

GLOBAL BUSINESS REPORTS

INDUSTRY EXPLORATIONS

SASKATCHEWAN AND MANITOBA MINING 2018

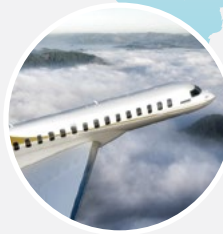


*Policy Environment - Exploration and Production
Technology and Services - Financing*

GBR

GLOBAL BUSINESS REPORTS

TRADE AND INDUSTRY PUBLISHING HOUSE



From research and analysis to print and distribution,
GBR acquires, delivers and diffuses business intelligence.

MINING • CHEMICALS • OIL AND GAS • POWER
PHARMACEUTICALS • AEROSPACE • AUTOMOTIVE



www.gbreports.com

If you are organizing an event or are the leader of a trade association or chamber of commerce, GBR can produce your official, industry-specific report according to the highest standards of quality and information gathering.
Contact info@gbreports.com for more details.



@gbreports



Search 'GBR'

Dear Reader,

Canada sets the tone of the global mining industry, given that 75% of mining companies are based in the country and it is among the top five producers of minerals globally. It is also the largest producer of potash in the world and the second-largest uranium producer after Kazakhstan. Canada's uranium and potash resources are found in Saskatchewan; in fact, Saskatchewan has around 60% of global potash reserves and it accounted for 22% of the world's primary uranium production in 2015. Manitoba, on the other hand, has significant base and precious metals resources, such as nickel, copper, zinc and gold, as well as lithium and cobalt. Whilst having a relatively underdeveloped mining industry compared to Saskatchewan, it accounts for 34% of Canada's zinc production.

However, mining production and investment have been slow in both provinces over the last few years, reflecting not only the global mining downturn, but low uranium and potash prices. Since the Fukushima Daiichi nuclear disaster in March 2011, uranium prices have been in a long decline, with U308 sitting at just US\$21 per pound in April 2018, down from around US\$65 per pound before the disaster. Potash prices have also fallen significantly in the last five to six years. However, there are hopes that Cameco's decision to put its flagship McArthur River/Key Lake operations on standby in 2018 and Kazakhstan-based KazAtomProm's reduction in production will shore up uranium prices.

In a positive move, May 2017 saw the grand opening of K+S Potash Canada's Bethune mine, becoming the first new mine in Saskatchewan in over 40 years. Additionally, potash giants Agrium and Potash Corporation will merge (with headquarters in Saskatchewan), boosting hopes that the potash industry will stabilize. Meanwhile, whilst exploration spending has been subdued in recent years, our research shows that exploration activity is now picking up in Saskatchewan and Manitoba.

Saskatchewan and Manitoba are also admired for their generally investor-friendly policy environments. The Fraser Institute's 2016 annual survey of mining and exploration companies ranked Saskatchewan and Manitoba as the number one and two, respectively, most attractive jurisdictions globally based on their geologic attractiveness and the effects of government policy on attitudes toward exploration investment. As our report was going to print, the Institute's 2017 survey results were released, showing that Saskatchewan had slipped to second spot and Manitoba to 18th in the rankings. Critical to Manitoba improving its attractiveness will be improving the permitting process and how it relates to First Nations consultations.

In addition to exclusive interviews with the leading producers, policy makers, juniors and service providers, this report delves deeper into the themes described above. As the global mining industry exits its long recession, this overview will help guide investors looking to understand more about the mining opportunities in these high potential Canadian provinces.



A handwritten signature in black ink, appearing to read 'Alice Pascoletti'.

Alice Pascoletti
General Manager
Global Business Reports (GBR)

Introduction to Saskatchewan and Manitoba

- 8. Saskatchewan Policy Environment: Sitting on top of the world
- 10. Interview: Minister of Economy, Government of Saskatchewan
- 11. Interview with Saskatchewan Chamber of Commerce
- 12. Interview with Saskatchewan Mining Association
- 14. Manitoba Policy Environment: Growing pains of an unexplored mining destination
- 16. Interview with Minister of Growth, Enterprise and Trade, Manitoba Government
- 17. Interview with Mining Association of Manitoba

Saskatchewan's Mining Industry

- 20. Saskatchewan's Mining Industry: Converting potential into success
- 23. Interview with Cameco
- 24. Interview with Denison Mines
- 25. Interview with SRK Consulting
- 26. Interview with SSR Mining
- 28. Advancing Exploration: Preparing for an upturn
- 31. Interview with IsoEnergy
- 32. Interview with Fission Uranium
- 33. Interview with Foran Mining
- 34. Interview with Eagle Plains Resources and Taiga Gold Corp.
- 35. Interviews with Purepoint Uranium and with ALX Uranium Corp.

Manitoba's Mining Industry

- 38. Manitoba's Mining Industry: Manitoba's mining renaissance
- 40. Interview with Hudbay Minerals
- 41. Interview with Manitoba Hydro
- 42. Manitoba's Exploration Potential
- 44. Interview with Minnova Corp.
- 45. Interview with Quantum Minerals
- 46. Interviews with Altius Minerals and with Mustang Minerals
- 47. Interview with Orix Geoscience Inc.

Technology and Services

- 50. Technology and Services: A conservative industry embracing change
- 52. Interview with Norseman Structures
- 53. Interview with Epiroc
- 54. Interview with Motion Metrics International
- 55. Interviews with Aquire Technology Solutions and with March Consulting
- 56. Interview with Hatch
- 57. Interviews with Team Drilling and with Rodren Drilling
- 58. Interview with Cementation Canada
- 60. Interview with Safemap International
- 61. Interviews with ASAP and with ON2 Solutions

Financing Environment

- 64. Interview with TSX Venture Exchange
- 65. Interview with Canadian Securities Exchange
- 66. Interview with Zimtu Capital Corp.
- 67. Interview with Peartree Securities

Final Thoughts

- 70. Interview with BLG LLP
- 71. Interview with Pitblado Law
- 72. Final Thoughts
- 73. Directory
- 75. Credits

Policy Environment

Both Manitoba and Saskatchewan lead the Fraser Institute rankings

14



Saskatchewan's Mining Industry

Uranium, Potash and more

20 - 35



Manitoba's Mining Industry

Nickel, Zinc, Gold and more

38 - 47



Finance, Technology and Services

Preparing for growth

50 - 67





SASKATCHEWAN AND MANITOBA MINING 2018
Industry Explorations
 Global Business Reports

This research has been conducted by
 Sorina Dumitru, Catherine Howe, Matthias Lomas,
 Sarah Crompton-Donnelly and Alfonso Tejerina

Edited by Mungo Smith
 Graphic design by Gonzalo Da Cunha

A Global Business Reports Publication
 For updated industry news from our
 on-the-ground teams around the world,
 please visit our website at gbreports.com,
 subscribe to our newsletter by signing up
 to our VIP list through our website,
 or follow us on Twitter: @GBReports

CANADA



Yukon Territory

Northwest Territories

Nunavut Territories

British Columbia

Alberta

MANITOBA

SASKATCHEWAN

Ontario

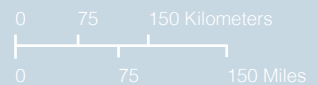
Regina

Winnipeg

Saskatchewan and Manitoba

- Canada
- ★ National Capital
- Province Capital

UNITED STATES



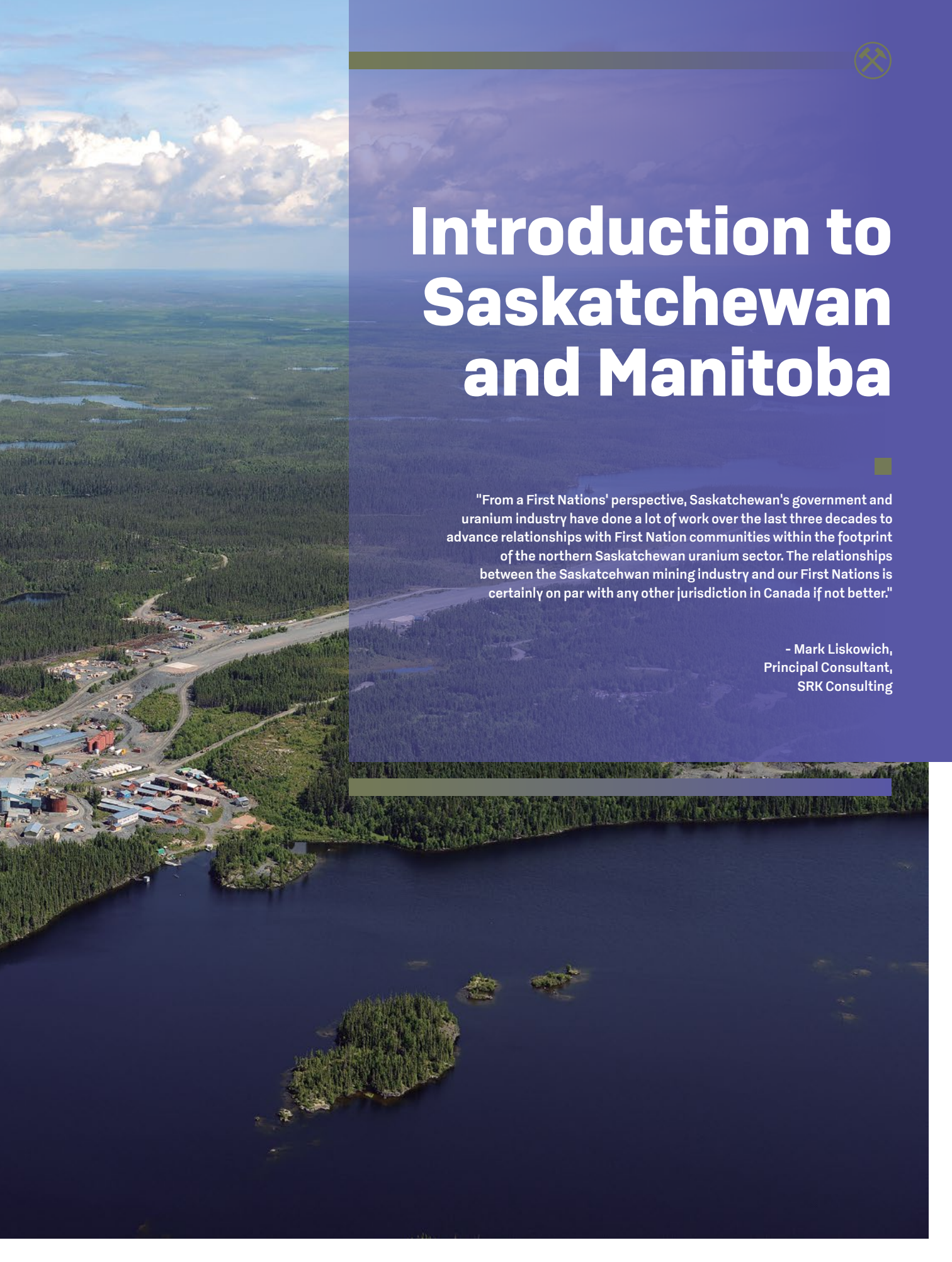




Introduction to Saskatchewan and Manitoba

"From a First Nations' perspective, Saskatchewan's government and uranium industry have done a lot of work over the last three decades to advance relationships with First Nation communities within the footprint of the northern Saskatchewan uranium sector. The relationships between the Saskatchewan mining industry and our First Nations is certainly on par with any other jurisdiction in Canada if not better."

- Mark Liskowich,
Principal Consultant,
SRK Consulting



Saskatchewan Policy Environment: Sitting on Top of the World

With a population of just 1.13 million and located in the middle of Canada's huge landmass, Saskatchewan is not the most likely province in Canada to capture international attention. However, occupying a landmass larger than France and being rich in minerals, it is the world's leading producer of potash and second biggest producer of uranium. In the north of the province Saskatchewan forms part of the Canadian Shield, whilst to the south is plains country.



In Saskatchewan, we tend to take our cues from industry. We have an industry-led approach rather than a government-down approach. We believe in having an effective and responsive regulatory framework that allows private businesses to flourish. While commodity markets rise and fall, Saskatchewan's business environment remains stable and reliable.

**- Hon. Steven Bonk,
Minister of Economy,
Government of Saskatchewan**



Saskatchewan's uranium deposits, which have been mined since 1953, are found in the famous Athabasca basin in the north, which has the highest uranium grades in the world.

Saskatchewan sits on top of the world in more ways than one. The Fraser Institute's Annual Investment Attractiveness Index, 2016, which rated 104 jurisdictions globally based on their geologic attractiveness for minerals and metals and the extent to which government policies encourage or deter exploration and investment, rated Saskatchewan as the most attractive jurisdiction globally. In the Fraser Institute's 2017 update, Saskatchewan slipped to second place, but is still very highly regarded and was the top rated Canadian province.

In particular, the government has won plaudits for its open to business stance. "The province has lots of rules but if you follow them correctly you get access. The bottom line is that the province wants business. Brad Wall, until recently the Premier of Saskatchewan, has been amazing," commented Dev Randhawa, CEO and chairman, Fission Uranium, which has made a large uranium discovery in Patterson Lake South near to the Athabasca Basin.

On Time and On Budget

The government has made a concerted effort to diversify its economy from agriculture in recent years, a sector in which it still leads Canada in exports. Saskatchewan's strategy is working as, despite a

SASKATCHEWAN AT A GLANCE

Capital: Regina
Population estimate (October 1, 2017): 1,168,057
Area: 651,900 km²
Unemployment rate (November 2017): 5.7%

Source: Statistics Canada

Saskatchewan
GDP
(million CAD \$, 2016)

75,261

Share of
national GDP
(%, 2016)

3.70

GDP per capita
(CAD\$, 2016)

65,525

Market Income
per capita
(CAD\$, 2015)

32,581

ACCORDING TO
NATURAL RESOURCES CANADA:

Saskatchewan
mining production totaling

\$8.2 billion in 2015

(second highest in Canada)

GDP (2015):

Minerals and petroleum
contribute **21% of total
provincial GDP**

TOTAL MINERAL SALES VALUE (2015):

\$8.2 billion

VALUE OF POTASH SALES (2015):

\$6.1 billion

EXPLORATION EXPENDITURES (2015):

\$211 million

slowdown in 2016 due to the fall in oil prices, it is expected to top Canadian provinces in GDP growth in 2017 and 2018, according to RBC Economics.

There are a number of policies which the government, ruled by the center-right Saskatchewan Party since 2007, has implemented to boost the mining industry, such as 10-year royalty holidays for base and precious metals produced in the province and a 10% mineral exploration tax credit for Saskatchewan residents. Additionally, there is no corporate capital tax on new capital investment, no payroll tax and only a 12% corporate income tax rate. “We have worked hard to build on our natural assets and maximize our potential for growth, supplementing the province’s significant resources with competitive royalty structures, backed by stable, transparent government policies. This combination has given Saskatchewan a unique standing in the international mining industry,” said Hon. Steven Bonk, Minister of Economy of the Government of Saskatchewan.

However, arguably it is the government’s overall openness and efficiency which most please investors. The cases of two significant projects illustrate the caliber of interactions mining companies have had with the government. K+S Group’s construction of the Bethune mine is a particularly good news story for Saskatchewan. The company, headquartered in Germany and Europe’s largest supplier of potash, had formally operated a potash mine in Canada but it was nationalized by the New Democratic Party (NDP) in the 1970s, under the terms of which K+S were paid an unsatisfactory amount.

Before choosing Saskatchewan for the Bethune mine, K+S also considered Russia, Ethiopia and Argentina as alternative destinations. “Therefore, when K+S assessed Saskatchewan with other jurisdictions they were nervous about political risk but then realized things have greatly changed since the 1970s. Indeed, the first act of the current administration was to announce that they would never nationalize the potash industry,” remarked Fred R. Pletcher, partner and chair, National Mining Group, of law firm Borden Ladner Gervais (BLG) LLP. “The Saskatchewan government is on time with permits, which is not the case in most jurisdictions in Canada or the world, and on was on budget with every permit K+S needed to move forward.”

The experience of Fission Uranium, meanwhile, demonstrates how the government has truly been open to international business. The junior miner has secured US\$82 million for 20% of the company from Chinese investors CGN Mining Company. “Originally our Chinese investors were worried if their money would be accepted by the Saskatchewan government but this could not have been further from the truth. We emailed the government on a morning and had a call back within three hours and a welcoming attitude to the investment from Premier Wall. This would not have happened in British Columbia,” remarked Randhawa.

The government has also taken practical steps to improve operating conditions for exploration. For example, Saskatchewan’s public geological database has past assessment reports which are available to everyone digitally and its map staking system has won praise for helping juniors easily secure tenure without being drawn into land disputes with other claimants. “The MARS staking system is new and certainly has its bugs, but they are working through them,” reflected Tim Termuende, president and CEO of prospect generators Eagle Plains Resources.

It is hard to point to flaws in Saskatchewan’s mining regime, although the introduction of a Provincial Sales Tax (PST) on drilling costs has drawn sharp criticism from the industry. Going forward, Saskatchewan has a new Premier after more than ten years of Brad Wall being at the helm. Whilst no major changes to the mining environment are expected under the new premier Scott Moe, also of the Saskatchewan Party, the province is looking to further solidify its attractiveness, with a new Mineral Development Strategy that will include a mineral exploration incentive covering part of the costs associated with ground-based exploration activities. “We already have a well-developed mining supply chain; we just need to keep improving on our strengths,” summarized Bonk.

First for First Nations

Mining companies also appear to have an overwhelmingly positive attitude towards interactions with the First Nations communities in Saskatchewan, especially com-



Compared to other jurisdictions we worked in previously, Saskatchewan is well-regulated and very consistent. The permitting process does take time, so we wish that was shorter, but the predictability of that process, at present, is almost worth the trade-off.

- David Cates,
President and CEO,
Denison Mines



pared to neighboring Manitoba. Part of the reason for this is the more entrenched nature of the mining industry in the province, with much more activity than Manitoba.

“In our experience, the First Nations peoples are very pro-exploration and pro-mining. They are major stakeholders in areas where we operate and have a passion for the land. It is a huge benefit to be in their region as they know the land like nobody else and are great prospectors. They understand exploration and mining because they have grown up with it throughout their lives, and they seem happy to join our crews and participate in the exploration process,” commented Termuende.

Unlike British Columbia, where there are virtually no treaties in place managing land claims with indigenous communities, Saskatchewan has treaties with First Nations groups. Its system is also clearer than Manitoba’s which allows First Nations to claim land even if there are existing mining claims. “Saskatchewan has treaties and K+S were very pleased by the supportiveness of the First Nations there of their development, as long as there were environmental protections in place,” remarked Pletcher. “K+S put in programs to help with youth unemployment and the only regret it has is not being able to fill all the positions they set aside for First Nations.” ■



Hon. Steven Bonk

10 **Minister of Economy
GOVERNMENT OF
SASKATCHEWAN**

How important is the mining sector for Saskatchewan's economic development?

Saskatchewan has been known traditionally as an agricultural province and we have tried very hard over the last few years to diversify our economy. We have put a lot of focus on oil and gas exploration, mining and value-added products. Mining plays a huge role in our plan to diversify the province's economy. There is also more to the industry than first meets the eye: over 30,000 of Saskatchewan's citizens owe their livelihoods in some way to our mining sector.

We have worked hard to build on our natural assets and maximize our potential for growth, supplementing the province's significant resources with competitive royalty structures, backed by stable, transparent government policies. This combination has given Saskatchewan a unique standing in the international mining industry.

Saskatchewan has recently been rated the top destination for mining investment by the Fraser Institute. What factors contribute to the province's attractiveness?

In Saskatchewan we tend to take our cues from industry. We have an industry-led approach rather than a government-down approach. We believe in having an effective and responsive regulatory framework that allows private businesses to flourish. While commodity markets rise and fall, Saskatchewan's business environment remains stable and reliable. We recognize that while possession of resources is the essential first step in building a flourishing mining community, we must also help to facilitate fair access to them.

We want to keep taxes as competitive as possible and keep regulation transparent, clear and efficient, plus listen to our industry partners and reduce roadblocks to their success. During this fiscal year, our government will also be introducing a new, targeted Mineral Development Strategy. This will include a mineral exploration incentive that will cover a portion of the costs associated with ground-based exploration activities. There are global investment dollars out there right now in search of the best combination of resource potential plus a reliable operating environment. This province is most likely to be where those dollars are headed.

Uranium and potash are Saskatchewan's superstar resources. How competitive are the province's production and potential at an international level?

Saskatchewan is home to the world's richest uranium deposits and has been producing this resource continually since 1953. The Athabasca basin in northern Saskatchewan contains the largest high-grade uranium deposits in the world. While the uranium sector at large is facing significant headwinds in terms of oversupply in the world market, we are prepared for when the market inevitably recovers.

Saskatchewan is also the largest potash producer in the world, possessing almost half of the world's reserves. We have seen

significant expansions of existing mines in recent years, plus the opening of a new mine and several exploration projects being advanced towards potential production. This activity translates into roughly C\$20 billion in total investment over that time. Saskatchewan's potash industry had sales of production of 11 million tonnes K₂O in 2016 – the second highest in our history. Over the past decade, our productive capacity has increased by about 80%. Rising global population and the increasing wealth of developing nations will continue to be factors driving this growth in the foreseeable future.

There has been an uptick in awareness of environmental issues and community relationships. Is the government also focused on these aspects?

Looking at the companies in Saskatchewan, we have the largest employer of aboriginal workforces in Canada, and see this is a success we can build on. Engagement with our aboriginal community is considered an advantage; we have a large, dynamic aboriginal workforce which we hope to integrate more deeply into our mining industry.

The Northern Saskatchewan Environmental Quality Committee (EQC), established in 1995, enables people in the province's northern region – which produces one-quarter of the world's uranium supply – to learn more about uranium mining activities by seeing first-hand the environmental protection measures being employed and the socio-economic benefits being gained.

What are the objectives for the government going forward?

We are keenly aware of the need to diversify the economy and ensure all sectors are working at full potential. We acknowledge the importance of thinking long-term and working with our industry associations and stakeholders to make doing business in Saskatchewan easier. We are in consultation with the industry on the new strategy and will continue to remove unnecessary red tape and road blocks. ■



Steve McLellan

CEO

SASKATCHEWAN CHAMBER OF COMMERCE

Could you briefly introduce the Chamber of Commerce and the role it plays in Saskatchewan?

The Saskatchewan Chamber of Commerce has been in operation for almost 100 years. During this time, the number of companies invested in the mining sector has grown dramatically. As a result, a large portion of the Chamber's member base is comprised of companies from the mining supply chain. The world now relies on Saskatchewan minerals, which puts the province in a great position.

Could you elaborate on some of the ways in which the Chamber interacts with the mining industry and the support it offers?

Most recently, the Chamber has been actively supporting the mining sector in relation to the federal government's carbon tax plan. Saskatchewan mining companies operate as heavy emitters within the sphere

defined by the province; therefore, the provincial government and the Saskatchewan Chamber of Commerce are very active in their advocacy efforts. The Chamber also has an Expert Environment Committee that has several representatives from the mining sector that share their perspectives and lend their expertise. Saskatchewan's mines continually work towards greater sophistication to lower emissions wherever possible.

SaskPower plans to raise its renewable energy focus to 50% of its output. How do you expect the power landscape to evolve in Saskatchewan with this change?

At this time, the amount of power generated by renewable energy in Saskatchewan is not yet at an ideal point. SaskPower's plan to move in that direction and their strategic approach is very positive. There are many international companies now looking at investing in the wind energy sector. The Chamber is working to ensure that Saskatchewan's renewable energy sector has options in the internal provincial supply chain – similar to the mining sector – to make sure that the province gains as much value as possible. Saskatchewan is a province built on trade, and the Chamber will continue to find the areas lacking expertise and turn it to Saskatchewan's advantage.

How could a rise in energy prices impact the industry?

The Chamber has clearly stressed the importance of stable and low energy prices. Saskatchewan has the advantage of learning from other jurisdictions, like Ontario, that did not handle their energy evolution well. Additionally, Saskatchewan has a different framework in terms of power generation, supply and connectivity, and close relationships between groups such as SaskPower and the Saskatchewan Mining Association.

The Chamber recently released a report about energy efficiency, which encourages the use of energy through proper practices and appropriate equipment. The Chamber is confident that Saskatchewan will transition to more renewables without causing a significant spike in energy prices.

Could you provide examples of advantages to the operating framework of the province?

One advantage is the ability of Saskatchewan's industry to have frank and open conversations with the government. The province wholly understands the importance of transparency in its regulatory environment as it relates to all sectors, especially mining. The province is also aware of the valuable revenue streams in the mining and resource sectors, which include direct royalties, income from corporate taxes, and personal income taxes from direct employers and suppliers.

Could the recent introduction of PST deter or decrease exploration activity?

All new costs – especially taxes without attached benefits – are a definite concern. The PST tax was added to construction labour in March 2017, so the analysis to determine whether it is advantageous to the province or not is still underway. The Chamber will continue to advocate that the province perform a full cost analysis, which was not performed for the March 2017 budget. It would not be a shock to see it rolled back. It is important to reduce unnecessary direct costs so that the greater good can be served and more companies can invest in Saskatchewan.

What are the objectives of the industry and the role that the Saskatchewan Chamber of Commerce plans to play in it?

Because prices and product quantities sold change dramatically in the global commodities market, we plan to provide all the support we can to ensure a predictable and fair internal framework. Having steady regulations allows companies to sustain and prosper when commodity prices are not favorable. We also aim to ensure that companies continue to be recognized for the good work they do in the community despite the unfortunate state of some prices. We want to share the good aspects of Saskatchewan's mining industry with the world because there are many good stories to tell. ■



Pam Schwann

President
SASKATCHEWAN MINING ASSOCIATION

The Saskatchewan Mining Association (SMA) has been in operation since 1965. Could you briefly introduce the association and the role it plays in the industry?

