



Scottish Contaminated Land Forum

SCLF CONFERENCE 2023  
GLASGOW | 25 AUGUST 2023

## CONFERENCE GUIDE

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Environmental Science



# Welcome to SCLF Conference 2023

Thank you for joining us for #SCLF2023. After missing out on a few years we are back in person at last!! The aim of the conference is to facilitate knowledge transfer in the land contamination sector.

In this booklet, you can read about the exciting programme we have lined up as well as information about our speakers and full abstracts.

## Getting there

Conference venue is The Studio, 67 Hope Street, Glasgow, G2 6AE.

Go to [The Studio website](#) for details on how to get there by foot, public transport and by car. There are also some handy videos there too to help make sure you reach us!

What3Words: [Soup, Brand, Caked](#)

## Venue Layout

When you arrive, go directly to the 9<sup>th</sup> floor (there is a lift!!) and make your way to the SCLF registration desk. The main conference will be in room 'Climb' with the exhibition in the breakout space.



GET SOCIAL @SCOTTISHCLF #SCLF2023

## Accessibility and Inclusion

We have tried to make the conference as accessible as possible so that everyone can feel comfortable and enjoy the event. If you have any specific accessibility needs then please let us know.

### Interactive Badges

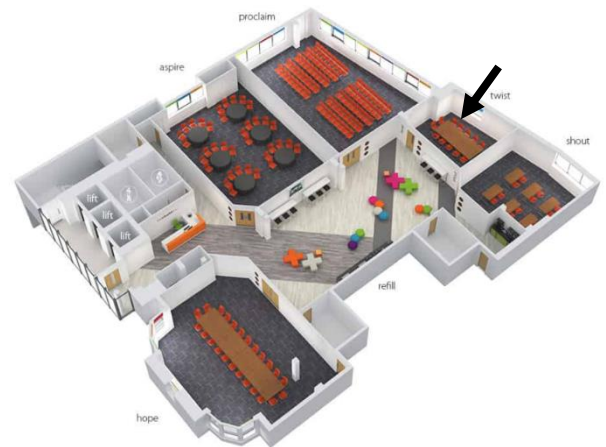
This year we are delighted to share Colour Communications Badges with all the attendees. These colour circles can be placed in your name badge holder and will enable you to express your communication preferences quickly and non-verbally. Use of these badges is entirely a personal choice but we would encourage you to use them. Please respect the communication preferences of those wearing a colour communication badge.

	<p>Come Talk to Me!</p>	<p>A person wearing a green badge is actively seeking interaction. They may have trouble initiating conversations, but it's okay to come up and start a conversation with them.</p>
	<p>Do I Know You?</p>	<p>A person wearing a yellow badge only wants to talk to people they recognise. Unless you've met this person face-to-face before, please don't start a conversation with them. If they start talking to you, you're welcome to talk back with them.</p>
	<p>Not Right Now.</p>	<p>A person wearing a red badge does not want anyone to talk to them. They may approach others to talk, in which case it's okay to respond. Unless you've been told that you're on someone's "red list", please don't start interacting with them. (A "red list" is the list of people who the badge-wearer has previously identified as exempt from the stop. The badge wearer would have let those on the list know in advance that it was okay to approach them.)</p>

## Quiet Room

We have a designated quiet room, Twist room located on 8<sup>th</sup> floor.

You can use this room during the conference if you need somewhere to welcome you in silence, whether you need a place to regroup from sensory overload, or to collect your thoughts, or to pray or meditate. This space is not to be used for conversation or phone calls 😊.



## Sensory Packs

We also have some sensory packs that are available from the registration desk. They include a variety of sensory fidgets, ear defenders. You can pre-book your pack by emailing [admin@sclf.co.uk](mailto:admin@sclf.co.uk)

## Inclusive toilet

You can find an inclusive toilet that can be used by everyone as well as gendered toilet facilities.

