

# IRSE ///

Institution of Railway Signal Engineers

# Annual Report

Number 108

1 January to 31 December 2020

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This Annual Report briefly describes the activities undertaken by the Institution of Railway Signal Engineers (IRSE) throughout the world during 2020. Our President from April 2020 has been Daniel Woodland from the United Kingdom.

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For up to date information about the Institution or its activities, or to download a membership application form, log on to the IRSE website [www.irse.org](http://www.irse.org).

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# IRSE

Institution of Railway Signal Engineers

## An introduction from our President

From March onwards, the 2020 year proved to be a difficult and most unusual one for many of our members, both in their personal and professional lives. With much of the world experiencing periods of COVID-19 related 'lockdown' and restrictions, our usual/familiar cycle of IRSE activities has also been impacted by this.

The AGM and annual dinner were the first IRSE event casualties, followed by the members lunch, convention and technical visits ... along, of course, with my own plans to visit local sections around the globe. It could have been a very quiet year for the institution, but I have been delighted to see how our staff and many volunteers have rallied around to find new, innovative, ways to facilitate continuing service of our memberships needs and fulfilment of our charitable aim to advance the science and practice of train control.

Back in 2018 (as I was becoming a Vice-President) we began to work on a 'beyond 2020' vision for the IRSE, which you can see summarised in the section on strategy on page 4 and laid out in full at [irse.info/strategy](http://irse.info/strategy). This encapsulated our vision, to 'Deliver Safe and Sustainable Global Railways' and five pillars of activity, or goals, ENGAGE, GROW, NETWORK, DEVELOP and ASSURE on which that is based.

Through 2020 it has been my privilege to lead the institution into that 'beyond 2020' period and we have been working to embed this vision into our planning and delivery to achieve the aims outlined in our Articles of Association. To draw out some highlights (which are by no means all that we have been doing):

### 1. Engage (with the sector and community)

2020 saw our first use of Civica (formerly electoral reform services ERS) to facilitate and run our Council election process – with nominations and voting now possible electronically. This was a significant step forward in engagement with our membership and represents the first stage in a review of our governance processes to explore how we can further improve representation of our global membership. I anticipate further changes coming out of this review to be implemented in 2021 and beyond. Looking further afield, throughout the year we have developed closer ties with our fellow professional institutions, the UK Railway Industry Association and Rail Business Daily, amongst others.



**“From March onwards, the 2020 year proved to be a difficult and most unusual one for many of our members”**

## **2. Grow (increase our membership)**

Recognising that the expertise and experience of IRSE members and prospective members are key to addressing many of the sectors challenges, our ability to support them in developing and applying their competence depends largely on getting them to engage and join. Delivering on the Grow pillar, the IRSE therefore launched working groups during 2020 to explore our value proposition (for members and licence holders) and fee structure – looking to explore how we can tune our offering to the industry and better market that globally. Expect to see changes arising from these working groups being implemented in coming years.

## **3. Network (facilitate interactions globally)**

As with all aspects of life, we have moved into online forms of activity and have now all become familiar with the plethora of online meetings, seminar and webinar tools! Delivering to the Network element, the programme of Presidential lectures has been able to continue as planned (completing George’s series on ‘Delivering Change’ and starting my own on ‘Complexities of Change’ in modern CCS systems), as have many local section events. By moving online, these have been able to attract wider audiences of both members and non-members. It has been pleasing to see higher attendances than we have for many years and participants joining from around the world, not just the area local to the event.

## **4. Develop (enhanced capability of the railway sector workforce)**

The IRSE filled the void left by the decision to cancel the 2020 Convention in Toronto by proposing a joint institution seminar on ‘Practical Integration of Automated Operation in Railways: A System of Systems Perspective’. I was personally delighted that the IMechE, IET and PWI joined with us in that event, enabling a far richer and more holistic review of the topic than we could have assembled alone, delivering a fantastic set of presentations and Q&A through September and October (and now available to all members via the IRSE website). With Presidential and Local Section presentations having continued online, we have seen a wealth of material become available to aid development of our members and the wider sector workforce. Our next challenge will be to find ways of conducting ‘virtual’ technical visits – a task which is already being worked on.

## **5. Assure (set and uphold standards for people and processes)**

Probably the most significant development for the IRSE over this year has been the movement of the IRSE Exams to an online format. This was (at least for our conservative industry) a radical move which required a huge effort from our staff and members of the Education and Professional Development and Examination committees – given that they only had a couple of months from realising that a physical invigilated exam would not be possible to having an online solution up and running, this was a really amazing achievement.

These highlights barely scratch the surface of all that has been going on within the institution and you will find details of more within the full annual report. My heartfelt thanks go out to our staff and volunteers for their significant efforts in keeping the institution active, relevant, and forward looking through all the trials of the year and despite all of the extra work, re-planning and challenges that has caused.

Dr Daniel Woodland, 2021

# The IRSE at a glance

# IRSE

The **Professional Engineering Institution** for all those engaged or interested in **railway signalling, control and communications** and allied disciplines

Over **5000** members in locations **across the world**

Providing world-class **presentations, seminars, conventions** and **conferences**

Industry leading competence assessment and **licensing** scheme

The world's leading **professional examination** for railway signalling, control and communications

**11** issues of **IRSE News** each year: our specialist railway signalling, control and communications magazine

**21 Sections** representing the needs of members in their geographic region or specialism

Accredited by the Engineering Council to add **Chartered Engineers, Incorporated Engineers and Engineering Technicians** to the Professional Register

Vibrant **Younger Members** Section

Run by **engineers** for **engineers**

Founded in **1912**

## Objectives of the Institution

The Institution's objectives are recorded in its Articles of Association. They can be traced back to the formation of the Institution in 1912 and are:

- a) The advancement for the public benefit of the science and practice of signalling by the promotion of research, the collection and publication of educational material and the holding of conferences, seminars and meetings, and
- b) The maintenance of high standards of practice and professional care amongst those working within the industry and the promotion of improved safety standards for the protection of the general public.

Although it might appear that the IRSE is concerned only with railway signalling, the full text of the objectives makes clear that all forms of train control and traffic management, and communications systems, are all within our scope of interest.

There is a clear emphasis in the objectives on 'public benefit'. This is most obvious in the sense of contributing to safety on the world's railways, where train control systems play a critical role. But we are also interested in

ensuring that railways are efficient, cost-effective and sustainable (in the widest sense). We meet our obligations to the public through the following principal mechanisms:

- The dissemination of knowledge, experience and good practice in the fields of railway signalling, control and communications and allied topics, to help ensure that those working in the profession do so with the best available knowledge for the safe, efficient and cost-effective construction and operation of the world's railways.
- The provision and management of the IRSE Licensing Scheme to assure the competence of those working in the profession. The Scheme is focused predominantly, but not exclusively, on ensuring safety in the design, construction, testing and maintenance of signalling and telecommunications systems.
- Our Code of Professional Conduct, with which IRSE members are required to comply in the course of their work. It emphasises topics such as personal responsibility for work undertaken or managed by

IRSE members, the importance of safeguarding the public interest (particularly safety), environmental management, the efficient use of resources, handling conflicts of interest etc.

- Undertaking specific initiatives to help ensure the safety and efficiency of railways. By bringing the IRSE Sections around the world together, we will facilitate the sharing of best practice and new initiatives to help engineers and others enhance their knowledge and professionalism. We will continue to reach out and grow our network of professionals around the world to harness the collective knowledge they possess for the benefit of all operators and users of railway transport.

The financial resources of the Institution are applied to achieve the objectives of the Institution, in addition to which members make a significant contribution to delivering the Institution's aims by their volunteer activities. The Institution has only a small number of full and part-time staff and most of the activities are organised by our members acting in a voluntary capacity.

# Our Strategy

In 2020 we launched our new five-year rolling strategic plan 'Beyond a 2020 vision', details are available on the website at [irse.info/strategy](http://irse.info/strategy). The objective of making the IRSE accessible to members 24 hours a day seven days a week throughout the year, as long as you have an internet connection, was timed perfectly to address the challenges of the COVID-19 pandemic. You will read in this report how the Institution has swiftly responded to the challenges of maintaining services to the membership during this difficult time.

