

A shifting landscape



The use of mining consultants is increasing in popularity across the mining sector, Dan Gleeson reports

WSP's ability to pull in colleagues from leading teams allows it to understand its mining clients' drivers, constraints and goals, according to Kevin Beauchamp

It is hard to know where to draw the line when it comes to mining consultants.

The majority of software providers have an advisory arm within their business, while the engineering houses are also considered consultants in some facets of the mining process. More industry-agnostic consultancies are looking to gain inroads into mining, too.

There is a reason for this: consultancy and advisory services are in great demand.

Skills shortages have been well documented, and this is one explanation for the rising interest.

Related to this is rising labour costs. Depending on what commodity a mining company is tied to, there may be a need to react to higher operating costs from this side of the spreadsheet with a strategy of outsourcing some of the work to consultants. The flexibility associated with these contractual arrangements appeal to miners looking to balance the books.

The pace of change in the technology space is another reason why the consultancy market is finding favour. Mining companies are, at the most elementary level, struggling to quickly come up with job titles that reflect this change acceleration, so being able to call on outside 'experts' to ensure they don't get left behind works well.

WSP on getting to the core

A good example of this is in the tailings management space where the creation of The Global Industry Standard on Tailings Management (GISTM), which sets a precedent for the safe management of tailings facilities, towards the goal of zero harm, has rapidly changed the rules of the game.

According to Kevin Beauchamp, Global Director, Mining & Metals, WSP,

tailings management is one of the areas experiencing the greatest skills shortage, specifically dedicated tailings engineers who can lead projects and make critical decisions.

"The demand has been high for years for experienced tailings engineers, and GISTM requirements have, rightly, only increased the demand," he told IM. "It's been well documented, including in a paper by WSP, that this shortage is an industry-wide issue that doesn't have an easy solution. Even with

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WSP's Kevin Beauchamp says the company's partnership with Microsoft is leading to the development of innovative tools for tailings management

over 1,200 tailings practitioners, this is still a key focus for WSP."

One of the six topic areas covered in the GISTM focuses on the ongoing management and governance of a tailings facility. It provides for the designation and assignment of responsibility to key roles in tailings facility management, including an Accountable Executive, an Engineer of Record (EOR) and a Responsible Tailings Facility Engineer.

To help address the demand gap in Engineers of Record for tailings facilities, and for effective succession planning, WSP has created an in-house EOR development program.

"Given our global footprint, we've seen the role of the EOR evolve over time, and under GISTM, to require additional competencies beyond pure engineering," Beauchamp said. "Our development program is designed to develop the next

generation of EORs, and the expanded skill sets that are required for success in the role, as well as address succession, a requirement of GISTM and a concern for operators."

Leveraging technology to make WSP's work more efficient – freeing up experts to concentrate on what matters most – is another area the company is prioritising to address industry demand for skills.

"Through WSP's partnership with Microsoft we are developing some truly innovative tools for tailings management that we believe will make a significant difference for our clients and further mobilise the skills of our people," Beauchamp added.

This technology focus is also apparent in WSP's career development strategies, where the company actively builds out employees' capabilities in areas including coding and AI. "When we take advantage of the tools of today, it means we can better attract and benefit from a new generation of talent that is sure to push the industry forward," Beauchamp said.

This is complemented by a passion for STEM education shared by the majority of WSP staff, he added. "Their passion for promoting the wide variety of rewarding careers available in the mining industry plays a big role in the longer-term pipeline of talent that we, as a company, and as an industry, require."

With 73,000 people on staff, WSP's influence on inspiring the next generation should not be underplayed. This contingent is spread across a wide range of disciplines and regions, with cross fertilisation across projects a common practice.

"It's often said, 'pit to port' or 'concept to closure', but few can actually do it," Beauchamp says of the consulting space. "Our ability to pull in colleagues from leading

teams in everything from renewable energy to modular construction, bridges to roads and airstrips, and, yes, ports, is a huge benefit to our clients. But the magic is taking this discipline expertise and applying it through a mining lens, truly understanding our clients' drivers, constraints and goals."

This varied expertise is helping WSP holistically tackle one of the highest cost items on a mine site's spreadsheet – energy.

"Finding ways to reduce energy demand, while also transitioning to greener sources, is a priority for many companies," Beauchamp said. "It's not just about the cost of energy, but also the reliability and the availability of that energy. We all know that remote sites don't commonly have access to a grid, but there are increasingly instances where there is a nearby grid, but it doesn't have enough capacity available to support a new mine development. In these cases, the need for energy savings, efficiency and on-site power generation solutions is of even greater importance."

