way to significantly increase its revenue, because the Company will need capital to continue its exploration, acquisition and operational activities. Further, this mode of payment may not work well at times when the stock is under pressure.
- MGX had current assets of \$8.9 million and current liabilities of \$3.2 million in FY 2018. This translates to the Current Ratio of 2.8x.
- MGX had a low Current Ratio of 3.5x in FY 2014 which further declined to 0.4x in FY 2016, suggesting that the Company faced liquidity issues during this period. The Company's Current Ratio increased significantly from 0.4x in FY 2016 to 2.8x in FY 2018, due to additional capital raised through private placement in FY 2018.

## **2. Capital Structure**

- MGX's share capital increased from \$0.8 million in FY 2014 to \$57.7 million in FY 2018. The Company has relied mostly on equity capital to meet both short-term and long-term capital requirements.
- MGX had low level of outstanding debt, as indicated in the low Debt to Equity ratio of 0.0x since inception.

## **3. Profitability**

- MGX has been incurring losses since FY2014, owing to no revenue and significant operating expenses. The operating expenses of the Company increased from \$0.3 million in FY 2014 to \$25.4 million in FY 2018. This is somewhat expected, as a junior mining business typically requires a company to incur significant upfront exploration and development expenses before commencing production. Additionally, the testing and development of new technologies as well as business development initiatives also contribute towards operating expenses.
- The Company spent heavily on marketing and hiring in FY 2018, which led to an increase in losses to \$25.4 from \$13.9 million in FY 2017. We believe that MGX should be able to start earning profits from FY 2022, led by its wastewater treatment business.

## Valuation

Equity Value of MGX stands between **\$89.10 million and \$108.91 million**

Equity Value per share for MGX stands between **\$0.63 and \$0.78**

|                 | Variance | Equity Value<br>(thousand \$) | Equity Value<br>per share |
|-----------------|----------|-------------------------------|---------------------------|
| Lower-end Value | -10%     | 89,104                        | 0.63                      |
| Base Value      | 0%       | 99,004                        | 0.71                      |
| Upper-end Value | 10%      | 108,905                       | 0.78                      |

## Important information on Arrowhead methodology

The principles of the valuation methodology employed by Arrowhead BID are variable to a certain extent, depending on the sub-sectors in which the research is conducted. But all Arrowhead valuation researches possess an underlying set of common principles and a generally common quantitative process.

With Arrowhead commercial and technical due diligence, Arrowhead researches the fundamentals, assets and liabilities of a company, and builds estimates for revenue and expenditure over a coherently determined forecast period.

Elements of past performance such as price/earnings ratios, indicated as applicable, are mainly for reference. Still, elements of real-world past performance enter the valuation through their impact on the commercial and technical due diligence.

We have presented the discounted cash flow estimate approach for FCFE valuation. We have also presented Comparable Company Analysis. The fair value bracket is built on the basis of these two methods.

## Arrowhead BID Fair Market Value Bracket

The Arrowhead Fair Market Value is given as a bracket. This is based on quantitative key variable analyses such as key price analysis for revenue and cost drivers or analysis and discounts on revenue estimates for projects, especially relevant to projects estimated to provide revenue near the end of the chosen forecast period. Low and high estimates for key variables are produced as a valuation tool.

In principle, an investor comfortable with the high brackets of our key variable analysis will align with the high bracket in the Arrowhead Fair Value Bracket, and, likewise, in terms of low estimates. The investor will also note the company intangibles to analyze the strengths and weaknesses, and other essential company information. These intangibles serve as supplementary decision factors for adding or subtracting a premium in investor's own analysis.

The bracket should be taken as a tool by Arrowhead BID for the reader of this report and the reader should not solely rely on this information to make his decision on any particular security. The reader must also understand that while on the one hand global capital markets contain inefficiencies, especially in terms of information, on the other, corporations and their commercial and technical positions evolve rapidly. This present edition of the Arrowhead valuation is for a short to medium-term alignment analysis (one to twelve months).

## Estimation of Equity Value

Following is the detailed methodology of the two valuation approaches:

### 1. Comparable Company Analysis

Comparable Company Analysis method operates under the assumption that similar companies will have similar valuation multiples, such as P/B, P/S. We have shortlisted companies similar in business with MGX Minerals based on parameters such as market size, regions of operations etc.