The rate of pace of change is testament to the commitment the staff and volunteers have made to continue to bring high quality information and services to you the membership.

Looking to the future the Council and its sub committees, as part of their governance activities have ensured that they continue monitor our progress and growth in the value we provide to the signalling and telecommunications community around the world.

Progress had to be halted in developing the international dimension of the Institution, with plans for the Toronto Convention in 2020 and work on ASPECT 2021 severely hampered by the pandemic. We obtained several video conferencing licences to support the Local Sections, and the work of the Local Section Coordinator has been essential in helping to roll this out internationally.

As part of the focus on new entrants into the sector, the Institution is working with training providers in the area of apprenticeships. We continue to offer our services as an End Point Assessment service. There will be developments into 2021 to support candidates in completing their programmes.

The IRSE vision is to:  
*Deliver Safe and Sustainable Global Railways*



To **ENGAGE** with and **GROW** a global **NETWORK** of railway signal and telecommunications engineers in order to **DEVELOP** and **ASSURE** high standards of ethics, knowledge, competence and safety in all aspects of train control.

## The five key elements of the IRSE strategic plan are

### Engage

Digital platform for a global professional body 24/7/365, early careers support, communicate best practice in ethics, diversity, inclusion, produce technical documentation, knowledge transfer activities.

### Grow

Peer recognition, professional development, practice support and guidance, support in professional obligations, Advance profession.

### Network

Industry Partnership Scheme, global local section development, International Technical Committee support, conferences, seminars and conventions, facilitate collaboration, latest information and news.

### Develop

Signpost professional development, awards & bursaries, upskilling and re-skilling, examination, apprenticeships, promote benefits to the public.

### Assure

International professional recognition, flexible pathways to professional registration, offer regulation in professional conduct, operate the licensing scheme.



# Governance

## Council

The IRSE is governed by an elected Council of twenty-one Corporate Members, led by the President, who are the Trustees of the Institution.

Six meetings of the Council were held during the year in which the business of the Institution was conducted. The Articles of Association permit the current Chairs of all local sections, both in and outside the UK, and also Country Vice-Presidents to attend Council meetings. During the year a number of Chairs and Country Vice-Presidents attended meetings using video conference facilities due to COVID-19 restrictions, with the exception of the meetings in February and March which were held in person.

In addition to conducting all the normal Council business during the year, Council discussions included the following topics:

- Adoption of the 'Beyond a 2020 vision' strategy and the associated Implementation Plan.
- Agreement to review the Governance documents.
- Implement a fees structure working group to start in 2021.
- Establishing a succession plan for the office of President.
- Consideration of changes to voting to facilitate greater representation of members around the globe.

Council also receives and reviews the annual report from each of the international Sections of the IRSE.

## Committees

The Institution has a number of Committees which are accountable to Council, through which our activities are managed. The principal Committees and their relationships to Council are shown in the diagram below. In addition, ad-hoc working groups are formed from time to time which focus on specific tasks.

### Audit

#### External audit

A number of areas of the Institution's business are audited on a regular basis by various external audit bodies:

- All areas of finance are subject to audit annually by independent external auditors who submit their report to the Annual General Meeting.
- The Licensing Scheme is subject to an annual external audit by the United Kingdom Accreditation Service (UKAS).
- As a registered Charity, the Institution is subject to periodic external review by the Charity Commission.
- As the Institution is licensed by the Engineering Council in the UK to register Chartered and Incorporated Engineers and Engineering Technicians, it is subject to a review every five years by the Engineering Council in order to ensure compliance with their registration standards.

#### Internal audit

The IRSE's internal Audit Committee undertakes independent audits to complement the external audits, in

order to ensure the Institution is running efficiently and effectively. The audits focus primarily on the role and remit of each of the principal Committees of the Institution.

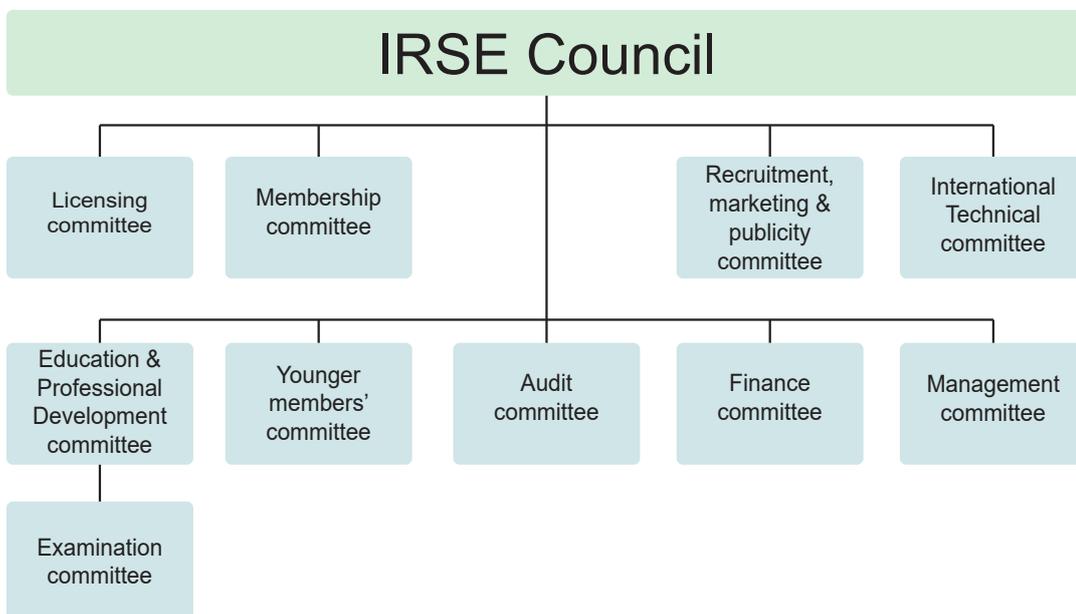
The Audit Committee normally performs two audits per annum. Each audit results in a report, which is presented to the Chair of that Committee and subsequently the Council, which uses the recommendations to improve the management of the Institution's affairs for public benefit and for the benefit of its members. The Institution maintains a Risk Register, which is reviewed annually by Council, and this is used as the basis for audit.

## IRSE Enterprises

IRSE Enterprises Ltd is the trading company wholly owned by the Institution. The trading company handles a number of activities which are associated with but outside the direct scope of the charity. The Directors of the company appointed for the year April 2020 to April 2021 were:

- Chair (Immediate Past President): George Clark.
- President: Daniel Woodland.
- Senior Vice President: Ian Bridges.
- Junior Vice-President: Andy Knight.
- Council representative: Steve Boshier.
- IRSE Treasurer: Andrew Smith.
- Company Secretary (CEO): Blane Judd.

Any profits from the company are, where possible, gift-aided back to the Institution.



## Sections

The IRSE Sections around the world exist by authority of the IRSE Council, and they operate in accordance with a set of Articles of Association (or Byelaws) that have been approved by Council. At the end of 2020 there were 23 sections in total. 15 Sections outside the UK in various parts of the world (Australasia, China, France, Hong Kong, India, Indonesia, Ireland, Japan, Malaysia,

Netherlands, North America, Singapore, Southern Africa, Swiss, Thailand) and six of which are UK-based. The North America Section includes the USA, Canada and Mexico. The Ireland Section includes both Northern Ireland and the Republic of Ireland.

Two other Sections also exist – the Younger Members' Section and the Minor Railways' Section. These are not geographically based, although their

activities are predominantly within the UK. Some geographical Sections also have younger members' groups.

Each Section has an organising Committee, with elected officers for key roles. Information about the activities of the Sections is provided elsewhere in this report.

# Professional development

Supporting professional development of IRSE members and prospective members throughout the world is a key objective of the IRSE.

To do this, we have Judith Ward, our Director of Operations, the Education and Professional Development Committee and the Examination Committee.

## IRSE Professional Examination

The IRSE professional examination is a Masters-level academic qualification which tests knowledge and understanding of railway systems with a particular emphasis on safety. A new module was introduced in October 2020, the Certificate in Railway Control Engineering Fundamentals, which covers all aspects of railway control engineering at a foundation level and is a stand-alone qualification.

To pass the full exam, to be known in future as the Advanced Diploma in Railway Control Engineering, candidates must pass four modules including a compulsory module on safety systems.