SMA evolved out of the Saskatchewan Chamber of Mines in 1962 with a mission to represent and support the safe and responsible growth of the Saskatchewan mining sector. As we have no supplier group attached, the association truly represents Saskatchewan mining and exploration companies. Our strategic plan revolves around three pillars of activity: government advocacy, public advocacy (including education outreach) and membership development. Membership development covers a number of subject-matter

committees including human resources, environment, safety committee, public awareness and a geotech committee. The committee meetings bring together members engaged in the potash, uranium, coal and gold sectors to discuss best practices and emerging issues. Outcomes of meetings include the Annual Emergency Response Mine Rescue Competition that is organized by the Safety Committee. The SMA also hosts an annual Safety Summit, where case studies of safety incidents and lessons learned are shared, as well as a bi-annual Environmental Summit that includes member companies, university researchers, environmental consultants and government officials. Presentations on key environmental issues in Saskatchewan such as tailings, water usage, emissions, species at risk and overall foot-print reduction are shared to drive improvements in environmental practices.

What is your take on the current state of Saskatchewan's mining industry?

Saskatchewan is the world's largest producer of potash and second largest producer of uranium. However, commodity prices for both these commodities have declined significantly over the few years which has presented significant challenges. In the past decade, Saskatchewan companies had invested billions of dollars in expanding their operations, so there is a lot of extra capacity sitting idle right now. It is a very challenging time for the mining sector, particularly because of increased costs related to proposed carbon taxes, additional regulatory processes and continually escalating power costs that competing jurisdictions aren't faced with. There is work to be done to ensure the sector remains globally competitive while ensuring a continued strong environmental and safety performance.

Could the recently-announced PST tax be revisited or potentially changed?

Because of a decrease in revenue as a result of the reduction in commodity prices, the government made some significant changes that have had unintended consequences. One example that has recently been confirmed is that the PST was broadened to include exploration drilling activ-

ity, which had previously been PST exempt. As junior companies do not have active revenue streams, any money spent in tax takes away from money invested directly into the ground, like drilling programs. Well over C\$100 million goes toward exploration in northern Saskatchewan. These funds cycle through northern suppliers, which are primarily indigenous-owned, and supports their businesses and communities. The SMA has a very collaborative relationship with the provincial government and we are optimistic about changes being made on this issue.

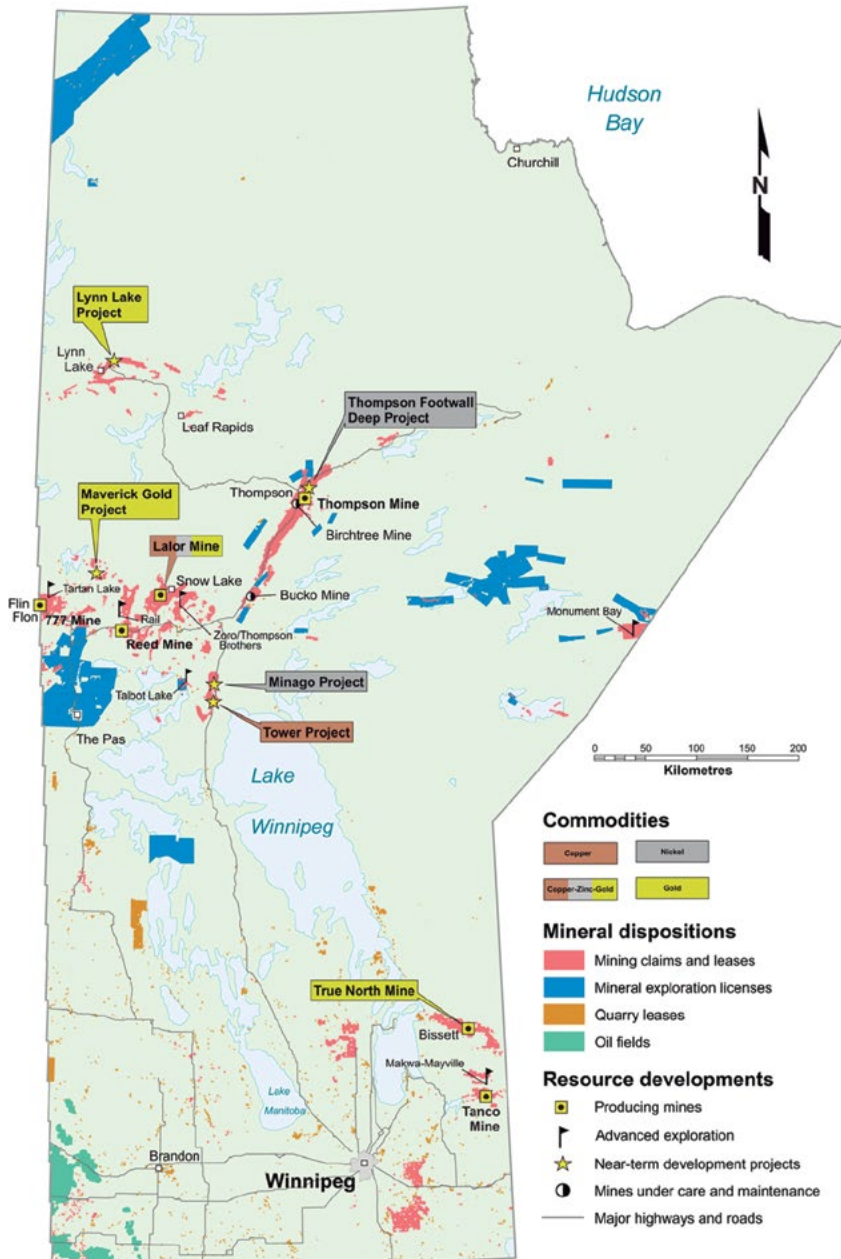
How focused is the government on community engagement and creating value for local communities?

Business growth and wealth in indigenous communities are tied to mining because it has been a beacon of safe jobs and business opportunities for the northern residents. For example, almost 45% of all the goods and services purchased by northern mining companies last year were purchased from northern indigenous businesses, which amounted to over C\$370 million in one year. With a population of only around 40,000 in northern Saskatchewan, 85% of which are indigenous, half of the employees at the mines are residents of northern Saskatchewan. I would say that the government facilitates the community engagement processes but the drivers are the company and community leaders.

Where do you see the biggest areas of opportunity for new companies wanting to enter Saskatchewan?

The region has had a lot of gold potential. It has a 20-year-old gold mine that now produces over 80,000 ounces of gold per year. With the current stable gold price, this is an attractive market for exploration companies. There is also potential on the diamond front. Shore Gold recently entered into an agreement with Rio Tinto to advance the Star-Orion diamond property into production, which has already received Federal environmental approval. Saskatchewan also has high rare-earth potential, historic base metal production and favorable geology for other deposit types. We are very fortunate in the diversity of mineral potential in Saskatchewan. ■

Source: Manitoba Growth, Enterprise and Trade Resource Development



← NEW MINES AND NEAR-TERM DEVELOPMENT PROJECTS

Loral Mine (zinc-copper-gold) 100% HudBay Minerals Inc.: HudBay officially opened the Loral mine in September 2014 and has achieved a strong ramp-up in ore production, on track for an expanded mine plan (4,500 tpd) beginning in 2018. The company is utilizing existing processing facilities at Snow Lake and Flin Flon and studies are ongoing to evaluate the optimal processing solution for gold and copper-gold ores from Loral, potentially incorporating the New Britannia gold mill acquired in 2015.

Thompson Footwall Deep Project (nickel) 100% Vale Canada Ltd.: The feasibility study for developing and mining Footwall Deep, representing a continuation of the Thompson Footwall Deep, was completed in 2016 and is currently on deferral awaiting improved market conditions. If successfully developed, Footwall Deep would sustain the Thompson mining and milling operation for up to 15 years.

Lynn Lake Project (gold) 100% Alamos Gold Inc.: In 2017, Alamos Gold announced a positive feasibility study for the Lynn Lake project, based on an initial proven and probable mineral reserve of 1.6 million ounces of gold contained in 26.8 million tonnes grading 1.89 g/t Au in the Gordon and MacLellan deposits. The company is advancing the project through permitting and sees excellent potential for enhanced economics, given recent exploration successes in the Lynn Lake belt.

Maverick Gold Project (gold) 100% Minnova Corp.: In 2017, Minnova announced a positive feasibility study for restarting the PL (Puffy Lake) Gold Mine near Sherridon, Manitoba. Based on a minimum mine life of 5 years, this combined underground and open pit operation is expected to produce 233,000 ounces of gold.

Minago Project (nickel) 100% Victory Nickel Inc.: With the release of a positive feasibility study in 2009 and receipt of an Environmental Act licence in 2011, Victory is evaluating opportunities for the Minago nickel and frac sand mine in light of increasing demand for these commodities.

Tower Project (copper) 100% Akuna Minerals Inc.: Feasibility studies are underway on the high-grade T-1 deposit, located near the eastern margin of the Thompson nickel belt, with results anticipated in early 2018.

True North Mine (gold) 100% Klondex Mines Ltd.: Klondex acquired the former Rice Lake complex in 2016 and returned the mine to commercial production in 2017. The current mine plan calls for underground mining of developed orebodies in early 2018 followed by a suspension of mining operations in order to review strategic options, and evaluate operational and infrastructure improvements going forward.

Manitoba

Policy Environment:

Growing Pains of an Underexplored Mining Destination

Recognized as the second most attractive destination worldwide for mining investment by the Fraser Institute in 2016, Manitoba has captured interest amongst global mining communities and potential investors. Primary criteria factored into the survey, which ranked 104 mining jurisdictions around the world, include resource potential and policy attractiveness. When compared to other mining regions globally, Manitoba certainly ranks highly on each of these counts.

We are very excited about the potential in northern Manitoba. Vale and Hudbay were established decades ago, and then there was a huge gap in investment, so we are looking at setting up a regime that will make up for that gap and allow investment to come. The Mineral Development Protocol is one step in that direction. With regard to the Look North plan, we know that mineral extraction will still be the major employer in that region.

- Hon. Blaine Pedersen,
Minister of Growth,
Enterprise and Trade,
Manitoba Government

However, Manitoba sits in somewhat of a paradox considering its apparent attractiveness versus the relatively small size of its mining industry.

Historically focused on agriculture, Manitoba's government has been committed to diversifying the province's economy over the years. Manufacturing remains Manitoba's largest sector, accounting for over 12% of GDP, with mining sitting at about 5% in 2015. Ruled by the social-democratic New Democratic Party from 1999 to 2016, Manitoba is now led by the Progressive Conservative Party of Manitoba which was elected on a pro-business platform.

Slipping Down the Rankings

It was all going so well for Manitoba in 2016 from an investment attractiveness perspective. It had improved its Fraser Institute score for a fifth straight year and survey respondents reported less uncertainty regarding the administration, interpretation and enforcement of regulations, and were positive on its taxation regime. However, in the 2017 rankings Manitoba has tumbled to 18th place globally, with 45% of survey respondents citing uncertainty around disputed land decisions and protected areas as factors holding back investment. This compares to 17% who referenced disputed land claims and 23% protected areas as deterrents to investment in Saskatchewan.

The permitting process and how it relates to First Nations consultations is a significant turn off for investors. Unlike in many other Canadian provinces where the mining industry takes the lead, in Manitoba an arm of the provincial government, the Mines

MANITOBA AT A GLANCE

Capital: Winnipeg
Population estimate: 1,293,400
Area: 649,947 square km
Unemployment rate (November 2017): 5.4%

Source: Statistics Canada

The Manitoba Bureau of Statistics estimates that Manitoba's real GDP grew 1.9% in 2016, above the national average of 1.4%

Manitoba
GDP
(million CAD \$, 2016)

67,863

Share of
national GDP
(%, 2016)

3.33

GDP per capita
(CAD\$, 2016)

51,485

Market Income
per capita
(CAD\$, 2015)

28,178



Anytime there is perceived uncertainty within a given jurisdiction, the investment community is cautious. We are working with regulators, stakeholders and rights holders within the province to increase certainty in a number of areas, including the provincial permitting processes, the Crown Duty to Consult, the proposed Manitoba Climate and Green Plan and power rates. We are also advocating for improved transportation infrastructure, human resource development and tax rates that are competitive with surrounding jurisdictions.

- Andrea McLandress,
Executive Director,
Mining Association of Manitoba



Branch, carries out consultations with potentially effected indigenous communities. However, it is actually the Department of Conservation which issues soil sampling permits and drilling permits, taking into account input from the Mines Branch and Manitoba's Aboriginal Consultation Unit, causing the process to be slow and marred by overlapping responsibilities. Furthermore, under the Treaty Land Entitlement (TLE) agreements the province has signed with First Nations communities, First Nations are able to claim land even if they are subject to mining claims. "These selections are registered in the Mines Branch and uncertainty follows - as it has been very difficult if not impossible in some cases to get permits issued on TLE selected lands. This uncertainty puts a drag on development," commented Darla Rettie, Lawyer at Pitblado Law. "In summary, Manitoba has not come up with an effectual way to address pre-existing mining claim

interests on TLE selected lands, and negotiations to resolve matters have led to significant stalemates... This is something that the government needs to square up."

One example of this situation frustrating investment is AltoVentures' pulling out of an exploration program at Oxford Lake in Manitoba. The decision was made in light of changes in the Bunibonibee Cree Nation towards the proposed exploration, as well as challenges the company faced in obtaining clear and timely information from the government of Manitoba regarding their position on aboriginal consultation and permitting matters, according to a press release put out by the company.

Some juniors have fared better than Alto Ventures. CanAlaska, which is exploring nickel and zinc at the Ruttan mine, the third largest volcanogenic massive sulfide (VMS) deposit in Canada, has had a relatively positive experience. "Whilst it did take a long time to get permits in Manitoba, we have good relationships with several First Nations communities. There is much unemployment but people in the north want to work and are best placed to show us how to work in the terrain there. In the short-term technical expertise from outside is needed but in the long-term, labor is best sourced locally. There have been challenges for miners in Manitoba due to federal decisions and Supreme Court rulings which have meant we have had to adapt," commented Peter Dasler, president and CEO, CanAlaska Uranium.

Another area of uncertainty concerns the government's Climate and Green Plan launched in 2017. Under the plan the government announced a C\$25 per tonne carbon tax but promised it would not raise the tax to the federally mandated C\$50 per tonne level by 2022. This potentially brings the province into conflict with President Trudeau's government, which may try to override the decision, so investors are not able to plan sufficiently for future costs.

Compounding this uncertainty are potential changes in energy costs. A major advantage of Manitoba as an investment destination is its lower power rates, but now Manitoba Hydro, the state owned enterprise which supplies the majority of the province's power, is seeking "drastic rate increases" from the Manitoba Public Utilities Board, according to Andrea McLandress, executive director, Mining Association of Manitoba. "The proposed increase is the single biggest

threat to continued operation and potential growth of mining in Northern Manitoba," she warned.

For its part, Manitoba Hydro maintains the changes are necessary for continued investment in providing a reliable power supply. "This will affect the large industrial customers, not just in mining, and we are sensitive to this... Thanks to our investment plan, our rates will continue to be amongst Canada's most competitive," promised Kelvin Shepherd, president and CEO, Manitoba Hydro.

Plans Afoot to Maintain Competitiveness

Of course, Manitoba still has many advantages as a mining investment destination. For example, the government's Mining Exploration Assistance Program provides financial assistance for junior miners and "is meaningful for almost all companies to help leverage still lean budgets in the space," according to Lawrence Winter, vice president exploration at prospect generators Altius Minerals.

Under the program, 5% to 50% of eligible expenditures are covered, with 50% offered for the Flin Flon/ Snow Lake region and 35% for remote regions. A maximum of C\$200,000 per recipient per fiscal year is available.

The government has also announced the 'Look North Strategy' to help develop northern Manitoba, of which mining is intended to play a key part. Improvements to road and rail infrastructure are expected to be part of the program. This cannot come soon enough given that flooding has put the railway from Manitoba's northern interior to the Port of Churchill out of service, which is affecting mining companies.

The permitting process is not loathed by everyone, either. Andre Lauzon, vice president of Manitoba business unit, Hudbay Minerals, perhaps the most important investor in Manitoba's mining industry, was sanguine on the province's policy environment: "I have worked in a variety of different mining districts across Canada and abroad, and Manitoba is probably the lowest-risk mining district that I know of... Also, permitting with the government of Manitoba is very good. We recently permitted our paste fill plant last year, and it only took several weeks, whereas in other jurisdictions it can take years. Where they can, the government is clearly supportive of the industry." ■



Hon. Blaine Pedersen

Minister of Growth, Enterprise and Trade
MANITOBA GOVERNMENT

16

What is the main vision of the current administration in Manitoba?

Our main message is that Manitoba is open for business. Actions such as red tape reduction and regulatory accountability will make the difference in terms of attracting the investment that Manitoba needs. Our finance department did a review of the number of regulations, and it turns out that we have more than 900,000 in place. There are many redundant regulations within every department, which is something that affects businesses. We are consulting with the business community to find out which regulations are burdensome for them.

How attractive is Manitoba for mining investment?

When this government started, we were 19th in the Fraser Institute's ranking of the world's most attractive jurisdictions for mining investment, so to move up to second place worldwide in just one year is very significant. While the price of nickel is very low, this is actually the right time to invest. We are working on the regulatory side, so that when mining companies look at Manitoba they can have confidence in their ability to invest here.

The previous Manitoba administration was not business-friendly, and business goes where business is wanted. Things also cannot be turned around immediately; we need to build our reputation in Manitoba. We have done our share over the year and a half that we have been in government, but mining is a long-term business so we need to continue working in the right direction.

What support are you providing for a better consultation process with local communities?

Manitoba has a large indigenous population, mainly located in the north. We have appointed Chief Ron Evans and Jim Downey, a former cabinet minister, to co-chair the Mineral Development Protocol. They are reaching out to the mining companies and the First Nations communities to put together this protocol. During the 17 years of the previous administration, there was never a clear framework, which led to mistrust, indecision and in some cases reluctance by mining companies to invest. This protocol will start at the prospecting

phase and will go all the way through the mine life and the closure and rehabilitation of the mine. So far, the perception has been that indigenous populations are against mining, but this is not the case – they are just struggling with the consultation process like the other parties involved. Vale and Hudbay have been very good at dealing with First Nations communities, but these relationships have been built in the known Flin Flon and Thompson mining areas. We are now focused on the development of new mines. We expect the new protocol to be finished in early 2018.

Industry leaders complain that they are unfairly taxed compared to other provinces and other industries. What is the government's position on the tax framework?

The tax framework is all about finding a balance. It may be the case that there is PST applied to some of the mining equipment in Manitoba that is not applied in Saskatchewan, for instance, but the bigger picture should also be taken into account. We do not fluctuate up and down like our provincial counterparts to the west, which are heavily resource-dependent. Here in Manitoba, we have a stable economy, we have very competitive hydro rates, and a great geoscience database that companies can benefit from. Wages in Manitoba are also more competitive compared to the other resource-based provinces.

From our perspective, we are facing some severe challenges as a government too. When we came into office in May 2016, we were spending C\$3 million a day more than we were bringing in. We have already cut that down to C\$2.25 million. As we continue to improve our fiscal situation, that will then allow us to be more competitive.

How is the Look North plan going to help the development of new mining projects?

We are very excited about the potential in northern Manitoba. Vale and Hudbay were established decades ago, and then there was a huge gap in investment, so we are looking at setting up a regime that will make up for that gap and allow investment to come. The Mineral Development Protocol is one step in that direction. ■



Andrea McLandress

Executive Director

**MINING ASSOCIATION OF
MANITOBA**

Could you provide some background information on the Mining Association of Manitoba?

We have been the voice of Manitoba's mining industry for over 75 years. We are focused on advancing mining in the province, working with all interested parties to align interests and move the industry forward. We are in the process of rebranding and are implementing a new social media strategy. The main parties in this industry are the mining and exploration companies, the mining service providers, the provincial government and indigenous communities. We are seeing all of the parties demonstrate an interest in working together.

Manitoba is somewhat unique in that industry, rather than government, manages and operates our Mine Rescue Program. We are currently developing our website so that members have access to the most current provincial mine rescue training manuals and certification requirements.

What are the main challenges in developing mining projects in Manitoba?

Anytime there is perceived uncertainty within a given jurisdiction, the investment community is cautious. We're working with regulators, stakeholders and rights-holders within the province to increase certainty in a number of areas, including provincial permitting processes, the Crown Duty to Consult, the proposed Manitoba Climate and Green Plan and power rates. We are also advocating for improved transportation infrastructure, human resource development and tax rates that are competitive with surrounding jurisdictions.

Is it not somewhat of a paradox that Manitoba is ranked as the second most attractive jurisdiction for mining by the Fraser Institute survey, yet has a very small mining industry?

The Fraser Institute survey is great for us from a public relations perspective and we're happy to promote that ranking whenever it will bring positive coverage to our sector. We know that the challenges identified above can be a deterrent to investment but we like to focus on Manitoba's rich geological profile and the potential for development once we improve certainty, capacity and competitiveness.

How is the industry going to adapt to the announced carbon tax?

We are working closely with elected and appointed officials within the Manitoba government to identify measures that will encourage our members to adapt to a lower carbon future, without limiting economic development opportunities.

Mining is considered an energy intensive trade exposed sector, in that mining companies sell their product in the international markets, so they cannot flow carbon taxes through to their customers. A third of the carbon emissions in Manitoba come from agriculture, but this industry is completely exempt because of that sector's trade exposed status; we are looking for fair treatment for our sector.

Mining typically takes place in remote areas. What is the situation regarding

infrastructure and access to power in Manitoba?

Transportation infrastructure is an issue in the north of the province. We would like to see more investment by the province and the federal government, because there is a clear link between existing infrastructure and attracting new exploration. The Province of Manitoba has announced the 'Look North' plan, where mining should be treated as a priority to promote economic growth.

With regard to power, one of the few advantages of doing business in Manitoba is our relatively affordable power rates, but now the new leadership at Manitoba Hydro is seeking Manitoba Public Utilities Board approval for drastic rate increases. The proposed increase is the single biggest threat to continued operation and potential growth of mining in Northern Manitoba.

What is Manitoba's geological potential for new mines?

Manitoba has very exciting mineral potential in zinc, nickel, copper, gold, diamonds and lithium. Today, the federal government wants to push the transition towards clean energy technologies, while China is promoting the big switch to renewable energy and electric vehicles. All the main components can be found in Manitoba: copper, zinc, nickel and lithium. We want to promote a vision of 'Manitoba mining for clean energy technology'. It is a very exciting message for investors as well as for our own local and indigenous communities.

What initiatives could all stakeholders take in order to promote more mining investment?

Manitobans realize that the provincial government needs to increase revenue to achieve its goal of becoming Canada's "most improved province." We need citizens throughout the province to advocate for the mining industry as potentially the most promising source of economic growth. Public support for the sector will influence government to make public policy choices that will promote responsible development. ■

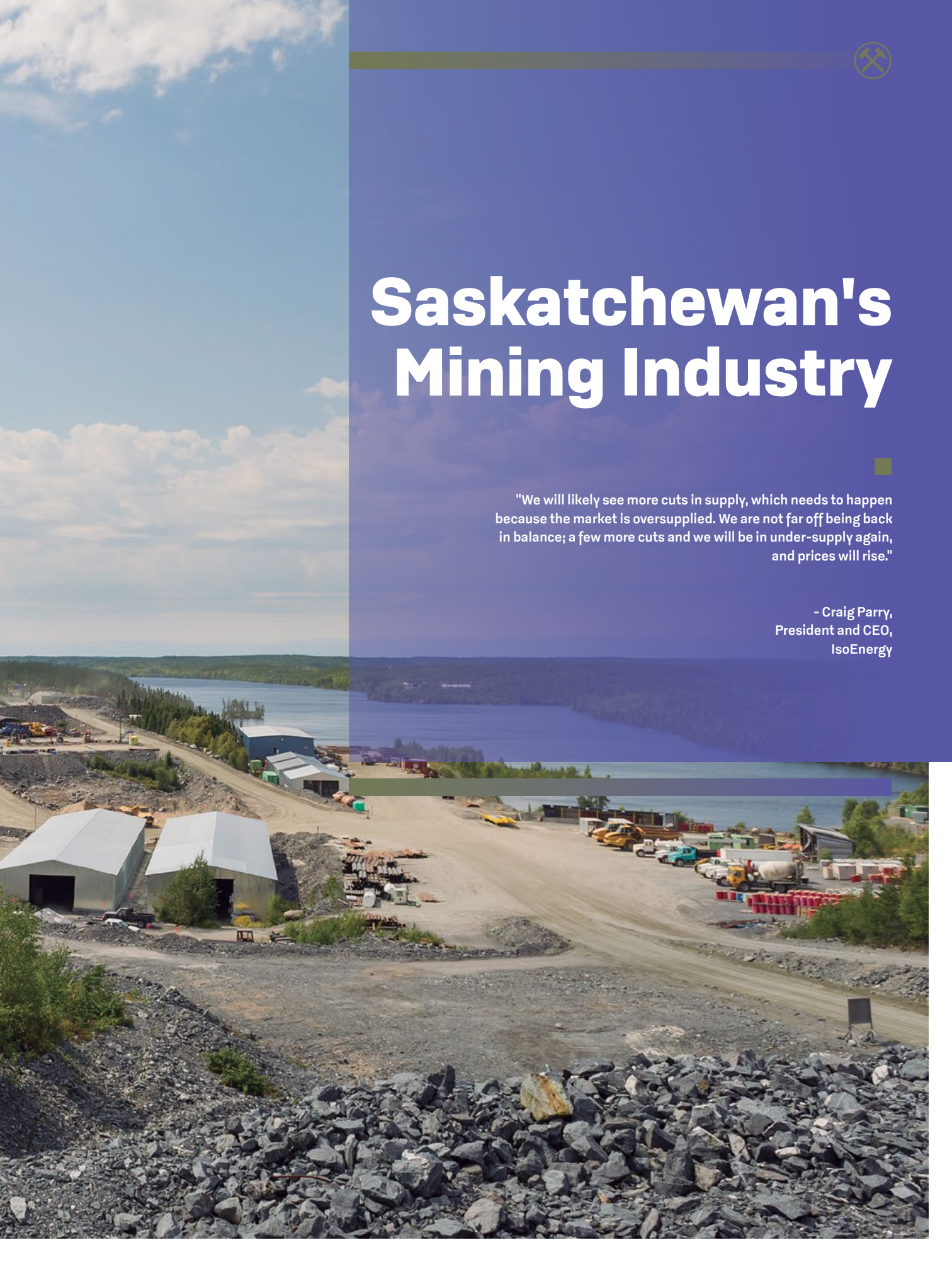




Saskatchewan's Mining Industry

"We will likely see more cuts in supply, which needs to happen because the market is oversupplied. We are not far off being back in balance; a few more cuts and we will be in under-supply again, and prices will rise."

