

Institution of
**MECHANICAL
ENGINEERS**

RAILWAY DIVISION
AGM
ANNUAL REPORT
2023-2024

Railway Division 54th Annual General Meeting

30/04/2024 HYBRID – Agenda

Time and place: 30th April 2024 after 18:30, during the judging break of the online Young Members event 'Final of The Future of Rail Presentations'.

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|-----------|--|--|-----------------------|
| 1. | MINUTES OF THE LAST MEETING | | |
| | Review of the minutes of the last AGM Minutes were agreed and available in the AGM report which will be uploaded tomorrow to the Railway Division Website. | | All Corporate Members |
| 2. | SUMMARY OF ANNUAL REPORT | | |
| | Chair to summarise key points of his report and to introduce the new Chair | | Chair |
| 3. | ELECTION TO RAILWAY DIVISION BOARD | | |
| | Constitution of Board 2024-2025 | | All Corporate Members |
| | Announcement of retiring Board Members and confirmation of elected new Members New Board Members: Chair: Iain Rae Deputy Chair: Rebeka Sellick Vice Chair: Farzanna Hampshire Vice Chair: Graham Taylor Ordinary Members David Pearce – 3-year term Patricia Watkins – 3-year term Emil Tschepp – 1-year term Retiring Members: Paul Burkitt-Gray Felix Schmid | | |

| | | | |
|-----------|--|--|-------|
| | | | |
| 4. | CLOSE OF MEETING | | Chair |
| | Annual General Meeting to be formally closed | | |

MINUTES OF LAST ANNUAL GENERAL MEETING

Minutes of the 53rd Annual General Meeting of the Railway Division of the Institution of Mechanical Engineers, held online on Monday 15th May 2023, during the judging break of the final of the Young Members' Future of Rail Presentation Competition.

Noel Travers was in the chair with Andrew Skinner (Deputy Chair) in attendance.

1. MINUTES OF THE 2022 MEETING

The minutes of the last Annual General Meeting were reviewed and accepted as a true record of what had been discussed and approved.

2. SUMMARY OF ANNUAL REPORT

The Chair provided a brief summary of his Annual Report. The Annual Report had also been made available on the Railway Division website. The Chair gave thanks to everyone who had assisted him during his term, especially during these challenging times.

3. ELECTION TO RAILWAY DIVISION BOARD

The Chair announced newly elected Railway Division Board Members and thanked those retiring from their positions.

4. CLOSE OF MEETING

The Chair formally closed the Annual General Meeting at 18:50 and the final of the Future of Railway Engineering – Young Members' evening continued.

Noel Travers

Noel Travers
Chair
Railway Division

RAILWAY DIVISION ANNUAL REPORT

Q2 2023 to Q1 2024

RAILWAY DIVISION CHAIR'S INTRODUCTION

I am pleased to be able to present to you the Annual Report for the IMechE Railway Division.

It was a humbling experience, when asked by my peers, if I would consider chairing the RD and it has been my great honour to do so this year as the Division's 55th Chair.

We have a proud tradition and history both as part of the IMechE and before that, the Institution of Locomotive Engineers. This reminded me of the 54 Chairs before me and the ILocoE presidents before that and it has been a career highlight for me to follow in their footsteps and continue my contribution to the Railway Division.

MY PRIORITIES

- Young people

People shape the industry and young people are our future. I was really pleased this year to be able to support the Railway Division Young members as they designed and brought their Buddy Scheme to fruition. The Board and I have supported them providing advice and guidance as well as ensuring that their processes work with those of the IMechE especially in terms of safeguarding.

Attending the Railway Challenge very early in my term was a hugely rewarding experience. Being able to see the enthusiasm of the young people and their competitive spirit really brought home the great future for our industry with such wonderful leaders of the future in our wings. Not everything was plain sailing but with a dedicated team managing the challenge there was plenty of opportunity for discussion with other engineers to point them towards a resolution.

I am currently working with the Young Members to help them shape this year's Young Engineers and Apprentices Railway Seminar (YEARS) event in Cardiff using my local contacts to provide them with as many opportunities as possible to expose young engineers to experiences they may not yet have had. I look forward to developing this with them as well as supporting them during the seminar.

