



# '17

## Annual report and financial statements

Charity registration no: 269275

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The Institute of Materials Minerals and Mining (IOM3)  
is an unincorporated registered charity with registration  
number 269275.



The Institute of Materials,  
Minerals and Mining

## Public benefit

Materials form an integral and important part of all our lives. The materials cycle covers the exploration and extraction of raw materials from the earth, processing them into industrial/engineered materials, application of these materials, recycling of waste and the ultimate disposal of waste in an environmentally friendly way. It is more important than ever that the scientists, engineers and technologists involved in the materials cycle are qualified and experienced to make the best use of materials in terms of economics, efficiency and sustainability for the benefit of all. The objectives and activities of the Institute (see page 36) have been designed to support the wider materials, minerals and mining community, together with government and other interested parties, to achieve these ideals.

The Institute has referred to the Charity Commission's guidance on public benefit when reviewing its aims and objectives and in planning future activities. In particular, the Council considers how planned activities will contribute to the aims and objectives it has set.

## Vision

Our vision is to be recognised as the global leader for professionals involved with the materials cycle.

## Mission

- To promote the science, design, engineering and technology of materials, minerals and mining and their practical applications.
- To facilitate qualifications, professional recognition and development, and to deliver knowledge, information and networking services to a global membership and wider community.

## Trustees' Report

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# President's overview

Martin Cox  
President  
2017 – 2018

At the start of 2017, when I received the hand-over from Past President, Mike Hicks, many of the longer-term objectives for IOM3 had been set, the product of previous years' groundwork and forethought.

The first year of my presidency was a busy one with several overseas engagements to develop our international relationships, as well as a continuing full programme of activities in the UK. The key to the future of IOM3 - the new Governance structure changes, initiated in 2012 - remains incomplete, although dialogue and workflow is established with a clear view to concluding the remaining issues. Our proposed Governance changes are part of the modernisation agenda for the IOM3 to continue to meet its Royal Charter, attracting engineering professionals engaged in all aspects of the materials cycle from all parts of the world. Membership is and remains a leading outward indication of our success.

The IOM3 Membership Growth Initiative was established in 2014 with a headline target of 20,000 individual members by 2020. By the end of 2017, the total individual membership stood at 15,300. A closer look at the evolving membership base reveals increasing applications from younger members, a reduction in the average age and increased diversity. IOM3 presently has 18% female membership, one of the highest proportions of all Professional Engineering Institutions (PEIs).

This membership number has remained frustratingly constant, but set against the significant loss of older/retired members, we are seeing growing interest in our activities. At the time of writing, the total of those engaging with IOM3 as individual, schools, industry and registered online users stands at just over 22,000.

Growth in members and non-members submitting applications for Fellowship continues, and three membership workshops were held with over 100 aggregate attendees. The Fellowship grade exceeded its annual 150 new Fellows target towards the year end. An Honorary Fellowship was awarded to Dame Sue Ion at an evening event held at IOM3 headquarters in London, who responded with a lecture giving insight into the materials issues relevant to the next generation of the UK's reactors for power generation. An Honorary Fellowship was also awarded to Professor Mark Miodownik during 2017.

Supporting the drive for membership, the developments in the benefits available to members, or the 'value proposition' continues to modernise and evolve, most recently with





The official handover of the presidential badge of office from immediate past president Dr Mike Hicks FREng CEng FIMMM FRAeS to Martin Cox CEng FIMMM took place in April 2017 at IOM3 headquarters in London, followed by Martin's Presidential Address

access to increased data resources through the National Archive in Grantham and new online resources including the OneMine data search engine.

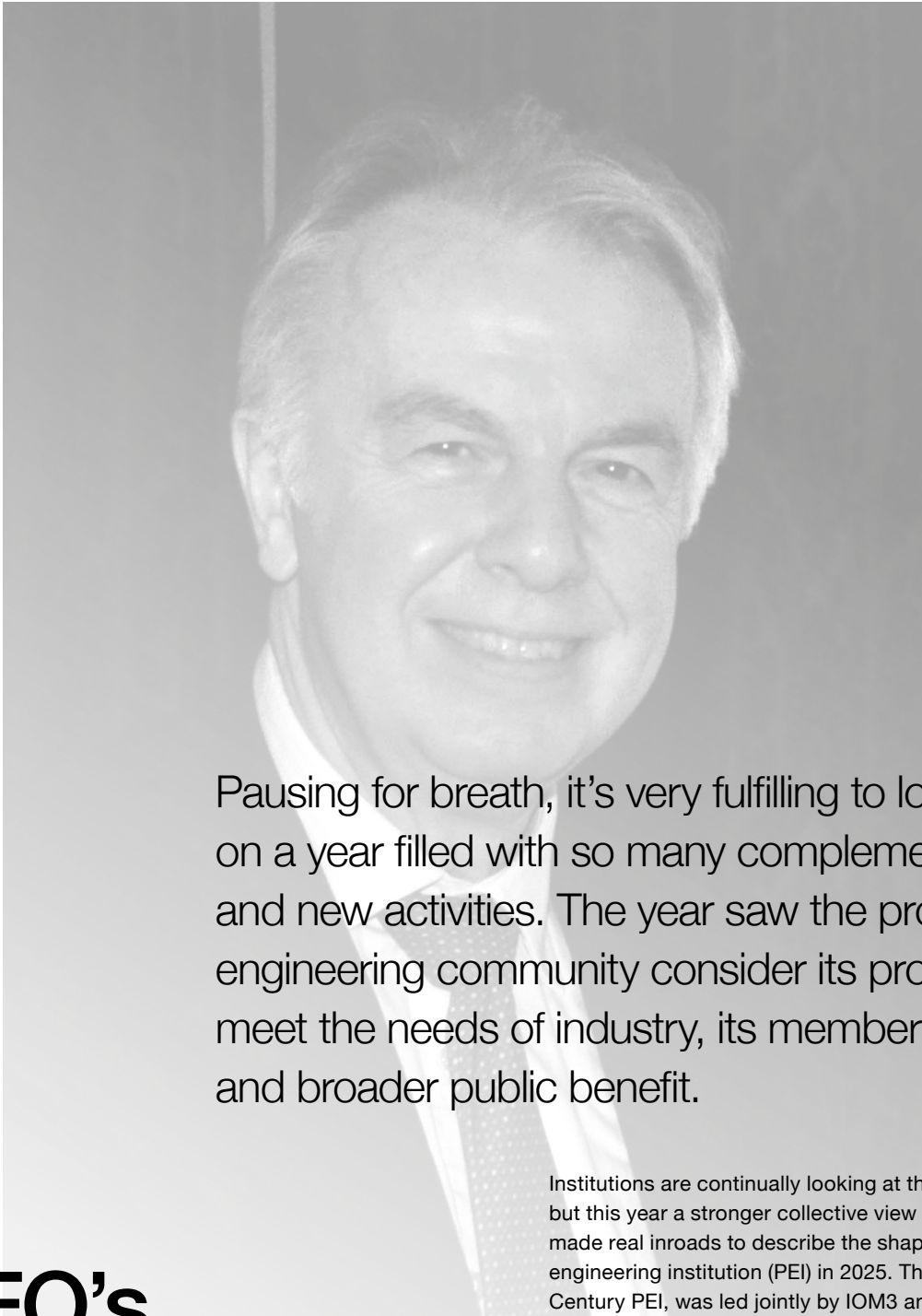
Our technical communities, each with their own skill set within the materials cycle, place IOM3 in a key position to engage with issues of concern to us all, requiring an interdisciplinary approach, a need for knowledge and know-how, combined with an ability to communicate accurately at multiple levels of understanding and differing perceptions. The year end saw the start of the series of 'Materials Protecting Society' seminars held at IOM3 headquarters in London, a collaborative initiative of our technical divisions. The launch event generated lively debate and we look to 2018 for a continued series to examine alternative materials solutions to provide societal benefit. Taking a multidisciplinary approach to issues of current concern places IOM3 in a unique position to involve members in the development of innovative solutions.

The established IOM3 annual events bring a President the opportunity to award medals and prizes, attend lecture competitions and see the abilities and commitment of those engaging and setting markers out in their careers - and it is a great pleasure to be part of these activities. The Young

Persons' Lecture Competition (YPLC) continues to create higher standards year by year. The 2017 world final was held in Perth, Western Australia, and I was fortunate to attend the Brazilian national final of the competition held in Araxa, Brazil at the site of our primary sponsor CBMM. In 2018 the YPWLC final will be held in Port Elizabeth, South Africa (and in London in 2019 – coinciding with the IOM3 150-year celebrations).

No less a pleasure is attending IOM3 local/regional events and meeting throughout the country members and volunteers engaged in industry, academia and government who contribute and form part of the local organisation. Each area is different, with different influences and concerns, but all provide a great welcome. During the year we were also encouraged to provide additional visibility of IOM3 in South Africa and Argentina and in October our growing involvement with Russian members came to fruition with a unique UK-Russian discourse event in St Petersburg.

I wish to thank all of the IOM3 staff and volunteers for their commitment and continued hard work. I am always conscious that where the President turns up to take part in any form of event, award or activity, then time, effort and a will to take on organisational duties and challenges will have preceded me.



Pausing for breath, it's very fulfilling to look back on a year filled with so many complementary and new activities. The year saw the professional engineering community consider its progress to meet the needs of industry, its member community and broader public benefit.

## CEO's Review

**Bernie Rickinson**  
Chief Executive

Institutions are continually looking at their own operations, but this year a stronger collective view matured and made real inroads to describe the shape of a professional engineering institution (PEI) in 2025. This initiative, the 21st Century PEI, was led jointly by IOM3 and the Institution of Structural Engineers who combined to deliver common thinking and a strategic lead across the PEI world.

Looking to our future operations, harnessing the views of young people was considered fundamental to the final plan and to this end we arranged a workshop attended by younger members representing all 35 PEIs. This was the first time in the history of the PEI community that such a meeting had taken place. The outputs from the meeting created an important guide to the future requirements from IOM3 and its partner PEIs. One thing that became clear was that a collaborative space is required and IOM3 is taking a lead on this aspect of the project.

The value of IOM3 membership took a major step forward in 2017 as we moved to secure new benefits for all members through our association with FEMS, the Federation

of European Materials Societies. All IOM3 members can now secure FEMS member rates for conferences or events organised by any of our FEMS partners.

Developments in knowledge exchange and information retrieval for members advanced both in physical and digital formats. IOM3 officially opened the National Materials and Minerals Archive after accepting a major collection from Tata covering Iron and Steel Technology. The growth of this archive continues as both members and businesses recognise the importance of careful curation of technology-based collections. If the UK wishes to maintain its position as a leading innovator for materials, minerals and mining subjects, then it is critical that researchers have access to previous work. Many of the new archive collections draw together R&D work that will never be published but require consultation to avoid duplication of effort. We see the cataloguing of this archive as fundamental to our members' future benefit and with the concurrent development of online access to many historic works, we wish to create a one-stop shop for knowledge needs. Members presently enjoy access to almost 100 peer reviewed journals through Taylor & Francis, our valued partner for journal publishing, but over and above this, we have negotiated free member access to OneMine, a digital collection of global mining and minerals content. All of this content is accessible through any IOM3 membership subscription without additional payment.

Plans were formalised during the year for IOM3 to both participate and actively develop partnerships with the design community. The Materials and Design Exchange (MaDE) was re-launched and has since attracted two new partners and organised a series of events. IOM3, with the British Plastics Federation, took responsibility for arranging a series of events associated with polymer recycling which will continue into 2018. Interdisciplinary activity, particularly between the materials technology and design communities, will be pivotal to future innovation and IOM3 is well ahead in its understanding of the importance and practical value of these interdisciplinary links.

Overseas relationships grew rapidly during the year. Our link to the St Petersburg Mining University provided the springboard for a Russian finalist to the World Lecture Competition. The growth of membership interest from Russia places the country well within the top ten for concentrations of IOM3 members. The arrangement of visiting lecturers, an annual conference and the formation of an affiliated local society are all set to follow. The same growth of interest, albeit at an earlier stage of development, is happening with organisations in Argentina and New Zealand. Overseas groups are recognising the strength that IOM3, covering the entire materials cycle, can provide.

Reflecting on the importance of a charity's contribution to public benefit, IOM3 has continued to apply its resources to the enrichment of school curricula through support for teachers enrolled in the IOM3 Schools Affiliate Scheme. IOM3 provides the largest outreach capability of any PEI to teachers in secondary schools. We now have over 1,200

schools to support in our programmes and the effect on the visibility of our subject area in schools, both to teachers as well as students, is significant. We are recognised as a valued provider of enrichment activity and this will continue to develop as teachers seek a growing relevance between modern products and the theoretical considerations provided through the national science and technology curriculum. We have a proven and valued deliverable that is a benchmark for other PEIs.

In summary, it has been a privilege to drive forward new developments, relationships and change through the IOM3 volunteer and staff networks. We are visible on a world stage and need to maintain this position, both for the benefit that it provides to our members, and for that which our members can provide to our society. We have made progress on all fronts and I thank the IOM3 team for their tremendous support and boundless energy.

## Corporate aims

Our strategic plan contains the following corporate aims:

- Increase the membership and the retention of members.
- Promote the importance and relevance of our subject areas and increase our influence.
- Improve membership services in extent, quality and perception.
- Operate at a surplus with sufficient reserves to meet at least one year's activities.

## Our plans for 2018

- Implement the change in governance to fully reflect best practice and to enhance interdisciplinary community activities;
- Continue to develop of our international membership and the growth of benefits particularly for younger members;
- Make further progress to provide a valued collaboration space for PEI members in other technical communities and continue to place materials, minerals and mining at the heart of societal change;
- Develop our national status for information sourcing and archive retrieval and be recognised as an important global provider of independent and reliable technical information;
- Make provision for, and put in place, a comprehensive programme for the celebration of the Institute's 150th anniversary in 2019.



In 2017, the Institute continued to develop its services to members and the activities of its technical, regional and member communities spread far and wide across the global materials, minerals and mining sectors. Membership development and the Get Registered campaign continued to gather momentum, and the year saw new initiatives in information services come to fruition in the form of the National Materials and Minerals Archive.

Plans for Governance changes continued to be high on the IOM3 agenda in 2017. The final proposals will be presented for approval by Members mid 2018 and it is anticipated that the long awaited new governance structure will be in place by the end of 2018.

Highlights of 2017 from all IOM3 activities are described in the following pages. IOM3 is grateful to the large body of volunteers contributing at all levels and across all sectors, both in the UK and overseas. We are keen to encourage more younger members and, in this anniversary year of women's votes (2018), more female members to get involved in volunteer activities. Information about the many ways in which members can contribute to IOM3 as volunteers is now available on the IOM3 website. The Trustees would also like to acknowledge the hard work and dedication of IOM3 staff.







# Highlights of 2017

## Member recruitment and development continued to make significant progress during 2017, with all targets being met or exceeded

A total of 1,683 new members were recruited during the year, with nearly 30% being women. The Institute is also seeing a major demographic shift in terms of the gender balance of its student recruits, where recruitment at some universities shows women to be in the majority.

New records have been set for professional grades involving peer review. The number of new Fellows during the year was 182, achieved against a target of 150 and a record of 124 set in 2016. Some 30 of these new Fellows were attendees at one of the three 'Become a Fellow' workshops that were held in the latter half of the year. A further 60 came through the Nomination Route, demonstrating the involvement of the existing Fellow community.

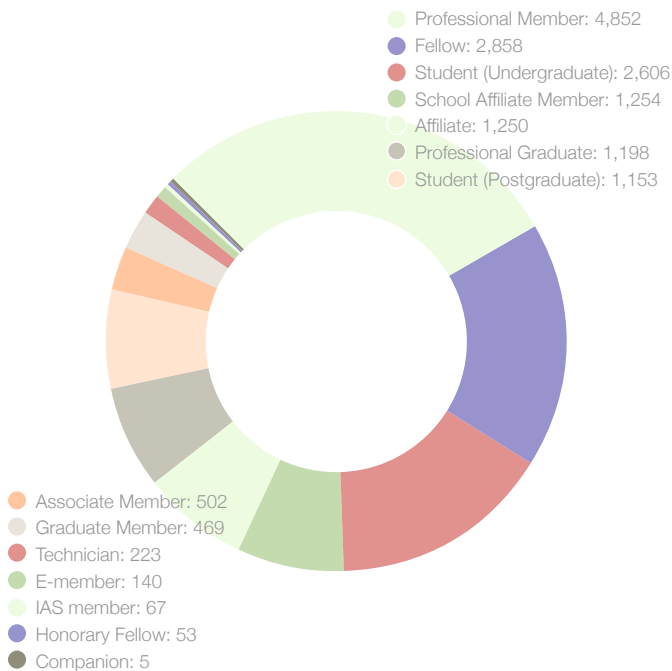
Licensed registrations to the Engineering Council, Science Council and Society for the Environment registers exceeded 200 for the first time. The 211 registrants achieved in 2017 included 182 to the Engineering Council registers. January 2017 saw the introduction of the Engineering Council

requirement for licenced bodies to sample and assess the CPD records of its registrants. Whilst registrants at this stage are only required to show a commitment to CPD, this exercise involves additional peer review effort. The Institute was able to peer review the CPD records of 295 of its registrants against a target of 150 during the year.

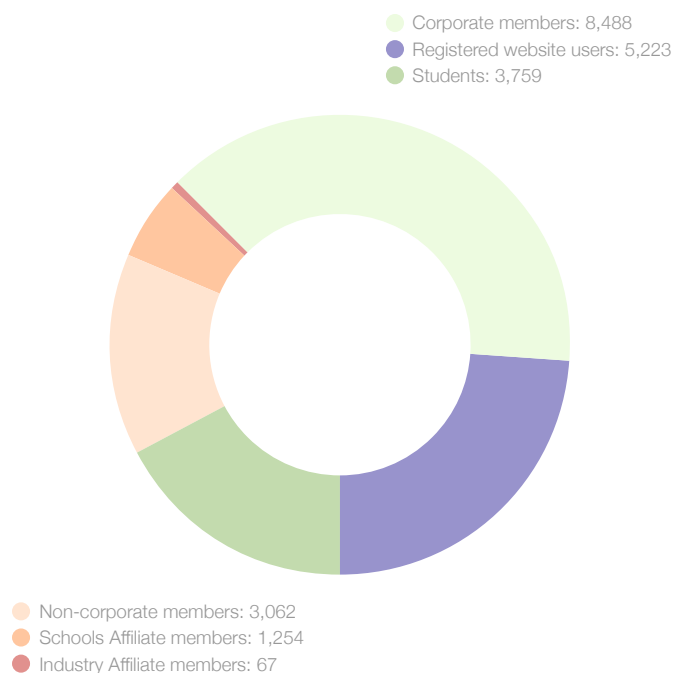
Work continues on supporting the development of a number of apprenticeship frameworks within the Materials Cycle domain, and several are due to their first apprentices in 2018. In order for the Institute to maintain its commitment to this important work stream, it applied for and achieved End Point Assessor status at the end of the year.

A member survey at the beginning of 2017 gave us an insight into what benefits members most value, which IOM3 services and activities they find of most benefit in their professional life and how they view the Institute. Some of the findings are presented opposite.