The weights allocated to the comparable companies were based on the degree of their business match with the subject company.

### 2. Discounted Cash Flow (DCF) Approach

- **Valuation Methodology:** The Arrowhead fair valuation for MGX Minerals is based on the Discounted Cash Flow (DCF) analysis of the Company's Driftwood Creek project and the Wastewater Treatment and Lithium Extraction business.
- **Time Horizon:** Period chosen for valuation is 20 years.
- **Terminal Value:** Terminal value is based on terminal growth rate of 3%.

The Equity Value of MGX has been arrived at by separately valuing the three businesses of the Company using different valuation methodologies. The three businesses include:

- Wastewater Treatment and Lithium Extraction Business
- Mining Business
- Energy Business

The following table summarizes MGX's Equity Value from these three businesses:

| Business   | Equity Value<br>(thousand \$) | Equity Value<br>per share (\$) |
|--|-------------------------------|--------------------------------|
| Wastewater Treatment and Lithium Extraction Business | 40,498                        | 0.29                           |
| Mining Business                                      | 50,960                        | 0.36                           |
| Energy Business                                      | 7,546                         | 0.05                           |
| <b>Total</b>   | <b>99,004</b>                 | <b>0.71</b>                    |

### Wastewater Treatment and Lithium Extraction

The Equity Value for the Wastewater Treatment and Lithium Extraction Business has been calculated by separately valuing the Wastewater Treatment business and the Lithium Extraction business. Both the businesses have been valued by the Discounted Cash Flow method using Free Cash Flow to Equity. The cash flows have been projected for the next 20 years, i.e. from FY 2019 to FY 2038, beyond which, we have assumed a terminal growth rate of 3%.

The following table calculates the cost of equity for Wastewater Treatment and Lithium Extraction Business. The expected return on the market is assumed for the broader market. We have additionally assumed a business-specific risk to account for the higher risk in the newly developed technology:

## Cost of Equity

|                                   |              |
|-----------------------------------|--------------|
| Risk-free Rate                    | 2.7%         |
| Beta                              | 1.93         |
| Expected Market Return            | 8.0%         |
| Additional Business-specific Risk | 20.0%        |
| <b>Cost of Equity</b>             | <b>15.5%</b> |

The following tables summarize the Free Cash Flow to Equity computation for the Wastewater Treatment business, which is subsequently discounted at the Cost of Equity for Wastewater Treatment and Lithium Extraction business:

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July) | FY 2019E | FY 2020P | FY 2021P | FY 2022P | FY 2023P |
|--------------------------------------|----------|----------|----------|----------|----------|
| <b>FCFE - Wastewater Treatment</b>   |          |          |          |          |          |
| Net Profit/(Loss)                    | (8,853)  | (8,521)  | (8,158)  | (6,564)  | (5,316)  |
| Add: Depreciation and Amortization   | 943      | 1,451    | 1,856    | 3,868    | 5,695    |
| Less: Capital Expenditure            | 33       | 2,889    | 3,106    | 11,868   | 14,530   |
| Fund Excess/(Shortfall)              | (7,944)  | (9,959)  | (9,408)  | (14,564) | (14,150) |
| Add: Net Borrowings                  | 7,944    | 9,959    | 9,408    | 14,564   | 14,150   |
| Free Cash Flow to Equity             | -        | -        | -        | -        | -        |
| Present Value of FCFE                | -        | -        | -        | -        | -        |

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July) | FY 2024P | FY 2025P | FY 2026P | FY 2027P | FY 2028P |
|--------------------------------------|----------|----------|----------|----------|----------|
| <b>FCFE - Wastewater Treatment</b>   |          |          |          |          |          |
| Net Profit/(Loss)                    | (2,410)  | (104)    | 4,436    | 9,176    | 14,362   |
| Add: Depreciation and Amortization   | 7,148    | 8,294    | 10,278   | 11,816   | 13,547   |
| Less: Capital Expenditure            | 14,504   | 14,348   | 18,618   | 18,608   | 20,736   |
| Fund Excess/(Shortfall)              | (9,766)  | (6,157)  | (3,903)  | 2,384    | 7,173    |
| Add: Net Borrowings                  | 9,766    | 6,157    | 3,903    | (2,384)  | (7,173)  |
| Free Cash Flow to Equity             | -        | -        | -        | -        | -        |
| Present Value of FCFE                | -        | -        | -        | -        | -        |