- Decarbonisation

The "green" credentials of rail are our USP and will be a significant contribution to the necessary drive for UK (and global) net-zero. I was keen to stress during my Chair's address that rail is the ready-made solution. I emphasised that investment in capacity will provide the ability for rail to accept modal shift of freight and passengers and act as a catalyst for economic growth and decarbonisation for both freight and passengers. It was on this theme that I asked Jim Steer (Non-Executive Director, Steer and Director, Greengauge 21) to speak at our Annual Luncheon.

We have organised a number of events both at HQ and within our Centres that picked up on this theme and I was very pleased to be able to participate in the "Innovation in Railway Traction" seminar in March. This not only explored electrification but also alternative traction powers. In parallel we looked at infrastructure innovation and how this needs to develop hand in hand with traction technologies. The Railway Industry Association also presented their decarbonisation strategy for UK rail to the South East centre.

- IMechE governance, stability and finances that are able to support its and our future

Being mindful of the reviews of the last few years of both governance and finance, I was keen to get more involved and support these workstreams. I also wanted to ensure that the RD was part of the knowledge of the current situation. I joined the Council Governance subgroup and contributed to their work. I have also remained close to the Council activities around Finance and increasingly during my year, the HQ building in Birdcage Walk, coordinating RD members' views to ensure that "our voice" is heard. As a Division we have provided significant input into the format of the detail that members will require to see to inform them before voting on the future of our estate. I am grateful

to the Division for their input and views on this.

THE HIGHLIGHTS OF MY YEAR

Chair's address

My tour started on "home turf" with the South Western Centre in Swindon. It was good to gauge the reaction and then make some tweaks before the HQ event. This, as ever, was held in Birdcage Walk and it was a privilege to follow in the footsteps of past Chairs to address the Division in a hybrid format. Over the next couple of months, I visited every UK Centre. This gave me the opportunity not only to visit local places of interest such as Crich Tramway Museum and the North Yorkshire Moors Railway but also more current locations. In Scotland it was really good to meet many young people from the industry and accompany them on a tour of Shields Road and the SPT underground depot at Broomloan. The two-day visit concluded with a tour into the Scottish countryside. I then presented to the IMechE and Engineers Australia broadcasting to Australia, New Zealand, Singapore and Hong Kong. The tour finally finished in Ireland. Following visits to Inchicore Works, the new Irish Rail Signalling Centre at Heuston and the archives of Irish Rail, I presented to IMechE Dublin, Engineers Ireland and the Irish Railway Record Society.

The tour really brought home how much drive and enthusiasm there is for the Division in the Centres who, in aggregate, bring in the vast majority of our event attendees. To their committees and members, my thanks for all they do for our Division in the Centres.

Railway Challenge

The 12th Railway Challenge was my first event as Chair and was a thoroughly enjoyable three days at the Stapleford Miniature Railway in the Leicestershire countryside. It has developed from its early days and is a well-run relaxed but competitive arena in which young people from academia and industry can compete in trials representative of full-scale heavy rail and metro. The innovation and out of the box thinking was great to see. The worthy winners were Politechniki Poznańskiej (Poznań University of Technology in Poland). During the year the Division has helped the railway expand their network by adding a turntable and link to the rest of the network. The Young Members in particular have contributed to this work which will allow for an expanded number of entries in future years.

Technical Tour

Having joined the organising team in 2021, I organised the Helsinki part of the 2023 tour. It was a great week in May when 36 of us spent the week in Finland, Sweden and Norway. The group was mixed with 11 young people. They are a key part of the tour which is designed to give them experiences they may not have had before in different countries, engineering and operating environments. A particular highlight was the LKAB iron ore mine in Kiruna. This is the world's largest and opened 125 years ago. We had a fabulous underground tour 540 metres below the surface. Eight lucky young people had a very special tour at the production level 1,365 metres down where they saw the standard gauge railway captive inside the mountain conveying the ore from the seam to the bucket system bringing it to the surface. We then followed the route of the iron ore by rail where the 8,400T trains run to the export port at Narvik in Norway. Here we ended up on the end of the conveyor loaders above the hold of the ships! Of course, we ensured that after some very long days there was time to socialise as well. I am currently part of the planning team for this year's tour to Austria, Slovakia, Hungary and Croatia which looks to be equally informative for young and mature alike!