- Craig Parry,
President and CEO,
IsoEnergy



Saskatchewan's Mining Industry: Converting Potential into Success

Saskatchewan has held strong ties to the mining sector for many years, with uranium mining being a key pillar since the start of the Cold War era in the 1950s when it was used in US atomic weapons. Traditionally known as an agricultural province, mining has played a prominent role in the diversification of Saskatchewan's economy, with over 30,000 citizens now dependent on the industry in some way for employment.

Over the past decade, Saskatchewan has been amongst the top growth provinces in terms of mineral production value, alongside Québec, Newfoundland and Labrador and British Columbia. In 2016, Saskatchewan also experienced the largest absolute gain in production value year-over-year, from C\$7.1 billion to C\$8.5 billion. However, despite its apparent attractiveness, exploration spending in the province took a dive in 2017 from C\$229 million in 2016 to C\$181 million. This follows an already significant decrease from the C\$257 million spent in 2015.

The gap between Saskatchewan's resource potential and investor confidence can in part be attributed to long lead times for mine development, causing many investors to look to other mining jurisdictions such as South America, Africa and Australia, for quicker return on investment dollars. The other primary factor is unfavorable market conditions for potash and uranium, coupled with a lack of significant diversification into other resources.

Superstar resources: potash and uranium

While the province's resource reserves are varied, uranium and potash remain the province's frontrunners. Saskatchewan pro-

duces all of Canada's uranium, remaining the second-largest producer in the world, and boasts world-class potash reserves.

The Athabasca Basin hosts the highest-grade uranium deposits in the world. With an average ore grade of 3% across the 30 identified deposits the two largest deposits, Cigar Lake and McArthur River, have average ore grades of 15%, reaching significantly higher in some pockets. Operated by Cameco, the second-largest producer of uranium globally, both the McArthur River/Key Lake property and the Cigar Lake operation produce about 18 million lb/year and each represents about 12% of the world's production. Formed in 1988, the company's legacy predates the formation of Cameco to the 1950s. To ensure that Cameco retains a presence in Saskatchewan, the government has kept a "golden share", stipulating that the head office must be in Saskatoon. The rest of the company shares are publically owned.

Cameco has gained a strong foothold in the global market over the years, but has also been subject to unfavorable market conditions since the Fukushima disaster in 2011. "10 years ago, the price of uranium was as high as US\$90 to US\$100 per pound," noted Tim Gitzel, Cameco's president and CEO. "Many countries were developing nuclear power, which pushed the prices up. Prices settled down in 2010 to around the US\$45 mark, but when the Chinese came in to the market and bought 150 million pounds in one month, almost a year's supply, prices rocketed to US\$73 and stayed there from June until March 11, 2011, when the Fukushima disaster happened. Today, it is around US\$25, and it has been as low as US\$17. The last seven years since Japan shut all its nuclear reactors down have been an almost continuous decline. Germany

has also scaled back its nuclear energy, although other countries like China and India are continuing to build nuclear reactors. There is still growth – although Japan's closures had a sobering effect on the market, there are 60 reactors under construction." In response to market oversupply, Cameco has reduced production at all its sites and will be putting the McArthur River/Key Lake operations on standby in 2018. Kazakhstan-based KazAtomProm will also reduce uranium production by 20% in 2018 to better align supply with demand. These



There are global investment dollars out there right now in search of the best combination of resource potential plus a reliable operating environment. This province is most likely to be where those dollars are headed.

- Hon. Steven Bonk,
Minister of Economy,
Government of Saskatchewan





Overall, Saskatchewan is quite a welcoming place from a business standpoint as well as a family perspective, which is an important factor in attracting talent. The relatively modest cost of living is also a large benefit and allows skilled trades people to be successful. Another facet that has been important to the province is Cameco's and Potash's ability to attract very competent workers. In such a small province, this is extremely impactful. These professionals make the province very unique and attractive to businesses such as ours.

**- John DeCooman,
Vice President Business
Development and Strategy,
SSR Mining**



moves by the world's uranium giants will cut global annual production from 160 million pounds, with about 35 to 40 million pounds now not coming out of the ground. "We are optimistic for the future, although we are not out of the woods yet; there is still a lot of inventory in the world, so the market will take some time to bounce back," said Gitzel. "However, the moves that have been made by the major producers send a signal that a US\$20 price for uranium is not sustainable. We are definitely headed in the right direction, and we have an optimistic demand outlook because we project a significant increase in nuclear power."

Cameco still expects to meet all contractual obligations and has a plan in place to sustain its employees over the suspension period.

Saskatchewan is also the largest potash producer in the world, possessing almost half of global reserves. "We have seen significant expansions of existing mines in recent years, plus the opening of a new mine and several exploration projects being advanced towards potential production," highlighted Hon. Steven Bonk, Minister of Economy, Government of Saskatchewan. "This activity translates into roughly C\$20 billion in total investment. Saskatchewan's potash industry had sales of production of 11 million mt K₂O in 2016 – the second highest in our history. Over the past decade, our productive capacity has increased by about 80%. Rising global population and the increasing wealth of developing nations will continue to be factors driving this growth in the foreseeable future."

May 2017 saw the grand opening of K+S Potash Canada's Bethune mine, becoming the first new mine in Saskatchewan in over 40 years. The mine produced its first tonnes of potash in June 2017, saw its first unit train of product depart to its potash handling and storage facility in Port Moody, BC in September 2017 and the first ship of product depart the port in October 2017.

Located in Saskatchewan's capital, Regina, The Mosaic Company is the world's leading producer of concentrated phosphate and potash crop nutrients as well as a single source global supplier for phosphates, potash, nitrogen fertilizers and feed ingredients for the agriculture industry. The company's largest centers of operation are in Central Florida, where it mines and processes phosphates, and in Saskatchewan, where it produces potash. As of December 31, 2016, Mosaic has C\$3 billion in expansion projects underway to increase mining and production capacity—including the world's largest mine shaft project at its Esterhazy K3 mine in Saskatchewan, whose shafts reached the potash area in February 2017. K3 is expected to be the lowest-cost potash mine in Canada, and projected to add an estimated 0.9 million mt to Mosaic's annual potash operational capacity.

In a significant move, Agrium and Potash Corporation will merge, having received received U.S. Federal Trade Commission clearance in 2017. The new company, Nutrien, is expected to be the third largest

Financier, client, & mine site
each on different continents?

We're your
common ground.

Our global experience gives
you expert, integrated
solutions on every phase of
your mining project.

 **srk.com**



Saskatoon
+1 306 955 4778
saskatoon@srk.com

Toronto
+1 416 601 9046
toronto@srk.com

Vancouver
+1 604 681 4196
vancouver@srk.com

natural resource company in Canada, with headquarters in Saskatoon, Saskatchewan. In response to recent industry changes, Eric Anderson, executive director at the Saskatchewan Industrial & Mining Suppliers Association (SIMSA), commented: “There are two aspects: the expansion and development of mines and then the operational side. When the announcements were made for the mining expansions, it was apparent that each company was spending a lot of money – one announced spending over C\$6 billion in the next five years – so the budget was already known at the start, making it easy for companies to plan accordingly. When investment is expected to taper off after a certain period of time, companies will not plan their business around the expectation of long-term business with that company. The Cameco change hurts a bit because it was unexpected.”

The significant decline of commodity prices for both uranium and potash over the years has presented significant challenges for Saskatchewan’s mining sector. “In the past decade, Saskatchewan companies had invested billions of dollars in expanding their operations, so there is a lot of extra



Despite the depression of uranium and potash prices, a tremendous interest remains in them. In addition, considering the widespread availability of high-quality construction and engineering resources, lead times and overall costs of execution shrink. Furthermore, with a cyclical market, mines built in the downturn will end up thriving as the market and prices recover.

**- Mike Fedoroff,
General Manager,
Hatch**



capacity sitting idle right now,” noted Pam Schwann, president of the Saskatchewan Mining Association. “When commodity prices turn around, the region will be ready to operate competitively again.”

Another route would be to encourage diversification in the resources mined in order to mitigate the risk associated with focusing on just two commodities. Exemplifying the scope for Saskatchewan’s mining sec-

tor to successfully pursue resources beyond potash and uranium, gold-focused SSR Mining achieved record production in 2016 and then again in 2017. Seabee in Saskatchewan is the company’s second-largest operation after its Marigold gold operation in Nevada, which accounts for 50% of total production and 50% of operating value. Seabee comprises two underground gold mines, the Santoy mine and the Seabee mine, and produces about 80,000 oz of gold per year. “The Santoy deposit, discovered back in 2011 as a part of the broader Seabee land package, just continues to deliver,” remarked John DeCooman, vice president business development and strategy at SSR Mining. “We are also doing some preliminary reconnaissance work at Amisk, located on Saskatchewan’s Flin Flon greenstone belt, to better understand the geology of this deposit.”

Following good exploration results, SSR Mining has pursued an expansion at Seabee with greater confidence in its ability to provide ore to the plant. “The expansion takes the plant from 850 mt/d up to a little over 20% or 1,050 mt/d,” said DeCooman. “The idea is that by investing capital up front for exploration, we are able to put moderate capital into the plant and the mine that will ultimately lead to well over 100,000 oz/y for the next five years or more.”

Adverse market conditions and the inconsistency in the recent and anticipated near-term successes of Saskatchewan’s established mining companies highlight a need for the province to diversify its resource exploitation to better weather future dips in different commodity markets. ■

Seizing Opportunity and Building Value

In the World's Top Mining Jurisdiction

FORAN
MINING CORPORATION

- Meeting world demand for Zinc and Copper
- Our team has done it before and we're ready to do it again

Visit our website www.foanmining.com
Phone +1 604-488-0008 Email ir@foanmining.com TSX-V FOM



Tim Gitzel

President & CEO
CAMECO

Could you briefly introduce Cameco's Saskatchewan's operations?

We have just begun our thirtieth year as Cameco, which was formed in 1988. However, our predecessors have been operating in the province since the 1950s. Because governments at the time wanted to ensure Cameco retained a Saskatchewan presence, they retained one "golden share", which stipulates that the head office must be in Saskatoon. The rest of the company shares are publically owned.

Our primary operations continue to be situated here in Saskatchewan – we have the two largest high-grade uranium mines in the world: the McArthur River/Key Lake property and the Cigar Lake operation. Both produce about 18 million lb/year, representing 12% of the world's production each. The average grades at both of these sites are one hundred times greater

than what can normally be found in uranium mines around the world, which are generally around 1.5% U3O8. We are particularly proud of our workforce, of which about 50% is made up by indigenous workers. This is a result of around thirty years of education and training.

How have uranium market dynamics led to Cameco's production suspension decisions?

10 years ago, the price of uranium was as high as US\$90 to US\$100 per pound. Many countries were developing nuclear power, which pushed the prices up. Prices settled down in 2010 to around the US\$45 mark, but when the Chinese came in to the market and bought 150 million pounds in one month, almost a year's supply, prices rocketed to US\$73 and stayed there from June until March 11, 2011, when the Fukushima disaster happened. Today, it is around US\$25, and it has been as low as US\$17. There is still growth – although Japan's closures had a sobering effect on the market, there are 60 reactors under construction.

Due to the sustained downturn, we have unfortunately had to reduce production everywhere. We put our Rabbit Lake operation into care and maintenance last year, and we decided that we will be putting the McArthur River/Key Lake operations on standby next year. Kazakhstan is also reducing its production by 20%, which is significant as the country produces about 40% of the world's uranium. So, compared to global annual production of 160 million pounds of uranium, there are now about 35 to 40 million pounds that are not coming out of the ground.

What does this mean for Cameco's capacity to meet demand?

We have significant inventory material that we have either produced or purchased over the last couple of years that we can feed into our contract portfolio. Firstly, we

are going to be using that inventory. Secondly, we will be buying uranium, as the cost-per-pound is currently cheaper than our production cost. We will continue to buy pounds to put into our contracts if it is cheaper to do that.

We are optimistic for the future, although we are not out of the woods yet; there is still a lot of inventory in the world, so the market will take some time to bounce back. However, the moves that have been made by the major producers send a signal that a US\$20 price for uranium is not sustainable. We are definitely headed in the right direction, and we have an optimistic demand outlook because we project a significant increase in nuclear power.

In the shorter term, what are the expected impacts of the announcement in Saskatchewan?

The decision to halt operations was made for the long-term sustainability of our company. We plan to be down for about 10 months, and the decision has been well managed; the provincial and federal government understand the motivations behind our actions.

We have put a plan in place for our employees, through which they will still receive 75% of their pay while they are not working.

What is the plan for Cameco's future?

We will meet all of our contractual obligations; we are selling around 30 million pounds this year and again next year. We have not missed a delivery in thirty years, and we are not going to start now. We want to take down McArthur River and Key Lake safely and in an environmentally responsible way, and to make sure it is in a good condition and is ready for when we want to bring it back on. We want to make sure we look after our people and treat them fairly. We are also continuing to produce at our other projects, and it will be business as usual for our sales team. ■



David Cates

President and CEO
DENISON MINES

Could you provide a brief introduction to Denison Mines and the management team?

We are a great story for Saskatchewan, because just over five years ago we were not at all Saskatchewan-centric, with producing uranium mines and a mill in the United States, along with assets in Mongolia, Africa and Canada. Since then, the uranium market has been up and down, mostly down, following the Fukushima Nuclear incident. At that point, it did not make sense to be a producer in the near term, so we sold our international assets and positioned ourselves for the future where the best assets are: in Saskatchewan. The jurisdiction is ranked number one for mining by the Fraser Institute, which is part of why we are there, as well as for the ge-

ology. We are trying to find a sustainable long-term proposition for our company in the uranium mining business, which is something Saskatchewan offers in its high-grade and large-scale opportunities in the Athabasca basin.

What have been the exploration strategies and highlights for Denison in the past 12 months?

The summer 2017 drilling program was probably the most successful we have had: we put 64 drill holes into the ground around the Gryphon deposit, which is located at our flagship Wheeler River property. Of those drill holes, over 40 were targeted outside of the existing resource estimate, and we found that over 90% of the total holes were mineralized. However, the market has been so apathetic about uranium stock that we got little to no traction from the results.

We have probably been the most aggressive player exploring in the eastern portion of the Athabasca basin, and we are trying to be strategic. Uranium has very long cycles, as does developing a mine in the Athabasca basin, which can take seven to ten years – including four to five years for permitting. We think the next uranium cycle is in the next seven to 10 years, so we must advance our flagship Wheeler River project towards permitting to transform ourselves into a developer/producer in time.

Wheeler River is the largest undeveloped high grade uranium project in the eastern Athabasca basin. After the last two years of drilling at Wheeler River, we are expecting to update our estimate of resources by early 2018. The priority is to maximise our indicated resources ahead of the completion of a Pre-feasibility study in the first half of 2018.

How has Denison managed to raise capital in the tough market conditions for uranium players of 2017?

In February, we closed a C\$43.5 million financing arrangement with Anglo Pacific Group and in March we completed a C\$20

million bought deal private placement of common and flow-through shares. Having good assets and being in a favourable jurisdiction helps, but it has not been easy with fluctuating uranium prices. Uranium is an unloved commodity right now, which often means it is a good time for investors to make additional or new investments with exposure to the commodity.

Could you share with us your insights into operating in Saskatchewan?

Compared to other jurisdictions we worked in previously, Saskatchewan is well-regulated and very consistent. The permitting process does take time, so we wish that was shorter, but the predictability of that process, at present, is almost worth the trade-off. It can be expensive to operate in the north of Saskatchewan, as remote projects can be far from service providers, and then to the west of the Athabasca basin, there is little to no infrastructure to rely on. We are fortunate to be focused in the eastern Athabasca basin, which affords us easy access to roads, and power, which are already in place from the existing mines and mills nearby.

What other developments can we expect for the coming year from Denison Mines and what are the mid-term goals?

We would like to leverage our large property portfolio to develop a second flagship asset – so that we have a development story with Wheeler and an exploration growth story with a second property.

We are trying to become an intermediate uranium producer, which is a sparse space for investors. Currently there is Cameco, a C\$6 billion plus company, which would have been followed by Paladin Energy before it went into administration, or very small-scale U.S. operators. So, there is literally a C\$6 billion gap waiting to be filled. With Wheeler River, Denison can follow the Lundin Group approach to being the lean, mean simple intermediate miner that investors can turn to as an alternative to the complicated bureaucratic majors. ■

Mark Liskowich



Principal Consultant
SRK CONSULTING

As Cameco has placed some of its operations on hold, how do you see the landscape developing?

Cameco's decision to put Key Lake and McArthur River on hold was a business decision that made sense to Cameco. As McArthur River is the largest low-cost high-grade mine in the world, it is suspected that Cameco will reopen the facility when the market is right. This temporary shutdown has had an impact on the entire mining industry in Saskatchewan, but there are other optimistic projects here, such as Denison's Wheeler River project. SRK is working with Denison on this very promising project and sees a positive future there.

Are other provinces still benchmarking against Saskatchewan when it comes to permitting processes?

The environmental assessment/permitting process for mining in Saskatchewan remains one of the most stable and is considered close to the leading edge by most Canadian jurisdictions. From our global experience, jurisdictions worldwide typically use Canadian regulatory processes as a benchmark. From a First Nations' perspective, Saskatchewan's government and uranium industry have done a lot of work over the last three decades to advance relationships with First Nation communities. The relationships between the Saskatchewan mining industry and our First Nations is certainly on par with any other jurisdiction in Canada if not better. This is one of the areas I personally do a lot of work in for my clients.

Are there any particular challenges that companies are facing that would be worth addressing by the government?

Technical challenges always exist and, moving forward, they are largely centered around waste management. Saskatchewan's uranium industry is definitely ahead of the curve in terms of in-pit tailings management, but it is becoming a challenge as the deposits are typically deeper and no longer being mined as open pit deposits, so we are running out of pits to use for waste management facilities. Therefore, equally-safe and creative technologies must be developed and implemented for the future of uranium waste management.

Challenges also exist from a social license perspective, but these social issues can be turned into social opportunities if engagement with stakeholder groups is done properly and initiated early in the process. Developing strong relationships early allows for training

opportunities at an early stage which can translate into trained individuals for later stages of advanced operations. SRK is helping Denison establish such relationships and is working with the communities to identify and implement training opportunities in preparation of advancement of the Wheeler River project.

Do you expect environmental regulations to continue to tighten in Saskatchewan?

The introduction of Saskatchewan's revised Environmental Code was an effort to maintain the same level of environmental vigilance within the industry while making it a little more user-friendly and making operating in the province a little easier. The federal government is currently in the process of revisiting some of its environmental legislation and regulations. Whether this will prove to be a positive change for the mining industry remains to be seen.

Obviously GHG emissions and their reduction is receiving a lot of attention and mining companies continue to look at ways of reducing those emissions associated with their operations. This is often difficult if the location of a project precludes access to an established power grid. That being said, Saskatchewan's uranium is dedicated to the generation of nuclear power which produces no GHG emissions. In today's world I do not think it is realistic to expect our power requirements to be met entirely by solar and wind generated power and let's not forget that both these industries rely heavily on the mining industry for the construction of all their infrastructure.

What are SRK's key objectives for its work with Saskatchewan's mining industry going forward?

SRK is very bullish on Saskatchewan and Manitoba's future in mining. Existing developments will remain and new ones will begin when the commodity economics improve. The company has developed strong relationships with many clients based in these two provinces, and those relationships should remain unchanged moving forward. We believe our future in Saskatchewan is strong and the strength of the mining industry equally strong going forward. We have grown this office by four to five individuals in the last couple of years, and we look to increase our numbers by optimistically hiring when suitable quality individuals that fit within the SRK culture present themselves. ■



John DeCooman

26

Vice President Business Development and Strategy
SSR MINING

Could you briefly introduce the company and outline the motivations behind the rebranding from Silver Standard Resources?

We are a +US\$1 billion market cap company with a focus on precious metals. 80% of our total production is gold and 100% of our gold production is in North America. The rebranding was part of a continued effort to reflect that the business platform has changed. While before we had an emphasis on exploration, today we have assets in five different countries, with three in operation. Of the three operating assets, two are North America-based gold producers. We wanted to continue to build on our past reputation, bringing on talent and moving forward in this way rather than moving away from our previous lineage.

How is SSR Mining's production focus split between its three locations?

Close to 50% of our production and 50% of our operating value is in our Marigold gold operation located in Nevada. We produce about 200,000 oz of gold out of Marigold per year. Our second-largest operation is Seabee in Saskatchewan, which comprises two underground gold mines, the Santoy mine and the Seabee mine, and we see it as having a lot of upside potential. It produces about 80,000 oz of gold per year.

How has SSR Mining's relationship with Saskatchewan developed over the years?

Having had a record year of production in 2016, we are about to have a record production this year as well. The Santoy deposit, discovered back in 2011 as a part of the broader Seabee land package, just continues to deliver. We are also doing some preliminary reconnaissance work at Amisk, located on Saskatchewan's Flin Flon greenstone belt, to better understand the geology of this deposit.

Overall, Saskatchewan is quite a welcoming place from a business standpoint as well as a family perspective, which is an important factor in attracting talent. The relatively modest cost of living is also a large benefit and allows skilled trades people to be successful. Another facet that has been important to the province is Cameco's and Potash's ability to attract very competent workers. In such a small province, this

is extremely impactful. These professionals make the province very unique and attractive to businesses such as ours.

What is your outlook for Saskatchewan's mining industry?

With specific reference to Seabee, the outlook is excellent. We have a lot of cash and a lot of exploration prospectivity. Coupled with good people, we can put our capital to good use.

Could you talk us through Seabee's expansion and its outlook?

We have applied sufficient exploration spending and have achieved very good exploration results. This success has led to increases in resources and reserves and in some instances at higher grades. This gave us the confidence to pursue the expansion. With these results, we have been able to have greater confidence that we could provide ore to the plant.

The expansion takes the plant from 850 tonnes per day up to a little over 20% or 1,050 tonnes per day. The idea is that by investing capital up front for exploration, we are able to put moderate capital into the plant and the mine that will ultimately lead to well over 100,000 ounces per year for the next five years or more.

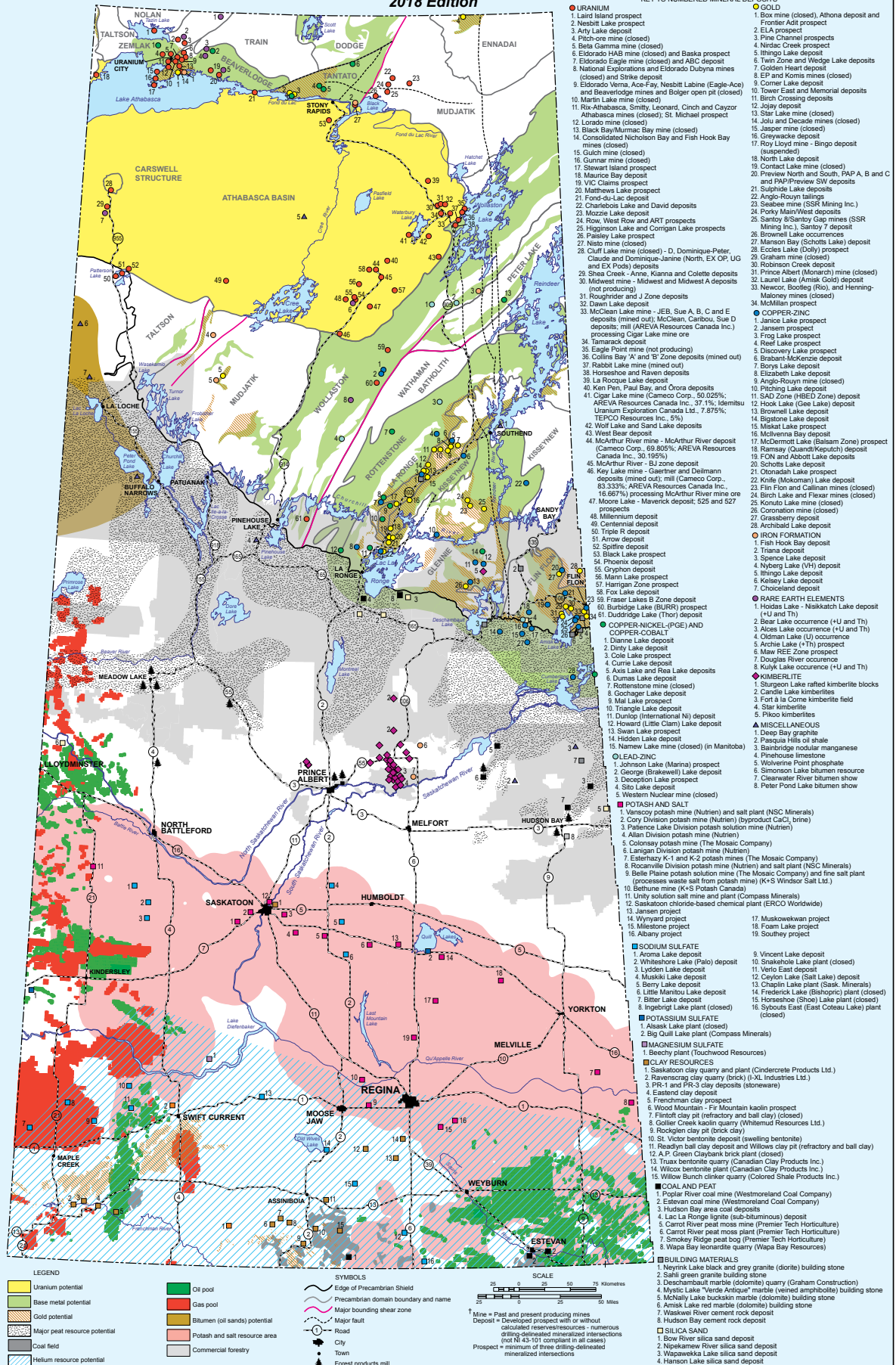
What are the key objectives and vision for SSR Mining?