One energy-intensive process the company is regularly putting under the microscope for clients is the widely used semi-autogenous grinding and ball mill circuit (SABC) in mineral processing.

"Smaller operations can still look at staged crushing circuits to reduce energy consumption," Beauchamp said of SABC alternatives. "For very hard materials, we

might look at high pressure grinding rolls (HPGRs), which have significant energy savings compared to an SABC. As we get into lower grade and harder materials, with the 'easy' orebodies depleting, we're seeing an increased interest in HPGR and have supported clients in studies and implementing this option at their sites."

Deciding on which route to take always starts with test work, and, based on the specific material, WSP develops an appropriate process that optimises recovery and energy usage. "We also leverage the expertise of our power and energy teams to look at a wide range of options, including renewables, for a site's power mix," Beauchamp said. "This allows us to bring our mining clients the right solutions for their evolving energy and operational needs, so that they have the power they need to maximise the recovery of the ore they have."

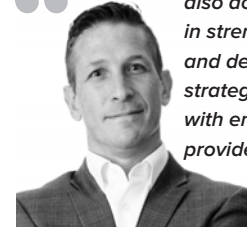
This is just a snapshot of the industry need to embrace innovation in the face of accelerated change, according to Beauchamp.

"To remain competitive and relevant, organisations must be nimble enough to adapt and ready to innovate," he said, "all while remaining grounded in sound science and engineering principles."

"And as we work to meet the growing demand for mined materials, we can't lose sight of the bigger picture. Innovation

is essential, but so is responsibility. Responsible mining – prioritising environmental stewardship, social responsibility and ethical governance – has to be at the core of everything we do."

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As a consultancy, we're also actively engaged in strengthening old, and developing new, strategic relationships with engineering service providers," Stantec's Greg Gillian says

Stantec:

Sustainability from start to finish

For Greg Gillian, Vice President of Mining, Minerals & Metals at **Stantec**, responsible and sustainable mining starts with planning beyond the mine's planned life.

"We use this planning as a starting block and work backwards to develop a sustainable project – in all senses of the word," he told **IM**. "This might include concepts such as alternative routes for product delivery, such as new revenue and reducing the resultant operational downstream liability."

Specific examples in a mineral processing sense include modular process scale-up



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strategies that allow for flexible expansion and integration of new technologies; tailings co-disposal and conveyor-based waste transfer, which reflect a move towards more sustainable and automated material handling; process flowsheet evolution, including run of mine and near-face ore sorting, liberation through stirred media mills and dry processing alternatives; and the incorporation of innovative advancements and emerging technologies during study phases in areas like tailings valorisation, bioleaching, hydromet, water conservation and wastewater management, and associated clean technologies.

This approach, Gillian says, results in those technologies advancing to commercialisation while the project matures through its lifecycle, as opposed to looking for an off-the-shelf solution at the tendering stage.

Such planning only works if consultants are schooled in mining domain expertise, with Gillian casting some doubt over the ability of firms in adjacent industries being able to match Stantec's established credibility of mineral resource project development and operations.

"To my knowledge, many of the market

entrants do not have the breadth of services to be able to successfully deliver projects of scale," he said. "While compensation considerations are usually front of mind for people, they also care about the reputation of their employer."

A few of Stantec's primary differentiators outside of pure mining expertise relate to a focus on communities and its approach to sustainability, according to Gillian.

"Being recognised by Corporate Knights in 2025 as one of the top 10 most sustainable companies in the world, and first among industry peers, certainly resonates with existing employees – supporting retention – and helps recruitment efforts," he said. This leads to Stantec populating project teams with established talent.

Speaking of recruitment, Gillian's colleague, Cody Ryckman, Innovation & Technology Lead of Mining, Minerals, & Metals, says he and the wider Stantec team has seen a year-to-date trend of an increasing reliance on consultancies to fill mining companies' critical gaps through embedded roles, secondments and engagements where it has shared accountability, like EOR roles.

The company is balancing this demand

with its own sustainable employment pipeline, though.

"While we always strive to support our clients when they're resource-constrained, some disciplines pose a significant challenge to recruit intermediate and senior staff to backfill those longer-term dedicated assignments," he said. "This often results in expensive and enduring talent hunts. Labour market tightness in some disciplines demands we reconsider the value of our finite resources on an individual basis and calibrate to the supply/demand dynamics. Otherwise, we might not be able to retain our top talent and sustainably continue to service the industry."

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Being truly global means we can select the best experts from our worldwide talent pool for any project, regardless of geography or discipline, without being constrained by franchise limitations or silo boundaries," SLR's Marco Maestri says

SLR on financeable, operational and responsible projects

Having teams that appreciate how responsible mining connects to all the various processes that take place at mine sites is imperative to creating practical solutions that can contribute to mining companies' ambitious emission reduction targets, according to Marco Maestri, Global Mining Sector Director for **SLR Consulting**.

