



IMQS

IRISH MINING & QUARRYING SOCIETY

Inspiring the Next Generation



ANNUAL REVIEW
2026

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Notes from the Editor

Inspiring the Next Generation

Welcome to the 2026 edition of the IMQS Annual Review. This year's theme, **Inspiring the Next Generation**, focuses on making the importance of our industry, the breadth of work within it and the routes into it more visible.

This is particularly timely as the skills required across the sector evolve in response to technological development, higher expectations around safety and environmental performance, and growing demand for the materials needed for housing, infrastructure, energy and modern technology.

The materials supplied by the extractive industries underpin our homes, roads and public infrastructure. The connection is visible in the fabric of our towns and cities, with STONEBUILT Ireland recording the prominent use of Leinster Granite and Portland Stone in Georgian Dublin, alongside Calp limestone from Co. Dublin and Scrabo sandstone from Co. Down.

Yet, the scale and variety of the sector aren't always visible from the outside. Careers extend well beyond the roles traditionally associated with mining and quarrying, and this year's contributions take us from the day-to-day reality of an opencast operation and the teamwork at the heart of mine rescue to careers in geology, engineering, environmental management, plant operations, safety, planning, regulation and business.

At Kemek, Stephen O'Reilly's career demonstrates how people can enter the industry from unexpected backgrounds. After studying sustainable agriculture and joining the company in a temporary role, he completed a Transport Operations and Commercial Driving Apprenticeship before progressing to a full-time driving role and undertaking further ADR training.

There is also no single route into the industry. The Review highlights pathways across Ireland and the UK through higher education, apprenticeships, Further Education and Training, employer-led development and statutory site-competence training. The experiences

featured are equally varied. At Sandvik, Brian Carroll progressed from Apprentice Plant Fitter to Operational Manager for the UK and Ireland, while a Roadstone business graduate moved through health and safety and quarry operations into an HR management role.

Inspiring the next generation also means enabling people from different backgrounds to see a place for themselves in the sector. Boliden Tara Mines provides a strong example, with women accounting for approximately 35% of its new hires in 2026 to date, while Lauren Meager's move from veterinary studies into exploration geology and Mollie Morton Gary's progression from Geo-Drilling to a Construction Plant Fitter apprenticeship illustrate very different routes into modern mining.

The responsibility doesn't rest with potential entrants alone. Employers, professional bodies and those already working in the Sector must explain what we do, provide meaningful training and work experience, support new entrants and make career pathways easier to find. We must also engage openly with questions about safety, environmental impacts and relationships with communities.

Roadstone's redesigned graduate programme shows one way in which employers can fulfil that responsibility, combining formal mentoring and professional management development with opportunities for graduates to undertake real projects and present them to senior management. The National Parks and Wildlife Service (NPWS) contribution highlights another aspect of responsible practice, showing how the vigilance of quarry managers and employees can help protect peregrine falcons

and other wildlife using quarry sites.

The Irish Mine Rescue Committee demonstrates how responsibility for safety is supported through mutual training and the transfer of knowledge from experienced rescuers to newer team members. Established rescue skills are now being combined with modern gas monitoring, thermal imaging, digital mapping, advanced communications and drone technology.

The Review also demonstrates the international reach of Irish geoscience, engineering and extractive-industry expertise. Its coverage of critical raw materials, secure supply chains and PDAC 2026 underlines the need to attract people with the skills and ideas to respond to future challenges.

I hope this Review encourages those considering their future to look more closely at the careers available and encourages everyone already working in the Sector to share their experience and help make those opportunities more visible.

Finally, I would like to thank all our contributors and advertisers for their continued support, as well as the IMQS Council and Editorial Committee. I would also like to acknowledge Golda, Marty, Joel and the team at 4SM for bringing this year's publication together.



BY DR AOIFE BRADY
Editor, Irish Mining & Quarrying Society



Message from the President

Dear prospective colleague, I hope you take the time to read this annual review and broaden your horizons to a future working in the dynamic and interesting Extractive Sector.

You may not be aware of the Extractive Sector but within it you will find many opportunities to develop a long term & agile career full of challenges and rewards. The Extractive Sector is critical to modern society, infrastructure, renewable energy and the low-carbon transition, and we would like to take this opportunity to better communicate the reality of modern extractive industries by showcasing the opportunities, innovation, diversity and long-term career pathways the sector provides.

The Irish Mining and Quarrying Society is a small voluntary, membership-funded, non-profit-making organisation which was founded in 1958 to provide a focal point for all those working in the extractive industry in Ireland. Each year members of the IMQS produce an annual review full of articles relating to the industry during the past year. However, this year we would like to use this publication for a different purpose; we would like to inspire the next generation of employees to join the Sector. For the past number of years, a reduced number of young people entering the sector has been noted and a healthy workforce needs young entrants. Many of the roles are naturally created by an aging work force leaving the sector. This is only part of the story, we want younger generations to enter into the Extractive Sector to bring a fresh perspective, to challenge the norms, develop innovative ideas and to bring a renewed energy to the sector.

An age diverse workforce with a mix of youth and experience can offer several benefits to all involved. The combination of a younger person's fresh perspective and the established knowledge of an experience employee can lead to innovative solutions to problems and creative thinking. Teams which have a balance of youth and experience can allow knowledge transfer and create mentoring opportunities.

This ensures that skills and insights are shared and developed and it also ensures that young people are supported as their careers develop. Multigenerational teams allow for the company culture, "the way we do things", and its institutional memory to transfer over time within an organisation, creating a sense of belonging to its employees. We want you to feel a sense of belonging to the Extractive sector.

SO HOW WOULD I ADVISE YOU TO JOIN THE EXTRACTIVE SECTOR?

Searching for courses within Ireland using key words such as the Extractive Sector, Quarrying and Mining will provide little or no results. This is unfortunate and something that we hope to address in the future. I would say read this publication as we hope it will provide you with enough knowledge of the extractive sector to want to find out more.

If you are still in secondary school ask your career guidance advisor to reach out to the IMQS at info@imqs.ie for further information and we would be happy to help in any way possible.

If this publication has inspired a person of any age, to want to work in the extractive Sector or change roles within the industry please do not hesitate to contact the IMQS and we would be happy to help you.

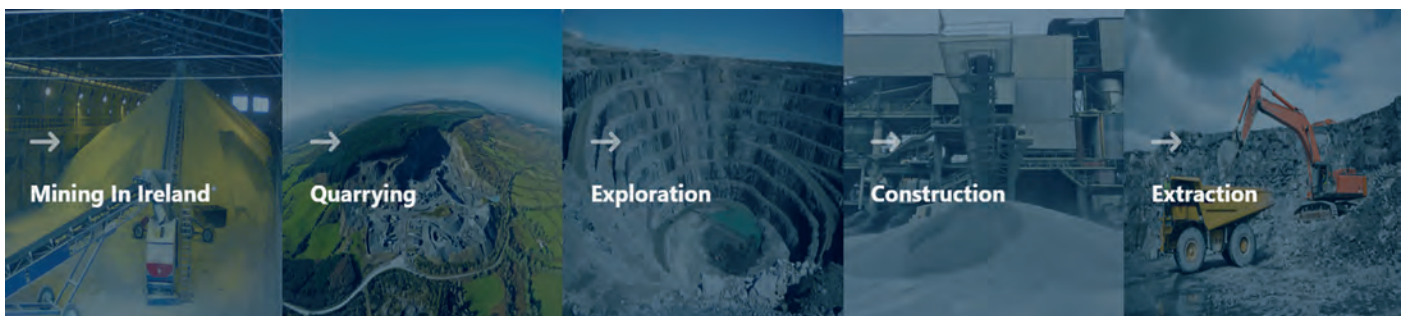
If you are a person that is enthusiastic about the Extractive Industry within Ireland why not join the IMQS. All persons involved in or associated with the Extractive Industry are welcome to apply for membership of the Society. Student membership to the Irish Mining and Quarrying Society is free of charge.

I would like to sincerely thank all who have contributed articles and advertisements to make this another successful publication. This publication would not be possible without you, I hope the stories that you have shared will inspire the next generation to join the Extractive Sector.

Finally, I would also like to complement the IMQS Editorial Committee and 4SM for the excellent work and cooperation while compiling and publishing this review.



BY RUAIRI O CONNOR
President,
Irish Mining &
Quarrying Society



Activities of the Society

2025-2026

The following are the main activities of the society in 2025/2026.

Details of all IMQS activities can be found at www.imqs.ie. I would like to take this opportunity to thank you, our members, for your patronage.

The society cannot exist without your continued support.

Annual Review 2025

The Annual Review 2025 as well as reviews from previous years can be viewed and downloaded at [Annual Review | IMQS](http://www.imqs.ie).

Representations

The IMQS has many members who actively promote the society in various groups and events including:

- European Federation of Explosives Engineers (EFEE)
- Prospectors and Developers Association of Canada (PDAC)
- Geoscience Ireland
- Quarry Skills Certification Scheme meetings (QSCS)
- Quarry Safety Partnership (QSP)
- Mineral Products Association Northern Ireland (MPANI)
- Institute of Quarrying Northern Ireland (IQONI)
- Irish Concrete Federation (ICF)

Institute of Quarrying Northern Ireland - Stone Crushers Ball

The Annual Institute of Quarrying (Northern Ireland) Stone Crushers Ball took place in the Europa Hotel, Belfast on the 24th of October 2025.

Annual Field Trip

The annual IMQS fieldtrip took place on Friday the 30th May 2025 to Valentia Slate in Co. Kerry. Valentia Slate Quarry is the oldest quarry in production in Ireland and the most westerly quarry in Europe.

Minco Exploration Challenge

Geoscience students in Irish universities were invited to take part in the Minco Exploration Challenge in collaboration with Minco Exploration Plc with additional support from the Geological Survey of Ireland (GSI), Institute of Geologists of Ireland (IGI), Irish Association for Economic Geology (IAEG), and the Irish Mining & Quarrying Society (IMQS).

This challenge simulates a real-world mineral exploration project using authentic industry datasets. Participating students will gain practical experience working with industry-grade data and workflows; develop teamwork, project management, and technical communication skills; receive visibility with professionals from Minco Exploration and our supporting organisations.

Quarry Ground awareness and Supervision Training

Early in 2025, the HSA ran a two-week quarry safety inspection campaign focusing on key hazards when working with excavations, tips and lagoons. The campaign highlighted the lack of available training for supervisors on Quarry Ground awareness. To fill the gap Lisheen Technical and Mining Services LTMS, in association with the IMQS, developed an MPQC accredited course, "Quarry Ground awareness and Supervision Training". This course is now available to the Extractive Industry in Ireland.

LinkedIn

Our LinkedIn page has over 2,700 followers with an average of 10 new followers per week. Subscribe to the page for up-to-date industry related articles and news.

IAEG-IMQS Conference

A significant highlight of the year was the joint IAEG-IMQS Conference, "Ireland's Natural Resources: Signs of Revival and Change".

The half-day event held on Friday 19th of September 2025 at the Mullingar Park Hotel attracted a wide range of attendees from industry, academia and government, reflecting the renewed interest and investment in Ireland's natural resource and extractive sectors.

The conference featured insightful presentations on exploration, quarrying, sustainability, and innovation, followed by a networking lunch that provided valuable opportunities for discussion and collaboration.

The positive aspects of metals and human health Presentation

Former winner of the IMQS Bursary award Eamonn Grennan presented to the IMQS members at our AGM

His subject 'The positive aspects of metals and human health', made for an enlightening and entertaining presentation.

Annual Dinner Dance 2025 & 2026

The 2025 IMQS Annual Dinner Dance took place on the 15th of November in the Hudson Bay Spa Hotel Co. Roscommon.

The Irish Mining and Quarrying Society is delighted to announce that the IMQS Dinner Dance 2026 will take place on Saturday, 14th November 2026 at the beautiful Hodson Bay Hotel.

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Building Geotechnical Competence Across the Global Quarrying Community

The Institute of Quarrying's geotechnical training pathway is helping quarry professionals strengthen safety, competence and confidence at every level of responsibility, from those working around quarry faces through to senior managers accountable for site-wide geotechnical risk.

Across its global community, including Ireland, the Institute of Quarrying works closely with national health and safety bodies, regulators and industry stakeholders to support higher standards, raise awareness and promote safer quarry operations. This collaborative approach ensures that members and the wider sector can access learning, guidance and professional development that reflects the real challenges faced by modern quarrying operations.

Quarrying remains a high-risk industry, shaped by complex geology, heavy machinery, changing operational conditions and evolving regulatory expectations. In this environment, competence is central to protecting people, supporting compliance and helping businesses make informed decisions on site.

Against this landscape, the Institute of Quarrying's Level 2, Level 3 and Level 4 geotechnical courses provide a clear progression route for individuals and organisations looking to develop practical knowledge, embed safer decision-making and strengthen geotechnical awareness across quarry sites.

A PROGRESSIVE PATHWAY FOR GEOTECHNICAL LEARNING

The Level 2 Geotechnical Awareness course is designed for anyone exposed to potential geotechnical hazards in a quarry or depot environment. Delivered as a face-to-face, interactive course that can be tailored to the quarry site, it introduces learners to basic geological principles, roles and responsibilities, types of geotechnical failure, quarry design and development plans, haul roads, excavation and tipping rules, inspection



Cliffe Hill - Quarry, August 2023.

and reporting, and emergency response. On completion of Level 2, learners are able to apply basic geotechnical theory in the workplace, better understand geotechnical hazards in a quarry environment, understand the reasons behind site rules, and undertake basic quarry-face inspections. The one-day tutorial includes a classroom session, site visit, short course assessment and accredited CPD certification

through the Institute of Quarrying. The Level 3 Award in Geotechnical Knowledge for Managing Mineral Processing Operations builds on this awareness for supervisors, foremen and those aspiring to management roles within the extractives environment. As an Ofqual-regulated qualification, it is pathway-driven and focused on the practical needs of operational leaders working within mineral processing

and quarrying environments.

Its content includes the physical properties of quarried mineral types, the difference between product characteristics and properties in the ground, quarry features such as excavation faces, overburden, access roads, ramps, tips, stockpiles and lagoons, as well as main failure types and hazards. Learners also explore inspection schemes, hazard identification, regulations, appraisals, control measures, mitigation, protection and design considerations for new quarry developments.

For senior site leaders, the Level 4 Award in Geotechnical Knowledge for Managing Mineral Processing Operations provides a higher-level Ofqual-regulated qualification focused on responsible managers, senior managers and quarry managers. It supports those with wider accountability for managing geotechnical risk across quarry operations and helps ensure that decision-making is grounded in both technical understanding and operational responsibility.

The Level 4 course covers failure types and assessment, compliance through appraisals and assessments, excavation and tip rules, design and inspections, training and competence, management structures and site responsibilities. It also explores soil and rock mechanics,

rock stability calculations, factor of safety, probability of failure, lagoon stability, waste disposal and the triage process for prioritising issues identified through reports and inspections.

Both Level 3 and Level 4 run for up to three months and include a blend of face-to-face tutorial, site visit, tailored online learning and end-point assessment through professional discussion, leading to an industry-recognised vocational qualification.

MEMBERSHIP AS A DRIVER FOR LIFELONG GEOTECHNICAL COMPETENCE

Alongside formal qualifications, Institute of Quarrying membership plays an important role in supporting the continued development of geotechnical specialists and quarry professionals across its international community. In a sector shaped by changing health and safety standards, environmental requirements, technology and operational pressures, lifelong learning is essential for maintaining competence and confidence in decision-making.

IQ membership supports this by connecting individuals to a wider professional community, giving members access to industry knowledge, CPD opportunities, technical events and professional networks that help keep skills current and relevant. This is

particularly important for geotechnical specialists, whose work depends on a strong understanding of ground conditions, quarry design, inspection regimes, failure mechanisms, risk controls and regulatory expectations.

For quarry professionals in Ireland, this connection to the wider IQ community provides an additional layer of professional support beyond the classroom. It helps individuals continue the learning journey after completing Level 2, Level 3 or Level 4 geotechnical training, encouraging them to apply learning in practice, share experience with peers and keep pace with industry developments.

This wider professional network is particularly valuable because geotechnical risk is not confined by geography. While each country operates within its own regulatory framework, the principles of safe quarry design, competent inspection, hazard recognition and effective management are shared across the global extractives sector. Through IQ membership, professionals in Ireland are part of a broader community that exchanges knowledge, discusses emerging challenges and supports the continuous improvement of safety culture and operational standards.

IQ's membership offer also helps bring together people at different stages of

 Celtic East Pit Study Tour 2016-18.



their careers, from early-career quarry professionals to experienced managers and technical specialists. Through this shared community, members can access professional development that supports safer, more consistent and more informed decision-making across the sector.

SUPPORTING THE NEXT CHAPTER IN QUARRY SAFETY AND COMPETENCE

The relevance of this training pathway extends well beyond one national market. Across the global quarrying industry, operators are responding to evolving legislation, greater expectations around competence, and an increasing need to demonstrate that people at every level understand the risks associated with quarry operations.

The Institute of Quarrying's close working relationships with health and safety bodies in different countries help ensure that its members remain connected to the standards, expectations and professional knowledge needed to support safer operations.

For Ireland, this means remaining part of an international community of practice that shares learning, strengthens competence and supports the

development of future industry leaders.

Julian Smallshaw, Head of Education and Standards at the Institute of Quarrying, said: "Our work with health and safety bodies across the industry reinforces just how important geotechnical knowledge is to safe and responsible quarrying. These courses have been developed to give people at every level of the operation the confidence to recognise hazards, understand their responsibilities and apply good practice on site. Whether someone is taking their first step into geotechnical awareness or leading the management of complex quarry operations, competence is the foundation of safer decision-making."

For quarry operators, the Level 2, Level 3 and Level 4 geotechnical courses offer more than training. They provide a practical route to strengthening site culture, supporting compliance, developing future leaders and ensuring that geotechnical risk is understood at every stage of the operation.

When combined with IQ membership, this pathway becomes part of a broader professional development framework. It supports quarry professionals not only in gaining new qualifications, but in maintaining their knowledge,

engaging with peers, accessing CPD and contributing to a stronger, safer and more resilient quarrying industry.

As the industry continues to adapt to changing regulation, inspection priorities, technology and workforce development needs, the Institute of Quarrying remains committed to helping quarry professionals learn, progress and succeed.

For Ireland, and for the wider global quarrying community it is part of, the next step is ensuring that competence, collaboration and professional standards continue to be embedded throughout the industry.

More information surrounding IQ's Geotechnical courses can be found [here](#).

IQ The Institute of Quarrying

BY JULIAN SMALLSHAW
IQ Head of Education and Standards





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Irish Concrete Federation (ICF)

It gives me great pleasure to contribute to this edition of the Irish Mining and Quarrying Society (IMQS) Annual Review, a publication which is highly regarded throughout the Irish mining and quarrying industries and beyond. I would like to thank Dr Aoife Brady, Chair, IMQS Annual Review Editorial Committee for her invitation to update readers on some of the industry priorities being addressed by the Irish Concrete Federation (ICF) at this time.

For last year's Annual Review, I focused on the single issue of access to raw materials which has been identified by ICF as a key challenge facing our industry, the economy and society in general. In particular, I highlighted our report "ESSENTIAL AGGREGATES - An Evidence-Based Assessment to Inform Ireland's Planning Policy" which was published in May 2025.

Over the past year, ICF presented the report, which highlights the need for national planning policy for the future supply of aggregates to meet Ireland's developmental needs, to the Minister for Housing, Local Government and Heritage James Browne and other stakeholders, including the Office of the Planning Regulator and An Coimisiún Pleanála, with whom we continue to engage on the recommendations identified in the report.

While the planning system and access to raw materials remains of critical importance to ICF, it will come as no surprise to readers that the primary concern of ICF members at the current time is the uncertainty of future construction activity levels arising from the war in Iran. The impacts of the war are being clearly experienced by our members in the increased costs of raw materials, fuel and energy, all of which feed into increased construction material and building costs.

These cost increases present additional affordability challenges for end customers, particularly in the area of housing which is the most significant domestic issue facing Government at this time. From recent engagements with other construction stakeholder organisations, it is abundantly clear that there is little knowledge or appreciation among these organisations of the massive cost increases that the aggregates and concrete products industry has borne in recent years. This is an area that ICF intends to highlight in the immediate future, particularly given

the ongoing daily impacts of current geopolitical uncertainty on supply chains.

Notwithstanding the ever present challenges facing our members, there is certainly room for optimism for the medium to long term future, particularly in the areas of infrastructure and housing. The government has committed a record €275.4 billion in public capital investment to 2035 in the reviewed National Development Plan.

This plan aims to address infrastructure needs in housing, transport, water and energy reflecting the Government's heightened ambition to address infrastructure deficits and respond to demographic, environmental and economic pressures. In addition, the Government's new housing plan 'Delivering Homes, Building Communities', targets the construction of 300,000 homes, including 72,000 social homes and 90,000 affordable housing units. These national plans present a major opportunity for the aggregates and concrete sector to grow given the national strategic importance of aggregate and concrete products for the construction of the homes and educational, health, energy, transport and agricultural infrastructure.

I welcome the theme of this year's Annual Review - 'Inspiring the Next Generation' which brings into focus one of the key pillars of this industry's future growth. Readers may find interesting that as part of the development of a new strategic plan for the organisation, ICF members have highlighted labour and skills as the principal challenge facing the sector currently, with one quarter of respondents to a membership citing the need to attract new employees to the sector as a key strategic objective for ICF in the coming years.

The next generation will be central to our members' businesses and the performance of the industry will depend on the strength of the relationships built with employees, contractors, suppliers, and importantly

the communities in which it operates. While the organisation's strategic plan is still under development at the time of writing, it is likely that the promotion of career opportunities and employee development in our industry will be one of ICF's new strategic objectives, with a focus on sector engagement with the education system from primary to third level, the provision of industry training programmes and an increased awareness of the opportunities in today's quarry and concrete products industry among the general public.

In addition, our industry must actively engage with local communities to deliver positive community impacts by driving rural economies, supplying critical raw materials for infrastructure, and creating stable, well-paying jobs to contribute to sustainable development in the regions where our members operate.

In conclusion, I hope that you find my perspective on some of the areas on which ICF is currently focused of some interest. As ever, I would like to pay tribute to the members of the Society for their commitment to their organisation which, as with all voluntary organisations, is given freely and for the benefit of the wider industry or sector. Finally, I would like to congratulate the IMQS in producing their Annual Review and to wish all readers a safe and prosperous remainder of 2026.



BY GERRY FARRELL

Chief Executive,
Irish Concrete
Federation





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An overview of activities by the Institute of Geologists of Ireland (IGI) 2025-2026

The Institute of Geologists of Ireland (IGI) was established in 1999 with the mission of promoting and advancing geoscience and its professional application in all disciplines, especially the geosciences, and to facilitate the exchange of information and ideas throughout the existing community.

The IGI is a registered charity and is not a lobbying organisation and its members are required to uphold, develop, and maintain the highest professional standards in the practise of their profession, and therefore, all members must undertake CPD recording for approval on an annual basis.

Professional membership of the IGI is open to all practising geoscientists who meet the required standards of qualification and experience. Professional members are intitled to use the Professional Geologist (PGeo) title as well as the European Geologist (EurGeol) title as IGI are a National Licencing Body with the European Federation of Geologists (EFG). The IGI maintain specialist registers of competent persons including:

- Qualified persons in respect of carrying out geological aspects of works related to pyrite described in 398-1 and EN13242 including SR21
- Geoscientists/competent persons: Regulated and Unregulated Waste Disposal/Contaminated Land Assessments following the EPA Code of Practice.

The IGI also maintains several Mutual Recognition Agreements (MRA) with professional bodies in other jurisdictions. These agreements allow professional members from the professional bodies to practice as geoscientists in the other's jurisdiction provided the conditions of the MRAs are met. For information on how to apply to the IGI, please visit www.igi.ie.

The mining and quarrying sectors have always been very well represented within our membership, with 25% of our members stating 'Mining Geology

and Exploration' as their main area of expertise at application stage. Many more of our members are involved in mining through associated fields such as hydrogeology, geochemistry, education, environmental assessment or regulation. The IGI recognise and support the work of IMQS in the responsible development of the minerals industry in Ireland in line with best practice.