First and foremost, we want to continue to grow. This is one of the first times in a while that there has been more visible internal growth at the company, which is fully financeable due to our +C\$400 million cash balance. This should give investors a lot of confidence around our ability to grow. Finally, we continue to look for external opportunities to grow. We have been successful over the years through external growth but still have active M&A strategies going forward.

Our Puna Operations joint venture with Golden Arrow Resources also makes the Chinchillas property in Argentina a very near-term catalyst for investment – we are anticipating permits by the end of 2017. This will allow us to invest US\$60 million in capital in 2018. Through this joint venture, we will then be able to supplement our mill at Pirquitas with ore from the Chinchillas deposit. ■

RESOURCE MAP OF SASKATCHEWAN

2018 Edition



Although the Saskatchewan Ministry of the Economy has exercised all reasonable care in the compilation, interpretation, and production of this map, it is not possible to ensure total accuracy, and all persons who rely on the information contained herein do so at their own risk. The Ministry of the Economy and the Government of Saskatchewan do not accept liability for any errors, omissions, or inaccuracies that may be included in, or derived from, this map.

Recommended Citation:
Saskatchewan Geological Survey (2018). Resource Map of Saskatchewan, 2018 Edition. Sask. Ministry of the Economy, Saskatchewan Geological Survey, Miscellaneous Report 2018-1.

This map is available from:
Saskatchewan Ministry of the Economy
Internet download:
www.publications.gov.sk.ca/details.cfm?g=94143

Advancing Exploration: Preparing for an Upturn

Saskatchewan's resource potential in conjunction with its stability from an economic and political standpoint should go a long way in stoking investor confidence in exploration activity. However, according to the Saskatchewan Ministry of Economy, exploration spending has declined year-on-year since 2014, estimated at C\$177 million in 2017 against C\$199 million in 2016.

Attracting investment in current market conditions hinges in great part on the knowledge that, whilst commodity prices may currently be low, exploration activity must be fueled in order to take advantage of an upturn when it comes around. In line with this, although uranium attractiveness is currently declining for mature operators, it seems to be picking up again for the ju-

niors. While producers such as Cameco must adapt and scale down in line with the commodity's demand profile, juniors are aware that they must be more active now to be ready to service uranium demand when it picks up, probably in the next five to 10 years. Companies with promising uranium projects include Fission Energy, Denison Mines, NexGen, IsoEnergy, ALX Uranium Corp and Purepoint Uranium.

Fission Uranium's Triple R uranium deposit at Patterson Lake South is believed by the company to be the most significant high grade, near-surface project in the Athabasca basin. In February 2018, Fission upped its indicated resource estimate to 87.76 million lb. of uranium oxide (U3O8), based on 2.19 million mt. grading on average 1.82%

28



TSX-V: ISO
OTCQX: ISENF
IsoEnergy.ca



IsoEnergy: Explore, Develop, Grow

Focused on finding and developing high-grade uranium deposits in Canada's prolific Athabasca Basin in Saskatchewan – rated the #1 mining jurisdiction in the world.

Led by a highly successful team with decades of experience in exploration through to development and production.

Contact: Kin Communications Email: iso@kincommunications.com Direct: +1 (604) 684 6730





U308, and doubled its inferred resource estimate to 52.85 million lb. of U308, based on 1.33 million mt grading on average 1.8% U308. Fission expects to further update its resource estimates as a result of its 2018 drilling program. “Overall, it is one of the best metal discoveries of its time; it ticks all the boxes... Infrastructure wise, there is a road that goes almost right in the middle of our property which runs 365 days a year. We will need to build a mill but with NexGen’s Energy’s Arrow project close by there will be a lot of uranium that needs processing given their deposit includes about 200 million lb.,” said Dev Randhawa, CEO and chairman, Fission Uranium.

Reflecting strong investor interest, including \$82 million for 20% of the company secured from Chinese investors CGN Mining Company, the company has no immediate financing needs.

In summer 2017, Denison put 64 drill holes in at its Wheeler River and Griffin deposit, 44 of which were targeted outside of the existing resource estimate. 91% of the total were mineralized, many outside the existing resource. However, despite this and the team’s excellent track record following the discovery of the Phoenix and Gryphon deposits over the last few years, the company failed to gain traction due to market apathy regarding uranium stock. “With Wheeler River producing, we would be the fifth-largest uranium mine in the world based on our PEA mine planning and two to three times the size of the entire U.S. uranium mining business,” commented David Cates, president and CEO at Denison Mines. “We are trying to become an intermediate uranium producer, which is a sparse space for investors. Currently there is Cameco, a C\$6 billion plus company, which would have been followed by Paladin Energy before it went into administration, or very small-scale U.S. operators. So, there is literally a C\$6 billion gap waiting to be filled. With the C\$6 million to C\$7 million-per-year operation at Wheeler, Denison can follow the Lundin Group approach to being the lean,

mean simple intermediate as the alternative to the complicated bureaucratic majors... We have the MacLean Lake mill operating with a 24 million lb. license capacity, and six million lb. current excess as only 18 million is being processed. The risk for this project is much lower than a new greenfield project.”

Going forward, Denison also plans to leverage its portfolio to develop a second flagship asset, most likely focusing exploration activity on the Waterbury Lake property following the discovery of a new zone of mineralization called Husky in the summer 2017. Seven of nine holes put in were mineralized, 9.1% over 3.7m, basement-hosted very close to the MacLean mill.

Holding a 20% carried interest on the Hook-Carter project, ALX Uranium Corp was formed in 2015 through the union between two companies with properties on the Patterson Lake trend: Lakeland Resources and a previous competitor, Alpha Exploration. The company recently acquired 72 lapsed claims totaling around 58,763 ha across eight projects: Argo, Sabre, Atlas, Luna, Vulcan, Echo, Apollo and Electra. Following data reinterpretation, ALX will likely put some people on the ground in the summer of 2018 with scintillometers to look for anomalies that might previously have been missed.

According to a PEA released in 2017, NexGen’s Arrow mine is on track to become the biggest uranium mine in the world. The company holds 259,000 ha of land in the southwestern Athabasca Basin. Towards the end of 2017, NexGen reported radioactivity results for the final 40 holes of South Arrow and Arrow on its Rook I property, concluding its summer drilling program.

Also proving itself to be an attractive investment opportunity is IsoEnergy, a company spun out from NexGen Energy following the acquisition of the Radio property, which now sits within the ISO portfolio. Since its establishment in 2012, IsoEnergy has grown from a capitalization of about C\$5 million into a billion-dollar



We have probably been the most aggressive regional player in exploration and we are trying to be strategic. Uranium has very long cycles, as does developing a mine in the Athabasca Basin, which can take seven to 10 years, including four to five years for permitting. We think the next uranium cycle is in the next seven to 10 years, so we must advance our flagship Wheeler River asset towards permitting to transform ourselves into a developer/producer in time.

- David Cates,
President and CEO,
Denison Mines



company, with NexGen remaining its major shareholder. IsoEnergy is well funded for 2018, with C\$1.2 million in flow-through and over C\$3 million in hard dollars. “One of the challenges for explorers, developers and miners is that a solid demand outlook is rare,” commented Craig Parry, IsoEnergy’s president and CEO. “In the case of uranium, demand seems to be growing at about 2% a year. Last year, more reactors were commissioned worldwide than have ever been before, so demand is increasing positively. However, for the last year, for every single mine in the world, the spot price has been sitting below the cost of production. This is highly unusual. Most companies sell on long-term contracts, but most of these are

expiring soon. Then all of the mines will be exposed to the spot price.”

Referencing an expectation to see more cuts in supply, Parry continued: “We are not far off being back in balance; a few more cuts and we will be in under-supply again, and prices will rise.”

IsoEnergy’s main focus is to drill its Geiger property, recently acquired from Cameco, Areva and JCU, and also plans to drill its Thorburn Lake property in 2018, which lies only 6 km from Cigar Lake, one of the world’s great uranium mines.

Alongside promising uranium projects, companies such as Gensource are gaining traction in other resource areas. Gensource plans to expand its potash operations in Saskatchewan through a partnership with Essel Group Middle East, aimed at bringing one of its small-scale projects into production. The company is currently negotiating off-take agreements before moving into detailed engineering in order to erase risk and build attractiveness to consumers as they gain price stability. The potash solution mine is also very innovative in its technology. “It has a selective dissolution process which eliminates tailings on the surface,” highlighted Jason Mewis, president & senior engineer at EngComp, which has set up an innovative multi-party contract for the delivery of this project between Gensource and the contractor, SECON. “Additionally, the small industrial facility has such a little environmental footprint that the company should only need to submit a project proposal to the Environmental Branch without conducting a full environmental impact assessment... The delivery model is expected to be disruptive and revolutionary for the potash industry.”

Taking advantage of a more attractive commodity cycle, Foran Mining has been focused on its VMS deposit, McIlvenna Bay. The most significant recent development is an agreement that Foran signed with Glencore Canada, a subsidiary of the mining giant Glencore. Glencore has agreed to complete a feasibility study on McIlvenna Bay in return for obtaining the zinc offtake from the project. “As we advance development work on McIlvenna Bay, exploration activ-

ity will be driving the interest in the company,” commented Patrick Soares, president and CEO at Foran Mining. “At US\$3.20 copper, US\$1.45 to US\$1.50 zinc, and a Canadian dollar exchange rate at \$0.78 McIlvenna Bay looks better than the PEA projections. With Glencore’s long term view on zinc and copper prices, it is no wonder that they want to get the zinc offtake from McIlvenna Bay.”

In addition to McIlvenna Bay, Foran Mining has also made a discovery about 8 km away called the Thunder Zone, plus a large EM anomaly about 1 km away from McIlvenna Bay.

Staying On Top

With a number of promising projects underway, the challenge will be the attraction of investment towards their progression. The recent introduction of a Provincial Sales Tax (PST) on drilling costs could act as a deterrent, and the industry hopes that it will be revised. “Because of a decrease in revenue as a result of the reduction in commodity prices, the government made some significant changes that have had unintended consequences,” clarified Pam Schwann, president at the Saskatchewan Mining Association (SMA). “As junior companies do not have active revenue streams, any money spent in tax takes away from money invested directly into the ground, like drilling programs. Well over C\$100 million goes toward exploration in northern Saskatchewan. These funds cycle through northern suppliers, which are primarily indigenous-owned, and supports their businesses and communities. The SMA has a very collaborative relationship with the provincial government and we are optimistic about changes being made on this issue.”

In line with a general recovery in the global mining industry, anecdotal evidence suggests investor interest and exploration activity in Saskatchewan has once again picked up in recent months. Investment issuer Zimtu Capital, for example, has seen an uptick in activity in both Saskatchewan and Manitoba and believes now is the best

time to invest in currently unloved minerals. “Zimtu tries to stay ahead of the commodity game. Before they become popular is where there is real opportunity. Commodities like uranium and potash are at the bottom of the market so we need to make deals on these now,” said David Hodge, president and director, Zimtu Capital.

In order to realize its full potential in the longer term, the province must maintain adequate exploration incentives to ensure a steady stream of investment. Saskatchewan’s prominence as a top mining jurisdiction depends on the progression of exploration activity in order to take advantage of an upturn in commodity prices when that time comes around. ■

When Kazakhstan says it is cutting production by 20% it is questionable given that the government has to ensure job creation for political reasons but when Cameco puts on hold the richest uranium deposit in the world this will have a big impact on the market. There is an oversupply in the market of about 15 million lb which Cameco's shutdown will remove. The uranium price at US\$23 a pound is so low that Cameco's move is the equivalent of Saudi Arabia saying it will not produce any more oil.

**- Dev Randhawa,
CEO and Chairman,
Fission Uranium**

Craig Parry

President and CEO
ISOENERGY



Could you give us some background on IsoEnergy?

IsoEnergy is focused in the Eastern Athabasca of Saskatchewan, the preeminent destination for uranium exploration. We have done two campaigns of drilling so far on our properties and we have another campaign planned for this winter. Whilst this is going on, we are hoping to piece together a strong collection of properties in the Eastern Athabasca.

Started back in 2012, IsoEnergy was spun out from NexGen energy following the acquisition of the Radio property, which now sits within the ISO portfolio. We then started to piece together a stronger presence in the Athabasca region. We were lucky to have some early success with the discovery of the Arrow zone, which has become a world class deposit. When we first started the company, we had a capitalization of about C\$5 million; we are now a billion-dollar company and growing all the time. NexGen remains our major shareholder. We listed on the Toronto Stock Exchange in September of last year, and we raised C\$12million at that time.

How do you expect the uranium market to pan out?

It has been a few difficult years for the sector. The importance of Cameco closing McArthur River cannot be overstated. Uranium has been slow to take off, but I think prices will rebound very strongly from here. Cameco has stated that it will

be buying some product off the spot market, which should generate some hedge fund interest. Although this has not been widely discussed so far, all the fundamentals are there. During the last uranium boom in 2007, we saw hedge funds in the United States buying on the spot market, which had a dramatic impact on price.

One of the challenges for explorers, developers and miners is that a solid demand outlook is rare. In the case of uranium, demand seems to be growing at about 2% a year. Last year, more reactors were commissioned worldwide than have ever been before, so demand is increasing positively. However, for the last year, for every single mine in the world, the spot price has been sitting below the cost of production. This is highly unusual. Most companies sell on long-term contracts, but most of these are expiring soon. Then all of the mines will be exposed to the spot price. We will likely see more cuts in supply, which needs to happen because the market is oversupplied. We are not far off being back in balance; a few more cuts and we will be in under-supply again and prices will rise.

What are the current timelines for IsoEnergy?

We will continue to consolidate our property portfolio through staking and doing deals.

The main focus is getting in and drilling our Geiger property which we acquired off Cameco, Areva and JCU a couple of

months ago. It looks to be a fantastic project. As far as we are concerned, there is a potential discovery already made there, so we have now got to get in and drill around that. We have a budget in place for January 2018. We have done a number of geophysical surveys and base level exploration work on our other properties. Thorburn Lake, for example, exemplifies the potential of this part of the world; it is 6km away from Cigar Lake, one of the world's great uranium mines. We will therefore be drilling right up next to the boundary there, probably midway through next year. If we make a discovery, it will come down to moving the project as quickly as we can through the development permitting phase, through the studies and on into production over the next five to 10 years.

Do you have a final message about the company?

We have got a very solid plan for exploring and developing our properties in the eastern Athabasca basin. While there are inherent risks involved with mining exploration, our management of these risks is second to none. We are well funded for the next 12 months; we have got C\$1.2 million in flow-through and a little over C\$3million in hard dollars. Nevertheless, we continue to look to raise capital to keep drilling projects going and to advance towards a discovery as quickly as we can. ■



Dev Randhawa

CEO and Chairman
FISSION URANIUM

32

You are the longest serving CEO in the uranium industry. Can you explain the history behind your involvement in the industry and Fission Uranium?

In our industry you are a victim or a contrarian. I would rather be the latter. I became involved in uranium in the 1990s when the price was at around US\$7 per pound. In 2004 there were just five companies involved in uranium but within two years there were 945 as the price went from US\$7 to US\$140. Fission Energy was formed from the Canadian interest of Strathmore Minerals. With this new company we bought a property with US\$45 million investment from Korean investors and sold it for around US\$170 million.

Fission Uranium owns the award-winning PLS uranium project, close to the near-surface, high-grade Triple R deposit which is part of the largest mineralized trend in the Athabasca basin region. Two years ago, Chinese state-owned mining giant CGN Mining Company invested US\$82 million for 20% of the company.

What is your opinion on the potential of Saskatchewan?

We like Saskatchewan because it has 60 years of uranium experience and the government has done a fantastic job of treating First Nations people and the environment properly. The province has lots of rules but if you follow them correctly you get access. The bottom line is that the province wants business; Brad Wall, until recently the Premier of Saskatchewan, has been amazing. Originally our Chinese investors were worried if their money would be accepted by the Saskatchewan government but this could not have been further from the truth. We emailed the government on a morning and had a call back within three hours and a welcoming attitude to the investment from Premier Wall. This would not have happened in British Columbia.

Can you provide more insight into PLS project?

The top 50 m to 500 m of the Athabasca basin is sandstone, whilst the rest is basement rock. Lots of water has come in over time which has left a lot of potash and high-grade uranium. The average grade of uranium in the region is 2% compared to an average 0.1% in the world, if lucky. It is

a unique part of the world. This combined with the friendly government is why there is so much money going into Saskatchewan. Until we came along every deposit was quite deep but ours is only 50 m from the surface. The project is actually just outside of the basin and is therefore easier to mine due to the presence of basement rock. It is also a large deposit encompassing about 150 million lb.

Infrastructure wise, there is a road that goes almost right in the middle of our property which runs 365 days a year. We will need to build a mill but with NexGen's Energy's Arrow project close by there will be a lot of uranium that needs processing given their deposit includes about 200 million lb. We have about US\$30 million in financing so we are not planning to raise more money unless the uranium price increases dramatically. Next, we want to complete a pre-feasibility study and hope to see the uranium price reach US\$30 per pound in 2018.

What led to the investment from the CGN Mining Company?

We have been travelling to China for the last five years. There are two companies that control more than 90% of Chinese uranium procurement: CGN and CNNC. We made our pitches to both when we were first doing exploratory work as we wanted a partner. CGN is like the equivalent of Areva, Cameco and Westing House Electric combined; it is the mother-ship of the global uranium industry. They know how to mine, process uranium and build nuclear reactors. They are also very well-funded.

How do you expect the market for uranium to evolve going forward?

Our strategy is to hope for the best and plan for the worst. We do not know when utilities will climb again but we expect it to be some sort of 'hockey stick' event which causes prices to rise sharply. When Kazakhstan says it is cutting production by 20% it is questionable given that the government has to ensure job creation for political reasons but when Cameco puts on hold the richest uranium deposit in the world this will have a big impact on the market. There is an oversupply in the market of about 15 million lb which Cameco's shutdown will remove. ■



Patrick Soares

President and CEO
FORAN MINING

Could you give us a brief introduction to Foran Mining and outline how the company has developed over the years?

Foran Mining was started in 1998 as a public company and took over the McIlvenna Bay project at about the same time. McIlvenna Bay was a large VMS deposit, which was thought to be zinc only. At that time, Flin Flon was looking for additional sources of ore and, although Cameco and BHP had this deposit, Cameco was going into uranium and it was too small for BHP, so Foran Mining took over the project. This current management group only got involved in 2011; our focus has been to develop the project with a mining partner to realize the value of the underlying asset. We focussed on infill drilling McIlvenna Bay. This added a large copper component to the resource and was enough to complete a preliminary economic assessment, which was published in late 2014. This showed that McIlvenna Bay was an economic deposit, and if we were to build a mill there and a processing plant on site, we could build it for an all-in cost of C\$250 million, plus an additional C\$150 million over the life of the mine. This generated an estimated pre-tax NPV7% of C\$382 million (\$263 million after tax) and 22% IRR (19% after tax). In short, it was a robust project. Unfortunately, soon after that, the prices of zinc and copper dropped, so projects like ours became hard to finance. We therefore focused on exploration.

What are some of the developments at the McIlvenna Bay project since 2015?

The most significant recent development is an agreement that Foran signed with Glencore Canada Corporation, a subsidiary of the mining giant Glencore. Glencore has agreed to complete a Feasibility Study on McIlvenna Bay in return for obtaining the zinc offtake from the project.

McIlvenna Bay, though our biggest project, is not the only deposit or discovery on our properties. We made a discovery called the Thunder Zone, which is about 8 km away from McIlvenna Bay, and we also found a large EM anomaly, Target A, about 1 km away from McIlvenna Bay.

Our first drill hole passed over the top of the Target A anomaly. This year we have two holes planned for Target A. Our hope is that a new discovery will be made here. In 2015, we drilled six holes into the Bigstone deposit, which is another property about 20 km West of McIlvenna Bay. There we drilled 100 metres of 2% copper and 80 m of slightly more than 2% copper. Unfortunately, we found it hard to gain traction in a market that no longer cared about base metals and the share price actually dropped from 40 cents to 8 cents. At that point Foran's Board decided to avoid unnecessary shareholder dilution, and the company protected its cash by keeping everything under low care and maintenance. As the price of zinc rose we began to become more active again. In 2016 and 2017, we searched for a partner for the McIlvenna Bay project, because we already had completed a PEA on that. However, while we came close to partnerships a couple of times, they each fell through. Our efforts culminated in a Technical Services Agreement with Glencore to advance McIlvenna Bay signed in December of 2017.

What are the plans for the project going forward?

Our work will be split between working with Glencore to complete a feasibility study on McIlvenna Bay, exploring new areas and expanding known deposits.

Going forward, what is the longer-term vision for the company?

The longer-term goal is to complete the feasibility study in late 2018 or early 2019, and to work towards funding the McIlvenna Bay project through to construction. We want to catch this metal cycle, and it is a good cycle now. They generally last between four and six years. With developments in battery technology and the push for electric automobiles, zinc and copper will be in high demand. It may be a longer cycle – perhaps not a big super cycle like 2001 to 2010 was, but we will see copper prices increase dramatically, and zinc prices remaining strong. ■



Tim Termuende

President and CEO

**EAGLE PLAINS RESOURCES
AND TAIGA GOLD CORP.**

■ **Could you explain Eagle Plains' business model and how it achieves its goal of being a partner of choice for junior miners?**

Eagle Plains is a company of geologists and prospectors. The company was started by my father and myself 25 years ago and became public in 1995. Over the years, we have found that exploration risks are so great that the only way to have a sustainable business model is to spread that risk between several parties. We were one of the first public companies working in prospect generating and today we still conduct research, make acquisitions and find partners to carry out exploration. We are typically prepared to spend C\$100,000 to C\$200,000 of our own money, which is enough to prove a geological concept and create enough data to generate interest. We then bring other companies on board to help carry the project along financially and in some cases, technically.

Our business model has been very successful because we also diversified to survive the downturn. We set up our own consulting group, TerraLogic Exploration Services, which is owned entirely by Eagle Plains. They work not only for us but also with arms-length third parties. During the downturn, when we did not have many partners, we managed to keep everyone employed at TerraLogic doing contract work for other companies. It was a source of income and a way to keep our talent pool.

■ **What are the benefits for junior companies of partnering with Eagle Plains?**

The high quality of our projects sets us apart. We have done deals with major companies like Teck, Rio Algom, NovaGold, and SSR Mining, to name a few. It is hard to partner with majors as there is so much competition and it is difficult to get their attention, so these deals really speak to the quality of our projects and make us an attractive choice.

■ **Can you give us an overview of your assets in Saskatchewan?**

Our primary five gold projects are south of the Seabee Gold operation, and those are the projects we are going to spin out into a new company called Taiga Gold. We have partnered with SSR Mining on

our Fisher project which has geology and structure identical to Seabee/Santoy, with a high potential for gold mineralisation, which interested SSR. They have ramped up production at Seabee aggressively and they need ore. In early March they are starting an 18,000 m drilling program at the Fisher property and are going to be spending C\$3million, which we are very excited about.

We have also partnered with Aben Resources on our Chico gold project. Our ultimate goal is to make Taiga attractive enough that SSR will want to take it over. Three of the properties still do not have partners, so we will be seeking joint-ventures for those. We also have a number of base-metal projects in Saskatchewan which we are currently advancing. We will be seeking partners for these projects down the road.

■ **How has Eagle Plains found interactions with the First Nations in Saskatchewan?**

In our experience, the First Nations peoples are very pro-exploration and pro-mining. They are major stakeholders in areas we operate and have a passion for the land. It is a huge benefit to be in their region as they know the land like nobody else and are great prospectors. They understand exploration and mining because they have grown up with it throughout their lives, and they seem happy to join our crews and participate in the exploration process.

■ **How will Eagle Plains capture growth in the future?**

We are constantly acquiring and researching, and steadily adding to our inventory of projects. The flip side of this is being able to conduct work on all of our properties. Work must be completed on a regular basis on mineral claims or they will be forfeited. We want to catch the upturn again like we have in the past. We think we are on the cusp of one of those cycles again and ready to begin increasing our partnerships in order to get back there.

Our ultimate success will come from a major discovery on our ground. During the past downturn and in the cycle before it we have attracted excellent partners and assembled a large portfolio of projects with significant potential. It feels like payday is coming. ■

Chris Frostad

President and CEO
PUREPOINT URANIUM



What is the history of Purepoint Uranium?

We started Purepoint Uranium around 15 years ago. My brother was an exploration geologist working for Areva (then Cogema Canada) back in 2002 when uranium was trading at \$8/lb. We staked about 350,000 hectares of property when it was still wide open, but very quickly, between 2002 and 2004, uranium took off.

As we were early in the basin, we were able to secure a large portfolio of projects and were able to invest a lot of money early on. Also in those early years, we entered into relationships with Areva and Cameco. Our flagship project, Hook Lake, is a joint venture with Areva and Cameco and Purepoint is the operator.

Do you plan to sign partnerships for your other projects?

We already have Smart Lake, on the western side of the basin, which is a partnership with Cameco. Prior to Fission's discovery,

this was actually our primary target. We own 27% of the project and we hit uranium on the first drill hole. With regard to the other projects, we have done enough work on all of them, so our maintenance costs are low. It is down to a strategic decision as to when we decide to invest money again, as the market is not responsive right now.

What is your vision for the medium term?

We are at the bottom of the uranium cycle. When you start looking at the mid-tier and junior investments, most are operating in a "survival" manner, and most companies are one financing away from disaster. It is difficult to attract investors when all you are doing is keeping things afloat. From our standpoint, we will continue to focus on our premier project at Hook Lake. We have made significant discoveries in an exciting area, we share costs with our partners, and we earn fees as operator. ■

Warren Stanyer

Director and Chairman
ALX URANIUM CORP.



How did the company first come into being?

ALX is the union between two companies: Lakeland Resources and a previous competitor, Alpha Exploration, which was borne out of Alpha Minerals' takeover of Fission Uranium in 2013. The Lakeland and Alpha merger into one property on the Patterson Lake trend made financial sense and took place in September 2015.

Drilling results for Black Lake have recently been announced. Could you provide an update on this property and the one at Newnham Lake?