# Conference Programme

REGISTRATION AND REFRESHMENTS FROM 9AM

## MORNING CHAIR : LIZ COPLAND | IKM

- 9:30- 9:40 WELCOME TO #SCLF2023  
Alison McKay | SCLF Chair / Partner, Leapmoor LLP
- 9:40 - 9:50 SCOTTISH GOVERNMENT'S WORK TO SUPPORT THE LAND CONTAMINATION COMMUNITY  
Madeleine Berg | Senior Policy Adviser - Contaminated Land, Scottish Government
- 9:50 - 10:10 ENVIRONMENTAL STANDARDS SCOTLAND: DETERMINING THE RISKS TO SCOTLAND'S SOILS  
Luke Bradley | Senior Environmental Analyst, Environmental Standards Scotland
- 10:10 - 10:30 LAND QUALITY REPORTING – A REGULATORS PERSPECTIVE  
Sarah Hamill | Contaminated Land Officer, West Dunbartonshire Council
- 10:30 - 10:50 PANEL Q&A  
Put your questions to our session 1 speakers
- 10:50 - 11:10 BREAK AND EXHIBITION  
Your chance to network too!
- 11:10 - 11:30 CASE STUDY: PFAS RISK RANKING FOR FIRE AND RESCUE SERVICES SITES  
Melanie Lipsham | Senior Geoenvironmental Engineer, Leap Environmental
- 11:30 - 11:50 BEST PRACTICE IN THE MANAGEMENT OF THE RECLAMATION OF A COMPLEX FORMER INDUSTRIAL SITE  
Lawrence Bowden | Senior Director, Geosyntec Consultants
- 11:50 - 12:10 2023 - ANNUAL SURVEY OF CONTAMINATED LAND INDUSTRY REPORT  
Chris Provan | Business Development Manager, i2 Analytical
- 12:10 - 12:30 PANEL Q&A  
Put your questions to our session 2 speakers
- 12:30 - 13:30 LUNCH AND NETWORKING  
Plenty of time to visit the exhibition



## ROUNDTABLE DISCUSSIONS CHAIR : HELEN MCMILLAN | RSK

13:30 - 13:45 INTRODUCING THE 3 BIG QUESTIONS

13:45 - 14:30 ROUNDTABLE DISCUSSIONS

Facilitated discussion of 3 Big Questions designed to gather views on some hot topics in the land contamination sector

14:30 - 15:00 GROUP FEEDBACK

Elected spokesperson can share your group's contributions with the rest of the conference

15:00 - 15:20 BREAK AND EXHIBITION

Grab a refreshment and last chance to visit the exhibition

## AFTERNOON CHAIR : HEBAH ABDEL-HADY | ARCADIS

15:20 - 15:40 FIELD TRIALS OF DISPERSED ALKALINE SUBSTRATE TO PASSIVELY TREAT HIGHLY POLLUTED ACID MINE DRAINAGE AT TWO EMBLEMATIC ABANDONED MINES IN WALES

Iain Hall | Technical Director, WSP

15:40 - 16:00 ENVIRONMENTAL IMPACT ON LAND CONDITION AND CHALLENGES FROM CHINA'S INDUSTRIAL EXPANSION

Andrew Hursthouse | Professor, University of the West of Scotland

16:00 - 16:20 SURE BY RAMBOLL: AN INNOVATIVE DIGITAL TOOL FOR EMBEDDING SUSTAINABILITY IN REMEDIAL OPTIONS APPRAISAL

Patricia Enot | Lead Consultant, Ramboll

16:20 - 16:45 PANEL Q&A AND CLOSE

Put your questions to our session 4 speakers

# Meet the Speakers and Session Chairs

SCLF would like to take this opportunity to thank all of our speakers and session chairs who have volunteered their time to make this event a success.

**Hebah Abdel-Hady (Chair)**  
 Senior Geo-environmental  
 Consultant at ARCADIS



Hebah is a Senior Geoenvironmental Consultant specialising in Contaminated Land Risk Assessment at Arcadis. Based in

Glasgow, Hebah has worked on sites across the UK and in a wide variety of public and private sectors including oil and gas, energy, and agrochemical. Currently, Hebah conducts Detailed Quantitative Risk Assessments including those for the assessment of sites under Part 2A. In addition to her core role, Hebah sits on the SoBRA Early Careers Subgroup and actively drives technical knowledge accessibility within the brownfield risk assessment community.

**Madeleine Berg**  
 Senior policy adviser, contaminated  
 land - Scottish Government



Maddy Berg is senior policy adviser for contaminated land at Scottish Government and

has been in post since March 2023. Prior to joining Scottish Government, Maddy worked in the third sector on environmental pollution projects. Maddy has a PhD in Geology from the University of Edinburgh.

