

# Custodians of knowledge

Carly Lovejoy asks a range of firms about the current role of consultants within the mining industry, challenges faced, how they are adapting and what the future holds

**T**he role of the mining consultant has changed significantly in the past 20-30 years thanks to a range of factors including tightening regulation and legislation across the industry, stricter reporting standards, the evolving needs of their clients, and the advent of better communication and data-management tools.

There has also been change in attitudes towards consultants, particularly those from independent firms. Many consultants are now asked by clients to be more actively involved in their businesses and become part of a team rather than an external group that completes a piece of work independently. A drive to gain more value from the knowledge and expertise of consultants has also meant that consulting practices now tend to offer solutions and intellectual property rather than just reports; put simply, clients expect more for their money.

Peter McCarthy, chairman and principal mining consultant at AMC Consultants, explains: "Thirty years ago, mining companies were the repositories of technical expertise. This changed in the Thatcher/Reagan era when people who were not essential for production were gradually removed. The people who left those companies set up consulting firms.

"Today, very few large mining companies try to maintain in-house technical expertise, as this can be bought by the hour from consulting firms. Consultants are now the custodians of knowledge. While operations staff come and go, individual consultants typically have multi-decade involvement with an operation."

Tim Paul, director of SLR Consulting UK and Ireland, agrees: "The role of consultants in the mining sector is almost unrecognisable from that of 20-30 years ago, as clients now look for more than just technical input. Consultants providing commercially astute insights, combined with industry expertise throughout a project's lifecycle are what clients look for."

Most consultants agree that the growth of the mining industry and the principal changes that have occurred within the operating environment over this period are what have driven changes within their practices the most; their roles have evolved to meet the needs of their clients.

Dave Walker, global mining sector



*Wardell Armstrong International consultants inspecting an open-pit mine site*

leader at Golder Associates, explains: "The most significant changes have been in the industry playing field; the rules have changed. Mining has come to take a more central role on the world stage. It is no longer good enough for a mining client to merely have a technically competent design or environmentally sound management practice.

"The breadth and depth of engineering, environmental and social inputs for project development has increased over the years. This directly influences project viability and performance, and reflects on what we as consultants have to provide to the industry. Stakeholders now go beyond owners and shareholders, or indeed the authorities that police the industry, but also include communities directly and indirectly affected by development; a social licence to operate is a requirement."

Walker adds: "The cost of our clients doing business has increased significantly as well. The top risk factors that have emerged in the past decade include pricing pressures, project cost overruns, market and sovereign risk, regulatory compliance, access to talent and, of course, pressures related to the global financial situation, and access to capital and cash resources."

MaryAnn Crichton, managing director of investment and business planning at Hatch's management consulting division, says: "The main change that we are seeing is in the type of projects that are coming through, particularly from the

major miners. There are a number of very large greenfield projects being built in remote locations. As our clients have globalised, we have expanded our expertise and services in order to support them in these far-flung locations.

"There are also issues surrounding capital spend on these large projects. For example, if a project costs US\$5 billion, 70-80% of that cost will be associated with infrastructure development, and the other 20-30% will be for mine development, sustainability programmes, etc. There are huge risks associated with these projects, so it is our job to help assess and mitigate those risks, and to break projects down into financeable portions."

Improvements in computing and communications technology as well as data transfer have also had an impact on the role of the consultant. "Every client ►

**"Today, very few large mining companies try to maintain in-house technical expertise, as this can be bought by the hour from consulting firms"**

*Wardell's experts on site at Irokinda gold mine in Russia*





**Munkbileg** ► now expects instant gratification on their project, sometimes requesting timescales that are unrealistic," explains Phil Newall, managing director at Wardell Armstrong International. "More recently, with the lack of skilled personnel available, more clients are using consultants to manage their projects as they themselves do not have the expertise. This in turn places a heavy burden on staff recruitment and management within the consultancy business."