Railway Division Annual Luncheon

Our largest event of the year took place on St David's day at the Grosvenor House Hotel on Park Lane in London. We had over 1,100 industry colleagues and friends join us for a great luncheon and afternoon allowing new friendships and contacts to be made as well as catching up with others. The new RD Board table allowed members attending alone to be meet up and enjoy the event seated together.

For me it gave me an opportunity to thank the key players in my railway career and I was pleased to have them with me to dine together and say thank you to them individually for their contribution to my career. A day that I shall remember for ever!

Looking out over the room, it was humbling to realise that I recognised so many faces around our 112 tables in the room. I used the event not only to thank the many others that have contributed to our year as the RD and advertise our coming events but also to introduce my guest speaker. Jim Steer (Non-Executive Director, Steer and Director, Greengauge 21) who spoke around the future of rail and his candid thoughts as to

where we might be going. I am very grateful to Jim for giving up his day and speaking to us.

I would also like to recognise the huge effort put into this event by the staff at the IMechE and for their dedication to the pre-planning and work on the day to make the event the success it was.

THANK YOU

The Division continues to be one of the most active within the Institution and that is down to the volunteer effort of many, many people. I have really enjoyed my year as Chair meeting many more people in the Division than I ever have in the past particularly though visiting the centres with my Chair's address. I am grateful for all the support I have received during the year from my fellow Board members, committee members, the Centre Chairs and many other members and supporters of the Division. I also want to acknowledge the support we received from the IMechE Staff and value their contribution to our Division. I have received much ad-hoc support from the Board Advisory Forum (BAF). This is very much valued by the RD Chair, and I am grateful to Noel Travers for coordinating much sage advice from this group of wise people. To you all thank so much you for supporting me during my year as Chair and for everything that you do for the Division.

I very much look forward to continuing to support the Board, my local centre and the Division through the coming years.

HANDOVER TO IAIN RAE

Finally, I am delighted to announce that the Railway Division Chair for 2024/25 will be Iain Rae. Iain is the Strategy and Sustainability Director of Brodie Engineering. Iain is a Chartered Engineer and Member of the IMechE and holds a BEng in Electrical and Mechanical Engineering from the University of Strathclyde and an MBA from Glasgow Caledonian University. Iain is hugely passionate about supporting and developing young people. As a member of the Scottish centre, he hosts an event each year for the younger engineers from across the country and employers to meet each other, followed by "Lunch with the Chair." I really enjoyed this event and Iain continues to support young people recently helping them form Team Scotland's Railway Challenge entry. I wish Iain well as he becomes the Division's 56th Chair and

look forward to working with and supporting him during his Chair's year.

The Deputy Chair for 2024/25 will be Rebeka Sellick who is the Business Development Director, UK & Europe at Cordel Group PLC.

Andrew Skinner
Railway Division Chair
Institution of Mechanical Engineers
April 2024

RAILWAY DIVISION MEMBERSHIP

The membership numbers continue to reduce. The Railway Division did not gain any members in the 2023-2024 year.

Development of the Membership of the Railway Division of the IMechE

| Membership Grade | 2020 | 2021 | 2022 | 2023 | 2024 |
|-------------------------|--------------|--------------|--------------|--------------|--------------|
| Affiliate | 494 | 464 | 419 | 379 | 290 |
| Associate Member | 1,524 | 1,446 | 1,343 | 1,264 | 1,240 |
| Companion | 1 | 0 | 0 | 0 | 0 |
| Fellow | 838 | 823 | 830 | 829 | 820 |
| Honorary Fellow | 3 | 3 | 3 | 3 | 3 |
| Member | 3,077 | 3,114 | 3,143 | 3,117 | 3,100 |
| Total | 5,937 | 5,850 | 5,738 | 5,592 | 5,453 |

RAILWAY DIVISION EQUALITY, DIVERSITY & INCLUSION

Over the course of the last twelve months, the Railway Division has had a stronger focus on Equality, Diversity and Inclusion. This has included a number of activities for both the Annual Luncheon and looking into how best to support the individual Railway Division Centres.