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July) | FY 2029P | FY 2030P | FY 2031P | FY 2032P | FY 2033P |
|--------------------------------------|----------|----------|----------|----------|----------|
| <b>FCFE - Wastewater Treatment</b>   |          |          |          |          |          |
| Net Profit/(Loss)                    | 16,999   | 15,334   | 17,604   | 17,402   | 18,483   |
| Add: Depreciation and Amortization   | 14,868   | 15,859   | 17,142   | 18,618   | 22,463   |
| Less: Capital Expenditure            | 20,654   | 20,455   | 22,454   | 24,344   | 35,375   |
| Fund Excess/(Shortfall)              | 11,213   | 10,739   | 12,292   | 11,677   | 5,571    |
| Add: Net Borrowings                  | (9,944)  | (8,453)  | (7,185)  | (6,107)  | (5,191)  |
| Free Cash Flow to Equity             | 1,269    | 2,286    | 5,108    | 5,570    | 380      |
| Present Value of FCFE                | 298      | 464      | 898      | 847      | 50       |

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July) | FY 2034P | FY 2035P | FY 2036P | FY 2037P | FY 2038P |
|--------------------------------------|----------|----------|----------|----------|----------|
| <b>FCFE - Wastewater Treatment</b>   |          |          |          |          |          |
| Net Profit/(Loss)                    | 21,614   | 25,713   | 28,316   | 31,724   | 34,970   |
| Add: Depreciation and Amortization   | 25,618   | 28,205   | 30,315   | 33,257   | 35,667   |
| Less: Capital Expenditure            | 36,134   | 37,021   | 37,826   | 43,438   | 44,399   |
| Fund Excess/(Shortfall)              | 11,098   | 16,898   | 20,805   | 21,543   | 26,239   |
| Add: Net Borrowings                  | (4,412)  | (3,750)  | (3,188)  | (2,710)  | (2,303)  |
| Free Cash Flow to Equity             | 6,685    | 13,147   | 17,617   | 18,833   | 23,935   |
| Terminal Value                       |          |          |          |          | 196,995  |
| Present Value of FCFE                | 762      | 1,298    | 1,505    | 1,393    | 14,143   |

The following tables summarize the Free Cash Flow to Equity computation for the Lithium Extraction business, which is subsequently discounted using the Cost of Equity for Wastewater Treatment and Lithium Extraction business:

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July) | FY 2019E | FY 2020P | FY 2021P | FY 2022P | FY 2023P |
|--------------------------------------|----------|----------|----------|----------|----------|
| <b>FCFE - Lithium Extraction</b>     |          |          |          |          |          |
| Net Profit/(Loss)                    | (3,273)  | (3,111)  | (3,006)  | (1,949)  | (988)    |
| Add: Depreciation and Amortization   | 343      | 541      | 710      | 1,519    | 2,300    |
| Less: Capital Expenditure            | 12       | 1,077    | 1,188    | 4,662    | 5,868    |
| Fund Excess/(Shortfall)              | (2,942)  | (3,647)  | (3,484)  | (5,091)  | (4,555)  |
| Add: Net Borrowings                  | 2,942    | 3,647    | 3,484    | 5,091    | 4,555    |
| Free Cash Flow to Equity             | -        | -        | -        | -        | -        |
| Present Value of FCFE                | -        | -        | -        | -        | -        |