**"Without doubt, there is now much more pressure to deliver 'good results' when in reality many deposits are uneconomic"**

**Geoff Mason of Saint Barbara witnesses iron-ore sampling in Mangalore, India**



### MEETING EXPECTATIONS

In response to some of these changes, many consulting companies have expanded their geographical footprint in order to service clients in certain markets better. There has also been a reduction in the number of independently managed mining and metals consultancies through acquisition, as companies seek to expand their in-house expertise and capabilities.

Ben Worst, general manager for business development at Snowden, says that clients are looking for capability that enhances their project, and in the current environment this means lowering costs and increasing revenue. "Snowden focuses on areas such as universal reconciliation and mine optimisation that can have a significant impact on the value extraction from a mining operation throughout the life cycle," he explains. "These solutions add value for the

mining company by providing an in-depth view of the operation that would not be available through historical operational reporting tools."

Clients expect a high level of technical ability from consultants, and want them to have an appropriate level of experience. With increased transparency throughout the marketplace, resource reporting has become one of the most important technical areas that clients now require, and, particularly as mining software becomes more sophisticated, many clients employ consultants to ensure that this is done to the highest standard.

Kent Bannister, director of mining and projects for CSA Global, sums up the scope of work now expected: "Clients expect a comprehensive service providing assistance from exploration target identification through exploration management, resource estimation and feasibility studies to reserve estimation, competent-persons reports, operations support and independent technical advice for mergers and acquisitions."

The rapid development of mining software has enabled the creation of centralised databases that facilitate geological data management, resource and reserve estimation and mine planning. To provide clients with the best possible service, consultants need practical operating experience and must be constantly looking for new advances in software.

Iestyn Humphreys, managing director and corporate consultant at SRK Consulting (UK), explains: "Clients expect the full integration of geological and mining software with seamless reporting and auditability. We have not focused on a single software supplier solution and continue to use technologies from the majority of international suppliers."

### CURRENT CHALLENGES

When the consultants interviewed for this article were asked what the biggest issues impacting their businesses today are, a few common themes emerged.

The global economy is an obvious challenge. Boom and bust cycles are an inevitable part of the mining industry. When mining companies prosper, consulting demand increases. However, during downturns, lack of available finance and new ventures results in a slowdown in consulting services requirements, as well as a culture of prudence.

James Hogg, manager of Micromine Consulting Services (MCS), comments: "Consulting firms need to safeguard their sustainability during the quieter periods and the retention of staff during downturns. In addition, the mining consultant's desire to deliver a professional, detailed report that adheres to international reporting standards may be hampered by the client's desire to achieve cost savings with streamlined reports."

Mineral exploration companies are also showing increasing interest in complex orebodies. These have typically been viewed as uneconomical to mine or confidently evaluate, requiring more detailed modelling to accurately assess mineralised zones.

In addition, as many near-surface deposits are encountered and mined, greater technical expertise and geological understanding is required to discover 'blind' orebodies at depth.

Newall comments: "Without doubt, there is now much more pressure to deliver 'good results' when in reality many deposits are uneconomic."

Mike Armitage, chairman of SRK Consulting, says: "This is generally true; however, the technology available to model such orebodies, including

### Golder Associates: current projects

#### Antamina, Peru

Resource audits; review of site data and reporting; periodic review of groundwater and karst-related water matters.

#### Weipa, Queensland, Australia

Routine environmental water monitoring.

#### Mount Tom Price, Perth, Australia

Geochemical characterisation of talus material collected from two different pits.

#### Riversdale, Mozambique

Support for ESIA.

#### Castle Hill, New York, US

Determine appropriate geotechnical

solutions to maximise net present value and minimise capital/operating expenditure over the life of mine.

#### Wabush, Labrador, Canada

Pit slope stability review, risk assessment and mitigation study.

#### Wolverine, British Columbia, Canada

Geological model and mine plan for pit.