Passing the IRSE exam is one route to obtain either Associate Member or Member of the IRSE and it can 'top up' engineering or technology qualifications for professional registration with UK's Engineering Council. An accredited Bachelor's degree with honours plus IRSE exam may demonstrate knowledge and understanding for Chartered Engineer applicants and an accredited Higher National Diploma / Foundation Degree plus IRSE exam may demonstrate knowledge and understanding for Incorporated Engineer applicants.

Many volunteers run exam study groups, the independent exam forum website and support the Younger Members' exam workshops to provide support for prospective examination candidates.

To enable our exam candidates to sit the exam in 2020, Education and Professional Development Committee agreed to hold the exam remotely for the first time in the Institution's history, with 286 candidates sitting the exam on 3 October. This was an increase in the number of candidates, the majority of whom were sitting the new Certificate in Railway Control Engineering Fundamentals (module A). The quality of answers from candidates was similar to 2019, with the overall percentage of those achieving pass grade or higher was 57%. Candidates sat the exam across the globe, covering 16 geographic sections and several countries not covered by sections.

October 2020 was the final time candidates could sit numbered modules. From October 2021, four mandatory modules covering the whole syllabus to the same high standards will be available, the successful completion of which will be known as Advanced Diploma in Railway Control Engineering .

## Continuing Professional Development (CPD)

The Engineering Council requires that as of 2020, those who do not engage in the CPD monitoring process are removed from their register.

Information about the importance of developing and maintaining members' professional competence through CPD has continued to be provided through IRSE NEWS and the website.

The IRSE recommends the use of the Mycareerpath system for CPD planning, recording, reflecting and reviewing. More information about Mycareerpath is available on the IRSE website.

## Certified courses

The IRSE offers a process by which training providers can have their courses assessed and certificated by the IRSE.

This year ASAP Mobility Sdn (Malaysia), Signet Solutions (UK) and PM Training and Assessing (UK) gained IRSE certification for their courses covering railway signalling and telecommunications.

Other training providers are in the process of having their signalling and telecommunications courses assessed.

## Professional Registration

The IRSE is licensed by the UK's Engineering Council to register suitably qualified members as Chartered Engineer (CEng), Incorporated Engineer (IEng) and Engineering Technician (EngTech).

The requirements for these are defined by the Engineering Council for knowledge, understanding, competence, relevant work experience and commitment. Brief definitions are that: Engineering Technicians apply proven techniques and procedures to practical problems; Incorporated Engineers maintain and manage applications of current and developing technology; Chartered Engineers develop solutions to engineering problems using new or existing technologies and/or have technical accountability for complex systems with significant levels of risk.

## Apprenticeships

IRSE are End Point Assessment Organisation (EPAO) for two English apprenticeships: Rail Engineering Design Technician (Level 3) and Rail Engineering Technician (Level 3).

# Membership and Registration

Remote working due to the COVID-19 issues has been both a challenge and an opportunity for the Membership and Registration activity of the IRSE. With the ingenuity and flexibility of both staff and volunteers we have succeeded in continuing to effectively process applications for both membership and professional registration.

From late March the Membership Committee has been meeting online to assess applications for IRSE membership and Engineering Council registration and deal with procedural and policy matters. There were 305 successful membership applications, 130 for corporate graded and 175 for non-corporate grades, there have also been 72 members who have transferred to a different grade of membership.

The total number of members has remained static over the last year, with 4,918 members on 31 December 2020.

During 2020 the IRSE has also supported 29 engineers to achieve professional registration with Engineering Council, the UK regulatory body for the engineering profession – 13 Chartered Engineers (CEng), 2 Incorporated Engineers (IEng) and 14 Engineering Technicians (EngTech).



We have been continuing to encourage our membership to engage with us electronically by email and through the IRSE website which has been vital during 2020 with the continued disruption caused by the COVID-19 pandemic. We are still hoping to pursue the development of a fully automated online application process for membership but the progress of this has not been possible over the last year.

The Institution was sad to report the deaths of the following members during 2020: Brian Foster, Denys Dyson, Paul Hepworth, Christopher Mitchell, Vivian Brown, Timothy Howard, Michael Hynd, Yoshio Ishihara, Stephen Harris, Walter Cooper, Paul Coulson, John Franklin, Michael Horne, Richard Stokes, Ray Weedon, Kevin Boyd, Derek Brown, David Norton and Ian Page.

## Licensing

The IRSE Licensing Scheme continued to provide assurance for the competence of individuals to carry out technical safety critical or safety-related work on rail control systems throughout 2020. The Licensing Team was impacted by various factors relating to COVID-19 including staff working from home, a lack of access to the office and working with a slightly reduced team. Despite this, the team continued to deliver and the Scheme continues to provide a cross-industry accepted benchmark of competence for personnel.

Competence standards are reviewed at least five yearly and during 2020 nine licence standards were reviewed. Briefing notes were also published on a range of topics including:

- Revisions to 1.4.230 Signalling Maintainer and Fault Finder competence standard.
- Updates to 1.2, Signalling Installation Suite of Licences.
- Updates to the Licensing Standard, and a number of Licensing Procedures.

- Revisions to the Engineering Manager and Senior Engineering Manager suite of licences.
- Coronavirus (COVID-19) restrictions: extension to licence validity.

During the first half of 2020 the Scheme was managed by an interim Licensing Registrar, David Weedon, who stepped down from the role in November. Sarah Loutfi joined the Institution as the new Licensing Registrar in July working under the direction of the Licensing Committee, chaired by Colin Porter.

The Licensing Team was joined in December 2020 by a further Licensing Officer to assist with the processing of applications and will soon be joined by a Licensing Co-ordinator, providing an admin support function, a new role for the team.

During the year, a total of 1076 licences were issued, slightly lower than previous years.

There has been a significant impact of the COVID-19 situation on the number of

licence applications received and issued. A six month extension to the validity of licences was agreed at the beginning of the lockdown period, and that has had an effect.

There are currently c.5816 active licence holders, which represents a slow decrease in the total no of licences held (c.6800 at December 2019).

For operations within the UK, the Licensing Scheme continues to hold accreditation by the United Kingdom Accreditation Service against the competence standard for the certification of persons: ISO17024:2012, with four yearly re-accreditation successfully achieved during 2018.

IRSE Assessing Agents are approved and appointed for the purposes of performing assessments of candidates for licences, and they are an essential part of the Licensing Scheme. The number of approved assessing agencies remains at 26, with one new agency and one ceasing to operate during the year.

# Awards

The IRSE makes several awards each year. The majority of these are to recognise, reward and encourage the professional development of engineers, particularly those in the earlier stages of their careers. The purpose behind this is not simply to

assist their career development, but to promote high standards of engineering excellence, thereby contributing to the public benefit objectives of the Institution.

## Frank Hewlett Bequest and Alan Fisher Memorial Fund

Frank Hewlett was an Associate Member of the Institution. He died in September 2008 and left a very generous and substantial bequest to the Institution. In 2009 the IRSE Council launched an appeal to establish a memorial fund for Alan Fisher, who died unexpectedly during his Presidency of the Institution. The intention was to use the fund to support the development of young S&T engineers, particularly those outside the UK.

In normal times the income from the two funds is used predominantly to provide a number of travelling bursaries for younger members from all over the world to support their attendance at major IRSE events. For 2020, as a result of the pandemic, the funds paid for free places to be made available to younger members to on the virtual Rail Automation Seminar, run jointly by the IRSE, IET, IMechE and PWI. In total 32 places were provided to members from India, UK, Indonesia, Canada, Egypt, UAE, Australia, Nigeria, Hong Kong, South Africa and the Netherlands.

## Thorrowgood Scholarship

The Thorrowgood scholarship is awarded under a bequest of the late W J Thorrowgood (Past President) to assist the development of a young engineer employed in the signalling and telecommunications field of engineering.

The award is made to a candidate who has excelled in the IRSE professional examination and comprises an engraved medallion and funding for a study tour of railway signalling installations or signalling manufacturing facilities.

For the 2020 award no candidates achieved the necessary criteria in the 2019 examination.