**Lawrence Bowden**  
 Senior Director at Geosyntec  
 Consultants



Lawrence is a Principal and office manager for Geosyntec Manchester, UK, with more than 18

years of relevant experience in contaminated land liability management. Lawrence is an environmental geochemist with key technical skills in human health, controlled waters and gas risk assessment, waste characterisation and management and mining legacy management. Lawrence is an experienced Project manager and Project Director and risk assessor having worked on numerous challenging brownfield land, landfill sites, petroleum sites, former industrial facilities, spoil heap leachates and waste sites. Lawrence thrives in working on large complex multidisciplinary projects where the successful interplay of different disciplines is essential for project success. Lawrence has worked across the UK & Ireland, Europe in general, in the Middle East, North Africa, and contributed to projects in North America.



**Luke Bradley**  
 Senior Environmental Analyst at  
 Environmental Standards Scotland



Luke Bradley has been a geoenvironmental engineer for over a decade, working at a range of environmental consultancies and remediation contractors before moving to Environmental Standards Scotland to carry out scientific analysis of Scotland's environmental issues. During his time in consultancy, Luke covered a wide range of projects in the public, commercial and housing sectors including power stations, schools and railway schemes. His experience also includes the design and scoping of remediation projects and verification of completed remedial works. Now working in an oversight role, he ensures public bodies are upholding environmental law and carries out reviews of the state of Scotland's environment.

**Liz Copland (Chair)**  
 Director at IKM



Liz has 18 years' experience in land contamination management and assessment. Liz has a wealth of experience in ground investigation and assessment on a wide range of sites including refineries, gas works, chemical works and former landfills. Liz has been more recently working with Upper Tier COMAH operators leading Environmental Risk Assessments as part of Safety Report submissions. Liz is a SiLC, SQP and ASOBRA ( Human Health and Controlled Waters).

**Patricia Enot**  
 Lead Consultant at Ramboll



Patricia is a Geo-environmental Specialist and is the Lead Manager for the Scottish Site Solutions team at Ramboll. Patricia has over 17 years consultancy experience, with a strong focus on the industrial and energy sectors. Her specific areas of expertise include contamination land investigation, risk assessment and remediation. Patricia advises a wide range of clients from both the public and private sectors, supporting them throughout the life cycle of the project. Patricia is heavily involved in a number of specialists working groups at Ramboll, including the remediation and sustainability groups.

**Iain Hall**  
 Technical Director at WSP



Iain is a Chartered Geologist with over 25 years' experience working in the consulting engineering industry across all major built-environment sectors; delivering services comprising, earthworks & platforming, materials re-use, contaminated land & remediation, hazardous waste management and handling, geotechnical and planning (including regulatory approvals and public consultations). Iain also has experience in project management, co-ordination of consultees, contract administration, cost consultancy, health, safety & environmental management, and sustainability.

**Sarah Hamill**  
 Contaminated Land Officer at West  
 Dunbartonshire Council



Sarah has over 20 years' experience in contaminated land management for both the private and public sectors.

Sarah was appointed as the Contaminated Land Officer for West Dunbartonshire Council in 2006 and has been involved in various projects from small scale desk studies/investigations to large scale residential/commercial developments and remediation projects.

Sarah currently represents the Central/West Authorities on CLAG (Contaminated Land Advisory Group) and also attends the EPS Land Quality Advisory Group. Sarah also represented Scottish LA's on the Society for Environment Regulatory & Governance Task Group who recently published the new framework document entitled 'Ten Principles of Good Soils & Stones Management'.

**Andrew Hursthouse**  
 Professor, University of the West of  
 Scotland



Professor Andrew Hursthouse, BSc, PhD, CChem, FRSC, is an environmental geochemist at the

University of the West of Scotland. His research covers land contamination, remediation and risk assessment, urban environmental quality and impact on emerging environmental issues such as antimicrobial resistance. He collaborates

with industry and regulators on a range of waste and sustainability issues. From 2014 to 2021 he was a 100-talent expert chair at China's Hunan University of Science & Technology (HNUST), and an associate member of the Key Laboratory for Shale Gas Exploitation based at HNUST.

**Melanie Lipsham**  
 Geoenvironmental Engineer at Leap  
 Environmental (part of RSK  
 Geosciences)



Melanie is a chartered water and environmental manager and has recently taken on

the role as the deputy technical lead for PFAS and Emerging Contaminants for RSK. She has worked on a large variety of brownfield developments projects, as well as working alongside Local Authorities on Part 2A projects and assisting with their contaminated land strategies. Melanie has extensive experience (over 8 years) in contaminated land site investigation and human health, land gas and controlled waters risk assessments, with particular experience in remediation and validation monitoring and reporting. Melanie also works part-time as an acting Contaminated Land Officer.

