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supporting the northern economy.

The project will connect a deepwater port in the centre of the Northwest Passage via an all-season road to Contwoyto Lake – the northern terminus of the Tibbit-to-Contwoyto Winter Road. When complete, the project will provide road access from southern Canada to the Coronation Gulf. This access will dramatically lower the cost of doing business in the region by connecting northern Canada products to markets around the world and unlocking formerly inaccessible critical mineral deposits.

The Kitikmeot region, located in the western part of Nunavut, is a vast and remote area that is home to several Inuit communities. The Kitikmeot’s economy is primarily driven by natural resource extraction, including mining and exploration activities, which play a crucial role in the local economy. Additionally, the region holds significant historical and cultural importance for the Inuit people, with traditional practices and knowledge deeply embedded in the community’s way of life.

Arlen Foster, Principal and Infrastructure Practice Lead for Northern Canada, told IM: “Grays Bay Road and Port is an example of our ability to work with clients like WKR to create road access from southern Canada and bring economic benefits to the north, including the opportunity to access Canada’s critical minerals.

“Our partnership with Nunami Stantec Limited has helped us integrate Inuit values into our project. Indigenous leaders from the north are part of the decision-making process as we work on these crucial projects. Involving local and Indigenous communities is a top priority for all these significant projects we undertake.”

## Consulting on complexities

**One of the most in-demand sectors in mining, consultancy continues to grow and evolve in line with mining company expectations, Dan Gleeson reports**

**M**ining company considerations are becoming as varied as their operational sites, with numerous stakeholder engagements, incoming or expected legislative changes and more impacting the way they do business.

‘Change’ often translates to ‘opportunities’ for mining consultancy practices, with firms inside and outside of the typical mining sphere looking to provide input and advice to companies in need.

IM speaks to some of them to find out how they are continuing to differentiate themselves from an expanding pack.

### **‘Find, Build, Operate and Return’**

Stantec’s extensive experience in leading large infrastructure projects with extreme weather conditions in remote areas has recently been tapped by West Kitikmeot Resources Ltd (WKR).

WKR engaged the company to continue advancing the engineering and environmental consulting services for the Grays Bay Road and Port Project in Nunavut, Canada, infrastructure expected to boost the region’s mining prospects.

WKR, which says it is building an Inuit owned and led resources company, signed memorandums of understanding with the Government of Nunavut and the Canadian Infrastructure Bank to provide additional financial support for the project.

Stantec’s Inuit-owned partnership, Nunami Stantec Limited, has been key to supporting this project, which it has been engaged on since 2016. Nunami Stantec is a partnership between the Kitikmeot Corporation, Sakku Investments

Corporation and Stantec to provide environmental science and engineering consulting services to organisations throughout the three regions of Nunavut.

Stantec says it has extensive experience in leading large infrastructure projects with extreme weather conditions in remote areas, including the Mackenzie Valley Highway, Slave Geological Province Corridor, Kivalliq Inter-Community Roadway, Inuvik to Tuktoyaktuk Highway and the Iqaluit Airport.

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*When complete, the Grays Bay Road and Port Project will aim to create a nationally significant northern trade corridor, aiding Inuit and Canadian sovereignty and offering new opportunities by unlocking Canada’s critical minerals wealth and supporting the northern economy*

Brian Mashford, Senior Vice President – Mining, Minerals and Metals, says Stantec’s ability to draw on a network of over 450 offices allows it to access a global knowledge base and deliver expertise at a local level, as exemplified on this project.

“When we match our local teams with our global outreach, we combine the best of both worlds,” he said.

“This also applies to partners within Stantec who support mining projects through the lens of other industries. Our integrated teams include professionals who can support all aspects of mining projects, including environmental services, water resources, infrastructure developments, community and stakeholder engagement, Indigenous relations and more.”

He said Stantec mining clients are currently requesting more in terms of carbon accounting, net-zero planning and renewable energy generation services.

“These will become even more important as our clients source the critical minerals necessary for the energy transition,” Mashford added.

And when it comes to innovative approaches in the work Stantec does, he referred to digital tools, like remote sensing, automation and other resources being deployed for clients in the right circumstances.