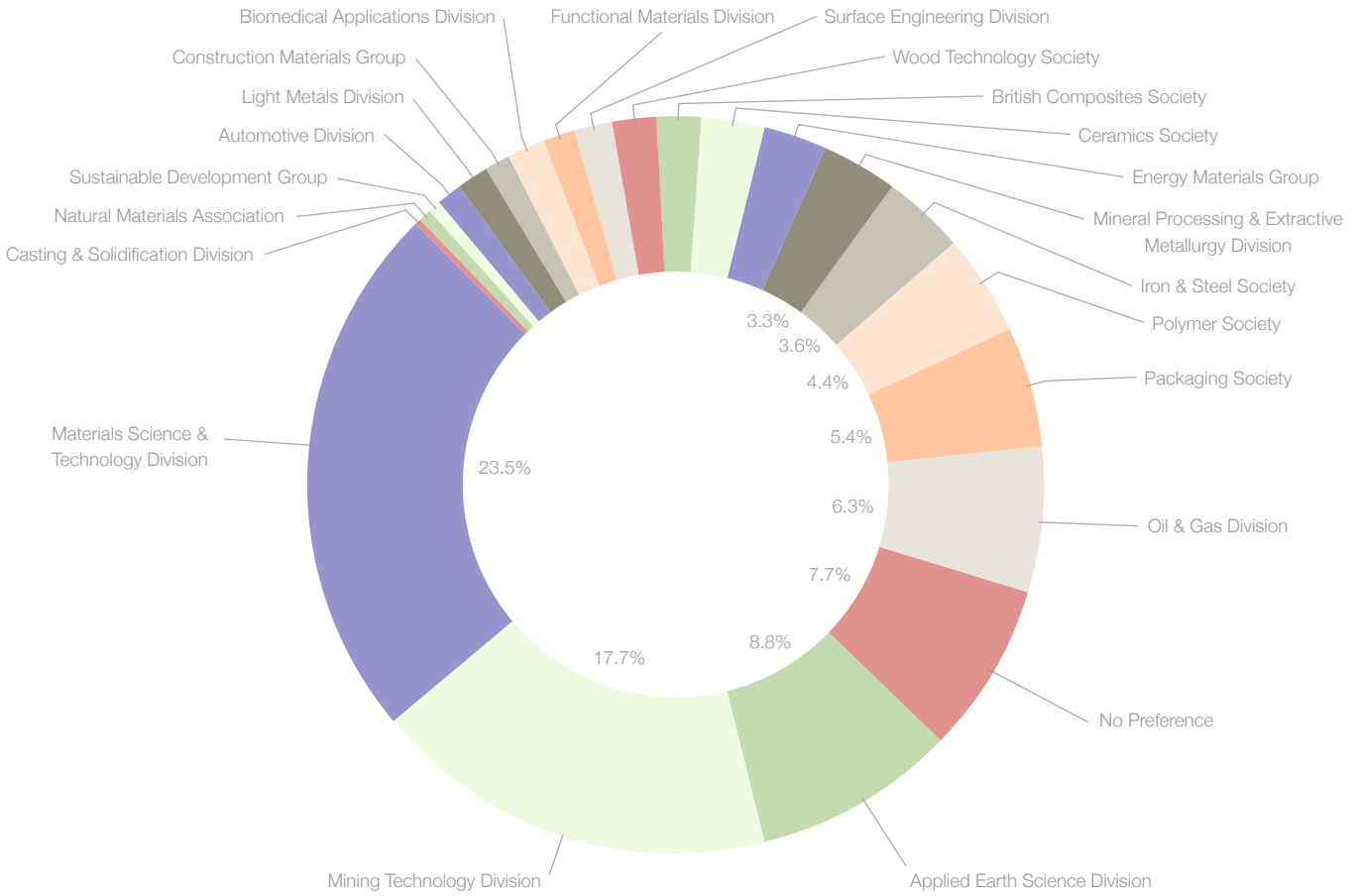
### IOM3 Members by Grade, 2017



### IOM3 Members by Status, 2017



### Members by Preferred Technical Division, 2017



### IOM3 members' feedback on IOM3 activities and services\*

#### Top Benefits

<b>Most valued by all member grades</b>	Member magazine <i>Materials World</i> (rated excellent by nearly 1/4 of "Graduate" members)
	IOM3 website
<b>Most valued by Fellows</b>	Upholding of professional standards
	Upholding of membership and registration standards
	Technical division/special interest activities
<b>Most valued by Professional Members</b>	Member magazine
	Upholding of professional standards
	Peer-reviewed journals
<b>Most valued by Graduates and Professional Graduates</b>	Conferences and seminars
	Peer-reviewed journals
	Training courses

#### Services

<b>Highly rated across all member grades:</b>
Communications to members
Accuracy of information provided to members
Accessibility of staff
Ability to meet professional needs
Level of service to members/response to membership queries

\* member survey 2017

The **Younger Members' Committee (YMC)** represents the interests of IOM3 members under 35 and is involved in organising various events throughout the year to engage with young people



Younger Members' Committee 50<sup>th</sup> Anniversary commemorative artwork

## YMC celebrates 50<sup>th</sup> Anniversary

The Institute boasts a wide demographic, with a third of all members being under the age of 35. To ensure the needs of these younger members were met, in 1967 the Institute formed the Younger Members' Committee (YMC). Half a century later, the YMC celebrated with a special 50th Anniversary Dinner at IOM3 headquarters, London.

Guests at the celebration included past and current YMC members, past Award winners, young scientists and event sponsors from Rolls-Royce. Mark Miodownik FREng HonFIMMM, Professor of Materials and Society at University College London, gave a keynote address at the dinner.

To commemorate the success of the past 50 years, a ceramic art piece was commissioned by artist, Emma Finch. The artwork, sponsored by the Worshipful Company of Armourers & Brasiers, was unveiled at the dinner and has been placed on the Heritage Staircase at 297 Euston Road. Everything in the making of the plate uses materials, processes and minerals associated with IOM3 to tell the transformative stories of the YMC. The artwork captures a sense of its history, development and projection into the future.

## World Lecture Competition 2017

Curtin University in Perth, Australia, hosted the 13th Young Persons' World Lecture Competition. The eight finalists, all winners of their respective YPLC national finals in Australia, Brazil, Hong Kong, Malaysia, Russia, Singapore, South Africa and UK, were treated to an all expenses paid trip to Perth, Australia, where they got the opportunity to visit South 32 Mine, Perth Mint, Maalinup Aboriginal Gallery and Caversham Wildlife Park.

Vidya Chamundeswari Narasimhan from Singapore was awarded first place with her lecture Biodegradable Scaffold Systems for Musculoskeletal Tissue Regeneration with Sustained Release of Multiple Bio-molecules. Second place went to UK's Ilija Rašović with his lecture Making The World's Most Expensive Material. Third place went to Zheng Yu Ng from Malaysia, with his lecture titled Graphene-Based Magnetic Hybrids For Dye Removal. IOM3 would like to thank the event's major sponsors, Companhia Brasileira de Metalurgia e Mineração (CBMM), the IOM3 Western Australia branch members and Rolls-Royce for their generous support.





Lecture Competition finalists 2017 at the Armourers' Hall

## Young Persons' Lecture Competition

The 2017 National Final of the Young Persons' Lecture Competition brought together six finalists from across the UK along with judges, engineers and scientists on 26 April at the Armourers' Hall in London, home to the Worshipful Company of Armourers & Brasiers. The annual event is organised by IOM3, sponsored by the Worshipful Company of Armourers & Brasiers, with additional support from the Midland Institute of Mining Engineers and East Midlands Materials Society.

The six finalists presented a 15-minute lecture, exploring a range of exciting scientific areas including physics, materials science, geology and chemistry. Each entrant was marked from a total of 100 points, with points awarded for technical content, structure of lecture, standard of presentation and time.

First place in the competition went to Ilija Rašović representing the South East, for his lecture The World's Most Expensive Material. Ilija travelled to Perth, Australia, in October 2017 to compete in the Young Persons' World Lecture Competition. Awarded second place was Amanda Field representing the Midlands for her presentation Additive Manufacturing for Nuclear Fusion. Third place was awarded to Marli De Jongh from Scotland for her talk Shocked Suevites from the Ries Crater – Insights into the Dynamics of Hypervelocity Impacts.

## YMC meets...

The YMC continued its series of 'YMC meets...' interviews published online on IOM3 TV. Additions during 2017 included Dr Kate Thornton, Chair of YMC and currently Vice-President of IOM3 Trustees. Kate is a Research Scientist on the Biopolymers Team at Croda. Also featured during 2017 was Dr Jessica Wade - Post Doctoral Research Associate at the Department of Physics and Centre for Plastic Electronics, Imperial College London, who was the winner of the 2017 Robert Perrin Award; Dr Craig Durham, Production Engineer Adviser at Nexen Petroleum UK Ltd; and Dana Brintz, Graduate Research Engineer, National Composites Centre. The interviews are published on IOM3 TV at [www.iom3.org/iom3-tv](http://www.iom3.org/iom3-tv).

## Meeting younger members' needs – 21<sup>st</sup> Century PEI

IOM3 younger members were among those gathered from 35 membership institutions in May at a meeting to discuss the future of the professional engineering institutes (PEIs). A Young Members' Workshop was held at the Institution of Engineering and Technology (IET) in London, UK, to gather feedback and hear from younger members from a range of institutes. The day comprised a variety of activities designed to allow members to relay their needs and wants to the CEOs of PEIs, including group workshops, presentations and feedback sessions. The event, part of the 21st Century PEI project, also provided the opportunity for professionals from all 35 engineering institutions to find out about the other PEIs.



Younger members from IOM3 were among those participating in the 21<sup>st</sup> Century PEI workshop

## The Materials Information Service (MIS) continues to provide technical help and information to personal members, corporate members and the general public

2017 continued to see a large number of enquiries from a global audience via the IOM3 website. Although the majority of these enquiries were of a highly technical and specific nature, the Information Services Team had a great year in providing a high quality service and response that exceeded the expectation of most enquirers.

The MIS Team continued to support the Technical Groups within IOM3, particularly identifying areas of synergy between various communities. The year saw a change in MIS personnel involved due to retirements but the new procedures worked well. Towards the end of the year, the team became responsible for the “Ideas Hopper” a mechanism by means of which societal issues that have a materials background are collected and disseminated within our technical communities for further involvement.

The Titanium Information Group (TIG), part of the Light Metals Division, continued to provide a forum for industry and academia with an interest in titanium and its alloys. The European Association for Brazing and Soldering (EABS), part of the Surface Engineering Division, had a disappointing year with respect to income generation and changes to its operations will be made during 2018.

The first half of 2017 saw the preparation and re-organisation of recently received information resources collections from external sources. These were the Tata Steel, STC (Steel Technology Centre) and Professor Peter Jost Tribology Collection. A new information resource housing these collections, the National Materials and Mining Archive based at the IOM3 Grantham Centre, was officially opened in July by IOM3 President, Martin Cox CEng FIMMM.

The IMMAGE (Information on Mining, Metallurgy and Geological Exploration) bibliographic database continues to be produced and managed by Information Services staff and is highly appreciated by members, subscribers and researchers worldwide. A slight decline in subscriptions was more than matched by the high level of interest and support from members.

Following on from a European ‘MATCH’ project, the MIS team were part of a consortium with the Federation of European Materials Societies looking at Materials R&D activity in Framework Programme 9 (FP9). A report issued to the European Commission on 12 December 2017 recommended the alignment of materials research to societal concerns.

Signature Materials, the activity for marking metals to prevent theft, had a productive year with contracts from Electricity North West Ltd (ENWL) worth over £140k gross. This built on earlier work and included marking on 700 sites across Lancashire. ENWL engineers were also trained to use the marking equipment, as their long term aim is to take the work in-house using the patented Signature Materials systems.



Copper and lead prices increased during the year and we fully expect crime levels to increase as thieves find ways to circumvent legislation coupled with less law enforcement. In the latter part of the year trials were undertaken on marking farm equipment in Lincolnshire as part of a drive to evaluate new opportunities.

Late in December MIS put in a proposal to the New Zealand Institute for Minerals to Materials Research for work on the competitive extraction of minerals in New Zealand, particularly rare earth elements and tungsten.

Major objectives for the Information Services group in 2018 are to continue to provide a high quality service to members and the general public, grow membership of the Titanium Information Group and the Industry Affiliate Scheme and develop a new operating plan for EABS. The team also aims to continue the digitisation of library resources and to implement new software to improve opportunities arising from technical enquiries.



IOM3 staff, trustees and members at the opening of the National Materials and Minerals Archive in Grantham in July

## Journals

Taylor & Francis (T&F) Group continues to handle the Institute's journal publishing activity. In 2018, it is planned to relaunch the *International Heat Treatment & Surface Engineering* journal as an open access journal. T&F have launched a marketing campaign to promote our journals and overall usage and impact factors are improving. As well as free access to all peer-reviewed journals, IOM3 members are entitled to a book discount with CRC Press, part of the same parent company.

Work on the library digitisation project continued throughout 2017 and members will be able to access selected mining content via OneMine early in 2018. More content will be added over time. An IOM3 library portal is expected to be launched to members in the second half of 2018 – initial areas of selected content relate to mining, iron and steel, copper and PVC. Additional areas in preparation for coverage are ceramics, rubber and wood. Work will continue throughout the coming years to add to the items available for download.

## Magazines

The Institute's member magazines comprise the monthly *Materials World* and quarterly *Clay Technology*. During 2017, the magazines team introduced a 'Materials Marvels' series to *Materials World*, looking at famous buildings and the resources used to build them. These reports have generated a lot of reader feedback via letters and comments on social media. The team aims to continue to increase member and divisional participation in the magazines, be it via letters or by invitation to write opinion pieces and articles.

In addition to the magazines, the editorial team feeds a daily news blog, which has 22,000 followers, giving a significant reach outside of the core audience of IOM3 members. Google Analytics statistics show that it is especially younger readers who tend to read our blog articles, and they also serve as a lunchtime read for office workers.

The beginning of 2018 saw the introduction of a face-lifted *Materials World*, including a new cover and streamlined article designs. Going forward, we plan to encourage younger members to contribute articles and opinion pieces, to help promote the Institute to the next generation of members in the early stages of their careers, and to introduce more video interviews and thereby increase our web-exclusive content.

## Training

The IOM3 Training Academy further developed its portfolio of courses and training interventions during 2017, to support the development needs of members and others working with the Materials Cycle domain. A modular management course was launched during the year with the aim of giving delegates a foundation of management knowledge and understanding to support their development to general or project manager. Relationships with other providers were established to deliver courses in the polymer domain, two of which underpin respective apprenticeship frameworks.

IOM3 remains committed to supporting the development of those working in the packaging industries through its portfolio of formal diploma and certificate courses, delivered face to face, online and onsite, and intensive short courses which focus on popular and cutting edge technologies. A total of 125 packaging professionals enrolled on courses during the year, a significant increase on 2016.

A new course in wood technology was launched in 2017. The Level 3 diploma in Wood Technology complements the existing Level 2 certificate in Timber and Panel Products and creates a route for those working in the timber industries to progress to professional registration as a Engineering or Registered Science Technician. Some 50 industry practitioners undertook IOM3 timber-related courses during the year, a number which is set to grow in 2018.

The Training Academy and its associated industry stakeholders further developed the Clay Quarry Manager's CPD scheme by offering 12 new refresher and training events for participants in 2017. This scheme continues to grow as companies have become increasingly aware of the need to maintain a competent and technically up to date workforce. The new Level 2 and Level 3 courses in Clay Building Products were launched during the year and were heavily subscribed within a short period of time.

## PIABC

PIABC Limited is a specialist awarding body administered by IOM3, with a suite of regulated and nationally recognised qualifications in the materials sector. During 2017 PIABC continued to develop and evolve qualifications to meet the needs of the materials sector including the development of new regulated qualifications in polymer processing (Level 3) and in rubber (Level 5). PIABC also successfully completed its annual regulatory activities for each of its four Regulators (CCEA Regulation, Ofqual, Qualification Wales and SQA Accreditation). PIABC plans to review its packaging qualifications in 2018 to ensure that they are current and reflect employers' needs. In addition, it is looking to increase its qualification portfolio both in terms of technical and geographical outreach.



The Institute has 22 **Technical Divisions**, societies, groups and associations that act as special interest groups, forming a focus for activities within specific sectors

## Materials Protecting Society seminar series

IOM3 Technical Communities and the Industry and Technology Policy Board (ITPB) worked together to launch a series of events being based on the theme of Materials Protecting Society. This is the first time that the ITPB has delivered a major series of events. The launch event was organised by Technical Communities including the Sustainability Development Group, Energy Materials Group and the Materials Science and Technology Division.

This series of seminars was organised in recognition of the need for society to respond to the modern-day challenges such as terrorism, natural disasters, climate change and an ageing population. The intention was to highlight the role of materials in society to help meet those challenges and to deliver potential solutions. Headline topics explored the role of materials in protecting people, protecting the environment, developing resilient infrastructure and protecting our future.

At the launch event in London on 20 September 2017, keynote speakers set out the high level challenges and potential solutions on each of these topics. The second seminar in the series, Materials Protecting the Environment, took place on 21 February 2018.

## Natural Materials Association (NMA)

2017 saw some changes for the NMA. Angela Morris stepped down as the Chair, and was succeeded by Chris Holland, a biologist by training who works in the field of natural materials. NMA have been working on a book, which is due to launch in 2018. Graham Ormondroyd and Angela Morris edited a collection of chapters from both industrialists and academics to address the area of designing with natural materials. The book's aim is to fill the gap between the current scientific knowledge of the use of natural materials and the product design and development. The book will introduce natural materials and define the phrase within the context of design, then develop ideas of designing with natural materials in specific areas, including buildings, automotive and packaging. The book will continue to look to the future of new bio-based materials and how these will influence design.

## Materials Failure Investigation Group (MFIG) joins IOM3 community

The Materials Failure Investigation Group (MFIG) was set up in 2017 to provide a forum for the exchange of information, knowledge and state-of-the-art industrial practice on all aspects of Materials Failure Investigation. The new group, the first of its kind in the UK, is part of the Materials Science and Technology Division. The group will focus on all technical, educational and professional issues related to materials failure investigation.

## Packaging Society engages in packaging waste debate

The Packaging Society joined the packaging waste debate and stated that forging better links with Government is crucial to address the ongoing problem of packaging waste. The UK Government recently launched a petition to ban all non-recyclable/non-compostable packaging in the UK and the Packaging Society united to highlight the importance of fundamental changes to current recycling and waste handling legislation to eradicate confusion. Recycling collections, bins and rules all currently differ from council to council across the UK – and differences are broader still across Europe. A uniform approach to collections would educate the public and lead to a long-term change in behavioural routine. The IOM3 Polymer Society spoke out in support of this viewpoint and highlighted the lessons we can learn from Europe – for example in Switzerland, where people are charged for waste disposal but recycling is free and widely available.

Other points raised included how technically crucial packaging is – for example, medicines packaging and packaging developed to extend shelf life and reduce food waste, much of which would be affected by any suggestion of a ban on non-recyclable or non-compostable materials. One thing is certain – changes need to be made, and by educating the public with consultation from experts like The Packaging Society, the Government can work towards an amended recycling and waste handling agenda that fulfills the needs of the country, without affecting the crucial role packaging plays in delivering essential goods.



## Recognising the UK's global potential key to Industrial Strategy

The Institute provided a response to the UK Government's Green Paper 'Building Industrial Strategy', with input from members and from the technical divisions. In the response, compiled as part of the public consultation and modern industrial plan for post-Brexit Britain, the Institute stated that recognising the UK's materials, minerals and mining global potential is key to securing a flourishing industrial strategy. The submission proposed how to deliver a stronger and more productive UK economy through identifying key strategic pillars including: innovation, investment, trade and collaboration. Beyond the excellence that the UK has developed in materials, the translation of such expertise to wealth creation in healthcare, digital technology, transport, energy, the circular economy and defence and security are key areas to exploit. For the last decade, IOM3 has bridged the important interface between these two significant communities, providing a contribution to the Government's strategy with a sense of foresight of what could be achieved for the UK.

## Wood Technology Board members lead climate change review

Two members of the Wood Technology Board, Dr Graham Ormondroyd FIMMM and Dr Morwenna Spear FIMMM were selected to lead a consortium to deliver a review on the potential for using bioenergy resources for construction and other non-energy uses for the Committee on Climate Change (CCC). This review will feed into the updated Bioenergy Review 2018, which will be published by the CCC in the Autumn.



## Energy Materials Group annual lecture

The IOM3 Energy Materials Group (EMG) organised its fourth Annual Lecture in July, at IOM3 headquarters in London. The lecture, Materials Challenges to Deployment of 21st Century Nuclear Reactor Systems – Can we do Better than the Early Pioneers?, was given by Dame Sue Ion OBE FREng FRS HonFIMMM FNucl. The main portion of Dame Sue's presentation was on the materials developments required for the next generation of reactors, both large scale and the small modular reactors. Dame Sue also covered the on-going work of life extension to the existing fleet that will be required to cover the time before any new plant comes on stream. Following her presentation, Dame Sue was presented a certificate confirming her new IOM3 Honorary Fellowship status.



