MAKE NO MISTAKE ABOUT IT

Canada is a heavyweight in the global mining sector
Canada has enjoyed a steady rise up the global GDP rankings in recent years, as its vibrant, diverse economy has continued to build in strength. However, its continued future economic growth, which some economists suggest could even see Canada become a true global economic superpower in decades to come, will, arguably, rest on the shoulders of the country’s wild, untamed northern provinces. Canada’s vast, frozen North - a rugged, beautiful land which occupies an area nearly double the size of Western Europe - is a place which could truly be described as one of the world’s final frontiers. It also happens to be a key economic driver for the country’s world-leading mining sector.

As the voice of the Northern mining sector – which is already the region’s largest private sector contributor to the economies of the Northwest Territories and Nunavut, the NWT & Nunavut Chamber of Mines will be at the forefront of Northern Canada’s charge, as it seeks to build further upon and fulfil its considerable mining potential over the coming years.

It is well-known that the Chamber of Mines is an industry association which is made up of over 300 companies and individuals, some of whom are elite players within the mining sector. It acts as a forum where its members, which includes mineral producers, exploration companies, equipment suppliers, and consultants, and even individual prospectors, can benefit from a golden network of high-power mining industry connections. In this fast-moving, unpredictable industry, such connections with mining’s big-hitters and access
Northern Canada, with its rugged beauty and outstanding mineral potential, is Canada’s mining frontier. (Courtesy Aurora Geosciences Ltd.)
to the inside knowledge that potential partners may possess can be the difference between seizing an opportunity or missing it – aka success or failure. However as Executive Director of the NWT & Nunavut Chamber of Mines, Tom Hoefer, suggests, their remit goes further than this alone: “We are a non-profit society, created in 1967, that champions on behalf of the minerals industry in northern Canada (NU and NT).” “Our goals are to promote the industry and the North to Northerners, Canadians, and the world at large. We continue to speak out on industry opportunities, concerns and issues. We advise governments, investors, the media, educational institutions, and the public on industry positions and initiatives.” “The Chamber of Mines works in 5 strategic areas: we seek improvements in regulatory environment & access to land, improve aboriginal relations through active engagement, encourage infrastructure development, engage in active communications & public relations, and support membership & operations.” The role that NWT & Nunavut Chamber of Mines plays in ensuring that the region’s mining sector runs smoothly is important now more than ever, bearing in mind that there are a number of both threats and opportunities that lie before it. The slowdown in growth and tightening of belts among the BRICS nations, especially China, has seen investment in exploration and new mining projects effectively go into deep freeze in recent years. However the mining sector is notoriously cyclical, and while the recent sluggish economic performance of the BRICS countries has pushed the global mining sector into a major slump, it is widely accepted that demand for commodities in the long-run can only soar – Canada, and its mineral rich Northern territories are well poised to
Ekati diamond mine in the Northwest Territories is the largest diamond mine in Canada and has a plan to increase mine life by 10 years. (Approved - Courtesy Dominion Diamond Corporation)

The Northwest Territories is the 3rd most valuable producer of rough diamonds globally. (Approved - Courtesy Diavik Diamond Mines Inc.)

capitalise on such an opportunity. The Northwest Territories and Nunavut in particular are home to an abundance of riches, in terms of the minerals and metals which lie beneath the frozen ground. Over the coming 5 years a number of new projects are a work in progress, which could lead to projections for an enormous increase in mineral output in the north to be realised.

Tom said: “We have tremendous mineral potential, and when you imagine we are 1/3 of Canada’s land mass, that is not surprising. As a result, we have one new mine in NU and 5 more in process behind it. We have one new mine under construction in the NWT, and 3 more behind it.”

“But we need investment dollars now for infrastructure to put them all under construction. We also would like to see the markets change, and exploration investments strengthen. This is a global situation, and we know the markets will eventually cycle back up, but we want to be ready for that moment.”

For the Northern territories to achieve their target of an anticipated 91% increase in metal and non-metallic mineral output between 2011-2020 and reach its mining potential, the NWT & Nunavut Chamber of Mines, in its role as a champion for mining in the North, will be working actively to attract fresh investment to the area, and fortunately recent political developments mean that the mining sector will receive increased support from local government.

“We work hard to promote the creation of an environment that is attractive for investors. Our success in getting governments and the public to support this is reflected directly in investment levels, unless of course, the global marketplace stymies us. Governments are making changes to make the North more attractive, and we will continue to work hard for continued improvements.”

“Through devolution, the NWT Government is now the new “landlord” for non-renewable resources. This means that they are in the driver’s seat now, and as a local government that feels the consequences of their actions, are in a good place to make a real difference in supporting our industry and its growth. As a sign of change, they are advancing work under a new Mineral Development Strategy, partnered with our Chamber of Mines.”