“We are in a unique position because we have the expertise available to support our clients through the entire mining lifecycle, from initial permitting through mine closure and asset transformation,” he concluded. “Find, Build, Operate and Return.”

### ‘Bridging the distance’

**SRK Consulting** is looking to technology, among other things, to give it an edge in the competitive consulting market, with the introduction of HiveMap set to bring advanced capabilities to geologists, geotechnical engineers and mining professionals worldwide.

HiveMap is, SRK says, a groundbreaking software solution for improving the mapping and interpretation of remotely collected rock exposure data. The software is designed to streamline the collection of geological data using photogrammetry and LiDAR (light detecting and ranging) scanning technologies.

Previously known as EasyMineXR, HiveMap has been rebranded and refined, providing geologists and geotechnical engineers with a safer way to conduct mapping tasks without the need to enter hazardous surface or underground environments.

SRK said: “Data accuracy is crucial for developing high-quality geological interpretations, which are vital for both engineering and geoscience applications. Yet, many open-pit and underground rock formations

are not easily accessible, posing significant safety risks and limiting the effectiveness of traditional field mapping techniques.”

One of HiveMap’s notable applications is its ability to detect large-scale fault patterns and maintain continuity in otherwise inaccessible pit slopes, SRK claims. The software also excels at grassroots mapping in mountainous regions, offering a level of geological analysis that was previously difficult to achieve.

“Conventional mapping practices required you to be up against or directly adjacent to the rock exposure, but the mining industry is now more risk averse and prohibits proximity to hazardous areas,” SRK Senior Rock Mechanics Engineer, Andrew LeRiche, explained.

Findlay Fraser, SRK’s Principal Structural Geologist, added that conventional mapping is hampered by limited access, bulky equipment and lengthy post-processing times required to build a 3D model. “HiveMap, in contrast, is quick and easy to use, enabling mining operations to prioritise mapping efforts more effectively,” he said.

HiveMap also facilitates collaboration and data sharing by enabling field staff to capture geological observations on a tablet, then transfer the data to a laptop version of the software for further analysis. This allows technical staff at the head office to collaborate with teams in the field.

“HiveMap bridges that distance by bringing the rocks from the field to the office and allowing everyone to work together in a 3D environment,” Fraser said.

LeRiche says advancements in data collection technologies such as LiDAR and photogrammetry have played a significant role in the development of innovative mapping tools like HiveMap.

“As recently as 10 years ago, data collection methodologies like LiDAR and photogrammetry weren’t as prevalent on mine sites,” he said. “LiDAR, for example, was very expensive when it was first introduced but is now being used by many of the operations we work with.

“Using drones, we now see models being built with photogrammetry for \$1,000, and in underground scenarios we’re seeing the use of iPhones with built-in LiDAR capabilities, so the ability to collect 3D datasets is now easier than ever.”

Fraser expects HiveMap’s ease of use and availability to lead to increased analysis frequencies in the geomapping space.

“When I started in the mining industry, we’d be lucky to get a model update once a year,” he said. “Sometimes, we had resource models in operating pits that we knew were wrong and had to rely on them for longer than was ideal because the conventional mapping tools were so difficult to use.

“If you want to operate safely, you need the

most accurate and up-to-date representation of your geology possible. Similarly, for grade control, if a geologist sees something is not right, it’s now possible using HiveMap to map the ore boundaries and update the model for optimal material routing on an expedited basis.”

### ‘Making Sustainability Happen’

**SLR Consulting’s** acquisition of Wardell Armstrong is aimed on building and retaining its world-class sustainability and environmental consulting services globally.

By adding Wardell’s 550-person environmental, engineering and mining consultancy to the SLR umbrella, SLR is able to enhance its core business and offer an even broader range of services to clients, while expanding its global reach and reinforcing its commitment to sustainability.

The two companies have a shared focus on “Making Sustainability Happen”, they say, with individuals and practices retaining a focus on delivering sustainable solutions.