IGI ACTIVITIES 2025 - 2026

During 2025-2026, the IGI continued to hold meetings and events online, with one board meeting, the AGM, and the IGN meeting following a hybrid model. The membership has grown in 2025 and 2026; nine candidates were approved for Professional Membership with one approved for Membership-in-Training. This brings our total membership to 426, of which 417 are EFG members.

Minerals Information Working Group

The Minerals Information Working Group (MIWG) remains the largest working group within the IGI and we are grateful to have the support of IMQS members who actively contribute to the working group.

This year, the MIWG's focus was on contributing to awareness of minerals in society, responding to national and local policy consultations, and keeping up to date with developments within the minerals industry.

Consultations in 25/26 included; Dept of Climate, Energy and the Environment Consultation on Whole of Government Circular Economy Strategy, Draft County Development Plan reviews for Louth and Meath, and Department for the Economy (Northern Ireland) on review of Mineral Licencing - Call for Evidence.

Courses and Webinars

The IGI delivered a series of events in 2025-2026, both online and in-person courses. We have aimed to provide regular CPD opportunities throughout the year and delivered:

- Energy Geoscience Webinars held in October and November 2025 with an online attendance of between 30 and 40 for each of the four webinars.

Topics including:

Seafloor Mapping in support of offshore renewable energy development

Geothermal energy in Ireland - recent developments and future plans

Renewable Resources to Hydrogen: storage and end-use

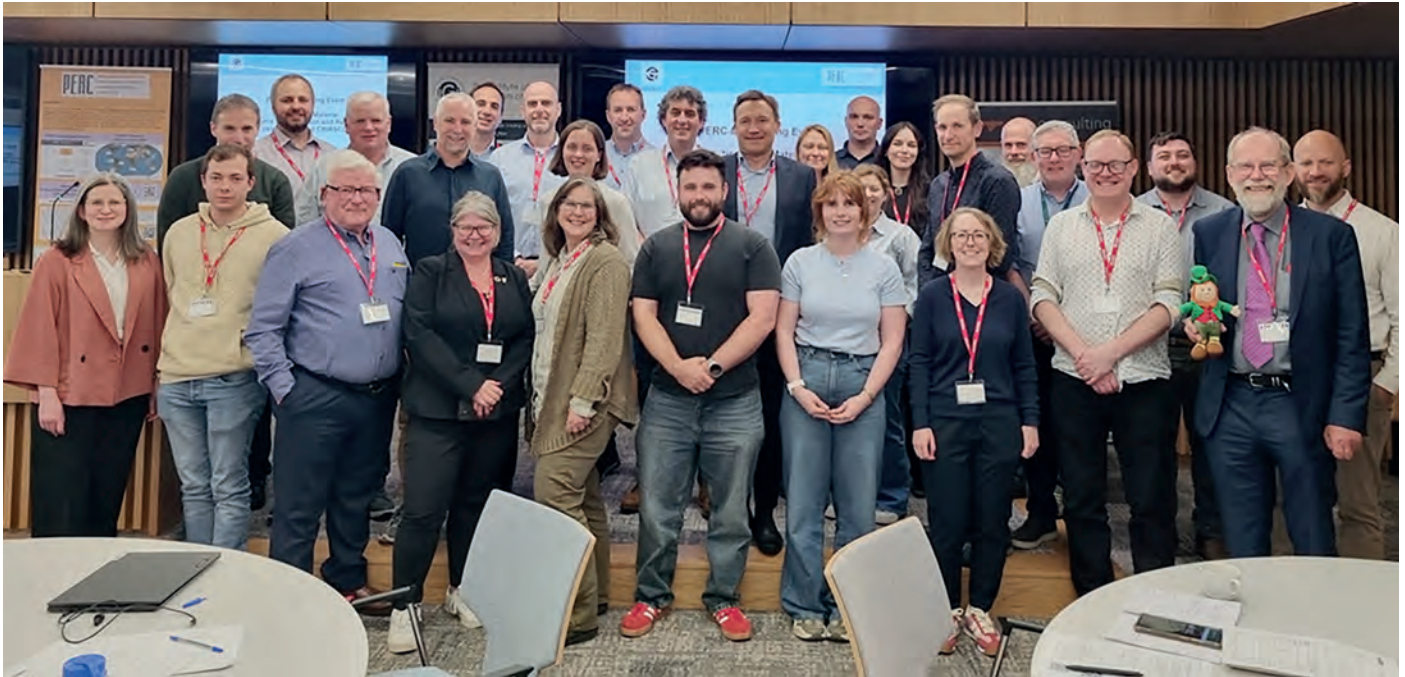
GeoStorIE - update on the assessment of Ireland's offshore geostorage potential

Recordings of the webinars can be viewed from the IGI website Conferences/Courses - The Institute of Geologists of Ireland

- PERC-IGI Training one-day event in HQ of the Department of Climate, Energy and the Environment, Dublin on 4 June on Critical Raw Material Resource Classification and Reporting using UNFC and CRIRSCO. Participation: 35 in person and 22 online.
- The IGI Board and committee members also received Inclusive Leadership training from the Irish Centre for Diversity (ICFD) and following additional work by the IGI EDI committee, IGI retained a Bronze Level "Investors in Diversity" certification.

Governance

The IGI is a member of Charities Institute Ireland (CII). The CII's mission



 **PERC-IGI Training course at Tom Johnson House, DCEE, Dublin on June 4th 2026. Speakers included in the group photo, from left to right, are front row: John Clifford (Minco), Erika Ingvald (UNECE), Edmund Sides (CRIRSCO); middle/rear: Owen Herod (Imerys), Bart Jaworski (Group Eleven), Ally O'Brien (Boliden), Tom Bide (BGS).**

is to provide leadership in the sector by empowering charities to maximise their impact, particularly through best practice in governance, finance and sustainable fundraising management.

The CII provides valuable resources and training and all board members will be required to undertake the Certificate in Best Practice for charity trustees. Further information can be found on their website <https://www.charitiesinstituteireland.ie/>.

Representation and visibility

This year the IGI maintained its public profile on a number of fronts. We responded to issues concerning geoscience in Ireland through the year via public consultations, mainly through the Minerals Information Working Group.

The IGI normally participates in key geoscience events each year as a sponsor and exhibitor. The IGI provided sponsorship and/or stands for:

- Tectonic Studies Group (Geological Society of London) AGM & Conference in December 2025 in TCD
- 69th IGRM at UCC in February/March 2026.
- exhibitor at the IAH Conference in Tullamore in April 2026 which allowed for good interaction with existing members and potential student and early career members.
- International Professional Geology Conference (IPGC) in Zaragoza in Spain in November 2025, which was attended by IGI EFG Reps Paul McDermott and Pól Ó Seasnáin

- Committed to financial and in-kind support of the Get into Geoscience initiative, which has applied for funding from Taighde Éireann / Research Ireland Discover Programme.

The IGI continues to be involved at a high level in the European Federation of Geologists (EFG). Members attended the last number of council meetings, including the recent Spring Council meeting in Milos, Greece, and have joined a number of key working groups with the EFG. A digital stamp is now available to all EuroGeol members as an annual cost for use in professional reports.

We continue to have an involvement in the space of geoscience education in Ireland, and to foster and support new geoscientists. Initiatives such as the IGI's Early Career Network and Mentoring Scheme have huge potential to enable the community to support each other and continue to develop the profession.

The Geoscience Education Working Group has provided responses to new second-level education curriculum consultations, and in November 2025, Dr Siobhán Power was invited to represent IGI at discussion hosted by the Geographical Society of Ireland in the Royal Irish Academy on the role of geography in the future of the Irish curriculum.

Geography, the subject where students get most exposure to geoscience, is not compulsory at either Junior Cycle or Leaving Certificate, and therefore the risk has increased of fewer students taking it at third level.

We continue to facilitate collaboration

in the geoscience community, through hosting the **Irish Geoscience Network** meeting which was held in March 2026. The IGI wishes to thank all participants who have given up their time during the year to make sure that the geoscience community in Ireland is connected and working together.

PLANS FOR 2026 - 2027.

The main activity for the coming year will be to develop a new strategy for the IGI. It will most likely cover the period 2026 - 2031 and in its development, we will need to be mindful of the increasing role of Artificial Intelligence, the ongoing global climate changes and how geology is part of the mitigation and adaption, critical minerals legislations, and the future of careers in geology.

The IGI acknowledges the continued support of our sponsoring bodies, the Irish Mining & Quarrying Society (IMQS), Geophysical Association of Ireland (GAI), Geotechnical Society of Ireland (GSI), Irish Association for Economic Geology (IAEG) and the International Association of Hydrogeologists (Irish Group, IAH).



BY DR SIOBHÁN POWER
EurGeol PGeo, IGI President



Saint-Gobain Mining (Ireland) Ltd 2026 Update

Drummond Mine / Knocknacran Open Cast Mine

In July 2026 Gyproc Ireland marked a major milestone in its 90th anniversary year with the official sod turning for its quarry extension project, a development that will help secure the future supply of gypsum for Irish construction for decades to come.

The event brought together project team members, contractors and key stakeholders to recognise the collaboration, expertise and commitment that have brought the project to this important stage. It also marked the beginning of the next chapter for a business that has been closely connected to local mining, manufacturing and construction in Ireland for generations.

The quarry extension will play a vital role in securing the long-term future of Gyproc's operations and the continued supply of gypsum, a key material used in the manufacture of plaster and plasterboard products for homes, schools, hospitals, workplaces and public infrastructure across Ireland. The existing Drummond Mine and Knocknacran Open Cast Mine continue to supply the growing Irish construction market with the material for plasterboard and plaster.

The initial works are well underway including a road diversion to allow for the construction of a cut and cover tunnel beneath the R179 pictured below.

This tunnel will allow the efficient transport of rock between the new quarry and the existing processing facility.

Kieran Holohan, Managing Director of Gyproc in Ireland, said:

"The quarry is not the whole story; it is where the story begins. For 90 years, this local natural resource has helped power Irish industry, skilled employment, innovation and construction. Today's investment ensures that this contribution can continue for the next generation, supporting the people, communities and sectors that rely on high-quality Irish-sourced and Irish-made building solutions."



Mining Manager Terry Byrne has also outlined the numerous upgrades being conducted over the next 3-5 years to improve infrastructure on site to allow Gyproc to progress into the new quarry extension. Some of the upgrades will include:

- New Primary crusher and conveyors
- New sampling system upgrades
- PLC and automation upgrades
- New fibre optic Network and Switches cabinets
- Heavy machinery including a 50-ton excavator & 40-ton Dump truck

As part of the global Saint-Gobain group, Gyproc's continued investment the Drummond & Knocknacran sites reflect its long-term commitment to

Ireland. These investments continue to support local employment and contribute to the sustainability of the company's operations, while ensuring Ireland's continued access to domestically produced gypsum.



SAINT-GOBAIN

BY TERRY BYRNE
 Mine Manager,
 Drummond Mine,
 Knocknacran Open
 Cast Mine





**ANYONE
CAN LISTEN
BUT NOT
EVERYONE CAN
UNDERSTAND**

Across Ireland, our experts are well-versed in businesses like yours, so they won't just listen to your plans, they'll understand them.

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IMQS Bursary

The Irish Mining and Quarrying Society (IMQS) was delighted to run its Bursary Programme once again in 2026, continuing its commitment to supporting education and professional development across the mining, quarrying and extractive industries.

The bursary reflects the Society's dedication to investing in the future of the sector by encouraging the development of the next generation of skilled professionals and helping individuals achieve their educational and career goals.

The programme is open to students, apprentices and individuals undertaking education or training relevant to the industry. Through financial support, the bursary helps recipients further their studies, develop their expertise and pursue opportunities that contribute to both their own careers and the continued growth of the sector.

It also demonstrates the Society's commitment to lifelong learning,

recognising that a skilled and knowledgeable workforce is essential to the future success of Ireland's mining and quarrying industry.

The Society encourages members to share details of the bursary with students, apprentices and colleagues who may be eligible to apply, helping to ensure the opportunity reaches those who could benefit most.

By supporting education and skills development, the IMQS aims to encourage more people to pursue rewarding careers within the extractive industries and to strengthen the pipeline of talent entering the sector.

The IMQS Bursary Programme continues to reflect the Society's commitment to fostering talent, promoting

professional development and investing in the future of the industry. We look forward to receiving applications in the coming year and to supporting more individuals as they develop their knowledge, skills and careers within Ireland's mining and quarrying sector.



OISIN O'CONNOR
IMQS Secretary



Geoscience Ireland (GI)

Geoscience Ireland was established to help Irish geoscience companies win work.

It was launched in 2012, in response to the global economic crisis, with the financial support of Geological Survey Ireland and Enterprise Ireland, the emphasis being on winning business overseas for the sector and focussing on the Multilateral Development Banks.

Our core objectives were, and remain, to know, grow and represent our members:

- KNOW, by locating opportunities, trends and technical developments
- GROW, by networking, profiling and collaborating
- REPRESENT, by advocating and promoting

Much has changed since 2012. Many of our members have successfully scaled their businesses in Ireland and overseas, several to the point where larger international firms have acquired them. Renewed economic growth at home has provided new opportunities, and the National Development Plan has released funds for infrastructure here. Spending by the Multilateral

Development Banks, meanwhile, has reduced. For anyone starting out, the domestic and international work now sitting with our member companies is where the opportunities are.

Our core objectives remain the same, but we are making a number of changes in recognition of this new environment.

The Geoscience Ireland secretariat has been reorganised, with enhanced services provided by NSI Technology Services, which has an established record in developing advocacy business organisations, including the British Irish Chamber of Commerce and the Family Business Network. John McGrane takes on the role of Managing Director, and I take up the role of COO. Through our wider team, NSI will also provide a broader suite of membership services, including events and networking, advocacy, communications and sectoral representation. Sean Finlay and Dermot Duff continue as directors, with Sean as Chair and Dermot in a non-executive capacity, and Gearóid Ó Riain and Joe Mongan continue to support the management team.

Geoscience Ireland will also provide the secretariat to the recently formed **Irish Minerals Industry Group, (IMIG)** a representative body for mining and mineral exploration companies active in Ireland. IMIG plans an official launch to coincide with MINEX 2026 in Trim, County Meath on 28th and 29th October. Geoscience Ireland, along with IMQS, iCrag and IAEG, is a knowledge partner for MINEX.

In 2025, Geoscience Ireland members had a combined turnover of €1.12 Bn employing 4,700 personnel.



BY AIDAN FINNEGAN
COO, Geoscience Ireland



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Update on the Curraghinalt Project in Tyrone

Over the past year, our team has continued to focus on preparing carefully for the next stage of the Curraghinalt Project, maintaining our environmental survey work and community engagement.

After more than 16 years working in West Tyrone, 2025 has been very much about readiness as we approach the resumption of the Conjoined Public Local Inquiry (Inquiry) into our planning application, which began on 13th of April and is scheduled to conclude on 12th of November in the Strule Arts Centre in Omagh.

We welcome the resumption and progress of the Inquiry. It is an important part of the planning process, providing an opportunity for the project to be examined in detail, for evidence to be presented and for all views to be heard. Our role is straightforward: to present clear, evidence-based information and to continue engaging openly and respectfully with all stakeholders.

In Great Britain and the Republic of Ireland, planning systems have evolved to provide clearer pathways and timelines for major developments. The government in the Republic of Ireland published an Accelerating Infrastructure Report and Action Plan² with their intent to improve the system. In Northern Ireland, similar projects can face prolonged delays and additional uncertainty. This does not serve any stakeholder well, including the planning authorities.

At the same time, the wider economic and policy environment continues to evolve. There is a strong focus from the Northern Ireland Executive on regional balance, productivity, energy transition and skills development. Across the United Kingdom and beyond, there is increasing attention on the importance of secure and responsible supplies of the metals and minerals needed for modern technologies and a lower-carbon economy.

This was reinforced by the UK Government's updated Critical Minerals Strategy, which sharpened the focus on domestic capability and resilient supply chains. Notably, copper was



 Irish Mining and Quarrying Society (IMQS), the Association of British Mining Engineering & Consultancy (ABMEC), and the Mining Association of the United Kingdom (MAUK) during a recent tour of our project.

included on the UK's growth minerals list, reflecting its essential role in electrification, renewable energy systems and infrastructure. We believe the project aligns strongly with both economic and strategic priorities — supporting secure supply while creating opportunity closer to home. The Curraghinalt Project represents a

significant opportunity. If approved, it has the potential to support around 1,000 jobs, contribute £9 billion in economic value and generate £2.3 billion in tax revenues (based on a gold price of \$4,000 per ounce), while investing significantly in local training and supply chains. Many of these benefits would be realised in West Tyrone, supporting the

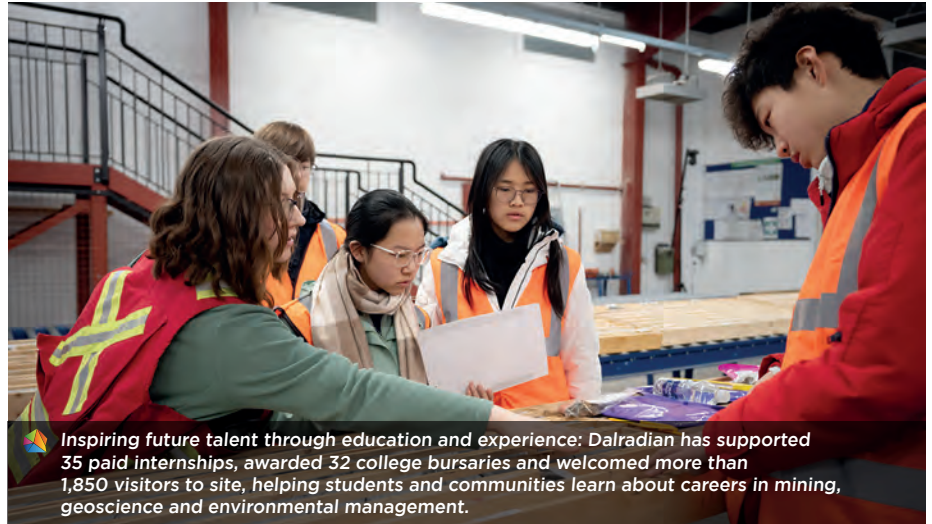
wider goal of balanced regional growth.

While the planning process moves forward, our day-to-day focus remains on maintaining high standards across the business. We reached five consecutive years without a Lost Time Injury in early 2026 while also retaining Investors in People Gold accreditation, reflecting the workplace culture we continue to build.

Our engagement with the local community also remains a priority. Since 2011, we have provided £1.2 million in funding to more than 680 community groups and over 4,900 people have registered interest in future roles at the mine.

Environmental responsibility remains fundamental to our approach. In 2025 we recorded zero environmental non-compliances and maintained our Carbon Neutral status for the seventh consecutive year, now aligned with the more rigorous ISO 14068 standard.

As we continue to progress through the Inquiry our focus is on being constructive participants in that process. We understand that projects of this scale bring scrutiny — and rightly so. At the same time, there is a broader conversation about how Northern Ireland can ensure its planning system is equipped to



Inspiring future talent through education and experience: Dalradian has supported 35 paid internships, awarded 32 college bursaries and welcomed more than 1,850 visitors to site, helping students and communities learn about careers in mining, geoscience and environmental management.

support responsible development in a timely and effective way.

We believe the Curraghinalt Project can make a meaningful, long-term contribution to the economy and communities in Tyrone and Northern Ireland while meeting modern environmental and safety standards. The months ahead represent an important milestone in our journey, and we approach them with confidence.

DALRADIAN

BY BRIAN KELLY
Dalradian
Managing Director



Average salary
£45,000



£4 million
community fund



£1 billion
local supply chain spend



Generate tax revenue of
£2.3 billion



£15 million
initial 3-year training programme



Young People in Ireland – Why Choose the Extractive Industry?

WHAT IS THE EXTRACTIVE INDUSTRY?

The extractive industry supplies us with all of the components that we need for everyday life. Quarries supply building materials such as aggregate stone, cement and plasterboard for houses, schools, offices, roads and bridges, etc. Mining provides materials for steel construction, cars, trucks, technology, medical devices and many more essential items.

The mining and quarrying industry needs young, driven people for careers in operations, engineering, geology, environmental science, trades, and administration. Everyday items, like mobile phones, rely on mined minerals. Society depends on these essential resources from the ground.

There are career opportunities in the following areas:

- **Operations and Engineering:**
Build and manage safe work sites.
- **Geology and Environment:**
Find resources and protect nature.
- **Trades and Administration:**
Keep daily work running smoothly.

This matters as minerals power modern tools like phones, industry and construction in our daily lives and society needs these materials to advance.

Almost everything is either grown or mined and this great collaboration

A Mobile Phone with more than 40 Metals & Minerals



between farming and mining/quarrying is essential for modern society to maintain the high standard of living that most people are lucky to have.

There is sometimes a perception in developed countries especially where mining is not a common activity, that the industry is 'dirty' and a level of nimbyism (not in my backyard) can creep in.

However, while we need to extract minerals, metals and rock from mines and quarries, it is essential that it is done in an environmentally and socially responsible manner. As such, it can be beneficial for the global environment to have extraction from areas where regulations against pollution and poor practice are present.





ENTRY TO THE EXTRACTIVE INDUSTRY

There are many diverse opportunities in the extractive industry for young people starting out, whether entering directly from school, through apprenticeships, further education or college routes. For example, school leavers can enter directly into the industry and acquire skills as equipment operators, crusher operators, in apprenticeships and technicians.

College graduates can enter into areas such as Health & Safety, Environmental, Mining/Quarry Engineering, Geology, Geotechnical, Human Resources, Finance, etc. The industry relies heavily on tradespersons such as Heavy Duty Mechanics, Fitters and Electricians, Welders and Metal Fabricators.

Roles such as environmental officers,

mining & quarry engineers often interact with the local county councils and the Environmental Protection Agency in the management of quarry and mining licences to ensure the highest standards are maintained for water discharge, noise, dust, blast vibration and other requirements that ensure the industry is operating in a responsible manner.

COMPANIES INVESTING IN PEOPLE

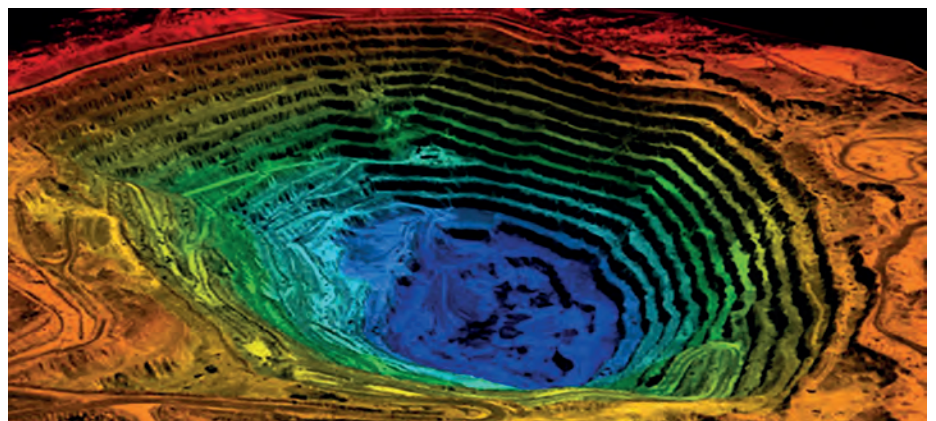
Direct entry routes for school leavers can offer good opportunities as many roles in quarrying and mining now require a semi-skilled or skilled workforce to meet the high safety, operational and environmental requirements. As such, school leavers are often offered training courses and certifications for such roles as truck drivers, equipment operators, explosives shotfirers, once basic training

and some experience is gained. Many people in supervisory and management roles in quarrying and mining in Ireland entered the industry directly from school.

Training in many aspects of the industry is provided to ensure that the rigorous safety and regulatory compliance levels are met on a continuous basis. For many companies investment in people means those people can grow their careers while the companies retain the employees for longer term employment.

Levels of technology in the industry are high and increasing rapidly with remote controlled machines, high tech control rooms and Geographical Information Systems (GIS) used for mapping and environmental management.

The industry needs to maintain and increase levels of technology to





continue extraction in a socially and environmentally responsible manner and to ensure wellbeing of our planet.