Following downhole probing at Black Lake, we know we have pitchblende in two of the five holes, and we hit our targets on the other three. Although we did not find the uranium we were looking for, what we did find is very encouraging – there are signs of a hydrothermal event where the pitchblende has filled a fracture. Our job now is to find out which direction it came from.

At our Newnham Lake property, we did a very comprehensive geophysical survey in 2017 and are planning to drill in early 2018. We then also have Denison drilling around the same time at the Hook-Carter

project and could also revisit Black Lake with some of the new information we have been generating. There are many possibilities for drilling in early 2018.

Could you expand on ALX's relationship with Denison Mines on the Hook-Carter project?

We are very excited about the project and have drill targets for 2018. It will be an extensive program. In the deal, we maintain 20% carried interest and they must spend C\$12 million before we are called upon to contribute. For a junior company, considering we received 7.5 million shares of their company, this is about as good as it gets.

Having recently acquired an additional 72 lapsed claims, how is ALX's focus shifting?

The 72 claims total around 58,763 hectares of lapsed land across eight projects: Argo, Sabre, Atlas, Luna, Vulcan, Echo, Apollo and Electra. We are reevaluating and reinterpreting data, mainly looking for conductors, which can indicate the possibility of uranium in the vicinity. We have already found a great conductor on Argo. ■

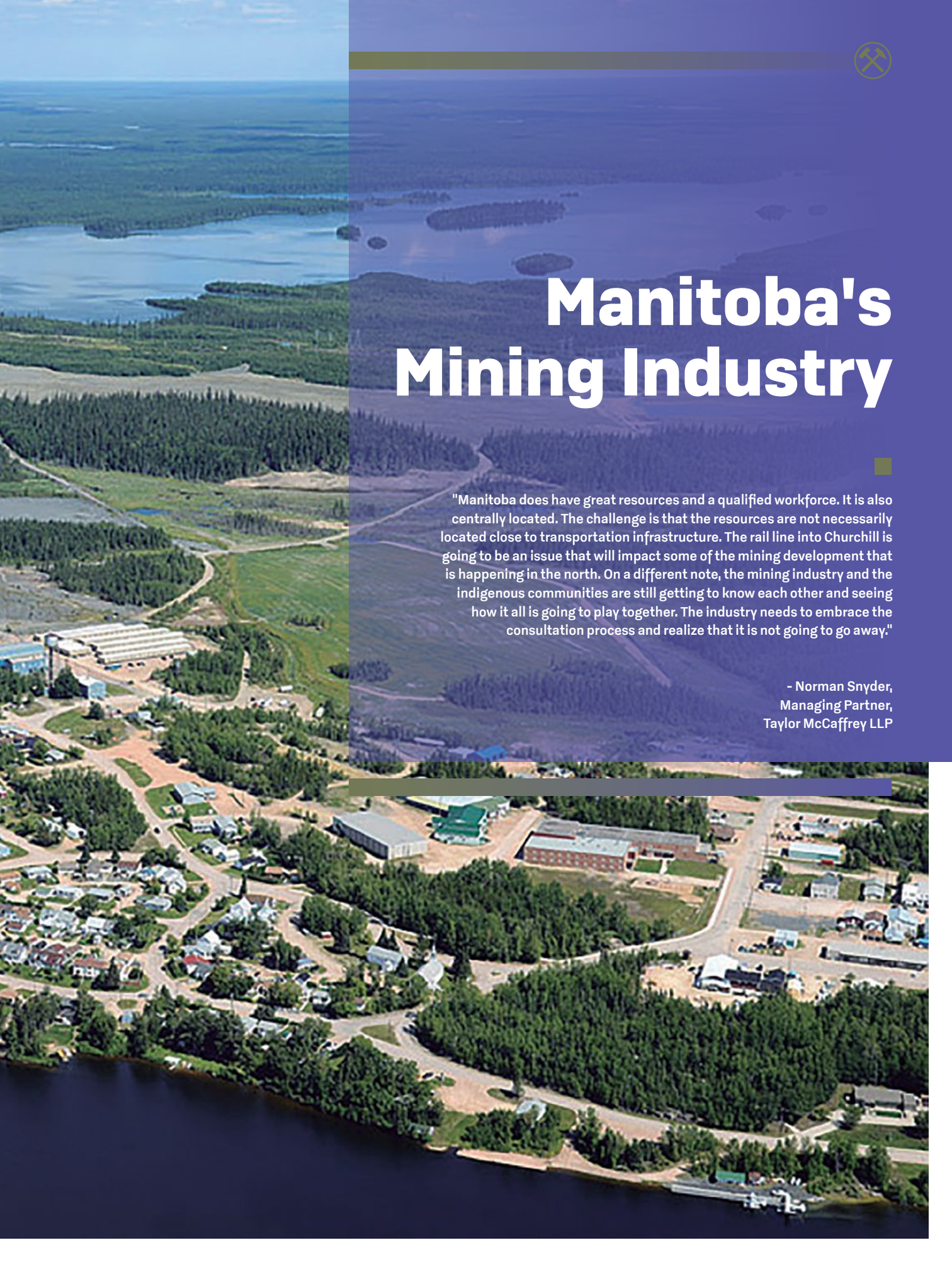




Manitoba's Mining Industry

"Manitoba does have great resources and a qualified workforce. It is also centrally located. The challenge is that the resources are not necessarily located close to transportation infrastructure. The rail line into Churchill is going to be an issue that will impact some of the mining development that is happening in the north. On a different note, the mining industry and the indigenous communities are still getting to know each other and seeing how it all is going to play together. The industry needs to embrace the consultation process and realize that it is not going to go away."

- Norman Snyder,
Managing Partner,
Taylor McCaffrey LLP



Building Foundations: Manitoba's Mining Renaissance

Manitoba's mining industry is dominated by two big players: Hudbay Minerals and Vale. Hudbay, founded in 1927 as Hudson Bay Mining & Smelting Company, has historically played a significant role in the province, largely centered around its Flin Flon operations. Today, the company's activities extend across the Americas, with a primary focus on the discovery, production and marketing of base and precious metals. Hudbay remains hugely important to the province, running a highly profitable poly-metallic operation, employing approximately 1,400 people as well as 200 contractors. The company's central focus is currently shifting somewhat from Flin Flon to Snow Lake with its Lalor operation. "We have been in Manitoba for 90 years, a period over which we have mined over 150 million tonnes of ore in the area," commented Andre Lauzon, vice president of the Manitoba business unit at Hudbay Minerals. "The last year has been transformational for us. Lalor had its first production in 2012, and by last year our idea there was to maintain a 3,000 mt/d operation till the end of the mine life. Yet, we identified some opportunities to increase that by at least 50%."

As a result, the mine is already working at a rate of 4,000 mt/d with anticipated production levels reaching 4,500 mt/d in 2018. "In terms of timing, this has been very positive due to the high zinc prices," continued Lauzon. "We are having record production of zinc this year, and for the first time we have actually shipped zinc concentrate out of the

province, even if we are running our zinc plant at Snow Lake to its fullest capacity."

Hudbay already has three concentrator facilities: the Stall mill at Snow Lake, the Flin Flon mill and the new Britannia mill, a gold mill which is currently idle. The 777, scheduled for completion by 2020, is in harvest mode, with no further major upcoming expenditures required. Closure of the Reed mine is planned for July 2018.

A more recent addition to the market, Brazilian Vale made its entrance to the province with its purchase of Inco in 2007. Inco, a Canadian company, began exploration for nickel in the Thompson Nickel Belt (TNB) in the late 1940s. The company was a leading producer of nickel for some time, with an output of more than 2,500 kilotonnes since the late 1950s. Since the acquisition, Vale has invested C\$1.4 billion in Manitoba through a combination of sustaining capital, exploration and mining studies, including about C\$61 million in exploration from 2012 to 2016.

However, the operation has encountered challenges due to the sustained downturn in the nickel price. This led to the announcement in May 2017 that Vale would suspend production of its Birchtree mine at Thompson, placing it in care and maintenance from October. Further to this, Vale will also be closing its smelter and refinery in July 2018, citing environmental regulations and a lack of local feed for processing as the key factors affecting the decision. By Q3 2018, the smelter and refinery in Thompson will be

“

The community does rely heavily on employment from us in the area. We have about 1,400 people in Manitoba, as well as 200 contractors. We have been working very closely with our workforce and have kept them very up-to-date in the process. Certainly, there are some challenging times ahead for some of our employees, but at the same time we are growing our Snow Lake operation, so the center of gravity is moving from Flin Flon to Snow Lake.

- Andre Lauzon,
VP Manitoba Business Unit,
Hudbay Minerals

”

closed, replaced by a mine and mill operation.

While there is potential to extend the Thompson mine's life until 2044, Vale has highlighted potential barriers, such as the requested 7.9% hydropower rate increases for the next five to six years. According to Mark Scott, Vale Canada's vice president for Manitoba operations, the requested increases would add C\$10 million in expenses to the business over the next five years. Scott also highlighted carbon pricing and the province's tax regime as further challenges to take into consideration. To demonstrate the company's economic impact, Vale commissioned a study which shows a total economic impact of C\$7.9 billion to the province if the life of mine is extended until 2044.

Going forward, Vale is focusing on exploration on existing mines, particularly at the Hangingwall resource zone, targeting extensions of known deposits, in-mine satellite deposits and new resource zones both north and south of existing mines. Vale is also investing C\$80 million in a concentrate load-out facility that will enable the company to start shipping the product for processing at its facilities in Ontario and Newfoundland and Labrador from July 2018.

Underscored by challenges experienced by Vale and Hudbay's shifting focus away from Flin Flon, the need for Manitoba to attract investment and establish new mines is clear. "Vale and Hudbay were established decades ago, and then there was a huge gap in investment, so we are looking at setting up a regime that will make up for that gap and allow investment to come," commented Blaine Pedersen, Minister of Growth, Enterprise and Trade.

Demonstrating its commitment to facilitating a favorable operating environment, Manitoba's government is developing a Mineral Development Protocol and reducing red tape where possible. "Our main message is that Manitoba is open for business," said Pedersen. "Our finance department did a review of the number of regulations, and it turns out that we have more than 900,000 in place. There are many redundant regulations within every department, which is something that affects businesses. We are consulting with the business community to find out which regulations are burdensome for them."

Government support and maintaining an open dialogue with industry will be key in furthering the industry. "Manitoba has



With regard to power, one of the few advantages of doing business in Manitoba is our relatively affordable power rates, but now the new leadership at Manitoba Hydro is seeking Manitoba Public Utilities Board approval for drastic rate increases. The proposed increase is the single biggest threat to continued operation and potential growth of mining in Northern Manitoba.

- Andrea McLandress,
Executive Director,
Mining Association of Manitoba



huge potential," emphasized Ashley Kirwan, vice president and senior geologist at Orix Geoscience, a consulting firm specializing in geoscience services for exploration companies. "It is a vast province and only a fraction of the land has been explored in

depth... This is the best time to branch out into Manitoba as there are undoubtedly deposits still to be found. In addition to nickel, copper, zinc and gold exploration, commodities like lithium and cobalt are going to gain a lot of traction." ■

MINNOVA
CORP.

**INNOVATING - PLANNING - EXECUTING PL MINE
GOLD PRODUCTION AS EARLY AS 2019**

Emerging Canadian gold producer focused on re-starting the PL Gold Mine and expanding gold resources on its PL and Nokomis gold deposits

Positive Feasibility Study completed: an average annual production rate of 46,493 ounces over a minimum 5 year mine life.

The resource remains open to expansion and future surface exploration work programs will target resource expansion.

minnovacorp.ca



Andre
Lauzon

VP Manitoba Business Unit
HUDBAY MINERALS

40

Could you provide an overview of Hudbay's operations in Manitoba?

We have been in Manitoba for 90 years, a period over which we have mined over 150 million tonnes of ore in the area. The last year has been transformational for us. Lalor had its first production in 2012, and by last year, our idea there was to maintain a 3,000 mt/d operation till the end of the mine life. Yet, we identified some opportunities to increase that by at least 50%. As a result, we are already working at a rate of 4,000 mt/d and we anticipate reaching 4,500 mt/d in 2018. In terms of timing, this has been very positive due to the high zinc prices. We are having record production of zinc this year, and for the first time we have actually shipped zinc concentrate out of the province, even if we are running our zinc plant at Snow Lake to its fullest capacity.

Our Manitoba business unit is a very profitable poly-metallic operation. We already have three concentrator facilities: the Stall mill at Snow Lake, the Flin Flon mill and the new Britannia mill, a gold mill which is idle right now. Now, 777 is scheduled to be completed by 2020, so it is in a harvest mode; the majority of the capital development is done, so there are no major expenditures and that provides very good economic results. Meanwhile, Reed should be closing in July 2018.

How are you approaching these closures in terms of your relationship with the locals?

The community does rely heavily on employment from us in the area. We have about 1,400 people in Manitoba, as well as 200 contractors. We have been working very closely with our workforce and have kept them very up-to-date in the process. Certainly, there are some challenging times ahead for some of our employees, but at the same time we are growing our Snow Lake operation, so the center of gravity is moving from Flin Flon to Snow Lake.

What are some of the key investments to expand Lalor?

As part of the expansion program, we are in the process of installing a paste backfill plant, which is key for us to reach the 4,500 mt/d level at Lalor in a sustainable manner. We also need to get a better understanding of the gold zone, which has what we still consider an inferred resource, so we need to transfer that resource into value. In terms of technology, we are now running teleremote operating scoops at both Lalor and 777 that are run from surface. This has increased productivity and safety.

With Lalor you will probably celebrate your 100th anniversary in Manitoba. What is the potential for new mines in the area?

Geologically speaking, the Manitoba belt is fertile exploration ground and there are deposits to be found there. We are just in a position today where we have a gap between the volume of zinc that we are producing in Lalor and Snow Lake and what is required to sustain our zinc plant in Flin Flon. In addition to us, there are many companies exploring in the area, so I am sure there is potential for new discoveries. On the other hand, technology will play a key role in the future of this belt. It will be a key component for us to know how some of the marginal deposits that we know and that have been in the ground for many years can show better economics.

What are the advantages of Manitoba as a mining jurisdiction?

I have worked in a variety of different mining districts across Canada and abroad, and Manitoba is probably the lowest-risk mining district that I know of. Our Reed mine, for instance, is within a provincial park. It is quite a special mine and we recognize that; we have a very small footprint and a large water purification system. We were given the opportunity by the province to mine in a provincial park, which was a politically sensitive decision. We knew it had to be done well. Also, permitting with the government of Manitoba is very good. We recently permitted our paste fill plant last year and it only took several weeks, whereas in other jurisdictions it can take years. Where they can, the government is clearly supportive of the industry. ■



Kelvin Shepherd

President and CEO
MANITOBA HYDRO

What is Manitoba Hydro's reach in the province's power market?

We are a Crown Corporation operating a vertically integrated electrical system in Manitoba, including generation, transmission and distribution, as well as natural gas distribution. We have 279,000 natural gas customers and 573,000 electricity customers. Of our 15 generation stations, the larger are in northern Manitoba. We are a major exporter of electricity, with connections into the United States, where we send 80% of our exports, and also into Saskatchewan and Ontario. 25% of our revenues from electricity last year came from exports. Finally, we have a subsid-

iary, Manitoba Hydro International that has done work in 35 countries.

How advantageous is Manitoba's position in relation to the upcoming carbon tax?

83% of electricity generation in Canada does not emit greenhouse gases, and 60% of the country's energy matrix is actually hydro. The carbon tax is a broader-based issue that affects all forms of carbon fuel, not just electricity generation. In addition, the federal government has mandated the phase-out of coal generation in Canada by 2030, which is affecting jurisdictions like Saskatchewan. In Manitoba, we are in a good position, not having to worry about phasing out a significant amount of capacity in coal generation. 97% of the energy we produce comes from hydro; 2% is wind power, and the remainder comes from small thermal plants that we only operate occasionally – only one of them is coal-based.

How big of an energy consumer is the mining industry in Manitoba and how will it be affected by the rate increases requested by Manitoba Hydro?

Although there are only two major operators, mining represents 9% of electricity consumption in Manitoba. Manitoba Hydro currently offers the lowest industrial rates across Canada. We are currently seeking rate increases that will have to be approved by the Public Utilities Board. This will affect the large industrial customers, not just in mining, and we are sensitive to this; however, just as important is our need to continue making the investments required to have a reliable service. Thanks to our investment plan, our rates will continue to be amongst Canada's most competitive.

4% of the world's electricity is used in comminution processes. How do you help mining clients be more efficient?

Since 1994, we have completed 39 Power Smart projects for energy efficiency in the mining sector, and provided over C\$3 million in incentives. Looking at areas such as

compressed air or pumping requirements, we have funded 11 feasibility studies for Hudbay, resulting in 16 applications for projects that we co-funded; plus 17 studies and 20 applications for Vale. These implementations helped the mining industry in Manitoba reduce its electricity demand by 150 GWh, or 21 MW of capacity.

Could you provide more details about the largest projects within your 20-year, C\$26 billion investment plan?

The most advanced one is the C\$5 billion Bipole III high voltage DC line, scheduled to go into service in 2018. Right now, the existing transmission lines coming from the north, Bipole I and Bipole II, carry 70% of the total energy in Manitoba. They run side by side along the same corridor and end up in the same station. The oldest of these lines is 50 years old. As we become more and more dependent on that transmission, we have a reliability concern. Bipole III will run on a separate corridor with separate converter stations.

Secondly, the Keeyask hydro generation project is a 695-megawatt facility on the Nelson river. It is an C\$8.7 billion project, with first power scheduled to come online in 2021. The project will effectively add 10% of power generation capacity to the province. We have C\$4.3 billion of long-term export revenue tied to Keeyask's completion.

Keeyask is a partnership with First Nations. What levels of local employment is the project providing during the construction phase?

We have four First Nations partners at Keeyask: Tataskweyak Cree Nation, War Lake First Nation, York Factory First Nation, and Fox Lake Cree Nation. These are all communities located in the immediate vicinity of the hydro development. To date, about 47% of the workers in the project have been indigenous people, and 25% have actually come from our partner nations. In August 2017 we reached 4 million person hours in the project from indigenous people – 2 million of which were completed by our partner nations. ■

Manitoba's Exploration Potential

Manitoba's potential for clean energy resources, which have high demand projections, make it an attractive prospect for new exploration ventures. "Manitoba has very exciting mineral potential in zinc, nickel, copper, gold, diamonds and lithium," underlined Andrea McLandress, executive director at the Mining Association of Manitoba. "Today, the federal government wants to push the transition towards clean energy technologies, while China is promoting the big switch to renewable energy and electric vehicles. All the main components can be found in Manitoba: copper, zinc, nickel and lithium. We want to promote a vision of 'Manitoba mining for clean energy technology'. It is a very exciting message for investors as well as for our own local and indigenous communities."

Toronto-based Far Resources is one company following this route at its Zoro proj-

ect, located near Snow Lake. The company has now conducted two campaigns, with a third imminent. "What is really exciting about this project is not just the fact that we have seven dykes, it is that we are in a pegmatite field," commented Keith Anderson, Far Resources' president. "Some pegmatite projects have just one big pegmatite dyke – here, we have a whole field. There is a lot of overburden cover, so we do not even know what is underneath that. There could be bigger pegmatite underneath, so we decided to do a geochemical sampling program to evaluate the likelihood of that."

The 2018 drill program will follow up on these other dykes that may be covered, and Far Resources has increased its land package from 500 hectares to 2,200 hectares in anticipation.

Mustang Minerals is also hoping to access this corner of the market with its combined

operation from two open pits, Mayville (copper-nickel) and Makwa (nickel-copper). Its last major study was a preliminary economic assessment but, due to the cycle, the company has been underfunded for the past couple of years. However, Robin Dunbar, Mustang Minerals' president, maintains a positive outlook going forward. "Most people have a forecast for the price of nickel of US\$7 to US\$7.50/lb which, coupled with the current strong US dollar, puts us at the level of our existing PEA," commented Dunbar. "We have been disappointed by fundamentals many times in the past, but nickel fundamentals look very good right now. Also, if you look around, there are not many nickel projects. Whenever the price of nickel goes up, we see strong attention directed at our company, because we have a doable project. Now, our goal is to drive the break-even of the project down significantly and move towards a pre-feasibility study."

Referring to increased demand for electric vehicles, Dunbar highlighted: "According to some forecasts, by 2025 between 300,000 and 900,000 mt/y Ni will be used in battery technologies. That nickel comes from sulphide nickel which is transformed into nickel sulphate –all the pig nickel that comes from laterite deposits cannot be used for the production of batteries. Current supply of sulphide nickel is 1.3 million mt/y and is declining, so that is the supply that will be needed for batteries moving forward."

Precious Metals: Deserving Attention

Whilst base metals have put Manitoba on the map, precious metals have been relatively underexplored. "It is because the



Manitoba is a tougher jurisdiction to work in from a permit and government-support perspective. Growth is foreseen, but until the commodities begin to make an upward trend, companies will continue to be risk-averse and reluctant to invest money into "what-if" commodities such as lithium and chromate, for which the upturn is difficult to predict. They could potentially be the biggest opportunity for a good return, but investors tend to feel more comfortable with minerals that have performed well over the last few years and are easy to research.

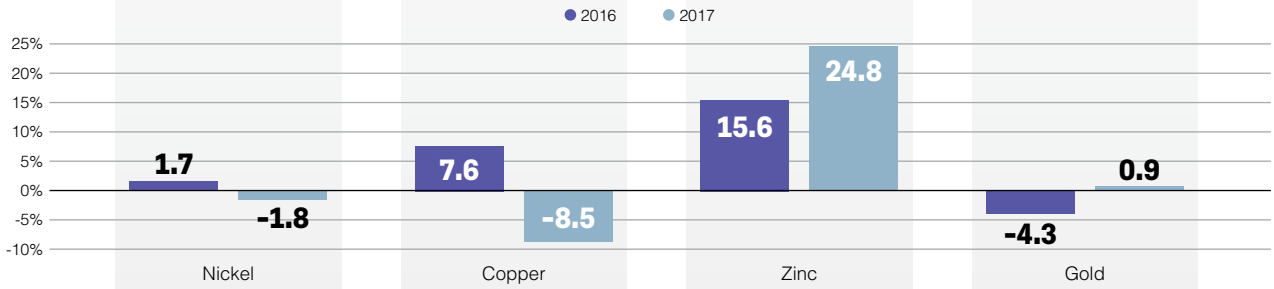
- Michael Kenney,
Chief Operating Officer,
Matrix



METAL MINING PRODUCTION (% CHANGE)

Source: Natural Resources Canada

In the first nine months of 2017, the quantity of Manitoba's zinc and gold production increased 24.8% and 0.9%, while copper and nickel production declined 8.5% and 1.8% respectively.



original discoveries, such as the Flin Flon deposit, were base metals and they were very large,” remarked Gorden Glenn, chairman, president and CEO, Minnova Corp.

A feasibility study has just been completed on Minnova's PL gold deposit in central Manitoba, a re-start from a past producing mine in the 1980s. The project should produce 50,000 oz/y and up to 70,000 oz/y with the expansion potential. “The project is very robust with a high IRR of over 50% and relatively low capex of approximately C\$35 million. This contributes to a very short payback of approximately 1.5 years. The capex is low because we have a 1,000 mt/d mill that is in very good condition considering it has not been used for 30 years,” continued Glenn.

Another project with significant potential is Altius' Lynx Diamond project. In partnership with a group of prospectors and geologists, the Manitoba Geological Survey found diamonds in the outcrop. “It is an enigmatic system, in part because it is probably the oldest diamond occurrence in the world (2.7 billion years old),” explained Lawrence Winter,

VP exploration at Altius Minerals. “It is not a kimberlite per se, so it is not like most diamond deposits at all. It is such a voluminous sequence that the potential for a bulk tonnage deposit is significant. A comparable situation in the copper business would be a porphyry deposit.”

Altius, established 20 years ago, is a prospect generator that generally seeks to leverage projects by bringing in partners, never taking a project to the development stage on its own. Whilst Altius is widely recognized as a royalty company, its Lynx Diamond project in Manitoba is one of more than 30 projects in its exploration business unit.

Alamos Gold is likely to have the next

producing mine in the province with its Lynn Lake gold project, a highly prospective past-producing gold camp. Previously a joint venture between AuRico Gold and Carlisle Goldfields, Alamos Gold merged with AuRico Gold in 2015 and consolidated full ownership of Lynn Lake in January 2016 through its acquisition of Carlisle Goldfields. The project consists of two primary deposits: the MacLellan mine and the Gordon mine, which were the subject of a positive feasibility study published in December 2017. The study declared an initial proven and probable mineral reserve of 26.8 million mt grading 1.89 g/t Au, containing 1.6 million ounces of gold. Both deposits will be developed using conventional shovel/truck open pit mining methods. Average annual gold production is projected to sit at 170,000 ounces over the first six years and 143,000 ounces over the first 10 years, with life of mine production of 1.5 million ounces. The Gordon and MacLellan deposits are expected to operate concurrently for the first six years of operation, with Gordon to be depleted first given its higher grades and lower stripping ratio. As the Gordon pit nears depletion, mining equipment will be transferred to MacLellan and utilized over the remainder of its mine life.

Waiting for Take Off

With a clear message from the government in place and proven resource potential, attracting investment and driving exploration are the next steps for the province in fostering a strong mining sector. “We are coming out of nearly two decades of NDP government, and the new conservative government is focused on promoting business,” highlighted Norman Snyder, managing partner



Being in the Flin Flon/Snow Lake greenstone belt, we are in one of the premier mining districts in Canada that has a mining history of about 100 years. This means we have access to the skilled workforce we would need and the lowest power costs in Canada.

**- Gorden Glenn,
Chairman, President and CEO,
Minnova Corp.**



at Taylor McCaffrey LLP. “If the carbon tax is an issue here, it is because we are dealing with it now; at least we will have some certainty about the taxation framework that other provinces do not have. We expect to see more support for businesses, but it is a big task – the ship cannot be turned overnight.”