With devolution now under active discussion in Nunavut, one can expect an aggressive approach in that territory too build up its mining industry for the benefit of its residents and economy. The Chamber of Mines will continue to be an active participant in both territories as their economies evolve.
Once upon a time the notion of discovering diamonds in Canada’s frozen wilderness was the stuff of dreams for explorers, who doggedly spent decades searching the length and breadth of the sub-arctic tundra and ice-fields of the Northwest Territories for the precious but elusive gemstone. But this all changed in almost fairy tale fashion when in 1991 a persistent geologist, by the name of Charles Fipke, succeeded in finding a diamond deposit with the last dollars in his pocket. Subsequently this lit the fuse for one of the biggest rushes ever recorded in North America – the rest, as they say, is history.
Taking into account that it is a relative newcomer to the party, Canada's recent emergence as a top-three global diamond producer has been pretty remarkable, bearing in mind that it was only seven years after Charles Fipke's discovery that the country's first diamond mine entered production in 1998. In terms of output, Canada's prolific diamond mining sector currently produces over US$1.2billion worth of diamonds annually, as sought after for quality as they are for their ethical guarantees – Canadian diamonds are much sought after by more discerning buyers, safe in the knowledge that stones do not come from conflict zones and are mined in environmentally sound manner which benefits local communities. It is no wonder that Diavik gemstones typically end up with some of the most exclusive jewellers and reach consumer markets across the world.

To describe the Diavik project deep into the bed of Luc De Gras, and are safely enclosed within uniquely created rockfill dike dams, which encircle the pits and the ore bodies within and keep the waters of the Luc de Gras at bay. The 3.9km & 1.3km long dikes are astonishing feats of engineering, bearing in mind the near unassailable conditions in which they were constructed. To the naked eye, it is difficult to comprehend that they were, in fact, built with human hands. Following a rigorous process which accounts for nearly 15% of the world's total rough diamond production on the basis of value – only Russia and Botswana rank ahead.

Nearly 20 years on, there are now three world-class diamond projects in operation at the Lac de Gras kimberlite field alone – a region of outstanding natural beauty, around 300km north-east of the NWT capital, Yellowstone. And of these three mines, which sit atop difficult to reach diamond-bearing kimberlite pipes on the bed of the stunning Luc de Gras, the Diavik Diamond Mine is the largest and greatest.

Owned by the global mining giant, Rio Tinto, and the Dominion Diamond Corporation, the Diavik Diamond Mine produces a staggering 6-7 million carats annually, a sizable proportion of which are large, white-quality stones. Understandably, this means that Diavik's diamonds are as truly epic in scale would be an understatement – quite simply, it is one of the world's largest and richest diamond mines, in terms of rock value. Both an industrial complex and, due to its remote location, self-contained town for the 1000 or so, largely local staff who are employed there, Diavik is home to processing and recovery plants, administrative buildings, independent power generation, water supply, boiler, and waste treatment plants, huge fuel storage tanks, and an airstrip which is large enough to accommodate Boeing 737's and even Hercules C-130 transport aircraft. As one might imagine, Diavik is a spectacular sight to behold when viewed from an aerial vantage.

Unsurprisingly, its most striking features, however, are the vast conacle-shaped open pits – the A154 North/South and A418 pipes - which delve up to 35m of environmental and feasibility studies over a four year period, all of which was overseen by a round table of representative organisations and local government, the Diavik operators went above and beyond in ensuring that not only would the Luc de Gras be protected, but also that local populations would benefit directly and fully from the mine’s presence. In line with this, the rockfill dikes surrounding the site were designed to protect the pristine and ecologically diverse waters of the Luc de Gras from Diavik's mining operations. However the effort that was expended to build the dikes was great indeed, and from the start the build was hampered by extremely tough operating conditions. The bitter cold of the north, where temperatures as low as -40°C are far from uncommon, along with the mind-boggling technical challenges posed by
Rio Tinto owns a 60% interest in, and operates the Diavik Diamond Mine in Canada's remote Northwest Territories. Discovered in 1994, Diavik commenced production in 2003, has an annual production of some 6 to 7 million carats of predominantly large, gem quality diamonds. It currently employs around 1000 permanent employees and contractors, and almost half are local. Total spending since 2000 is $6.2 billion, of which $4.5 billion (72 per cent) is Northern.

The Diavik ore bodies comprise four kimberlite pipes (A154South, A154North, A418 and A21) located in shallow waters adjacent to East Island, Lac de Gras. Mining could only proceed safely at Diavik if the waters of Lac de Gras could be held at bay with certainty, so unique rockfill dike structures have been built into the lake.