## Dell Award

The Dell award is made annually under a bequest of the late Robert Dell OBE (Past President). It is awarded to a member of the Institution employed by London Underground (or its successor bodies) for achievement of a high standard of skill in the science and application of railway signalling. The award takes the form of a plaque with a uniquely designed shield with an engraved plate being added each year with the recipient's name.

No award was made in 2020.

## IRSE-Signet Award

### Jonathan Farrell

The IRSE-Signet award is the most recent of awards, introduced in 2016 and sponsored by Signet Solutions. This Award is given annually to the person who obtains the highest marks in any single module of the IRSE Examination.

The Award takes the form of the Signet logo 'person' on a small plinth, engraved with the name and year of the winner, and bearing the IRSE's logo. The Award also comprises funding for the winner to attend the IRSE Convention.

This year's IRSE-Signet Award was presented to Jonathan Farrell of Irish Rail for achieving 90% in module 1 (safety of railway signalling and communications).

## IRSE Merit Award

### David Came, Trevor Foulkes and Mark Glover

The Merit Award was introduced in 2007 in order to recognise exceptional service to the Institution by a volunteer or staff member anywhere in the world. The award is made by the Council following receipt of a nomination and takes the form of a plaque mounted on a rectangular plinth with an engraved citation.

In 2020 Merit awards were awarded to David Came MIRSE, Trevor Foulkes FIRSE and Mark Glover FIRSE.

David Came was recognised for his continuous work and support for the IRSE Plymouth Section, from inauguration to the 50th Anniversary. Trevor Foulkes played an important role

in establishing the new London and South East section which he now chairs. He has been a good contributor to the Institution for many years, presenting a number of papers particularly on telecoms topics and supporting the IRSE exam review and development of the revised arrangements.

Since late 2014 Mark Glover has undertaken the production of key Institution publications. In all his work, Mark demonstrates a high level of commitment and workmanship, and the IRSE has benefited hugely from the professional image that his work portrays.

# Presidential programme

As a result of the COVID-19 pandemic, after March 2020 no group gatherings could be held. The AGM was cancelled and IRSE history was made when incoming president Dr Daniel Woodland was the first to deliver his presidential address virtually.

Our President up to April 2020 was George Clark. His theme for 2020 was 'Delivering Change' and his series of presidential events looked at ways in which challenges faced by change could be addressed. His final three presidential programme events were: 'Delivering change – the race against obsolescence' presented by Wim Coenraad in Holland in January, in February Nicola Furness and Michel Ruesen presented their paper on 'Future reference CCS architecture' in London and in March Steve Allday presented 'Delivering metro travel' in Sydney.

President Dr Daniel Woodland then faced a completely different challenge; how to carry out traditional presidential duties in the time of COVID-19.

Whilst extremely disappointed he would not be able to travel internationally to visit sections, he worked hard to deliver a full presidential programme on his theme of the 'Challenges of change in complex command, control and signalling systems' virtually. In addition to this programme of lectures, he was also the instigator of the first highly successful joint revenue-generating seminar between the IRSE, IET, IMechE and PWI. This online Automated Railway seminar

held across two sessions on 1 September and 8 October, delivered 17 expert presentations to a global audience of over 200 attendees.

He also took part in the first ever online Rail Broadcast Week hosted by the Railway Gazette in September and was a panellist in the 'ERTMS & ETCS: The future of railway signalling' conference held in December.

Three Presidential Programme webinars were presented between June 2020 and December 2020, all followed by an interactive question and answer session. In June, Professor Yuji Hirao presented 'The forefront of system safety and its application to railway signalling'. Tom Jansen, delivered 'The crossover between rail and autonomous road vehicles' in October and in November Professor Rod Muttram presented 'Cross acceptance of systems and equipment developed under different standards frameworks'. Nicholas Wrobel, presented his paper on 'Testing modern electronic/software systems' in December.

All presidential papers are published in our monthly journal, IRSE News, and the presentations are available to watch on the IRSE Vimeo channel [irse.info/vimeo](http://irse.info/vimeo) or on the IRSE website.



### About the presenter

- Consider myself as primarily a systems engineer
- Now over 50 years experience in 4 industries where safety is a priority
  - Nuclear
  - Material processing
  - Defence – the last 26 years
  - Railways – the last 26 years
- Director level positions in Railtrack and VP at Bombardier
- Fellow of the Royal Academy of Engineering, the IET and the IRSE
- IRSE Council Member and member of the International Technical Committee (ITC)



IRSE ///



## Presidential Lecture Series 2020-2021

A collection of the IRSE Presidential papers delivered during the Presidential term of Dr Daniel Woodland IRSE.

Share



Techniques at the forefront of sy...

The IRSE

Dr Yuji Hirao from the Department of System Safety



Cross acceptance of Systems & ...

The IRSE

Prof Rod Muttram of IRSE's International Technical



Nicholas Wrobel with Q&A

The IRSE

In the fourth in the series of presidential lectures, testing



The crossover between rail and ...

The IRSE

Tom Jansen and Rick Driessen of Ricardo Rail present the

# Section activities

In addition to the Presidential Programme, every year there is a programme of lectures, seminars and technical visits organised by the Institution's 22 sections across the globe. Our sections are in Australasia, China, France, Hong Kong, India, Indonesia, Ireland, Japan, Malaysia, Netherlands, North America, Singapore, Switzerland, Thailand, and Southern Africa. Within the UK, sections cover London & South East, Midland & North Western, Plymouth, Scottish, Western, York and Minor Railways.

The geographical sections vary considerably in size (from around 20 members up to several hundred), and in levels of activity. Each has its own organising Committee, elected officers and programme of events. They report annually to the Council on their work.

In 2020 sections were unable to meet face-to-face for the majority of the year. Some adapted and provided virtual meetings and others were unable to provide these opportunities

due to technical difficulties and the workload of the volunteers. Paul Darlington (Chair Midland & North Western) and Trevor Foulkes (Chair London & South East) produced a guide for sections organising and running virtual meetings and many of the sections who ran these have reported record numbers of attendees. Several technical presentations were recorded and can be found on IRSE's Vimeo channel [irse.info/vimeo](https://www.vimeo.com/irse).

The Council wishes to record its thanks to the officers, committee members and all others involved in the operation of the local sections, for the excellent work they undertake in organising technical meetings and other events particularly in this challenging year. Council also very much appreciates the help and support given by many companies in facilitating and supporting the events organised by the sections all over the world. Charles Page continues his excellent work in the role of Local Section Coordinator, supporting the sections.

# Younger Members

2020 marked the spirited relaunch of the IRSE Younger Members Section chaired by Aaron Sawyer. This section exists to ensure that the activities of the Institution are relevant to the professional development of younger and less experienced members.

The expansion of the committee, and the revised energy imparted by its members, has enabled the section to grow in strength and significantly increase the benefits offered to the community. The section focused on five key areas for development: major events, attract & expand, digital initiatives, support development and sustain & improve.

Under these focus areas the section delivered on an array of existing and new initiatives with an agile shift to online events. The highlights included:

- Preparation for major events including a flagship competition and accident investigation weekend.
- The 'IRSE Super Train Challenge: A Journey Around the World' and associated online STEM webinar. The event followed the semi-fictional character Prerna the Great Inventor and her quest to build a Super Train.
- International outreach where the section worked closely with younger members around the world to facilitate future collaboration and increase diversity within our committee.
- A newly automated mentoring scheme that connects mentors with mentees in a simple self-managed system to be released in 2021, alongside improvements to the 'Maintain your Competency' system.
- A 12-week IRSE Cyber Academy course bringing together developing engineers within the field of railway cyber security.
- And of course, our continued support for the IRSE Exam through study events and over 24 hours of recorded material.

With the strength of the Younger Members section ever growing, there are now over 20 volunteers dedicated to bringing increased benefits our community. We welcome members from around the world to share in this experience and thank everyone who has supported the section in realising its ambitions.

# International Technical Committee

The IRSE's International Technical Committee (ITC) has 23 fully participating and 11 corresponding members from many parts of the world, including Japan, the UK, Netherlands, Germany, Switzerland, Belgium, Finland, France, Australia, Spain, Singapore and Canada. The ITC's primary purpose is to provide thought leadership and disseminate learning on strategic or technical topics relevant to train control and communications systems in the railway environment, thereby providing value not only to IRSE members but to the wider rail industry. Its particular strength lies in its international membership at senior level, enabling engineering principles and practices from a diverse range of countries to be brought to bear upon the subjects that the ITC debates.