## Oil & Gas Division decommissioning seminar

The Oil & Gas Division held its first ever event in the Mine at 297 Euston Road, London, in October. Over 35 attendees comprising legal, financial and technical professionals attended the seminar, UKCS Decommissioning Obligations and Opportunities, to hear a variety of speakers give their observations and insights on this emerging chapter of the UK North Sea oil industry. The day ended with a panel session comprising Tony Hartwell of the IOM3 Sustainable Development Group, Andrew Hockey, Non-Executive Director of Fairfield Decom, and Vicary Gibbs, Financial Consultant, answering questions from the floor, moderated by Frank Moxon FIMMM.



## Light Metals Division support for BLOODHOUND STEM outreach

In June, the Light Metals Division visited the BLOODHOUND SCC (super sonic car) Technical Centre in Bristol, to see the vehicle in the workshop as well as to share materials with the BLOODHOUND education team. BLOODHOUND is now the largest STEM outreach programme in the UK and as such provides access to unprecedented numbers of young people ready to receive the message about light metals and materials science in general. The work undertaken by LMD board members has provided materials for the BLOODHOUND team to use in their educational work. This progress has only been possible due to the passionate commitment of the board members and the generosity of their parent organisations in providing materials and/or machining samples.

## Titanium group flourishing

The Titanium Information Group (TIG), whose activities were incorporated into IOM3 in 2016, is flourishing under the auspices of the Light Metals Division. Two successful networking events were held in 2017, on Additive Manufacturing and The Welding and Joining of Titanium. An active group is identifying areas for 2018, with a focus on research and development activities. TIG has handled several technical enquiries of note leading to business opportunities for members, and the building of new networks.

## Applied Earth Science Division (AESD) copper mine visit

In June, the members of the Applied Earth Science Division (AESD) had the opportunity to visit the historical Parys Mountain copper mine on the Isle of Anglesey, Wales. The mine worked between 1768 and 1904, where approximately 3.5 million tonnes of ore yielded 130,000 tonnes of copper metal. Around 20km of tunnels were excavated. The majority of the party were mineral enthusiasts interested in Parys Mountain's hidden gems, including the ubiquitous stalactite formations hanging from the tunnel roof. It was an informative tour for all and provided younger professional members with an appreciation of the intricacies of historical mines.

## Successful Mining Technology event in London

The Mining Technology Division conference in London in October gave an up-beat, positive message about the state of health of the mining industry in the UK. It became clear that the UK has an abundance of natural resources remaining and the speakers made regular references to the need to exploit minerals within the UK for security of supply motives. These arguments have not been heard at a mining conference for a long time. There is a surprising amount of activity taking place in the UK, often within National Parks or areas of particular scientific or leisure interest. Issues about satisfying environmental conditions played as prominent a role in the presentations as did descriptions of the geological setting and the means to extract, process and transport the product to the customer.



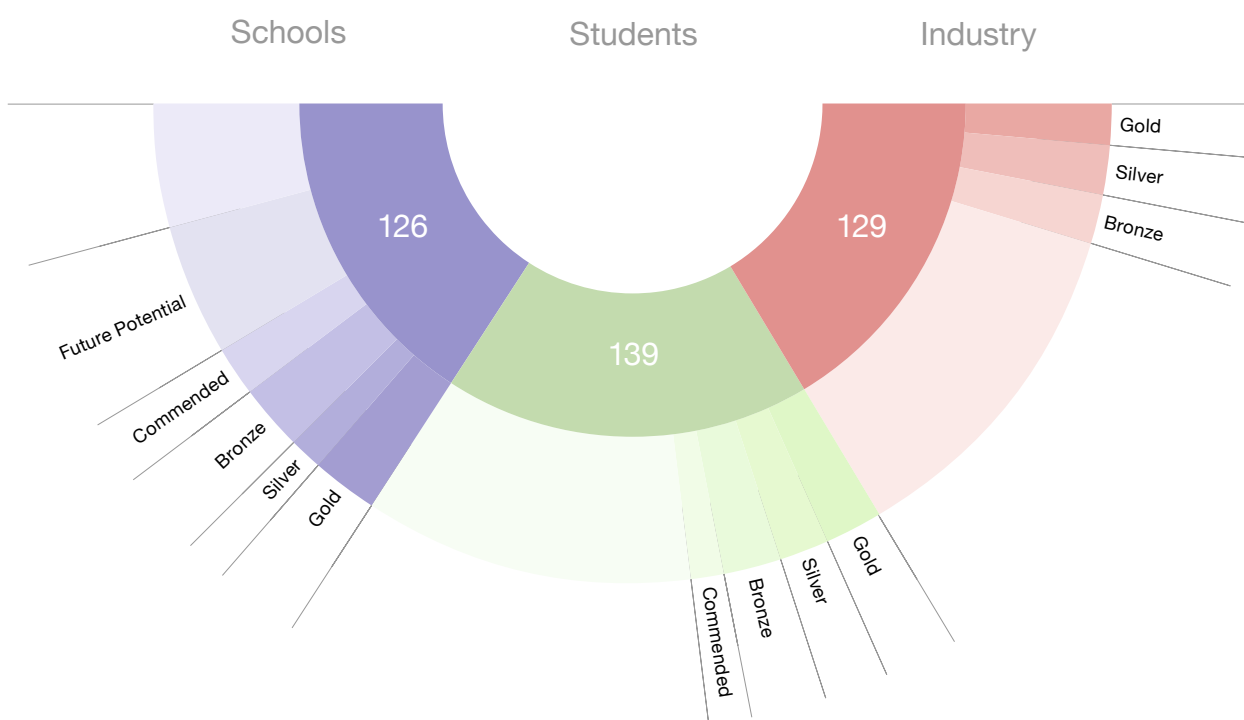
## Mineral Processing Division activity

The Mineral Processing and Extractive Metallurgy Division (MP&EMD) board members presented at and chaired a session on Mineral Processing at the 2017 Mines & Technology conference in London in November, part of the Mines & Money series. MP&EMD has two conferences scheduled for 2018, their Geometallurgy event postponed from December 2017, and a further conference being planned in Cambridge in December.

## Industry and Technology Policy Board changes

IOM3 currently has 22 Technical Divisions and under the proposed changes to Institute governance it has been suggested that these will be reduced to reflect their membership and activity levels. The structure of how the committees report to the Technical Divisions is also under review. It is intended that all of the active divisions or committees would continue to function as usual but under a more streamlined structure. Under the new governance proposals a new Technical Communities Board will report to the Executive Board. It is hoped that the new structure will encourage greater activity levels, more collaboration between technical communities and help promote a greater awareness of the Institute's activities in the wider community.

The **Starpack Industry Awards** scheme recognises innovation in packaging design and technology, with its Schools and Student awards intended to encourage young people to take up careers in consumer packaging design



2017 saw the Industry Awards' relaunch as the Starpack Packaging Industry Innovation Awards to recognise excellence in packaging innovation, design and development, with a new focus on a personal level of recognition for those working in industry, as well as corporate awards. The intention was to reward not just the best looking packs but those showing innovation in meeting a design challenge, the use of materials, the processes developed to create the pack, or the engineering required to assemble, fill and handle it.

The Industry Awards received a total of 129 entries in 2017, up 26% on 2016. The judges awarded 14 bronze, 13 silver, nine gold, five Greenstar Sustainability awards, two Inclusive Design awards, one Packaging Team of the Year award and one Packaging Star award.

The Student and Schools awards showed entrants take up the challenge with brilliant off-the-wall creativity and solutions to quite demanding briefs. 114 packs were submitted to the Schools Awards and 125 for the Student competition. The entrants for the latter come from a wide range of courses,

some with graphics emphasis and others concerned with structural/product design, as well as those from materials and technology courses. The judges presented 9 highly commended, 15 bronze, 12 silver and 15 gold in the Student awards and 33 future potential awards, 15 highly commended, 17 bronze, 9 silver and 17 gold in the Schools awards.

The WorldStar Awards, the largest global packaging competition, owned by the World Packaging Organisation (WPO), continue to grow and succeed under the administration of IOM3. 2018 was a record year, with 318 entries (the award entries were made in 2017 for the following year). Winners of the Starpack Industry awards are entitled to enter the WorldStar Awards, and in 2017 there were 12 WorldStar winners from the 13 Starpack winners entered.

The income from WorldStar helps to fund the education programmes organised by the WPO, focusing on poorer countries around the world. The Save Food Packaging programme continues to be a major focus for WPO. 2018 will see the WorldStar Awards Ceremony take place on the Gold Coast in Australia.

## Education and outreach

2017 was another busy and successful year for education. We continued to provide resources to enrich and enhance teaching in primary and secondary schools and run events to inspire and inform teachers and pupils. Membership of the IOM3 Schools Affiliate Scheme continued to grow steadily throughout 2017 and by the end of the year had in excess of 1,200 members.

Our event programme also grew in 2017, with two Materials Matter days (in conjunction with the Younger Members' Committee), a successful Magic of Materials course, four Engineering Extravaganza events and an inspiring conference for teachers. Materials Matter got off to a slow start in Science Week 2017 with around 20 students attending the event at the National Composites Centre in Bristol, however, the November event at Rolls-Royce in Derby (during Tomorrows Engineers Week) was booked up within 3 days and heavily oversubscribed. These events, primarily aimed at sixth formers, will continue to run in 2018 and we hope to develop our relationship with key stakeholders to host these at other sites around the UK.

Our three-day conference for 14/15 years olds, Magic of Materials, was fully booked again and this time attracted more girls than boys. All of the students went away from the course fired-up about materials and many submitted projects to earn Bronze Crest Awards from the British Science Association.

Engineering Extravaganza is a joint event run in Yorkshire and Humber with the Institution of Civil Engineers, Institution of Mechanical Engineers and Institution of Engineering and Technology. In 2017 events were held in North Yorkshire, East Yorkshire and twice in South Yorkshire. These fantastic events gave in excess of 400 students aged 13-14 an opportunity to find out more about engineering and the wide range of careers on offer.

Throughout 2017 we continued to support the subject knowledge enhancement of trainee and practicing teachers. A number of CPD sessions were delivered at events organised by other bodies and we are working with an increasing number of Initial Teacher Training organisations to inform trainee teachers about our fields before they go in to schools. Our conference for teachers was run in conjunction with the IOM3 Surface Engineering Division (SED) and the feedback from the day was excellent. We have been supporting SED and other divisions to develop presentations on their area of expertise, to be made available on their websites during 2018.

Looking forward to 2018 we will continue to build relationships with universities, companies and organisations that share our vision in order to further expand our reach and impact.

## Marketing

2017 saw a strong advertising sales performance across *Materials World* and *Clay Technology* magazines, with a number of new organisations choosing to promote their products to IOM3 members. Our challenge moving forward is to expand and retain this commitment. Online advertising postings continued to grow during 2017 with several recruiters choosing to promote multiple vacancies. The 2017 IOM3 conference programme delivered strong sponsorship and exhibition revenue with PVC 2017 achieving record levels of sponsor support.

The team's focus for 2018 remains on the development of long term relationships with organisations supplying products and services to the materials, minerals and mining sectors with the aim of developing strategic and creative promotional campaigns. Work will also centre on promoting the programme of events being created for the IOM3 150th anniversary in 2019 to potential partners.

## Conferences and events

The IOM3 conference team ran 17 events during the year, attracting a total of over 1400 delegates. Events ranged from the Oil and Gas Division's highly focussed first London-based seminar on decommissioning on the UKCS with an audience of 36, to PVC 2017, a three-day event with over 500 delegates.

The triennial PVC conference continues to be the world's most reputable forum supporting the future of PVC globally. Industry professionals including manufacturers, producers and suppliers from 43 countries came together in Brighton in April to discuss how the industry is rapidly adapting to regulatory and market pressures as well as to consumer demands.

Around 70 papers were presented at the event, covering the entire life cycle of PVC products including environmentally responsible production, sustainable use of additives, efficient raw materials use and controlled loop recycling. PVC 2017 also attracted a record breaking level of sponsors and exhibitors.

ClayTech UK, the annual event for the UK heavy clay industry continues to grow and in 2017 moved to a new venue, Newark Showground. The Mining Technology division initiated a new event - Current Developments in the UK Mining Industry - which was so successful, it necessitated a change of venue to meet demand from delegates and exhibitors. 2017 also saw the launch of the new Materials Protecting Society series - a collaborative series involving a number of IOM3 technical communities which considers topical themes - protecting people, the environment, developing resilient infrastructure and protecting our future. Following on from the launch event in September, the first of the focussed meetings on 21 February 2018, addressing how materials help protect the environment, attracted a capacity audience to IOM3 headquarters in Euston Road and provided a forum for lively debate on current issues.

Highlights of the conference programme for 2018 include ICMAC 2018, the 11th International Conference on Manufacturing of Advanced Composites in July and EuroSuperalloys 2018 in September. We will also be focussing on plans for the large events we have scheduled for 2019, the Institute's 150th anniversary year.





The IOM3 collaboration with St Petersburg Mining University led to our first UK-Russian event held in St Petersburg in October and a new cohort of Russian student, graduate and professional members

## IOM3 continues to maintain and expand its international links, with overseas branches, sister institutions and new collaborations

Staff from IOM3 collaborated with the IOM3 Western Australia branch to organize the final of the Young Persons' World Lecture Competition (YPWLC) in Perth in October, which included a tour of local visits for the finalists (more details on page 10). This was the first time that the YPWLC was held in Australia.

IOM3 was involved with the Euromat conference organised by the Federation of European Materials Societies in Thessaloniki, Greece, in September. A new website for FEMS was launched at this event, developed by the IOM3 Communications team as a collaborative site where FEMS member organisations can all have an input. IOM3 members have access to the presentations from Euromat and lectures delivered by FEMS prizewinners via the FEMS site.

The Institute in collaboration with the St Petersburg Mining University held the inaugural Russian-UK Raw Materials dialogue in St Petersburg on 18 and 19 October. The event theme 'The major elements of sustainable development' touched on a number of key strategic issues for both countries. The Institute fielded a group of leading mining and materials experts drawn from its membership to speak, supported by a contingent of delegates from the UK drawn from related industries and universities; this included a significant number of student members. The precursor to the event was a business

forum between senior industrialists from both countries keen to forge business links with each other. The Institute received significant support from the Russo-British Chamber of Commerce and UK Consulate in St Petersburg and embassy in Moscow in organising this forum.

In May, IOM3 President, Martin Cox, visited Argentina for a series of meetings at the British Embassy, the British-Argentine Chamber of Commerce, the Ministry of Energy and Mining, and the Argentinian Mining Institute. He also took part in discussions for IOM3 involvement in a 'Lithium Board' to help establish international links. Martin also attended the Global Mineral Professionals Alliance (GMPA) meeting which took place in Johannesburg, South Africa in February. GMPA is a collaboration between the Australasian Institute of Mining and Metallurgy (AusIMM), the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), IOM3, the Southern African Institute of Mining and Metallurgy (SAIMM), the Society for Mining, Metallurgy and Exploration Inc (SME) and Instituto de Ingenieros de Minas del Peru (IIMP). Dr Phil Bischler, Chair of the Local Affairs Board, also visited South Africa in 2017, representing IOM3 at the 23rd National Rubber conference held in March at Khaya iBhubesi, Parys, and giving a presentation on the Institute's international activities.

The IOM3 **Women In Materials** group aims to continue its series of networking events for women in different parts of the UK during 2018, and to develop mechanisms for supporting women in their careers in the materials industries.



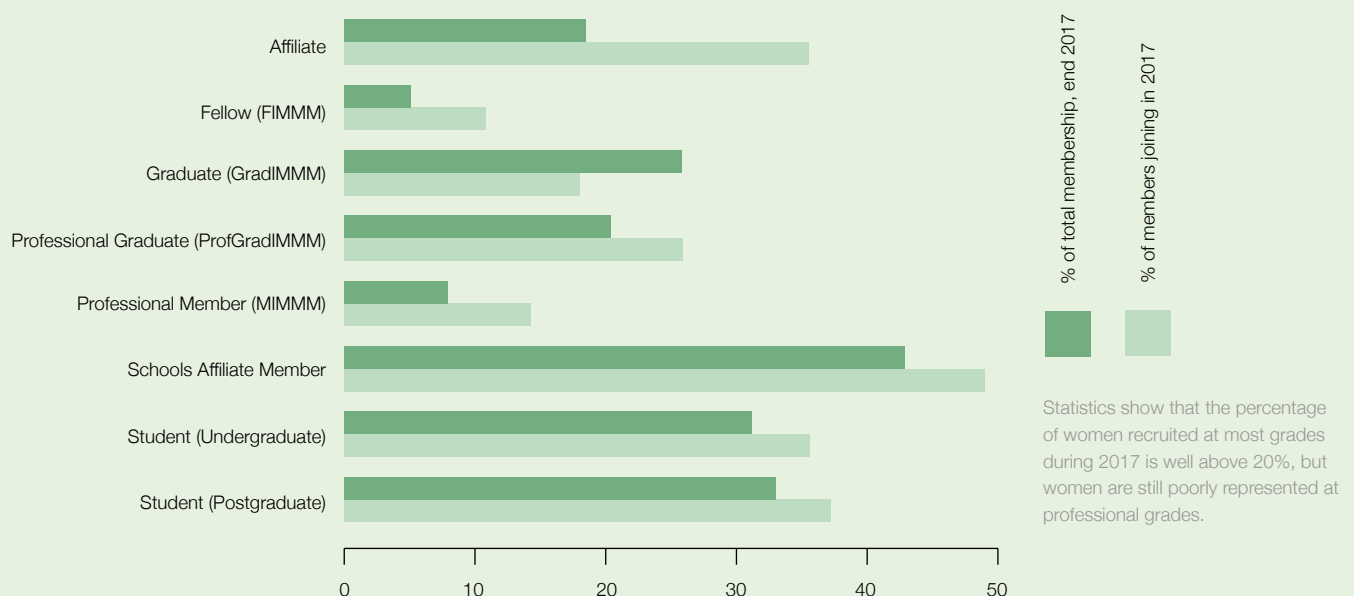
## Women in Materials seminar success in Birmingham

The Women in Materials group (WIM) held a successful seminar on mentoring and career development in Birmingham, UK, in March. Chaired by Mary Taylor, Postdoctoral Researcher at the School of Metallurgy and Materials, Birmingham, the event included presentations on the personal experiences of IOM3 women members in academia and in industry. Sarah Boad of IOM3 gave an introduction to mentoring and professional qualifications. Academic mentoring and coaching was covered by Vincent O'Grady of the University of Birmingham, and Dawn Bonfield gave a presentation on MentorSet and the Women's Engineering Society. Diane Aston of the IOM3 Schools Affiliate Scheme (SAS) presented a session on outreach to schools and encouraged everyone to get involved in promoting materials in their local schools as part of SAS activities.

## International Women in Engineering Day

WIM celebrated the first International Women in Engineering Day in June with an afternoon seminar on matters close to the heart of many women in materials and engineering careers. The keynote address was given by Serena Best, Professor of Materials Science at Cambridge University and Senior Vice President of IOM3, who had also recently received a CBE in the Queen's Birthday Honours. Mary Gearey spoke about her experience with the Daphne Jackson Trust which helps women get back into work after career breaks, followed by three presentations about industrial and academic careers from women who had experiences of working outside the UK. Jess Middlemiss, Chair of WIM, launched a drive to get more women volunteers involved in Institute activities and a lively panel discussion completed the agenda for an inspiring day for women in materials.

## Proportion of women members by grade



## Communications

The Communications & Design teams developed a new website for [www.fems.org](http://www.fems.org) (the Federation of European Materials Societies) which received a positive reaction at the EUROMAT 2017 conference in September and were also involved in the launch of a new website earlier in the year by the Materials and Design Exchange, a partnership activity between IOM3, Innovate UK, the Crafts Council, Barron Gould, The Royal College of Art and the Institution of Engineering Designers. Work is now underway on a new website for the 21st Century PEI project, aiming to bring together professional engineering institutions under one online roof to cross-promote events to (young) engineers, share information and promote interaction.

The IOM3 presence on social media continues to grow, with 5,371 followers on Twitter (an increase of 22%). Our weekly LinkedIn newsletter sent to 7,400 members and non-members maintains its popularity and the regular *Materials World* monthly email update to members is also appreciated. Development work on the website continues and in 2017 concentrated on improving users' experience on mobile devices.