Diavik's project approval was received in 1999 and A154 dike construction began in 2001 with commercial diamond production commencing in 2003 for the A154 pipes. Construction of a second smaller dike, the A418 dike encircling the A418 pipe, was approved in 2004 and completed in 2006 with ore production beginning in 2008. Simultaneously, work began on the underground mine feasibility study with study approval in November 2007. Underground production commenced in March 2010 and Diavik became an all underground mine in September 2012 when open pit mining of its three kimberlite pipes ceased.

The A154 dike, Diavik's first, was awarded Canada's most prestigious engineering award. The A418 dike was built with the same award-winning technologies. Diavik has a proven safe and successful record of dike construction and mine operations. The two current dikes have safely held back the waters of Lac de Gras allowing a decade of safe open-pit mining of three kimberlites. The dikes include hundreds of sensors measuring temperature, pressure, and movement. Both A154 and A418 dikes continue to perform as expected.

The A21 pipe

With its proven track record of dike construction and open-pit mining, Diavik will in 2015 begin construction of the dike to access the A21 kimberlite pipe. Total capital cost is estimated at US$350 million over four years. The A21 dike will be 2.2 kilometres in length and constructed in water up to 20 metres deep. This compares to Diavik's A154 and A418 dikes which are 3.9 km and 1.3 km long and built in 25 metres and 35 metres of water respectively. Currently, the A21 mine plan is open-pit only.

constructing a mine which is surrounded by vast body of water and ice, meant that a genuinely new and innovative approach to engineering and construction was required. But trying as the task might have been, the saga of Diavik's construction was a successful one, which was afterwards rewarded with Canada's most prestigious engineering award.

The two current dikes have now safely held back the waters of Lac de Gras for over a decade, which allowed for the safe open-pit mining of the three kimberlites until diamond mining became a purely underground operation in 2012. The dikes include hundreds of sensors measuring temperature, pressure, and movement. Even now, both A154 and A418 dikes continue to perform as expected.

With all this in mind, it is easy to imagine how total spending at the site since development began in 2000 has reached US$6.2 billion, and how the site generates an income of hundreds of millions of dollars each year. However following the exciting announcement by Diavik owners, Rio Tinto and Dominion Diamond Corporation, that formal approval has been granted for the development of a fourth kimberlite pipe, known as A21, the already world-class mine is set to be taken to the next level.

The A21 pipe development was part of the original mine plan and it is estimated that the cost of the project will be in the region of US$350 million, over the coming four years. A 2015 programme of works is due to begin and it is anticipated that the A21 pipe will enter diamond production during the latter part of 2018, and provide an important source of further incremental supply for Diavik – this is expected to ensure the continuation of existing diamond production levels as the A154 and A418 pipes begin to decline.

The A21 dike will be 2.2 kilometres in length and constructed in water up to 20 metres deep. This compares to Diavik's A154 and A418 dikes which are 3.9 km and 1.3 km long and built in 25 metres and 35 metres of water respectively. Currently, the A21 mine plan is open-pit only.

The Rio Tinto Diamonds & Minerals CEO, Alan Davies, said: “Our decision to invest in the Diavik A21 project reflects our strong confidence in the diamond sector and in our ability to compete effectively in the industry.” The A21 kimberlite pipe is
located just south of Diavik’s existing mining operations and, just like the existing three pipes, require a rockfill dike construction to encircle the ore body located just offshore of existing mining operations at Lac de Gras. As is to be expected, Diavik will utilise the same innovative design and engineering technologies used to construct the Diavik mine’s two other dikes, which enabled the successful mining operations of the existing pipes. Once completed, the A21 dike will be 2.2 kilometres in length and constructed in water up to 20 metres deep, and the pipe itself will operate as an open-pit mine, rather than an underground one like its peers. It goes without saying that the same safety first approach to the build will also be utilised, along with an ongoing commitment to Diavik’s community partnerships, which generate employment in the area, and providing significant business benefits to local communities, many of which are Aboriginal.

The President of Diavik Diamond Mines, Marc Cameron, said: “This is great news for Diavik, but also for the local communities in which we operate where we are committed to delivering economic and social benefits that will endure beyond the life of the Diavik mine.”

The coming years will be an exciting time as the new A21 pipe development project progresses with earnest, and also a most challenging period too if the challenges posed by the previous dike builds are anything to go by. However this extension of Diavik Diamond Mine’s lifeline, and the continued investment and benefits that will reach local communities and the local economy as a result, will ensure that Diavik continues to produce high quality gems up until 2023, and potentially beyond. Diavik has a bright future ahead which will see the project continue to hold its lofty status as an industry leading world-class diamond producing site for some time, and continue to deliver on its social, environmental, and economic commitments to the many who benefit from its continued success and enormous capacity for wealth generation.