David Walker, Global Mining Sector Director for SLR, told **IM**: “SLR believes in making a difference: a difference to our clients, the communities we touch and the world we live in. We’ve made it our mission to support clients in Making Sustainability Happen which is why our goal in the mining sector is to bring this company mission to life through the solutions, services and projects we provide to the industry.”

Walker says both businesses have long histories of helping companies to address their environmental and sustainability issues, and are among the few remaining large companies to solely focus on sustainability issues.

“The coming together keeps that focus and expands the services, sectors and geographical reach we can offer together for the benefit of our clients,” he added.

For the mining side of the respective businesses, SLR is adding significant resources or capacity to its collective ability to serve the market.

“Specifically, the Wardell Armstrong International (WAI) team provides additional, specialised geological, mining, processing and environmental expertise from the offices in Truro, Cornwall, to SLR’s existing capability across the UK, Ireland and Europe,” Walker said. “The addition of an office in Kazakhstan matches our collective ambition to better serve the market in Central Asia.”

The office in Truro, at the old Wheal Jane mine site, includes an extensive mineral assaying, processing and pilot plant testing facility, he added.

Along with SLR, WAI provides services for minerals-related project ranging from: preliminary exploration planning and execution,



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through mineral resource and reserve estimation to international reporting standards, scoping studies, mine design and financial appraisal, to prefeasibility and feasibility studies.

“Both businesses have a strong, but complementary client list, including companies and organisations from the private and public sectors, as well as many major financial institutions,” Walker said. “In addition, WAI has been involved in multiple LSE Main Board and AIM listings as well as NI 43-101 Technical Reports in line with TSX and Competent Person’s Reports in line with ASX.”

Walker says the SLR “sweet spot” in the marketplace is tied to the long-standing relationships it has fostered, some dating back more than 15 years.

“With a larger, more comprehensive team, we have not only increased the multiple touch points in striving for trusted advisor status with our clients, but we have also improved our technical capacity to deliver consistently on technical excellence,” he added.

Mining lifecycle coverage is enhanced with the addition of WAI to SLR’s existing capability, from development and funding stages, through design, operation and closure, according to Walker.

He explained: “One of our unique value propositions is that we help clients develop to close eventually, thereby addressing some of the key pain points in mining, ie obtaining the social licence to operate, minimising and offsetting harm to the environment, as well as improving the chances of a just transition and avoiding

nasty legacy issues.

“Another is emphasis on the integration engineering, sciences, environment and social drivers to make sustainability happen. This is behind our drive for global reach of networked expertise available locally.”

In addition to being able to better support Tier 1 mining clients with the addition of WAI, SLR is able to strongly support explorers, juniors and mid-tier players, according to Walker.

“This help and support can come in the guise of solving key sustainability challenges, or solving difficult technical problems, or positioning for investment or acquisition by bigger players,” he said.

An industry backdrop of increased demand for a newer mix of raw materials to help tackle climate change, the energy transition and decarbonisation; plus increasing protectionist policies, is making for an extremely attractive marketplace for consultants and advisors like SLR, according to Walker, “where we offer what we argue to be the ideal balance between strategic advice and the practical realities of making them real benefits to our clients”.

### Heap leaching history

**Kappes, Cassiday & Associates** (KCA), having celebrated its 50-year anniversary in 2022, is happy to leverage its heap leach expertise to stand out from the consulting and engineering crowd.

The company has a remit that includes heap leaching, cyanide processing, laboratory testing, project feasibility studies, engineering design, construction and operations management. This is all under the banner of process metallurgical services.

While primarily known for its heap leach expertise, KCA’s staff includes professionals with design capabilities in a wide range of metallurgical processes, such as: a complex acid leach process for a Bolivian silver project, a SART (Sulphurisation, Acidification, Recycling and Thickening) process for a Mexican copper-gold project and multiple HPGR (High Pressure Grinding Roll) processes around the globe.

Earlier this year, KCA Australia was engaged by ASX-listed Marmota Energy to advise and manage the metallurgical heap leach test work program for the Aurora Tank gold discovery in South Australia.

The program is being carried out to optimise gold recoveries from open-pit mining and heap leach processing at Aurora Tank, Marmota said. 