During the year, the ITC held four meetings. Due to COVID-19 measures all four were held as video conference meetings. The ITC experienced video conference meetings effective however live interaction in this international setting is essential. After lockdown the ITC will hold its meetings in a mix of video conferencing and live meetings. This will have also a positive effect on our carbon-footprint. The ITC produced six papers, all of which have been published in IRSE News, three of them were given as presidential papers. All ITC papers can be found on the IRSE website. The meetings are hosted by members in their country and minutes are produced for each meeting.

The ITC is aligned with the IRSE strategy. From this year the ITC has decided to keep in touch with the younger membership by having a Younger Member official position on the committee – the first Younger Member to join is Robin Lee. The ITC also focused on Safety – issues of cross-acceptance and standards as well as requirements management and system integration. The Junior Vice President and Senior Vice President are members of the ITC so that they can influence the choice of topics to be discussed, to align with the presidential theme. Papers in the pipeline also include Signalling Power Supplies and the Effectiveness of Security Measures.

# London office and personnel

The Institution leases a small suite of offices on the 4th floor of the Institution of Mechanical Engineers, 1 Birdcage Walk, London, UK, from where the centrally organised activities of the Institution are managed – membership, licensing, events administration and financial administration.

The COVID-19 pandemic has meant that the offices have not been accessible since March 2020. As a result, all staff have had to make the transition to working from home. The Council and many members have on numerous occasions praised the efforts of the staff in maintaining a high level of professional service despite this significant disturbance to work patterns. It became apparent that there was a need to restructure in order to meet the differing demand of a distributed workforce and Council have overseen the work done by the Chief Executive and senior staff to effect these changes.

## Chief Executive

The Chief Executive and General Secretary of the Institution is Blane Judd, a Chartered Engineer and Fellow of the Institution of Engineering and Technology. He is responsible for directing and managing the resources of the Institution in order to implement the decisions of Council in an efficient manner and in compliance with UK company and charity law. He is accountable to the Council. He also provides the focal point of contact for other Institutions and external organisations, including the UK's Engineering Council and the Royal

Academy of Engineering, government agencies, the chief officers of other professional bodies, and the scientific, engineering and technology community. He is also responsible for ensuring compliance with the requirements of the Institution's Articles of Association, Companies House, the Charities Commission and relevant legislation.

## Office team

The office team comprises:

- Polly Whyte, Head of Membership and Registration
- Hilary Cohen, Executive Assistant
- Judith Ward, Director of Operations (part-time)
- Sarah Loutfi, Licensing Registrar
- Karen Boyd, Deputy Licensing Registrar
- Roger Button, Licensing Assistant
- Caterina Indolenti, Membership and Registration Administrator
- Sophie Hunter, Membership and Registration Assistant (fixed term contract)
- Hannah Mueller, Finance Assistant (part-time)
- Swaathy Bhaskaran, Licensing Assistant (part-time)

October 2020 saw the departure of two members of the team – Anja Laitinen, after eight years with the IRSE and Laura Freeborn at the end of her temporary contract.

We also received the shock news that Hilary Cohen had been taken seriously ill and would be absent from work for some time. As many will know Hilary, who has been with the IRSE for more than ten years, is a key member of staff and is engaged in a number of member facing activities. We have appointed Deepka Kharaud to provide temporary cover for her position.

## Contract support

The following members of the team work part time on a contract basis:

Marketing and Communication activities have been operated externally by Lindsay Jones of LJPR Ltd. Lindsay is a qualified journalist with a MSc in public relations and runs her own PR consultancy. She is successfully promoting the Institution to a much wider International stakeholder group. We are also receiving excellent support from Howard Elwyn-Jones of Prettybright on a wide range of social media activity, which includes the much-improved e-bulletin and video livestreaming of events.

Andrew Smith is the Institution's Treasurer, with responsibility for the production of the budgets and accounts, and for monitoring the health of the Institution's savings and investments.

Debbie Bailey, is the Institution's HR Manager. She is a Chartered Member of the CIPD and runs her own HR consultancy business. Debbie has provided HR services to the staff of the IRSE for more than eight years and has been much involved this year in supporting the staff through the pandemic and in particular the transition to remote working.

# Annual General Meeting

The IRSE's intended 107th Annual General Meeting, which was to be chaired by the retiring President, George Clark, was initially postponed until July 2020 due to the COVID-19 pandemic, in accordance with the Memorandum and Articles of Association. It was hoped that by July the situation would have been sufficiently controlled to allow a normal AGM to take place. As the year progressed it became apparent, prior to the July date, that International lockdown restrictions would not allow a meeting to be held in person. After considerations of a number of options it was resolved by Council that there would be no AGM in 2020. All ordinary business was concluded by correspondence and it was resolved to appoint HPH Chartered Accountants for 2020.

The membership received copies of the Annual Report for 2019 (published on 1 April 2020), and there being no comments or questions received through correspondence this report was adopted.

The ballot for the election of members to Council had resulted in Harvinder Bhatia (UK), Gordon Lam (Hong Kong), Clive Roberts (UK), Rob Cooke (Singapore) and Firas Al-Tahan (N America) joining Council.

Grateful thanks go to Pierre-Damien Jourdain, Cassandra Gash and Lynsey Hunter all of whom retired from Council.

# IRSE Council

IRSE Council 2020-2021	
President	Daniel Woodland
Vice Presidents	Ian Bridges, Andy Knight
Members of Council from the class of Fellow	Peter Allan, Ian J Allison, Harvinder Bhatia ,Steve Boshier, Bogdan Godziejewski, Yuji Hirao, Gordon Lam, Rod Muttram, Jane Power, Clive Roberts
Members of Council from the class of Member	Firas Al-Tahan, Rob Burkhardt, Rob Cooke, Martin Fenner, Ryan Gould, Paul McSharry
Members of Council from the class of Associate Member	Xiaolu Rao, Keith Upton
Co-opted Past Presidents	George Clark, Markus Montigel, Peter Symons
Chief Executive	Blane Judd
Treasurer	Andrew Smith

## IT systems

The three major IT components that support the Institution's operations are the Membership and Licensing database, the website, and the London office IT systems.

The decision to migrate our office software systems to a more secure cloud-based server facility, could not have been taken at a better time. We could not have known that by the first quarter of 2020 we would be locked out of the offices and hence access to any IT-based systems located there.

After many years of support from Mike Tyrrell who single-handedly kept our old telephony system working, a decision to change the obsolete equipment was made in the first quarter of 2020. The initial discussions were to install a similar but more modern private automatic branch exchange (PABX). The lockdown however, made us rethink that decision and complete 'softphone' voice over internet protocol (VoIP) was adopted. This has facilitated us being able to make and receive calls while working from home, or on mobiles without interruption of service. The VoIP system also allows us to manage calls remotely from the office system, giving us a greater flexibility and improved communication service to members.

We have now had a year of operating with the new website which again has been extremely helpful in allowing us to maintain a high standard of service for the membership. The inclusion of video content has seen a significant increase in the number of visits to the site. Members are also able to use the site to update information, previously managed manually by staff in the office. Throughout 2021 there are plans to increase the functionality of the site in line with our vision to be accessible 24/7/365 wherever there is an internet connection.

Just after lockdown occurred, we acquired additional licenses for the online conferencing tool, GoToMeeting (GTM), which we had been using for many of the IRSE virtual meetings. Some of these licenses were offered free by LogMeln, the company that owns GTM, as part of a support package for charities. We have been able to distribute these licenses to the sections that wanted to be able to run virtual meetings. As a result, all of the meetings that IRSE hold, both as part of its normal operational activities and with volunteers, have seen a large increase in membership engagement. We intend to continue to offer this service even once lockdown has been lifted.

The combination of GTM and Microsoft Teams has meant we have reached more of the membership that we have been able to achieve in the past.

You will read elsewhere in this report that we held IRSE examination online for the first time this year, through necessity. The platform we used, Moodle, has a lot of additional functionality which we will be looking to exploit as we become more familiar with its capabilities. The aim is to increase the educational offerings under the Knowledge, Skills and Behaviours initiative, started by Markus Montigel in his presidential year, using Moodle at the foundation for this development.