TRAINING PROGRAMMES

A typical training programme for a drill rig operator working in a quarry or mine is shown in the figure above and includes the following stages:

- Initial classroom training on the operation of the drill rig, safe operating procedures and communications, etc.
- Training on the drill rig
- Assessment to ensure that an appropriate level of competence is achieved
- Authorisation to operate the drill rig
- Observation during drilling operation
- Retraining at regular intervals
- Reassessment on a regular basis

Similar training programmes are in place for truck, excavator, service vehicles, explosives shotfirers and other roles.

WOMEN IN THE INDUSTRY

While the industry has traditionally been male dominated, more women are entering the sector across a wide variety of technical, operational, professional and leadership roles. Internationally, there are positive examples of efforts to improve gender balance in the industry.

Women have equal opportunity for entry to the industry in semi-skilled equipment operation and technical roles, skilled roles in apprenticeships and managerial and professional roles. It is no longer a male only industry and as such is wide open for entry by young women in a wide variety of roles.

Some examples of women in the Irish mining and quarrying industry are:

Nicola Nixon, a Past President of the Irish Mining & Quarrying Society, previously a Planning Engineer at Boliden Tara Mines and currently a Surveyor at Kilsaran.

Dr Aoife Brady, currently Vice President of IMQS and Chief Operating Officer (COO), iCRAG Research Ireland Centre for Applied Geosciences

Siobhan Tinnelly, a Past President of the IMQS and currently employed as a Director of Tobin Engineering, an AtkinsRéalis Company, who are involved in environmental, planning infrastructure and other extractive industry related projects.

Sarah Coulter, Chief Geologist at the Cavanacaw Gold Mine in Omagh.

THE WORLD IS YOUR OYSTER

Quarrying and mining is a global industry and there are many Irish people employed across the globe in many roles.

The opportunities are extensive and this offers young people to travel

while earning good salaries. Many mining and quarry operations offer Fly-In Fly-Out (FIFO) options such as two weeks on and two weeks off.

In summary, the extractive industry, and specifically the quarry and mining sector, needs young and energetic people to ensure the continued supply of essential construction materials, metals and minerals. The industry offers a wide variety of career paths from direct school entry to professional roles.

BRENDAN MORRIS

is the Managing Director of LTMS Limited and COO of Galantas Gold. Brendan is a Chartered Mining Engineer and has been engaged in the mining and quarrying industries, globally, since 1979.

Brendan is a Past President of the IMQS.



 **Nicola Nixon.**



 **Siobhan Tinnelly.**



 **Sarah Coulter.**



 **Dr Aoife Brady.**



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MPANI Regional Director's Report



Once again, it gives me great to write this report for the annual IMQS Journal. I am pleased to report another successful year for MPANI. I have taken this opportunity to highlight our achievements and focus areas going forward. These achievements have only been delivered through the collective work and leadership of our Executive Committee and Sub Committees, and last but by no means least through the continued support of or our Members and Affiliate Members.

I have commented in previous reports, Journals and at various forums about how our local businesses perform locally, across these islands and further afield and how we “punch above our weight” and that we do so in spite of the non-existent political leadership and decision making of our local Executive and Assembly. In effect, the NI Executives annual report could be summarised as “long on strategies and announcements, short on delivery.”

The next few years (2026-2030) will be crucial: the success of the Programme for Government, draft budget and Investment Strategy will depend on whether ministers can turn plans into action, invest for the long-term, and prioritise reforms that improve outcomes for ordinary people rather than just ticking policy boxes. With the prospect of new longer 3 year resource budgets and 4 year capital budgets one would expect better financial planning and delivery. However, given the disagreements and the “battle a day” environment around the Executive table, and the looming 2027 Assembly election I do believe it will be much more of the same up on the hill!!! As we look forward to next year's Assembly Elections, MPANI have already begun drafting our “Priorities for Government 2027 – 2032”.

In January of this year MPANI wrote to our MLAs highlighting what we believe must be the Key Priorities for our politicians as we start 2026. Taking the decisions that will help kick start growth, deliver infrastructure and enable net zero are not an option, they are a necessity! Use the following link to download the flyer: Key Priorities for Our Politicians – 2026.

The construction industry in NI displayed mixed but generally upward momentum in the past 12 months, with solid output growth, strong housing and infrastructure activity, and robust repair and maintenance. However, the year was uneven, with some project

starts decreasing and challenges from planning and infrastructure constraints.

Most early forecasts pointed to a recovery and stronger growth from 2026 onwards, especially as investment and confidence were expected improve. However, as we all know the current conflict in the middle east has changed everything and with increasing uncertainty on energy prices, food prices and resulting economic uncertainty at home and abroad we, along with other business organisations, have been vocal in calling for both local and national Government to do more to help the growing cost of doing business in NI and across the UK and Ireland.

The headwinds and challenges of the slow planning process, energy prices, public sector reform and the need for revenue raising to fund the maintenance and development of our essential infrastructure assets means that NI Business groups, including MPANI, must continue to work together to drive change and much more effective decision making by our politicians and public sector.

MPANI and others had been highlighting the significant costs that rural businesses were facing in getting upgrades to their electricity connections thus making it more difficult and financially viable to invest in low carbon technologies. As a result of lobbying by many of us Economy Minister, Dr Caoimhe Archibald, announced her decision to make new connections to the electricity grid fairer and more affordable for rural businesses. Reinforcement costs, previously charged for any upgrade to increase the capacity of the local network, will now be spread across all consumers, and over a longer period of time. The decision will remove a major barrier to business investment in rural areas. This announcement by the Minister is very welcome news for our members across Northern Ireland. Another “win” as a result of effective lobbying was that common sense prevailed on Government's proposed

reforms to the landfill tax regime, with the quarry exemption being retained. Consultation processes can be frustrating at times, but this is one example where hard data and evidence of the economic impact on the minerals sector and the wider construction industry it supports has directly influenced the direction of policy travel being taken by HM Treasury. The government listened to stakeholders' arguments made in response to the consultation and revised its approach to ensure the reforms to the Landfill Tax are proportionate, do not impose unavoidable costs on businesses and do not undermine the government's target of building new homes.

MPANI, again, were and continue to be extremely active representing Members and the wider Industry interests. I have summarised some of our achievements and also listed our overall focus areas and objectives for 2026 below.

HEALTH & SAFETY

Employee and Contractor:

- MPANI supported and co-ordinated the prestressing, silica dust, workplace health initiatives with HSENI.
- MPANI issued guidance to members on Driver Safety and All Round Visibility in vehicles.
- MPANI issued guidance and toolbox talk on preventing violence and aggression toward Roadworkers.
- MPANI continued to promote safe quarry and the need to report safety alerts.

Public Safety:

- MPANI and HSENI wrote to School Principals in NI seeking support for Cold Water Safety message and warning of the dangers of trespassing in active and disused quarries.
- MPANI, Department for Infrastructure Roads and the Police Service of Northern Ireland ran two successful social media campaigns in 2025 promoting Road Worker Safety.

PEOPLE

Employment:

- MPANI developed and promoted our Women in Minerals initiative by producing a video for social media specifically targeted at young women and girls.
- MPANI is working with Construction Futures in NI to promote the wider construction sector as an exciting and valuable long time career.

Skills and Competence:

- MPANI is working with South West and Northern Regional Colleges to promote apprenticeships in our Industry.
- MPANI, in partnership with CITBNI and People First, ran another L4 Site Supervisors Course with Highway Maintenance Focus.
- MPANI, in partnership with CITB and Concrete Society, ran two "Back to Basics with Concrete" courses for construction site supervisors based on MPA Best Practice Booklet.

Equality and Diversity:

MPANI Women in Minerals Group held a number of Networking Events to promote our industry to young women and girls.

Local Communities:

- MPANI became members of the Sperrin Partnership to promote and safeguard our members operations in the Sperrins AONB.
- MPANI continue our affiliation with the Belfast Hills Partnership to promote and communicate the economic, heritage and social value in the Belfast Hills.

RESOURCE USE

Access to Sufficient Minerals and Resources:

- MPANI is working with the Department for the Economy Minerals Branch to improve and maximise returns of the annual minerals statement.
- MPANI is working with local councils to build relationships with local operators and facilitate the flow of important information that measures the economic and social value of the mineral products sector in each Council area.
- MPANI is working with local councils on the important issue of identifying Mineral Reserve Areas.

Circular Economy:

- MPANI is working with stakeholders to investigate the use of biochar in cement, biomethane as a fuel and the longer term use of small scale green hydrogen.

Water:

- MPANI is working with the NI

Environment Agency to promote and ensure compliance to the "Wise Use of Water" best practice guidance

CLIMATE CHANGE AND ENERGY

Carbon & Atmospheric Emissions:

- MPANI continue to play important role as a partner in the Innovate UK supported NI Decarbonisation Initiative.
- MPANI continue to support and facilitate a number of decarbonisation collaborative networks;
- Use of Biochar in Cement with Queens University, Agri-Food and Bio-Science Laboratory, Agriad and four local Cement Companies.
- Low Value / High Volume materials as cement replacements.
- Manufacture and use of Bio-methane in mineral product transport and manufacturing.
- Formed a Mineral Products cluster in the Toomebridge area for MPANI members to reduce energy costs and decarbonise.
- Through the IDNI project we have set up a Community of Shared Interest (COSI) to promote collaboration across our mineral products sector in NI to accelerate decarbonisation.

Energy:

- MPANI continued our working relationships with the Department for the Economy, NIE Networks and the Energy Regulator to improve access to and cost of connecting to the energy grid to reduce costs for Members and help facilitate the journey to Net Zero. This has resulted in the Economy Minister announcing the "Socialisation" of grid reinforcement costs, thus reducing the costs for our members to connect to the electricity grid.

NATURAL ENVIRONMENT

Biodiversity:

- MPANI continue work to facilitate Biodiversity Partnerships between members, local councils and NGOs.
- MPANI and a number of members continue to engage and support the work of the All Island Pollinator Plan.

Geodiversity:

- MPANI continue to play an important role on the Consultative Committee for the Geological Survey NI.

BUILT ENVIRONMENT

Technical Codes and Standards:

- MPANI informed the local construction and design sectors about changes to BS8500 and promote the use of companies that have 3rd Party BSI and QSRMC quality assurance.

Sustainable Construction:

- MPANI is working with colleagues in

the NI Construction Group and with Government Construction Clients to promote Responsible Sourcing and recognition of responsible operators.

COMMUNICATING INDUSTRY VALUE

Contribution to Economy and Supply Chain:

- MPANI responded to 15 Consultations during 2025 on behalf of Members.
- MPANI lobbied extensively on the need to invest in asset management including roads maintenance and our waste water infrastructure. We met with both the Assembly Infrastructure Committee and the Infrastructure Minister on two occasions during 2025.

Influencing Business Environment:

MPANI play key role on a number of Industry Bodies:

- All Party Group on Construction
- CBI Infrastructure Group
- CBI Economic Strategy Group
- CBI Energy Group
- NI Business Brexit Working Group
- UK Minerals Group
- Consultative Committee for the Geological Survey NI.

MPANI FOCUS AREAS AND OBJECTIVES FOR 2026

Role – Facilitator to/from Government influence

Under Planning

Objective 1 – Continue to Work with others, including CBI, NI Chamber and NIGG, to improve the Planning System in NI via the planning reform agenda and in particular to establish a more efficient minerals planning system to ensure that the long-term sustainability of the Mineral Products Industry and its right to operate are protected. Continue to engage and build on work done to date with local council planning departments to build and raise awareness of the economic and social value of the mineral products sector in each council area.

Objective 2 – Continue to engage with senior planners via the Strategic Planning Group, led by Senior Planner Rosemary Daly, to establish a "Council Shared Service" for Minerals Planning. Encourage the Industry to supply the relevant aggregate resource and production information to enable Department for Infrastructure and local council planners to develop mineral policies and plans that ensure the future sustainable supply of minerals and construction materials.

Objective 3 – Continue our work with IoQ, RTPi, DfI, NILGA and others to build the knowledge and capacity of local planning officers to ensure their understanding of the industry results in a fast and efficient service to MPANI members.

Objective 4 – Continue to work with the Department of the Economy, GSNI, Strategic Planning Division and local Council Planning staff to establish a Northern Ireland Minerals Forum. MPANI will continue to make a constructive contribution to the UK Minerals Forum.

Objective 5 – Work with regulatory authorities within Northern Ireland to ensure a level playing field for the minerals industry and clear recognition for responsible operators. Ensure that the introduction of a review mechanism for environmental conditions does not come with additional planning fees. Work to ensure that the introduction of restoration bonds is risk based, fair and economically sustainable.

Objective 6 – Work with NIEA and others to improve communication and understanding between MPANI members and environmental regulators.

Objective 7 – Respond to Public Sector Consultation Papers on issues that affect our members operations.

UNDER ECONOMY

Objective 1 – Continue to work through our Highway Maintenance and Construction Group and with Northern Ireland Construction Group (NICG) partners to improve the communication of the pipeline of infrastructure work, maximise funding for the maintenance of key infrastructure assets, maximise the benefit of longer term 3- and 4-year budgets from April 2026.

Objective 2 – Work with Industry Colleagues and the NI Executive and Assembly to ensure more investment into improving skills, knowledge and experience in key decision-making roles in the public sector departments.

Objective 3 – Work with Construction Industry colleagues, Manufacturing NI, FE and others to ensure the education and careers systems develop young people so they gain the relevant skills suitable for a modern growing economy.

Objective 4 – Work with DfE, Invest NI, local Councils, Universities and FE Colleges to secure support for collaboration between MPANI members to enable them to transition to renewable/zero carbon energy, for the re-training of staff for new zero carbon technologies and to utilise

innovative technology and digitisation.

Objective 5 – Engage with Government and others to make realistic changes to the NI Climate Change act 2030 and 2040 targets so that they do not act as a barrier to much needed development in NI.

Objective 6 – Work with other Business Groups and the NI Energy Regulator to ensure we see changes in the NI Energy market. Work with all relevant parties to ensure the efficient roll out of the socialisation of grid connection costs.

Objective 7 – Work with our colleagues in the farming and agri-food sector to collaborate on areas, such as biomethane and biochar production that will assist the Mineral Products sector in reaching net zero ambitions.

Role - Education internal/external

Objective 1 – To advise and inform the industry on its legal obligations under health and safety law to ensure that improving performance on reducing incidents of harm continues. We will continue working with other partners to assist Members in dealing with the management of mental health, the fatal 6 risk areas and achieving our aims as set out in the MPA Vision Zero. To ensure that all members fulfil their obligations in reporting health and safety data, signing up to safequarry and circulating safety alerts.

Objective 2 – To develop and deliver training, competence assessment and Level 3 and above apprenticeships in partnership with IoQ, IAT, CIHT, MPQC, Concrete Society, CITBNI and others to raise skill levels across all sectors that MPANI represent and with customers who use our members' products.

Objective 3 – To promote our MPA Good Neighbour Scheme and to assist members in engaging with their local community stakeholders.

Objective 4 – To take every opportunity to engage with political decision makers to highlight the essential contribution the mineral products sector makes to the local and national economy.

Objective 5 – Work with key stakeholders, such as Womenstec, our Women in Minerals Group and our Young Leaders Group to promote diversity and the important role of women

within the mineral products industry.

Objective 6 – Work with all relevant stakeholders to inform and advise our members on energy efficiency and on reducing their carbon emissions.

Role - Protect & expand market

Objective 1 – Work with public sector agencies, including local councils building control, Housing Associations and other construction representative bodies to promote the use of quality assured and responsibly sourced construction materials.

Objective 2 – Be an active participant in the promotion of UK Concrete, highlighting the positive aspects of concrete and masonry construction to those within the NI construction sector and Government construction clients.

Objective 3 – Work collaboratively with the Department for Infrastructure to improve the procurement and delivery process for highway maintenance and construction by more contractor involvement.

Objective 4 – Maximise the benefits created by AI and new online technology to promote the positive contribution our Industry makes to the economy and people's quality of life.

Objective 5 – Advise and inform our members as they continue to manage the challenges and opportunities created by the Windsor Framework.

Objective 6 – Sustain and Increase the MPANI full and affiliate Membership.

Finally, may I wish IMQS and all its members well over the coming months and we look forward to sustaining our valued and important relationship through what are challenging times for everyone on this island.

Best wishes and Stay Safe



BY GORDON BEST
Regional Director,
MPANI



Northern Ireland
life needs minerals

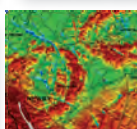
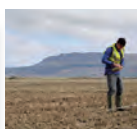
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Faults and fractures Contaminated land
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Data and Services

GSNI collects, interprets and provides geological data, research and advice to central and local government, industry, academia, NGOs, schools and the public. GSNI maintains extensive digital databases and paper archives that are accessible online and through our enquiry service.

The data held by GSNI include:

- Modern and historical geological maps including 1:10k vector map data
- Borehole and site reports
- Tellus geochemical and geophysical datasets
- Exploration data and open-file reports
- Historic mines database
- Groundwater data repository
- Rock thermal properties database
- Reservoir quality data
- Geothermal prospectivity reports
- Seismic reflection data
- Gravity data
- Magnetotelluric data
- Downhole geophysical data
- Borehole temperature data
- Core, rock and thin section collections

Access GSNI data:

- gsni.bgs.ac.uk
- gsni-data.bgs.ac.uk
- opendatani.gov.uk
- spatialni.gov.uk



Investing in Potential: How Kemek Supports Employee Development



At Kemek, we believe that our people are our greatest asset. We are committed to creating opportunities for employees to grow and develop new skills. By investing in training, education, and mentorship, we help our employees reach their full potential while strengthening the future of our business.

We also recognise that our success depends on having the right people in the right roles.

That is why we actively seek out talented individuals who share our values and potential, whether they are already part of our team or joining us for the first time. By attracting, developing, and retaining great people, we continue to build a better future for both our customers, employees, and our business.

The stories below are two examples of this.

STEPHEN O'REILLY: GROWING A CAREER THROUGH LEARNING AND OPPORTUNITY

I have always had an interest in farming, so after finishing secondary school, I pursued a Bachelor of Science in Sustainable Agriculture. The degree provided a solid foundation in agriculture, environmental management, and sustainable land use, while developing valuable technical and problem-solving skills.

After graduating, I spent time in New Zealand, gaining practical experience and broadening my understanding of the agricultural sector. Returning home in 2021, I established an agricultural contracting service for local farmers. While I enjoyed the work, I was eager to explore new challenges and career opportunities.

In 2023, I joined Kemek in a temporary role. What began as a short-term opportunity introduced me to an industry I knew little about but quickly found both interesting and rewarding. As I became more familiar with the business, I recognised the potential for career growth.

Kemek encouraged me to enrol in the Transport Operations and Commercial Driving Apprenticeship, a new programme in Ireland designed to train HGV drivers. The apprenticeship combined academic study with practical workplace experience. One day each week was dedicated to online learning with the Technological University of the Shannon, while the remaining four days were spent working

alongside experienced drivers.

The combination of classroom learning and hands-on experience allowed me to apply new knowledge directly to my role while gaining a broader understanding of the transport sector.

What stood out most throughout the programme was the support I received. Experienced colleagues were always willing to share their knowledge and provide guidance, helping me build both confidence and technical expertise.

I went on to become a full-time Driver with Kemek, who subsequently provided me with ADR training. ADR training sets the standards for the safe transportation of hazardous materials, enabling drivers to transport these goods while complying with strict safety and legal requirements.

One of the biggest surprises for me was discovering the wide range of opportunities available within the quarrying sector, an industry I had never previously considered. The apprenticeship allowed me to earn a nationally recognised qualification while building a rewarding new career.



Ciaran McCann.



Stephen O'Reilly.

Looking back, accepting temporary work with Kemek was one of the best decisions I have made. It introduced me to a completely different industry and career path. My journey began with an interest in agriculture, but it has led to a fulfilling career in commercial driving within the quarrying sector.

The training, support, and development opportunities I have received have played a significant role in my progression. They have shown me that with the right attitude, a willingness to learn, and support from your employer, there are many paths to a successful career.

A few years ago, I would never have imagined myself working in transport operations and commercial driving. Today, I have a recognised qualification, valuable practical experience, and a clear career path ahead of me. It proves that sometimes the best opportunities are the ones you least expect.

CIARAN MCCANN: A CAREER BUILT ON OPPORTUNITY, LEARNING AND CHALLENGE

When I completed my National Diploma in Construction and Civil Engineering in 1998, I did not fully appreciate where a career in the Mineral Extractives Industry would take me. Looking back over the last 27 years, I can honestly say it has been a rewarding journey filled with opportunities, challenges, continuous learning, and experiences that have taken me around the world.

My introduction to the industry began in 1999 when I joined McCann Drilling Ltd. as a surveyor. Like many people starting their careers, I learned quickly that the classroom is only the beginning. Through extensive in-house training, I became involved in quarry and rock-face surveying for blasting operations, while also gaining hands-on experience assisting with drilling and maintaining air-track drill rigs.

One of the greatest strengths of the extractive industry is its willingness to develop people. I developed practical skills and technical knowledge that allowed me to complete my Shotfiring and Explosives Supervisor Certificates in 2001.

Those early years taught me an important lesson that I still share with younger people considering a career in the industry today: there are many pathways available, and progression often comes through a combination of formal qualifications, practical experience, and mentorship.

I continued in drill and blast operations until 2006, when I was offered the role of Contracts Manager with Rocklift Ltd. in Ireland. This provided a completely different perspective on the industry. Managing drill and blast contracts across quarrying and civil engineering projects allowed me to develop leadership, planning and project management skills while working with



a diverse range of clients and teams.

After six years in that role, a new opportunity emerged on the other side of the world. In 2012, my family and I relocated to Australia, where I joined Action Drill and Blast as a Drill and Blast Specialist and Shotfirer.

The move opened the door to projects on a scale I had never previously experienced. Over the following years, I worked across multiple sectors including civil engineering, iron ore, coal, gold, and nickel mining operations. The experience reinforced something that many people outside the industry may not realise; extractive industries are incredibly diverse. The skills you develop can create opportunities across different commodities, environments and even continents.

In 2016, I had the opportunity to return home and join Kemek. Since then, the company has continued to support my professional development, enabling me to complete both a Diploma in Mineral Extractives and a Degree in Mineral Extractives through the University of Derby.

This highlights another aspect of the industry that deserves greater recognition. Career development does not stop once you begin working. The mineral extractives sector actively encourages lifelong learning, providing opportunities to gain new qualifications, broaden your expertise and advance professionally throughout your career.

Ten years on with Kemek, and three decades since I first entered the industry, I still enjoy coming to work. What has kept me motivated is the fact that no two days are ever the same. Even when working on the same site, every project presents different challenges, conditions, and objectives. The work requires technical knowledge, careful planning, teamwork, and a commitment to safety, while increasingly incorporating new technologies and innovative approaches like drones, photogrammetry, design software, and innovative measurement equipment. Working in the Quarrying Industry as an Explosive Supervisor is a challenging role that requires attention to detail to ensure that Safety

Procedures are adhered to daily, but job satisfaction is delivered in a short time frame with a successful blast.

For young people considering their future careers, I would encourage them to look beyond outdated perceptions of the extractive sector. Today's industry is modern, highly skilled, technologically advanced, and essential to everyday life.

The materials produced through Quarrying and Mining are fundamental to the infrastructure we rely on, the homes we build and the renewable energy transition that will shape our future.

More importantly, the Extractive Industry offers genuine opportunities for people who are willing to learn and develop. Whether your interests lie in engineering, surveying, geology, environmental management, operations, technology, project management or specialist fields such as drill and blast, there are pathways available to build a successful and fulfilling career.

Reflecting on my own journey, from a young surveyor in 1999 to where I am today, I am grateful for the opportunities, support and experiences the industry has provided. It has allowed me to work alongside talented people, gain qualifications, travel internationally and build a career that remains both challenging and rewarding.

The Extractive Industry has given me far more than a job. It has given me a profession, a lifelong learning journey and a career that continues to inspire me. For the next generation entering the workforce, I believe it offers the same opportunity and much more.



Building from the Ground Up: Investing in Resources, Manufacturing and Innovation



For more than 50 years, Creagh Concrete has played a vital role in supplying the material foundations of modern construction across Ireland and Great Britain. From housing developments and hospitals to schools, commercial buildings and major infrastructure projects, the company transforms locally sourced materials into high-value engineered construction solutions.

Headquartered in Toomebridge, Co. Antrim, Creagh has grown from a regional manufacturer into one of the leading producers of precast concrete products and engineered building systems in the UK and Ireland.