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July) | FY 2024P | FY 2025P | FY 2026P | FY 2027P | FY 2028P |
|--------------------------------------|----------|----------|----------|----------|----------|
| <b>FCFE - Lithium Extraction</b>     |          |          |          |          |          |
| Net Profit/(Loss)                    | 806      | 2,312    | 5,299    | 6,892    | 7,802    |
| Add: Depreciation and Amortization   | 2,971    | 3,554    | 4,546    | 5,404    | 6,418    |
| Less: Capital Expenditure            | 6,029    | 6,148    | 8,235    | 8,511    | 9,823    |
| Fund Excess/(Shortfall)              | (2,253)  | (282)    | 1,610    | 3,785    | 4,396    |
| Add: Net Borrowings                  | 2,253    | 282      | (1,610)  | (3,097)  | (2,632)  |
| Free Cash Flow to Equity             | -        | -        | -        | 688      | 1,764    |
| Present Value of FCFE                | -        | -        | -        | 216      | 478      |

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July) | FY 2029P | FY 2030P | FY 2031P | FY 2032P | FY 2033P |
|--------------------------------------|----------|----------|----------|----------|----------|
| <b>FCFE - Lithium Extraction</b>     |          |          |          |          |          |
| Net Profit/(Loss)                    | 10,100   | 12,038   | 14,030   | 14,686   | 16,919   |
| Add: Depreciation and Amortization   | 7,310    | 8,110    | 9,139    | 10,377   | 13,129   |
| Less: Capital Expenditure            | 10,154   | 10,460   | 11,971   | 13,569   | 20,676   |
| Fund Excess/(Shortfall)              | 7,255    | 9,688    | 11,198   | 11,495   | 9,372    |
| Add: Net Borrowings                  | (2,237)  | (1,902)  | (1,617)  | (1,374)  | (1,168)  |
| Free Cash Flow to Equity             | 5,018    | 7,787    | 9,582    | 10,121   | 8,204    |
| Present Value of FCFE                | 1,177    | 1,582    | 1,685    | 1,540    | 1,081    |

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July) | FY 2034P | FY 2035P | FY 2036P | FY 2037P | FY 2038P |
|--------------------------------------|----------|----------|----------|----------|----------|
| <b>FCFE - Lithium Extraction</b>     |          |          |          |          |          |
| Net Profit/(Loss)                    | 19,603   | 22,499   | 24,247   | 26,727   | 28,998   |
| Add: Depreciation and Amortization   | 15,247   | 16,955   | 18,405   | 20,394   | 22,090   |
| Less: Capital Expenditure            | 21,506   | 22,254   | 22,966   | 26,637   | 27,498   |
| Fund Excess/(Shortfall)              | 13,344   | 17,200   | 19,687   | 20,484   | 23,590   |
| Add: Net Borrowings                  | (993)    | (844)    | (717)    | (610)    | (518)    |
| Free Cash Flow to Equity             | 12,351   | 16,356   | 18,970   | 19,874   | 23,072   |
| Terminal Value                       |          |          |          |          | 189,891  |
| Present Value of FCFE                | 1,408    | 1,614    | 1,620    | 1,470    | 13,633   |

Since MGX has 60% ownership in PurLucid, the equity value attributed to MGX from Wastewater Treatment business is 60% of the total value from Wastewater Treatment business. Whereas, the entire equity value from the Lithium Extraction business has been attributed to MGX as the Company owns the Rapid Lithium Technology.

The following table summarize the Equity value from the Wastewater Treatment business and the Lithium Extraction business that is attributed to MGX:

| <b>Business</b>                    | <b>Ownership</b> | <b>Equity Value</b> |
|------------------------------------|------------------|---------------------|
| Wastewater Treatment               | 60%              | 12,995              |
| Lithium Extraction                 | 100%             | 27,503              |
| <b>Total Equity Value</b>          |                  | <b>40,498</b>       |
| <b>Equity Value per Share (\$)</b> |                  | <b>0.29</b>         |

### **Mining Business**

For the purpose of valuation, the Mining business of MGX has been divided based on the current stage of mines. Mining business has been divided into Development-stage Mines and the Exploration-stage Mines.

#### **Development-stage Mines**

The only mine which is currently under development is the Driftwood Creek Magnesium Project. MGX currently owns 90% of interest in this mine. The Development-stage property of the Company has been valued by the Discounted Cash Flow method using Free Cash Flow to Equity.

#### **Driftwood Creek Project Valuation**

We have assumed the production at the Driftwood Creek Project to commence in the second half of FY 2022. The Capex required to develop the mine has been divided into 4 years starting from FY 2020 to FY 2023.