We cannot express our gratitude more strongly, to all those who work for or with the Institution, including the volunteer network. Their ability to adapt so well to the challenges that we have faced as a result of the pandemic has been a tremendous help. Hopefully 2021 will bring a better year and see us able to use much of what we have learnt during lockdown for the benefit of the membership, wherever they are in the world.

# Publications and communications

## Publications and communications

The global pandemic has impacted on every aspect of our lives. Sometimes out of necessity comes innovation, and this has certainly been the case for the IRSE.

Towards the end of George Clark's presidency, we successfully trialled the webinar format for his November presidential programme event. This learning was to prove invaluable in the months to come.

As it became clear that face to face meetings would not be possible for the foreseeable future, HQ staff, members and volunteers all stepped up to devise robust ways to keep the Institution running as normally as possible in the 'virtual' world. Section meetings were held via GoToMeeting or Zoom platforms and the presidential programme was delivered with outstanding success by GoTo Webinar. In all cases, a far higher number of members attended the events virtually than ever before from all over the world.

For the first time in the Institution's history, a paid-for joint online seminar on Automated Railway was held in partnership with the IET, IMechE and PWI. Not only did this event generate much needed revenue for the Institution but it was watched internationally by over 200 people.

We were able to build on the work carried out since 2018 to upgrade and improve our digital communications and as a result our digital platforms came into their own enabling us to keep members informed via frequent e-bulletins and enhanced content on [www.irse.org](http://www.irse.org).

## IRSE News

IRSE News is published monthly, its purpose being primarily to inform IRSE members worldwide about industry news, technical developments, and the work and activities of the IRSE and its Sections. Papers that comprise the presidential programme are published in IRSE News, together with a wide range of other internationally sourced educational papers and articles. We'd like to extend our thanks to the dedicated and hard-working editorial production team and committee led by Managing Editor Paul Darlington for another excellent year.

## Proceedings

The Proceedings provide a summary of the Institution's activities and have been produced annually since the very first issue in 1913. A hard copy of the Proceedings is supplied to the British Library and to the library of the Institution of Engineering and Technology and pdf versions of the Proceedings are available for all to read via our website.

## Website

The website provides details of Institution events, Sections, information about the governance and operation of the IRSE, material for members taking the IRSE professional examination, how to become a member, as well as a wealth of information relating to professional development. Members

(and registered non-members) can update contact details, book events, order publications, and pay their subscriptions online. This year almost 72 000 visitors from 137 countries viewed more than a million pages at [www.irse.org](http://www.irse.org).

## Video

During 2020 the number of videos available on the IRSE website increased significantly as we uploaded content including presidential events, section meetings and study guides. As a result in the past 12 months we saw a 1700% increase in video views and more than 3000% increase in audience size. IRSE videos received over 15 000 views.

## E-Communications

A monthly email bulletin is sent to all members, containing information about upcoming events and other topical information. In addition, we send out ad-hoc electronic communications to members highlighting key presidential events and other important information.

## Social Media

The Institution has a social media presence on LinkedIn, Facebook and Twitter which play a key role in promoting our activities and signposting our content. Key events, presentations and topical news stories are posted on all these feeds on a regular basis to help keep members informed and raise the profile of the Institution amongst the wider railway industry.

LinkedIn has seen a 90% increase in engagement in the last 12 months, boasting almost 7000 followers. On average, IRSE posts on LinkedIn which linked to content were clicked over 58 times each (7400 clicks), while over 55% of our tweets were re-shared by other Twitter users. Link clicks on Twitter are up over 700% on 2019, while on Facebook, links to IRSE content were clicked 1600 times.

## Rail Industry media

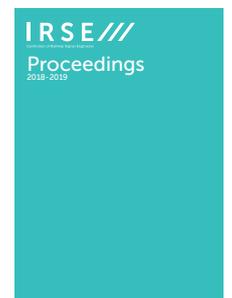
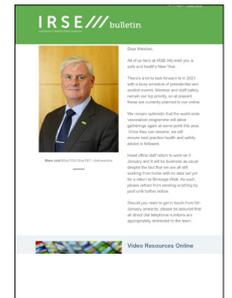
During this year we have developed our relationship with more key railway media. Until the lockdown, Modern Railway Magazine had included selected section events in their events section, and presidential events have been promoted in the online [Railbusinessdaily.com](http://Railbusinessdaily.com) e-zine.

## Publications

The IRSE publishes a range of books on railway train control and communications systems, which provide a useful source of educational material for those relatively new to the profession, as well as providing a valuable record of the development of signalling. Extensive work continues to edit and modernise the Metro Signalling Handbook.

## Library

Sadly, the IRSE Library which is housed in our London offices has been closed this year due to the pandemic. The building at Birdcage Walk which we share with several other professional engineering institutions has remained closed with all staff working from home.



# Collaboration

The IRSE has formal and informal working relationships with a number of organisations in the UK and with organisations in other parts of the world. In China and South East Asia in particular, the IRSE's sections are forging closer links with other engineering and educational organisations, and with governments.

The Industry Partnership Scheme has been slow to get off the ground mainly due to the inability to engage with senior leaders during the COVID-19 lockdown period. That said, some dialogue with employers has started to highlight the areas that would be of interest and benefit to Industry. It is expected that as the restrictions on face-to-face engagement are lifted, more work will be able to be done to move this initiative forward.

An important element of our strategy, is to strengthen our engagement with external bodies, including rail industry companies and other relevant organisations. The Institution enjoys good working relationships and support from many companies, but our ambition is to grow this further. As a result, the

development of the Future Integrated Rail Think Tank (FIRTT), a collaboration with WSP, KPMG, the Rail Delivery Group and IRSE, has focused on several key areas of railway operation, to debate key issues. The first two of these were held this year and the outputs were published on the IRSE website.

This is the second of the IRSE two-year term as chair of the Rail Engineers Forum (REF). The REF ([theref.org.uk](http://theref.org.uk)) is made up of representatives from the Professional Engineering Institutions who have a rail interest e.g., IMechE, IET, ICE, PWI, IRO, INCOSE, CILT, RCEA and the Young Railway Professionals. The chair, Andrew Simmons, a former President of the IRSE, continues to work with HQ to help focus on REF's aim, to harmonise the various strengths of the constituent Institutions to support the railway community. In normal times this would encompass conferences, seminars, lectures, training, information services, publications and statements of policy to Government and other regulatory bodies. This year has mainly focused on maintaining links across the sector.

Regular meetings are taking place with the UK's Railway Industry Association (RIA) to ensure that where possible the two bodies are working closer together to promote the principle of professional employees working in professional businesses. This working relationship is helping the IRSE and RIA identify where we can make a difference.

A closer relationship with the Royal Academy of Engineering and Engineering UK is helping us to gain better traction with activities focusing on encouraging young people into careers in science, technology, engineering and mathematics as a career opportunity. We are able to gain a better exposure working with these bodies than if we used our own smaller resources.

The UK's Engineering Council is responsible for the regulation of engineers, particularly in the UK. The IRSE is a licensed body of the Engineering Council and is thus licensed to register Chartered Engineers, Incorporated Engineers and Engineering Technicians. We work closely with them to maintain standards of engineering excellence.

# Finances

The financial results are shown on pages 16 to 20. They are extracted from the consolidated accounts for the IRSE and its wholly owned trading subsidiary, IRSE Enterprises Limited. The term 'Group' at the top of a set of tables refers to the two companies combined, and 'Charity' to the IRSE alone. As far as possible, these extracted results use the titles and the format of the consolidated accounts.

Probably the headline figure from the 2020 financial results is the Total Charity Funds in the first table on page 16. Despite the outbreak of COVID-19 and its global consequences, the Total Charity Funds have increased by £186,750. This increase is entirely due to a significant increase in value of the investments, in the form of shares, shown in Note 1 on page 18. Our activities during the year made a loss which is not unexpected, given two major fundraising activities, the annual dinner and convention, did not take place, so IRSE Enterprises did not make a surplus to donate to the IRSE.