#### Khotgor, Mongolia

Feasibility study

#### Nui Phao, Vietnam

Design and construction supervision of tailings storage facility.

geological interpretation and 3-D visualisation techniques, has become increasingly advanced and our ability to understand and model the complexity without necessitating an increased density of geological information is therefore improving. Another key area, given the lower orebody grades now being mined, is the increasing requirement to mine selectively and therefore to model variations in orebody quality over short distances, and our ability to do is also improved by the availability of these techniques."

The top concerns that emerged were the increasingly strict regulations and international standards to which consultants must now work, socio-political factors, such as resource nationalisation, and managing client expectations.

Reporting of resources and reserves is further complicated by the growing number of joint ventures between companies from Western mining countries and new companies in emerging markets. "Such joint ventures are obliged to comply with regulatory reporting codes that do not yet share a consistent framework," explains Mohan Srivastava, principal consultant at MCS.

However, most consultants agree that, while challenging, these factors have made the role of the consultant more exciting. "The added complexity of the current mining environment adds a new level of excitement," says Worst. "This change has also prompted the industry to develop better and more sophisticated tools to adapt to these conditions. Demands on our clients to provide more sophisticated studies and operations that provide higher returns on investment drive this process."

Jane Spooner, vice-president of Micon International, agrees: "The main challenges today relate to operating in an increasingly complex regulatory environment, and in managing the expectations of clients who are challenged by project costs and delivering shareholder value."

Andrew Wells, partner at Saint Barbara, adds: "When clients need help with difficult projects or an external viewpoint on the value of a project, then the dispassionate view and analysis of an independent consultancy firm can prove of benefit. Getting involved at the scoping study stage or earlier can save a lot of tears later."

Consulting groups have also had to become more dynamic to respond to uncertainties across international markets. Erratic price fluctuations can unsettle client confidence, and changing priorities very quickly require rescheduling, postponing or abandonment of projects.

**ENVIRONMENTAL LEGISLATION**

Increasingly tight environmental legislation for mining projects works to protect the countries in which mines are operating and may also benefit mining companies, as environmentally responsible mines can more easily obtain social licence. But as legislation becomes tighter, it becomes more difficult for consultants to estimate the cost and schedule to fulfil legislative requirements for clients' projects. In addition, the implementation of new legislation comes with uncertainty, because agencies need time

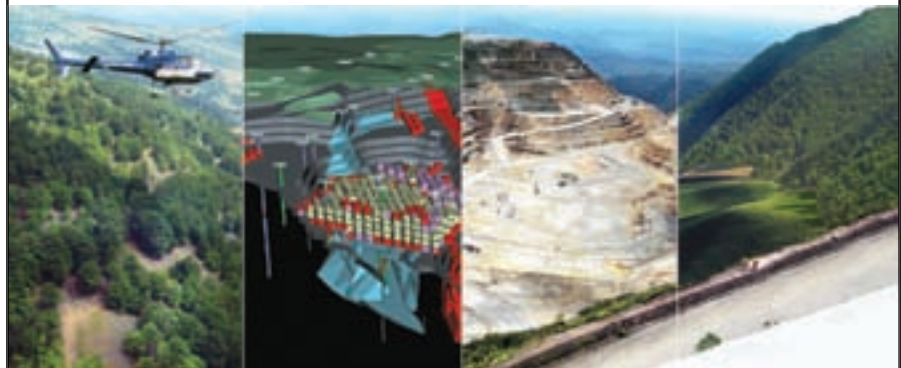


to determine how to interpret and apply the new legislation.

"In general, an increased level of specialist detail is required and the review

*CSA Global consultants at work in Indonesia*

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**A Golder Associates rock-slope inspection using rope access**

by agencies has also become more complex," explains Spooner. "For example, two years of baseline data and bench-scale tests may be needed now, whereas the same project may have previously needed only one year of baseline data. Similarly, a new project may now take two levels of governmental review even though an almost identical nearby project only took one level of review 10 years ago. This, in turn, increases the volume of material that must be prepared and reviewed by consultants."