Today, the company employs approximately 1,000 people and supplies more than 5,000 contracts annually across a network of manufacturing facilities, quarries, ready-mix concrete plants and distribution operations. These operations combine to create one of the most integrated construction supply chains on these islands.

SECURING THE MATERIALS THAT BUILD OUR FUTURE

The construction industry relies on a dependable supply of high-quality raw materials. As demand for housing, infrastructure and industrial development continues to grow, securing long-term access to aggregates and sand has never been more important.

Recognising this challenge, Creagh strengthened its position in 2024 through the acquisition of the Norman Emerson Group. The acquisition expanded the company's ready-mixed concrete production capacity, aggregate

processing capabilities and access to licensed sand extraction operations on Lough Neagh, providing an important strategic platform for future growth.

The investment reflects Creagh's commitment to controlling key elements of its supply chain and creating greater resilience for customers operating in increasingly demanding markets.

RESPONSIBLE STEWARDSHIP OF NATURAL RESOURCES

Creagh's involvement in Lough Neagh sand operations demonstrates the importance of balancing economic development with environmental responsibility.





Lough Sand.

Lough Neagh is one of the most environmentally sensitive and heavily regulated extraction environments in the UK and Ireland, with operations governed by strict licensing conditions, environmental assessments and ongoing monitoring requirements. Operations are controlled within permitted extraction zones and subject to continuous oversight by regulators.

Through responsible management and investment, Creagh continues to play its part in supplying materials that are essential for construction while protecting a resource that has supported local communities and industry for generations. The company's investment in Lough Neagh operations reflects its long-term commitment to securing quality aggregate resources while maintaining the highest environmental standards.

CREATING VALUE THROUGH VERTICAL INTEGRATION

While raw materials form the foundation of the construction industry, Creagh's strength lies in its ability to transform those materials into highly engineered building solutions.

Across its manufacturing network, aggregates, cement and steel are combined using advanced production techniques to create precast concrete products for residential, commercial, education, healthcare and infrastructure projects. From insulated flooring

systems and hollowcore slabs to wall panels and bespoke precast solutions, these products help customers build faster, safer and more efficiently.

This vertically integrated approach allows Creagh to add value at every stage of the process, from resource extraction and material processing through to manufacturing, delivery and installation support.

"Access to quality raw materials is fundamental to the future of

construction. Our investment in aggregates, sand resources and manufacturing capability is about more than securing supply. It is about creating long-term value from our local resources, supporting regional employment and ensuring that we can continue to provide the innovative construction solutions needed to build Ireland and Great Britain for generations to come."

James McKeague, Managing Director, Creagh Concrete



Draperstown Quarry.

DRIVING INNOVATION ACROSS CONSTRUCTION

Innovation has always been central to Creagh's success.

With increasing pressure on the construction sector to improve productivity, reduce waste and lower embodied carbon, factory-engineered construction is playing an increasingly important role in delivering better project outcomes.

Creagh continues to invest in manufacturing technology, automation, engineering expertise and product development to ensure customers benefit from innovative solutions that meet the demands of modern construction. Factory-controlled production environments help improve consistency, quality and efficiency while significantly reducing on-site waste and programme risk.

SUPPORTING ECONOMIC GROWTH

Construction remains one of the key drivers of economic development throughout Ireland and Great Britain. From housing delivery and infrastructure investment to education, healthcare and industrial projects, the demand for high-quality building materials continues to grow.

Through its integrated operations, Creagh supports thousands of projects every year while creating long-term employment opportunities across a variety of sectors, including quarrying, manufacturing, engineering, logistics and construction. By maintaining control over key stages of the supply chain, the company is able to maximise the value created from indigenous resources while supporting regional economic growth.



Recent Warehouse Project.

BUILDING FOR THE FUTURE

As the construction industry continues to evolve, resource security, sustainability and innovation will remain critical priorities.

Creagh's continued investment in aggregates, manufacturing capability and engineered building solutions positions the company strongly for the future. A new 4,000m² facility at its Toomebridge headquarters and a £2 million investment in an automated mesh welding plant are just some of the investments helping ensure Creagh remains at the forefront of innovation in the construction sector.

More than 50 years after its foundation, the business remains committed to transforming locally sourced

materials into innovative solutions that support economic growth, strengthen communities and create a lasting legacy across Ireland and Great Britain.

From quarry to construction site, every stage of the process is connected by the same ambition: to transform local resources into solutions that build stronger communities, support economic growth and leave a lasting legacy for future generations.

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Geological Survey Ireland, Department of Climate, Energy & the Environment



The following updates are provided for those areas of Geological Survey Ireland operations of most relevance to IMQS members, including both our Outreach & Communications and Graduate Programme, which align with the IMQS theme of “Inspiring the Next Generation”.

MINERALS

The principal focus of the GSI Minerals Programme in 2025/26 was on **the Irish Construction Materials Project**, supported by the Department of Housing, Local Government and Heritage (DHLGH) and providing technical assistance in relation to deleterious aggregate materials. GSI have managed a series of research initiatives in relation to this issue, referred to as the “Mica Problem” which have shown that it is definitively the result of the presence of sulphides, specifically pyrrhotite, in the affected buildings.

The research, funded mainly by DGLGH is accessible via the GSI website. Building on this collaboration two staff were recruited in 2025, Ciara Bannon and Des Johnston, with two further staff to join this team in 2026. Work is focussed on supporting the Market Surveillance Authorities. The project aims to develop a live database of locations producing harmonised aggregates throughout the country, providing a useful tool to inform planning authorities of local sources of high-quality resources to meet infrastructural needs. The team has been working ground truthing locations and plans ramp up site visits over the next year, so expect to see them in a quarry near you soon.

GSI have also been given responsibility to develop a **National Exploration Programme** under the EU Critical Raw Materials Act of 2025. While this programme remains to be resourced, preliminary work has been carried out in data preparation and planning, including workshops on the prioritisation of specific areas including SE Leinster and Charlestown inlier



 **GSI Director Koen Verbruggen with the Sander Geophysics Ireland Field Crew.**

(Copper-VMS potential), SE Leinster (Lithium) and the Munster Basin (Copper) as well as potential CRMs associated with known carbonate hosted lead-zinc mineralization.

In October 2026, under the auspices of Ireland hosting the EU Presidency, a meeting of the EuroGeoSurveys Mineral Expert Group and CRM/NEP Subgroup will take place in Dublin, hosted by the Survey.

TELLUS PROGRAMME

2026 is a significant year for Tellus, Geological Survey Ireland’s national geophysical and geochemical surveying

programme, as the final airborne geophysics flight was completed in June. This was the culmination of 16 years of national surveying which saw the distinctive Tellus aircraft crossing Irish skies from Donegal to Kerry.

New data is currently being QA/QC and should be released in the coming months. A master grid, comprising long continuous lines across the whole country has also been flown and will be used to recalibrate all previous survey block data and provide a new data merge of all three geophysical datasets, magnetics, radiometrics and electromagnetics,



 View from survey aircraft C-GSGP of the Kerry Coastline.

planned for release in 2027.

New geochemical analyses continue on collected soil samples, with data for the midwest and southwest soon to be available along with the publication of urban geochemical soil data for Galway, Limerick, Cork and Waterford. GSI has also recently signed a new MOU with Teagasc in advance of the Terra Soil 2 project which will see Tellus soil data being further analysed for agronomic indicators. All Tellus data is made freely available for download from the GSI website.

HYPERSPECTRAL SCANNING PROGRAMME

GSI continues to advance hyperspectral core scanning as a viable technique for Irish Geoscience applications. Collaborative domestic projects with UCD, UoG and UCC and are testing the applications for this valuable dataset and widening the knowledge base in Ireland for using hyperspectral data.

An exciting international collaboration with the Geological Survey of Belgium will lead to knowledge sharing on hyperspectral and LIB's (Laser Induced Breakdown Spectroscopy) applications for critical raw materials project. To improve access to GSI's >1700 scanned drillholes we have developed an open-source desktop analysis and interpretation platform, CoreSpecViewer. This platform is specifically designed to allow geoscientists to extract value from hyperspectral core scanning data. GSI are developing a work programme

aimed at expanding industry access to take up of hyperspectral core scanning, and are arranging a Hyperspectral Workshop at PDAC 2027, the world's largest mining convention, in Toronto, Canada.

GEOSCIENCE FOR PLANNING

Geological Survey Ireland supports the Department of Climate, Energy and the Environment (DCEE) in its role as a Statutory Consultee. We respond to calls for information and observations on a range of environmental assessments carried out under planning regulations. In 2025, we responded to 214 consultations by statutory response.

The 'Geoscience for Planning' web pages were updated in 2025 with the most relevant information. These pages are a resource for delivering our support in this respect and have been redesigned to be intuitive to those working in the Environmental Assessment Impact reports (EIAR) sphere using familiar terminology.

We also respond in writing where required or appropriate to requests for observations on EIAR and Strategic Environmental Assessment (SEA) reports at planning and pre-planning stage. We also provide observations and geoscience data for County Development Plans, Heritage Plans, Local Area Development Plans, Visitor Experience Development Plans, Wind Farm and Quarry Developments and many others during planning and consultation phases. All our published data are freely available to the Public.

HISTORIC MINES PROGRAMME

The Department is continuing its work on development of objectives, scope and data gathering for a comprehensive historic mine sites rehabilitation programme. This programme receives technical support from GSI and is managed by the Geoscience Policy Section.

Under this programme, environmental monitoring and safety works continue at priority sites, Silvermines and Avoca, in collaboration with local authorities. In 2026, ground investigations, including geophysics, trial pitting and drilling, were carried out at both sites in collaboration with the local authorities. In addition, these sites are being examined for their potential for critical raw materials, as part of implementing the EU Critical Raw Materials Act.

A further phase of work on this programme is being advanced through three new contracts to be awarded in 2026 covering; 1) A renewed monitoring and analyses programme of priority sites, 2) Critical Failure Assessment of the Tailings Management Facilities at Gortmore, Silvermines and Shelton Abbey, Avoca, and 3) Volume II of the Historic Mine Sites Inventory, which will identify the physical risks present at sites nationally.

OUTREACH AND COMMUNICATIONS

Public and stakeholder events in which GSI participated included the National

Ploughing Championships in Screggan, Co Offaly in September 2025 as part of the Government of Ireland village.

The STRIPE Young Scientist and Technology Exhibition took place in January 2026. Geological Survey Ireland exhibited a stand and continued to sponsor a special award for the student project which best demonstrates the use of geological data.

Karen Hanghøj, Director of the British Geological Survey, delivered the GSI Annual Geoscience Lecture at the Royal Irish Academy in January, 2026. The title of the lecture was "Why does net zero need geoscience?" This was the second lecture of the series which aims to raise awareness of geosciences and its relevance to society's needs and challenges. The lecture was followed by a panel discussion which gave an Irish perspective on the topic.

The Geological Survey Ireland, Department of Climate, Energy and the Environment episode of "10 Things to Know About....." was broadcast on RTÉ in November 2025. The episode was about building Ireland and looked at the materials we have and those

we need for the future to meet our building needs. Dr Siobhán Power and Eoin McGrath featured from the GSI and included others from across the building materials sector in Ireland.

Publications launched in 2025 and supported by GSI included Professor Patrick Wyse Jackson, Trinity College Dublin, and Dr Louise Caulfield's 'The Decorative and Building Stones of Dublin'. 'Silvermines: A Heritage of Mining and Miners, Exploring the Cultural Heritage of an Irish Mining Community' edited by Greg Finnegan and Laura McSherry from Silvermines Hydro, was also published and was supported by funding as part of the GSI's Geoheritage Grant Project scheme. 'Geology of Sceilg Mhichíl: A Field Guide', was published in conjunction with University College Cork's Dr Pat Meere, Professor Ken Higgs, and Dr Ronan Hennessey.

GSI GRADUATE PROGRAMME

GSI continue to operate a Geoscience Graduate Programme, with an intake of c.6 graduates every year for just under 1 year of work experience.

As this programme has been running successfully for over 10 years now,

with over 60 "grads" having worked with us, it is planned to develop a GSI Graduate Alumni Group, hosted on LinkedIn, and to feature a more detailed piece featuring some of those who have completed the programme, to be included in the next IMQS Annual Review.

In keeping with the IMQS theme of "Inspiring the next generation", we have seen our graduates move on to careers in mining, environmental monitoring, geotechnical engineering, geophysics, groundwater, drilling, marine surveying and various post graduate courses, all over the world.



BY KOEN VERBRUGGEN
Director



 View from survey aircraft C-GSGP of the Skelligs.

Trust in experience

Quarryplan have provided specialist planning and property advice to the minerals, waste management and renewable energy sectors for over 20 years, delivering a full range of services for the preparation of successful planning applications.

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PDAC 2026: Record Numbers and a Strong Irish Presence

PDAC 2026 welcomed a record 32,155 participants from around the world and more than 1,300 exhibitors to Toronto, marking the highest attendance and largest trade show footprint in the event's 94-year history.

The scale and energy of this year's Convention reflected renewed confidence across the minerals sector and a sense that the mining cycle is moving back into growth mode. Strong commodity markets, growing demand for critical minerals and the increasing importance of secure and resilient supply chains all featured prominently.

Discussions also focused on the practical challenges of bringing new projects forward, including access to investment, permitting timelines, infrastructure, responsible development and the need for a skilled workforce.

Ireland was once again strongly represented through the Ireland Pavilion, led by the Geoscience Policy Division and Geological Survey Ireland, with support from Geoscience Ireland, iCRAG and the Irish Minerals Fund.

Irish companies attending included Arup, Aurum Exploration, Mincon, Minerex Drilling, Zero Trip/Priority Drilling, QME and SLR, showcasing Ireland's expertise in exploration, drilling, engineering, mining services and environmental consultancy to an international audience.

The strong Irish presence highlighted both the global reach

of Ireland's geoscience sector and the breadth of opportunities it offers the next generation.



PROSPECTORS &
DEVELOPERS
ASSOCIATION
OF CANADA

BY DR AOIFE BRADY
Chief Operations
Officer, iCRAG



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McHale Plant Sales: Your Metso Distributor in Northern Ireland

As its shipyard, drydock and aerospace industries continue to form part of Northern Ireland's economy and its reputation for engineering and fabrication on global markets (Dublin's James Joyce Liffey bridge fabricated in Belfast is an example), so too is Finland's global reputation for quality and excellence in design, and its dedication to top-quality engineering found within the equipment produced by Metso to service a global market in quarrying, mining and aggregates production.

Alongside others such as telecommunications giant Nokia, glassware producers Iittala, and fabrics designers Marimeeko, Metso is a Finnish manufacturer of exceptional note, whose equipment reaches into every crevice of global activity in which its crushers and ancillary equipment and expertise can bring value to an enterprise, above or below ground.

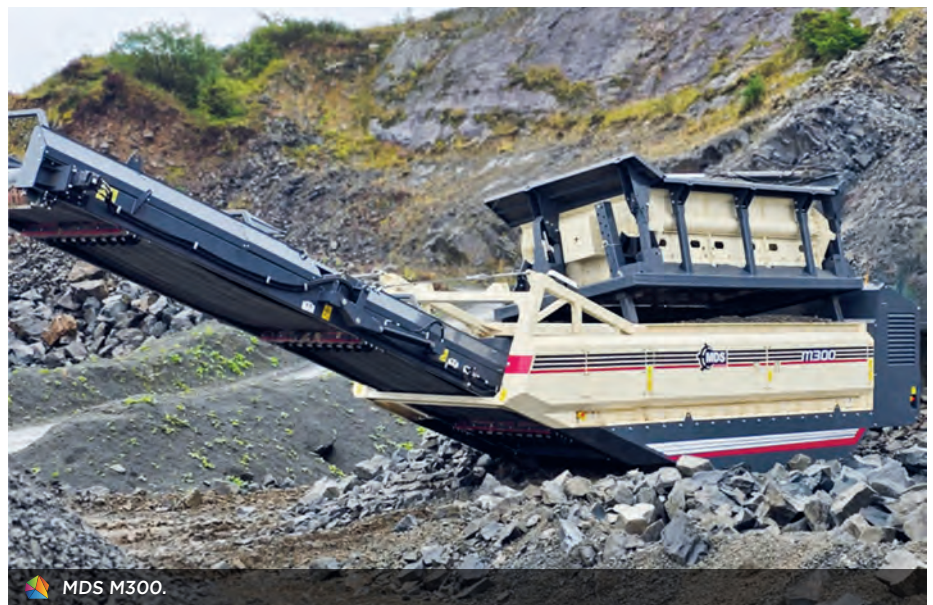
In all of these examples, good taste, excellence in terms of design, build quality, long-life performance, innovation, and superior value retention are by-words for all that customers get when choosing Metso.

In addition, as their distributors McHale Plant Sales would be first to agree, quarry owners and aggregates producers who buy into Metso, buy-in also to advice, support, contacts, experience, technical knowledge, research and data which, collectively, heap depth and dimension on to the value of the equipment itself.

In Northern Ireland, customers coming to Metso and McHale Plant Sales can select from both static and mobile crushers.

Of particular note is the new Metso Nordberg HPe cone crusher range, an 'e' for an 'evolutionary' unit that straddles the fixed and mobile requirement that Metso says is 'a versatile rock crushing machine' designed for high productivity, with low operating and wear costs, and 'frequently utilized as a secondary, tertiary, or quaternary crusher in aggregates production'.

Stand-alone static units from the HPe range - recommended for fitting to new or existing static plants to increase efficiency and output - include HP200e, HP350e, HP450e and the HP600e.



Kilsaran are one prominent purchaser who installed a static version HP350e at one of its centres last year.

Meriting particular attention within the Metso Lokotrack range of

mobile crushers are the spin-offs benefits customers might expect in terms of productivity that arise from their 'transportability' and faster start-up features.

Of particular focus is the Lokotrack LT350HP unit - a facelifted and enhanced LT300HP model whose Nordberg HP350e crusher delivers up to 10% more capacity. Streamlined for high-capacity mobile crushing, its hydraulic diesel-direct drive combines with major updates to enhance usability, safety, and support a more sustainable aggregates process.

Sharing importance within its diverse crushing and screening offering is the work McHale Plant Sales is doing within its markets to promote the excellent work of Monaghan-based manufacturer MDS - now properly and formally known as





Terex MDS - whose stature is significantly enhanced through its association with the highly-regarded Terex brand name.

Proud to manufacture cutting-edge, heavy-duty track trommel screeners and conveyor equipment, MDS is headquartered at Drummond, near Carrickmacross, in the heart of a county becoming increasingly famed for its engineering output.

With the added comfort that many naturally feel through their proximity to its production base, Terex MDS is widely admired for the innovation, enduring quality, unmatched toughness and durability embedded in their equipment.

Thanks in large measure to the bespoke nature of their products – a factor that strikes a positive chord with owners – Terex MDS equipment

is said to 'stand out from their competition' by virtue of their power to 'tackle the hardest applications'.

In this, pride of place from a competitive viewpoint goes to their powerful MDS M300 heavy-duty scalper. From processing quarry-blasted rock to managing construction and demolition debris, the M300 is built to maximize efficiency and durability.

Designed to excel in rugged environments, they are the ideal choice for contractors, quarry operators, and recycling yards seeking high-performance equipment that combines strength with portability.

Also from Terex MDS are trommel units held by McHale Plant Sales and available for delivery, whether by sale or on long term hire, which include

M518R and a smaller M413 units.

Besides the quality standards that Terex MDS injects into all of their products, McHale Plant Sales expresses pride in having the opportunity to represent what their Sales Director, Denis McGrath says is 'a product range with the quality of MDS' supported by 'customer deliveries to all points in Ireland, backed with tailored solutions to suit each customer's needs'.

McHALE
Plant Sales Limited



 M413 MDS.

Supporting the next generation of economic geologists

Minerals and mining have been a fundamental backbone of society over thousands of years, and the future demand for metals to meet the various goals for the green energy transition cannot be met without new mineral discoveries. Years of declining geological field training at universities around the world have put the quest to find new mineral resources at risk.

The David Hall Mineral Exploration Fund aims to provide financial assistance for young geoscientists interested in pursuing a career in mineral exploration to undertake field related studies. The Fund is designed to give new graduate economic geologists a start in field based exploration mapping projects in Ireland or overseas.

DAVID HALL

David graduated with BA Honors in Geology from Trinity College Dublin in 1981 and a MSc in Mineral Exploration at Queens University, Kingston, Ontario in 1984-85. David then worked as an economic geologist over a 40-year career spending his early years in Africa, Europe, and the Middle East, living in Egypt and Turkey where two of his children were born. While at Minorco, he was the Chief Geologist for Central & Eastern Europe & Middle East based out of Hungary from 1993-1997. He moved to South America with his family in 1997 and became Exploration Manager South America for AngloGold before



 **Figure 1: The David Hall Mineral Exploration Fund logo.**

establishing numerous junior exploration and development companies from 2000 onwards. His passion for exploration and discovery based on field work was renowned and he inspired many economic geologists during his fruitful career. David passed away suddenly in August 2023. He still had much to give to those around him and the

mineral exploration industry in general, however he has left a positive legacy.

The David Hall Mineral Exploration Fund has been established by David Hall's family, friends, and colleagues as a way of celebrating and continuing David's passion for mineral exploration; allowing new, young graduate geologists and researchers to have exposure to field-based exploration activity. David was passionate about fieldwork and he believed it was fundamental that the next generation of economic geologists should get direct "boots-on-the-ground" field experience. David was a strong believer that although new technologies (such as AI, machine learning, etc.) could benefit the search for new mineral resources, the key was developing the next generation(s) of exploration geologists with solid field experience who understand how the earth works and how and where to apply these new technologies based on fundamental field knowledge. The Fund aims to inspire the future, passionate generation(s) of mineral discoverers similar to how David greatly inspired all those who worked around him.



 **Figure 2: Caroline Grant core logging at Shanoon Resources Ltd.**



 **Figure 3: Joseph Donoghue examining core out in the Eastern Goldfields.**



Figure 4: Natalie Cole, Theertha Rajesh and their fellow students completing fieldwork in the Villamanin region of north western Spain.



Figure 5: 2026 bursary recipient Sophia Artz presenting her student flash talk at the IAEG 2026 Annual Conference.

THE DAVID HALL MINERAL EXPLORATION FUND

The Fund is affiliated with the Irish Association for Economic Geology (IAEG). The IAEG is a body with the goal of providing a professional association for geoscientists in Ireland and the committee meets regularly to advance these goals. The Fund has a set of articles that govern how the Fund can operate and is governed and managed by the Fund Committee. The Fund awards up to four Bursaries per year to selected geology students to assist with Irish and overseas field programmes. The range of funding to each recipient is between €1,000 and €4,000 at the Committee's discretion and subject to the financial position of the Fund. The bursaries are selected and awarded in March-April on an annual basis to link in with academic timelines, where appropriate.

The Fund began in March 2024 and already has two success stories. Recipients Caroline Grant and Joseph Donoghue received the first bursaries as final year students at Trinity College Dublin. The Fund supported them in their dissertation fieldwork and both have since graduated and begun successful careers in the economic geology and mineral exploration industry.

CAROLINE GRANT

"I received the David Hall bursary in 2024, which funded my final year mapping project of the Megara Rift Basin. This generous support allowed me to spend six weeks conducting the fieldwork portion of the project abroad, which was an incredible opportunity to explore the geology of West Attica, Greece. The time I spent in the field inspired me to pursue a career in economic geology. Since then, I graduated from Trinity College with an undergraduate degree in Geoscience.

After completing my final exams, I started my first job as a junior geologist with Shanon Resources Ltd, working on the reopening of the Galmoy mine. As a member of the IAEG and a recipient of the David Hall

bursary I was eager to start my career within the Irish mining industry. My initial role at Galmoy involved data clean up including the digitization of historic face sheets, drill hole and log recoding and the geolocation of face sheets. Once we started our surface drilling program my main task has been core logging and I've gained experience with geotechnical logging.

Looking ahead, I'm excited to gain underground experience soon as the mine fully reopens!"

JOSEPH DONOGHUE

"Shortly after graduating, I was hired by BRG Geotechnics for a short-term summer role. During this time, I worked on a variety of interesting projects, including the Rapla Project in the Lisheen area, the Gemini Project targeting geothermal potential and several other small campaigns.