For part of 2020 because our activities were forcibly reduced by the pandemic we were able to furlough some members of staff under the UK Government's

furlough scheme although as we introduced innovative new ways to deliver the service to our Members, by the end of the year all employees were back working as normal. During the year we took on two new members of staff, both of whom required training in order to take on their roles. However, as we have a very small workforce, to suddenly, if only temporarily, expand our expenses to cover them would have required a sudden, significant increase in income. We could have increased subscriptions or licence fees significantly, only to put them back down again for 2021, but we identified some of our reserves as being saved to cover for eventualities like this. As a consequence, during the year there was a transfer from investments to cover these additional costs.

An issue that has come to our attention can be seen by comparing Notes 10 and 12. Note 10 includes a figure which is the total income from our main activities whilst Note 12 is the cost of running the charity. It can be seen that for the last two years the charity's costs have been higher than the income. Historically this has been the case, but the surplus from IRSE Enterprises has topped up

the income to cover the difference, and commonly led to a net surplus. However, in 2020, clearly, this didn't happen although additional unexpected income was realised through the Institution's first ever and highly successful paid-for online seminar held jointly between the IRSE, IET, PWI and IMechE. In addition, the introduction of the new Module A Exam Certificate in Railway Control Engineering Fundamentals created a surge in Exam income for 2020. We face a similar situation for 2021 as COVID-19 restrictions prevent us once again from holding either the annual dinner or a traditional convention. Whilst it is to be hoped these events will reappear in the IRSE's calendar as soon as possible, it has exposed a potential challenge for the future, especially if it continues to prove difficult to organise big events for several years. As a consequence work is currently underway considering how to increase the Charity's income. Naturally, given that most is from subscriptions, it is this area that is being particularly addressed. There are no conclusions so far, so they will have no impact on 2021, but will need to be included in the budget for 2022.

# Consolidated accounts (extract)

## THE INSTITUTION OF RAILWAY SIGNAL ENGINEERS CONSOLIDATED BALANCE SHEET AS AT 31st DECEMBER 2020

	Notes	Consolidated 2020 £	Consolidated 2019 £	Charity 2020 £	Charity 2019 £
<b>Fixed Assets</b>					
Tangible assets		19,558	31,227	10,395	16,871
Investments	1	2,055,844	1,812,394	1,488,776	1,342,570
		<b>2,075,402</b>	<b>1,843,621</b>	<b>1,499,171</b>	<b>1,359,441</b>
<b>Current Assets</b>					
Stocks	3	48,862	45,110	42,416	36,076
Debtors	4	207,530	194,705	290,623	269,580
Investments	5	209,668	209,205	209,668	209,205
Cash in hand		238,466	338,188	69,062	108,013
		<b>704,526</b>	<b>787,208</b>	<b>611,769</b>	<b>622,874</b>
<b>Creditors: amounts falling due within one year</b>	6	<b>(422,469)</b>	<b>(438,934)</b>	<b>(228,440)</b>	<b>237,003</b>
<b>Net current assets / (Liabilities)</b>		<b>282,057</b>	<b>348,274</b>	<b>383,329</b>	<b>385,871</b>
<b>Total assets less current liabilities</b>		<b>2,357,459</b>	<b>2,191,895</b>	<b>1,882,500</b>	<b>1,745,312</b>
<b>Creditors: amount falling due after more than one year</b>	7	<b>(237,697)</b>	<b>(258,883)</b>	<b>-</b>	<b>-</b>
<b>Net assets</b>		<b>2,119,762</b>	<b>1,933,012</b>	<b>1,882,500</b>	<b>1,745,312</b>
<b>Funds</b>	2				
Unrestricted funds		2,083,971	1,896,893	1,846,709	1,709,193
Restricted funds		35,791	36,119	35,791	36,119
<b>Total charity funds</b>		<b>2,119,762</b>	<b>1,933,012</b>	<b>1,882,500</b>	<b>1,745,312</b>

## THE INSTITUTION OF RAILWAY SIGNAL ENGINEERS CONSOLIDATED CASH FLOW STATEMENT AS AT 31st DECEMBER 2020

	2020 £	2019 £
Net cash (used in) operating activities	(124,790)	(78,758)
<b>Cash flow from investing activities:</b>		
Purchase of tangible fixed assets	(5,784)	(44,793)
Purchase of fixed asset investments	(237,983)	(231,680)
Sale of fixed asset investments	237,082	193,471
Interest received	1,825	2,534
Dividends received	29,928	36,371
<b>Net cash provided by / (used in) investing activities</b>	<b>25,068</b>	<b>(44,097)</b>
<b>Change in cash and cash equivalents in the year</b>	<b>(99,722)</b>	<b>(122,855)</b>
Cash and cash equivalents at start of year	338,188	461,043
Cash and cash equivalents at end of year	238,466	338,188

**THE INSTITUTION OF RAILWAY SIGNAL ENGINEERS**  
**CONSOLIDATED STATEMENT OF FINANCIAL ACTIVITIES AND INCOME AND EXPENDITURE**  
**ACCOUNT FOR THE YEAR ENDED 31st DECEMBER 2020**

	Notes	Unrestricted £	Restricted £	Total 2020 £	Total 2019 £
<b>INCOME AND ENDOWMENTS FROM:</b>					
Charitable activities:					
Donations and legacies	9	19,092	-	19,092	41,708
Other trading activities:					
Non-ancillary trading income	10	354,592	-	354,592	425,921
Other activities	10	480,916	-	480,916	448,263
Investments:					
Investment Income	11	31,685	68	31,753	38,905
<b>Total Income</b>		<b>886,285</b>	<b>68</b>	<b>886,353</b>	<b>954,797</b>
<b>EXPENDITURE ON:</b>					
Raising Funds					
Other activities	12	3,857	-	3,857	8,567
Investment		8,008	-	8,008	7,865
Non-ancillary trading		422,322	-	422,322	438,884
		434,187	-	434,187	455,316
Charitable activities					
Awards	12	16,195	-	16,195	24,529
Promoting best practice		481,557	-	481,557	534,779
		497,752	-	497,752	559,308
<b>Total Expenditure</b>		<b>931,939</b>	<b>-</b>	<b>931,939</b>	<b>1,014,624</b>
<b>Net Expenditure before (loss) / gain in investments</b>		<b>(45,654)</b>	<b>68</b>	<b>(45,586)</b>	<b>(59,827)</b>
Net (loss) / gain on investments		232,732	(396)	232,336	280,451
<b>NET INCOME / (EXPENDITURE)</b>		<b>187,078</b>	<b>(328)</b>	<b>186,750</b>	<b>220,624</b>
<b>RECONCILIATION OF FUNDS</b>					
Total funds brought forward		1,896,893	36,119	1,933,012	1,712,388
<b>TOTAL FUNDS CARRIED FORWARD</b>		<b>2,083,971</b>	<b>35,791</b>	<b>2,119,762</b>	<b>1,933,012</b>

## ANNUAL MEMBERS' REPORT WITH SUPPLEMENTARY MATERIAL

The tables set out on pages 16 to 20 are extracted from the full audited accounts of the Institution for the year ended 31 December 2020. They constitute supplementary material to this Annual Members' Report. Section 426A of the Companies Act 2006 requires the following statements to be made in respect of the supplementary material:

1. This annual report is only part of the company's annual accounts and reports prepared under the Companies Act.
2. A full copy of the company's annual accounts and reports may be obtained upon request from The Institution of Railway Signal Engineers, 4th Floor, 1 Birdcage Walk, Westminster, London SW1H 9JJ, UK.
3. The auditor's report on the annual accounts was unqualified.
4. The auditor's statement under section 496 of the Companies Act (whether the Trustees' Report is consistent with the accounts) was unqualified.

**A P Smith**  
Treasurer

Approved by the Trustees on 11 March 2021.