Consultants must be fully aware of environmental issues for mining projects, wherever their location.

"Even in countries where environmental legislation may appear lax, the consultant must advise and ensure that adequate protection measures are adhered to," says Wells. "Often, the lender to the project will have its own environmental procedures to follow."

As environmental standards have tightened, many consulting firms have seen their environmental divisions expand. Newall comments: "Wardell Armstrong has seen its Environmental and Social team grow enormously in the past few years to satisfy this demand. From a

**An MCS consultant at work in Asia**

project perspective, this area can often be key to the successful development of a project."

Paul agrees: "Increased environmental legislation has definitely increased regulatory-related project work carried out by SLR for mining projects. In particular, this relates to stakeholder engagement, environmental baseline studies, environmental social impact assessments (ESIAs), permitting, mine waste management and mine closure services."

However, others have chosen to stay away. "AMC has avoided establishing an environmental consultancy, as it is a crowded space and there are a lot of good companies already working in that area," explains McCarthy. "Also, we have seen in some firms that the environmental work can come to dominate the strategic thinking of the consultancy, to the detriment of its mining division. Unfortunately, sometimes the EIS [environmental impact study] process gets ahead of the feasibility study process, which can lead to promises being made in the EIS that cannot be delivered."

The duration of environmental approvals has had a significant impact on development time for mining projects. Bannister comments: "With environmental approvals taking many years, the requirement to incorporate approval conditions into feasibility study outcomes has created a complexity to the staged study approach that was not present 20 years ago. The importance of prefeasibil-



ity studies cannot be over-emphasised, as this study stage frames the environmental approvals and project development timeline."

The adoption of international standards by the financial community has also led to compliance requirements as a pre-condition of project finance facilities. This in turn forces mining companies to comply with both local and national standards, with the resultant input to environmental impact assessments expanding significantly. "In some circumstances there is a need to generate two documents," explains Humphreys. "One for local regulatory requirements and one for international compliance generally associated with funding."

"With the recent focus on bulk commodities, the exploration and mining project footprint has expanded to include transport corridors and export facilities. These inevitably impact on the scope and scale of the project with enhanced focus on the biophysical and social environment. Additional areas pertaining to corporate social investments and general sustainability issues (post mining) are also key aspects requiring further investigation and planning during the EIA phase."

## TEAM WORK

Some consultancies choose to partner with outside service suppliers such as engineering, procurement, construction and management (EPCM) firms, financial institutions or law firms to deliver certain projects, and some will act as sub-contractors on mining projects.

However, each company has its own approach to these types of contracts; some have preferred partners in certain geographical regions, and some prefer to let their clients select project partners. Conversely, some prefer not to engage in shared projects.

Golder often works with other firms to deliver projects, particularly EPCM firms. "We often provide specialist support for a number of project components, either in part, in whole or in some other combination of services covering geology or resources, mine engineering, environmental and social, waste and tailings, geotechnical, water and civil or mining infrastructure," says Walker. "We tend not to have preferred partners, relying more on the client preference. When we do partner, we prefer to work with companies that are aligned with our own core values, ethics and culture."

Wells reports a similar view at Saint Barbara: "We like to work with firms whose skills we complement and with people we know, but we are always open to approaches from new firms, and for

## Micromine Consulting Services

Western United Mines, a subsidiary of Cornish Minerals, has commissioned MCS to provide technical assessments of the South Crofty (UK) mine redevelopment's geology and mineralisation to advance its exploration and investor programme. MCS conducted a programme of data validation, wireframing, block modelling, resource estimations and reports for submission to the Toronto Stock Exchange.

MCS recently completed a pre-feasibility study for an open-pit uranium mine in Namibia. It developed, audited and validated the drillhole database incorporating modern data and historic paper logs. The results were then reconciled using a comparative study against trial mining, and a

preliminary open-pit mine design was completed based on the MCS block model.