As summer ended, I packed my bags and headed to Perth, Western Australia. Not long after arriving, I was hired as an exploration geologist at Saturn Metals, a junior gold exploration company. Saturn operates in the Eastern Goldfields of the Yilgarn Craton. I primarily work on the company's main asset Apollo Hill, a 2.83 Moz gold deposit that is yet to be mined. My work is varied and includes diamond core, RC, and aircore logging and office exposure. Saturn's exploration tenure covers more than 1,000 km², so there's always the possibility that the next discovery is waiting to be made. More recently, I've been given the opportunity to design my own proposed drill program for a relatively unexplored area. I've also started leading morning pre-start meetings for the exploration and drilling teams on site, which has been a great chance to build my confidence and take on more responsibility.

The David Hall Mineral Exploration Fund was a key stepping stone that supported my dissertation and helped me secure my first job. It greatly strengthened my passion for pursuing a career in mineral exploration and has given me an exciting start to my career."

2025 AND 2026 BURSARY RECIPIENTS:

In 2025, UCD students Theertha Rajesh and Natalie Cole both received bursaries which supported their fieldwork in the Villamanin region of north western Spain (Figure. 4). Three bursary winners were announced in 2026: Sophia Artz, MSc student at VU Amsterdam, whose project focuses on Pb-Zn and Cu-Ag mineralisation at Tynagh Mine. As well as Nathan Welters and Alison Power, both UCD students undertaking fieldwork in Tremp, Spain.

IRISH ASSOCIATION FOR ECONOMIC GEOLOGY

The IAEG has continued its outreach to students and early career geoscientists interested in economic geology this year. As part of the Online Lecture Series, Ron Voordouw presented an Early Careers talk in March 2026, focusing on the Equity Ireland Award, which supports geologists pursuing a career in mineral exploration. The IAEG also collaborated with the Joly Geological Society of Trinity College Dublin and hosted an early careers and networking in person event at the end of March.

After last year's success, the IAEG were once again delighted to include student flash talks and poster sessions on the topic of economic geology at the 2026 Annual Conference (Figure. 5). The IAEG also runs a student and early career logging course every October. The IAEG would like to thank all those who have contributed to date. As with any fund, it requires ongoing financial support. The fund web page with bank details and a paypal donate button can be found at www.iaeg.ie/David-Hall-Exploration-Fund.



BY ZOË BROWN
IAEG Secretary



OTR tyres from BKT, one of the leading tyre manufacturers across the globe

Agrigear Tyre and Wheel Specialists, located in Bailieborough, Co. Cavan was established in 1980 by Fred Clarke. With over 40 years' experience in the tyre industry and employing a staff of over 70, Agrigear is one of the largest tyre wholesalers in Ireland.

Agrigear Tyre and Wheel Specialists, located in Bailieborough, Co Cavan was established in 1980 by Fred Clarke. With over 40 years' experience in the tyre industry and employing a staff of over 70, Agrigear is one of the largest tyre wholesalers in Ireland. The company's flagship product is the BKT range of tyres manufactured in India.

With four state-of-the-art production facilities and its own in-house mould fabrication plant, BKT is recognised as having one of the broadest product ranges in the world. With over 2,500 different types and sizes of tyres in the earthmoving, industrial, construction, ATV and agricultural categories, BKT tyres are available in sizes ranging from 5" to 54" rim diameter.

BKT boasts a comprehensive range of Off-The-Road (OTR) tyres to suit a wide variety of applications including underground mining equipment, grader, excavator

& dozer machinery as well as rigid & articulated dump trucks. Furthermore, the industrial range offers tyres for loaders, telehandlers and skidsteers as well as for other construction machinery.

The "Earthmax" tyre range is BKT's series of radial all-steel earthmoving tyres proficient at operating in the harshest operating conditions. The 'max' in Earthmax represents maximum performance and maximum load capacity. Available in a range of sizes, the most popular being 17.5R25, 20.5R25, 23.5R25, 26.5R25, 29.5R25, 29.5R29, 18.00R33 and 24.00R35, these Earthmax tyres are ideal for articulated dumpers, dump trucks, dozers and wheel loaders working in quarries, mines and sites.

Agrigear is the sole importer and distributor of BKT tyres for Ireland, north and south. BKT tyres are available countrywide through a network of authorised agents, with deliveries handled by Agrigear's own

fleet of vehicles and by courier service.

The BKT tyre range in Ireland is about high quality at a competitive price. This, coupled with Agrigear's after-sales service, which is further supported by BKT's European technical and design teams based in Italy, ensures that customers in Ireland get an excellent product.

Alongside its tyre business, Agrigear also offers a unique wheel rim design, manufacturing and modification service where ideal wheel configurations are offered to suit a customer's own requirements. In addition, a wheel rim reconditioning service is also available where a customer can have a set of wheels cleaned and re-painted to look as good as new.

For more information or to find your nearest BKT stockist, call Agrigear on 042-9666444. Visit www.agrigear.ie to view the full range of tyres and wheel rims available at Agrigear.

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Sandvik DD423i: Built on a Strong Legacy and Ready for the Future

Over the last decade, the Sandvik DD422i has become one of the most trusted development drills in underground mining. It set a very high standard for productivity, reliability, automation and drilling accuracy. Many mines around the world have built their development processes around the DD422i... and for good reason.

Now Sandvik has introduced the new DD423i, and in my opinion it is much more than just an update. It takes everything that made the DD422i successful and improves it in the areas that matter most underground: coverage, operator safety, automation, visibility, serviceability and overall productivity.

The DD423i has been designed around a simple goal... helping mines develop more metres with less downtime while making the operator's job easier and safer. It is built on a proven platform but brings a number of meaningful improvements that can have a real impact on daily operations.

MORE COVERAGE MEANS MORE PRODUCTIVITY

One of the biggest improvements in the DD423i is the introduction of the new SB75i booms. These booms provide significantly greater drilling coverage than the SB60i booms used on the DD422i. The DD423i delivers



 Sandvik DD423iE.

34.5% more drilling coverage and 48% improved crosscut performance.

Greater coverage means operators can drill more holes without repositioning the machine. Every time a jumbo has to be moved, valuable time is lost. Reducing machine movements improves productivity, reduces cycle times and allows crews to complete rounds more efficiently.

The expanded reach is especially beneficial in wider headings, crosscuts and room-and-pillar applications where traditional jumbos often require multiple setups to complete the drill plan. The DD423i can accomplish more work from a single position, helping crews stay productive throughout the shift.

When compared to many other drills in the market, this larger coverage area becomes a real advantage. Operators spend less time moving equipment and more time drilling. For mine managers and development teams, that ultimately means more metres advanced and better utilisation of equipment and labour.

BETTER ACCURACY AND DRILL QUALITY

Modern underground mining is all about precision. Poor drilling accuracy leads to poor blasting results, overbreak, underbreak and increased costs throughout the development cycle.

The DD423i continues Sandvik's focus on intelligent drilling control systems to help minimise hole deviation, reduce jamming and maximise tool life. The machine combines advanced drilling controls with comprehensive planning, reporting and analysis tools that support high-quality drilling and blasting results.

Good drilling accuracy is often overlooked when discussing productivity, but it has a direct impact on pull-out, ground control and overall development

costs. The DD423i has been designed to help operators consistently achieve the intended drill pattern, even in challenging ground conditions.

This is an area where Sandvik continues to stand out. While many machines can drill holes, the DD423i is built to help mines achieve repeatable, high-quality results shift after shift.

A MAJOR STEP FORWARD IN OPERATOR SAFETY

Safety should always come first underground, and the DD423i includes several improvements aimed directly at protecting operators.

Perhaps the most noticeable change is the redesigned cabin. Sandvik reports a 55% improvement in visibility compared with the previous generation. The upgraded cabin includes full glass doors and an improved viewing

area, allowing operators to see more of the face and surrounding work area without leaving their seat.

This may seem like a simple improvement, but it reduces the need for operators to leave the cabin to check hole positions during manual drilling. Less time outside the protected cabin means less exposure to underground hazards.

The cabin also offers improved dust control and reduced noise levels, creating a healthier and more comfortable working environment. Over a full shift, these improvements can make a significant difference to operator wellbeing and fatigue management.

When compared with older generation drilling equipment across the industry, the DD423i provides a more modern and operator-focused workplace that supports both safety and productivity.

AUTOMATION & DIGITAL INTEGRATION THAT DELIVERS REAL BENEFITS

The Sandvik DD423i is designed with integrated, scalable automation and digital connectivity to improve underground drilling performance. Standard automation features, automated boom movements and collision avoidance systems increase drilling efficiency, reduce operator workload and help prevent costly damage in confined underground environments.

The machine can be upgraded for advanced automated drilling and tele-remote operation, supporting mines facing labour shortages and delivering more consistent results across shifts. Fully integrated with Sandvik's digital mining ecosystem, including iSURE, DrillConnect, iNav, My Sandvik and Newtrax, the DD423i enables real-time performance monitoring, data analysis and continuous



improvement, supporting the mining industry's digital transformation.

RELIABILITY PROVEN IN TOUGH CONDITIONS

A machine can have impressive specifications, but what matters most is how it performs underground. During testing in the Skelleftea region of Sweden, an area known for very hard and abrasive rock conditions, the DD423i achieved more than 95% machine availability. That result is extremely important.

High availability means the machine spends more time producing and less time sitting in the workshop. For operations that depend on development rates to meet production targets, reliability is often just as important as drilling speed.

The DD423i builds on the reliability reputation established by the DD422i and further strengthens Sandvik's position as a supplier of dependable underground equipment.

EASIER MAINTENANCE AND REDUCED DOWNTIME

Maintenance teams will also appreciate the improvements made to the DD423i. Sandvik has redesigned the machine to improve access to key service points and critical components. Easier access means faster inspections, simpler maintenance procedures and reduced downtime during planned servicing.

Every hour saved during maintenance is another hour available for production. While maintenance improvements are often less visible than automation features or drilling performance figures, they contribute directly to overall fleet efficiency. For operations trying to maximise equipment utilisation, this is another meaningful step forward from the DD422i platform.

WHY THE DD423i STANDS OUT

Looking at the market as a whole, there are plenty of capable development drills available today. However, the DD423i brings together several advantages that are difficult to match in a single package.

These include:

- 34.5% greater drilling coverage.
- 48% improved crosscut performance.
- 55% better operator visibility.
- Advanced automation and collision avoidance systems.
- Integrated digital mining connectivity.
- Greater operator comfort and improved dust control.
- Proven reliability with over 95% availability during field testing.
- Improved serviceability and maintenance access.

What really stands out is that these improvements are not focused on



Sandvik DD423iE.

just one area. They improve the entire development cycle, from drilling accuracy and safety through to maintenance and reporting.

FINAL THOUGHTS

The DD422i earned its reputation by becoming one of the benchmark development drills in underground mining. It helped many operations improve productivity, accuracy and safety while embracing automation. The DD423i takes that proven foundation and moves it another step forward.

For operators, it delivers better visibility, improved comfort and easier drilling. For maintenance teams, it offers better access and serviceability. For mine managers, it provides increased coverage, stronger performance, enhanced automation and valuable digital insights. Most importantly, it helps mines achieve more development metres with fewer delays and greater consistency.

In simple terms, the DD423i is not a complete reinvention of the DD422i. It is something better. It keeps everything that made the DD422i successful and improves the areas that matter most to underground operations today. For mines looking to increase productivity while supporting safer and smarter

development, the DD423i looks set to become the new benchmark for underground face drilling.

SANDVIK IRELAND

Supporting our Irish customer base in both the surface and underground extractive industries since 1996, with technical support and operating from our midlands workshops over the past 29 years, since 1997.

With a high emphasis on Environment Health and Safety, a product range of quality products, parts and services and an exceptionally skilled workforce, our customer support continues today from our Portlaoise facility, where we strive to deliver tomorrow's needs, today in Ireland and around Europe.



BY BRIAN CARROLL
OPERATIONS MANAGER UK &
IRELAND - SALES TERRITORY
CEU & UK/IRELAND



From Apprentice to Operational Manager: A Journey Built on Curiosity, People and Purpose

When I started my career as an Apprentice Plant Fitter with Tamrock, now Sandvik, in 1999, I never imagined where the journey would take me. Like many young people entering the workforce, I simply wanted to learn, develop my skills and do a good job. I wasn't focused on climbing a career ladder. I was focused on becoming the best version of myself that I could be.

Over the past 25 years, that mindset has guided me through a variety of roles across the business. After qualifying as a Plant Fitter in 2003, I progressed through positions including Rebuild Facility Workshop Supervisor, Workshop Manager, Service Manager Ireland, Parts Service & Warranty Lead, Sales Manager, Operations Manager, Business Line Manager, and ultimately Operational Manager for Sandvik UK & Ireland.

While each role brought new responsibilities, I have never viewed my journey as an individual achievement. Looking back, the greatest source of pride is not the titles held, but the team ethos we built together along the way. Creating an environment based on trust, respect, teamwork and shared goals has always been something I valued deeply.

I am particularly proud of the respect that my teams and I have earned within the industry and among our customers. In my experience, success is never achieved alone. One of the mottos that has guided me throughout my career is simple: our success means nothing unless our customers are successful. When customers trust you to support their business, that responsibility should never be taken lightly.

One of the biggest leadership lessons I have learned is that people are people, not robots. Every individual brings different experiences, strengths, ambitions and challenges. Good leadership is not about directing people. It is about understanding them, supporting them and creating an environment where they can succeed. When people feel valued and respected, they achieve remarkable things.

I have also been fortunate to work with exceptional leaders who provided opportunities, guidance and trust when I needed it most. Brendan Anderson, Elias Engman, Peter Lundmark,



Brian Carroll, Operations Manager UK & Ireland – Sales Territory Ceu & UK/Ireland.

Friedrich Hirtler, Ulf Johansson, Jan Ove Stene and Christian Bjorne all played important roles in my development. Each of them challenged me to think differently, encouraged me to take on new responsibilities and helped me gain experiences that shaped both my career and leadership style. For that, I remain genuinely grateful.

Throughout my career, curiosity has been one of my greatest strengths. I have always wanted to understand more, learn more and see how things could be improved. Not because I wanted to be better than anyone else, but because I wanted to be the best that I could be.

If I could offer one piece of advice to the next generation, it would be this: never stop learning. Be curious. Work hard. Respect people. Take opportunities when they come your way, even when they feel uncomfortable. Most importantly, remember that careers are built one step at a time.

I started with a toolbox and a willingness to learn. Everything that followed was built on curiosity, teamwork, strong relationships and a commitment to helping others succeed. Those values remain just as important to me today as they were on my very first day.

Mol an Óige



An ICF member recently recounted the experience he had when he gave a tour of one of his facilities – a quarry, block plant and readymix concrete plant - to one of his friends. The friend, a life-long pal, was astonished at the level of sophistication involved in producing – consistently, safely, sustainably and to a high standard - the raw materials which underpin our built environment.

“Did he think we crush rocks against our foreheads?”, the producer quipped, but the anecdote was instructive. Despite, or perhaps because, of the ubiquitous nature of the products created by ICF members and the ancient history of quarrying in Ireland, the industry is often taken for granted, grudgingly considered necessary but old-fashioned and environmentally damaging, particularly when compared with other employment sectors such as Big Tech and pharmaceuticals.

Alongside the construction industry more broadly, the aggregate and concrete industry faces labour shortages if current trends continue. The workforce is ageing (the median age of quarrying and mining workers was 49 in 2024) and its products will continue to be vital if Ireland’s infrastructure needs for housing, transport, water, commerce and energy are to be addressed.

At the same time, the industry is at the precipice of transformative change; new precast and modular products are being developed, circular aggregates are being produced, low carbon binders are being proven and adopted, electrification of quarry, production and delivery operations is underway, digital tracking is being implemented across all aspects of the business, and production workflows are being automated. Automation, AI and sustainability will transform the sector over the coming decades.

The concrete and aggregates industry will need bright, ambitious young minds combined with the expertise of more experienced industry staff to help achieve this metamorphosis. They will be required across a huge range of roles and disciplines; geologists, ecologists, quarry operatives, structural engineers, fitters, readymix concrete truck drivers, general operatives, material scientists, concrete technologists, laboratory technicians, heavy plant mechanics, safety professionals, sustainability experts, automation specialists, computer programmers, communications specialists and many more – a far cry from the monolithic ‘quarrymen’ of popular imagination.

The industry must prove that it doesn’t simply provide jobs, but



Brian Boru Bridge Under Construction.

careers which provide life-long opportunities to learn and progress and to contribute meaningfully to the society in which we live.

It will not be sufficient for the industry to grumble to itself that it is not given the credit that it deserves. The industry will have to inspire this next generation and, equally importantly, their parents. It needs to show the public the fantastic, vital, innovative, interesting work that its employees do. It must demonstrate how it incorporates ecological and biological concerns into its normal operating procedures and it must be transparent on the leaps it is taking to decarbonise its operations.

ICF, along with partners in Cement Manufacturers Ireland, is currently embarking on a new plan to change the narrative about the industry and lay the groundwork for the future of concrete as a high quality, sustainable material. This is a challenge shared with other extractive and manufacturing industries and indeed the aggregate and concrete industry worldwide.

This author’s two-year old son is an avid fan of ‘The Adventures of Owl Paul and Dumper Henry’, an illustrated children’s book produced by Àrds García, a family-owned granite aggregates producer in Spain. Every quarry open

day, apprenticeship, bursary, work placement, STEM event, media piece and conversation with a young person is an opportunity to show what our industry can offer and to discover the people who will help shape its future.

This industry is doing more than simply filling vacancies. The next generation of employees which will help shape the future of the industry will be more diverse – age, background, education, thinking – not just to satisfy simplistic HR diversity targets, but to bring in new perspectives and approaches to ensure the future sustainability of the industry, thereby enabling it to make a vital contribution to building Ireland’s future.



BY CONOR HAYES
Head of Sustainability
Irish Concrete
Federation CLG



Essential materials from quarry to customer



Breedon is a leading vertically-integrated construction materials group in Ireland, the UK and the USA.

We supply the construction industry with the essential materials needed to build the places where we live and work, play and in-between.

We use our core assets to produce value-added downstream products, pulling our aggregates and cement through to deliver asphalt, ready-mixed concrete and surfacing solutions to the construction supply chain.



breedongroup.com

Investing in People: How Breedon Ireland is Shaping the Future

At Breedon Ireland, we see things differently. From our quarries and plants, we create the materials that shape the world around us and we are looking for people who'll shape the future with us.

Across the island of Ireland, our industry delivers the roads, homes, schools, hospitals, runways and renewable energy projects a growing economy depends on. Every tonne of aggregate, every load of asphalt and every cubic metre of concrete contribute to building a more sustainable future for Ireland. And it is an industry that has evolved more in the last five years than in the fifty before it, with the pace still accelerating.

The forces behind that change are not abstract. The EU Emissions Trading System, the Carbon Border Adjustment Mechanism, the Corporate Sustainability Reporting Directive and Ireland's Climate Action Plan have collectively rewritten what a construction materials business is expected to measure, prove and improve. Revised European standards have opened the way for a new generation of lower-carbon cements.



Working together on site to maintain the highest standards of safety and performance, ensuring everybody goes home safe and well.

Specifiers and public procurement teams now request Environmental Product Declarations as a matter of routine, because verified performance data has become the currency of the sector. What was once good practice has become a licence to operate.

Our industry has not been dragged into that transition. It has chosen to lead it. Decarbonising construction materials is among the hardest industrial challenges anywhere in the world, and it is being tackled here, on this island, in our quarries, plants and laboratories.

That work demands a workforce the sector simply did not have a generation ago. Quarrying is still too often pictured as heavy, low-skilled labour. Walk around a modern Breedon site and you will find process engineers optimising plant performance and alternative fuel substitution; environmental scientists managing biodiversity, water quality and emissions monitoring; chemists and technicians in accredited laboratories verifying every batch; data analysts working with telematics, drone survey and real-time production data; and sustainability specialists producing the carbon information our customers now require. Alongside them are the operators, fitters, electricians and





 **Monitoring and optimising plant performance to ensure quality, efficiency and sustainable operations**



 **Our people are at the heart of everything we do at Breedon, supporting every colleague to build their skills and grow their career.**

drivers whose trades have themselves become markedly more technical with every generation of equipment. These are engineering, science and technology careers based in the communities where our sites are, rather than in a city-centre office.

But technology and innovation are only part of the story. At the heart of everything we do are our people. Health, safety and wellbeing are paramount, because people are our greatest asset, and our priority is always to ensure everyone goes home safe and well at the end of every working day.

Ensuring there is comprehensive support, guidance and training helps to safeguard the physical and mental wellbeing of colleagues and creates a culture of trust, integrity and accountability that supports growth and success.

Encouraging greater diversity of backgrounds, experiences and perspectives ensures our business reflects modern Ireland, strengthens our workforce and contributes to making our industry more innovative. At the heart of this is nurturing a culture of respect, valuing colleagues for who they are and the individual experience and perspectives they bring.

Attracting the next generation is therefore less about convincing people that the sector has changed, and more about showing them where they might fit within it.

One of our greatest strengths at Breedon Ireland is recognising that there is no single route into the business. Some colleagues join us as apprentices, others arrive through our graduate programmes, while many build successful careers after entering the industry in operational roles. What matters is not where someone starts but how they are supported to grow.

The clearest account of what that looks like comes from colleagues who have lived it.

Martin Burns, Senior Contracts Manager, Temple Quarry

"I have been working with Breedon Group now for over 25 years. I first started back in 1997 when I was studying

the equivalent to A Levels - it was a GNVQ Level 3 course in Construction. I knew at that early stage in my studies and my career that it would be testament to try and get some experience and Breedon Ireland gave me that opportunity. From there I established a relationship with them, and I went on to do my HND in Civil Engineering. I spent my year out with Breedon Group, which was very successful for me, as I won Placement Student of the Year. This was down to the experience Breedon Group gave me and I am now a Senior Contracts Manager for the Civil Engineering Team in Northern Ireland."



 **Learning on the job through teamwork, mentoring and hands-on experience.**

Catherine O'Connell, Graduate Mechanical Engineer, Maintenance

"A typical day starts with a team meeting, where we discuss safety concerns and the jobs planned for that day. If I'm in the office, I'm chatting with suppliers, planning jobs and bouncing ideas off the other team members. If I'm down on site, I'm checking in on how a job is going with the fitters and contractors carrying it out. There is a lot of troubleshooting involved, and that always comes back to team discussion. There's a really good balance between desk work and being hands-on, and it brings a lot more variety to your day."

These experiences highlight that for young people entering the workforce today, continuous learning matters. They

are looking for opportunities to develop new skills, take on responsibility and see clear progression pathways. Creating a great place to work, fostering a sense of team and investing in colleague training and professional qualifications so they can grow, learn and be the best they can be help us to inspire the next generation.

Careers that offer purpose and the opportunity to make a positive impact are at the forefront of what many young people are looking for today. Those studying engineering, environmental science or earth sciences are often passionate about biodiversity and responsible resource management.

Sustainability is no longer an add-on in our sector. Ireland's transition to a lower-carbon economy depends on responsibly sourced construction materials, and neither infrastructure nor housing can be delivered without aggregates. Breedon Ireland's continued focus on restoring biodiversity, reducing carbon emissions and improving resource efficiency is central to how a successful and responsible building materials business now operates. And for young people who want their work to count, few industries offer a more direct line between what they do each day and the outcome they care about.

Most importantly, we offer opportunities for people to build rewarding careers that can last a lifetime. We value skills, invest in growth, and support the communities where we live and work. Making a material difference to the lives of our colleagues, customers and communities is at the heart of everything we do at Breedon.


BREEDON
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Building a diverse workforce for the future

When many people think about mining, they picture a very different industry from the one that exists today. Modern mining is powered by technology, innovation, collaboration and highly skilled people. It offers rewarding careers across a wide range of disciplines, creating opportunities for people from many different backgrounds to make a real impact.

Attracting and developing the next generation of talent is part of what we do and believe in Boliden Tara Mines. From geology and engineering to maintenance, operations and apprenticeships, there are many pathways into the industry, often for people who never originally considered a career in mining.

For **Lauren Meager**, a geologist on Boliden Tara Mines' exploration team, mining was not part of the original plan.

Lauren began her studies in veterinary medicine before realising it wasn't the right path for her. While working in Canada, she met people who had studied geology and environmental science, sparking an interest in a completely different career direction.

"I wanted to work in an industry that makes a real difference to the world while also being intellectually challenging and rewarding," Lauren explains.