However, while many of the pieces of the puzzle are in place, Manitoba lacks advanced exploration projects, meaning a lag in traction and new mine development in the foreseeable future. Nevertheless, with continued focus from the government and an uptick in mining investment imminent, the province has all the makings for success in the longer-term. ■



Gorden Glenn

Chairman, President and CEO
MINNOVA CORP.

Minnova completed a feasibility study in November 2017 on its PL gold mine in central Manitoba. What were its main findings?

Due to the feasibility study, for the first time since the mine was developed it is now at reserve level. We have done a lot of drilling to have a higher confidence in our reserve and resource base. It is very comprehensive technical study and is NI43-101 compliant. The project is very robust with a high IRR of over 50% and relatively low capex of approximately C\$35 million. This contributes to a very short payback of approximately 1.5 years. The capex is low because we have a 1,000 mt mill that is in very good condition considering it has not been used for 30 years. A new mill would cost well over C\$60 million; thankfully we just have a C\$10 million refurbishment cost. Once up and running the project will produce around 50,000 oz/y and we foresee up to 70,000 oz/y with the expansion potential.

Could you tell us more about the results of your drilling program in the summer of 2017?

It was the most significant drilling campaign at the project in the last 30 years. We drilled about 50 holes and 25 of them came back with exceptional ore grade, whilst the others were more typical of the deposit at about 5g to 7g. Building on this, we also did a lot of surface exploration, and identified five showings over the course of the summer, many of which were on trend from the existing deposit and in the shadow of the mill. Some also opened up new mineralization in the footwall tonalite, suggesting the potential for a new deposit type.

How good is the infrastructure surrounding the PL gold mine?

Local and regional infrastructure is excellent. Being in the Flin Flon-Snow Lake greenstone belt, we are in one of the premier mining districts in Canada that has a mining history of about 100 years. This means we have access to the skilled workforce we would need and the lowest power costs in Canada. As the mine was previously in production, it has road access and significant infrastructure onsite such as the mill and underground facilities. We also have benefit greatly with strong support from local communities.

What lessons have been learnt from the performance of the original mine in the 1980s?

The previous company was too aggressive in their development plan. They went underground on limited drilling meaning they had not defined the resource in detail so it was difficult for the mining engineers to develop a thorough plan. Also, the targeted throughput rate of 1,000 mt/d was too high for the size of the deposit.

Why has there been relatively little exploration of precious metals in central Manitoba?

It is because the original discoveries, such as the Flin Flon deposit, were base metals and they were very large. Also, the Flin Flon-Snow Lake greenstone belt was controlled by Hudson Bay Mining & Smelting for almost 100 years. In the 1930s they built a big copper smelter and zinc refinery so all of their efforts were focused on finding more base metals to feed their mill.

What are the prospects for gold in 2018?

We expect more of the same in 2018, hopefully with more upside. Gold is a monetary asset so it competes with currencies for investor interest. Russia and China have been accumulating significant amounts of gold as they want their currencies to global reserve currencies, backed by gold. Overall, there is only one way to go for gold and that is up.

What is the timeline for developing the PL gold mine?

We are looking at how to structure the financing but the goal is to get up and running as soon as possible. If we reach our funding target of C\$35 million we will be able to operate in approximately 18 months. Despite having significant infrastructure and permits already in place there are still factors outside of our complete control such as timing of funding and ongoing community engagement. We are waiting for the market to continue to improve. One challenge is that investors are looking for big projects and the PL gold mine, despite being an excellent deposit, is smaller than what they are typically looking for. Given this and with the current trend towards consolidation, we would also consider acquisition or merger opportunities. ■

Balraj Mann

President and CEO
QUANTUM MINERALS

Could you introduce Quantum Minerals and an overview of its properties in Manitoba?

Our main focus right now is the Irgon lithium mine property acquired in late 2016, which was 1,729 acres in size. A couple of weeks ago, we announced that we had increased the size of the property by approximately 400%, to cover over 6,500 acres. The original property had a non-NI43-101 compliant historical resource of 1.2 million mt, at 1.51% Li₂O. In 1955 there was drilling done on the site and a plan to go into production with a 500 mt/d yield. Everything was put in place on site to go into production but unfortunately the lithium price dropped, so two years later they auctioned off the structures that had been put in place there. It has taken almost 60 years for lithium prices to recover allowing a company like Quantum Minerals to recognize the potential and again push the project forward. Much of the infrastructure is there; for example, there was a highway commissioned and built specifically for the project.

Initial exploration had been to about a 700 feet depth and about 400 meters along strike. Our geologists have said that there is potential below this and beyond. They predict that the resource estimation is going to increase. We have commissioned a 3D model of the property, which will be available within the next couple of months. We are currently in the process of making the historical resource NI43-101 compliant. The long-term goal is to take the property into the production; this was not done sixty years ago. The property is located in a provincial park, however commercial mining is permitted under the charter of the park. Now all we have to do is adhere to environmental and sustainability laws and consult with First Nations in the area. We have already gone through these processes and we have work permits in place.

Is there further potential at the property?

We are aware of seven other dykes on the main property and have increased the property size through additional staking because it is highly possible there are more dykes to be found.

How are you looking for financing?

We just closed a financing in December at fifty-five cents. Stock was as high as US\$1.85 in November and now we are at a healthy US\$1.10. We are selling around 400,000 to one million shares on a daily basis. The average volume in price from October to December was a dollar a share. We have traded 36 million shares and maintained our value. Liquidity is there and so is the price. We are currently well funded, with around US\$3 million in cash. Our next financing will probably be north of a dollar, maybe five or twenty million shares depending on what the program costs are expected to be. We are looking for investors internationally.

Why is lithium such a good investment for the future?

The market for electric vehicles is growing rapidly because so many countries want to eliminate carbon-based fuels. While Tesla was the original linchpin to get it going, there is now a global push to increase electric vehicles to solve pollution problems. For example, India is aiming for no carbon emission fuels by 2020. In mid-2017, the EU announced that they wanted more electric vehicles and China has also recently made similar statements. While at one point coal was the energy that powered everything, subsequently, it was pushed aside by oil; now oil is being pushed aside by electricity. Lithium is the first choice for battery powered electronics because it is light and maintains a charge. In the past, one of the main problems with electric vehicles was the weight of the batteries; the use of lithium really solves that issue.

The demand for lithium for the next five to ten years is expected to overtake supply, and the commodity price will continue to increase. We want to lock in some contracts soon. Other juniors, who are not even at the stage we are at, have started locking up with Chinese buyers. These Chinese buyers are being very smart, because they are locking up the commodity now before the rush truly kicks in. ■

Lawrence Winter

VP Exploration
ALTIUS MINERALS



46

How does the exploration business fit into the wider Altius' strategy?

The company was established 20 years ago and adopted a prospect generator model before there was a phrase coined for that actual business type in mining. Mining exploration is inherently risky and we try to leverage our projects by bringing in partners, and then either retain a minority equity position in the project, or convert the whole project to equity in a public company, which offers us liquidity earlier if the project is successful. We have dealt 85 projects throughout the company's history, most of them over the last 10 years.

Would you spin off your project generation business at some point?

Through the success of the project generation model, which provided enormous returns and cash flow, we started to invest in royalties. Our first royalty was Voisey's Bay, and today we have 15 producing royalties. Our whole business model is based on recognizing and capitalizing on the cycles of the mining and exploration business.

Could you give us more details on the recent diamond discovery in Manitoba?

We recognized that the Lynx Diamond project in Manitoba was unusual, geologically speaking, and that there had been a lot of money spent in the past trying to locate the potential source of the diamonds. We are trying to better understand the geology. It is an enigmatic system, in part because it is probably the oldest diamond occurrence in the world (2.7 billion years old). It is not a kimberlite per se, so it is not like most diamond deposits at all. It is such a voluminous sequence that the potential for a bulk tonnage deposit is significant.

What are the main pros and cons of working in Manitoba?

Manitoba offers great geoscience support. The Geological Survey and the Mines Branch have been incredibly helpful for us. They have active field programs, and they are indeed the ones who actually made the Lynx diamond discovery. In addition, there is the Mineral Exploration Assistance Program (MEAP), which is meaningful for almost all companies to help leverage still lean budgets in the space. ■

Robin Dunbar

President
MUSTANG MINERALS



What is Mustang Minerals' positioning in the market?

We have been focused on Manitoba since 2005. Our last major study was a preliminary economic assessment on a combined operation from two open pits, Mayville (copper-nickel) and Makwa (nickel-copper).

Due to the cycle, we have been underfunded for the last two years but that is changing. We are currently raising US\$1 million to start doing some more work on the project, including exploration and metallurgy. We need higher metal prices for the project to work, so we need to find some more tonnage, some high-grade material, or both.

Could you give us some more details about the resource and the PEA?

The project has about 40 million tonnes of resources, putting together the indicated and inferred categories, from two pits. We would build a central concentrator and

probably mine the nickel first, because it offers a slightly higher NSR value (the study uses a price of US\$8.50/lb Ni), but it will all depend on the metal prices. It is a basic, conventional flotation circuit. The PEA contemplated the whole resource, but it is possible that over the next campaign we will scale that back to around 1 million mt/y for 15 years, which would reduce our strip ratio.

What is the potential for other elements, such as PGMs, cobalt and chromite in the area?

There is good PGM potential in the area. The chromite bands go on for kilometers, so if we find some PGMs that are associated with that, we will be able to follow up on that over the next campaign. The belt is really interesting, because you also have significant numbers of hard-rock pegmatites for lithium –so you have all the battery metals in one place. ■



Ashley Kirwan

M.Sc.

P.GEO

Vice President & Senior Geologist

ORIX GEOSCIENCE INC.

How has the company developed since its inception in 2012?

It has been an exciting ride over the last five and a half years, especially beginning in the 2012 downturn. My co-founder, Shastri Ramnath, and I decided to incorporate a company to service juniors in the industry. This is the third company we have worked with together - it makes a difference to work with a strong geological team where trust has already been established. We started with a very low overhead and only one client, and through word-of-mouth we were then asked to generate geological interpretations for another client. Business took off from there.

There is discontinuity when people exit the industry due to mining cycles, which is a problem because so much data and knowledge is lost. When the markets pick up and companies are able to raise funds again, they need to hire a new team and start everything from scratch. Our aim is to maintain that continuity of knowledge to support clients through the highs and the lows. After five years, we have 56 employees in three different cities (Winnipeg, Toronto, and Sudbury). We are considering opening up a Vancouver office as well. Our vision is to be the leading geological firm in the industry providing all the services that an internal team would provide, including corporate strategy and marketing the projects.

Could you elaborate on the company's model?

We do not consider ourselves consultants, but partners to our clients in the industry. It is a more intrinsic relationship with the client. We realized the value in being based in Toronto, on Bay Street, and early on we connected with multiple juniors that were in a bit of a Catch 22 situation - they had great projects and a mandate to do work on them, but they lacked financing. Raising funds in the downturn was difficult: proof of a good project and strong management team was essential, alongside strong images and marketing materials. This was a challenge for many companies.

At Orix, we decided to pursue a very unique business model whereby we would work with juniors to provide geological services ahead of their financing to develop a strong geological understanding of projects, which was key during marketing cam-

paigns. This business model established strong client relationships and increased our understanding of their project's geology. With this model, we have thrived during the downturn and continue to succeed as markets are picking up.

What are some of the main ways in which Orix Geoscience is able to support its clients?

We are involved with a multitude of juniors with projects across Canada, including Ontario, Manitoba and Nunavut. We also work with clients in Ecuador, the United States and Africa. Our team has been focused on gold projects but is starting to see more interest in other commodities such as copper and lithium. Right now, the drive is for advanced-stage exploration with some grassroots target generation as well.

Our initial services were high-level geological interpretations but we have now evolved to be the full arm of an exploration team. Anything that a junior or a mid-sized company may need from a geological perspective, we can provide: from initial data organization, drill hole databases, QA/QC, GIS compilations and target generation through to field work, from core logging to mapping and prospecting, and so on. In this way, we are able to support internal teams and capture the best value for shareholders.

Manitoba's mining industry is relatively small compared to those in other provinces. How do you expect the sector to develop?

Manitoba has huge potential. It is a vast province and only a fraction of the land has been explored in depth. There are road access challenges so helicopter costs add up and must be taken into account. This is the best time to branch out into Manitoba as there are undoubtedly deposits still to be found.

In addition to nickel, copper, zinc and gold exploration, commodities like lithium and cobalt are going to gain a lot of traction.

What are the objectives for the company going forward?

Our vision is not to be the largest geological firm, but to be the leading geological firm of choice. We want to have a pronounced impact on the industry in terms of corporate culture and high quality of work. ■





Technology and Services

"Connectivity to the cloud means things are no longer local. It brings more visibility to upper management and also brings out a lot of dirty laundry."

- Shahram Tafazoli,
CEO,
Motion Metrics International



Technology and Services:

A Conservative Industry Embracing Change

Particularly in light of adverse market conditions, companies across the mining supply chain are as focused as ever on reducing costs and increasing efficiencies wherever possible. Aside from low commodity prices, Saskatchewan and Manitoba's companies are facing challenges at a regulatory and policy level. "It is a very challenging time for the mining sector, particularly because of increased costs related to proposed carbon taxes, additional regulatory processes and continually escalating power costs that competing jurisdictions are not faced with," highlighted Schwann, president of the Saskatchewan Mining Association. "There is work to be done to ensure the sector remains globally competitive while ensuring a continued strong environmental and safety performance."

A key challenge for many companies, particularly in the extraction of rare earths, is economic feasibility. While at first glance this challenge would seem to present an excellent opportunity for innovators to present more efficient or cost-effective solutions, uptake of new technologies remains slow in this historically conservative industry. "It is not common to get an opportunity to innovate with customers," stated Jason Mewis, president and senior engineer at EngComp, a heavy industrial process engineering firm for which the mining industry accounts for about 75% to 80% of business. "They tend to prefer tried-and-tested solutions,

and their risk appetite is very sensitive. Adoption is further complicated because contracts and methodologies for procuring service providers are not conducive to innovation. Therefore, a lot of equipment and processes in the mining sector remain very traditional."



Injection hoisting is starting to gain some traction from public exposure and we are starting to see greater willingness from the industry to try new, potentially-impactful technologies. The industry has been hardpressed to implement new ideas, and there seems to be more openness to doing so nowadays.

**- Roy Slack,
President,
Cementation Canada**



Turning Data into Information

Nevertheless, companies are recognizing a need for new technologies and are becoming more open to the implementation of new solutions. Automation technologies are gaining further traction, and Big Data is an increasing focus for most engineering firms. "As the demographics change with the retirement of mine founders and third generations joining the industry, uptake of automation is increasing in order to be more globally cost-competitive and gain more recovery out of processes," highlighted Mike Fedoroff, general manager at Hatch.

Referencing the advancement of artificial intelligence (AI) and its application to mine data to discern trends for better operation, Fedoroff continued: "The ability to store massive amounts of data coupled with the ability to search and analyze it for trends can be implemented for facility improvements. Uranium and potash are 100% exported commodities, so it is important to improve facilities for increased global cost-competitiveness."

Mining companies themselves are collecting ever more data as the number of technological devices on a mine site proliferates and its potential to drive efficiency is realized. Vancouver-based Motion Metrics helps mining companies by offering advanced monitoring technologies and AI to improve the longevity and safety of shov-

els, help spot missing teeth in loaders, and bring about rapid fragmentation analysis. The data points from its monitoring tools are then put on the cloud. “Connectivity to the cloud means things are no longer local. It brings more visibility to upper management and brings out a lot of dirty laundry. This puts pressure on our engineering team to continuously improve,” commented Shahram Tafazoli, president and CEO, Motion Metrics.

Whereas before companies were wary of putting data on the cloud, primarily due to security concerns, now there is growing demand for it, according to Warren Carvey, regional manager - commercial support, acQuire Technology Solutions. “Every mine now has sensors and drones capturing data,” commented Paul Whelan, managing director, acQuire North America. “All of this data needs to be organized in a better way as data can be more of a problem if is not managed and analyzed in an efficient manner.”

The Mine of the Future

With technology moving fast and changing important aspects of how mines are operated, it is a relevant question to ask where these trends will take the mining industry in the future and what this means for Saskatchewan and Manitoba. Mines of the future could have far fewer humans working on them compared with today. The speed of uptake suggests this could happen in the next 10 years: “Fully autonomous mines

“**The Internet of Things is becoming a buzzword but what it really comes down to is more people using devices they are comfortable with such as mobile phones and tablets which allow more accessibility of data. Currently a lot of decisions are made reactively but if data is constantly analyzed people will be able to make predictive decisions.**”

**- Paul Whelan,
Managing Director,
acQuire North America**

“will become a reality, given the speed of adoption of autonomous trucks in places like Chile, North America and Australia. People are still trying to work out how to have autonomous shovels but dozers are easier to automatize,” predicted Tafazoli. A large proportion of the mines in Saskatchewan and Manitoba are underground which are higher risk in terms of safety and usu-

ally higher cost, so there is a particular interest in improving the efficiency and safety of such mines, which is where automation can help. Epiroc, a global supplier of rock evaluation equipment, has been leading the way in automation for underground mines. “In Australia we have multiple units drilling autonomously. We have just launched our first cab-less rotary drill, which is entirely remotely controlled... Autonomous underground drills and having someone working remotely from above ground, is key,” commented Jamie Charland, regional manager – western Canada. “It also increases productivity; one person operating multiple drills, especially in remote locations, will be more productive.”

Hudbay is now using autonomous equipment underground at its Snow Lake mine. “They are recommissioning another unit to start next month. They love the safety factor for their staff underground and everyone who operates the equipment from the surface is very happy with its performance, remarked Joe Gilewicz, regional manager – midwestern Canada. “I can see it expanding rapidly at that site over the next few years.” With the mining industry recovering from the worst downturn in living memory, the incentive to improve efficiency should linger longer in the minds of mine managers compared with previous cycles. At the same time, the digital revolution affecting so much of the global economy is unlikely to leave Saskatchewan and Manitoba’s mining industry untouched, and could provide significant improvements in efficiency and safety. ■



BUILDING PEACE OF MIND.
DESIGN • ENGINEERING • FABRICATION • INSTALLATION

NORSEMAN
STRUCTURES
Fiercely Reliable™

ShelterSolutions
For You.
For Your Business.
For Your Peace of Mind.
norsemanstructures.com | 1.855.385.2782



Kevin Dow

COO NORSEMAN STRUCTURES

Could you start with a brief introduction to Norseman Structures and its history in Saskatchewan?

Norseman has been in existence since 1921. Its genesis was converting canvas materials into various products for shelter and protection of people, assets and processes. At that point in time, one of the business ventures the company got into was converting canvas material into shelters for mine exploration camps. So, Norseman has a long history of supporting the mining industry in exploration ventures. The company later evolved into

developing and offering a number of different covering products such as blankets to protect processes during construction and operation of resource extraction projects. This includes, for example, large structures built around drill rigs, material conveyors and product separator plants to protect workers and processes from the harsh environment during mining operations.

In 2010, Norseman purchased the assets of Cover-All in Saskatoon. This led to the merger of Norseman's knowledge of the mining and oil and gas sectors with a manufacturing capacity that could do larger and more sophisticated structures with greater design capabilities and more integration of diverse design elements. Since then, Norseman Structures has been very focused on supporting customization on the building structures that we offer to our customers, providing complex solutions to problems that might arise during the construction period. Our real specialty is to engage with the customer, determine their true needs and then work as partners so that we can deliver a complete customized solution.

Are there particular advantages in the use of fabric structures?

Working in many remote areas, the use of fabrics makes the shipping of these structures much easier and more cost effective. We can construct and manufacture the buildings in a relatively short period of time, typically less time than a pre-engineered building structure. We can erect them more quickly on site, meaning less time on site and fewer camp days. This is a major advantage for engineering firms that are managing projects for clients and also for the clients themselves because those camp days are very valuable.

Particularly when it comes to the mining sector, the true advantage is the versatility – we can very easily customize the design to match the processes or operations that need to be protected from the surrounding environment. The building can be transported via any means, whether by container, barge or on ice roads. We have many different foundation options when

anchoring the building to the site, whether it is concrete blocks, piles, screw piles, containers or even on rails if the building needs to be easily moved.

Is Norseman's business primarily in Saskatchewan or is there a broader geographic focus?

No, we do business from coast to coast in North America and globally as well. We actually have some buildings that are shipping in containers to Africa at this time for a mine operation there. Quite often we are not necessarily pushing into global regions as much as we are being pulled through our relationships with engineering firms and mining companies as they move into new regions. At other times, we are drawn to respond to RFP's where we recognize an opportunity to deliver a unique solution.

How great is Norseman's capacity to meet project demands?

We have a tremendous manufacturing footprint and are very well equipped to fabricate large complex building structures in a relatively short timeframe. We see significant opportunity within the mining sector, particularly with new ventures in Saskatchewan that are beyond the traditional resources typically mined in this region. We continue to be connected with the growth of the potash industry, but we do a lot of business in the uranium sector as well and would be happy to see stability return to that market.

What are the key objectives for the company going forward?

Our key objective is to develop new strategic partnerships that will help us accomplish the task of delivering complete shelter solutions for our customers. We will continue to focus on intelligence of design and precision of fabrication, but also expand our strength of project execution by bringing the right partners to the table. Through this strategy we will be able to successfully service any region in the world efficiently and effectively. We are focused on providing a cost effective solution for the customer, no matter where they are in the world. ■

Joe Gilewicz, Jamie Charland & Mike Ladouceur

JG: Regional Manager – Midwestern
Canada

JC: Regional Manager – Western Canada

ML: Business Line Manager –
RDT Division

EPIROC



JC



ML

The mining business of Atlas Copco is now Epiroc. What is the reason for this split?

ML: It is a complete split from Atlas Copco, rather than a rebranding. The mining business area of Atlas Copco represents approximately 25% of the entire entity. This new path will allow us to better focus and service the mining and civil engineering industries, as Atlas Copco is much more of an industrial based service company with many different aspects. To have a completely separate and legal entity allows us to focus solely on our business. We hear some people saying that they feel that this split is Atlas Copco selling off their mining business, but it is actually a way for us to better serve our customers, expand our offering, and to make strategic acquisitions that would fit well into our portfolio.

What are Epiroc's flagship products for the mining industry in Canada?

JC: Epiroc provides full-service solutions for the mining industry. Underground is our prominent focus. We supply smaller drills up to large rotary blast drills, and drilling for construction and larger mine operations. We also supply equipment for haulage, mucking, tramming, and production phase drilling. We provide the parts for the products and the consumables to go along with them. We also offer our technical knowledge and have a full after-sales support package to support our clients.

What stage of the mining cycle are you usually involved with?

JC: Epiroc is involved from beginning to end, and gets involved at the consulting stage, before pre-evaluation. Epiroc has expanded exponentially by acquiring new companies over the past ten years. It is always important for us to consider what more we can do for our customers, and we want them to see and understand the extent of what we have available.

Have there been any new innovations recently?

JC: Most excitingly, we have recently acquired Mobilaris, who are a leader when it comes to data services and communications. We have also been focusing on automation and working on projects like autonomous Scooptrams. Autonomous drilling on surface is a big part of the business. In

Australia we have multiple units drilling autonomously. We have just launched our first cab-less rotary drill, which is entirely remotely controlled. Our main goal is digitisation. Mining companies are very data rich but often struggle to use their data in a meaningful way. We want to be able to help our customers to use their data to do things like calculating trends, helping with preventative maintenance and optimising production.

Another very notable development is our battery-powered vehicles, which contribute to a safer and healthier work environment for those working underground. Along with lower running costs of the machines themselves, there are considerable savings to be had in ventilation and cooling.

Are there any exemplary cases of cutting edge technology being used already?

JG: Right now, we are working on diamond mines in the Northwest Territories where we started with our autonomous Scooptram programme, the ST14 - 14 tonne (8-yard class) loader. We have done articles and case studies with the company operating the mines. They looked at autonomy because they did not want to put their people in harm's way. Because of the location, situations like mud rush were a concern. Epiroc has been working with them for over ten years on developing this. We now have a Scooptram that is completely automated.

Regarding drills, HudBay has autonomous equipment underground at Snow Lake. They are recommissioning another unit to start next month. They love the safety factor for their staff underground and everyone who operates the equipment from the surface is very happy with its performance. I can see it expanding rapidly at that site over the next few years.

How will you capture growth in Saskatchewan and Manitoba?

JG: The account management team in the region is excellent at keeping in touch with customers and has been maintaining relationships even throughout the downturn. We are poised as the environment continues to improve to grow alongside our customers in Saskatchewan and Manitoba. We work with them on a grassroots level and get involved at the very beginning of a project. ■

Shahram Tafazoli & Jodie Davies

ST: CEO

JD: Marketing Manager

**MOTION METRICS
INTERNATIONAL**



ST

54

How has Motion Metrics progressed in the last year in its pivot towards artificial intelligence (AI) and deep learning?

ST: We have doubled our AI team which is split into those that handle the labelling of data, developing algorithms, developing software and quality control. Applied AI for tough mining challenges defines Motion Metrics. Our new product, BeltMetrics, carries out 3D sensing of rocks on a conveyor belt and for that we employ AI to do fragmentation analysis. We have had amazing results with this, beyond what we thought was possible. We use an AI engine both locally and on the cloud. On top of the conveyor belts, our 3D imaging and AI based solution determines the size of the rocks without making any assumptions, something which has been a challenge with conventional products.

Our bread and butter product is ShovelMetrics which has many modules including missing tooth detection, tooth-wear monitoring, rock fragmentation analysis and camera based surveillance. It is a distributed AI solution where, for each module, part of the processing is carried out inside the embedded computer onboard the mining shovel and part is processed on the cloud via our MetricsManager Pro software.

Can you provide any KPIs for how your products save cost and improve safety?

ST: Broken loader teeth can have disastrous consequences, sometimes bringing an operation to a standstill. Missing teeth often go undetected due to limited operator visibility. LoaderMetrics uses a rugged thermal camera and deep learning algorithms to continually monitor loader teeth and notify the operator when an incident occurs. Three hours downtime can equate to lost revenue of US\$400,000 which LoaderMetrics would save. If the tooth goes into the crusher it is also a big hassle to fix and dangerous.