In Mali, MCS completed a competent person's site visit, property review and independent technical report related to gold occurrences in the West Bountou region, and it is currently undertaking a full NI 43-101 resource estimation study for a lead-zinc project in Balya, Turkey.

MCS is currently completing a JORC resource estimation study of all gold and gold-silver assets for a Russian mining company in the Khabarovsk region. This includes full exploration programme design and updating the existing geological model to satisfactory levels of confidence, according to best practice standards.

new project areas we will seek out new partners with the requisite skills," he explains.

SRK works with a suite of service suppliers to the mining and metals sectors. However, it prefers to do so on a project-by-project basis. "We are typically sub-contracted by EPCMs as part of the feasibility-study process," Humphreys tells MM. "Interaction with the financial sector is generally limited to working alongside accounting or legal advisors for a specific client undertaking some form of capital raising. Notwithstanding this, we are mandated by the debt-market participants, specifically project finance, although our professional fees are generally passed on to the end client. In certain instances we have provided expert witness services; however, these are generally of a limited nature."

Micon does not partner with EPCM contractors, but will occasionally partner with financial groups or law firms, particularly for work relating to the development of mineral policy in an emerging mining jurisdiction. "Often for due diligence reviews and independent engineer assignments, we have to bring in specialists who have expertise or knowledge of a geographical or geological environment. While we do

work regularly with certain firms and individuals, we do not consider that we have preferred partners since the choice is usually based on the need to address site- or project-specific issues and, therefore, on being able to field the best-qualified team," explains Spooner.

Wardell Armstrong is happy to partner with certain firms, particularly EPCMs. One of its regular partners is UK-based engineering company GBM.

McCarthy says that AMC sometimes works as a subcontractor to EPCM firms and may partner in preparing bids. "Financial firms engage us for due-diligence work, and law firms engage our consultants as expert witnesses, but we have not seen the need to partner with these firms," he adds.

**ADDING VALUE**

There are a number of benefits of employing the services of an independent consulting firm, or those associated with service providers or vendors.

An independent and unbiased view is often what clients value the most. "Clients value our independence and integrity, and the quality of our final reports, which are, after all, our product," says Spooner. "Independence is essential for most areas of work, particularly in Canada relating to



*A Golder Associates consultant carrying out biological monitoring work*

technical reports under NI 43-101, for due-diligence assignments on behalf of lenders and in expert-witness assignments.

"We also believe that our work is valued for our attention to detail and our flexibility in being able to offer expertise from offices in Canada and the UK, and field teams that have technical breadth and depth. Micon has made a conscious effort to recruit and retain individuals who already have a number of years of hands-on operational experience in the consulting field," she adds.

Newall believes that transparency is also important: "Because Wardell ▶

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**Alex Winant, ► MCS resource consultant based in the firm's Beijing office**

**“Firms wishing to strengthen their diversity may consider adding consulting to their services portfolio”**

**SLR Consulting has been working at the Kilroot salt mine in Northern Ireland since 1999 (see box, p94)**

**Photo: Irish Salt Mining & Exploration Co Ltd**

Armstrong is owned by its partners, all of whom are technical staff, clients get the best advice from people who know the business and who also have a vested interest in giving the best service possible. The fact that Wardell can deliver a turnkey service is also important.”

“We consider that not having a down-stream interest in the sale or promotion of any specific technology or equipment solution enables us to provide independent input to the consideration at hand,” says Humphreys.

“Furthermore, by precluding our employees from either directorships or other beneficial interests in our clients’ projects we ensure that there is no conflict of interest. In certain markets, knowledge transfer is also highly valued and is now expected as part of the process to capacitate client employees to generate quality products, which we review as opposed to explicitly authoring.”

Walker agrees: “It’s all about impartiality, access to intellectual capital and experiences that transcend the mining industry. Our strength lies in the access to some of the best intellectual capital in the world.”