"Geology appealed to me because it combines science, problem-solving,

business and a love of the outdoors."

While studying geology, she became particularly interested in mining and exploration because of the combination of technical challenges and real-world applications. Today, her role involves analysing geological data, planning drilling programmes and helping the exploration team build a better understanding of the orebody.

"The most rewarding part of my role is solving complex geological problems with relatively limited data," she says. "Exploration geology often involves building an understanding of the geology between drill holes and making informed predictions about what lies beneath the surface. It is particularly rewarding when drilling confirms an interpretation, especially when it intersects significant mineralisation."

Looking back, Lauren believes greater awareness of careers in geology and mining could encourage more young people to consider the sector.

"Before university, I wasn't even aware

that geology was a career option," she says. "I would strongly encourage anyone with an interest in science, problem-solving or the outdoors to consider geology or mining. The work is varied, the challenges are engaging and the people in the industry are fantastic to work with."

Building careers does not stop at recruitment. Tara Mines provides opportunities for employees to develop new skills, take on different challenges and build long-term careers within the business.

Megan Buchanan, Mill Operations Support Specialist, is a great example of internal mobility and the opportunities available to progress at Tara. Her journey began with a short-term opportunity assisting with the mobilisation of a tunnelling contractor before covering a period of sick leave within the mine department.

Today, Megan coordinates activities between the mill production, process, maintenance and facilities teams.



 **Mollie Morton Gary.**



 **Megan Buchanan.**



 **Diarmuid O'Reilly.**



 Tara aerial view.

She also manages surface facilities and oversees the planning and execution of major shutdowns.

"The opportunity to cover a job short term was the starting point for my career, and I've been here for 10 years now," says Megan. "Working in the mining industry is a great place to learn and has given me the opportunity to try different aspects of the business and develop both personally and professionally in a unique work environment."

Alongside professional and operational roles, apprenticeships provide another important pathway into the mining industry.

Mollie Morton Gary is currently completing a Construction Plant Fitter apprenticeship at Tara Mines, having previously completed a Geo-Drilling apprenticeship at the mine.

Through the programme, she has gained experience both underground and on the surface, while working with heavy equipment and developing valuable technical skills.

"I get a lot of different experiences," says Mollie. "I work underground, get to work with heavy equipment, and it's not something you see every day. It's good fun, you learn a lot of different skills, and you learn how to work as part of a team".

Diarmuid O'Reilly recently completed his 4-year Electrical & Instrumentation Apprenticeship and highlighted that the opportunities and experience he had were fantastic.

"Having completed my apprenticeship, I gained valuable hands-on experience and continue to learn every day. I would highly recommend an apprenticeship at Tara Mines, it's a fantastic opportunity to develop your trade while working with a highly experienced and qualified team in a fast-paced environment,

where safety is always a priority."

The experiences of Lauren, Megan, Diarmuid and Mollie highlight the breadth of opportunities available within modern mining. They also demonstrate the importance of ensuring that people from all backgrounds are aware of the different career paths the industry can offer.

Building the workforce of the future also means building a workforce that reflects a wider range of perspectives, experiences and backgrounds. While mining has traditionally been a male-dominated industry, increasing diversity remains an important priority across the sector, not only because it is the right thing to do, but because diverse teams contribute to stronger businesses.

Across Boliden, women now make up approximately 22% of the permanent workforce. At Tara Mines, women currently represent 11.7% of employees, with approximately 35% of our new hires in 2026 to date being women. To build on this progress, we have set a target for 40% of all new hires to be women by 2030, alongside our broader commitment to attracting people with diverse skills, experiences and perspectives.

A diverse workforce brings together people with different backgrounds, experiences, perspectives and ways of thinking. This diversity of thought helps us challenge assumptions, solve problems more effectively, foster innovation and make better decisions. These different ideas and experiences strengthen our teams today and will help shape the future success of Tara Mines.

Building that future workforce is about more than recruitment. It means creating opportunities for people to develop their skills, grow their careers and contribute to an environment where everyone feels respected, included and empowered to succeed.

As Tara Mines continues to explore the Tara Deep prospect and plan for the future, investing in our people and developing the skills, capability and expertise needed for the years ahead is one of our key priorities. By attracting, developing and retaining talented people from a broad range of backgrounds and experiences, we are building a stronger, more resilient organisation that is well placed to seize the opportunities ahead.

Michelle Bennett, General Manager at Boliden Tara Mines, believes the operation is well positioned to attract the next generation of talent. "As we work to confirm Tara Deep's full potential, we are inspired by Boliden's promise of delivering metals for generations to come," says Michelle. "Our greatest opportunity isn't only what lies beneath the ground, it's the people who will unlock its potential. By continuing to attract talented individuals, invest in their development and foster an inclusive culture, we are ensuring Tara Mines remains a place where people and the business can thrive together for generations to come.

Keep an eye in the opportunities in our careers page at boliden.com/career and our social media

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BOLIDEN
Tara Mines

BY ANDREZA REZENDE
Communications,
Boliden Tara Mines



Rapidmix 400CW Powers Sustainable Material Processing for David Walsh Civil Engineering



Rapid International is continuing to support contractors across the civil engineering sector with high-performance mixing solutions, recently supplying David Walsh Civil Engineering Ltd. with a customised Rapidmix 400CW continuous mixing plant.

Designed to provide high-volume, continuous production, the Rapidmix 400CW is being used by David Walsh Civil Engineering to process and stabilise materials for reuse on site. The machine has also been finished in the company's distinctive blue colouring, demonstrating Rapid International's ability to customise its equipment to meet individual customer requirements.

Material is fed into the Rapidmix 400CW, where it is accurately blended to produce a consistent, high-quality stabilised material ready for use on site. By recycling and reusing existing materials wherever possible the process can help reduce waste and minimise unnecessary truck movements, providing a more sustainable and cost-effective

approach to material management.

For Rapid International, the project highlights the versatility of the Rapidmix 400CW and its ability to integrate into a customer's existing material-processing operation.

David Walsh Civil Engineering Director, Conor Walsh, has been pleased with the performance of the new plant, particularly the quality of the material being produced



and the tonnage being achieved.

"The output from the machine has been excellent, and we are very happy with both the quality of the material and the tonnage the Rapidmix 400CW is producing."

The Rapidmix 400CW is designed to offer continuous, reliable mixing for a wide range of applications, giving contractors greater control over their material production while supporting efficient on-site operations.

For Rapid International, working closely with customers such as David Walsh Civil Engineering is central to delivering equipment that meets the practical demands of modern construction and civil engineering. From machine configuration and bespoke finishing to application-specific requirements, Rapid works with customers to provide mixing solutions designed around their individual operations. The David Walsh Civil Engineering

 **Rapidmix 400CW.**



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installation is another example of how the Rapidmix 400CW can help contractors maximise the value of existing materials, improve productivity and move towards more efficient and sustainable working practices.

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Enhancing Mining Education Through Integrated Learning: Online Platforms, Hands-On Experience, and Mixed Reality Tools for Future Mining Engineers

Mining education is undergoing rapid transformation driven by technological innovation, sustainability demands, and evolving industry expectations. Universities must now prepare engineers not only for traditional mining operations but also for digitalised, automated, and environmentally responsible futures. This article examines the advantages and challenges of online and on-site learning, the role of practical fieldwork and industry collaboration, and the growing importance of mixed-reality learning tools such as the MiReBooks.

Drawing on the work of my colleagues in the Division of Mining and Mineral Technology at Tallinn University of Technology (TalTech) in Estonia, Karin Robam, Sander Kanter, Erik Väli and myself, this article synthesises current educational approaches and proposes a hybrid model that integrates digital flexibility, immersive hands-on learning, and advanced mixed-reality resources to equip mining engineers with comprehensive, future-ready skills.

Modern universities offer diverse learning pathways that allow students to tailor their educational experience to personal needs, professional goals, and lifestyle constraints. In mining education, this flexibility is particularly important due to the field's unique combination of theoretical complexity, practical risk, and technological evolution.

Online learning provides accessibility and independence, enabling students to engage with course materials regardless of location. Traditional on-site learning, meanwhile, offers hands-on experience, laboratory work, and direct interaction with instructors—critical components for fields such as geotechnics, geology, and mining engineering. The challenge for educators is to balance these modes effectively while ensuring students gain both theoretical understanding and practical competence.

This article explores these learning modes in depth and introduces an emerging third pillar: mixed-reality



 **Figure 1. Site visit (Google Images).**

learning, exemplified by the MiReBook, a new generation of interactive handbooks designed specifically for mining engineers.

THE CHANGING LANDSCAPE OF MINING EDUCATION

Industry Pressures and Skills Shortages

The mining sector is undergoing profound change. The European Union's Critical Raw Materials Act (2024) places significant pressure on academia to produce graduates capable of

supporting sustainable extraction and advanced technological operations. As the document states, "the Act states that the EU must increase its annual needs for the extraction of critical raw materials (CRMs) by 10% by 2030". This is less than four years away, therefore, time is of the essence to equip students with the knowledge and some quality experience to be able to enter the sector and find their feet quickly. Simultaneously, the global mining industry continues to face skills shortages, with workforce concerns

ranking among its top risks. Digitalisation, automation, artificial intelligence, and remote-controlled machinery are reshaping mining operations, requiring engineers to master new competencies that extend beyond traditional mine design and safety.

Sustainability and Responsibility

Mining engineers must now balance resource extraction with environmental stewardship, social responsibility, and circular economy principles. Students need exposure to interdisciplinary knowledge, geology, environmental science, engineering, and data analytics, to develop innovative solutions for sustainable mining.

TalTech's "Circular Economy for Materials Processing" course exemplifies this shift, using a flipped-classroom model to teach resource efficiency and circularity across the raw materials value chain.

ON-SITE LEARNING: THE FOUNDATION OF PRACTICAL COMPETENCE

Hands-On Experience

On-site learning remains indispensable in mining education. It provides students with direct exposure to laboratory experiments, field measurements, and real-world geological and technical analysis. The idea is that on-site learning enables students to acquire practical skills by applying the learned theory in real work conditions.

This mode of learning offers:

- Immediate instructor feedback
- Peer collaboration and professional networking
- Immersive engagement with equipment, materials, and field conditions
- Opportunities to observe and participate in research activities.

Challenges in Mining Education

Unlike civil engineering, where construction sites are accessible and visible, underground mining environments are remote, hazardous, and difficult to replicate. Students cannot easily observe deep-earth operations, making it challenging to convey the complexity of underground processes.

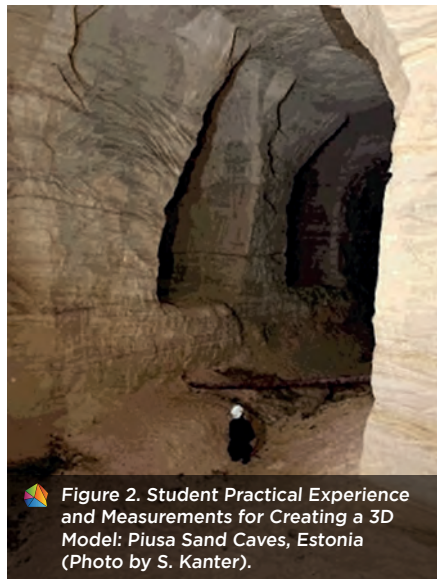
To address this, universities rely on:

- Virtual simulations
- 3D modelling
- Case studies
- Controlled laboratory environments

These tools help bridge the gap between theory and practice, though they cannot fully replace real-world immersion.

Fieldwork and Industry Collaboration

Field excursions to operational mines allow students to witness technologies, workflows, and safety protocols



firsthand. Partnerships with mining companies create opportunities for internships, research projects, and collaborative innovation.

An example of such is TalTech students participating in the project "Expanding the Reuse of Mined Areas and Mining By-products", where they developed guidelines for stabilising old mining areas and reusing undermined land.

Such experiences cultivate:

- Problem-solving skills
- Environmental awareness
- Technical competence
- Professional readiness.

ONLINE LEARNING: FLEXIBILITY AND ACCESSIBILITY

Advantages

Online learning offers unmatched flexibility, allowing students to study at their own pace and access materials from anywhere. This is particularly beneficial for mining professionals working in remote locations or on shift schedules.

Key advantages include:

- Self-paced learning
- Access to specialised digital resources
- Independence and personalised study pathways
- Ability to revisit complex topics.

Challenges

Fully online learning also presents limitations:

- Lack of live interaction
- Reduced peer engagement
- Limited networking opportunities
- Difficulty mastering complex technical topics without guidance
- Potential isolation and reduced motivation

Mining, as a highly practical discipline, requires tactile experience that online platforms cannot fully replicate.

THE CASE FOR HYBRID LEARNING MODELS

A blended approach combining online flexibility with on-site immersion offers the most comprehensive educational experience. Hybrid models allow students to:

- Build foundational knowledge online
- Apply theory through hands-on fieldwork
- Engage with instructors and peers
- Participate in industry-based projects
- Use digital tools to enhance practical understanding

This integrated model aligns with the evolving demands of the mining sector, where digital competence and practical expertise must coexist.

MIXED REALITY IN MINING EDUCATION: THE MIREBOOKS

Introduction to the MiReBooks

Mixed Reality (MR) technologies are emerging as transformative tools in engineering education. The MiReBooks (**Mixed Reality Handbook for Mining Engineers**) represents a new generation of interactive learning resources that combine physical textbooks with augmented and virtual reality overlays. The MiReBooks project was initiated in 2018 with a proposal created by a consortium of 14 partners, led by colleagues at Montanuniversität Leoben (MUL), Austria. The MiReBooks is designed to:

- Visualise underground mining environments
- Simulate hazardous scenarios safely
- Demonstrate equipment operation
- Provide interactive 3D models of geological formations
- Offer step-by-step procedural guidance
- Integrate real-time data from mining operations.



Figure 3. MiReBooks Vol. 1. (Photo by the author).

Why Mixed Reality Matters in Mining

Mining is inherently spatial, complex, and often inaccessible. MR tools allow students to experience environments that would otherwise be impossible to visit.

Key benefits include:

- **Immersive learning:** Students can “walk through” underground tunnels, observe rock mechanics, and interact with virtual machinery.
- **Safety:** Hazardous scenarios—rock bursts, ventilation failures, equipment malfunctions—can be simulated without risk.
- **Enhanced comprehension:** 3D visualisation improves understanding of geological structures, mine layouts, and extraction processes.
- **Skill development:** MR supports procedural training, equipment familiarisation, and emergency response practice.

Integration with Curriculum

The MiReBooks can be incorporated into:

- Introductory mining courses
- Geotechnical engineering modules
- Safety and risk management training
- Equipment operation workshops
- Fieldwork preparation sessions

For example, before visiting a mine, students can explore a virtual replica, learn safety protocols, and practice measurement techniques. This enhances readiness and reduces risk during actual fieldwork.

Complementing Online and On-Site Learning

The MiReBooks bridges the gap between digital and physical learning:

- **Online learning:** Students can access MR content remotely, using headsets or mobile devices.
- **On-site learning:** MR overlays can enhance laboratory experiments and field measurements.
- **Hybrid learning:** MR provides continuity between theoretical study and practical application.

Mixed reality thus becomes the third pillar of modern mining education, complementing traditional and digital methods.

RESULTS AND DISCUSSION

Online courses have gained popularity due to their flexibility, allowing learners to better manage their time and select the most convenient moments to engage with study materials. However, mining education requires more than convenience, it demands immersive, hands-on experience.

Mixed reality tools like the MiReBooks address this need by providing:

- Realistic simulations

MIXED REALITY HANDBOOKS FOR MINING ENGINEERS

Transforming Learning with Immersive Technology

MiReBooks is redefining mining education by integrating **Mixed Reality (MR)** into textbooks and lectures. This approach creates a **hands-on, interactive learning experience**, enabling better visualization of **mining processes, geological structures, and engineering principles**. With **3D models, animations, and simulations** embedded directly into handbooks, complex mining concepts become more accessible and practical, bridging the gap between theory and real-world application.

What Makes MiReBooks Unique?

- **MR-Enhanced Handbooks** – Traditional textbooks are reimagined with embedded Mixed Reality content, allowing for an interactive exploration of mining processes, equipment, and key engineering concepts beyond static images and text.
- **MR Software for Lecturing** – Specialized software enhances teaching with interactive 3D visualizations, 360° videos, and immersive imagery, making it easier to illustrate complex topics in both physical and digital learning environments.



KEY FEATURES & BENEFITS

- **Unlock Interactive Mixed Reality** – Use a smartphone, tablet, or VR headset to explore mining concepts with animated models, virtual environments, and hands-on simulations for deeper understanding.
- **Engage in Practical Digital Learning** – Reinforce theoretical knowledge through interactive exercises and real-world mining scenarios, improving critical thinking and problem-solving skills.
- **Blend Physical and Digital Resources** – Seamlessly integrate handbooks with digital enhancements for a flexible, adaptive, and future-ready learning experience.
- **Boost Comprehension & Retention** – Strengthen learning with immersive elements that help you visualize, understand, and remember complex subjects, making education more effective and enjoyable.

 **Figure 4. MiReBooks key features and benefits. (Photo by the author).**

- Interactive learning
- Safe exploration of hazardous environments
- Enhanced engagement
- Improved retention of complex concepts

When combined with fieldwork, internships, and industry collaboration, MR technologies create a comprehensive learning ecosystem that prepares students for modern mining challenges.

CONCLUSIONS

Mining education is evolving rapidly, driven by sustainability imperatives, technological innovation, and industry expectations. Online learning offers flexibility and accessibility, while on-site learning provides essential hands-on experience. Mixed reality tools such as the MiReBooks introduce a powerful new dimension, enabling immersive exploration of complex mining environments and bridging the gap between theory and practice.

A hybrid educational model, integrating online platforms, practical fieldwork, industry collaboration, and mixed-reality resources, offers the most effective pathway for preparing future mining engineers. This approach ensures students gain:

- Theoretical knowledge
- Practical competence
- Digital literacy

- Environmental awareness
- Professional readiness

As mining becomes increasingly automated, data-driven, and sustainability-focused, universities must continue adapting curricula and teaching methods. By embracing innovative tools like the MiReBooks and fostering strong industry partnerships, educators can equip students with the skills needed to thrive in a rapidly changing sector.

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BY TONY HAND

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Preparing the next generation to tackle global earth resource challenges



The fourth iteration of ReStoRE International Summer School brought together early-career researchers and professionals from 28 countries at University College Dublin in July 2026. Held under the patronage of UNESCO and co-organised by the iCrag Research Ireland Centre for Applied Geosciences, the International Union of Geological Sciences and the Centro de Estudios del Cobre y la Minería in Chile, ReStoRE 4 explored the theme Delivering Sustainability to the Global Community. This reflected the idea that resource challenges have both geological and societal dimensions: while often global in scale, their effects are experienced locally.

On the first morning of ReStoRE 2026, many participants found themselves assigned to a case study far from their usual work, training, and expertise. For example, a resource estimation specialist from Arizona spent the week grappling with community trust and perception around deep geothermal energy in Dublin, rather than the technical, day-to-day geology she knows well. "It's so outside what I think about on a day-to-day basis," she said.

By working in different areas, participants learn how to learn and apply their knowledge to different situations and bring new knowledge back to their own expertise. Participants recognize this as a major strength in the programme; as one participant commented, "...one thing I have really grown to appreciate is how much cross-pollination there can be between different issues that have similar dimensions".

A NEW GENERATION, A DIFFERENT SET OF EXPECTATIONS

Those who enter the earth resources sector today will work in a world which is very different from that of previous generations. The technical challenge of finding, extracting and managing resources remains, but it now sits

alongside equally important questions about climate, communities, trust, cultural heritage and long-term social value.

Meeting those challenges will require more than expertise in geoscience and engineering. It will require people who can work across disciplines, draw on rigorous social and environmental research and policy analysis, and make measured, responsible decisions in situations where there may be no single, straightforward answer.

Moreover, it requires an understanding of different disciplines and the skills to collaborate across traditional silos. Training early career researchers and industry participants in this was one of the main objectives of ReStoRE, an international summer school hosted by University College Dublin.

The fourth edition ran from 29 June to 3 July 2026 under the patronage of UNESCO. Over five days, around 40 early-career researchers and professionals from 28 countries worked together on complex resource and sustainability challenges drawn from different parts of the world.

LEARNING THROUGH REAL AND CONTESTED CHALLENGES

Participants came from geoscience, social science, environmental research

and professional practice. They worked in interdisciplinary teams on case studies involving a mine in the Gobi Desert, water systems in Gaza, geothermal energy in Dublin and rare earth mining in Chile.

Each case was complex and deliberately open-ended. Under the guidance of international experts, teams had to consider technical feasibility alongside environmental impacts, governance, economics, community priorities and consider their cultural context. They were encouraged to ask not only whether a solution could work, but who would shape it, who would benefit and how trust could be built and maintained.

This challenge-based approach reflects the realities that many participants will encounter in their careers. Resource projects and solutions are conducted under uncontrolled conditions, where information and knowledge is limited. Evidence is generally incomplete, stakeholders may hold competing priorities and decisions can have consequences extending far beyond the lifespan of a project. Learning to work constructively with that uncertainty is a necessary transferable professional skill that ReStoRE participants learned.

One participant drew on her experience working in Peru on how control dust pollution and engaging

local communities. She and her team thought through the challenges of mining in a remote landscape shared with nomadic herders. “The week was not just about learning from my colleagues and the lecturers,” she said, “but also learning from the culture, the country, going outside and sharing ideas with all these people.”

CROSSING DISCIPLINES AND BORDERS

The international and interdisciplinary character of ReSToRE is central to the programme. Participants travelled to Dublin from across the Global North and South, bringing perspectives shaped by their countries, communities, research and professional experience.

Those differences mattered. A geoscientist might begin with the physical properties of a resource, while a social scientist might focus first on how a decision is governed or understood by a community. An environmental researcher may identify impacts that are less visible in a technical assessment. Bringing these viewpoints together does not necessarily produce easy agreement, but it leads to better questions and more robust thinking.

As one participant put it: “Instead of

the classic way of working in silos, where you do your own task and then hand it over to somebody else, here you have lots of different skills working on the same problem at the same time in the same room, and you get a lot of different perspectives at once.”

Although the four case studies spanned several continents, the teams repeatedly returned to similar themes: what technological solutions are available, who has a seat at the table, whose knowledge counts, how uncertainty is communicated and how solutions can be scaled without losing sight of local needs.

CONNECTING FUTURE PRACTICE WITH THE PAST

A field trip to Glendalough and the Glendasan Valley grounded these global discussions in Ireland’s own resource history. Participants visited an active UCD archaeological excavation and explored the remains of historic lead mining in the valley.

For one participant from Peru, the visit carried a particular resonance. “Latin America can be viewed as the new world, so experiencing this cultural heritage and historic background was like magic,” she said. “We saw the archaeological team working, and that’s

something [her employer] takes very seriously, because we do that kind of work before intervening in any lands.” She was struck, too, by how mining history and natural beauty sat side by side in the valley: “there’s no competition between the beautiful landscape and mining activities and development that we see all around in Ireland.”

The landscape provided a tangible reminder that resource development leaves a long legacy. Technical achievement, working lives, local identity, environmental change and cultural heritage can all become layered within the same place. For early-career researchers and professionals, understanding that legacy is an important part of considering how today’s decisions may be viewed by future generations.

FROM PARTICIPANTS TO COLLABORATORS AND LEADERS

ReSToRE is designed not only as a week of learning but as the starting point for a longer professional network. Since the first ReSToRE summer school in 2019, former participants have stayed connected through friendships, research collaborations and shared professional interests. Several returned in 2026 as speakers and mentors.



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Dr Emilio Castillo of the University of Chile, for example, first came to ReStoRE as a participant in 2019 and returned this year as a workshop leader. At the time, his focus was firmly on economics. "After coming to ReStoRE, I started to think about what I could bring from other disciplines," he recalled. "I started doing research with political scientists, with lawyers, with sociologists, with geographers." His journey captures one of the programme's wider ambitions: to give early-career people the confidence, connections and opportunity to grow into experts and leaders who will guide others in turn.

Professor Geertje Schuitema, Director of the ReStoRE Summer School, described the 2026 programme as its most ambitious yet. "The case studies were contested and uncertain by design, but what struck me was how often teams landed on the same questions: working with uncertainty, building trust, and scaling solutions without losing what makes them work locally. That convergence is exactly why we bring people together across disciplines and from all over the world, including developing countries."