The Company has 19 years of mine lease left, which will expire in FY 2038. The Company may not be able to extract all the resources that are available in the mine at lease expiration.

The following table calculates the cost of equity for Driftwood Creek Project. The expected return on the market is assumed for the broader market. We have additionally assumed a business-specific risk to account for the higher Geopolitical risk and Environmental risk in the mining business:

#### **Cost of Equity**

|                                   |              |
|-----------------------------------|--------------|
| Risk-free Rate                    | 2.7%         |
| Beta                              | 1.93         |
| Expected Market Return            | 8.0%         |
| Additional Business-specific Risk | 25.0%        |
| <b>Cost of Equity</b>             | <b>16.2%</b> |

The following tables summarize the Free Cash Flow to Equity computation for the Driftwood Creek Project, which is subsequently discounted using the Cost of Equity for Driftwood Creek Project:

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July)          | FY 2019E | FY 2020P | FY 2021P | FY 2022P | FY 2023P |
|---|----------|----------|----------|----------|----------|
| <b>Free Cash Flow to Equity</b>               |          |          |          |          |          |
| Net Profit/(Loss)                             | (10,683) | (13,170) | (17,015) | 6,687    | 30,894   |
| Add: Depletion, Depreciation and Amortization | 13       | 60       | 129      | 4,903    | 14,705   |
| Less: Capital Expenditure                     | 46       | 35,871   | 47,924   | 76,005   | 91,440   |
| Fund Excess/(Shortfall)                       | (10,716) | (48,980) | (64,810) | (64,415) | (45,841) |
| Add: Net Borrowings                           | 10,716   | 48,980   | 64,810   | 64,415   | 45,841   |
| Free Cash Flow to Equity                      | -        | -        | -        | -        | -        |
| Present Value of Free Cash Flow To Equity     | -        | -        | -        | -        | -        |

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July)          | FY 2024P | FY 2025P | FY 2026P | FY 2027P | FY 2028P |
|---|----------|----------|----------|----------|----------|
| <b>Free Cash Flow to Equity</b>               |          |          |          |          |          |
| Net Profit/(Loss)                             | 19,984   | 20,171   | 22,080   | 23,823   | 25,429   |
| Add: Depletion, Depreciation and Amortization | 15,437   | 16,069   | 16,638   | 17,141   | 17,581   |
| Less: Capital Expenditure                     | 8,786    | 8,514    | 8,520    | 8,419    | 8,307    |
| Fund Excess/(Shortfall)                       | 26,636   | 27,726   | 30,198   | 32,544   | 34,703   |
| Add: Net Borrowings                           | (26,636) | (27,726) | (27,060) | (23,001) | (19,551) |
| Free Cash Flow to Equity                      | -        | -        | 3,138    | 9,543    | 15,153   |
| Present Value of Free Cash Flow To Equity     | -        | -        | 1,091    | 2,858    | 3,904    |

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July)          | FY 2029P | FY 2030P | FY 2031P | FY 2032P | FY 2033P |
|---|----------|----------|----------|----------|----------|
| <b>Free Cash Flow to Equity</b>               |          |          |          |          |          |
| Net Profit/(Loss)                             | 26,798   | 27,821   | 28,796   | 29,345   | 30,482   |
| Add: Depletion, Depreciation and Amortization | 17,958   | 18,263   | 18,505   | 18,673   | 18,821   |
| Less: Capital Expenditure                     | 8,110    | 7,763    | 7,436    | 6,944    | 6,913    |
| Fund Excess/(Shortfall)                       | 36,646   | 38,322   | 39,864   | 41,074   | 42,390   |
| Add: Net Borrowings                           | (16,618) | (14,125) | (12,007) | (10,206) | (8,675)  |
| Free Cash Flow to Equity                      | 20,028   | 24,196   | 27,858   | 30,868   | 33,715   |
| Present Value of Free Cash Flow To Equity     | 4,443    | 4,620    | 4,580    | 4,367    | 4,106    |