At the Annual Luncheon, the RD partnered with Women In Rail to promote both Women In Rail and the joint Women in Rail and Rail Industry Association Equality, Diversity and Inclusion Charter. The stand was well received, and the RD will look to grow this partnership in the coming year.

A demographic survey was also carried out at the Luncheon to gain a better understanding of who the attendees of the Luncheon are, to ensure the Luncheon is welcoming people from all backgrounds, and it is representative of our engineering community. The data collected will be used to influence our approach to future Luncheons and the Railway Division as a whole.

The RD is aiming to build on the work done this year with Women In Rail, and the feedback received from the demographic survey, for the 2025 Luncheon

In addition to the Luncheon, the RD has also began exploring how to better support the individual Centres in the area of ED&I. This has included discussions on good practice for running inclusive events, how to recruit a diverse range of volunteers to support the work the Centres undertake and also working with the central IMechE ED&I Team to access support material and general guidance on ED&I.

The RD will continue its focus on ED&I in the coming year and will continue to support the IMechE's vision of all IMechE activities and campaigns being inclusive and representative of the diversity of the IMechE membership and the engineering profession.

RAILWAY DIVISION CENTRE ACTIVITIES 2023 – 2024

NORTH-EASTERN CENTRE CHAIR'S REPORT BY ANDY BATTERS

This has been another positive year with a varied programme for the North Eastern Centre. There remain some challenges with finding new locations and venues, unfortunately we thought our York venue was settled, but they wish to impose a management fee as well as a hire fee, so we may have to rethink this venue.

Our year started with the North East Railway Engineers Forum, which is cosponsored by IMechE so we cannot take any credit for the organization. There was a thought-provoking talk on the Fast Charge Battery Train Trial by David Horton (GWR) on the Greenford branch. Sadly our tradition of a Christmas annual film evening, came to an end with in 2023, with long standing committee members Derek Rayner and Richard Gibbon standing down from correlating these productions; we must thank them for many years' service. However last December, we were fortunate to receive Felix Schmid with his presentation on Challenging gravity, steep railways, a great presentation.

We also have something very special lined up for this coming December, 'Railway people and history - 26 years at the National Railway Museum' from the recently retired Associate Curator Bob Gwynne.

Other highlights were the Future of Rail competitions where this year we welcomed 4 superb young speakers.

And still to come in our programme before the summer recess on the 16th May

Doncaster is Rail Accident Investigation Branch – Investigation Techniques by Simon Lomax.

We did try to engage with IMechE members further North this year as an experiment, holding an event in Darlington and Newcastle however attendance levels were not as high as anticipated. However, before giving in to defeat, we will try and continue this endeavour, especially as 2025 is the Stockton & Darlington Railway Bicentenary and have an event lined up in January 2025 on this theme.

Now a serious plea, we are in dire need of new committee members, the current demographic is imbalanced towards retired members, which makes connections with the industry ever challenging. We have sent out several messages to local railway companies, but with minimal engagement, frustratingly! We are considering a new tack to engage with younger railway members via the IMechE young member rep and Young Railway Professionals organisation.

Finally, I'd like to thank our speakers for giving up their time, and our audiences for the contributions and questions, and my colleagues on the Centre Committee for all of their support and enthusiasm in running a packed and interesting programme.

I will be handing over the reins of chairmanship to Sam Marchant shortly, who has supported me as vice chair these last two years, but I and the committee will be fully supporting him, and we have already in development an engaging and interesting programme ahead. Any requests on subject matter, please drop us a message or get in touch.