## Promotion

A number of the Institute's divisions took part in exhibitions during 2017 to promote IOM3 activities and services and reach out to members and non-members in specific industries. The Packaging Society organised Packaging Clinics at the two annual EasyFairs Packaging Innovations events in London and Birmingham, and the British Composites Society was present at the Advanced Engineering event at the NEC in November. The Polymer Society formed part of the Knowledge Pavilion at Interplas in September. IOM3 staff also attended careers events at Imperial College in London and the biannual National Engineering & Construction Recruitment Exhibition.

## Data protection and security

Towards the end of 2017, preparation began for ensuring compliance with the General Data Protection Regulation which becomes law in the UK on 25 May 2018. Initial activities involved information sessions and staff training as well as a data audit of all activities to understand in detail the processes being carried out within the Institute and where changes need to be made. The programme of activity is continuing during 2018 as the deadline approaches.

Improvements and enhancements continued to be made to the IOM3 CRM (customer relationship management) system throughout the year to further streamline operations and consolidate data. Data security aspects of the Institute operations are also being addressed on an ongoing basis, with system improvements, staff training and the development of a disaster recovery plan.

## Venue Hire

The London office at 297 Euston Road saw a significant increase in the number of new external clients hiring meeting room space for conferences, workshops, meetings and events. The Members' business area, based on the 4th floor, has been in regular use. Feedback shows that members value this benefit as the London office is well situated with excellent public transport links.

Following refurbishment, the IOM3 regional office in Stoke-on-Trent was made available to hire for meetings and events, and external clients are beginning to utilise the meeting space, with positive feedback. IOM3 Members are entitled to free use of the Members' Business Areas at all three IOM3 offices and receive discounted rates on room hire fees.

## Staff

IOM3 staff worked hard during 2017 to reduce the financial deficit significantly on 2016. We received a nomination for writer of the year at the Independent Publishing Awards run by the Professional Publishers Association, launched a redesign of our flagship magazine, *Materials World*, and achieved a record number of new clients for our 297 Euston Road venue hire activity which operates under the Institute's subsidiary company, Materials Institute Services Ltd.

Across the business, employees have worked on their own professional development, with qualifications being achieved in Finance and HR. All staff have undergone training in online and digital safety as well as on the new GDPR and how this will affect data processing across all activities within IOM3. A number of career development courses are planned for 2018 in management, marketing and IT.

2018 has seen the launch of the Institute's Healthy Mind, Healthy Body campaign. This aims to encourage healthy eating and exercise with a strong focus on mental health and wellbeing, and we now have our own mental health first aider. At the IOM3 staff day in February, Dr Rickinson launched a new organisational structure to improve working practices and provide opportunities for professional development within the organisation.

2018 will be an important year for our technical divisions alongside our conference and sales teams as we develop the 2019 programme to celebrate 150 years of the Institute. These will aim to provide opportunities for a large number of members across all grades and disciplines to join in the celebrations and mark this significant milestone for our Institute.





# Awards, Medals and Prizes





23 – 28

The Institute of Materials, Minerals and Mining (IOM3) awards numerous medals and prizes in recognition of outstanding contributions to science, technology and management across all disciplines in materials, minerals and mining.

Awards are presented for personal achievement and published work as well as for outstanding contributions to the Institute and its activities. Some awards are aimed specifically at younger people, others recognise technological developments or contributions to education. Awards are presented at special occasions throughout the year, and some award winners deliver lectures to which all members are invited. Prizes are also presented to the best students in specific disciplines and IOM3 runs competitions such as the Young Persons' Lecture Competition to recognise communication and presentation skills. Full details of IOM3 awards and prizes are published on the IOM3 website at [www.iom3.org/iom3-awards](http://www.iom3.org/iom3-awards).

The Institute's [awards, medals and prizes](#) are awarded for outstanding contributions to science, technology and management in the field of materials, minerals and mining

## Premier awards

Futers Gold Medal	D J Barratt
Gold Medal (jointly awarded)	BP Exploration & Production Co. Ltd., Companhia Brasileira de Metalurgia e Mineração (CBMM)
Institute's International Medal	B Agar
Medal for Excellence	B A Wills
Platinum Medal	J Wood
Bessemer Gold Medal	J G Speer
Sir Andrew Bryan Medal	N W Jackson
Chapman Medal	M Edirisinghe
Silver Medal	C Petit
Sir Colin Humphreys Education Award	F S Wheeler
Colywn Medal	M Klüppel

## Personal achievement awards

Griffith Medal & Prize	N M Pugno
Thornton Medal	R Waugh
T B Marsden Professional Award	G Sawyer
Rosenhain Medal & Prize	S Haigh
Rowbotham Medal & Prize	N Li
Tom Colclough	N Baddoo
Dowding Medal & Prize	M J Steeper
Frank Fitzgerald Medal & Travel Grant	E J Pickering
Hadfield Medal & Prize	J Beswick J Ferriman
Roy T Holland Medal	F Morrall
Leslie Holliday Prize	T McGrail
Hume Rothery Prize	H Ipser
Ivor Jenkins Medal	P Nurthen
Institute's Technician Medal	M Graham
Thomas Medal & Prize	J H Noldin
Verulam Medal & Prize	I Reaney
Outstanding Contribution Awards	A Francis, A True
Kroll Medal and Prize	S Skinner
Grunfeld Memorial Award and Medal	M R Clinch

## Publication awards

Guy Bengough Award	M Rogowska, J Gudme, A Rubin, K Pantleon & R Ambat
Billiton Gold Medal	Y H Luo, D Q Zhu, J Pan & X L Zhou
Composite Award	W S Sum, K H Leong, L P Djukic, T K T Nguyen, A Y L Leong & P J Falzon

Cook/Ablett Award	T L Martin, A Radecka, L Sun, T Simm, D Dye, K Perkins, B Gault, M P Moody & P A J Bagot
Alan Glanvill Award	P Kubik, M Zatloukal, J Vlcek & T Womer
Douglas Hay Medal	D P Sainsbury, B L Sainsbury & E Sweeney
Mann Redmayne Medal	C Drover & E Villaescusa J P Sykes, J P Wright & A Trench J Zhao & C E Loo
Materials World Medal	J Allwood
Materials World Medal (Highly Commended)	A Marsh
Adrian Normanton Award	F He, D-F He, Z-H Deng, A-J Xu & N-Y Tian
Pfeil Award	A Paul, J G P Binner, B Vaidhyanathan, A C J Heatonand & P M Brown
Wardell Armstrong Prize	J Dumouchel, F Hees & M P Alvin
Williams Award	T N Baker
James S Walker Award	K Danks

## Joint awards

Beilby Medal and Prize	K-T Yong
2016 Harvey Flower Titanium Prize (Retrospective)	R O Thomas
Charles Hatchett Award	J Takahashi, K Kawakami, J-I Hamada & K Kimura
Robert Perrin Award	J Wade
2016 Vanadium Award (Retrospective)	B Hutchinson, D Martin, O Karlsson, F Lindberg, H Thoors, R K W Marceau & A S Taylor
STWJ Best Paper Prize	M Alizadeh-Sh, M Pouranvari & S P H Marashi

## Other awards

Royal Charter Prize	Georgia Fraser
R H Craven Award	Alasdair Maitland
A T Green Award	Holly Pearce
Technician of the Year Category A	Lucy Smith
Technician of the Year Category B	Tomasz Zalewski
Young Persons' National Lecture Competition	Ilija Rašović
Young Persons' World Lecture Competition	Vidya Chamundeswari Narasimhan



Professor John Speer (left) receiving the 2017 Bessemer Gold Medal from IOM3 President, Martin Cox



Derek Barratt FIMMM ARSM presented with the Futers Gold Medal by Martin Cox



Francisca da Silva Wheeler MBE CPhys FInstP receiving the Sir Colin Humphreys Education Award from Sir Colin



Dame Sue Ion DBE OBE FREng CEng HonFIMMM receives her IOM3 Honorary Fellowship certificate from IOM3 President Martin Cox



Professor Mark Miodownik MBE FREng CEng HonFIMMM receiving his Honorary Fellowship certificate from Professor Serena Best, Senior Vice President of IOM3





Winner of the Young Persons' Lecture Competition final 2017, Ilija Rašović, with Professor William Bonfield CBE FREng FRS FMedSci (left) and IOM3 President Martin Cox at the Armourers' Hall in London



Vidya Chamundeswari Narasimhan from Singapore was the winner of the 2017 World Lecture Competition with her lecture Biodegradable Scaffold Systems for Musculoskeletal Tissue Regeneration with sustained Release of Multiple Bio-molecules. Second place went to UK's Ilija Rašović with his lecture Making The World's Most Expensive Material. Third place went to Zheng Yu Ng from Malaysia, with his lecture titled Graphene-Based Magnetic Hybrids For Dye Removal.



Ellen Britton, a Year 4 Product Design Engineering student at Glasgow School of Art, won the Design Innovation in Plastics competition for her interactive travel shade for children. The competition brief challenged students to design an innovative product, primarily in plastic, that will provide a more comfortable and less stressful travel experience.



Starpack Packaging Team of the Year was awarded to SAICA Pack and Diageo, for their collaborative spirits case optimisation project. Special thanks go to the Starpack judging panel; Mike Swain, John Lamb, David McGowan, Alaster Yoxall, Chris Peach, Nikki Clark, Brian Lodge and David Wiggins.





Paul Lowes (right), Designer and Technical Sales for Smurfit Kappa Leeds, received the prestigious Starpack Packaging Star of the Year Award, for his 'Shop In A Box' pack



Richard James from Sheffield Hallam University was awarded Technician of the Year (Category B). Mitchell Greener, Daniel Ryan and Scott Campbell also received Highly Commended Technician Awards



Lucy Smith, technical apprentice, was awarded Technician of the Year (Category A). The award was based around three projects Lucy has undertaken at British Steel, as well as her industrial experience, training and future ambitions.

## Honours and awards

### Crown Honours

#### CBE

**Prof Peter Goodhew CBE FREng CEng FIMMM FlnstP**, Emeritus Professor of Engineering, University of Liverpool. For services to Engineering and Education.

#### OBE

**Prof Anne Neville OBE FREng FRSE CEng FIMMM FIMechE**, Royal Academy of Engineering Chair in Emerging Technologies, University of Leeds. For services to Engineering.

**Dr Christoph Wiesner OBE FREng CEng FIMMM FWeldI**.

Chief Executive, The Welding Institute. For services to Engineering and Innovation.

**Professor Serena Michelle Best, FREng FIMMM**, Professor of Materials Science, University of (Mrs Jaunzens) Cambridge. For services to Biomaterials Engineering.

### Fellowships

#### Fellows of the Royal Society

- Professor the Baroness Brown of Cambridge (Julia King) DBE FREng FRS
- Professor Anne Neville OBE FREng FRS

#### Fellows of the Royal Academy of Engineering

- Professor Julian Allwood FREng
- Dr Anthony Batchelor FREng
- Dr Keith Bowers FREng
- Mark Cutifani FREng
- Professor Roger Reed FREng

#### Honorary Fellows of the Institute

##### Professor Mark Miodownik MBE HonFIMMM

Mark is a materials scientist, engineer, broadcaster and writer at University College London. Previously, he was the head of the Materials Research Group at King's College London, and a co-founder of Materials Library.

##### Dame Sue Ion DBE OBE FRS FREng HonFIMMM

Sue is Chairman of the UK Nuclear Innovation Research Advisory Board and represents the UK on a number of international review and oversight committees for the nuclear sector. She is the only non-US member of the US Department of Energy's Nuclear Energy Advisory Committee on which she has served since 2005.

### Top 50 Women in Engineering

The Women's Engineering Society (WES) 'WE50' list of 50 women under 35 years of age acknowledges 50 of the engineering industry's most inspirational young females. This year it included IOM3 member Nan Li, lecturer at Imperial College London.



### Large Local Society of the Year

The North of England Institute of Mining and Mechanical Engineers (NEIMME) received the Large Local Society of the Year award in 2017. NEIMME made a huge step during 2016, having been on the verge of having to sell its Grade 2\* listed building due to a long term decline in its fortunes. A new Vision for the Future was adopted and a Heritage Lottery Fund (HLF) application based around this was successfully submitted, resulting in an HLF award of £4.7m and £100,000 from the Reece Foundation. NEIMME is now trying to raise the remaining £2m necessary to release the £4.7m, which will enable it to retain the integrity of its collections, building and the Institute in perpetuity.



### Small Local Society of the Year

Newport and District Materials Society (NDMS) received the Small Local Society of the Year award in 2017. NDMS has faced difficult times with the decline of the metals processing industry in its catchment area. The Society decided to focus attention on Cardiff University School of Engineering to generate interest in its activities and encourage significant student participation. The lecture programme at Cardiff University has resulted in healthy attendance at meetings by engineers from a range of disciplines. NDMS also developed its social media presence to augment the website, and enhanced its communications activity to ensure that society members are kept informed.

# Financial review

## Overview

2017 was a strong year for the Institute, with both staff and trustees concentrating on improving the financial performance of various Institute activities and developing new sources of income.

The Institute finished the year with a combined overall deficit of just £7k, a significant improvement on the 2016 deficit of £534k. A successful conference programme, a one-off metal marking contract and an increase in external room hire all contributed to an 18% increase in revenue from £3,542k in 2016 to £4,164k in 2017. The Institute's management continued with the cost reduction programme initially implemented in 2015 and as a result the costs of running the Institute and its subsidiaries increased by only 4.5% from £4,533k in 2016 to £4,735k in 2017, with the increase in costs fully attributable to the spend on external conference venues. Looking at 2018, the staff and trustees continue to look for further cost savings and new income streams to ensure the Institute returns to operating at break-even level as soon as possible.

As with other organisations, the costs of running a defined benefit pension scheme and funding its deficit continue to have a significant effect on the financial results and strategic development of the Institute. In order to free cash flow for operating requirements, during the 2016 actuarial valuation the Institute and the pension scheme trustees agreed to place a first charge of £610k against the London property and for the pension scheme to pay its own running costs for 2.5 years from January 2017. Such a move enables the Institute to invest freed-up funds in the development of new income-generating activities.

## Investments and reserves review

Council's policy on reserves is to:

- Set aside sufficient reserves to fund the net book value of all tangible fixed assets and the cost of future capital expenditure requirements. These amounts are held in the asset development fund and total £13,345k at 31 December 2017.
- Set aside reserves to develop and improve the quality of services provided by the Institute. These reserves are held in the services development fund and total £57k as at 31 December 2017.
- Retain sufficient liquid reserves to cover the future expenditure of charitable, management and administrative costs of up to one year. This level of reserves is considered appropriate to allow the Institute to be managed effectively, to provide a buffer for uninterrupted services and to achieve the long-term objectives of the Institute. The unrestricted reserves total £4,114k at the year end and represent 98% of the total budgeted expenditure for 2018.

In light of the challenges faced by various Institute activities, the Council has set a budget for net expenditure of £172k for 2018 to support initiatives for the development of membership and conference programmes, implementing a marketing plan to increase external client room hire across three sites, and preparing for the Institute's 150th anniversary in 2019.

The Institute has adopted a policy of maximising total returns from investments commensurate with acceptable risk for a charitable organisation. Amounts required to fund the operations of the Institute are set aside in a short-term fund consisting of cash or easily realisable investments. All other investments are placed in a long-term fund. An appropriate benchmark (depending on the Institute's requirements) is agreed with the investment managers to measure performance.

## Principal risks and uncertainties

Council has identified the following major risks facing the Institute:

- Failure of IT systems and compromise to the use of membership database as a result of cyber security breach;
- Loss of members through the ageing population and economic impact within industry;
- Difficulty in maintaining current income streams;
- Financial impact of the deficit of the defined benefit pension scheme on the Institute's future strategy;
- Failure to appoint new Chief Executive before the end of 2018;
- Major adverse change in investment values.

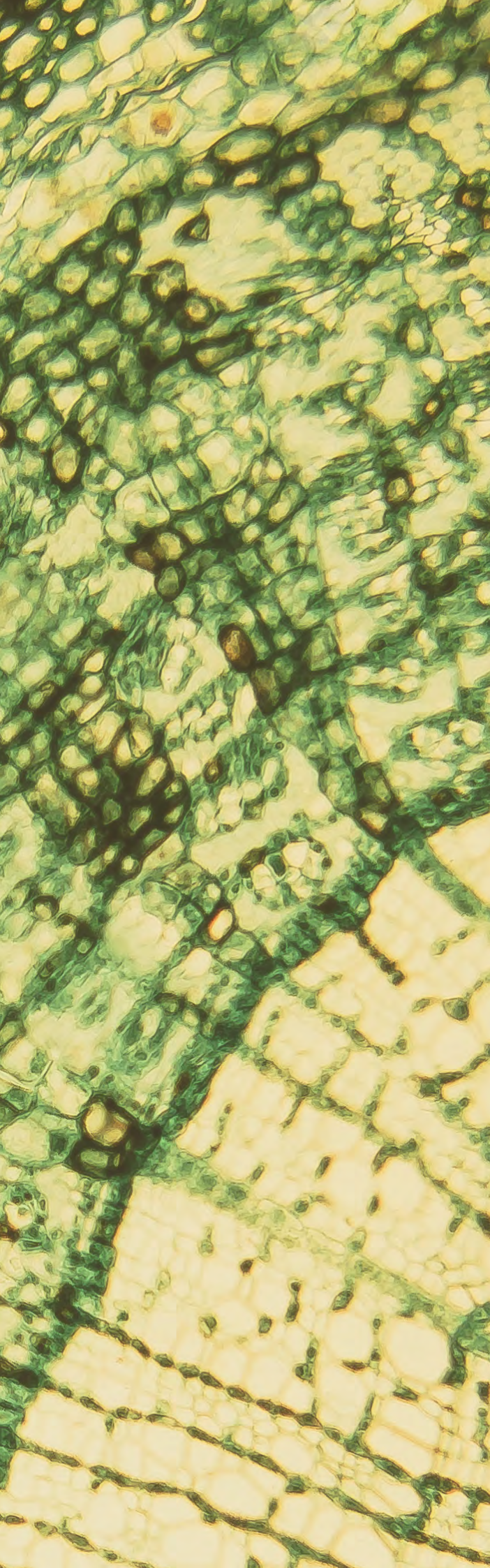
The risk register is being updated on a regular basis and the trustees, staff and professional advisors are taking steps to mitigate these risks and minimise their impact on the Institute's future performance.



A detailed microscopic cross-section of a plant stem, showing various tissue layers. The outermost layer is a thin, reddish-brown epidermis. Below it is a thick, green, multi-layered cortex. The central part of the stem is the vascular cylinder, which contains several vascular bundles. Each bundle consists of a primary xylem on the inner side and a primary phloem on the outer side, separated by a vascular cambium. The cambium is a thin, dark layer that produces secondary xylem and secondary phloem. The secondary xylem is a large, light-colored area with a distinct growth ring. The secondary phloem is a thin, dark layer. The innermost part of the stem is the pith, which is a small, central area of parenchyma cells.

# Structure and Governance





The founding body of this Institute was created in 1869. The Institute of Materials, Minerals and Mining is a body incorporated by Royal Charter dated 25 July 1965 and modified on 26 June 2002. As such it does not have company directors or share capital.

The Institute is governed by a broadly based Council whose members represent the full scope of interests of its membership. Councillors are the Trustees of the Institute and are elected to represent members by discipline, region and grade. The responsibility for the ongoing management of strategy and performance of the Institute lies with the Managing Board, whose membership is drawn from senior members of the Institute. An Audit Committee keeps under review the effectiveness of the Institute's financial reporting, internal control policies and operating procedures, and has a broad remit to review all elements and levels of Institute governance and function.

Proposals for changes to the Institute's governance structure have been approved by the Members but have yet to be implemented. The following pages describe in more detail the composition and remit of the Institute's current boards and committees, as well as the proposed governance changes.

# Structure, governance and management

## Council

The governance of the Institute is vested in the Council. Members of Council, other than co-opted members, are trustees of the Institute for the purpose of charity law. Under the Bye-laws of the Institute, members of Council are elected by members of the Institute at the annual general meeting to serve for varying terms. Under the Institute's regulations, Council is entitled to co-opt honorary vice presidents and five members of Council.