**D Woodland**  
President  
Director and Trustee

**I Bridges**  
Vice-President  
Director and Trustee

**THE INSTITUTION OF RAILWAY SIGNAL ENGINEERS**  
**NOTES TO THE CONSOLIDATED ACCOUNTS**  
**FOR THE YEAR ENDED 31<sup>st</sup> DECEMBER 2020**

**1 Fixed Asset Investments (Group)**

	Equities £	Government Securities £	Total £
Market value			
At 1 January 2020	1,602,145	210,249	1,812,394
Additions	237,983	-	237,983
Disposals	(211,545)	(25,537)	(237,082)
Revaluations	233,790	8,759	242,549
At 31 December 2020	1,862,373	193,471	2,055,844

**2 Movement in Funds (Group)**

	At 1.1.20 £	Net movement in funds £	At 31.12.20 £
<b>Designated funds</b>			
Scholarship fund	77,128	940	78,068
Alan Fisher / Frank Hewlett Fund	407,071	18,250	425,321
General Development	307,000	-	307,000
Future ASPECT Conference	10,000	-	10,000
International Convention	27,500	-	27,500
Textbook Preparation	7,500	-	7,500
General Fund - Unrestricted Fund	856,485	118,328	974,813
IRSE Enterprises - Non-charitable Trading Fund	204,209	49,560	253,769
	1,896,893	187,078	2,083,971
<b>Restricted funds</b>			
Dell Bequest	23,432	(305)	23,127
Thorrogood Bequest	12,687	(23)	12,664
<b>TOTAL FUNDS</b>	36,119	(328)	35,791

The company holds 20% or more of the issued share capital of the following company:

<u>Company</u>	<u>Country of incorporation</u>	<u>Share class</u>	<u>%age owned</u>
IRSE Enterprises Limited	England and Wales	Ordinary	100

	<u>Share capital and reserves</u>	<u>Profit for year</u>
IRSE Enterprises Limited	£241,676	£49,590

<b>3 Stock</b>	Consolidated 2020 £	Consolidated 2019 £	Charity 2020 £	Charity 2019 £
Stock	48,862	45,110	42,416	36,076

<b>4 Debtors</b>	£	£	£	£
Trade debtors	122,910	58,801	-	-
Other debtors	12,017	9,707	12,017	9,707
Pre-payments and accrued income	6,422	78,555	-	-
VAT	66,181	47,642	53,571	35,995
Amounts owed by group undertakings	-	-	225,035	223,878
	207,530	194,705	290,623	269,580

<b>5 Current Asset Investments</b>	£	£	£	£
National Savings	209,668	209,205	209,205	209,205
	209,668	209,205	209,205	209,205

<b>6 Creditors: amounts falling due within one year</b>	£	£	£	£
Trade creditors	28,984	38,981	18,093	28,520
Deferred income and accruals	200,644	196,505	177,332	176,262
Other taxes and social security costs	-	-	-	-
Other creditors	192,841	203,448	33,015	32,221
	422,469	438,934	228,440	237,003

7	Creditors: amounts falling due after one year	Consolidated 2020 £	Consolidated 2019 £	Charity 2020 £	Charity 2019 £
	Deferred income	237,697	258,883	-	-

Representing the proportion of licence fees receive which will be credited to Income after more than one year.

8	Activities of IRSE Enterprises	2020 £	2019 £
	<u>Turnover</u>		
	Donations	4	(10)
	Proceeds - Conventions and Conferences	784	15,559
	Proceeds - Dinners	-	51,466
	Proceeds - Technical Visits and Seminars	13,008	35,453
	Licensing - Licence Fees Received	205,404	194,321
	Licensing - Audit Fees	45,042	56,022
	Licensing - Assessing Agents Fees	82,306	62,564
	Licensing - Technical Publications	8,044	10,546
		<b>354,592</b>	<b>425,921</b>
	<u>Cost of sales</u>		
	Costs - Conventions and Conferences	1,812	4,801
	Costs - Dinners	(2,653)	31,285
	Costs - Technical Visits and Seminars	13,929	35,354
	Costs - Young Members' Seminars and Visits	-	1,104
	Licensing - Logbooks Opening Stock	9,034	4,721
	Licensing - Engineer's fees	14,503	14,081
	Licensing - IRSE Administration Charges	162,753	122,032
	Licensing - Audit Engineers	48,195	58,825
	Licensing - Accreditation	5,385	10,980
	Licensing - Logbooks Closing Stock	(6,444)	(9,034)
		<b>246,514</b>	<b>274,149</b>
	<b>GROSS PROFIT</b>	<b>108,078</b>	<b>151,773</b>
	<u>Other income</u>		
	Dividends receivable	6,105	6,413
	Bank interest receivable	119	367
		<b>6,224</b>	<b>6,780</b>
		<b>114,302</b>	<b>158,553</b>
	<u>Expenditure</u>		
	IRSE Admin Charges	48,561	18,990
	Telephone	6,322	7,033
	Post and Stationery	2,447	6,441
	Officers' expenses	-	-
	Accommodation and Refreshments	675	3,584
	Computer costs	33,598	34,522
	Sundry expenses	2,910	2,975
	Licensing - Treasurer's, Chief Executive's and Registrar's Fees	73,201	71,500
	Logbook Purchases	-	9,025
	Investment Manager's Fees	3,694	3,421
	Auditor's remuneration	2,000	4,000
	Exchange rate variance	(2)	7
		<b>173,406</b>	<b>161,498</b>
	<u>Finance costs</u>		
	Licensing - Bank charges	2,402	3,238
		<b>(61,506)</b>	<b>(6,183)</b>
	<u>Gain / Loss on revaluation of assets</u>		
	Gain on revaluation of investments	111,066	77,292
	<b>NET PROFIT</b>	<b>49,560</b>	<b>71,109</b>

<b>9</b>	<b>Donations and Legacies (Group)</b>				<b>2020</b>	<b>2019</b>
					£	£
	Donations				<b>19,092</b>	<b>41,708</b>
<b>10</b>	<b>Other Trading Activities (Group)</b>				£	£
	Subscriptions				407,702	404,989
	Professional Reviews				3,350	915
	Advertising				12,555	9,075
	Booklets and text books				18,730	7,138
	IRSE ties, badges & cufflinks				26	26
	Examination Fees and materials				38,553	25,413
	Proceeds from members' lunch				-	707
	Consultancy Income				-	-
	IRSE Income				<b>480,916</b>	<b>448,263</b>
	Trading income:					
	Turnover of trading subsidiary - Note 8				<b>354,592</b>	<b>425,921</b>
<b>11</b>	<b>Investment income (Group)</b>					
	Equities and government stocks				23,824	29,958
	Interest receivable				1,705	2,167
	IRSE Enterprises Ltd				6,224	6,780
					<b>31,753</b>	<b>38,905</b>
<b>12</b>	<b>Analysis of Expenditure</b>	<b>Staff Costs</b>	<b>Depreciation</b>	<b>Other</b>	<b>2020</b>	<b>2019</b>
		£	£	£	£	£
	Raising Funds					
	Other Activities	1,494	93	2,270	3,857	8,567
	Investment	-	-	8,008	8,008	7,865
	Non-ancillary trading - Note 8	126,654	8,170	287,498	422,322	438,884
	Total raising funds	<b>128,148</b>	<b>8,263</b>	<b>297,776</b>	<b>434,187</b>	<b>455,316</b>
	Charitable Activities					
	Awards	5,977	371	9,847	16,195	24,529
	Promoting best practice	141,955	8,818	330,784	481,557	534,779
	Total charitable activities	<b>147,932</b>	<b>9,189</b>	<b>340,631</b>	<b>497,752</b>	<b>559,308</b>
	Total Expenditure	<b>276,080</b>	<b>17,452</b>	<b>638,407</b>	<b>931,939</b>	<b>1,014,624</b>
<b>13</b>	<b>IRSE Charitable Expenditure</b>				£	£
	Raising donations and legacies					
	Fund raising dinners				-	4,190
	Consultancy				-	-
	Charitable activities					
	Proceeding: editing and printing				4,028	4,517
	Newsletter: editing and printing				98,249	94,728
	Booklets and textbooks				5,628	5,773
	IRSE ties, cufflinks and badges				-	1,295
	Prizes				39	1,111
	Awards				767	7,020
	Activities funded by country subscription supplements				5,974	8,821
	Professional review costs				1,203	2,682
	Support costs					
	Staff costs				151,739	191,176
	Office rent and services				18,524	20,202
	Fees and honoraria				74,017	71,070
	Membership database				-	8,420
	Other administrative costs				128,160	127,100
	Investment manager's fees				8,008	7,865
	Fixtures and fittings				9,282	15,770
	Governance costs					
	Auditor's remuneration				4,000	4,000
	Total Expenditure				<b>509,618</b>	<b>575,740</b>