NORTH-WEST CENTRE CHAIR'S REPORT BY LYNDON PLATT

This year we have continued to provide a full programme of face-to-face events primarily delivered at our complimentary location Manchester Metropolitan University in Manchester. We have continued to widen the lectures for our members and colleagues with our simple method of delivering the lectures online as hybrid meetings. This is still well received and will now be the norm going forward for the centre. We still note the increase in audience numbers in total and we have still not seen any decline in in-person numbers. The centre continues to benefit from a stalwart of regular attendees. This hybrid situation will continue and if funds permit, enhance the equipment that is used, but what we are using is satisfactory. This delivery of hybrid meetings fulfils the commitment made and aligns with other

centres and the HQ strategy.

Due to financial constraints the ubiquitous Chairman’s evening meal convened after the chairman’s address was again not carried out this year. We shall continue to monitor the situation to see if it will return based on value for member’s and the centre. As reported last year we have reviewed the refreshments provided and do not use the MMU catering now, simply buying from local supermarkets a range of sandwiches, snacks and drinks. This has really helped save costs for the centre.

The visit to the Alstom Crewe facility in early April was well attended and received good feedback from the participants and the hosts. Thanks to Alstom for hosting this visit and allowing the attendees to see the Crewe workshop and repair facility. The Young Engineers competition was held in March and the NW centre heat was won by Richard Harmer of Network Rail, who goes through to the final on the 30th April. There were a total of four participants this year.

The table below shows the number of attendees at our lectures in the 2023-2024 session

| Date | Paper Title | Speaker(s) | Online | Total |
|--------------------------------|--|--|---------------|--------------|
| Tuesday 12th September 2023 | New Trains Introduction – C2C Aventras Class 720/6 | Mr. Sami Ghebache | 20 | 59 |
| Thursday 12th October 2023 | Railway Division Chairman’s Address - Case Study Session | Dr. Martin Evans Mr. Daniel Basher and Mr. Isaac Eccles Mr. John Evans | 4 | 29 |
| Tuesday 16th October 2022 | Railway Division Chairman’s Address - "Along the Way" | Mr. Andrew Skinner | 5 | 44 |
| Tuesday 14th November 2023 | The GB Railfreight Class 99 Locomotive | Mr. David Golding | 40 | 68 |
| Tuesday 12th December 2023 | Early Recollections of HST Operations (ECML) | Mr. Steven Hoather | 16 | 32 |
| Tuesday 9th January 2024 | Two very different Engineers: Marc and Isambard | Prof. Felix Schmid | 26 | 56 |
| Tuesday 13th February 2024 | Trans Pennine Route Upgrade (TRU) | Mr. Ryan Duff | 44 | 108 |
| Tuesday 12th March 2024 | Future of Rail Presentation Competition | Various | 12 | 38 |
| Tuesday 9th April 2024 | Detection of OLE Defects from Class 390 Pendolino Train Data | Mr. John Evans | 33 | 67 |

- Total Online = 200
- Total In Person = 301 over 9 events with 1 event yet to be held
- Average In Person attendance = 34

We benefit from a strong and supportive committee and currently have 17 active members. The majority of members are active in industry with a balance of experienced retired rail industry engineers. We continue to look for and want to attract more members, especially to enhance the diversity of the committee. We continue to market our events far and wide on social media.

Committee Members 2023-2024

| Name | Organisation | Position |
|-----------------------------|-------------------------------|--------------------------|
| Alice Callaghan | TransPennine Express | Social Media Officer |
| Andrew Pankhurst | Retired | Programme Management |
| Dr. Chris Johnson | Park Signalling Ltd | Liaison Officer with MMU |
| Dan Basher | Digital Rail Ltd | |
| David Banister | Network Rail | Website Officer |
| David Crosbee | Institute of Railway Research | Vice Chairman |
| Prof. Gareth Tucker | Institute of Railway Research | Immediate Past Chairman |
| Dr. Howard Parkinson | Digital Rail Ltd | Past Chairman |
| Joe Brown | Retired | Supporter |
| Jon Leigh | Retired | Past Chairman |
| John Batty | TransPennine Express | |
| Lyndon Platt | Siemens Mobility | Chairman |
| Neil Harwood | Retired | |
| Ray Rodwell | Retired | |
| Richard Peck | Retired | Past Chairman |
| Rory Taylor | Intertek | Hon. Treasurer |
| Elliott Rothwell | Institute of Railway Research | Hon. Secretary |
| Simon Fung | Porterbrook | Past Chairman |