Regular induction meetings are held for new Council members to ensure that they understand their responsibilities as trustees of the charity. The induction process provides trustees with information about the role of Council, its supporting boards and the organisational structure of the Institute. The objects of the Institute together with the mission statement and corporate strategies are explained. Each trustee is provided with an information pack and points of access to further details. Ongoing training is provided to trustees in relation to the individual responsibilities undertaken by them wherever appropriate.

Council meets at least three times during the year to review strategy and approve operating plans and budgets.

Council has overall responsibility for ensuring that the Institute has appropriate systems of control, financial and otherwise. It is responsible for safeguarding the assets of the charity and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities. Council has introduced a formal risk management process to enable it to assess business risks and implement risk management strategies on a regular basis. It involves identifying the types of risks the Institute faces, prioritising them in terms of potential impact and likelihood of occurrence, and identifying means of mitigating the risks. As part of this process Council reviews the adequacy of the charity's current internal controls. The systems of internal control are designed to provide reasonable, but not absolute, assurance against material misstatement or loss. They include:

- a strategic plan and an annual budget approved by Council
- regular consideration by Council of financial results, variance from budgets, non-financial performance indicators and benchmarking reviews
- delegation of authority and segregation of duties

The law applicable to charities in England and Wales requires Council to prepare financial statements for each financial year which give a true and fair view of the state of affairs of the charitable group and the charity, and of the incoming resources and application of resources of the charitable group for that period. In preparing those financial statements, Council is required to:

- select suitable accounting policies and apply them consistently
- observe the methods and principles in the Charities SORP (Statement of Recommended Practice)
- make judgements and estimates that are reasonable and prudent

- state whether applicable UK accounting standards have been followed, subject to any material departures disclosed and explained in the financial statements
- prepare the financial statements on a going concern basis unless it is inappropriate to presume that the charity will continue in business

Council is responsible for:

- preparing the trustees' report and the financial statements in accordance with applicable law and United Kingdom accounting standards (Generally Accepted Accounting Practice)
- keeping proper accounting records which disclose with reasonable accuracy at any time the financial position of the Institute and enable Council to ensure that the financial statements comply with the Charities Act 2011, the applicable Charity (Accounts and Reports) Regulations and the provisions of the Royal Charter and Bye-laws
- safeguarding the assets of the charity and taking reasonable steps for the prevention and detection of fraud and other irregularities
- the maintenance and integrity of the charity and financial information included on the charity's website in accordance with legislation in the United Kingdom governing the preparation and dissemination of financial statements.

The Council are aware of the early adoption by the charity of the Charities SORP (FRS 102) issued in July 2014, rather than applying the Charities 2005 SORP which has been withdrawn but is still referred to in the extant Charities (Accounts and Reports) Regulations 2008. This departure has been necessary for the financial statements to show a true and fair view in accordance with United Kingdom Generally Accepted Accounting Practice effective for accounting periods beginning on or after 1 January 2015.

## Audit Committee

The Audit Committee, which reports to the Managing Board and Council, comprises a chairman and four other members who are not associated with the Managing Board or management of the Institute. Appointments are endorsed by Council. Members who served during the year are set out on page 39. The committee normally meets twice a year or as the chairman of the committee sees fit. The Chief Executive and Finance Director generally attend, with others invited as and when appropriate. The committee is authorised to keep under review the effectiveness of the Institute's financial reporting, internal control policies and operating procedures, together with a broad remit to review all elements and levels of Institute governance and function. Advice is given on the appointment of external auditors. A regular dialogue is maintained with the Institute's external auditors to review matters identified from audits as being in need of management attention and the actions to be taken to resolve the same. The chairman has direct access to the President and Council.

The Audit Committee completed a series of three comprehensive internal audits during the year and has two other audits in progress. The Committee, together with an internal audit working group, is continually active in a wide range of reviews covering disbursements to local groups and scholarships, the process of professional membership, capital projects and the effectiveness of governance procedures. This is in addition to regulatory financial assessments and, through this well developed audit process, the Committee provides to the Institute's officers and management, a valuable mechanism for maintaining the highest standards of systems and controls.

## Managing Board

Council delegates its responsibility for the ongoing management of strategy and performance of the Institute to the Managing Board. Membership of this board is drawn from senior members of the Institute and staff. The day to day management of the Institute's activities is delegated to the Chief Executive and staff. The Managing Board reviews the progress of the Institute's subsidiaries, boards and committees.

## IOM Communications Ltd

The charitable trading activities are carried out by this wholly owned subsidiary. The Board of this company meets regularly to assess the commercial opportunities and effectiveness of the company's trading activities.

## Nominations Committee

The committee reviews the role, membership and performance of the major committees including Council and provides nominations for succession planning of Institute officers. The committee also oversees adherence to the Charter and Bye-Laws.

## Remuneration Committee

The committee agrees the remuneration package for all executive directors and key management personnel (as detailed on page 39) and the overall levels of remuneration for other staff. Remuneration is set on the basis of level of responsibility and experience.

## Industry and Technology Policy Board

The board is responsible for the co-ordination of 22 technical divisions and groups. In turn, the role of the divisions is to further the networking and professional development of their members. The board consists of the divisional chairmen who are elected by the technical community they represent.

## Professional Policy Board

The board is responsible for membership, education, accreditation and professional development and technician activities. Four committees support the board.

## Local Affairs Board

The board is responsible for the promotion of the interests of regional members, communication between Council and regional members and the establishment of links with affiliated local societies.

## International Affairs Board

The IAB is responsible for communications between the Institute and its international communities. It also encourages the development of new activities and communities outside the UK.

## Younger Members' Committee

The younger members play a vital and active role in the development of the Institute and their activities are co-ordinated by the Younger Members' Committee.

## External Affairs Group

The group makes submissions to UK government, parliamentary committees and the European Commission on behalf of the Institute.

## Women in Materials Group

The IOM3 Women in Materials Group was formed in 2012 to raise the profile of women members within IOM3, to support networking, mentoring, and work in schools to educate girls about the benefits of a career in science and engineering.

## Materials Institute Services Ltd

This is a wholly owned subsidiary responsible for non-charitable activities. The company had not traded for a number of years prior to recommencement of activities from 1 January 2016.

## PIABC Ltd

PIABC Limited is a specialist awarding body for professional qualifications in the materials cycle. It is a wholly owned subsidiary of IOM3.

## Changes to IOM3 governance

The Institute's Council voted unanimously at its meeting on 3 July 2012 to support a proposal to amend the governance of the Institute. The proposed changes are important to implement current best practice and to comply with guidance from external organisations such as the Charity Commission. The proposals saw extensive debate by Council, with much thought going into the inter-relationship of Charter, Bye-Laws and Regulations. Safeguards are provided for the democratic operation of the Institute.

A document detailing the proposed changes was sent to all IOM3 members in the autumn of 2012 and IOM3 members voted to accept the proposals at an EGM held on Tuesday 20 November 2012. The proposals for Governance Change were subsequently sent to the Privy Council for approval. There was then a long period over which comments from third parties to both Privy Council and Engineering Council slowed progress, and during that time the working group commenced consideration of the second phase of the governance review.

The pause in progress has turned out to be beneficial, as in the meantime some of the guidance from regulators has changed. Together with changes to some other elements of governance (such as the primary boards of the Institute), this has necessitated additional slight amendments to the draft of the Bye-Law changes.

The draft of the amended Bye-Laws is now complete and has been considered by the Institute Council and recommended for acceptance by the Members at an EGM.

The primary change to Governance embodied in the proposals is to bring the size of the governing body into line with best practice and Charity Commission guidance. This change should also make decision-making more efficient. The Institute Council numbers around 50 and these Councillors are also the trustees of the charity. The changes to Governance will retain a Council of similar size, but make it advisory to a smaller decision-making trustee body to be called the Executive Board.

The changes will free the Advisory Council from management issues and enable it to consider strategy. Once free of statutory obligations, Advisory Council can give its time to investigating future needs and opportunities for the Institute and recommending the strategic direction on all aspects of the Institute. The smaller Executive Board will be able to meet more frequently and act more quickly in addressing management and business opportunities. The Institute will have a structure that follows current best practice and that enables it to function more effectively in the fast moving technological and business world.

### Governance changes phase 2

The IOM Governance Working Group have been looking at the organisation of IOM3 boards reporting to the new Executive Board, with a view to streamlining and consolidating activities and reporting structures. Draft proposals have been published and final approval will be required by Council once Phase 1 of the Governance Change is in place.

## Composition of proposed Advisory Council

The Advisory Council will draw representatives from across the interests within the Institute. Elections from the membership will continue to be overseen by an ongoing Nominations Committee.

- The President, Senior Vice-President and two Vice Presidents will be ex-officio members.
- 20 members will be elected from Society, Division and cross-cutting group chairmen.
- Eight members will be elected from the different grades of membership.
- Six members will be drawn from UK and overseas regions.
- Co-options will enable areas of expertise on the Advisory Council to be reinforced.

## Composition of proposed Executive Board

The Executive Board, the trustee body, will comprise the immediate Past President as chairman, the President, Senior Vice President, two Vice Presidents and Honorary Treasurer. It will also include the Chairmen of the primary boards of the Institute, as follows:

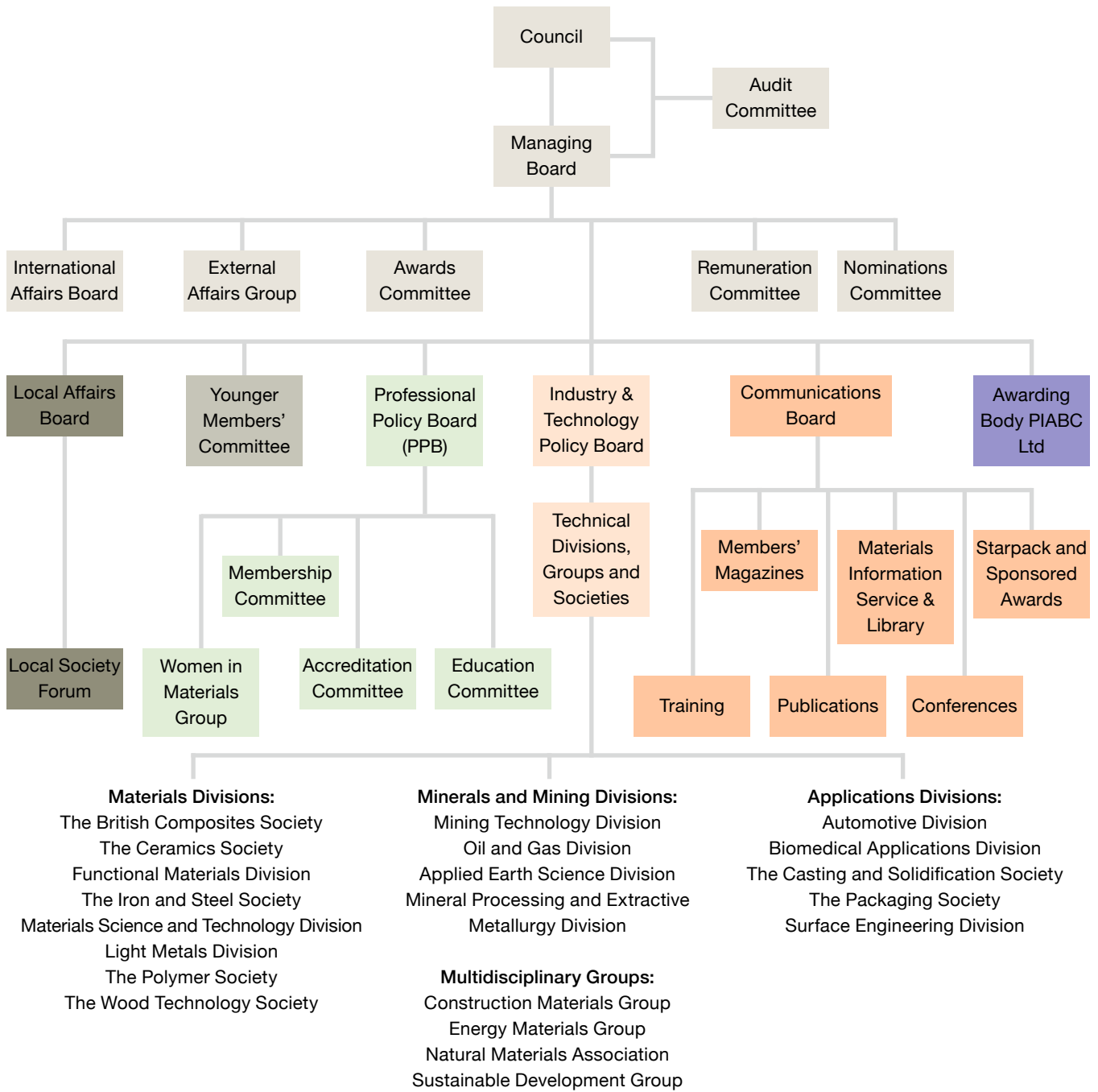
- Technical Communities Board (currently Industry and Technology Policy Board)
- Professional Standards and Development Board (currently Professional Policy Board)
- Members' Board (currently Local Affairs Board)
- International Affairs Board
- Younger Members' Committee
- Commercial Services Board (currently Communications Board)

An additional two members will be elected from the Advisory Council and two members co-opted to reinforce areas of expertise.

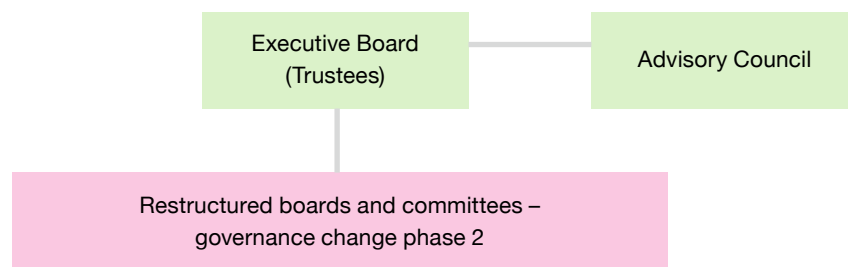
The method of appointment for the officers of the Institute (President, Vice-Presidents and Honorary Treasurer) will not change from current practice, which is led by the Nominations Committee.



### IOM3 current structure



### Proposed new structure



## Objectives and activities

The objects of the Institute, as set out in the Royal Charter, shall be: To advance and develop all aspects of the science, engineering and technology of the discovery, exploration, development, characterisation, exploitation, processing, application and recycling of materials, minerals and fuels; To further and co-ordinate education, training and practice in these disciplines and to facilitate the acquisition, preservation and dissemination of knowledge pertaining to these disciplines. In pursuing these objects in so far as they may be similar to those of existing organisations, the Institute shall use its best endeavours to co-operate with them and to ensure that its activities are complementary to those of such organisations.

Through our activities we aim to:

- Raise the profile of our sector as a technology vital to the wealth of the nation
- Provide a central resource of expertise and information
- Support and encourage education in materials, minerals and mining to attract young people to the profession
- Disseminate information through conferences, events, publications, online resources, social media
- Provide networking opportunities through technical, local and other activities to increase interaction between industry, academia and government
- Increase the visibility of new technology to industry
- Provide our members with benefits, services and opportunities to support their careers

22 special interest groups (see page 35) act as a focus of expertise within the broad range of technical sectors embraced by the Institute. Each group holds regular meetings and, through its supporting network of committees and members, organises a programme of events to promote and develop its discipline. Each also maintains its own online microsite and communicates its activities to members and non-members alike through web content, newsletters and social media. Events organised by the technical groups are open to all and serve to inform about the latest developments within the discipline as well as providing networking opportunities for people from academia, industry and government, often in an international context. Networking events attract non-members from the UK and overseas, who often make up at least 75% of the event audience.

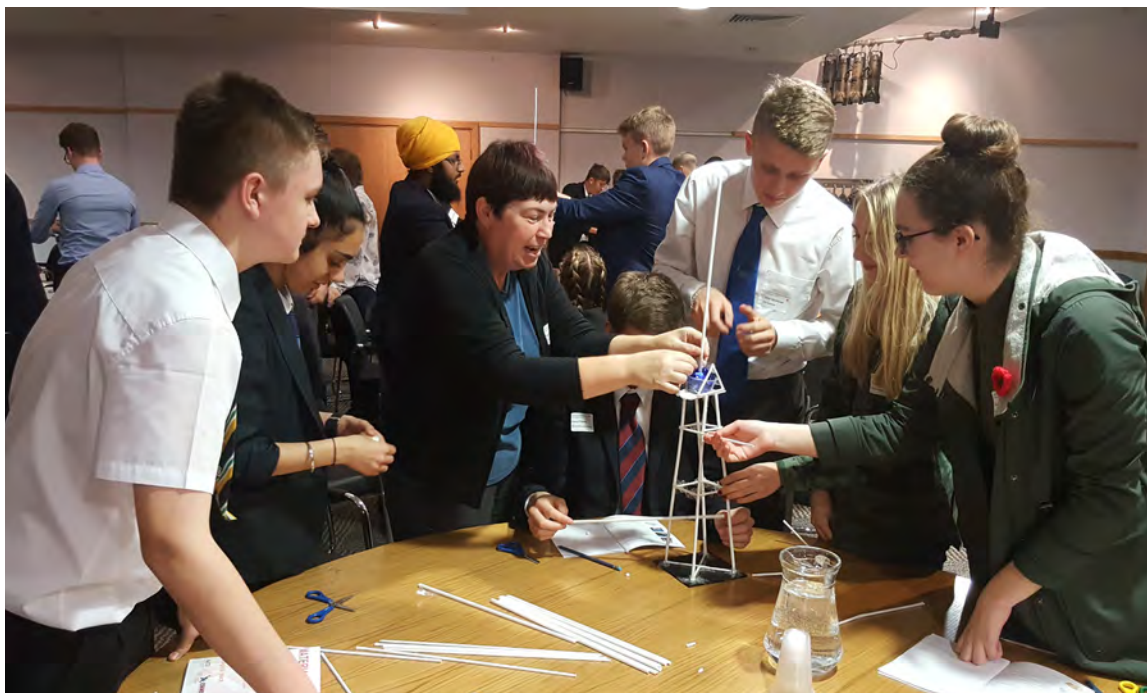
A network of affiliated societies in the UK and overseas provides activities at a local level, delivering a regular programme of evening lectures, site visits and seminars that are open to all. Some affiliated societies also engage with local schools, universities and businesses to provide valuable support for teaching and learning.

The Institute has an active education programme to attract young people into a career in the materials, minerals and mining science, engineering and technology sector. Our Schools Affiliate Scheme (with over 1,000 registered schools) provides help, advice and teaching materials free of charge to schools and the education team regularly attends schools and careers fairs. Our schools presentations have so far been delivered to over 74,000 pupils throughout the UK. The Education team also organises study days for teachers and events to allow older pupils to interact with young people already working in the sector. The Institute accredits a number of university, college and industry courses in the UK and overseas, and provides a special low cost membership package for undergraduates, which is often sponsored by local societies or by their university. A thriving Younger Members' Committee organises regular events for students and younger members. A relatively recent addition to our activities, the Women in Materials group promotes networking for women in the materials profession and strives to provide support for women in STEM careers.

The Institute's divisions, boards and committees are all composed of volunteers mostly drawn from the Institute's membership, who freely give their time and expertise to further the Institute's professional activities, develop its communities and provide peer review processes where needed. The Institute depends on the engagement of its members in the broad range of its activities and could not deliver its objectives effectively without their significant contribution.



A high proportion of students participating in IOM3 schools outreach events go on to study the subject at university



IOM3 has a long-running and successful programme of schools outreach through its Schools Affiliate Scheme. Visits to schools are complemented by events for teachers, sixth formers and year 10 pupils to introduce them to the subject of materials, minerals and mining

Members of the Institute play a prime role in promoting our objects and providing public benefit. Accordingly, a wide range of member services and benefits have been developed in pursuance of our objectives and to attract newcomers to the Institute. Benefits of membership include professional recognition, networking opportunities to share knowledge and experience, free materials information services, a members' magazine, a members' business centre and use of facilities, discounted conference fees, training courses and publications, and additional online services. The Institute provides support to its worldwide membership through its UK offices, its technical divisions and societies, and its network of affiliated local societies. Career progression is recognised through various of grades of membership and the Institute is licensed to deal with applications for Chartered Engineer, Chartered Scientist, Chartered Environmentalist, Incorporated Engineer, Engineering Technician, Registered Scientist and Registered Science Technician status. The Institute collaborates with many like-minded societies in the UK and overseas.