AN INVESTMENT IN THE FUTURE OF THE SECTOR

On the final day, each team presented recommendations to an expert panel, drawing together the technical, environmental, social and governance perspectives developed throughout the week. The value was not in arriving

at one definitive answer. It was in demonstrating a way of working: listening carefully, testing assumptions and building responses that recognise the full complexity of resource decisions.

For the resources sector, inspiring the next generation means providing them with a new, transferable skillset, and showing young people the breadth of careers opportunities available to them. It also means equipping them with the knowledge on how to shape the future together with a pool of disciplinary experts that range from geoscientists, engineers and other technical specialists, to social scientists, environmental experts, communicators, policy professionals.

ReStoRE offers a deep dive into that future: international, interdisciplinary and willing to engage openly with difficult questions. The participants have now returned to their home countries, but the discussions and relationships formed at ReStoRE will continue. For some, that future is already taking shape. "The challenges are different, the perspectives are different," one participant said, "but also there is common ground — there are take-home messages and learnings across as well."

Notes on Sponsorship: ReStoRE Summer School was supported and organised by iCrag Research Ireland Centre for Applied Geosciences, the International Union of Geological Sciences and Centro de Estudios del Cobre y la Minería in Chile.

ReStoRE 4 was run for the fourth time under the patronage of UNESCO

and was made possible through the support of sponsors from across the international resources sector, including Anglo American, Sandfire, Boliden, Cristobal Mining, Endeavour Mining, Freeport-McMoran, Shanoon, Group Eleven, Satarla, IDOS and the Society of Economic Geologists.

Their investment enabled early-career researchers and professionals from a diverse range of countries and backgrounds to participate, helping to develop the interdisciplinary skills and international connections the sector will need in the years ahead.



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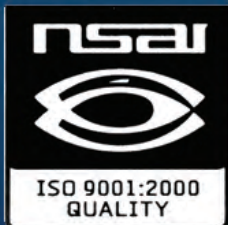
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Rebuilding from the Ground Up: How Roadstone Transformed its Graduate Programme into a Destination for Talent



Three years ago, Roadstone found itself at a crossroads.

Despite being a leader in the quarrying and construction materials industry, an industry built on strong foundations, resilience, and long-term thinking, our graduate programme simply didn't reflect those values. It lacked depth. It lacked structure. Most importantly, it lacked the visibility and momentum needed to attract the quality and number of graduates required to fuel our future leadership pipeline.

We knew we could not continue to rely on traditional recruitment methods. The competition for graduate talent was intensifying, and Roadstone did not have sufficient visibility where it mattered most: in the minds of graduates exploring their first career steps.

It was time to take a root and branch approach.

LOOKING INWARD BEFORE REACHING OUT

Just as every strong building begins with a solid foundation, we began by asking ourselves two fundamental questions:

- 1. What kind of graduates do we need?**
- 2. What do we genuinely offer?**

Due to the nature of our business in quarrying and manufacturing construction materials and providing technical product support and road laying solutions, we have traditionally attracted mechanical and civil engineers.

We still need to attract these types of engineers. However, in the last few years we have attracted HR, Finance, IT, Environmental, Health & Safety, Sustainability, Energy, Marketing and Ecology graduates. The beauty about a large company like Roadstone and its nationwide coverage is the breadth of opportunities and diverse specialities that exist.

Although we operate in a challenging industry, Roadstone

offer something truly unique: real responsibility, early ownership, and deep developmental opportunity.

My own career is proof of that. I joined Roadstone as a business graduate. After exposure to a new construction project, I moved into Health & Safety where I studied and developed into a senior role. To succeed in the industry, I knew I needed general management experience, so I shifted into operations, initially into our mobile crushing division before transitioning onto managing three quarry locations.

Over the course of these periods I studied health and safety, quarry specific courses and a Masters in HR—supported by a company that genuinely values growth. Today, as HR Operations Manager, due to the breadth of experience that I have accumulated, I have a wide-angle view of the many opportunities Roadstone and our parent company, CRH, can offer ambitious young people.

My story isn't special in Roadstone. It's typical. And that was our starting point.

REDESIGNING THE BLUEPRINT

1. Identifying the Talent We Needed

Our first step was clarity. We mapped the educational backgrounds essential for our long-term success. Once identified, we focused our attention on universities and colleges producing graduates in those disciplines.

We attended career fairs. We learned that we needed to make sure graduates not only met us but remembered us.

2. Reimagining Our Digital Presence

Our website needed to reflect the modern, dynamic organisation we truly are. So we rebuilt it, clean, modern, stylised, and honest.

We added: Testimonials from graduates and employees, short videos featuring real people telling real stories, and clear developmental pathways for graduates.

These assets became powerful tools. After meeting students at fairs, we directed them to the website, where they could explore the depth and authenticity of what Roadstone offers.

PUTTING OUR GREATEST STRENGTHS ON DISPLAY: OUR PEOPLE

One of the hallmarks of Roadstone is the strength of connections within the organisation. I experienced it personally through the mentors who guided me across multiple functions. We realised this was something worth showing, not hiding.

So we introduced formal one-to-one mentoring, pairing each graduate with an experienced senior manager. This has become one of the most consistently praised aspects of the programme. Graduates value real relationships, real support, and real access to leaders. At Roadstone, they get all three.

TELLING OUR STORY WITH PURPOSE

Graduates want to work for organisations that have purpose, integrity, and fairness. For too long, Roadstone, like many Irish people, was modest about sharing its success.

We realised that this had to change.

Through LinkedIn and other social platforms, we began showcasing:

- Our sustainability solutions
- Innovative projects
- Inclusion and diversity initiatives such as 'International Women's Day'.
- Stories about the people who make Roadstone special

Social media requires consistency and intentionality. It also requires someone dedicated to creating relevant, regular, engaging content. But the effort has paid off, dramatically increasing awareness of who we are and what we stand for.

INVESTING IN GRADUATES AS FUTURE LEADERS

Roadstone has always valued development, but we needed to demonstrate that commitment more deliberately to graduates.

Through our partnership with IBEC, we

established a professional management development programme, giving graduates foundational leadership and soft skills to complement their technical expertise.

This has: built confidence, generated greater commercial awareness, fostered a network of young professionals across the business, and provided opportunities to present real projects to senior management. Some of these projects have been carbon reducing such as changing quarry pumps from generator driven to electrical, enhancing safety by providing improved traffic management plans, developing new databases to track performance or the introduction of new technologies such as AI or apps to streamline tasks that we currently do.

This visibility for our early careers cohort is invaluable. It helps graduates grow, and helps leaders spot emerging talent early.

FROM OVERLOOKED TO "DESTINATION PROGRAMME"

We are proud to say that Roadstone's graduate programme has undergone a remarkable transformation.

What was once barely recognised is now increasingly seen as a destination programme, one that:

- Attracts higher-calibre graduates

- Gives genuine responsibility from day one
- Builds skills through structured development
- Connects graduates with senior mentors
- Shapes future leaders for Roadstone and CRH

But while we celebrate the progress, we also know this: we can never stand still. Adaptation, improvement, and innovation will always remain core to our graduate offering, just as they are to our industry.

Because when you're building something that lasts, you build it right. You build it with intention. You build it from the foundation up.



BY SHANE CASEY
HR Operations
Manager



TOBIN



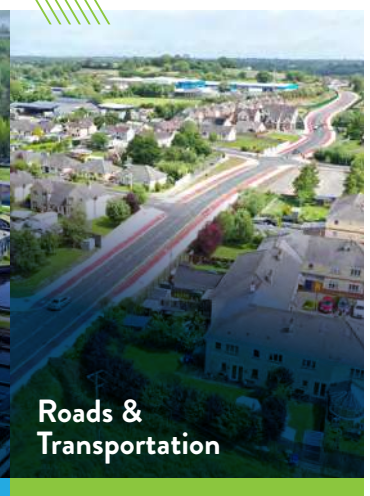
Environment & Planning



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BUILT ON KNOWLEDGE



Representing Ireland on the world stage, the Boliden Tara Mines Mine Rescue Team secured 2nd place at the 2016 International Mine Rescue Competition in Canada, showcasing exceptional skill, teamwork, and commitment to safety.

Mine Rescue in Ireland: Inspiring the Next Generation of Mine Rescue Teams

WHAT IS MINE RESCUE?

Mine rescue is the practical procedure in mining in which trained personnel wear breathing apparatus and use specialised equipment to save lives and recover property during underground emergencies. Rescue teams are trained to respond to incidents involving fires, explosions, rockfalls, toxic gases, flooding, and injuries underground.

The fundamental principles of mine rescue have remained unchanged for many years: team safety, saving lives, fighting fires, testing for gases, and returning the mine to safe operations.

A PROUD HISTORY OF MINE RESCUE IN IRELAND

The first formal records of mine rescue activity in Ireland date back to Tynagh Mine during the 1960s, where strong Canadian influences introduced practices from the Ontario Mine Rescue system. These early foundations became embedded within Irish mine rescue standards and continue to influence training today.

Over the decades, Irish mine rescue has developed alongside the country's mining industry. Teams from Tynagh, Avoca, Silvermines, Tara, Galmoy, Lisheen,

THE TYNAGH MINER

Vol. 11. MAY, 1973.



The Tynagh mine rescue team in May 1973.

Kilroot, and other operations have built a proud tradition of professionalism, cooperation, and excellence.



 The Tara Mines team competing in South Crofty in 1980s.



 Competition Judge Joaquim Pereira and Lisheen Captain Tim Bergin confer during a practical exercise at the Iberian Mine Rescue Competition in Aljustrel, Portugal, 2013.

COMPETITION AND CONTINUOUS IMPROVEMENT

The All-Ireland and UK Mine Rescue Competition has long been one of the cornerstones of mine rescue development. These events provide teams with an opportunity to test their skills, exchange knowledge, and build relationships with colleagues from across Ireland, the UK, and Europe.

Irish teams have also competed internationally, including in Portugal,

Spain, and Canada, with Boliden Tara Mines achieving an outstanding second-place finish at the 2016 International Mines Rescue Competition in Ontario.

Competitions continue to play a valuable role in maintaining standards and encouraging continuous improvement within mine rescue organisations. They provide realistic scenarios that challenge teams to perform under pressure while developing the confidence and teamwork required during real emergency situations.

THE IRISH MINE RESCUE COMMITTEE

Established in 2003, the Irish Mine Rescue Committee (IMRC) coordinates mine rescue resources across Ireland enabling mutual assistance in the event of an emergency at one of the participating mines. The members of the IMRC are Boliden Tara Mines, Irish Salt Mining and Exploration, Dalradian Gold, Gyproc, and Galantas. The IMRC operates on an all-Ireland basis.

In addition, the IMRC facilitates mutual assistance arrangements, develops standards, and acts as a liaison with the Health and Safety Authority and the Health and Safety Executive (NI) on mine rescue matters.

A key strength of the IMRC is its mutual training programme, which allows rescue teams from different operations to train together, become familiar with other mines' procedures, layout and equipment, and develop the relationships that are critical during emergency response situations.



 Tara - Lisheen - Galmoy joint training at Galmoy Mine in November 2004.



 Combining teamwork, specialised equipment, and air mobility: mine rescue personnel training with the Irish Air Corps to support rapid response capabilities across Ireland.



 A combined team from Dalradian, Gyproc and Tara at Mutual Training in ISME's Kilroot Mine in October 2025.

INSPIRING THE NEXT GENERATION

Mine rescue offers far more than emergency response training. Team members develop leadership, communication, decision-making, risk assessment, and teamwork skills that benefit both their careers and their wider organisations. Training is demanding, requiring commitment, physical fitness, and technical competence, but those who take part often describe it as one of the most rewarding experiences of their professional lives.

One of the greatest strengths of Irish mine rescue is the transfer of knowledge between generations. Experienced rescuers continue to mentor newer members, passing on lessons learned through years of training, competitions, and operational preparedness. Although technology continues to evolve, the core principles of mine rescue remain constant: protecting life, teamwork, discipline, and professionalism.

Today's mine rescuers will work in an increasingly technological environment. Modern gas monitoring systems, thermal imaging equipment, digital mapping tools, advanced communications systems, and drone technology are enhancing emergency response capabilities. The next generation will combine these innovations with the traditional skills that have long defined successful rescue teams.

The future also depends on ensuring that opportunities are open to everyone with the commitment and capability to contribute. The success of pioneers such as Orla McKenna from Dalradian, the first woman to compete in mine rescue in Ireland, demonstrates how



 Combined mine rescue team of Tara, Irish Salt, Gyproc and Dalradian using drone technology during an IMRC mutual training exercise at Tara Mines in May 2026.

the discipline continues to evolve and broaden participation across the industry.

LOOKING FORWARD

The mining industry will continue to change, but the importance of mine rescue will remain constant. Through mutual training, international cooperation, competitions, mentorship, and continuous improvement, the Irish Mine Rescue Committee is helping to support Irish mines to ensure that the next generation is ready to meet the challenges ahead.

The next generation of rescuers will not only preserve a proud legacy but

will bring new skills, fresh perspectives, and renewed energy to one of mining's most important disciplines.



Irish Mine Rescue Committee

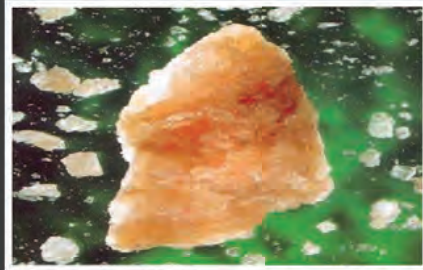
BY
MIKE LOWTHER Chair IMRC
AOIFE TALLON Secretary IMRC
ANTHONY MORAN IMRC



 Team captains Angela Coney (Dalradian) and Ben Loverage (Galantas) coordinate strategy during a mutual training exercise in 2023 at Gyproc's Drummond Mine.



 Post-exercise debrief at Boliden Tara Mines in May 2026, reviewing key learnings and reinforcing coordination and readiness for future mine rescue incidents.

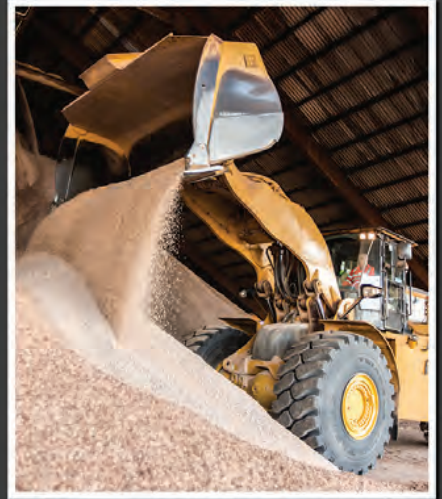


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Building Tomorrow's Workforce: Continuous Learning at Kilsaran



The extractive and construction materials industry has never stood still, and neither has Kilsaran. As the sector looks to attract the next generation of talent, Kilsaran continues to invest heavily in developing the skills of its people, from apprentices taking their first steps in the industry to experienced staff deepening their expertise.

At Kilsaran, investing in people's development is key to building a skilled, innovative, and future-ready workforce.

INNOVATION IN PRACTICE: RETHINKING RESOURCES IN THE QUARRY

For Kilsaran, innovation starts at the quarry face. Under its 'ideas taking shape' ethos, the company runs a network of dedicated research and innovation laboratories tasked with

developing new construction materials and, increasingly, with rethinking how existing resources are used.

A good example is Kilsaran's commitment to the circular economy. Through its Materials Recovery and Recycling division, the company recovers and processes excavated land waste that might otherwise end up in landfill, transforming it into compliant aggregates and sand for use in concrete, paving, and other construction products.

By investing in advanced washing,

grading, and recycling technology, Kilsaran is extending the life of valuable materials, reducing reliance on quarry resources, and creating new opportunities to reuse construction waste across its operations.

Innovation is also driving down the carbon impact of quarrying and processing itself. Dedicated R&D teams across the business continue to work on lowering the carbon footprint of concrete mixes, and Kilsaran runs the first electric concrete truck fleets in Ireland,





developed in partnership with Volvo, alongside ongoing investment in solar generation to help power its operations.

Environmental management also extends to biodiversity, with quarry faces and restored water bodies at Kilsaran sites providing habitats for species including peregrine falcons, sand martins, and solitary bees. Across its quarrying operations, the company continually monitors emissions, dust, noise, and groundwater to minimise environmental impact and ensure high environmental standards are maintained. The collection and analysis of environmental data supports informed decision-making and reinforces Kilsaran's commitment to responsible resource management.

None of this happens without the right people and skills in place. Behind every innovation, from advanced recycling processes to electric vehicle technology, is a workforce that has adapted, learned, and grown alongside the business. That's why continuous learning remains a key priority for Kilsaran, helping to build the skilled, future-ready workforce needed to support innovation and sustainable growth.

SHARING KNOWLEDGE: THE ESSENTIAL LEARNING SERIES

Kilsaran's commitment to continuous learning extends beyond its own workforce. As a recognised leader within the construction materials industry, the company regularly hosts its Essential Learning Series, bringing together architects, engineers, contractors, specifiers, and sustainability professionals to explore emerging technologies, exchange insights, and discuss the challenges shaping the future of construction.

One of the latest sessions focused on low-carbon concrete, where attendees examined the latest developments in sustainable concrete technology and its practical application. Led by Ken Mulkerrins, Kilsaran's Head of Innovation & Sustainability, the event explored the science behind low-carbon concrete, its role in helping the construction sector meet ambitious climate targets, and how Kilsaran's flagship low-carbon solution, ClimaKrete, is supporting more sustainable project delivery without compromising performance.

The Essential Learning Series reflects

Kilsaran's belief that continuous learning is vital not only within its own business but across the wider industry. By creating opportunities for collaboration and open discussion, the series brings together professionals from different disciplines to share expertise, explore emerging challenges, and develop innovative solutions. In doing so, Kilsaran is helping to foster a culture of learning that benefits the construction sector as a whole.

GROWING THE NEXT GENERATION: THE KILSARAN APPRENTICESHIP PROGRAMME

Developing future talent is a key part of Kilsaran's commitment to building the next generation of the construction materials industry. The Kilsaran Apprenticeship Programme provides young people with the opportunity to earn while they learn through structured, hands-on training across a range of disciplines, including electrical, laboratory, logistics, heavy vehicle mechanics, construction plant fitting, and mechanical automation and maintenance. Combining practical workplace experience with formal education, apprentices gain



nationally and internationally recognised qualifications while developing valuable technical and professional skills.

Working alongside experienced and qualified teams, apprentices are exposed to real-world projects and day-to-day operations across the business. This blend of on-the-job learning and off-site education helps participants build the knowledge, confidence, and competence needed to progress in a fast-moving and evolving industry.

Kilsaran is committed to creating opportunities for people who are eager to learn, develop, and build long-term careers. This includes encouraging greater diversity within the industry and ensuring these opportunities are accessible to all. In 2025, Kilsaran welcomed its first female electrical apprentice, alongside two female apprentices undertaking Laboratory and Logistics apprenticeships, highlighting the growing opportunities available for people from a range of backgrounds to build successful careers within the sector.

By investing in apprenticeships and supporting people from the beginning of their careers, Kilsaran is helping to develop the skilled, diverse, and future-ready workforce that will shape the future of the construction materials industry.

A CULTURE BUILT ON LEARNING

Whether it's developing innovative, more sustainable construction solutions, sharing technical expertise through the Essential Learning Series, or providing



apprentices with a clear pathway into the industry, Kilsaran's commitment to continuous learning is evident at every level of the business. Learning is not viewed as a standalone initiative, but as a key driver of innovation, collaboration, and long-term success.

By investing in its people, embracing new ideas, and fostering a culture of knowledge-sharing, Kilsaran is helping to build a more skilled, innovative, and sustainable construction sector. As the industry continues to evolve, the company remains committed to developing the talent,

expertise, and leadership needed not only to meet the challenges of the future, but to help shape it.

For more on careers and apprenticeships at Kilsaran, visit www.kilsaran.ie

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Quarry operations are a prime example, where industry, humans and wildlife merge together in a successful way. People may not like living beside quarries due to increased noise pollution, traffic and other associated issues and there are others who see them as an ugly blot on the landscape.



Irene O'Brien.

However, some of our native wildlife thrive and have adapted to living in these environments and furthermore, due to the constant activity and heightened security, they often have a higher level of protection than they may have elsewhere, particularly in an urban setting.

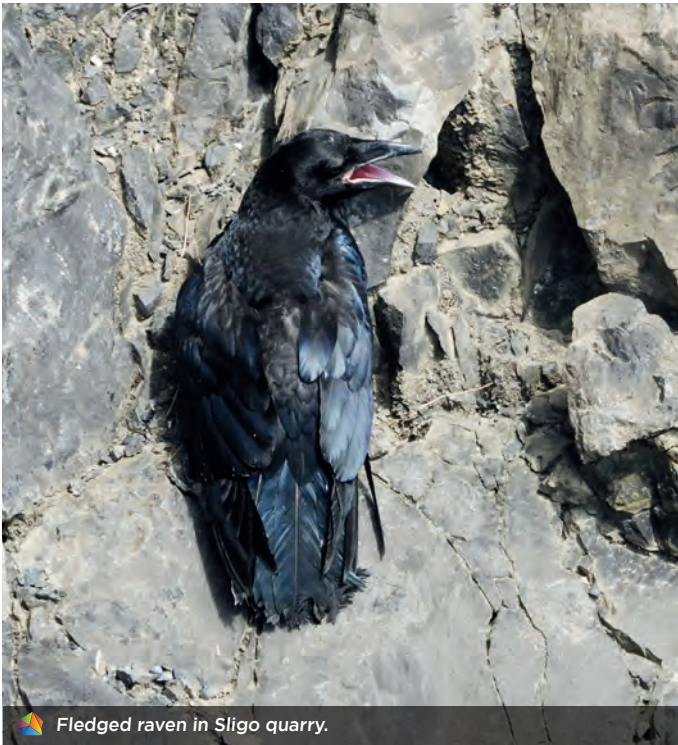
In my line of work, I have been visiting quarries in the West of Ireland for 15 years or more and the amount of wildlife that I come across at these sites never ceases to amaze me. Let us start with the Peregrine Falcon, as this species is the reason I visit quarries in the first place. The Peregrine Falcon is one of our most iconic birds of prey and is the largest of the three falcon species that breeds in Ireland.

The Peregrine Falcon was traditionally associated with upland crags and coastal cliffs. Falcons do not build a nest so

they need a vegetated ledge with a vantage point for nesting. They may also use other species nests such as the Raven. In the last 20 years, these birds have taken to nesting in quarries, both active and in-active quarries.

It makes sense, as there are plenty of cliffs and ledges to nest on. They tend to nest in the section of the quarry that is no longer being worked on, this is most likely because there is less activity there but more importantly, the older ledges will have accumulated substrate to that they can make a cup or scrape that they require to lay their eggs in.

The Peregrine Falcon nests very successfully at these sites despite the level of work going on beneath them, they come and go with prey as the chicks develop from eggs to fledging over six weeks. The reality is that birds of prey will nest somewhere if there



 Fledged raven in Sligo quarry.



 Galway.

is a good abundance of prey and a suitable nest site. Peregrine Falcons are specifically bird-eaters, and the quarry surroundings are often abundant with their prey species such as Starlings, Blackbirds, Pigeon and many others.

My long-term study as well as other studies in the UK has shown that these birds are now breeding more successfully in quarries and other urban sites than the traditional upland sites. This is most likely because many of our upland habitats have been degraded in the last thirty years due to misguided land management practices, such as over grazing, land drainage and commercial forestry and as a result, there is less available prey for a bird such as the Peregrine Falcon to raise their young.

Another bird of prey that regularly nests in quarries, often close to the Peregrine is the Kestrel. Kestrels are the most commonly seen falcon, due to their habit of hovering in the wind whilst looking for small mammals to prey on.

The Kestrel is harder to detect than the Peregrine as it tends to nest in a discrete hole and it is more secretive than the Peregrine. I have regularly seen battles between the two species when they are nesting close by in a quarry.

Most quarries also have an active or territorial pair of Ravens. Ravens are our largest member of the Corvid species with a wingspan of 1.5 metres. Ravens build a large stick nest on a cliff ledge often under a tricky overhang. They will use the same nest each year and add to it every year. They can also have about three different nests and alternate between them from one year to another.