**Alison McKay**  
 SCLF Chair / Partner at Leapmoor  
 LLP



Alison is a Partner at Leapmoor LLP. A chartered chemist and chartered scientist, Alison also has a post graduate qualification in

Environmental Toxicology and Pollution Monitoring. Her career spans over 30 years in the environmental field, specialising in the assessment and management of land contamination particularly delivering services in peer review, risk assessment, exposure assessment, toxicology review, regulatory compliance and training.

Alison has been involved with SCLF since its inception and is proactive in policy development, promoting best practice and encouraging knowledge transfer.

**Helen McMillan (Chair)**  
 Associate Technical Director at RSK



Helen McMillan is an Associate Technical Director and the QRA Group Technical Lead at RSK Geosciences, an award winning multi-disciplinary consultancy who help clients realise

opportunities and manage the potential liabilities associated with the acquisition, ownership, operation, development and divestiture of land. Helen is a qualified hydrogeologist, Chartered Geologist and ASOBRA (controlled waters) with over 20 years' experience working in environmental consultancy, specialising in land

contamination risk assessment (Part IIA and planning) and environmental compliance projects. Helen is actively involved in raising the standards of land contamination risk assessment through her involvement in the EPS Land Quality Expert Advisory Group, leading the SoBRA Climate Change and Controlled Waters sub-group and knowledge sharing by presenting at high profile land contamination conferences in the UK. A career highlight was winning the 2022 Brownfield Award for Best Project Preparatory Work.

**Chris Provan**  
 Commercial Director Scotland at i2  
 Analytical



Chris has a BSc Hons in Forensic Investigation from Glasgow Caledonian University and has been involved in various commercial roles within chemical testing laboratories

over the last 10 years. i2 Analytical launched i2 Scotland based in East Kilbride in 2019 and has developed into an industry leader in Scotland. His current role for i2 Analytical is to help develop the i2 Scottish customer base across Chemical, Geotechnical and Air testing.

# Abstracts

## Scottish Government's Work to Support the Land Contamination Community Madeleine Berg | Senior Policy Adviser - Contaminated Land, Scottish Government

Maddy will introduce herself and Scottish Government's role in the framework of the contaminated land regimes. The focus will be on supporting regulators and other land contamination professionals to enable clean-up of historically contaminated land, to support environmental improvement and economic opportunity in Scotland. She will also give an update on the Contaminated Land Advisory Group as a refreshed forum for dialogue between Scottish Government and the wider community of interest.

## Environmental Standards Scotland: Determining the Risks to Scotland's Soils Luke Bradley | Senior Environmental Analyst, Environmental Standards Scotland

Environmental Standards Scotland are an oversight body, set up to make sure Scottish Public Bodies correctly apply and act in accordance with environmental law, and to make sure environmental legislation is effective and keeps pace with the EU. ESS is embarking on a project to identify what risks to soils in Scotland exist, and which are most significant. We've consulted numerous organisations and business that monitor and work with soils to ensure we have as broad a spectrum of views as possible. Eventually, we hope to direct the legislation and policies on soil to ensure soils are protected as much as possible. This presentation will give a brief overview of ESS and our work on soils.

## Land Quality Reporting – A Regulators Perspective Sarah Hamill | Contaminated Land Officer, West Dunbartonshire Council

A theme that regularly comes up in forums and at conferences is what can be done to improve the quality of reports submitted through the planning process. As a regulator we see all sorts which we could categorise as the good, the bad and the ugly. This however is not a blame game and it is important to recognise that we all have a role to play if we are to see improvements. With this in mind, rather than focus on the negatives, this presentation will simply introduce some of the common issues that we as regulators come across as well as discussing a wish list of what we'd like to see throughout the process.

The presentation will also summarise some case studies that show that the key to achieving and maintaining good quality is early engagement, continual communication and collaboration.