The Institute works closely with government and EC departments particularly in relation to the delivery of new technology to industry. This work has enhanced the reputation of the Institute and we are now seen as a first port of call in our area of expertise. We are also increasingly called upon by the national media to provide comment or signposting for high profile news stories as well as technical articles for the specialist press. The Institute maintains an extensive resource of technical and historical publications that form the core of its information and library services, a source of expertise accessible to all. The Materials Information Service provides consultancy and advice services to anyone who needs access to expertise in materials, both individuals and organisations. Of the 1,500 enquiries routinely handled

each year, 50% originate from the UK public. Our Industry Affiliate Scheme allows small and medium sized enterprises to become company members of IOM3 with direct access to its information and consultancy services.

Through its subsidiary, IOM Communications Ltd, the Institute publishes technical books, learned journals and member magazines and organises conferences on materials, minerals and mining related subjects. The publishing of technical books and learned journals is outsourced to Taylor & Francis (formerly Maney Publishing). Access to this material is available to both members and non-members. In-house teams publish the member magazines and organise the majority of conferences. IOM Communications Ltd also operates information services and provides consultancy advice on materials. All these services are fundamental in achieving the Institute's objectives.

Stimulating innovation in the use and application of materials, the Institute organises both UK and worldwide competitions to develop a broad understanding of the importance of materials and minerals. Non-members are encouraged to take part in competitions related to soft skills, the use of plastics and innovations in packaging, and such events engage with schools, students and businesses from the UK and Europe. Separately the Institute provides an extensive range of awards both to members and non-members who have provided outstanding contributions to the community that the Institute supports.

There is a regular programme to ensure that employees are involved in the direction and progress of the Institute. Employees are consulted and kept fully informed on issues of concern to them. Staff training and development appropriate to the Institute's goals is assessed on a regular basis and provided both internally and externally.



## Officers and Council members (from 1 January 2017 to May 2018)

<b>President</b>	Mr M C Cox (from January 2017)
<b>Senior Vice-President</b>	Dr S M Best (from January 2017)
<b>Honorary Treasurer</b>	Dr M J May
<b>Vice Presidents</b>	Dr K Thornton Dr P J E Bischler (to January 2018) Mr N E Glover (from January 2018)
<b>Chairman of Managing Board and Past President</b>	Dr M A Hicks
<b>Chairman of Professional Policy Board</b>	Dr C W Corti
<b>Chairman of Industry and Technology Policy Board</b>	Mr K A Harrison
<b>Chairman of the Local Affairs Board</b>	Dr P J E Bischler
<b>Chairman of Younger Members' Committee</b>	Dr K Thornton (to February 2018) Dr S Cruchley (from February 2018)
<b>Chairman of International Affairs Board</b>	Mr B D Lye

### Council members representing corporate members from the regions

<b>Scotland</b>	Dr C S Hindle
<b>North East</b>	Vacancy
<b>North West</b>	Vacancy
<b>Midlands</b>	Mr D R Evetts
<b>South East</b>	Vacancy
<b>South West &amp; Wales</b>	Vacancy

### Council members representing all corporate members

<b>Professional Members &amp; Members</b>	Dr J R Wilcox
<b>Honorary Fellows &amp; Fellows</b>	Vacancy
<b>Associate Members</b>	Dr S O Matthews
<b>Technician Members</b>	Mr S L J Bellaby

### Council members representing disciplines

<b>Metals</b>	Dr K A Ridal
<b>Ceramics</b>	Professor J G P Binner
<b>Plastics &amp; Rubber</b>	Mr K L Forsdyke
<b>Minerals &amp; Mining</b>	Mr R G Siddall

### Divisional board chairmen

<b>Applied Earth Science</b>	Mr J J Aldridge
<b>Automotive Applications</b>	Mr A Haggie (to March 2018) Mr J S Hayes (from March 2018)
<b>Biomedical Applications</b>	Prof A L Lewis
<b>The British Composites Society</b>	Dr D Kells (from March 2017) Mr E G Shahidi (to March 2017)
<b>The Casting &amp; Solidification Society</b>	Professor Z Fan (to November 2017) Dr S A Butler (from November 2017)
<b>The Ceramics Society</b>	Dr A M McDermott
<b>Functional Materials</b>	Prof R A Dorey
<b>Light Metals</b>	Dr M R Clinch
<b>Materials Science &amp; Technology</b>	Prof M R Jolly
<b>Mineral Processing &amp; Extractive Metallurgy</b>	Mr A D Francis
<b>Mining Technology</b>	Mrs C A Blackmore
<b>The Packaging Society</b>	Mr C B Waterhouse (to December 2017) Mr I Davis (from March 2018)
<b>Oil &amp; Gas</b>	Dr A J Sturgeon
<b>The Polymer Society</b>	Dr A K Wood (to December 2017) Mr S Patrick (from December 2017)
<b>The Iron &amp; Steel Society</b>	Mr M J Steeper (to December 2017) Dr M S Brunnock (from March 2018)
<b>Surface Engineering</b>	Dr D S Rickerby
<b>The Wood Technology Society</b>	Mr J H Park

### Advisory Council members

Elected to serve when the first phase of governance change has been implemented (see page 34)

Mr B Edy, Mr J Sellors,  
Mr W J Tinsley, Dr C Fenn,  
Mr A Partridge

# Senior boards and professional advisors

## Managing Board

The Managing Board is chaired by the immediate past president and includes the following:

The President  
 Senior Vice-President  
 Honorary Treasurer  
 Vice Presidents  
 Chairman of IOM Communications Ltd  
 Chairman of Professional Policy Board  
 Chairman of Industry & Technology Policy Board  
 Chairman of Local Affairs Board  
 Chairman of International Affairs Board  
 Chairman of Younger Members' Committee  
 Chairman of PIABC  
 Chief Executive  
 Deputy Chief Executive (to July 2017)  
 Finance Director

## Board of Directors

### IOM Communications Ltd

The following served as directors during the year:

<b>Chairman</b>	Mr J C H Lewis
<b>Directors/trustees</b>	Dr A T Cole Dr M J May Mr K Shankland Prof A L Greer Dr S Garwood Dr A T Tinker
<b>Chief Executive and trustee</b>	Dr B A Rickinson
<b>Company Secretary</b>	Ms J Bugajeva

## Audit Committee

<b>Chairman</b>	Mr P J K Haslehurst Dr D Elliott (to May 2017) Mr C Hallas Mr S Patrick (to March 2018) Mr M Chapman Mr B A Bhat
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## Key management personnel

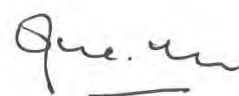
<b>Chief Executive</b>	Dr B A Rickinson
<b>Deputy Chief Executive</b>	Dr G Woodrow (to July 2017)
<b>Finance Director</b>	Ms J Bugajeva
<b>Director of Communications</b>	Dr I A N Stanciaszek
<b>Director of Sales and Marketing</b>	Ms K Harrison
<b>Director of Membership and Professional Development</b>	Mr I J Bowbrick
<b>Director of Administration</b>	Ms C M Tuke

## Professional advisors

<b>Bankers</b>	Lloyds Bank plc (to November 2017) Chelmsford Legg St OSC 1 Legg Street Chelmsford CM1 1JS  Santander UK plc (from December 2017) 4th Floor 100 Ludgate Hill London EC4M 7RE
<b>Solicitors</b>	Allen & Overy LLP One Bishops Square London E1 6AD  Howes Percival LLP 3 The Osiers Business Centre Leicester LE19 1DX
<b>Auditors</b>	RSM UK AUDIT LLP 25 Farringdon Street London EC4A 4AB
<b>Investment Managers</b>	Blackrock Investment Management (UK) Ltd 12 Throgmorton Avenue London EC2N 2DL
<b>Actuaries</b>	First Actuarial LLP Second Floor, The Square Basing View, Basingstoke Hampshire RG21 4EB

RSM UK Audit LLP has indicated its willingness to continue in office.

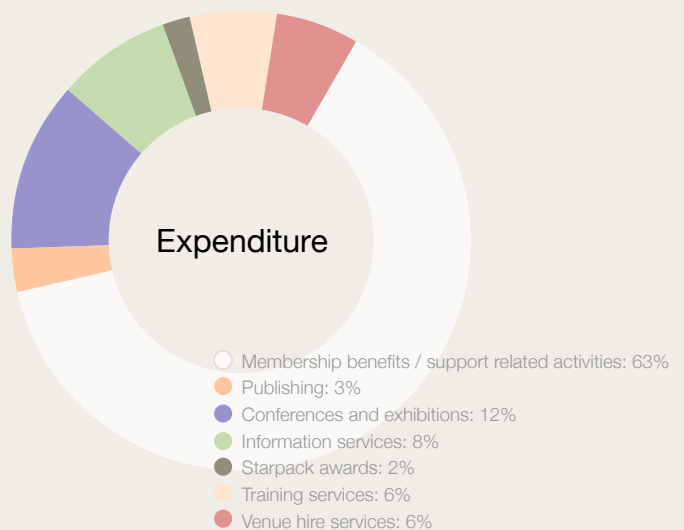
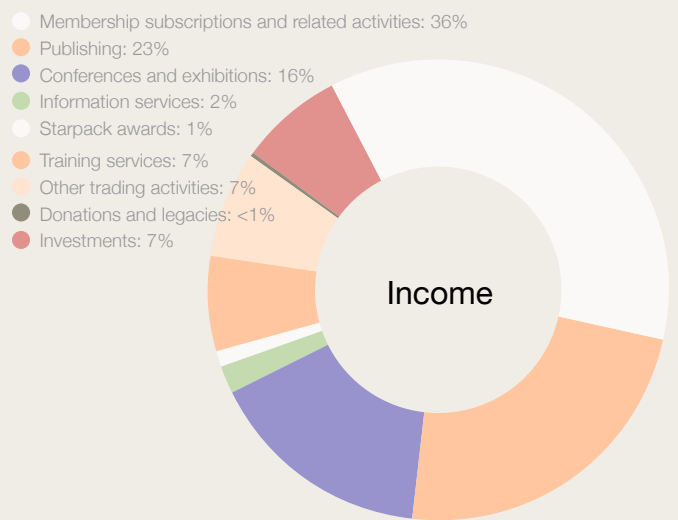
This report was approved by the trustees on 23 May 2018.  
Mr M C Cox



# Financial Statements



The following pages detail financial activities for the year ended 31 December 2017, reflecting operating performance, assets and obligations. Income and expenditure for the year are summarised in the charts below.



# Independent auditor's report to the trustees of the Institute of Materials, Minerals and Mining

## Opinion on financial statements

We have audited the financial statements of The Institute of Materials Minerals And Mining (the 'charity') and its subsidiaries (the 'group') for the year ended 31 December 2017 which comprise the Consolidated Statement of Financial Activities, the Consolidated and charity Balance Sheets, the Consolidated and charity Statements of Cash Flows and notes to the financial statements, including a summary of significant accounting policies. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards, including FRS 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland" (United Kingdom Generally Accepted Accounting Practice).

In our opinion the financial statements:

- give a true and fair view of the state of the group's and charity's affairs as at 31 December 2017 and of their incoming resources and application of resources for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- have been prepared in accordance with the requirements of the Charities Act 2011.

## Basis for opinion

We have been appointed as auditors under section 151 of the Charities Act 2011 and report in accordance with regulations made under section 154 of that Act.

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of our report. We are independent of the group and parent charity in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

## Conclusions relating to going concern

We have nothing to report in respect of the following matters in relation to which the ISAs (UK) require us to report to you where:

- the trustees' use of the going concern basis of accounting in the preparation of the financial statements is not appropriate; or
- the trustees have not disclosed in the financial statements any identified material uncertainties that may cast significant doubt about the group's or parent charity's ability to continue to adopt the going concern basis of accounting for a period of at least twelve months from the date when the financial statements are authorised for issue.

## Other information

The trustees are responsible for the other information. The other information comprises the information included in the Annual Report other than the financial statements and our auditor's report thereon. Our opinion on the financial statements does not cover the other information and, we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether there is a material misstatement in the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

## Matters on which we are required to report by exception

We have nothing to report in respect of the following matters where the Charities Act 2011 requires us to report to you if, in our opinion:

- the information given in the financial statements is inconsistent in any material respect with the Trustees' Report; or
- sufficient accounting records have not been kept by the parent charity; or
- the parent charity financial statements are not in agreement with the accounting records and returns; or
- we have not received all the information and explanations we require for our audit.

## Responsibilities of trustees

As explained more fully in the Statement of Trustees' responsibilities set out on page 32, the trustees are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the trustees determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the trustees are responsible for assessing the group's and parent charity's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the trustees either intend to liquidate the group or parent charity or to cease operations, or have no realistic alternative but to do so.

## Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is provided on the Financial Reporting Council's website at <http://www.frc.org.uk/auditorsresponsibilities>. This description forms part of our auditor's report.

## Use of our report

This report is made solely to the charity's trustees, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the charity's trustees those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the charity and the charity's trustees as a body, for our audit work, for this report, or for the opinions we have formed.

RSM UK AUDIT LLP  
Statutory Auditor  
Chartered Accountants  
25 Farringdon Street  
London  
EC4A 4AB

Date: 6 June 2018

RSM UK AUDIT LLP is eligible to act as an auditor in terms of Section 1212 of the Companies Act 2006



## Consolidated statement of financial activities for the year ended 31 December 2017

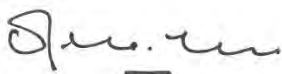
	Notes	Unrestricted funds		Restricted funds	Permanent endowment	Total funds 2017	Total funds 2016
		General £'000	Designated £'000	£'000	£'000	£'000	£'000
<b>INCOME AND ENDOWMENTS FROM:</b>							
Donations and legacies	4	-	-	12	-	12	-
Charitable activities							
Membership and related activities		1,507	-	-	-	1,507	1,459
Charitable trading activities	3	2,041	-	-	-	2,041	1,618
Other trading activities	5	309	-	-	-	309	180
Investments	6	239	2	54	-	295	285
<b>Total income</b>		<b>4,096</b>	<b>2</b>	<b>66</b>	<b>-</b>	<b>4,164</b>	<b>3,542</b>
<b>EXPENDITURE ON:</b>							
Raising funds	5	289	-	-	-	289	161
Charitable activities							
Membership and related activities		2,938	32	28	-	2,998	3,076
Charitable trading activities	3	1,448	-	-	-	1,448	1,290
Other		-	-	-	-	-	6
<b>Total expenditure</b>	<b>7</b>	<b>4,675</b>	<b>32</b>	<b>28</b>	<b>-</b>	<b>4,735</b>	<b>4,533</b>
<b>Net gains on investments</b>		<b>553</b>	<b>6</b>	<b>102</b>	<b>-</b>	<b>661</b>	<b>886</b>
<b>Net income/(expenditure)</b>		<b>(26)</b>	<b>(24)</b>	<b>140</b>	<b>-</b>	<b>90</b>	<b>(105)</b>
<b>Other recognised gains/(losses):</b>							
Gains on revaluation of fixed assets		-	84	-	-	84	84
Actuarial losses on defined benefit pension scheme		(181)	-	-	-	(181)	(513)
<b>NET MOVEMENT IN FUNDS</b>		<b>(207)</b>	<b>60</b>	<b>140</b>	<b>-</b>	<b>(7)</b>	<b>(534)</b>
<b>Reconciliation of funds</b>							
Total funds brought forward		4,321	13,574	2,150	33	20,078	20,612
<b>TOTAL FUNDS CARRIED FORWARD</b>		<b>4,114</b>	<b>13,634</b>	<b>2,290</b>	<b>33</b>	<b>20,071</b>	<b>20,078</b>

## Consolidated and charity balance sheets as at 31 December 2017

	Notes	Group		Institute	
		2017 £'000	2016 £'000	2017 £'000	2016 £'000
<b>FIXED ASSETS</b>					
Intangible assets	9	196	278	180	262
Tangible assets	10	13,946	14,016	13,946	14,016
Investments	11	9,620	8,958	9,620	8,958
<b>Total fixed assets</b>		<b>23,762</b>	<b>23,252</b>	<b>23,746</b>	<b>23,236</b>
<b>CURRENT ASSETS</b>					
Stock and work in progress	13	67	51	2	3
Debtors	14	336	577	152	188
Cash at bank and in hand		126	497	2	123
		529	1,125	156	314
<b>CREDITORS: Amounts falling due within one year</b>	15	<b>(1,306)</b>	<b>(1,683)</b>	<b>(1,280)</b>	<b>(1,218)</b>
<b>NET CURRENT (LIABILITIES)</b>		<b>(777)</b>	<b>(558)</b>	<b>(1,124)</b>	<b>(904)</b>
<b>NET ASSETS EXCLUDING PENSION LIABILITY</b>		<b>22,985</b>	<b>22,694</b>	<b>22,622</b>	<b>22,332</b>
Defined benefit pension scheme liability	22.3	(2,914)	(2,616)	(2,914)	(2,616)
<b>TOTAL NET ASSETS</b>	16	<b>20,071</b>	<b>20,078</b>	<b>19,708</b>	<b>19,716</b>
<b>THE FUNDS OF THE CHARITY</b>					
<b>ENDOWMENT FUNDS</b>	17	33	33	33	33
<b>RESTRICTED INCOME FUNDS</b>					
Restricted funds	18	2,290	2,150	2,290	2,150
<b>UNRESTRICTED FUNDS</b>					
General funds		4,114	4,321	3,751	3,959
Designated funds	19	13,277	13,301	13,277	13,301
Revaluation reserve		357	273	357	273
<b>TOTAL CHARITY FUNDS</b>		<b>20,071</b>	<b>20,078</b>	<b>19,708</b>	<b>19,716</b>

The financial statements on pages 44 to 70 were approved and authorised for issue by the trustees on 23 May 2018 and signed on their behalf by:

Mr M C Cox, Trustee and President 2017–18



Dr M J May, Honorary Treasurer



## Consolidated and charity statement of cash flows for the year ended 31 December 2017

	Notes	Group		Institute	
		2017 £'000	2016 £'000	2017 £'000	2016 £'000
<b>Cash flows from operating activities:</b>					
<b>Net cash (used in) operating activities</b>	<b>T1</b>	<b>(689)</b>	<b>(778)</b>	<b>(442)</b>	<b>(910)</b>
<b>Cash flows from investing activities:</b>					
Dividends, interest and rents from investments		295	285	295	285
Purchase of intangibles		(3)	(19)	-	(19)
Purchase of property, plant and equipment		(19)	(106)	(19)	(106)
Proceeds from sale of investments		154	1,274	154	1,274
Purchase of investments		(154)	(425)	(154)	(425)
<b>Net cash (used in)/provided by investing activities</b>		<b>(371)</b>	<b>231</b>	<b>(121)</b>	<b>99</b>
<b>Change in cash and cash equivalents in the reporting period</b>		<b>(371)</b>	<b>231</b>	<b>(121)</b>	<b>99</b>
<b>Cash and cash equivalents at the beginning of the reporting period</b>		<b>497</b>	<b>266</b>	<b>123</b>	<b>24</b>
<b>Cash and cash equivalents at the end of the reporting period.</b>	<b>T2</b>	<b>81</b>	<b>497</b>	<b>(43)</b>	<b>123</b>

### T1 Reconciliation of net income/(expenditure) to net cash flow from operating activities

<b>Net income/(expenditure) for the reporting period (as per the statement of financial activities)</b>		<b>90</b>	<b>(105)</b>	<b>89</b>	<b>(125)</b>
<b>Adjustments for:</b>					
Depreciation charges		258	254	255	250
Gains on investments		(661)	(886)	(661)	(886)
Pension costs		116	68	116	68
Dividends, interest and rents from investments		(295)	(285)	(295)	(285)
(Increase)/decrease in stocks		(16)	(35)	1	(1)
Decrease/(increase) in debtors		241	(75)	36	69
Increase/(decrease) in creditors		(423)	286	17	-
<b>Net cash (used in) operating activities</b>		<b>(689)</b>	<b>(778)</b>	<b>(442)</b>	<b>(910)</b>

### T2 Analysis of cash and cash equivalents

Cash in hand		126	497	2	123
Bank overdraft		(45)	-	(45)	-
<b>Total cash and cash equivalents</b>		<b>81</b>	<b>497</b>	<b>(43)</b>	<b>123</b>



## Accounting Policies

### Basis of financial statements

The Institute of Materials, Minerals and Mining (“the Charity”) is an unincorporated charity domiciled in England. The address of the Charity’s registered office and principal place of business is 297 Euston Road, London NW1 3AD.