All figures in thousand \$, unless stated differently

| Financial Year (1st Aug - 31st July)          | FY 2034P | FY 2035P | FY 2036P | FY 2037P | FY 2038P |
|---|----------|----------|----------|----------|----------|
| <b>Free Cash Flow to Equity</b>               |          |          |          |          |          |
| Net Profit/(Loss)                             | 31,555   | 32,474   | 32,969   | 33,551   | 32,873   |
| Add: Depletion, Depreciation and Amortization | 19,015   | 19,253   | 19,516   | 19,818   | 21,717   |
| Less: Capital Expenditure                     | 7,519    | 8,152    | 8,647    | 9,289    | 13,830   |
| Fund Excess/(Shortfall)                       | 43,050   | 43,575   | 43,838   | 44,079   | 40,760   |
| Add: Net Borrowings                           | (7,374)  | (6,268)  | (5,327)  | (4,528)  | (3,849)  |
| Free Cash Flow to Equity                      | 35,677   | 37,307   | 38,511   | 39,551   | 36,911   |
| Present Value of Free Cash Flow To Equity     | 3,740    | 3,367    | 2,991    | 2,644    | 2,124    |

The following table summarizes the Equity Value that is attributed to MGX from the Driftwood Creek Project:

| <b>Equity Value</b>                                  |             |
|--|-------------|
| Equity Value   | 44,835      |
| Equity Value attributed to MGX                       | 40,352      |
| <b>Equity Value per Share attributed to MGX (\$)</b> | <b>0.29</b> |

### ***Exploration-stage Mines***

The Exploration-stage mines of MGX have been valued by the Comparable Companies Valuation method. Based on the Current Exploration-stage of each mine, a discount or premium is applied to the market Price-to-Book multiple, which is then used for the valuation of specific Exploration-stage mine.

The following table summarizes the value of multiple used for valuing Exploration-stage mines based on their current Exploration-stage:

| Stock Exchange                                      | Company Name                             | Business Match | P / E  | P / B | P / S | P / CFO | EV / EBITDA | P / E | P / B | P / S | P / CFO | EV / EBITDA |
|---|--|----------------|--------|-------|-------|---------|-------------|-------|-------|-------|---------|-------------|
| <b>Mining Business</b>                              |  |                |        |       |       |         |             |       |       |       |         |             |
| Canadian National Stock Exchange                    | MGX MINERALS INC.                        |                |        |       |       |         |             |       |       |       |         |             |
| Toronto Stock Exchange                              | Nemaska Lithium Inc.                     | 50.0%          | (1.8)  | 0.4   |       | (34.0)  | 9.4         | (0.9) | 0.2   |       | (17.0)  | 4.7         |
| New York Stock Exchange                             | Lithium Americas Corp                    | 50.0%          | (16.1) | 5.5   | 94.1  | (24.6)  | (16.1)      | (8.1) | 2.8   | 47.1  | (12.3)  | (8.0)       |
| TSX Venture Exchange                                | ADVANTAGE LITHIUM CORP                   | 50.0%          | (9.6)  | 0.9   |       | (12.5)  | (7.7)       | (4.8) | 0.4   |       | (6.3)   | (3.8)       |
| TSX Venture Exchange                                | PURE ENERGY MINERALS LIMITED             | 50.0%          | (1.7)  | 0.4   |       | (5.5)   | (3.7)       | (0.9) | 0.2   |       | (2.7)   | (1.9)       |
| New York Stock Exchange                             | LIVENT CORPORATION                       | 50.0%          | 8.1    | 2.1   | 2.3   | 11.1    | 6.0         | 4.1   | 1.0   | 1.2   | 5.6     | 3.0         |
| New York Stock Exchange                             | ALBEMARLE CORPORATION                    | 20.0%          | 10.4   | 2.0   | 2.3   | 14.1    | 9.0         | 2.1   | 0.4   | 0.5   | 2.8     | 1.8         |
| New York Stock Exchange                             | CHEMICAL AND MINING COMPANY OF CHILE INC | 20.0%          | 17.9   | 3.7   | 3.5   | 15.1    | 9.7         | 3.6   | 0.7   | 0.7   | 3.0     | 1.9         |
| Median  |  |                | (1.7)  | 2.0   | 2.9   | (5.5)   | 6.0         |       |       |       |         |             |
| Mean Without Outliers                               |  |                |        | 1.6   | 2.7   |         | 8.5         |       |       |       |         |             |
| Weighted Mean Without Outliers                      |  |                |        | 1.3   | 2.6   |         | 8.2         |       |       |       |         |             |
| Ignore Outliers where Deviation from Median Exceeds |  |                |        |       |       |         |             |       |       |       |         |             |