PortaMetrics, which is a handheld 3D rock fragmentation sensing and analysis device, replaces a two-person job with a safer and faster one-person job. Our area surveillance solution also prevents accidents between shovels and other vehicles or people around it.

How receptive are mining companies to new digital technologies?

ST: Mining used to be very traditional but it is changing now. Mines are eager to show their stakeholder that they are forward-looking and budgets are being allocated to technology as they recognize it can make things more efficient and safer if it is allocated properly. Connectivity to the cloud means things are no longer local. It brings more visibility to upper management and also brings out a lot of dirty laundry. Miners are becoming a lot more open to putting data on secure servers on the cloud as long as it is done safely through a dedicated connection.

How different will a typical mine site look in ten years?

ST: The global economy has been limited to earth for too long now and we expect there to be a lot of innovations from space mining for the wider mining industry. We have been limited to a mere blue dot in the universe but maybe an asteroid has untouched platinum from billions of years ago. There are opportunities on the Moon, Mars, and the thousands of near-Earth asteroids. A good proportion of the asteroids are mineable for minerals and water.

JD: Space mining is unlikely to properly happen in ten years but almost fully autonomous mines will become a reality in the not-too-distant future, given the speed of adoption of autonomous trucks in places like Chile, North America, and Australia. People are still trying to work out how to have autonomous shovels and loaders. However, one of the key ways to get to space is if you have autonomous solutions on earth so once this is tackled space mining will become more possible.

What does Motion Metrics hope to achieve in the next three years?

ST: All our suite of products will have incorporated within them AI, as well as the ability for distributed intelligence on the cloud. We would like to see all the main equipment in open pit mines using our systems and all connected to secure servers. This includes shovels, belts, loaders, drones, drills, crushers and trucks. Our higher risk, higher reward goals have to do with space and autonomous mining but they will not be met in three years. We also aim to learn about cutting edge space technologies and bring them back to Earth to enhance mining operations. It is truly exciting times for us. ■

Warren Carvey & Paul Whelan

WC: Regional Manager -
Commercial Support

ACQUIRE TECHNOLOGY SOLUTIONS

PW: Managing Director

ACQUIRE NORTH AMERICA



WC

Why do mining companies use acquire Technology Solutions services?

WC: acquire provides geoscientific information management solutions with its GIM Suite mining software. This is a central repository for companies to store all their geological observations and measurements, carry out quality assurance and quality control and export the data to mine modelling packages for data interpretation.

What types of clients does acquire work with in Saskatchewan and Manitoba?

WC: We work mostly with larger mining companies, such as some of the biggest uranium producers.

What are the main technological trends driving the geoscientific information management business and how will things be different in five years' time?

WC: Traditionally mining lags behind in technological uptake but we have seen many more customers ask about cloud based solutions in the last few months, whereas a couple of years ago companies were very wary about putting data on the

cloud primarily due to security concerns. Another development is an increasing demand for data analytics, i.e. turning data into useful information.

PW: Another trend is that businesses are looking for a lot more efficient ways to capture data with things like portable devices in the field. Every mine now has sensors and drones capturing data. All of this data needs to be organized in a better way as data can be more of a problem if it is not managed and analyzed in an efficient manner.

What will we see in 2018 from acquire and the market?

WC: There are exciting things coming from acquire this year. Our software, GIM Suite, will be introducing a brand new interface which will come with a raft of new features and functionality for more streamlined reporting and dashboards, as well as integrating data capture from sensors. For the market in general, in 2017 the buzzword was 'cautious optimism' and now it is just 'optimism' as spending is increasing and commodity prices are higher. ■

55

Ritu Malhotra

Vice President of Operations

MARCH CONSULTING



Could you start with a brief introduction to the company?

We have experience in every potash and uranium mine in Saskatchewan; our core has always been sustaining capital projects. When the potash industry was going through a boom in 2007 to 2008, we were involved in a lot of the larger projects. During the downturn, our focus has been on smaller, sustaining capital projects.

Have you noticed a recent uptick in mining activity?

The last year has been a turnaround year in potash; we are seeing a lot more projects being talked about and work happening at different sites.

Could you elaborate on how March Consulting can support its clients?

We really are a multidisciplinary engineering firm; we can work on structural projects, mechanical projects, and electrical, instrumentation and controls. We operate

in two main verticals. The first is sustaining core capital projects for different mine sites. The second is prefeasibility and feasibility studies.

Have there been any recent developments on the technology front?

In a very recent project for K+S Potash, we designed a screening and compaction plant. Everything was assembled and fabricated, pre-planned and designed in 3D, so that when it was delivered to the site all that had to be done was the assembly.

Do you have a final message?

We are a smaller multidisciplinary organization offering a full suite of EPC and EPCM services, and that gives us the advantage of being agile on projects, big or small. We have always believed in looking for the best interests of our clients and we will continue to strengthen our relationships with existing clients and build long lasting partnerships with new ones. ■



Mike
Fedoroff

56

General Manager
HATCH

■ **Could you briefly introduce Hatch's Saskatchewan operations?**

Hatch has operated in Saskatchewan since late 2007, today employing over 100 staff members. Our Saskatchewan projects have mostly focused on the mining industry with some power, iron and steel and civic projects as well. Hatch's mining work mainly supports operations in the two primary mining industries in Saskatchewan: uranium and potash. Through the past decade, the business transitioned from large capital studies and projects to the commissioning and ramp up support for these projects. Most of our activity is now in sustaining capital and operational improvement projects such as de-bottlenecking and asset integrity initiatives to improve maintenance and reliability, increasing throughput and lowering operations costs.

Hatch's global center for potash excellence is located in Saskatchewan. Although more than 60% of our work is based in Saskatchewan, in the third quarter of last year, our team in Saskatchewan was involved in projects on every continent on earth, except Antarctica.

■ **How have Hatch's interactions with the mining industry evolved over the past few years?**

In Saskatchewan we are currently active at many sites with one of our largest being at the Mosaic K3 mine. Hatch is working on both stage 2 and 3 of this project. Over the last few years, the way in which Hatch executes projects has pivoted, moving from large capital projects to operational improvement and sustaining capital projects. Although smaller in scope, operational projects allow for closer integration with clients' operations teams. This integration is very valuable to both our clients and Hatch as it will be instrumental in future larger capital projects, and provides us with first hand insights into the needs of our clients operations teams and how we can better incorporate these needs into our services and designs.

Despite the depression of uranium and potash prices, there continues to be interest in these commodities, both for new mines and for improvements to existing facilities and their future. It is a good time for counter cyclical investment as there is an availability of high-quality construction and engineering resources, lead times in general have shrunk and the overall cost of execution can have greater certainty by avoiding premium costs. With a cyclical market, mines built in the

downturn will end up thriving as the market and prices recover.

■ **Hatch is an innovative company now moving beyond automation into machine learning and Artificial Intelligence (AI). How will these technologies impact the industry?**

As the demographics in our clients workforce change and third generation employees join the industry, uptake and implementation of automation is increasingly taking hold to enable mature mines to be more globally cost-competitive and gain more recovery out of processes. In the past, AI required a leap of faith as there were not many demonstrable examples of its benefits. However, with the advancement of AI and computing capacities over the years, this technology has become more accessible, enabling the mining of data to discern trends for better operation. Uranium and potash are 100% exported commodities from Saskatchewan, so it is important to improve facilities for increased global cost-competitiveness.

■ **How do you see a move to remote-control operations shaping mining activity?**

Uranium mines have started to use this technology to some extent, but it would be a paradigm shift for northern potash mining operations. It is not a new concept as it is used elsewhere in the world quite effectively in adjacent industries and commodities. Utilizing remote-control would therefore be a case of applying tried-and-true technology and practice to Saskatchewan. The benefits include decreasing employee exposure time on the highways – the most common source of lost time accidents in industry, or in air transport. Although Saskatoon is arguably known as the best mining camp in the world, the daily commutes consist of between two and about three hours of road exposure each day of work.

■ **What are the objectives for Hatch Saskatchewan over the next few years?**

Some key objectives include supporting our clients to capitalize on increasing operational performance through de-bottlenecking, the application of AI to the industry, improved automation, and exploring the use of remote-operating centers. We are a unique company, embracing this forward-thinking approach as we always have done through our history – we feel we are the most enthusiastic in the industry regarding these advancements. ■

Robert Fleming

President and CEO
TEAM DRILLING



■ **Can we have a brief introduction to the company's history and its main areas of focus today?**

We started the company in 2008. We are 50% First Nations Owned by a company called Athabasca Basin Development Corporation. We provide services for both surface and underground. We started off with one drill and one client in Northern Saskatchewan and we now have 31 drills. We are currently working in the Northwest Territories, but have moved around to work in Ontario and Labrador. Currently, most of our projects are uranium, however we do have some gold projects and we have worked in iron ore and diamonds before.

■ **How has the market in Saskatchewan been?**

There has been some tightness in pricing and downward pressure. Clients have their budgets and we just need to make

adjustments in order to partner with them and provide services. We were not hugely affected by the downturn like other companies were, as drilling underground is steady, year-round work. We did not diversify, instead we stuck to doing what we do best which is diamond core drilling. We have diversified from uranium into gold, but do not really have plans to diversify further.

■ **For the next 1-2 years, where do you want to take the company?**

We are always looking for new opportunities and joint ventures, whether with the First Nations or other drill companies. We are expanding our business in that way. We are driven by the market and the market seems to be changing, so we want to maintain our market share by doing a good job so that our clients are always satisfied with us. We want to provide a good, efficient, productive and safe service. ■

Rod Cyr

President
RODREN DRILLING



■ **What have been the key milestones in Rodren Drilling's development?**

At our peak in 2013, we were running 22 drills, but the recession stopped the industry in its tracks. We focus on surface drilling. In 2017, the company started to grow again. It has been a complete rebuild. Right now, we are running five drills and have purchased a soil sampling drill.

■ **How has Rodren Drilling tackled the exploration downturn?**

One of our responses is to develop new markets. We recently got involved in some construction, proving bed rock. We also did a large program doing tailing pond sampling, lake bottom sampling, and other very interesting jobs. Our strong reputation opens new business opportunities to utilize our capabilities. Nevertheless, the mining market is still very competitive in pricing and people are still cautious. We have seen an increasing number of re-

quests for quotations, so we are cautiously optimistic that the industry is picking up.

■ **Could you elaborate on Rodren's capabilities and service portfolio?**

We do diamond drilling exploration; we have five of these drills out right now. Although in the past we have worked across the globe, today we define our geographic scope as a 12-hour radius from Winnipeg. We therefore work mainly in Saskatchewan, Northwestern Ontario, as well as Manitoba.

■ **How strong is Manitoba's talent pool?**

The talent pool is currently somewhat depleted because many people left during the low cycle to pursue other careers. Not all of them are coming back. Many of the best people continue to work in this business but the industry needs to replace those that have exited. Training the younger generation will be key in filling this gap. ■



Roy Slack

58

President
CEMENTATION CANADA

■ ■ ■

Following almost 100 years of experience, what are some of the most recent developments at Cementation Canada?

Cementation Canada is a global group owned by Murray & Roberts Holdings Ltd. in South Africa. In the Americas, the group is active in Canada, the United States, Mexico and a number of countries in South America. Cementation Canada was established in 1998 and the group is celebrating its 20th anniversary this year. The company was awarded the 2017 Canada's Safest Employer Award for the natural resources sector and was a winner at the 2017 Disrupt Mining competition at PDAC as well.

About two years ago, the company purchased Merit Consultants International, a construction management group that works on mining projects around the world. Some of Cementation's services include concept feasibility, feasibility engineering, detailed engineering, mine construction, construction management and contract mining.

Could you elaborate on some of the new technologies coming into play in the mining industry?

In general, mining companies are starting to try out technologies like battery-operated equipment. The digitization of mines will bring forth unknown opportunities through a better understanding of operations and performance over time. Relative to other players, Cementation is advanced in its applications of virtual reality, which has some engineering applications in terms of constructability and review. This technology could facilitate remote training and provide other helpful features to the industry.

Injection hoisting is starting to gain some traction from public exposure and in general we are starting to see greater willingness from the industry to try new, potentially-impactful technologies.

How large a focus are Saskatchewan and Manitoba for Cementation Canada?

Cementation has a great history in both provinces and some of the large potash mines were supported by the company from day one. In Manitoba, Cementation has been involved long-term with Hudbay and Vale and continues to actively conduct work and studies in both provinces. With a substantial internal engineering group, Cementation performs detailed design en-

gineering and study work. These provinces have historically been very strong ones for the company, so it continues to work there.

Cementation is very innovation-focused. Could you provide some insight into a project that the company is particularly proud of?

An innovative application that has gained great success is borehole hoisting. Cementation worked closely with the mine owner to design and build this hoisting system at the Young-Davidson mine in Ontario, where a vertical raise borehole was pulled to 5.5m in diameter instead of drilling and blasting a shaft. The mine is now operating at 8,000 mt/d through the borehole-hoisting system from 1000 meters deep, and the shaft is currently being extended to a final depth of 1500m. At the scale it is presently operating at we believe it is the first of its kind in the world. This system cut capital costs in half and proved to be a great solution for the client. Other groups have shown interest in borehole hoisting since its success and we feel it has wide application particularly in existing ramp access mines which are going deeper.

Cementation Canada operates around the world. Are there any specific considerations in Saskatchewan and Manitoba that are not typically found in other regions?

Potash is a specialty market and hence requires strong technical support. Similarly, uranium is not a typical ore and certain federal regulations apply to it.

Where do the main opportunities lie for Cementation Canada?

Cementation Canada is involved in every province and territory in either current or recent projects, across most resources. The company is focused on the project life cycle and aims to expand its services to be more holistic. While there is no immediate plan to open new branch offices, there is much interest in joint ventures with potential for acquisition. We view strategic acquisitions as opportunities to add to the services we provide and then provide them on a global basis. We also consider acquisitions that could advance us more quickly in a certain geographic market. In case of an upturn in the industry, we insure we have the capacity in place to support our clients as they experience the change. ■





Corrie Pitzer

60
 CEO
 SAFEMAP INTERNATIONAL

What events led you to set up SAFEMap International?

Initially, it was the death of a person on a mine in South Africa where I was an HR manager. I visited the family of the deceased and experienced first-hand the impact of tragedy on a family. Four weeks later another death occurred and I visited this family with the mine manager; an experience that had a significant impact on us both. From this visit he developed a vision for safety on the mine, which was something beautiful: that the most important to come out of the mine are the miners. After this, miners at the deepest stope knew that their safety was important to the manager, and this represented a change in the culture of the company.

Ten years later I founded SAFEMap in Australia, and in 2007 I moved the company to Canada.

What are the psychological underpinnings behind SAFEMap's services?

We start with a mantra that a company's culture will trump its system every time. I have been working on defining culture for 25 years and I still do not completely understand it and would challenge anyone that says they do because it is a dynamic influence that lives in the perceptions of people and changes all the time. The best way to describe it, is what someone does when no one is looking; they act based on their perceptions of what is required and permissible.

I worked 2km underground in a platinum mine and got to understand how underground miners perceive their world. In such mines people act based on their perceptions of what they must do rather than rules. It is important to understand people's intuitions and we measure this through an anonymous survey using a forced choice technique. It is a huge shock for organizations to see how their employees really act and think and this methodology leads to very different results to the standard questionnaires used in typical surveys.

How do you change culture within an organization?

It boils down to leadership's vision of safety; a vision can be very vital to a culture

when everyone knows about it, or completely useless if people do not care about it or they do not even know what it is. We go to organizations and ask employees why their employers want them to be safe and get very interesting answers; most of the time they answer that their companies want good safety records, very seldom do they answer that it because the company cares about their safety. This is where you really find out about the culture of an organization.

We cannot change culture without changing our thinking. Once leadership has changed their thinking, supervisors must then make that change a reality; supervisors are crucial. Organizations must also change their systems because these have a huge influence on people's behaviors. A common example is discipline for safety mistakes: if we look upon these mistakes as a result of bad behavior then we discipline that person but that damages the culture of an organization deeply. RISKmap focuses exclusively on the systems within an organization, whilst SAFEMap is focused on an organization's vision, leadership and culture so the one follows the other.

What are the extent of SAFEMap's business in Saskatchewan and Manitoba and what is the safety culture generally like there?

In Saskatchewan we have worked for Potash Corporation and BHP Potash. In January 2018 we completed a culture analysis for BHP Potash and they are now deploying our findings and recommendations.

How will automation impact safety?

Automation and artificial intelligence can add a lot of value through the reduction of people exposed to risk but it will not give us the moral decision making power that is the basis of safety. We are creating complexities in technology so that when something goes wrong it could be catastrophic. In the long term, we may see a dramatic increase in such events due to the concept of tight coupling: there are a lot of steps in the production process and if one goes wrong there is not enough time to recover mistakes. ■

Jay Fitches

Operations Manager
ASSET SECURITY AND PROTECTION (ASAP) SECURED

Could you briefly introduce the company and elaborate on where the Manitoba operations fit in?

ASAP Secured was founded in 2000 as a security company responding to insurance situations such as fires and floods. The company began by offering a two-hour insurance response and has grown from there to include static security and is heavily expanding into the retail business. ASAP handles Vale's Manitoba operations and has managed its first mine, Thompson, for the last seven years. ASAP's mining business is growing through its industry knowledge and hopes to grow further in this vertical.

Are there particular aspects of Manitoba legislations that companies might find challenging?

Every jurisdiction across Canada has different legislative requirements, especially for security. The biggest challenge in Manitoba is its unique requirement for a child-abuse registry check. This is an enhanced background check consisting of an application process with identification. It can take up to three months to obtain the results, and the applicant cannot obtain a license until the results are received.

ASAP can assist companies in meeting this requirement faster through its electronic application service that receives the results in about two to three weeks.

How do factors like the introduction of new technologies and remote controlling impact ASAP's work?

Technology is not perfect, and failing at the wrong time could be catastrophic. Therefore, ASAP must develop different ways of managing traffic control on-site to make sure people are paying attention.

Has ASAP noticed an uptick in quotation requests for mining companies in Manitoba?

The future is definitely looking brighter for Manitoba in particular. ASAP has noticed more interest and has had some conversations with exploration companies looking to move into production. Manitoba's mining industry has good consistency and potential for long-term growth. It is good to get in on the ground floor and ride the wave. Security is also a very consistent industry when it comes to mining and happens to increase in times of no production. ■

Duncan Patterson

Sales Manager
ON2 SOLUTIONS



Could you briefly introduce ON2 Solutions and the reasons behind the rebranding from RANA?

In April 2016, RANA sold its manufacturing division as the company had decided to move in a different direction. The manufacturing division, which consists of mine refuge and oxygen concentrator businesses, was purchased by a partnership of local entrepreneurs. ON2 Solutions derives its name from the oxygen and nitrogen-generation systems it designs and manufactures, as well as the breathable air solutions and Underground Refuge Chambers known worldwide as the "Tommyknocker" and the "Refuge One Air Center".

Where does the company find most opportunity geographically?

ON2's business is well established here as we are Canada's only OEM of Mine Refuge Chambers and breathable air centres. As we continue to refine and update our products we are finding that mining companies across the country are reaching out to us for pricing and availability. We are confident that this trend will continue to the point where we are Canada's leading supplier of mine refuge equipment. Through strategic partnerships and

global manufacturing/distribution networks ON2 has begun to expand into the international marketplace. We believe we offer a competitive and simple to use system that will appeal to mining companies globally.

Have there been any recent changes in attitudes towards safety in the mining industry?

Our customers appreciate the "Made in Canada" label and the strict safety regulations that the Canadian and provincial government require. These strict standards allow ON2 to provide a product that meets or exceeds international safety regulations.

What are some of the key considerations when building a refuge chamber system?

When designing a refuge chamber for a mine it is important to understand the local conditions where the chamber is to be installed, ambient temperatures of the mine area at different times of the year, and what type of mine it is. The mine itself needs to determine the number of miners working in the area of installation at any given time, as refuge chambers must be able to accommodate the maximum number of people in that area. ■





Financing Environment

"Gold is a monetary asset so it competes with currencies for investor interest. Russia and China have been accumulating significant amounts of gold as they want their currencies to global reserve currencies, backed by gold. Overall, there is only one way to go for gold and that is up. There is much opportunity in blockchain, the technology behind bitcoin, but bitcoin itself is ephemeral and has no intrinsic value so its impact is dependent on widespread adoption by mainstream consumer and retailers."

- Gorden Glenn,
Chairman, President and CEO,
Minnova Corp



Brady Fletcher

64
 Managing Director
**TSX VENTURE EXCHANGE
 (TSXV)**

How do you explain TSXV's leading position in raising junior mining finance?

TMX Group's equity exchanges, the Toronto Stock Exchange (TSX) and TSX Venture Exchange (TSXV), are involved in projects all over the world. There are approximately 5,700 projects being worked on by the exchanges' listed issuers, with over half of those being international projects. We are a truly global destination for international mining companies to be financed, explore, build and grow with us. Our leadership position has been reached because of an ecosystem with the risk appetite to finance companies from inception through production. This ecosystem has an innate ability to identify opportunities and develop matrix that allows our capital markets to measure those opportunities and make investment decisions. This goes all the way back to how we have defined things like the National Instrument 43-101 standard, which now serves as the basis for mining disclosure around the world. Our markets have a long-standing track record of identifying opportunities at early stages.

What are the reasons for the TSXV's focus on quality of issuers?

Our capital markets have helped some of the world's largest and most successful mining companies get to where they are today. As a result, almost half of the world's mining financing happens on the TSX and TSXV. We are consistently ranked first globally for mining financing, with over C\$8.5bn raised for mining companies in 2017.

TSXV's focus on quality companies and transparent disclosure enables our listed clients with access to global pools of capital. Canada shares the world's longest border with the United States, making it much easier for every US institution and family office to trade through TSX and TSXV. In fact, this focus on quality results in our markets being a destination for capital from around the world, with over C\$52.9bn of net foreign inflows to TSX and TSXV listed equities by the end of November 2017.

Where do you see most opportunity in Manitoba and Saskatchewan?

One of the most interesting dynamics we have seen in the past year is the convergence of mining with trends like electric vehicles, electrification of developing nations, and feeding a global population. Fol-

lowing the merger of Potash Corp. with Agrium, Saskatchewan is now home to one of the world's largest fertilizer companies. While there are 11 companies listed on TSX and TSXV with headquarters in Manitoba and Saskatchewan, there are 81 companies that have active properties in the area.

Manitoba and Saskatchewan are very interesting regions, not only because they have vast resources, but also the deep pools of highly skilled labor. This is even more the case after the merger of Potash Corp and Agrium to form Nutrien.

What are the main challenges to raising finance for mining companies in Saskatchewan and Manitoba?

In Saskatchewan and Manitoba very big players dominate the market. They are spending a lot of money and this makes it more difficult for smaller companies to get started when you have that kind of dynamic going on. That being said, it does create a natural exit strategy.

Do you think financing of marijuana will take financing away from junior minors and where else will TSXV try to attract financing from going forward?

Anything that brings capital into the junior capital markets has a positive impact across all sectors. It brings new attention on junior markets because people are making money again. We just finished looking at our Venture 50 list for last year where we recognize the top 10 companies from five different industry groupings and, for the first time in the history of the awards, the performance across all five industry groupings has been almost uniform; we have never seen such a balanced list. It is a good indication of the broader health of the market.

While marijuana and blockchain may be dominating headlines currently, mining accounted for 52% of the proceeds raised on TSXV last year. Of the C\$6.1bn worth of financing, C\$3.2bn went to mining companies. We are the world's pre-eminent venture stage financing platform. While mining will always be a focus for us, we are actively working to attract international pools of capital, and companies using the structures, like our Capital Pool Companies and Reverse Take Overs, that have successfully allowed some of Canada's largest companies to list early and grow with TSX and TSXV. ■

Barrington W. Miller & Mark Francis

BM: Director

MF: Senior Advisor

CANADIAN SECURITIES EXCHANGE



BM

CSE has had a record-breaking year. What has it succeeded in achieving, specifically with the mining industry?

BM: The keys to our success have been our growth as a stock exchange and gaining visibility, acceptance and recognition. It also helps that the market itself is growing. We have more legitimacy now as people can see we are a good and reasonable way to gain access to the public markets. We have a simple formula: we stay out of board rooms and let companies keep their money.

MF: Because we do not involve ourselves in board decisions and we do not tie companies up in regulations, they are able to respond very flexibly and execute on deals rapidly. They are able to take advantage of opportunities very early in a cycle. As a consequence of our policy model we now have mining companies in production, whereas before they were all still in development.

How has your performance related to Saskatchewan and Manitoba?

MF: In general, Saskatchewan has been very healthy while Manitoba has struggled due to its government which has made it difficult for the mining industry to do business. Now Manitoba has changed its government but they still have the serious challenge of repairing the operating environment. In Saskatchewan, both political parties have been very constructive with the mining industry.

Copper Reef, which is listed on the CSE, has an interest in the McIlvenna Bay deposit, and Murchison Minerals on CSE has the Brabant Lake zinc district, which has never produced but they have the entire belt and it could eventually host several deposits. In terms of precious metals, Manitoba has a lot of gold potential that is being explored. Saskatchewan has seen an increasing spotlight on their gold resources because of the discoveries by Brian Skanderbeg and his team when he was at Claude Resources.

What are the requirements for mining companies to be listed on CSE?

BM: For all of our companies they need a minimum 150 shareholders and C\$200,000 working capital or enough to sustain their business for a 12 month period. They also need a 43-101 report as well as a minimum \$C100,000 spent on the property over the last three years for the phase one. Essentially they need to have a viable business; that is our main requirement.

Why would a junior mining company come to CSE instead of the TSX Venture Exchange (TSXV)?

Companies list on the CSE because of our simplicity. Our policy manual is only 60 pages long compared to about ten times the size of that at the TSXV. We are not intruding in companies' corporate decisions, so as long as they are engaging in arm's length transactions we do not subject them to evaluation reviews. We believe the shareholders are backing the judgement of the management not the judgement of the exchange. The CSE will cost them less, means they can execute faster and more expeditiously and they are less likely to miss a mining financing window which can close very quickly.

How will cannabis and blockchain affect the availability of capital for miners?