"What differentiates us is understanding how everything connects," he told **IM**. "How processing decisions affect water management, how carbon reduction drives operational efficiency and how environmental performance links to social licence. Most consultants treat these as separate workstreams, but that's not how mining works in practice." This integrated thinking has guided SLR's recent expansion strategy that contributes to the company's aim of 'Making Sustainability Happen'.

The company recently added Robertson GeoConsultants and RPMGlobal's Mining Advisory division, bringing the global team to over 4,500 professionals, with 2,000-plus focused on mining across more than 30 countries.

These two additions strengthen SLR's position as one of the few mining consultancies that can genuinely integrate strategic advisory, technical delivery and sustainability implementation at global scale, Maestri said.

"The RPMGlobal integration significantly expands our mining advisory team and geographic reach, particularly strengthening

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our APAC and LATAM presence,” he told **IM**. “Their expertise as Independent Lenders Engineers means they provide the technical and E&S due diligence that lenders require before financing mining projects. Their proven track record of supporting capital raisings worth over A\$23 billion (\$15 billion) in 2024 demonstrates their ability to validate projects in ways that strengthen our overall capability.”

Robertson GeoConsultants brings complementary expertise in areas where the industry faces mounting pressure. “Mine water characterisation and acid rock drainage are becoming critical bottlenecks as legacy environmental issues compound and permitting requirements intensify,” Maestri explained. “Their 150-plus projects across 16 countries give us proven methodologies for some of the sector’s most challenging technical problems,” he added.

These additions build on earlier strategic investments including the Europe-based Energy & Emissions Excellence team, RMS Solutions’ paste backfill capabilities, and Wardell Armstrong’s 185-year metallurgical heritage.

“The key is genuine integration rather than just acquisition,” Maestri emphasised. “Being truly global means we can select the best experts from our worldwide talent pool for any project, regardless of geography or discipline, without franchise limitations or

silos boundaries. This allows us to support our clients to develop projects that are financeable, operational and responsible – something very few firms can deliver at scale.”

When it comes to ‘Making Sustainability Happen’, Maestri highlighted work the SLR team in Chile was delivering with some of the world’s largest mining companies to help decarbonise their operations. “We’re not just creating strategies – we’re PMO’ing renewables integration, helping electrify fleets and creating credible roadmaps that satisfy lenders and boards,” he said. “This hands-on implementation experience is what makes our advisory work credible.”

SLR’s approach extends to digital capabilities, with platforms like VINE, TRACE and CLIMsystems. VINE and TRACE, developed by RCS Global, provides supply chain mapping and ESG traceability. CLIMsystems gives clients access to some of the most advanced climate risk modelling available – used for Task Force on Climate-Related Financial Disclosures (TCFD) reporting, resilience planning and understanding how long-term climate change might impact water resources, infrastructure and operating cycles.

Maestri explained: “The key difference is these platforms aren’t separate products – they’re embedded in our work and our teams use them to bring real data into

conversations, whether that’s flood risk analysis for a mine expansion or tracing supply chains back to source.

“In addition to these digital platforms, we’re also developing AI tools internally to handle routine tasks, which frees up our teams to focus on the complex technical challenges that require human expertise and input. We’re not trying to be a software company; we’re focused on building tools that make our advice more relevant and robust.”

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Juan Ignacio Guzmán says
GEM’s approach is to complement, not replace, a mining company’s own team, providing targeted expert insight where it is needed most

GEM on bringing clarity in uncertain times

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clients' capabilities across the value chain.

The Chile-headquartered engineering and consultancy firm is often asked by clients to contribute in areas like high-end data analytics, technical-economic evaluation and risk analysis, where a client's in-house expertise or bandwidth might be limited, according to Juan Ignacio Guzmán, CEO of GEM.

"This support is feasible across most disciplines because our practice areas cover a broad spectrum of the mining business, from technical modelling to economic forecasting," he told *IM*. "Our approach is to complement (not replace) the client's own teams – providing targeted expert insight where it is needed most, and in doing so help pave the way for innovative solutions in their projects."

Guzmán says the company pairs a strategy of building and nurturing talent – through a strong recruitment and education investment process – with a focused remit on combining deep mining expertise with sophisticated analytical capabilities to differentiate itself in this crowded market.