SLR aims to develop long-term relationships with its clients. “From a client perspective, this means they not only benefit from independent practical advice, but our long-term approach means they minimise the risk of corporate memory loss due to client staff transfers or turnover,” states Paul.

Most independent consultancies report that their businesses have not been affected by the entry of service providers and vendors into the mine consulting market (a relatively recent development) and many view the competition as a positive move that will drive excellence within the market.

Where consulting services are offered by mine service providers or equipment/software vendors, there is always a risk that the consulting advice or services may not be impartial, or that they may be

biased towards the use of a particular equipment or software. However, there are also a host of benefits that can be leveraged.

MCS, the international consulting division of software provider MICROMINE, offers a range of services that span the mining value chain from exploration, resource estimation and scoping to bankable feasibility studies, and mine production and control.

Hogg explains: “Clients particularly value our consultants’ technical expertise and ability to achieve outlined objectives through software. MCS consultants leverage the full suite of MICROMINE’s products and solutions to deliver technical studies, investor presentations and 3-D animations without passing on any additional software costs onto the client.”

MCS consultants also provide beta testing services for MICROMINE’s product development, and advise on the development of tools and advanced functionality requirements for mineral exploration data collection, management, interpretation, modelling and resource estimation. This means that clients’ projects benefit from the latest technical advances in hardware, processing power, programming capabilities and connectivity. MCS consultants can also leverage third-party applications.

The current economic climate has placed significant financial pressure on equipment and software suppliers to the exploration and mining industry. Hogg says firms that have achieved diversity and breadth across their product range, services, geographical locations and clients have coped well.

However, firms wishing to strengthen their diversity may consider adding consulting to their services portfolio, and equipment and software vendors may wish to leverage their client bases and positive relationships to drive new consulting business lines.

“While the cross-selling opportunity is apparent, it is not an easy transition to make successfully,” he cautions. “Firms need to carefully consider the resources required to establish a management and operational team that can effectively undertake consulting. Other firms may



see consulting as a distraction from their core business, but MICROMINE’s consulting services will continue to grow as part of the company’s planned expansion.”

Hatch believes that its EPCM capabilities offer an additional layer of expertise and services to its consulting clients. “The breadth of technical expertise and capability that we have in-house is really what sets us apart,” explains Crichton. “We do a lot of studies for mining companies, not just scoping, feasibility and prefeasibility studies, but also technical assessments for new technologies and applications. We also do detailed engineering, construction and start-up of projects, and our operational services practice can help companies to improve the performance of their operations. On the management consulting side, we often get involved at a very early stage, even before the scoping study to help with conceptual business studies.”

She continues: “Shareholders will no longer back multi-billion-dollar mining projects that will take five or more years to build. They are demanding quick returns, so our clients are looking for ways to break these megaprojects down into smaller, more financially attractive projects that put less of the company’s capital at risk. Our scope of services and expertise means that we can provide these solutions.”

## STAYING AHEAD OF THE GAME

When asked about their business development plans for the coming 12 months, most consultants reported an expansion in their capabilities or geographical reach.

“We have responded to client needs by providing offices in the UK and Canada, and by adding expertise in mechanical engineering,” says McCarthy. “Our mix of services and capabilities has not really changed in 30 years, but we are expanding our business improvement capability due to client demand.”

Micon plans to keep up to date with the latest software developments for mineral resource estimation, open-pit and underground mine planning.

“We have increased our range of mine planning services and are seeing the benefit of that investment,” says Spooner. “We recently opened an office in Cornwall, UK, which is a developing centre of mining-industry expertise.”

Worst says that Snowden is focused on delivering specific solutions to the market. “Our geostatistical tool, Supervisor, is being adopted around the world. We are a leader in universal reconciliation, and



the new version of Reconcilor, our mine-wide reconciliation solution, will be released in late 2013," he says. "We are also bringing an exciting new resource governance solution to market. We are working closely with our clients to look for areas where we can add more value in future."