Source: Morningstar, Latest Reported Company Filings

Market data as on 15th July, 2019

The following table shows the Market P/B multiple applied to the each of the mines depending on the stage of the mine:

| Exploration-stage   | Premium/(Discount) to Comparable Multiple | Market P/B Multiple |
|---------------------|---|---------------------|
| Early Exploration   | -30%                                      | 0.88                |
| Advance Exploration | -10%                                      | 1.13                |
| Development         | 0%  | 1.26                |

The following table summarizes the Equity Value from each Exploration-stage mine:

| Metal                              | Project                    | Book Value (thousand \$) | Exploration Stage   | Market P/B Multiple | Equity Value (thousand \$) |
|------------------------------------|----------------------------|--------------------------|---------------------|---------------------|----------------------------|
| <b>Magnesium</b>                   | Prospects Portfolio        | 127                      | Early Exploration   | 0.88                | 112                        |
| <b>Silicon</b>                     | Silica Projects            | 465                      | Advance Exploration | 1.13                | 526                        |
| <b>Lithium</b>                     | Canada Lithium             | 2,898                    | Early Exploration   | 0.88                | 2,551                      |
|                                    | Chilean Lithium Salars SpA | 2,881                    | Early Exploration   | 0.88                | 2,536                      |
|                                    | Argentina Lithium          | 327                      | Early Exploration   | 0.88                | 288                        |
|                                    | US Petrolithium            | 4,689                    | Early Exploration   | 0.88                | 4,127                      |
| <b>Gold</b>                        | Fran Gold                  | 414                      | Advance Exploration | 1.13                | 469                        |
| <b>Rare Earth Elements</b>         | REN                        | -                        | Early Exploration   | 0.88                | -                          |
| <b>Total</b>                       |                            |                          |                     |                     | <b>10,608</b>              |
| <b>Equity Value per Share (\$)</b> |                            |                          |                     |                     | <b>0.08</b>                |

## Energy Business

The Energy Business of MGX, which comprise of the Zinc-air battery mass energy storage system, has been valued by Comparable Companies Valuation method. A Price-to-Book multiple has been computed based on the Comparable Companies, which is then used to compute the value of Energy Business.

The following table summarizes the computation of multiple used for the valuation of Energy Business:

| Stock Exchange                                      | Company Name                       | Business Match | P / E | P / B | P / S | P / CFO | EV / EBITDA | P / E | P / B | P / S | P / CFO | EV / EBITDA |
|---|------------------------------------|----------------|-------|-------|-------|---------|-------------|-------|-------|-------|---------|-------------|
| <b>Energy Business</b>                              |                                    |                |       |       |       |         |             |       |       |       |         |             |
| Canadian National Stock Exchange                    | MGX Minerals Inc                   |                |       |       |       |         |             |       |       |       |         |             |
| New York Stock Exchange                             | Johnson Controls International PLC | 70.0%          | 17.3  | 1.7   | 1.2   | 14.8    | 15.9        | 12.1  | 1.2   | 0.8   | 10.4    | 11.1        |
| OTCMKTS   | Panasonic Corp                     | 40.0%          | 9.0   | 1.2   | 0.3   | 5.4     | 6.5         | 3.6   | 0.5   | 0.1   | 2.1     | 2.6         |
| Median  |                                    |                | 13.1  | 1.4   | 0.7   | 10.1    | 11.2        |       |       |       |         |             |
| Mean Without Outliers                               |                                    |                | 13.1  | 1.4   | 0.7   | 10.1    | 11.2        |       |       |       |         |             |
| Weighted Mean Without Outliers                      |                                    |                | 14.3  | 1.5   | 0.9   | 11.4    | 12.5        |       |       |       |         |             |
| Ignore Outliers where Deviation from Median Exceeds |                                    |                |       |       |       |         |             |       |       |       |         |             |