Finally on a heritage note, the North Western Centre has an Institute of Locomotive Engineers medallion that is worn by the Chair. I have approached the original

makers, Spink & Son, London to carry out a clean and refurbishment of the presentation case and medal. This item was made around the 1960s and has never had any such restoration work carried out. This is a modest cost and will safeguard the item for future generations.

MIDLANDS CENTRE CHAIR’S REPORT BY DAVE COXON

The Midlands Centre ran 8 events in the 2023-2024 session, all live, with a technical visit arranged for May 2024. Following the loss of our 2022-2023 venue we have secured the use a new regular venue at East Midlands Railway’s HQ building. We have also moved our meeting start times forward to commence at 17:00 for 17:30. Thanks to EMR we will continue to use their HQ as our regular venue for the remainder of 2024.

We have continued to hold joint meetings this year with the Derby Railway Engineering Society (DRES) in December (Hybrid meeting) and live with the Permanent Way Institute (PWI) in January 24.

Our November meeting (which was held at the Railway Technical Centre) included a tour of the Wheel Slide Protection Evaluation Rig facilities. The room booking and refreshments were provided by DB ESG, and this was our first sponsored event.

The programme had an average attendance of 47, and a peak attendance of 72 as detailed below. The evening Technical Visit to Loram is taking place in May and is fully booked with 20 members scheduled to attend.

| Date | Topic | Speaker(s) | Attendance |
|-------------|---|-------------------------------|-------------------|
| 13/09/2023 | Revolution VLR – the future is very light rail | Tim Burleigh | 37 |
| 11/10/2023 | Chair’s Address – Along the way | Andrew Skinner | 47 |
| 08/11/2023 | Wheel Slide Protection (WSP) Evaluation Rig – Past Present and Future | Andrew Lightoller | 40 |
| 06/12/2023 | Renewal of Pendolino and Replacement of Voyagers (Joint with DRES) | Martin Ward & Liam Hockings | 72 |
| 10/01/2024 | Transitional Methodology in Clearances: An Innovative Enhancements (Joint with PWI) | Ian Johnston | 52 |
| 07/02/2024 | Future of Rail Presentations | N/A | 39 |
| 06/03/2024 | Passenger Comfort – Engineering and Human Factor Considerations | Phil Rogers & Wendy McCristal | 48 |

| | | | |
|------------|-------------------------------|---------------------------------------|----|
| 10/04/2024 | Derby and the Monorail | Tony Cooke, Sam Malins & Bence Barton | 41 |
| 08/05/2024 | Technical Tour – Loram UK Ltd | N/A | |

SOUTH-WEST CENTRE CHAIR’S REPORT BY THOMAS MOORE

The SW Centre has hosted eight in-person events between September 2023 and April 2024.

Our collaboration with the four IMechE Regions with which we interface and with the other Institutions continues to be productive. We have developed a routine collaboration with other institutions locally to cosponsor meetings on an annual (PWI) and twice-yearly (IET) basis. This continues to prove both popular and mutually beneficial. This year we also have joint events with Women in Rail and IRSE, and I hope we can continue this cooperation for future years.

We are grateful to Network Rail and Siemens for providing free venues for meetings. We also hosted a Christmas Family lecture at the Steam Museum in Swindon, with an excellent presentation by railway historian Greg Morse on holiday trains. We also hosted a careers event at the University of Southampton. In a post Covid environment these events are not attracting the attendees we previously achieved. The committee are committed to these careers events and will review possibilities for increasing awareness of the university careers events in the future.