In the past 12 months, MCS has focused on expanding its international team and has opened offices in Russia, Scandinavia and South America. The company has also added capabilities around valuation and due diligence, and in December it launched MCS Exploration Services, which delivers end-to-end expert advice, data compilation, interpretation and geological modelling.

The MCS team is leveraging the new features and benefits across recent software releases, including MICROMINE 2013 and Geobank 2013. "In the coming decade, mining consultants will need to be increasingly 'tech savvy', familiar not only with new developments in software, but also in the innovations in hardware, mobile devices and cloud computing," says Srivastava.

Newall agrees: "Having state-of-the-art software is vital to stay at the forefront, as is having experienced personnel. To this extent, Wardell Armstrong has invested heavily in senior staff and software (with the requisite training)."

CSA Global has reacted to customer enquiries by developing services such as strategic exploration planning studies and reserve assessment reviews to facilitate quick assessment of projects that are at different stages of evaluation. "This gives the project owner a better understanding of key value drivers and risks. Also, in the past 12 months we have opened offices in South Africa and Canada to better service

our clients in those regions," says Bannister.

SRK's focus remains on expanding its global footprint to ensure the capability to deliver multi-disciplinary products in each jurisdiction. "This relies on both maintaining centres of excellence and recruitment of consultants into the developing practices," says Humphreys. "This is supplemented by partnering with clients and other mining industry-focused groups, eg professional membership institutions, governmental and regulatory authorities and educational establishments." The company may also expand its service line for niche areas including: exploration services; mining legislation restructuring; mining-related infrastructure; as well as specialisation in bulk commodities.

Golder has evolved its services in response to market pressures. "We have increased our capabilities in the management and advisory space, as well as offering more engineering design and construction capability in niche disciplines aligned with our core business," says Walker. "We have expanded our service offering to take cognisance of the price sensitivity of the mining marketplace. Brownfield projects and sustainable cost-reduction priorities are the watchwords of the times for our clients, so they are ours too."

Golder has also improved its focus on certain clients. "We have elected to place greater emphasis on our key clients, with a balanced portfolio of clients and projects across the industry. This helps reduce our risk and, more importantly, provides an opportunity for our consultants to add value to our clients' projects," Walker adds.

Hatch is focusing on operational perfor-



mance improvement and helping its clients to get more value from their operations with less capital. "Now is a good time to buy, so we're helping clients to search for new properties in certain sectors," explains Crichton. "We are also doing more energy- and water-management studies. Our services have really evolved to meet the needs of our clients." The company is currently working with Kinross at a project in Mauritania to develop financial, engineering and design options.

SLR expects to see a significant uplift in ►

*Golder Associates conducts audits, reviews and groundwater monitoring at the Antamina copper-zinc-molybdenum mine in Peru*

## Micon International

Micon is engaged on a number of assignments on behalf of lenders to mineral projects, as an independent engineer. Locations include Canada, UK, Turkey and Eritrea.

"We have recently completed independent technical reports on all of the operations of the Russian diamond producer OJSC Alosa, and on behalf of the Polish copper producer KGHM Polska Miedz," says Spooner.

The preparation of mineral resource estimates and technical reports under NI 43-101 is an important part of Micon's business. The company has recently completed a number of these relating to precious metals properties in North, Central and South America.

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**SRK consultants** ► work in the US and Canada this year and, as a result, has made strategic hires to support this growth. The company has grown its mining sector business over the past four years through a combination of organic growth and strategic acquisitions in Australia, North America and southern Africa.

### THE FUTURE

Considering the current volatility in the mining market, it is also pertinent to look at the future role of consultants. While core competencies and services are likely to remain the same, the way in which consultancies operate and the nature of the work that they undertake will change in response to market conditions and the needs of their clients.

"The fundamental role of the consultant is to provide high-quality, independent advice to clients. We do not see that changing," says Spooner.