## Case Study: PFAS Risk Ranking for Fire and Rescue Services Sites Melanie Lipsham | Senior Geoenvironmental Engineer, Leap Environmental (Part of the RSK Group)

The presentation is a case study of a score-based approach prioritising current fire station sites for a local fire and rescue services. A high level environmental sensitivity review was undertaken on all current fire station sites across the county. Using the information collected, a prioritisation exercise has been completed (source pathway and receptor score-based approach) to prioritise the fire stations, based on their environmental setting, and historical information available, with particular emphasis on historic firefighting foam usage and associated potential PFAS contamination (i.e., during fire training activities, equipment testing, and storage on site). This exercise has been used to inform the local fire service which sites required further, more detailed investigation.

## Best Practice in the Management of the Reclamation of A Complex Former Industrial Site

Lawrence Bowden | Senior Director, Geosyntec Consultants

Geosyntec have recently supported a client in the manufacturing sector to dispose of land assets for redevelopment into housing. The reclamation process involved the demolition of the former industrial buildings, the surrender of an Environmental Permit, and supporting a planning application for change of use. The work focussed on addressing risks to groundwater, surface water and human health for a sensitive future land use, embedding the principle of sustainable development/ circular economy and managing multiple regulatory and invested stakeholders.

Geosyntec's initial involvement in the project was in addressing TCE impacts related to manufacturing operation within the underlying fractured mudstone bedrock aquifer system flowing to a sensitive surface water stream. To characterise the risks we developed a detailed conceptual site model and quantitative risk assessment to develop risk-based screening levels. We designed an innovative remediation solution which allowed for the TCE impacts to be addressed this included a combination of thermal desorption and multi-phase extraction – the first application in the UK.

The project was complicated by the negotiation with multiple stakeholders with different often competing requirement. We actively collaborated with South Lanarkshire Council and SEPA to make sure that risk assessment and design decisions were effectively communicated to ease the review process. We devised a site platform reclamation CSM which addressed the potential harm to varying receptor, as well as the differing regulatory requirements, and used this to devise a staged investigation and pragmatic remediation strategies, which efficiently addressed the requirements of competing regimes and receptors, without the need for significant removal of soils from the site improving sustainability objectives.

In combining innovative remediation techniques, with a joined-up, holistic approach to site reclamation which incorporates the process from demolition to hand over to the future developer, Geosyntec was able to embed sustainability and value into a project which also addressed multiple regulatory regimes and complex remediation problems. And alongside this, we were able to minimise the impacts on surrounding communities and enhance the sustainable credentials of the reclamation process.

## 2023 - Annual Survey of Contaminated Land Industry Report Chris Provan | Business Development Manager, I2 Analytical

I2 Analytical commissioned a survey of the UK Contaminated Land Testing industry. The objective of the survey was to understand current trends in the market to ensure that we as a business, continue to support our partners, and the industry at large. This survey covered a range of subjects including:

- Industry expectations through 2023 and beyond
- Legislation/ Regulatory changes
- Sustainability
- Testing Trends
- Required relationships with contract testing laboratories
- Market issue

This was designed to be an independent survey and did not mention i2 analytical in any of the questions. The survey was well received with over 250 responses and gives a great snapshot of current industry feeling and challenges. The data and the subsequent report makes very interesting reading and we look forward to presenting key themes and an overview of the data with the delegates. This is the first time that i2 Analytical have ran a survey program of this nature and we hope to develop this into an annual survey which gives the temperature of the UK contaminated land industry and allows us to explore developing trends and understand industry critical issues over the coming years.

## Field Trials of Dispersed Alkaline Substrate to Passively Treat Highly Polluted Acid Mine Drainage at Two Emblematic Abandoned Mines In Wales Iain Hall | Technical Director, WSP

Wales has a long history of metal mining. By the 1920s most mining of metals had ceased, however drainage from in excess of 1,300 abandoned metal mines continues to impact over 700km of river reaches today. Traditional passive treatment systems, which can be an economical and sustainable option, are prone to clogging and passivation when used to treat mine water with high metal concentrations or high acidity loads. To overcome these constraints, the patented Dispersed Alkaline Substrate (DAS) solution was developed; consisting of a fine-grained alkaline reagent mixed with a coarse inert matrix.

DAS had been tested previously at laboratory column, then field scale pilot trials and is currently successfully deployed full scale at two abandoned mines in Spain. In 2020, NRW commissioned Golder (now WSP) to undertake two field pilot trials at Cwm Rheidol mine and Parys Mountain to test if this technology can be used to remediate acid mine waters at remote sites in a wet temperate maritime climate. These are two of the top five most polluting mines in Wales. The trial at Cwm Rheidol has been operating since December 2020, the trial at Parys Mountain commenced in February 2021.