Sometimes, the Peregrine will use the Ravens nest if it is vacant. Ravens have a habit of using baling twine in their nesting material, which can prove fatal for young Raven and Peregrine chicks. More than once, a

young bird's leg has got caught in the baling twine preventing them from fledgling and if the nest is accessible, I have had to help them escape.

Another corvid species that nest in large numbers within the quarry faces are



 Declan Hughes of McGraths Group Cong witnessing inspection of chicks by the Parks and Wildlife.


 **Bee orchid.**

 **Peregrine using Raven nest in quarry.**

Jackdaws, a smaller member of the Crow family. Jackdaws use the large number of crevices occurring between the rocks for nesting. They are also a food source for the Peregrine and on nest site visits, lots of Jackdaw remains are to be found on the Peregrines nest ledge.

Sandmartins are also regular breeders in quarries. The sand martin is a migratory species from the swallow family. They winter in Africa and South America and come back to Ireland to breed. They are known for making nest holes in sand banks along rivers but also sand pits and they nest in large colonies. They also choose to make their nest holes in large piles of gravel found in quarries.

This can be a little fatalistic at times, as it can be a pile of gravel that is in use and they can begin making their nest holes over a weekend, and when the quarry re-opens on a Monday, the gravel may be in use again.

Several dis-used limestone quarry sites, develop waterbodies on the floor of the quarry. These sites often become important breeding sites for Common Gulls and wader species such as the Ringed Plover. They are also winter stop over sites for wildfowl such as Teal and Mallard. These species will also be preyed upon by the nesting Peregrine Falcon.

Mammals that are regularly noted on site visits include the Irish Hare and the Red Fox. Both species have been found breeding at some sites, particularly the abandoned quarries, where they have a large undisturbed

area at the top of the quarry.

The limestone quarries are also very rich in floral diversity and many of the karst limestone species can be found at the top of the quarry around the edges as there are vast areas that have been undisturbed or allowed to vegetate. Rarer orchids such as the Bee Orchid and more common species such as the Pyramidal and Common-spotted orchid often thrive in abandoned quarries.

As a result of the wide variety of vegetation at some quarry sites, they can also be good sites to see rarer butterfly species such as the Holly Blue butterfly, the Common Blue and some of our more common species on a sunny day. The wet pools are productive places for other invertebrates such as dragonflies and pond skaters. Bumblebees are also regular visitors at these sites due to plenty of available pollen.

The ability of our native wildlife to adapt to these industrial sites often in urban areas is inspiring and gives us hope for their future survival of our wildlife. It does of course, require a helping hand, and the tolerance and vigilance of many quarry managers and employees is an important contributing factor to the protection of these species.

As a conservationist, it is heartwarming to experience the level of interest from many quarry employees and their level of knowledge on the comings and goings of the wildlife in the quarry is the best knowledge of all.


 **Peregrine Falcon Chicks.**


Irene O'Brien is a District Conservation Officer with National Parks and Wildlife Service. She has a keen interest in wildlife but has a special interest in Birds of Prey. Irene has been co-ordinating a long term monitoring programme on Peregrine Falcons in the west of Ireland since 2012 and has developed positive relationships with many of the quarry operators in this part of the country.





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STONEBUILT Ireland: an inventory of stone use in the built environment

Ireland has a rich built environment that dates back to the construction of Neolithic passage tombs over 4,000 years ago. The use of stone is often indicative of the period in which it was used. Georgian Dublin, for example, is characterised by the prominent use of Leinster Granite and Portland Stone and the lesser application of Calp limestone from Co. Dublin and Scrabo sandstone from Co. Down.

Later, during the Victorian period, a more diverse suite of dimension and decorative stones can be seen in high street banks and churches, while modern buildings often incorporate a thin veneer of Irish or imported stone.

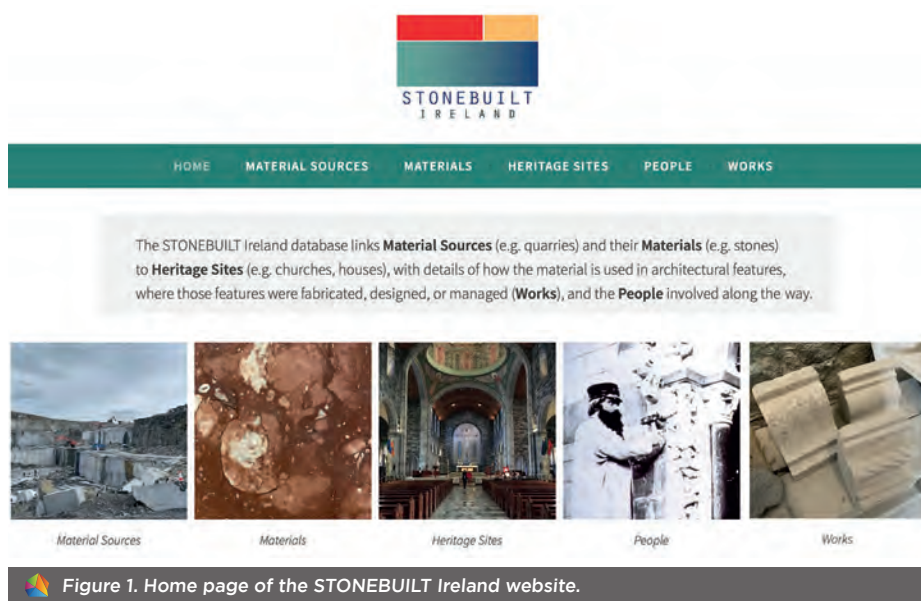
These materials contribute significantly to the distinctive identity of Irish urban landscapes.

PROJECT BACKGROUND, AIMS AND OBJECTIVES

STONEBUILT Ireland is a research collaboration between Trinity College Dublin, Geological Survey Ireland and the Office of Public Works, which aims to enhance the understanding and conservation of Ireland's architectural and geological heritage. These goals are achieved through the identification and documentation of Irish stone resources - including dimension stone, decorative stone and aggregates - and by promoting and building awareness of these resources through a publicly accessible database, hands-on displays, publications, training sessions and events.

Commencing in 2019 with funding provided by the COALESCE scheme of the Irish Research Council (now part of Research Ireland), the first phase (2019-20) saw the design of a database and the development of research protocols required to populate it. Phases two and three (2020-27), funded by Geological Survey Ireland and the Office of Public Works (OPW), are building upon and extending this foundational work.

This involves, in part, documenting the stone used in historic buildings and monuments under the care of the OPW, assisting in the identification of matching stone for conservation works where replacement material is required. The project is also investigating the status of historic quarries and the



potential for their reopening where necessary to supply specific lithologies for the conservation and restoration of properties, as demonstrated by the OPW extraction of Edenderry oolitic limestone for works at Castletown House approximately 20 years ago. The sourcing of correct materials maintains the durability, authenticity and character of our towns and villages. The decline of local stone quarrying, as well as lack of information and awareness within rural communities, has led to significant degradation of fabric.

The comprehensive geological data suite (<https://dcenr.maps.arcgis.com>) maintained by Geological Survey Ireland is being enhanced through the addition of documentation on historic quarries and, where appropriate, the augmentation of Geological County Heritage Site information. The project

also supports the implementation of EU climate action plans on raw materials facilitated by Geological Survey Ireland. Data on Irish natural stone - its provenance, utilisation and sustainability performance - is essential to understand its role in meeting national climate targets, to provide baseline datasets for policymakers and to secure sustainable domestic supply chains.

In revealing the hidden journey of stone from quarry to building, the wider communities involved in the 'making' of buildings are recognised. The well documented history of architectural design and patronage can be balanced, and built upon, by alternative chronicles of materials, workmanship and craftsmanship. STONEBUILT Ireland is recognising the stone prospectors, the quarry owners and the various categories of stone workers and bringing their



identities to wider notice. By diversifying the narratives surrounding buildings, this project invites new ways for people to identify with their heritage. Stone has a visceral quality to which people – of any background – can respond, and stories of stone anchor structures in the surrounding geological landscape.

DATABASE

The project's primary means of dissemination is the relational database, which links historical building and decorative stones to their source quarries, the stone-works where they were fabricated, the buildings and monuments in which they were used, and the people involved. The database is accessible through the project website (www.stonebuiltireland.com), where users can explore these connections through maps, linked records, and flexible search and filtering tools. The STONEBUILT Ireland database complements databases already established in Northern Ireland, England and Scotland.

For inclusion in the database, buildings and monuments are selected to represent the country-wide utilisation of diverse stone lithologies. Research into the stone types and their quarrying and fabrication history is undertaken in a stepwise manner. First, Geological Survey and Ordnance Survey Ireland maps, together with archival sources such as building journals, quantity surveying papers, historical newspapers, Geological Survey Ireland memoirs, Board of Works records and so on, are interrogated. Published volumes, including architect George Wilkinson's *Practical Geology and Ancient Architecture of Ireland* (1845) and geologist George Henry Kinahan's *Economic Geology of Ireland* (1889), are also valuable as they provide geological autopsies of contemporary and historical buildings, document the distribution of quarries in Ireland and record the physical properties of many stone types that had been tested. Following desk-based research, built structures are surveyed directly to record the stone types used and the finishes applied to them. Where feasible, quarry sites are also visited and documented, and samples are retrieved where possible.



OTHER OUTPUTS

Public engagement on the use of stone is an important aspect of the project, supported through engagement with media outlets, academic conferences and industry events that broaden outreach and foster knowledge exchange across heritage, architectural, extractive and stone working sectors.

Three large display stands were constructed to exhibit specimens reflecting the wide range and diversity of Ireland's building and decorative stones. Many of these were generously provided by quarry owners across the country. The stands are currently located at the Connemara National Park Visitor Centre, OPW headquarters and the Museum Building at Trinity College Dublin. Designed to be portable, they will in time be relocated in other sites, where local stone types will be highlighted.

Recently, STONEBUILT Ireland published the book *The Decorative and Building Stones of Dublin: a walking guide* that documents over 170 stone types encountered on 10 walks through the city. The publication also forms the basis for regular guided walks delivered by the team.

The project has been central in the recent designation of Connemara Marble and Valentia Slate as International Union of Geological Sciences (IUGS) Heritage Stones, currently two of only 55 such designated globally (<https://iugs-geoheritage.org>), and it hosted the 4th International Heritage Stone Workshop of IUGS in Dublin in 2025. This research has also fed into the EuroLithos database (www.eurolithos.org) of European dimension and decorative stone. These two initiatives have broadened appreciation of the diversity and richness of Ireland's

dimension and decorative stones.

A citizen science element recording the use of stone in walls has been launched. This is based on the innovative scheme developed by the late Eric Robinson in England, and it is hoped that stone used in walls will be identified and the information submitted to the STONEBUILT Ireland team. The construction of stone walls across the country exhibits great regional variety: the Carlow Fence is a unique boundary of long scantlings of granite whereas the limestone dry stone walls of the Burren are constructed to allow wind to pass through but livestock not.

CONCLUSION

STONEBUILT Ireland is enhancing understanding of Ireland's stone-built heritage through the documentation of historic stone use, quarrying traditions, material provenance, and the development of a national stone database. Combining research, public engagement, and cross-sector collaboration, the project supports conservation, promotes the sustainable use of Irish natural stone, and contributes valuable resources for heritage and climate action initiatives.



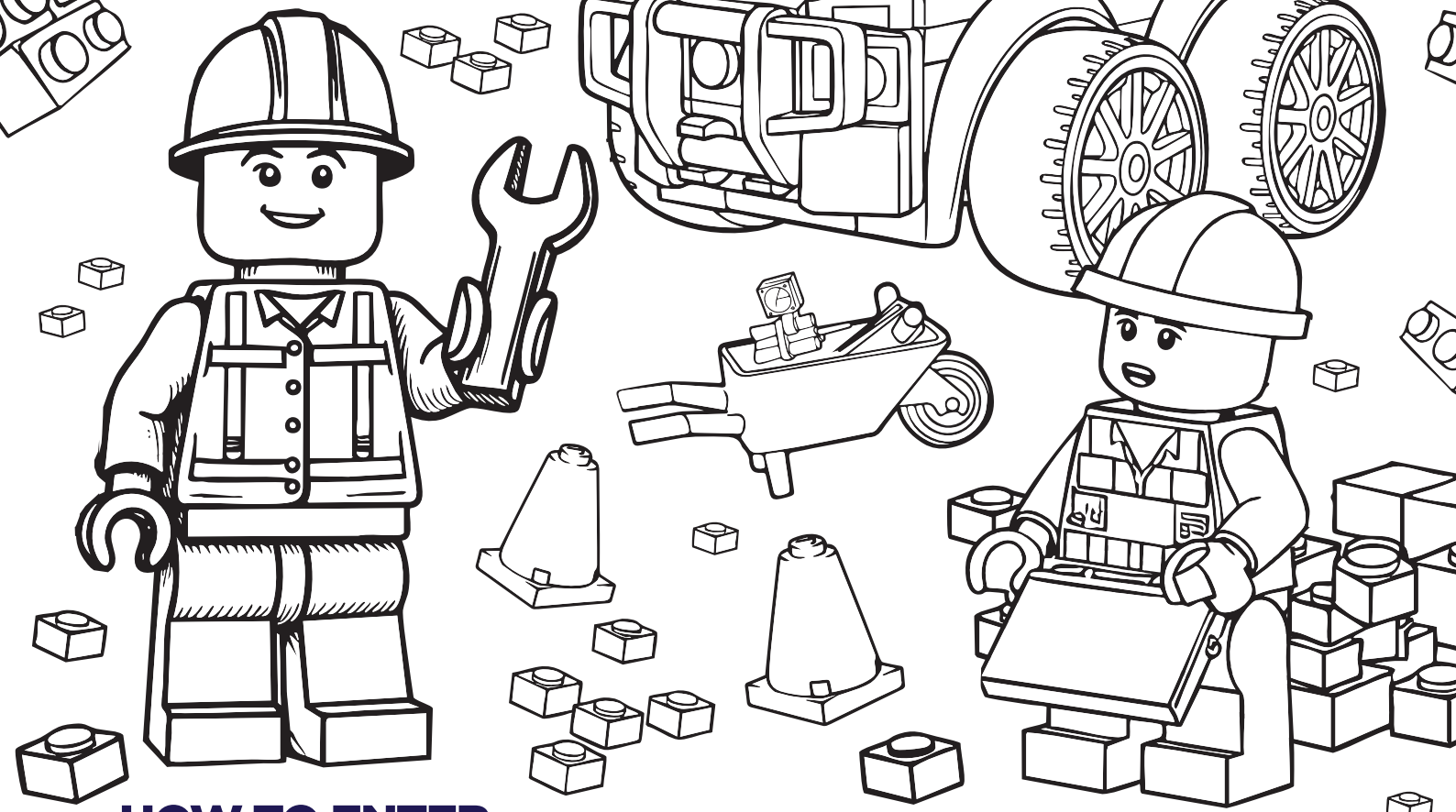
**BY DR LOUISE CAULFIELD,
DR ÚNA FARRELL AND
PROF. PATRICK WYSE JACKSON**

STONEBUILT Ireland, Discipline of Geology,
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IMQS Golf & Dinner Dance 2025



The 2025 IMQS Annual Dinner Dance took place on the 15th of November in the Hudson Bay Spa Hotel Co. Roscommon.



The full selection of photos from the IMQS 2025 Dinner Dance are available for viewing on our website.

Routes into the Extractive Industries

Selected education and training options across Ireland and the UK.

There is no single route into the sector. The list below highlights programmes that can support careers in geology, engineering, quarrying, environmental management, surveying, plant operations and related areas. It is a selected guide rather than an exhaustive course catalogue.

UNIVERSITY AND HIGHER-EDUCATION ROUTES

GEOLOGY, GEOSCIENCE & GEOGRAPHY

Trinity College Dublin	Geography and Geoscience (TR062)
University College Dublin	BSc Earth Sciences (via DN200 Science)
University College Dublin	MSc Subsurface Geomodelling
University College Dublin	MSc Environmental and Engineering Geoscience
University College Cork	BSc Geoscience (CK404)
University of Galway	BSc Earth and Ocean Sciences
University of Galway	BSc Geography and Geosystems
Maynooth University	MSc Geographical Information Systems & Remote Sensing
Queen's University Belfast	Geography (F800)
Ulster University	Geography with optional placement year (F800)

ENVIRONMENT, SURVEYING & GIS

University College Dublin	MSc Applied Environmental Science
University of Galway	BSc Environmental Science
University of Galway	MSc Sustainable Environments
TU Dublin	Quantity Surveying and Construction Economics
TU Dublin	MSc Geospatial Engineering and Data Management
Munster TU	BSc (Hons) Quantity Surveying
South East TU	BSc (Hons) Quantity Surveying
TU Shannon	Built Environment - Common Entry
Ulster University	Environmental Science with optional placement year (F900)
Ulster University	MSc Geographic Information Systems
Ulster University	MSc Environmental Management with GIS

ENGINEERING & TECHNICAL

Trinity College Dublin	Civil, Structural and Environmental Engineering
University College Dublin	Civil Engineering
University College Cork	Civil, Structural and Environmental Engineering
University College Cork	Process and Chemical Engineering
University of Galway	BE / ME Civil Engineering
TU Dublin	Structural Engineering
Munster TU	BEng Civil Engineering
Atlantic TU	MEng Geotechnical Engineering with Structural Engineering
Dublin City University	Mechatronic Engineering
Dublin City University	Mechanical and Sustainability Engineering
Queen's University Belfast	Civil Engineering (H200)
Queen's University Belfast	Environmental and Civil Engineering (H252)

APPRENTICESHIPS, SOLAS TRAINING AND SPECIALIST PROGRESSION

APPRENTICESHIPS

Generation Apprenticeship	Construction Plant Fitting
Generation Apprenticeship	Geo-Driller (Level 6)
Generation Apprenticeship	Electrical
Generation Apprenticeship	Electrical Instrumentation
Generation Apprenticeship	Instrumentation
Generation Apprenticeship	Heavy Vehicle Mechanics
Generation Apprenticeship	Metal Fabrication
Generation Apprenticeship	Mechanical Automation and Maintenance Fitting
Generation Apprenticeship	Stonecutting and Stonemasonry
MTU/ATU partners	Civil Engineering degree apprenticeship
Generation Apprenticeship	Accounting Technician
Generation Apprenticeship	Laboratory Analyst
Generation Apprenticeship	Manufacturing Engineering
Generation Apprenticeship	OEM Engineering Technician

OTHER LEARNING & PROFESSIONAL DEVELOPMENT

FETCH Courses	Engineering Technology — Enniscorthy
FETCH Courses	Construction Technology / Civil Engineering — Galway
FETCH Courses	Environmental Science — Cork
FETCH Courses	Business Administration & Accounts — Waterford
Engineers Ireland	Registered professional titles and chartered routes
Institute of Geologists of Ireland	Continuing Professional Development (CPD) and training
Institute of Geologists of Ireland	Professional Geologist (PGeo) membership and application information
Institute of Quarrying	Quarry-specific training and qualifications

SOLAS	Safe Pass
SOLAS	QSCS categories: 180° and 360° Excavator; Mini Excavator; Telescopic Handler; Slinger/Signaller; Rigid Dump Truck; Articulated Dumper; Site Dumper; Tractor/Dozer; Front End Loader; Crawler Crane; Mobile Crane; Shotfiring; Explosives Supervision

SPECIALIST PROGRESSION

University of Exeter	BEng Mining Engineering
University of Exeter	MEng Mining Engineering
University of Exeter	BSc Resource and Exploration Geology
University of Exeter	BSc / MSci Engineering Geology and Geotechnics
University of Exeter	MSc Mining Engineering
University of Exeter	MSc Exploration and Mining Geology
University of Exeter	MSc Minerals Processing
University of Derby	FdSc Mineral Extractives Technology
University of Derby	BSc (Hons) Minerals Management - Top-up

KEY TERMS: SOLAS - Ireland's Further Education and Training Authority; QSCS - Quarries Skills Certification Scheme; GIS - Geographic Information Systems; BSc/BEng/BE - bachelor's degrees; MSc/MEng/ME - master's degrees.

MEMBERSHIP APPLICATION FORM

Irish Mining & Quarrying Society, 27 Upper Pembroke Street, Dublin 2, Ireland, D02 X361

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Please state association with the Mining or Quarrying Industry:

Proposed by: (Existing IMQS Member)

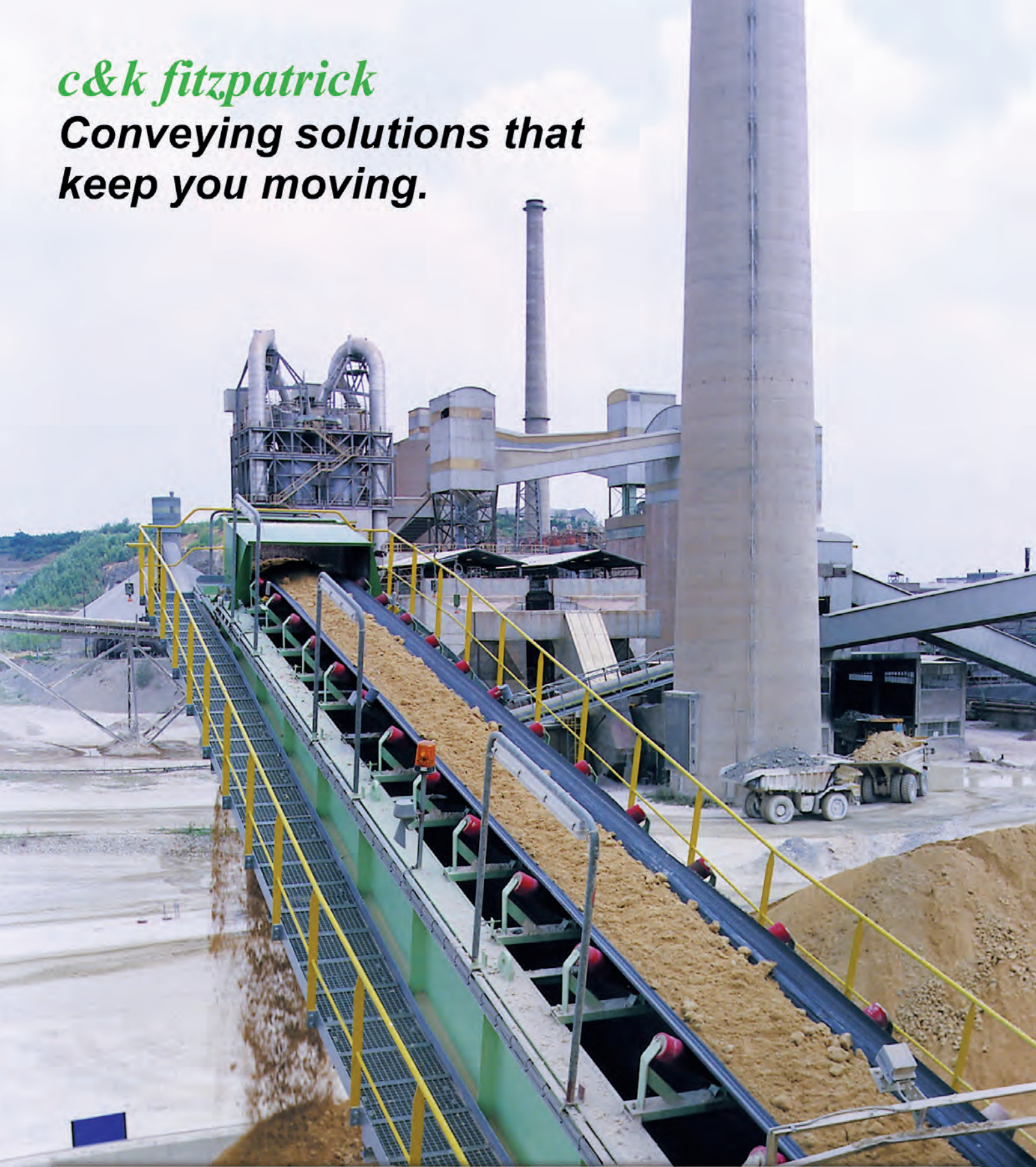
Note: Should the candidate be unable to obtain a proposer who is a member of the IMQS, the application will be assessed by the Council of the IMQS and membership is subject to the approval of the Council. Please send to address above enclosing payment of €50 (ordinary membership). (Membership fees are payable in January each year and are valid for that calendar year).

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