**AMC Consulting**  
experts in  
discussion

"Changes and challenges will be those associated with global economic conditions, and their impact on metals and financial markets. Challenges include being able to understand and respond to those faced by clients in the mining industry who are pressured by metals prices, the capital costs associated with major new projects, the availability of finance and shareholder expectations."

Current financial constraints on the mining industry have placed an increased focus on profitability and the availability of capital. "This will create more work for mining consultants, but there is pressure to reduce rates," explains McCarthy.

"Consultancies are stuck between a call for reduced rates and the need to pay competitive salaries to attract and retain staff. We expect that salary pressures will reduce over the next couple of years."

This trend is also likely to increase competition within the consulting market, not just for new contracts but also for recruitment. "It is well known that there is a shortage of experienced geologists, mining engineers and processing engineers, and in the future the recruitment of experienced consultants will become harder as the



current generation retires," says Wells.

Newell also points to competition from emerging markets. "In the coming years it is likely that there will be a greater acceptance of consultancy firms from countries such as China. However, as commodities become more scarce and more expensive to develop, it could be argued that the role of the consultant will become more important as companies, particularly the smaller ones, struggle to deal with the technical issues," he explains.

In addition to accommodating changing client demands, it is likely that consultants will be expected to work in increasingly remote locations with very little infrastructure as mining companies seek new resources. "The mining projects being assessed for development and production in the near future will be more economically marginal and technically complex," says Srivastava. "This will require that mining consultants make increasing use of new technologies and methods that offer more precision and accuracy in grade and tonnage predictions. The appropriate use of new technologies and methods will need to be guided by practical field and operations experience, and by a strong and confident sense for decision-making in the face of uncertainty."

Worst agrees: "Major changes will come through the application of technology to solve some of the problems facing the industry. With more focus on automation and measurement of the mining process to an effective design and plan, the quality of those designs and plans needs to increase considerably."

It is also unlikely that a single mining consultant will have the experience, knowledge and skills to meet the challenges of future projects. This will dictate the need to work in inter-disciplinary teams, staffed by people with diverse cultural and technical backgrounds, although this is an ability on which many consultancies currently pride themselves.

"Mining consultants will be required to provide more oversight of studies and facilitate the integration of specialists and discipline experts," says Bannister. "The trend to more prescriptive and independent reporting, and auditing of resource and reserves will continue. Consulting mining engineers with sufficient experience to be competent or qualified persons will be in high demand."

Walker summarises the situation perfectly: "Put simply, our clients' challenges are our challenges. The role of the consultant will need to evolve with the changing pressures facing the industry. It is how we respond to these challenges and act that will define our success." ♥

## SLR Consulting

SLR is currently involved in mining projects in Australia, Europe, North America, South America and sub-Saharan Africa. Project examples include:

### Kilroot salt mine, Northern Ireland

This underground salt mine produces 500,00t/y of rock salt. SLR has acted as technical advisor to the mine since 1999 providing geological, geotechnical, mine planning and design, engineering and ESIA services for mine development and operation. Following receipt of planning permission for a 270ha underground mine extension (30 years'



*SLR is assisting with redevelopment plans for the East Pit site in south Wales*

reserves) in 2010, SLR is advising on a new 1.1km access tunnel, which started construction in May.

### East Pit coal mine, UK

This is an existing open-pit coal mine in south Wales. SLR has prepared a rural regeneration plan for 585ha of the site. The restoration strategy will provide opportunities to create a range of new environmental, rural enterprise and tourism projects linked to the adjacent Brecon Beacons National Park. SLR provided a multidisciplinary service for the project and a planning application covering the first phase of the project was submitted to the local planning authority in November 2012.

### Anglo Gold Ashanti's Obuasi gold mine, Ghana

Over a number of years SLR has advised on tailings management and last year was appointed to assist with closure planning, including the design and permitting work related to a landfill site required to accept solid waste from the mine. In addition, SLR carried out feasibility work on developing a combined heat and power-generation facility.