Source: Morningstar, Latest Reported Company Filings  
Market data as on 15th July, 2019

The following table summarize the Equity value from the Energy business that is attributed to MGX:

| <b>Equity Value</b>                |              |
|------------------------------------|--------------|
| Book Value (thousand \$)           | 4,950        |
| Market P/B Multiple                | 1.52         |
| <b>Equity Value (thousand \$)</b>  | <b>7,546</b> |
| <b>Equity Value per Share (\$)</b> | <b>0.05</b>  |

## Analyst Certifications

I, Ankit Gupta, certify that all of the views expressed in this research report accurately reflect my personal views about the subject security and the subject company.

### Important disclosures

Arrowhead Business and Investment Decisions, LLC received fees in 2018 and will receive fees in 2019 from MGX Minerals Inc. for researching and drafting this report and for a series of other services to MGX Minerals Inc., including distribution of this report, investor relations and networking services. Neither Arrowhead BID nor any of its principals or employees own any long or short positions in MGX Minerals, Inc. Arrowhead BID's principals have a mandate for investment banking services from MGX Minerals and expect to receive compensation for investment banking activities from MGX Minerals in 2019.

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## Appendix

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### Glossary

|          |                                 |
|----------|---------------------------------|
| MGX      | MGX Minerals                    |
| PurLucid | PurLucid Treatment Solutions    |
| ZincNyx  | ZincNyx Energy Solutions        |
| CAD      | Canadian Dollar                 |
| USD      | US Dollar                       |
| JV       | Joint Venture                   |
| NSR      | Net Smelter Revenue             |
| bpd      | Barrel Per Day                  |
| EBD      | Evaporator Blowdown             |
| SAGD     | Steam Assisted Gravity Drainage |
| O&G      | Oil & Gas                       |
| PEA      | Preliminary Economic Assessment |
| PFS      | Preliminary Feasibility Studies |
| FS       | Feasibility Studies             |
| CAGR     | Compounded Annual Growth Rate   |

## Notes and References

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<sup>i</sup> IRENA Electricity Storage and Renewables

<sup>ii</sup> Zion Market Research Report “Produced Water Treatment Market by Type (Primary Separation, Secondary Separation, and Tertiary Separation) and by Application (Offshore and Onshore): Global Industry Perspective, Comprehensive Analysis, and Forecast, 2018—2024”

<sup>iii</sup> Argus White Paper - The lithium market – the future is electric

<sup>iv</sup> USGS 2019 - [minerals.usgs.gov/minerals/pubs/commodity/lithium/mcs-2019-lithi.pdf](https://minerals.usgs.gov/minerals/pubs/commodity/lithium/mcs-2019-lithi.pdf)

<sup>v</sup> Swiss Resource Capital Lithium Report 2018

<sup>vi</sup> Swiss Resource Capital Lithium Report 2018

<sup>vii</sup> Grand View Research - Lithium-Ion Battery Market Worth \$93.1 Billion By 2025 | CAGR: 17.0%

<sup>viii</sup> Metalary.com

<sup>ix</sup> Morningstar - Lithium Price Concerns Result in Buying Opportunity by Seth Goldstein, CFA

<sup>x</sup> Transparency Market Research – [www.globenewswire.com/news-release/2018/10/25/1627202/0/en/Global-Silicon-Metal-Market-to-hit-US-3-4-Bn-by-2024-Buoyed-by-Product-s-Usage-in-Making-Aluminum-Alloys-TMR.html](http://www.globenewswire.com/news-release/2018/10/25/1627202/0/en/Global-Silicon-Metal-Market-to-hit-US-3-4-Bn-by-2024-Buoyed-by-Product-s-Usage-in-Making-Aluminum-Alloys-TMR.html)

<sup>xi</sup> Allied Market Research - Solar Energy Market - Global Opportunity Analysis and Industry Forecast, 2014 - 2022

<sup>xii</sup> USGS - Statista 2018

<sup>xiii</sup> Nikkei Asian Review - Magnesium gains luster as electric cars take hold by Soichi Takano

<sup>xiv</sup> USGS – Natural Resources Canada