MF: The major mining companies are currently looking at how blockchain can be used as a business tool to advance their projects. It will also probably be used for expediting the closing of agreements, because blockchain allows for faster closing and affirmation for each condition that is acquired. An ironic twist about cannabis and mining is that one of the very first grow operations was formed off the back of an underground mine that was no longer producing in Flin Flon.

For 2018, how is CSE going to attract more juniors to list on your exchange?

MF: We are going to keep doing what we have been doing because it is working. We are growing and our competitor is shrinking so we are going to keep going.

BM: The biggest testaments to the success of our exchange are the companies themselves. We have a monthly progress report on our website where companies can display what they have done each month and it has become the number one liked feature on our website. This is an example of how we are differentiating ourselves from other exchanges. ■



David Hodge

President and Director
ZIMTU CAPITAL CORP.

Can you provide some background on Zimtu Capital's role in the junior mining industry?

Originally we started a company called Commerce Resources from flow-through money we had raised as an internet privacy business. We then created nine companies on what is now the Canadian Securities Exchange. As well as creating companies, we generate new exploration opportunities and have a series of partners globally that help us acquire properties and market them to other juniors. We have also developed a cooperative marketing program called The Zimtu Advantage which allows companies to pick and choose what marketing they would like to be involved in and pay a percentage of the cost.

What is your geographic focus?

We look for resources wherever there is opportunity. We are focused on North America but we have a lot of European and some Australian contacts. There are some countries we shy away from due to them being in conflict areas, such as where some tantalum and cobalt resources are located.

Where do you see most opportunity across resources and in Saskatchewan and Manitoba?

Manitoba's lithium and cobalt reserves have much potential. One of our companies, Far Resources, has a property in Manitoba focused on lithium and has been very successful on the stock exchange and on the ground. It is led by a very dedicated management, which is an important factor for Zimtu. There is some glitter in the diamond industry in Manitoba; we do not have a property in it there but have our fingers in it, although the diamond sector is pretty tough right now. For Manitoba and Saskatchewan, potash and uranium are certainly on our list. Zimtu tries to stay ahead of the commodity game. Before they become popular is where there is real opportunity. Commodities like uranium and potash are at the bottom of the market

so we need to make deals on these now.

If you are too far ahead of the curve you acquire ground you cannot do anything with as you cannot finance it but if you are behind it everyone else has the good spots. Timing is what it all boils down to. We made the right call on lithium twice: there was an initial boom in the early 2010s and another that started a year and a half ago, both of which we foresaw. We have made eight lucrative lithium transactions. We made the same call on cobalt which has a bright future but has not had its day in the sunshine yet as the investor community has not responded as readily to cobalt as to lithium. We still expect the cobalt boom to come.

What criteria do you look at when assessing potential projects?

The number one criterion is whether we or a company can raise money. It is not our decision but the decision of the investment community. Without money you cannot do anything. Right now it is possible to finance lithium and cobalt whilst gold and copper are harder and uranium and diamonds close to impossible. However, uranium and copper will have their day in the sunshine again. As important as financing is the management team. If you get the right management team and the wrong project you will be fine as they will turn around and find the right project; but if you have a good project and a bad management team it will not work.

Do you agree that junior activity is picking up in Saskatchewan and Manitoba and do you plan to make more investments into the provinces in 2018?

This is definitely the case and we will be making more investments into these provinces. We have a lot of experience in the Prairie Provinces. By the end of the year we hope to have isolated opportunities in lithium, cobalt and potash and to have matched those up with a junior exploration companies that understand the bottom of the market is the best time to invest. ■



Lisa Davis

CEO

PEARTREE SECURITIES

Could we start with an introduction to PearTree Securities unique services?

PearTree Securities Inc., a subsidiary of PearTree Financial Services Ltd., is an exempt market dealer and a specialized fund manager. PearTree created an investment platform for high-net-worth Canadian clients to access the tax benefits available in resource exploration and development activities funded through the issuance of flow-through shares, for the ultimate purpose of lowering their after tax cost of philanthropy. The PearTree format is well-known in Canada and our goal is to grow market share, retain and grow trusted relationships and expand the market through adoption of this financing platform by international investors.

Our format is well poised to expand the universe of capital sources, bringing a unique value proposition directly to a worldwide investment community. In the past two years, we have done over C\$500 million

in flow-through share financings. Right now, if you look at the capital available for Canadian exploration in particular, it is largely financed through the flow-through share regime. Our firm is the single largest source of that capital.

Why do you focus predominantly on the resource sector?

Flow-through financing is only available if the funds that are raised are used in the resource sector. We began in mining and spend most of our resources on it but have also expanded into oil and gas. Our platform also works for certain renewable energy expenditures. The Canadian government is getting behind renewable energy, so we will be seeing more of that in the future.

In a 2017 PDAC survey 80% of juniors stated that flow-through financing was essential to their success. Why is the system so important for them?

The risk level involved in making an investment in an early stage exploration project is high. There has to be some form of incentive for getting people to invest in this sector at the early stages. After almost 50 years, the flow-through share tax regime is well-established.

There is a limit on the pool of capital that investors are willing to put in to very high-risk investments. The recent PDAC survey demonstrates that projects would find it very hard to get off the ground without flow-through shares. Exploration companies generally cannot attract capital until they get closer to commercial production without being able to offer the tax benefits associated with flow-through shares to mitigate the risk.

How has the charity sector reacted to the flow-through share system?

With a 10 year track record, the flow-through share donation format is a very well-accepted major gifts format for Canadian philanthropists. We help charities

immediately receive the full amount of funds pledged by their donors. We do this by completing the share subscription, donation and sale over the course of a single day. Flow-through shares provide the only opportunity for philanthropists to significantly increase the size of their gifts to really transformational amounts, accelerate their pledges, as well as see their money doing good work in their lifetime.

Some have criticized the flow-through share regime as being of limited value because it does not cover administrative costs. What would you say to this?

Our tax authorities have been very specific in providing categories of expenditures that can be covered by this funding and those that cannot. The criticism is valid. The reality is that there are expenditures associated with exploration that are not actually drilling holes in the ground but without which you could not succeed. Things are improving. The categories were expanded a little in 2015, so now, for example, certain community consultation and environmental assessment work can be included.

What are the key priorities for PearTree Securities in Saskatchewan and Manitoba and further afield?

Certain things are commodity price dependent, with Saskatchewan and Manitoba being no different. We need to find those investors who can see that PearTree provides a unique opportunity for a transaction that has better value at all stages of the commodity cycle. There are very few ways to de-risk potential projects at the early stages. PearTree provides an opportunity for non-Canadian investors to get involved at that early stage in a way that mitigates risk through improved deal economics and better opportunities for follow-on financings. There is no other way for investors outside of Canada to participate in flow-through financings so Canadian firms need to get their stories out beyond our borders to attract investment. ■

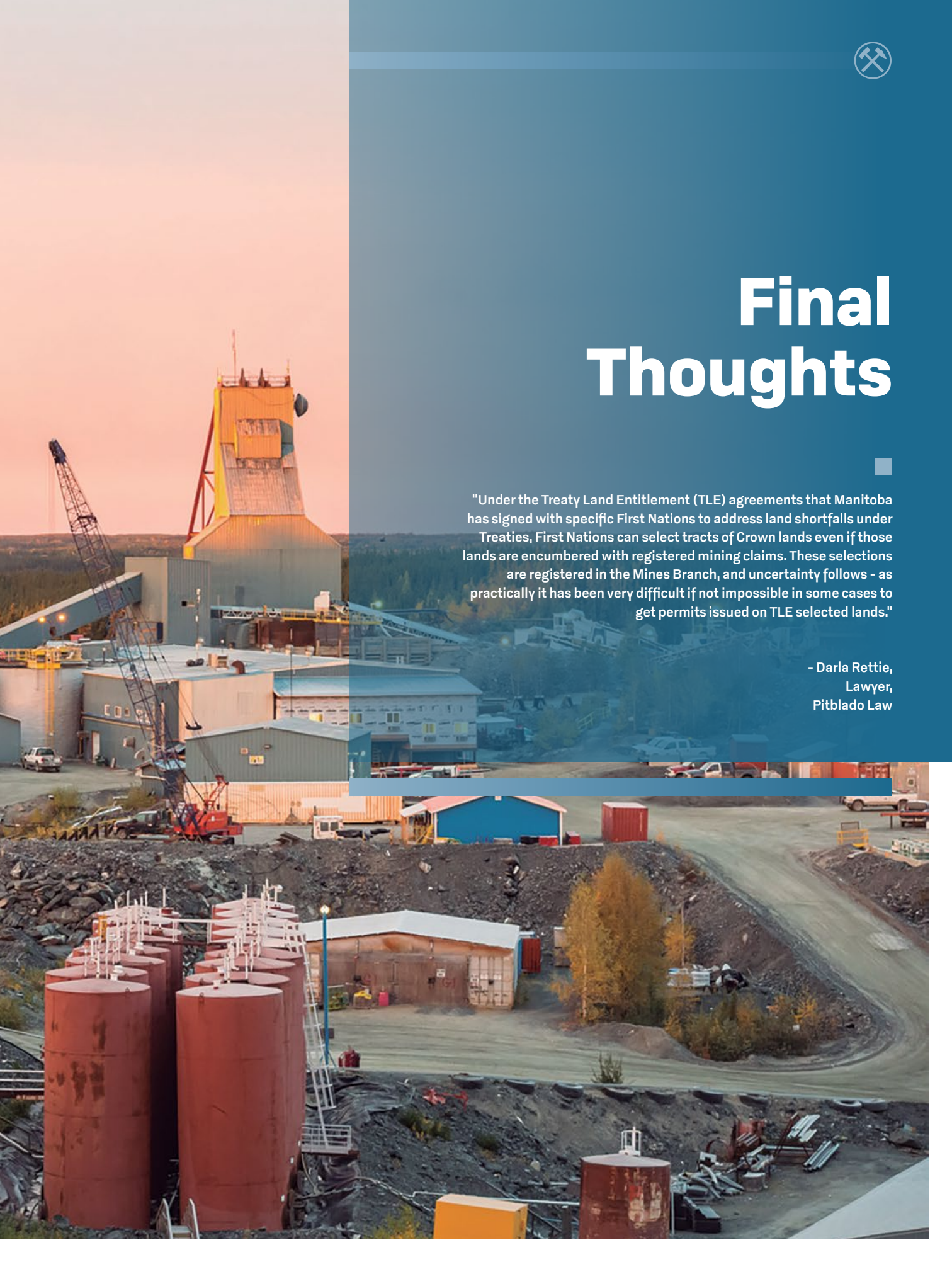




Final Thoughts

"Under the Treaty Land Entitlement (TLE) agreements that Manitoba has signed with specific First Nations to address land shortfalls under Treaties, First Nations can select tracts of Crown lands even if those lands are encumbered with registered mining claims. These selections are registered in the Mines Branch, and uncertainty follows - as practically it has been very difficult if not impossible in some cases to get permits issued on TLE selected lands."

- Darla Rettie,
Lawyer,
Pitblado Law





Fred R. Pletcher

Partner and Chair, National Mining Group
**BORDEN LADNER GERVAIS
 (BLG) LLP**

What services does BLG provide to the mining industry in Canada?

We are a full service Canadian commercial law firm and with mining being one of Canada's major industries we have many lawyers dedicated to this sector. BLG is one of the largest firms in Canada with 750 lawyers and about 60 of them work on mining in some form. Most of the companies we work with are large public companies listed in Canada. However, our work is not just restricted to Canadian mining endeavors because many of our Canadian clients are active around the world. 65% of our work is in Latin America and we also do work in places like Central Asia and West Africa. In Canada we have done a lot of work in Saskatchewan; with two major clients being K+S and Cameco. We have also worked for a variety of companies active in other commodities like potash, gold, and diamonds. Additionally, we do a lot of security financing work for junior companies.

Is there an exemplary case of your work in Saskatchewan you can share?

Our work with K+S stands out. K+S' Bethune Mine, which opened in May 2017, was the first new potash mine in 50 years. In connection with this, K+S also recently opened its new potash handling and storage facility at Pacific Coast Terminals' Port Moody terminal, in Vancouver. The new mine was an extraordinarily large commercial endeavor given it was the biggest and most capital intensive mine built in Canadian history. The build spend was C\$4.3 billion and the project was delivered largely on time and on budget. It is a sea change for Saskatchewan given that such mines produce enormous quantities and have a very long mine life, with Bethune's expected to be 42 years and with opportunity to extend this with mine expansion so that 100 years is well within the realm of possibility.

K+S looked at Russia, Ethiopia and Argentina but chose Saskatchewan. They had been in the province in the 1950s when they built the Lanigan mine, Saskatchewan's largest. The mine was nationalized by the New Democratic Party (NDP) in the 1970s and K+S were paid a paltry amount for it. Therefore, when K+S assessed Saskatchewan with other jurisdictions they were nervous about political risk but then realized things have greatly changed since the 1970s. Indeed, the first act of the current administration was to announce that they would never nationalize the potash industry. Therefore, it is a good news story for Saskatchewan.

What other governance aspects make Saskatchewan an attractive mining jurisdiction?

The Saskatchewan government is on time with permits, which is not the case in most jurisdictions in Canada or the world, and on was on budget with every permit K+S needed to move forward. They were extremely cooperative and pragmatic in assisting the company. Across Canada there are often difficulties in building new projects, especially large ones, in terms of land claims by First Nations. In British Columbia it is a particular issue because the government never entered into treaties, except for one, with local indigenous peoples. Saskatchewan has treaties and K+S were very pleased by the supportiveness of the First Nations there of their development, as long as there were environmental protections in place. K+S put in

programs to help with youth unemployment and the only regret it has is not being able to fill all the positions they set aside for First Nations.

The government did threaten to review potash royalties, a significant source of revenue, which were due for a refresh. To its credit, when they realized the negative message it would send, they backed off. There are many other governments in Canada which are not so pragmatic. Saskatchewan's approach to regulation is very transparent and there is an open-door policy where businesses can easily talk to decision makers. For example, within three hours of announcing they would open a mine in Saskatchewan K+S met with the Premier of the province. In contrast, it would take six months to get a meeting with a mayor in Germany, where K+S is headquartered. No other jurisdiction is as responsive to the needs of business as Saskatchewan. The winds may change if another party takes over. However, even NDP governments over the last 15 to 20 years have been less in favor of state ownership of resources. Indeed, the former NDP finance minister is the assistant general counsel at K+S and in charge of government relations.

What services did you provide to K+S?

Originally K+S acquired a public company that held mining properties so we assisted with that acquisition and then we assisted them with everything they needed in terms of setting up a business, such as advice on labor and tax and corporate structuring. Then when the project was being developed we helped them on engineering and construction legal issues and their significant rail transportation contracts. We also assisted them with the selling of potash internationally, such as through Koch Industries in the United States.

How advantageous are the flow-through system?

It depends where we are in the commodity cycle but generally speaking there is some tax advantage in exploration and a little less associated with development. In the past there were many companies that sold tax-incentivized shares at the significant premium but come November each year they struggled to find money to return to their investors. So it is certainly not perfect but it allows juniors to provide investors with some added protection through tax exemption. ■

Darla Rettie

Lawyer

PITBLADO LAW

Could you tell us about your involvement with both resource companies and indigenous people?

My practice area is focused on indigenous commercial law. We represent First Nations, their commercial entities and tribal councils that are interested in engaging in the resource sector through partnerships, joint ventures, option agreements, purchase and sale of mining claims, etc. We also work with resource companies that want to engage with First Nations to draft memoranda of understanding and other sorts of collaborative agreements. We act as legal counsel for various lenders and trust companies that are involved in these kinds of opportunities, so we have a holistic approach considering all integrated stakeholders.

What is the current framework of understanding between the different parties?

Industry is coming to the understanding that they are part of the current reconciliation process in Canada. As such, they have an obligation, both financial and ethical, to engage respectfully and in partnership with the indigenous communities that live in the areas where they do business. In the past, industry typically saw this as a 'nice to do', they now recognize that this is the starting point to build a solid business.

Many Indigenous communities want to be project owners, whether it is through revenue-sharing agreements or other sorts of partnerships. To that end, resource developers need to understand how Indigenous businesses access financing, and how First Nation settlement trusts can leverage capital, as well as the practical politics behind decision making processes. It is smart business in 2018 to look for Indigenous groups as viable partners, not just as groups that need to be accommodated.

What are the permitting hurdles affecting Manitoba's exploration and development sector?

In other provinces like Ontario, the government has transferred much of its obligations to consult to industry. Here in Manitoba, the Mines Branch engages with potentially impacted Indigenous groups. The process Manitoba currently uses has proven to be time consuming and frequently ineffectual for both industry and First Nations alike.

To illustrate this: although the Mines Branch consults with Indigenous groups, it is the Department of Conservation that ultimately issues soil sampling permits and drilling permits, with recommendations from Mines Branch, and with input from Manitoba's Aboriginal Consultation Unit as well. Implementing a new timely and meaningful consultation process is job #1. But effective consultation is not enough, it is just one leg of the stool that underpins the success of the industry. Manitoba also needs viable and transparent permitting processes, and a viable and transparent regulatory process that addresses competing interests at all stages.

Could you give us a particular example of how permitting can go wrong?

Under the Treaty Land Entitlement (TLE) agreements that Manitoba has signed with specific First Nations to address land shortfalls under Treaties, First Nations can select tracts of Crown lands even if those lands are encumbered with registered mining claims. These selections are registered in the Mines Branch, and uncertainty follows - as practically it has been very difficult if not impossible in some cases to get permits issued on TLE selected lands. This uncertainty puts a drag on development. In summary, Manitoba has not come up with an effectual way to address pre-existing mining claim interests on TLE selected lands, and negotiations to resolve matters have led to significant stalemates. You have mining prospectors and exploration companies with legal rights under The Mining Act, and then you have Indigenous groups with land rights under TLE agreements, over the same piece of property. This is something that the government needs to square up.

What steps is the government taking to allow for exploration activities to pick up?

The main issues affecting mining in Manitoba are consultation and regulatory issues. We understand the government is currently working on a Mineral Development Protocol with First Nation representatives. We are hopeful the logjam on early stage exploration will be broken over the next year, and then we will see an increasing influx of money to the industry. ■

Final Thoughts

Eric Anderson

EXECUTIVE DIRECTOR,
SASKATCHEWAN INDUSTRIAL &
MINING SUPPLIERS ASSOCIATION

Could you talk us through the guidelines of SIMSA's aboriginal inclusion program and outline some of the highlights?

There are several reasons why we pioneered these guidelines. On a practical level, about half of our population entering kindergarten is aboriginal and so we want to foster an environment in which, when these children leave high-school, they are able to get jobs and contribute to society in a meaningful way. Secondly, there is a constitutional treaty which includes a legal obligation. Thirdly, there is a moral motivation to realize a means for prosperity across the population, rather than just a narrow segment.

The mining sector has done an incredible job of hiring a large number of aboriginals – Cameco is Canada's largest employer of Aboriginal people. Many Aboriginals are now receiving value through profits from treaty-lands (via the TLE process), which have granted them large sums of money to purchase land and invest. It becomes a win-win situation because many of these communities go on to develop their land and/or invest in various mining projects with their funds. We have an event coming up which will cover various bands and their investment interests. We also encourage companies to work towards aboriginal engagement or at least support initiatives.

Jeffrey Kowall

LAWYER

Sheryl Rosenberg

LAWYER,

THOMPSON DORFMAN SWEATMAN

How does permitting work for mining projects in Manitoba?

SR: Aboriginal relations are now integral to obtaining permits, both at a provincial and federal level. In Canada there is a constitutional obligation to determine whether communities are exercising aboriginal or treaty rights in areas of mining interest, followed by an information-sharing process that leads to mitigating the impacts of this activity and accommodating those aboriginal rights. Here in Manitoba, we have an Environment Act that requires any mining

development to have an environmental license before beginning operation. This applies only to a mine, not to early exploration. The licensing process begins with the collection of baseline information, includes an environmental impact assessment with public consultation, and concludes with the issuance of a license that governs the whole mining operation from construction through closure.

What are the main challenges throughout the process?

JK: Companies need to be aware of the regulatory process in terms of the acquisition of mineral interest rights. Staking claims is fairly straightforward, but anything beyond the initial exploration can be an obstacle because there is not much companies can do in terms of ramping up operations without first dealing with the permitting.

Norman Snyder

MANAGING PARTNER

Donn Pirie

PARTNER,

TAYLOR MCCAFFREY LLP

What are the advantages and challenges of Manitoba for mining?

NS: Manitoba has great resources and a qualified workforce. It is also centrally located. The challenge is that the resources are not necessarily located close to transportation infrastructure. The rail line into Churchill is going to be an issue that will impact some of the mining development that is happening in the north. On a different note, the mining industry and the indigenous communities are still getting to know each other and seeing how it all is going to play together. The industry needs to embrace the consultation process and realize that it is not going to go away.

DP: There is a bit of distrust between the industry and First Nations groups. For the First Nations, whenever people come along to do development on their land, they have the feeling that they have already seen that before and it did not work out well for them. On the other side, there are industry leaders that have been working on a project for 20 years, spending significant amounts of money, and they perceive that the First Nations are dragging their feet over the consultation process. Overall, the whole federal consultation process seems a bit amorphous. There have been supreme court rulings going in different directions, so that creates a bit of uncertainty country-wide, not just in Manitoba.

COMPANY/ INSTITUTION	WEBSITE
Producers	
Cameco	https://www.cameco.com/
Denison Mines	http://www.denisonmines.com/s/Home.asp
SSR Mining	http://www.ssrmining.com/
Hudbay Minerals	http://hudbayminerals.com/
Juniors	
ALX Uranium	https://www.alxuranium.com/
Far Resources	https://www.farresources.com/
Fission Uranium	https://www.fissionuranium.com/
Foran Mining	https://www.foranmining.com/
IsoEnergy	http://www.isoenergy.co.uk/
PurePoint Uranium	https://www.purepoint.ca/home.php
Minnova	http://www.minnovacorp.ca/
Mustang Minerals	http://www.mustangminerals.com/
QMC Quantum Minerals	https://qmcminerals.com/
CanAlaska Uranium	http://www.canalaska.com/s/Home.asp
Taiga Gold	http://www.eagleplains.com/
Prospect Generators	
Altius Minerals	http://altiusminerals.com/
Zimtu Capital	http://www.zimtu.com/s/Home.asp
Eagle Plains Resources	http://www.eagleplains.com/
Financial Institutions	
Canadian Securities Exchange	https://thecse.com/
TSX Venture Exchange	https://www.tsx.com/
PearTree Securities	https://peartreecanada.com/
Equipment Providers	
Frontier Power Products	http://frontierpower.com/
Provincial Helicopters	https://www.provincialhelicopters.ca/
Rodren Drilling	https://www.rodrendrilling.com/
Matrix	http://www.matrixconsulting.ca/
Norseman Structures	http://www.norsemanstructures.com/
ON2 Solutions	http://www.on2solutions.ca/
Team Drilling	https://www.teamdrilling.com/

This list intends to include just a representative sample of companies operating in the Saskatchewan and Manitoba mining sector, and as such it should not be considered a guide to take investment decisions.

COMPANY/ INSTITUTION

WEBSITE

Engineering, Consulting and Contract Services

SRK Consulting	https://www.srk.com/en
Kova Engineering	http://kova.com/
March Consulting	http://www.marchconsulting.com/
Orix Geoscience	http://www.orixgeo.com/
Cementation Canada	http://www.orixgeo.com/
Running Deer Resources	http://www.runningdeerresources.com/

Technology Providers

Motion Metrics	http://www.motionmetrics.com/
Epiroc	https://www.epiroc.com/en
acQuire Technology Solutions	https://www.acquire.com.au/

Safety

Asset Security and Protection (ASAP) Secured	http://www.asapsecured.com/
SAFEmap International	http://www.safemap.com/en/

74

Law Firms

Pitblado Law	https://www.pitblado.com/
Taylor McCaffrey LLP	https://www.tmlawyers.com/
Thompson Dorfman Sweatman	https://www.tdslaw.com/
Borden Ladner Gervais	http://blg.com/en

Government and other Public Entities

Ministry of Growth, Enterprise and Trade, Manitoba Government	http://www.gov.mb.ca/jec/
Mining Association of Manitoba	https://www.mines.ca/
Saskatchewan Chamber of Commerce	http://www.saskchamber.com/
Ministry of Economy, Government of Saskatchewan	http://www.economy.gov.sk.ca/
Saskatchewan Industrial and Mining Suppliers Association	https://simsa.ca/
Saskatchewan Research Council (SRC)	https://www.src.sk.ca/

Energy

Manitoba Hydro	https://www.hydro.mb.ca/
DEEP Earth Energy Production	https://www.deepcorp.ca/

This list intends to include just a representative sample of companies operating in the Saskatchewan and Manitoba mining sector, and as such it should not be considered a guide to take investment decisions.

EDITORIAL AND MANAGEMENT TEAM

Project Director: Sorina Dumitru (sdumitru@gbreports.com)
Project Journalists: Matthias Lomas (mlomas@gbreports.com); Catherine Howe (chowe@gbreports.com);
Alfonso Tejerina (alfonso@gbreports.com)
Project Coordinator: Sarah Crompton-Donnelly (scromptondonnelly@gbreports.com)
Editor: Mungo Smith (mungo@gbreports.com)
Operations Director: Miguel Pérez-Solero (mperezsolero@gbreports.com)
Graphic Design: Gonzalo Da Cunha (gonidc@gmail.com)
Graphic Design (adverts): Özgür & Deniz (ozgur@gbreports.com)
General Manager: Alice Pascoletti (apascoletti@gbreports.com)

Your opinion is important to us, please be in touch to share your comments on this report! For updated industry news from our on-the-ground teams around the world, please visit our website at gbreports.com, subscribe to our newsletter through our website, or follow us on Twitter: @GBReports

THANK YOU

We would like to thank all the executives and authorities that took the time to meet with us.
Also, a special thanks to:

Ministry of Economy, Government of Saskatchewan
Ministry of Growth, Enterprise and Trade, Manitoba Government
Saskatchewan Mining Association (SMA)
Mining Association of Manitoba
Saskatchewan Chamber of Commerce
Association for Mineral Exploration (AME)



GLOBAL BUSINESS REPORTS