We will present results from the trials and an outlook about potential full-scale application at these sites. If successful, this new passive technology will provide a proven cost-effective option to treat acidic metal mine water to potentially reduce the pollutant load, develop resilience, reverse the deterioration of Water Framework Directive failing waterbodies and restore river health. This is

especially relevant at remote maritime sites where other treatment systems cannot be applied either due to excessive treatment costs or land requirements.

## Environmental Impact on Land Condition and Challenges From China's Industrial Expansion

Andrew Hursthouse | Professor, University of the West of Scotland

After over 30 decades of rapid industrialisation and poor management of manufacturing processes, transport and power production, the environmental quality of large areas of China has been severely compromised. Most external focus has been on air pollution, which has been relatively effectively managed, but significant issues have been revealed around soil and ultimately food chain contamination. Remediation is challenging with to date a focus on spatial assessment of risk and remediation strategies, backed by policy development.

Investigations centred on one of China's richest base metal ore zones in Central South China have identified significant levels of mobile and bio-accessible<sup>1,2</sup> portions of potentially toxic elements (PTEs) from recent historic mining and associated activities. Case studies of environmental contamination and health risk associated with resource exploitation show variable food chain contamination<sup>3</sup> and present considerable challenges for large scale environmental remediation. Waste management strategies in China need to cope with rapidly growing levels of hazardous waste, post COVID<sup>19</sup>. Recent assessment of the development of the land condition community<sup>5</sup> provide a glimpse into the activities of the professional organisations and enterprises active in the sector. It highlights conventional remediation strategies being supplemented by emerging "soft" techniques under an increasingly diligent regulatory control. Is this appropriate to deal with such extensive spatial demands?

## Sure By Ramboll: An Innovative Digital Tool For Embedding Sustainability In Remedial Options Appraisal

Patricia Enot | Lead Consultant, Ramboll

Whilst interest in Sustainable Remediation began over ten years ago, application of sustainable thinking in remediation option selection is in practice still very patchy across Europe, even within individual legislatures, and sustainability is often not well understood either by problem holders or regulators. There is now a greater urgency arising from the climate emergency, biodiversity loss and socioeconomic challenges and as remediation professionals we need to ensure that sustainability is embedded in decision making principles when selecting the best option for contaminated land remediation.

Whilst technical guidance on sustainability is plentiful, the process of selecting the most sustainable approach has to be simple, understandable and transparent to gain public acceptability. Ramboll has therefore developed SURE, a digital on-line tool which draws on over 70 sustainability indicators and their contribution to 17 United Nations Sustainable Development Goals (UN SDGs) to enable the identification of the most sustainable and resilient remediation approach. With the increasing need for climate action, Ramboll has made the tool freely available to all. Access to SURE is available via [www.ramboll.com/sure](http://www.ramboll.com/sure) from where a new user can sign up and create an account. A simple user introduction video is also available. The functionality of SURE is based on three facets:

- Assessment of options for remediation according to procedures set out in BS ISO 18504:2017 and aligned with NICOLE and SuRF guidance, especially the updated protocols issued by SuRF-UK.
- Engagement with project stakeholders through an automated digital procedure to enable review, and provide a record of decision making.
- Reporting, according to a customised format.

The presentation will discuss the background to SURE, explain its key features and functionality and exemplify its application to the Brownfield sector. A case will be presented for a former vehicle showroom and maintenance facility being developed for residential use. The tool compares a number of remediation technologies and compares their relative benefits against social, environmental and economic sustainability indicators. Whilst this presentation will be aimed at introducing SURE to a wider audience, it will also challenge our collective views on how we evaluate sustainability within the remediation industry and ask the question: what comes next?



# With Thanks

Thank you to everyone involved in making SCLF Conference 2023 a success.

We would like to thank our chairs and speakers for their time and for bringing interesting topics and discussions to our members and attendees. There would be no conference without you and we very much appreciate your input.

To our headline sponsor Juta and all our exhibitors, we thank you for your support and hope that you have seen benefit to your support of the conference. Our supporters contribution allows us to keep ticket prices as low as possible and to open the doors to all of our members.

Finally, we would like to give a huge thanks to our conference organising team which is made up of a number of dedicated SCLF Committee members who volunteer their time to organise and promote this event.