"This means we bring a unique capability to quantify even what seems to be unquantifiable – translating complex factors (be it environmental impact, social risk, or market volatility) into clear, quantitative insights for our clients," he said. "While many new ESG-oriented consultancies might

approach mining purely from a sustainability perspective, we differentiate ourselves by treating ESG as a value-driving framework rather than a standalone goal. In practice, that means we embed ESG considerations into the core of our mining models and decision processes, instead of just overlaying them as an afterthought."

In terms of specialties, GEM is renowned for its quantitative approach to problem solving in areas like uncertainty modelling and strategic planning, Guzmán says, with clients often looking to GEM for high-level project evaluations, scenario analysis and risk management strategies.

And Guzmán is confident the company is setup to prosper in what looks like being a digitally-connected, automated and environmentally-focused industry in the future.

He gave an example: "On the fleet and energy side, our Analytics practice is devoted to integrating complex datasets with AI and machine learning to drive automation and efficiency. We are already helping clients deploy intelligent systems such as autonomous haulage and dispatch, using predictive algorithms to optimise equipment use and maintenance."

GEM also analyses electrification strategies – for instance, modelling the technical-economic-environmental impacts of replacing diesel trucks with electric vehicles or incorporating renewable energy

sources into a mine's power mix – as well as leverages in-house simulation tools to model processing plants when evaluating alternatives to the SABC status quo. Guzmán said of the latter: "Our simulations do not just provide a static result; they capture the interactions between processes and equipment, helping identify potential bottlenecks, risks and opportunities in new designs. In fact, we are already advising clients on several next-generation flowsheets."

GEOVIA consulting on connectivity

Ralph Smith, **GEOVIA** Sales Expert – Management Director, says consultants are not just plugging gaps for mining companies; they're also helping transform how knowledge is captured, shared and applied across the mining value chain.

Dassault Systèmes GEOVIA is doing this through not just software, but also by enabling knowledge transfer, operational continuity and strategic decision making, he says.

Asked to highlight specific areas of heightened demand for its consulting-related services, Smith looked to areas such as mine planning, geological modelling and data management.

"Companies are turning to us to automate repetitive processes, standardise best practices and provide virtual twins that enhance collaboration between disciplines,"

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he told **IM**. “Our platform-based approach through the 3DEXPERIENCE® platform enables teams to work more cohesively and with greater agility, regardless of their physical location or level of experience.”

No single solution can replace deep domain expertise, but digital tools can significantly augment human capability and reduce dependency on scarce specialist roles, according to Smith.

“Through simulation, machine learning and remote collaboration tools, we help mining companies maintain continuity and scale expertise across sites and teams,” he said.

Dassault Systèmes GEOVIA is also ensuring it has the in-house skills to cope with this increasing industry demand by establishing strong partnerships with universities and industry programs, plus conducting in-house training initiatives.

“By integrating our solutions into academic curricula and offering hands-on learning, we’re helping to equip students and young professionals with real-world, future-ready skills,” Smith said. Internally, the company continues to grow its team and foster cross-disciplinary capabilities to meet evolving client needs.

A sustainable talent pool, deep mining and geospatial expertise, and the digital capabilities of the 3DEXPERIENCE platform provide the company with a competitive

edge in the consulting world, according to Smith.

“We offer more than just consulting – we deliver integrated, mining-specific solutions that drive smarter, more sustainable decisions,” he said. “Our specialties lie in strategic mine planning, parametric design and geospatial application. We enable clients to quickly evaluate multiple scenarios and optimise across technical, economic and ESG parameters.”

And the company is also setup to support a more digitally-connected, autonomous and electrified industry, according to Smith.

“We enable mining companies to simulate, optimise and validate entire value chains – from pit to plant to tailings – before implementation,” he said. “This starts with a model-based systems approach, providing a way to understand complex systems, allowing for improved analysis and verification of models, reducing errors and improved decision making.”

This is seeing Dassault Systèmes GEOVIA work with clients to rethink conventional flowsheets, leveraging parametric design and strategic planning tools to evaluate innovative configurations. This includes exploring alternatives to traditional SABCs, integrating coarse particle flotation and assessing dry tailings and in-pit backfill scenarios from both economic and ESG perspectives, for example.



Through simulation, machine learning and remote collaboration tools, Dassault Systèmes GEOVIA helps mining companies maintain continuity and scale expertise across sites and teams, Ralph Smith says

The mining sector is often effective at improving or optimising processes within individual disciplines, but continues to fall short when it comes to cross-disciplinary collaboration and connected workflows, according to Smith.

“By connecting geological models, mine plans, processing routes and sustainability data in a single environment, we help clients futureproof their operations with agility and confidence,” he said. “These capabilities are particularly valuable as operations navigate changing energy inputs, water constraints and evolving product specifications.”

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