The Charity’s principal activities and the nature of the Charity’s operations are described in the Trustees’ Report on page 36.

The financial statements have been prepared in accordance with Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) (effective 1 January 2015) – (Charities SORP (FRS 102)), the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) and the Charities Act 2011.

The financial statements have been prepared to give a ‘true and fair’ view and have departed from the Charities (Accounts and Reports) Regulations 2008 only to the extent required to provide a ‘true and fair’ view. This departure has involved following Accounting and Reporting by Charities preparing these accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (the Charities SORP (FRS 102) effective 1 January 2015) rather than the Accounting and Reporting by Charities: Statement of Recommended Practice effective from 1 April 2005, which has since been withdrawn.

The Institute of Materials, Minerals and Mining meets the definition of a public benefit entity under FRS 102. Assets and liabilities are initially recognised at historic cost or transaction value unless otherwise stated in the relevant accounting policy notes.

The financial statements are prepared in sterling, which is the functional currency of the Charity. Monetary amounts in these financial statements are rounded to the nearest £1,000.

### Preparation of the accounts on a going concern basis

The Council members confirm that at the time of approving the financial statements, there is a reasonable expectation that the Institute has adequate resources to continue in operational existence for the foreseeable future. In arriving at this conclusion the Council members have taken account of current and anticipated financial performance in the current economic conditions, and the Institute’s reserves position. For this reason, the going concern basis continues to be adopted in the preparation of the Institutes financial statements.

### Group financial statements

The financial statements consolidate the results of the wholly owned subsidiary companies and companies over which the Institute exercises dominant influence on a line-by-line basis. The members’ benevolent funds are not consolidated because they are under independent control.

Details of the Institute’s total incoming resources and net movement in funds are shown in the notes.

### Income

Income is recognised when the charity has entitlements to the funds, any performance conditions attached to the items of income have been met, it is probable that the income will be received and the amount can be measured reliably.

Subscription income represents the amount received in respect of current and past years. Amounts received in advance are carried forward to the following year and subscriptions in arrears have not been anticipated.

Income from conferences represents the amount receivable in respect of the current year. Amounts received in respect of conferences to be run in future years are carried forward to the following year.

Incoming resources from grants, where related to performance and specific deliverables, are accounted for as the charity earns the right to consideration by its performance.

Other income is recognised where there is entitlement, probability of receipt and the amount can be measured with sufficient reliability.

## Expenditure

Expenditure is recognised once there is a legal or constructive obligation to make a payment to a third party, it is probable that settlement will be required and the amount of the obligation can be measured reliably.

All expenditure is accounted for on an accruals basis and has been classified under headings that aggregate all costs related to the category. Where costs cannot be clearly attributed to particular headings they have been allocated to activities on a basis consistent with the use of the resources. Overheads have been allocated on the basis of head count.

Grants and prizes are awarded annually, mainly to affiliated societies and individuals.

## Allocation of support costs

Support costs comprise employment, establishment and administration costs in support of the charitable activities of the Institute. Allocations of these costs are made to the various activities of the Institute using standard rates based on staff time involved on each activity and facility usage. The basis on which support costs are allocated is set out in note 7.

## Donated services and materials

Where services are provided to the Institute as a donation that would normally be purchased from suppliers, this contribution is included in the financial statements at an estimate based on the value of the contribution to the Institute.

## Heritage Assets

A description of heritage assets held by the Charity is given in note 10. No value for these assets is recognised in these financial statements as the Trustees believe the cost of obtaining a valuation is not justified by the usefulness of such a valuation to users of the accounts.

## Tangible fixed assets depreciation and amortisation

Individual fixed assets are capitalised where the purchase price exceeds £1,500.

Depreciation is calculated by reference to the cost of fixed assets using the straight line method at rates considered appropriate having regard to their expected useful lives.

The bases used are:

Freehold Property	2% p.a.
Leasehold property	over the term of the lease
Furniture	15%-20% p.a.
Equipment	20%-33% p.a.

Impairment reviews are carried out where there is an indication that the recoverable amount of a fixed asset is below its net book value. Any such impairments are charged through the statement of financial activities in the year in which the impairment occurs.

Freehold property is accounted for using the revaluation method with the building element depreciated at a rate of 2% per annum and revalued to its market value at the end of the financial year. The net value of gains on revaluation is held in the revaluation reserve.

The trustees have reviewed the value of the Institute's freehold properties. They consider the cost of 297 Euston Road to be representative of its market value as at 31 December 2017. The trustees consider the accounting value of Shelton House as at the previous year end still to be representative of its market value at 31 December 2017.

## Intangible fixed assets

Intangible fixed assets, including patents, are amortised at rates calculated to write off the assets on a straight line basis over their estimated useful economic lives. Where it is not possible to make a reliable estimate of the useful life of an intangible asset, the life shall not exceed five years. Impairment of intangible assets is reviewed where circumstances indicate that the carrying value of an asset may not be fully recoverable.

## Investments and investment income

Investments are shown at market value at the balance sheet date. Realised and unrealised gains or losses are taken to the fund to which they relate via the SOFA in the year in which they arise. Income is included together with the tax related credit in the financial statements of the year in which it is receivable. Investment income and any gain or loss on the asset development and service development designated funds is taken to general funds.

## Stocks and work in progress

Sundry stocks are valued at cost. Work in progress is valued at cost and includes staff and other overheads.

## Debtors

Trade and other debtors are recognised at the settlement amount due after any trade discount offered. Prepayments are valued at the amount prepaid net of any trade discounts due translated at the rate of exchange ruling at the balance sheet date. Transactions in foreign currencies are recorded at an internal rate of exchange ruling at the date of the transaction. All differences are taken to the statement of financial activities.

## Cash at bank and in hand

Cash at bank and in hand includes cash and short term highly liquid investments with a short maturity of three months or less from the date of acquisition or opening of the deposit or similar account.

## Creditors and provisions

Creditors and provisions are recognised where the charity has a present obligation resulting from a past event that will probably result in the transfer of funds to a third party and the amount due to settle the obligation can be measured or estimated reliably. Creditors and provisions are normally recognised at their settlement amount after allowing for any trade discounts due.

## Financial instruments

The Institute only has financial assets and financial liabilities of a kind that qualify as basic financial instruments. Basic financial instruments are measured at their settlement value.

## Foreign currencies

Assets and liabilities denominated in foreign currencies are translated at the rate of exchange ruling at the balance sheet date. Transactions in foreign currencies are recorded at an internal rate of exchange ruling at the date of the transaction. All differences are taken to the statement of financial activities.

## Operating leases

The rentals under operating leases are charged to the statement of financial activities on a straight line basis over the lease term.

## Irrecoverable VAT

Irrecoverable VAT incurred in respect of the year is included in the statement of financial activities except for any amounts relating to capital expenditure which are included in the cost of fixed asset additions.



## Pension costs

The Institute participates in both a defined benefit scheme and defined contribution schemes.

Under the defined benefit scheme, the Institute makes contributions to The Institute of Materials Pension and Life Assurance Scheme. Pension costs are assessed in accordance with actuarial advice and based on the most recent actuarial valuation of the scheme. The scheme was closed to new entrants during 2002.

The assets of the scheme are held independently from the Institute in separate trustee administered funds. Full actuarial valuations, by a professionally qualified actuary, are obtained at least every three years, and updated to reflect current conditions at the balance sheet date. Fair value is based on the market price information and in the case of quoted securities is the published bid price. The pension scheme assets are measured at fair value. The pension scheme liabilities are measured using the projected unit method and discounted at the current rate of return on a high quality corporate bond that has been rated at AA or equivalent basis of equivalent term and currency. A pension scheme asset is recognised in the balance sheet only to the extent that the surplus may be recovered by reduced future contributions or to the extent that the Council have agreed a refund from the scheme at the balance sheet date. A pension liability is recognised to the extent that the group has a legal obligation to settle the liability.

The actuarial gain or loss arising in the year included under 'other recognised gains or losses'. Contributions are charged to expenditure so as to spread the regular cost of pensions over the expected working lives of the employees in the scheme. Any difference between the cumulative amounts charged and contributions paid is included as an asset or liability on the balance sheet.

The interest element of the defined benefit cost represents the change in present value of scheme obligations relating to the passage of time and is determined by applying a discount rate to the opening present value of the benefit obligation, valuing into account material changes in the obligation during the year. The expected return on plan assets is based on an assessment made at the beginning of the year of long-term market returns on scheme assets adjusted for the effect on the fair value of plan assets of the contributions received and benefits paid during the year. The difference between the expected return on plan assets and the interest costs is recognised in the consolidated SOFA (Statement of Financial Activities) as pension finance income or within resources expenses as appropriate.

Under the defined contribution schemes, the Institute contributes to group personal pension plans providing benefits for some employees. Pension costs are based on current salaries and charged to the statement of financial activities in the year in which they are due.

## Critical accounting estimates and assumptions

The Institute makes estimates and assumptions concerning the future. The resulting estimates and assumptions will, by definition, seldom equal the related actual results. The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are those used by the scheme actuary in calculating the Institute's defined benefit scheme liability (see note 22 for details).

Revaluation of freehold property: the revaluation is based on the building element of freehold properties depreciated at a rate of 2% per annum and revalued to its market value at the end of the financial year.

## Institute funds and reserves policy

Funds held by the Institute are:

Unrestricted general funds – these are funds that can be used in accordance with the charitable objects at the discretion of the Council. The Institute's policy is to maintain sufficient liquid reserves to cover the future expenditure of charitable and administrative costs for up to one year.

Designated funds – these are funds set aside by Council out of unrestricted general funds for specific future purposes or projects. The revaluation reserve within designated funds represents the value of gains on revaluation of freehold property.

Restricted funds – these are funds that can only be used for particular restricted purposes within the objects of the Institute. Restrictions arise when specified by the donor or when funds are raised for particular restricted purposes.

Permanent endowment fund – the income of the Mining Club is dealt with in a restricted fund that provides grants for travel, study or attendance at international conferences related to the minerals industry.

Further explanation of the nature and purpose of each fund is included in the notes to the financial statements.

## Notes to financial statements

1. Consolidated statement of financial activities for the year ended  
31 December 2016

	Notes	Unrestricted funds General £'000	Designated £'000	Restricted funds £'000	Permanent endowment £'000	Total funds 2016 £'000
<b>INCOME AND ENDOWMENTS FROM:</b>						
Donations and legacies	4	-	-	-	-	-
Charitable activities						
Membership and related activities		1,459	-	-	-	1,459
Charitable trading activities	3	1,618	-	-	-	1,618
Other trading activities	5	180	-	-	-	180
Investments	6	230	2	53	-	285
<b>Total income</b>		<b>3,487</b>	<b>2</b>	<b>53</b>	<b>-</b>	<b>3,542</b>
<b>EXPENDITURE ON:</b>						
Raising funds	5	161	-	-	-	161
Charitable activities		-				
Membership and related activities		3,030	-	46	-	3,076
Charitable trading activities	3	1,290	-	-	-	1,290
Other		6	-	-	-	6
<b>Total expenditure</b>	<b>7</b>	<b>4,487</b>	<b>-</b>	<b>46</b>	<b>-</b>	<b>4,533</b>
<b>Net gains on investments</b>		<b>745</b>	<b>8</b>	<b>133</b>	<b>-</b>	<b>886</b>
<b>Net income/(expenditure)</b>		<b>(255)</b>	<b>10</b>	<b>140</b>	<b>-</b>	<b>(105)</b>
<b>Transfers between funds</b>	<b>8</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Other recognised (losses)/gains:</b>						
Gains on revaluation of fixed assets		-	84	-	-	84
Actuarial losses on defined benefit pension scheme		(513)	-	-	-	(513)
<b>NET MOVEMENT IN FUNDS</b>		<b>(768)</b>	<b>94</b>	<b>140</b>	<b>-</b>	<b>(534)</b>
<b>Reconciliation of funds</b>						
Total funds brought forward		5,089	13,480	2,010	33	20,612
<b>TOTAL FUNDS CARRIED FORWARD</b>		<b>4,321</b>	<b>13,574</b>	<b>2,150</b>	<b>33</b>	<b>20,078</b>

## 2. Charity only statement of financial activities for the year ended 31 December 2017

	Unrestricted funds		Restricted funds	Permanent endowment	Total funds 2017	Total funds 2016
	General	Designated	£'000	£'000	£'000	£'000
<b>INCOME AND ENDOWMENTS FROM:</b>						
Donations and legacies	610	-	12	-	622	327
Charitable activities						
Membership and related activities	1,457	-	-	-	1,457	1,459
Other trading activities	-	-	-	-	-	-
Investments	239	2	54	-	295	285
<b>Total income</b>	<b>2,306</b>	<b>2</b>	<b>66</b>	<b>-</b>	<b>2,374</b>	<b>2,071</b>
<b>EXPENDITURE ON:</b>						
Raising funds	-	-	-	-	-	-
Charitable activities						
Membership and related activities	2,886	32	28	-	2,946	3,076
Other	-	-	-	-	-	6
<b>Total expenditure</b>	<b>2,886</b>	<b>32</b>	<b>28</b>	<b>-</b>	<b>2,946</b>	<b>3,082</b>
<b>Net gains/(losses) on investments</b>	<b>553</b>	<b>6</b>	<b>102</b>	<b>-</b>	<b>661</b>	<b>886</b>
<b>Net income/(expenditure)</b>	<b>(27)</b>	<b>(24)</b>	<b>140</b>	<b>-</b>	<b>89</b>	<b>(125)</b>
<b>Transfers between funds</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Other recognised (losses)/gains:</b>						
Gains on revaluation of fixed assets	-	84	-	-	84	84
Actuarial losses on defined benefit pension scheme	(181)	-	-	-	(181)	(513)
<b>NET MOVEMENT IN FUNDS</b>	<b>(208)</b>	<b>60</b>	<b>140</b>	<b>-</b>	<b>(8)</b>	<b>(554)</b>
<b>Reconciliation of funds</b>						
Total funds brought forward	3,959	13,574	2,150	33	19,716	20,270
<b>TOTAL FUNDS CARRIED FORWARD</b>	<b>3,751</b>	<b>13,634</b>	<b>2,290</b>	<b>33</b>	<b>19,708</b>	<b>19,716</b>

### 3. Charitable trading activities

	2017 £'000	2016 £'000
<b>TURNOVER</b>		
Publishing	1,506	1,485
Conferences and exhibitions	653	212
Information services	111	142
Technology improvement awards	39	48
Training services	286	285
	<b>2,595</b>	<b>2,172</b>
Internal contribution for costs included in sales	(554)	(554)
Incoming resources	2,041	1,618
<b>COST OF CHARITABLE TRADING ACTIVITIES</b>		
Publishing	664	682
Conferences and exhibitions	565	346
Information services	417	475
Technology improvement awards	88	49
Training services	268	292
	<b>2,002</b>	<b>1,844</b>
Internal contribution to sales	(554)	(554)
	<b>1,448</b>	<b>1,290</b>
<b>NET CONTRIBUTION FROM CHARITABLE TRADING ACTIVITIES</b>		
Publishing	842	803
Conferences and exhibitions	88	(134)
Information services	(306)	(333)
Technology improvement awards	(49)	(1)
Training services	18	(7)
	<b>593</b>	<b>328</b>



#### 4. Donations and legacies

	2017 £'000	2016 £'000
Donations for medal funds	12	-
	12	-

#### 5. Other trading activities

The Institute has a policy to generate income from its property facilities when not required for its own purpose. Related expenditure includes direct costs, employment costs and relevant overheads. These activities are undertaken by Materials Institute Services Ltd (see note 12: Subsidiary undertakings).

#### 6. Investment income

	2017		2016	
	<i>Unrestricted</i> £'000	<i>Restricted</i> £'000	<i>Unrestricted</i> £'000	<i>Restricted</i> £'000
Listed securities				
Fixed interest	88	26	68	25
UK equities	143	27	153	27
Overseas equities	10	-	11	-
Cash and cash equivalents	-	1	-	1
	241	54	232	53

## 7. Total resources expended

### Summary

	2017 £'000	2017 £'000	2016 £'000	2016 £'000
Direct charitable costs		1,539		1,168
Employment costs				
Salaries	1,757		1,879	
Social security costs	189		203	
Pension costs	228		350	
Temporary and other staff costs	85		60	
Redundancy costs	32		-	
		2,291		2,492
Establishment costs				
Property costs	271		259	
Information technology	122		121	
Depreciation and amortisation	255		250	
		648		630
Administration costs				
Travel, meeting and committee expenses	67		84	
Postage and telecommunications	77		65	
Printing and stationery	24		32	
Finance costs	25		13	
Professional fees	57		41	
Office and other costs	7		8	
		257		243
		4,735		4,533

### Breakdown of costs of activities

	Direct costs £'000	Support costs £'000	2017 Total £'000	2016 Total £'000
Charitable activities				
Membership and related services	1,170	1,828	2,998	3,076
Charitable trading activities	287	1,161	1,448	1,290
	1,457	2,989	4,446	4,366
Costs of generating funds				
Activities for generating funds	82	207	289	161
Investment management costs	-	-	-	6
	1,539	3,196	4,735	4,533

## Support cost breakdown by activity

	<i>Employment costs £'000</i>	<i>Establishment costs £'000</i>	<i>Admin costs £'000</i>	<i>2017 Total £'000</i>	<i>2016 Total £'000</i>
Membership and related services	1,310	371	147	1,828	1,936
Charitable trading activities	833	235	93	1,161	1,323
Activities for generating funds	148	42	17	207	106
	<b>2,291</b>	<b>648</b>	<b>257</b>	<b>3,196</b>	<b>3,365</b>

Employment costs are allocated to activities based on the cost of the estimated time spent on those activities.

Establishment and administration costs are apportioned to activities on the basis of employment costs.

Admin costs include governance, finance, HR, IT and sales and marketing costs, which are apportioned to activities on the basis of employment costs.

## Employee information

	<i>2017 No.</i>	<i>2016 No.</i>
The average number/(full time equivalent) employees during the year was	52 (48)	57 (53)
The number of employees who earned more than £60,000 per annum including benefits was:		
£60,001 - £70,000	2	2
£70,001 - £80,000	1	1
£160,001 - £170,000	1	1
The number of employees who earned more than £60,000 per annum and accrued benefits in the Institute's pension scheme was:		
Defined benefit scheme	1	1
Money purchase scheme	3	3

	<i>2017 £'000</i>	<i>2016 £'000</i>
Total remuneration of key management personnel, including benefits during the year was	560	572
Total employer National Insurance contributions paid on the key management personnel remuneration	60	64
Total amount of redundancy payments made during the year was	32	-
Contributions to the pension funds during the year were:		
Defined benefit scheme	54	135
Money purchase scheme	53	68

The key management personnel of the charity are detailed on page 39.

## Total expenditure includes

	2017 £'000	2016 £'000
Auditor's remuneration		
Audit fee – current year	33	36
Accountancy, taxation and other services	5	-
Travel expenses paid to 35 (2016: 27) Council Members for attending Council and other meetings	34	34
Travel expenses paid on behalf of 3 (2016: 8) Council Members for attending Council and other meetings	3	5
Operating lease charges	41	41

None of the Council members received any remuneration in either year.

	2017 £'000		2016 £'000	
The total future minimum lease payments under non-cancellable operating leases	Land and buildings	Other	Land and buildings	Other
Within one year	35	6	35	6
Within two to five years	124	22	140	5
After five years	147	-	174	-

## Other transactions with trustees

No members of the Council have directly or indirectly received any remuneration during the years ended 31 December 2016 and 2017.

## 8. Transfers between funds

There were no transfers between funds during 2017 or 2016.



## 9. Intangible fixed assets

	<i>Group and parent</i>	<i>Group only</i>	<i>Total</i>
	<i>Website and software</i>	<i>Patent costs</i>	<i>£'000</i>
	<i>£'000</i>	<i>£'000</i>	<i>£'000</i>
<b>Cost</b>			
1 January 2017	403	23	426
Additions in the year	-	3	3
31 December 2017	403	26	429
<b>Amortisation</b>			
1 January 2017	141	7	148
Charge for the year	82	3	85
31 December 2017	223	10	233
<b>Net book value</b>			
31 December 2017	180	16	196
31 December 2016	262	16	278

## 10. Tangible fixed assets

	<i>Freehold property</i>	<i>Short leasehold property</i>	<i>Furniture, fittings &amp; equipment</i>	<i>Total</i>
	<i>£'000</i>	<i>£'000</i>	<i>£'000</i>	<i>£'000</i>
<b>GROUP AND PARENT</b>				
<b>Cost or valuation</b>				
1 January 2017	13,476	2,219	1,189	16,884
Additions in the year	-	-	19	19
Disposals in the year	-	-	(376)	(376)
31 December 2017	13,476	2,219	832	16,527
<b>Depreciation</b>				
1 January 2017	-	1,935	933	2,868
Provided during the year	84	25	64	173
Revaluation	(84)	-	-	(84)
Disposals in the year	-	-	(376)	(376)
31 December 2017	-	1,960	621	2,581
<b>Net book value</b>				
31 December 2017	13,476	259	211	13,946
31 December 2016	13,476	284	256	14,016

## 10. Tangible fixed assets (continued)

In 2014 the trustees reviewed the Institute's accounting policies and agreed that the freehold land and buildings should be accounted for using the valuation method. The freehold property held at February 2014 was therefore revalued at its present market value of £300k by Ian Robertson MRICS on 20 February 2014. The next formal valuation of freehold properties is due to take place in 2019. In the interim the trustees will review the valuation on an annual basis. At 31 December 2017 the cost of freehold property was £13,476k.

In addition to the assets outlined above, the institute owns a collection of paintings and artefacts of historic and scientific importance which it deems to be heritage assets as defined under SORP (FRS 102). The collection comprises portraits, paintings, artefacts and sculptures, which the Institute has commissioned, acquired or received as a donation to either enhance the fabric of its building or to celebrate its history in science, engineering and technology. The Institute

maintains a register of these assets, however it is not practical to ascertain the costs of these assets. The Trustees consider that the cost of obtaining a valuation of the heritage assets is not justified by the usefulness of the information to the users of the accounts and to the charity for its own stewardship purposes, and in accordance with SORP (FRS 102) has not included them within the balance sheet.

Following the 2016 actuarial valuation of the Institute's defined benefit pension scheme and the deficit arising as a result, the Trustees of the pension scheme placed a fixed charge of £610k on the Institute's London Property (part of Freehold property). An initial £250k of the charge took effect in February 2016 and a further £360k took effect in December 2016. The charge was set to reduce deficit funding paid by the Institute to the pension scheme.

There are no other charges on any of the Institute's assets at present.

## 11. Investments

	<i>Group</i>		<i>Institute</i>	
	<i>2017</i>	<i>2016</i>	<i>2017</i>	<i>2016</i>
	<i>£'000</i>	<i>£'000</i>	<i>£'000</i>	<i>£'000</i>
<b>Analysis of movements in the year</b>				
Market value at 1 January	8,958	8,922	8,958	8,922
Additions at cost	154	425	154	425
Disposals at opening market value	(145)	(1,210)	(145)	(1,210)
Revaluations	653	821	653	821
Market value at 31 December	9,620	8,958	9,620	8,958
<b>At the balance sheet date, the portfolio was invested as follows</b>				
<i>Listed investments</i>				
Fixed interest	2,562	2,441	2,562	2,441
UK equities	6,526	6,005	6,526	6,005
Overseas equities	374	354	374	354
<i>Unlisted investments</i>				
Cash and cash equivalents	158	158	158	158
Subsidiary undertakings (note 12)	-	-	-	-
Market value at 31 December	9,620	8,958	9,620	8,958
<b>At the balance sheet date, the following investments represent more than 5% of the portfolio by market value</b>				
Charinco (UK fixed interest common investment fund)	2,413	2,258	2,413	2,258
Charishare (UK equities common investment fund)	3,287	3,366	3,287	3,366
Historical cost at 31 December	5,700	5,624	5,700	5,624

## 12. Subsidiary undertakings

The Institute has four subsidiary organisations:

- IOM Communications Ltd (company number 3285009, charity number 1059475), a charitable trading company limited by shares.
- The Institute of Packaging (company number 786826, charity number 295762), a company limited by guarantee.
- Materials Institute Services Ltd (company number 2882544), a company limited by shares.
- PIABC Ltd (company number 10371273) a company limited by shares.

All subsidiary companies are incorporated in the UK and file accounts with the Registrar of Companies. The accounts of IOM Communications Ltd, Materials Institute Services Ltd and PIABC Ltd are audited. IOM Communications Limited and Materials Institute Services Limited and PIABC Ltd are

wholly owned subsidiaries. The Institute holds 100 shares of £1 each in IOM Communications Limited and one share of £1 in PIABC Ltd. IOM Communications Limited holds 2 shares of £1 each in Materials Institute Services Limited, which were transferred from the Institute during the year. No premium was paid on acquisition.

IOM Communications Limited undertakes the charitable trading activities of the Institute of Materials, Minerals and Mining. Materials Institute Services Limited undertakes income generating activities of the Institute of Materials, Minerals and Mining. PIABC Ltd undertakes membership related activities on behalf of the Institute of Materials, Minerals and Mining. The Institute of Packaging did not trade during 2017 or 2016.

Summaries of the 2017 results and balance sheets of IOM Communications Limited, Materials Institute Services Limited and PIABC Ltd together with comparative figures for 2016, where applicable, are shown below.

### IOM Communications Limited

	2017 <i>Total</i> £'000	2016 <i>Total</i> £'000
<b>Results</b>		
Charitable trading activities	2,595	2,172
Total incoming resources	2,595	2,172
Charitable trading costs	2,002	1,844
Donation to the Institute	593	327
Total outgoing resources	2,595	2,171
Net incoming resources	-	1
Balances brought forward	341	340
Balances carried forward	341	341
<b>Balance sheets at 31 December</b>		
Fixed assets	16	16
Current assets	837	983
Creditors: amounts falling due within one year	(512)	(658)
Net current assets	341	341
Shareholders' funds	341	341

## 12. Subsidiary undertakings (continued)

### Materials Institute Services Limited

	<i>2017</i>	<i>2016</i>
	<i>Total</i>	<i>Total</i>
	<i>£'000</i>	<i>£'000</i>
<b>Results</b>		
Turnover	309	180
Total incoming resources	309	180
Costs	290	161
Donation to the Institute	17	-
Total outgoing resources	307	161
Net incoming resources	2	19
Balances brought forward	22	3
Balances carried forward	24	22
<b>Balance sheets at 31 December</b>		
Current assets	38	27
Creditors: amounts falling due within one year	(14)	(5)
Net current assets	24	22
Shareholders' funds	24	22

### PIABC Limited

	<i>Period ended</i>
	<i>31 Dec 2017</i>
	<i>Total £'000</i>
<b>Results</b>	
Turnover	88
Total incoming resources	88
Costs	87
Total outgoing resources	87
Net incoming resources	1
Balances brought forward	-
Balances carried forward	1
<b>Balance sheets at 31 December</b>	
Current assets	1
Creditors: amounts falling due within one year	-
Net current assets	1
Shareholders' funds	1

The net assets of The Institute of Packaging at 31 December 2016 and 2017 were £nil.



### 13. Stock and work in progress

	<i>Consolidated</i>		<i>Institute</i>	
	<i>2017</i>	<i>2016</i>	<i>2017</i>	<i>2016</i>
	<i>£'000</i>	<i>£'000</i>	<i>£'000</i>	<i>£'000</i>
Work in progress	64	48	-	-
Sundry stocks	3	3	2	3
	67	51	2	3

### 14. Debtors

Trade debtors	130	380	8	35
Other debtors	8	10	10	10
Prepayments and accrued income	198	187	134	143
	336	577	152	188

### 15. Creditors: Amounts falling due within one year

Trade creditors	224	186	181	151
Taxes and social security costs	53	119	53	114
Subscriptions and orders paid in advance	677	840	337	319
Other creditors and accruals	307	538	166	437
Amounts due to subsidiary companies	-	-	498	197
Bank overdraft	45	-	45	-
	1,306	1,683	1,280	1,218

### Subscriptions and orders paid in advance

At 1 January	840	617	319	338
Recognised in year	(726)	(525)	(311)	(336)
Provided for in year	563	748	329	317
At 31 December	677	840	337	319

## 16. Analysis of net assets between funds

At 31 December 2017

Group	Unrestricted funds		Restricted	Permanent	Total
	General £'000	Designated £'000	funds £'000	Endowment fund £'000	funds £'000
Intangible assets	196	-	-	-	196
Tangible fixed assets	601	13,345	-	-	13,946
Investments	7,653	82	1,852	33	9,620
Current assets	(116)	207	438	-	529
Current liabilities	(1,306)	-	-	-	(1,306)
Net assets before pension liability	7,028	13,634	2,290	33	22,985
Pension liability	(2,914)	-	-	-	(2,914)
Total net assets	4,114	13,634	2,290	33	20,071

Institute	Unrestricted funds		Restricted	Permanent	Total
	General £'000	Designated £'000	funds £'000	Endowment fund £'000	funds £'000
Intangible fixed assets	180	-	-	-	180
Tangible fixed assets	601	13,345	-	-	13,946
Investments	7,653	82	1,852	33	9,620
Current assets	(489)	207	438	-	156
Current liabilities	(1,280)	-	-	-	(1,280)
Net assets before pension liability	6,665	13,634	2,290	33	22,622
Pension liability	(2,914)	-	-	-	(2,914)
Total net assets	3,751	13,634	2,290	33	19,708

## At 31 December 2016

Group	Unrestricted funds		Restricted	Permanent	Total
	General £'000	Designated £'000	funds £'000	Endowment fund £'000	funds £'000
Intangible assets	278	-	-	-	278
Tangible fixed assets	755	13,261	-	-	14,016
Investments	6,992	151	1,782	33	8,958
Current assets	595	162	368	-	1,125
Current liabilities	(1,683)	-	-	-	(1,683)
Net assets before pension liability	6,937	13,574	2,150	33	22,694
Pension liability	(2,616)	-	-	-	(2,616)
Total net assets	4,321	13,574	2,150	33	20,078

Institute	Unrestricted funds		Restricted	Permanent	Total
	General £'000	Designated £'000	funds £'000	Endowment fund £'000	funds £'000
Intangible fixed assets	262	-	-	-	262
Tangible fixed assets	755	13,261	-	-	14,016
Investments	6,992	151	1,782	33	8,958
Current assets	(216)	162	368	-	314
Current liabilities	(1,218)	-	-	-	(1,218)
Net assets before pension liability	6,575	13,574	2,150	33	22,332
Pension liability	(2,616)	-	-	-	(2,616)
Total net assets	3,959	13,574	2,150	33	19,716

## 17. Permanent endowment fund

Group and Institute	Balance at 1 January 2017 £'000	Incoming resources £'000	Resources expended £'000	Investment gains/ (losses) £'000	Transfers between funds £'000	Balance at 31 December 2017 £'000
Mining Club	33	-	-	-	-	33

The income of the Mining Club is dealt with in a restricted fund that provides grants for travel, study or attendance at international conferences related to the minerals industry.

## 18. Restricted funds

Group and Institute	Balance at 1 January 2017 £'000	Incoming resources £'000	Resources expended £'000	Investment gains/ (losses) £'000	Balance at 31 December 2017 £'000
Stanley Elmore Fellowship	695	17	(6)	(6)	700
Andrew Carnegie Trust Fund	589	16	(4)	47	648
Bosworth Smith Trust	259	7	(7)	22	281
Tom Seaman Travelling Scholarship	255	7	(5)	21	278
Metals & Metallurgy Trust Fund	105	2	(1)	6	112
Edgar Pam Fellowship	104	3	(1)	7	113
G Vernon Hobson Bequest	66	2	(2)	5	71
Other funds	20	-	-	-	20
Prize funds	57	12	(2)	-	67
	2,150	66	(28)	102	2,290

The income of these restricted funds is to be used for the following purposes:

Stanley Elmore Fellowship, Bosworth Smith Trust, Edgar Pam Fellowship and G Vernon Hobson Bequest - to provide grants to assist post-graduate research, together with the unexpended balance of Mining Club income.

Andrew Carnegie Trust Fund – to support the award of scholarships and awards in the field of materials.

Tom Seaman Travelling Scholarship Fund is for the purpose of awarding scholarships to persons who are engaged in or associated with the coal mining industry.

The Metals & Metallurgy Trust Fund – to support the award or grants, scholarships and prizes in the field of metals and metallurgy.

Other funds include:

- A G Charleton Fund – to award prizes to deserving students at the Imperial College of Science Technology and Medicine.
- Centenary Student Sponsorship Fund – to provide membership benefits of the Institute to students.
- Dixie Dean Bursary Fund – to provide bursaries for foreign students associated with the packaging industry.

Prize funds include the R T Holland Fund, Dennis Chapman Medal Award, Frank Fitzgerald Medal and other funds set up for the award of medals or money to appropriate recipients.

Further information about scholarships, bursaries, professional and travel grants including details of case studies are shown on our website [www.iom3.org/scholarships-grants-and-bursaries](http://www.iom3.org/scholarships-grants-and-bursaries).



## 19. Designated funds

	<i>Balance at</i> 1 January 2017 £'000	<i>Incoming</i> <i>resources</i> £'000	<i>Resources</i> <i>expended</i> £'000	<i>Gains/</i> <i>(losses)</i> £'000	<i>Balance</i> <i>at 31</i> <i>December</i> 2017 £'000
Asset development fund	12,988	-	-	-	12,988
Revaluation reserve	273	-	-	84	357
Services development fund	88	-	(31)	-	57
Sir Julius Wernher Memorial Fund	134	2	(1)	6	141
Packaging education fund	50	-	-	-	50
Materials education	24	-	-	-	24
Robert A Moore Fund	17	-	-	-	17
	<b>13,574</b>	<b>2</b>	<b>(32)</b>	<b>90</b>	<b>13,634</b>

The designated funds have been set up for the following purposes:

- Asset development fund – representing selected amounts (at cost or market value less depreciation) invested in freehold and leasehold properties, furniture, equipment and computers used for the functional purposes of the Institute and amounts set aside to meet future capital requirements as deemed appropriate by the trustees.
- Services development fund – representing amounts designated by Council to develop and improve the quality of services provided by the Institute.
- Sir Julius Wernher Memorial Fund – representing amounts designated to provide for memorial lectures.
- Packaging education fund – representing amounts set aside to promote and develop packaging education.
- Materials education fund – representing income generated for and costs relating to the promotion of materials education in schools.
- Robert A Moore Fund – representing amounts designated to promote the aims of the Institute in the name of Robert A Moore.

## 20. Unrealised gains

	<i>Consolidated</i>		<i>Institute</i>	
	<i>2017</i> £'000	<i>2016</i> £'000	<i>2017</i> £'000	<i>2016</i> £'000
General fund	2,847	2,366	2,847	2,366
Designated funds	21	16	21	16
	<b>2,868</b>	<b>2,382</b>	<b>2,868</b>	<b>2,382</b>
Restricted funds	560	457	560	457
	<b>3,428</b>	<b>2,839</b>	<b>3,428</b>	<b>2,839</b>

## 21. Capital commitments

The Institute had no capital commitments at 31 December 2016 and 2017.

## 22. Pension schemes

### 22.1 Introduction

The Institute operates a funded defined benefit occupational pension scheme. The assets of the scheme are held separately from those of the Institute and are invested in an insured fund administered by the Prudential Assurance Company Limited and the Newton Exempt Fund administered by Mellon Fund Managers Limited. Under the terms of the Trust Deeds, the scheme is administered by the Trustees.

The scheme was closed to new members during 2002 and new employees are given the opportunity to join the group

personal pension arrangements with Royal London. The group personal pension plan is a defined contribution benefit scheme and complies with the stakeholder legislation.

At the year end, the scheme had eight current staff members and 81 deferred members.

Results of the most recent triennial actuarial valuations, at 1 January 2010, 2013 and 2016 showed the following results.

	<i>2010</i> £'000	<i>2013</i> £'000	<i>2016</i> £'000
Market value of the scheme's assets	6,404	7,361	13,970
Liability for projected accrued benefits	(6,925)	(9,201)	(15,593)
(Deficit)	(521)	(1,840)	(1,623)

Arrangements have been made for the deficit shown by the actuarial valuation at 1 January 2016 to be funded at the rate of:

- £42k by 31 December 2017. This was paid in a lump sum in March 2017.
- £33k payable during 2019.
- £67k p.a. increasing at 3.4% p.a. payable in equal monthly instalments from 1 January 2020 to 31 December 2031.

## 22.2 Principal actuarial assumptions

A valuation of the defined benefit pension scheme assets and liabilities at 31 December 2017 under FRS102 has been carried out by a qualified independent actuary. The projected unit valuation method has been used. The major financial assumptions used by the actuary were:

Years ended	2017 % p.a.	2016 % p.a.
Discount rate	2.60	2.80
Price inflation – pre-retirement (RPI)	3.10	3.40
Consumer Prices Inflation – pre-retirement (CPI)	2.10	2.40
Future salary increases	1.50	1.50
Rate of increases of pensions in payment (RPI)	3.00	3.10
Rates of increases of pensions in payment – (CPI)	1.80	1.80
Rate of increase for deferred pensioners	2.10	2.40

The following demographic assumptions were used in the valuation:

	Year ended 31/12/2017		Year ended 31/12/2016	
	Males	Females	Males	Females
Mortality pre-retirement	As for post retirement		As for post retirement	
Mortality post-retirement	S2PMA CMI 2016 1%		S2PMA CMI 2015 1%	
Life expectancy for a current 65 year old in 2017	86.9 years	88.7 years	86.9 years	88.9 years
Life expectancy at age 65 for an individual aged 45 in 2017	88.0 years	90.0 years	88.2 years	90.4 years

## 22.3 Amounts recognised in the balance sheet for defined benefit scheme

	2017 £'000	2016 £'000
Present value of defined benefit obligation	(16,542)	(16,188)
Fair value of scheme assets	13,628	13,572
Pension scheme liability recognised in the balance sheet	<u>(2,914)</u>	<u>(2,616)</u>

## 22.4 Changes in present value of defined benefit obligation

	2017 £'000	2016 £'000
Defined benefit obligation at 1 January	(16,188)	(14,859)
Service cost	(62)	(86)
Interest cost	(448)	(542)
Member contributions	(32)	(29)
Benefits paid	482	529
Actuarial gains/(losses)	(294)	(1,201)
Defined benefit obligation at 31 December	<u>(16,542)</u>	<u>(16,188)</u>

## 22.5 Changes in fair value of scheme assets

	2017 £'000	2016 £'000
Plan assets at 1 January	13,572	12,824
Return on plan assets (excluding net interest on defined benefit obligations)	113	688
Interest income	374	467
Employer contributions	98	93
Expenses (paid by the Fund)	(79)	-
Member contributions	32	29
Benefits paid	(482)	(529)
Plan assets at 31 December	<u>13,628</u>	<u>13,572</u>

## 22.6 Major categories of scheme assets

	%	%
Equities	33	16
Corporate bonds	12	7
Gilts	12	18
Properties	1	2
Cash	5	18
Annuities	31	33
Other assets	6	6
Total scheme assets	<u>100</u>	<u>100</u>



## 22.7 Amounts recognised in the statement of financial activities

Amounts recognised in net incoming resources are as follows:

	2017 £'000	2016 £'000
Current service cost	62	86
Expenses paid by the scheme	79	-
Net interest cost	74	75
Net charge	215	161

The actual return on scheme assets was a gain of £487k (2016: £1,155k)

The actuarial losses recognised in the statement of financial activities for 2017 were £181k and the cumulative losses recognised from 2002 to 2017 amounted to £3,109k.

The Institute expects to contribute £52k to its defined benefit pension scheme in 2018.

## 22.8 Outstanding pension contributions at the year end

Contributions for the defined benefit scheme amounting to £7k (2016 - £7k) were outstanding at the year-end. Contributions for the defined contributions schemes amounting to £6k (2016 - £8k) were outstanding at the year-end.









The global network for the materials cycle