Changes to the RD SW Centre committee following the AGM on the 22nd of April are as follows: -

- Mr Chris Byrce, Mr Tom Lendhill and Mr Jack Evans have been elected to the committee
- Mr Louis Schmandt, Mr Ben Woods, Mr Rory Everett and Mr Ashley Grostate are re-elected to the committee
- Mr David Cunningham, Mr. Mick James, Mr. Andrew Mellors, Mr. Thomas Moore, Mr. Matthew Prosser, Mr. Andrew Skinner and Mr. Ben Woods continue to be committee members
- Mr. Prasad Bhave has been elected as the RD SW Centre Chairman, and Mr. Thomas Moore will stand down at the end of his three-year term
- Mr Ashley Grostate has been elected to the position of deputy chair

- For the session 2024 – 2025, Mr. Mick James will continue as Honorary Secretary and Mr. Andrew Skinner will continue as Honorary Treasurer

Our events attract an average attendance of typically >35 members and remain popular. We have made cutbacks to our events, where we no longer provide teas, coffees, etc. However, the committee are committed to hosting these events and engaging with our local members and the broader engineering community in the South Western region.

A summary of our Sept 2023 to April 2024 programme is given in the following table:

| Date | Title | Attendance | Comments | Co-sponsored |
|------------------------|---|----------------------------|--|---------------------|
| 18 th Sept | Chairs address | 38 | NR provided free venue | N |
| 17 th Oct | | TBC | Joint event with IET | Y |
| 13 th Nov | Systems performance modelling | 40 in person >20 online | Joint event with IRSE Siemens provided free venue | Y |
| 11 th Dec | Holiday trains | 31 | Steam museum | N |
| 10 th Jan | Wheel to Rail interface and derailment risks | 35 in person 30 online | Joint event with PWI, Bridget Eickhoff stepped in at last minute as original speaker let us down. | Y |
| 19 th Feb | Future of Rail Presentations | 30 | 4 presenters, winner was Nicholas Miljkovic from Angel trains. | N |
| 13 th Mar | University careers event and lecture - Introduction of new trains-701 | 45 | Careers event at University of Southampton. Joint event with Women in Rail. | Y |
| 22 nd April | Network Rail Air Operations & Centre AGM | 35 | Free venue – NR, Western House, Swindon Joint event with IET | Y |

SOUTH-EAST CENTRE CHAIR'S REPORT BY TOBY JOHNSON

The South East centre delivered eight events in the 2023-24 year. We continued to host the meetings using hybrid facilities at the Rail Safety and Standards Board office in Central London. This year we have focused on providing an improved experience for the in-person attendees to grow our audience numbers. We now offer refreshments before the event and arrange a networking opportunity after the talk.

Whilst this has increased our costs, in-person attendance is growing steadily which improves the atmosphere and engagement during the talks. The Centre has been approached by a sponsor and we have organised a trial with for them to cover the costs of the networking event.

The Centre transitioned the planning of the programme from the financial year to the calendar year, in line with the other centres. Committee membership has grown in this year, with more volunteers coming forward to be involved. Our active committee members are very engaged and dependable which has meant management of tasks is straightforward.

Our engagement with Centre members has continued to grow year on year, with average attendances for our talks now at 48, up from 39 in the previous year. The Centre has become more active on social media with our own dedicated page launching this year. It now has 90 followers on and regularly receiving interactions. The talks that we are able to record have been listed on the IMechE YouTube channel, with our most popular talk receiving over 2,400 views.

An overview of the activities is shown in the table below.

| Date | Event Title | Speaker | Delegates (in person) | Delegates (online) | Partner |
|------------|---|--|--------------------------|-----------------------|---------|
| 26/05/2023 | Technical Visit to PEARL (Person-Environment-Activity Research Lab) | Nick Tyler, Director of UCL Centre for Transport Studies | 12 | N/A | No |
| 20/09/2023 | From little acorns to mighty Oaks - HS2 and Old Oak Common Station | Peter Gow, Head of Delivery, HS2 Old Oak Common | 24 | 13 | No |
| 18/10/2023 | Re-signalling the Underground - 4LM Signalling | Chris Hobden, Project Director, Transport for London | 30 | 12 | No |

| | | | | | |
|------------|--|---|-----|-----|----|
| 15/11/2023 | Global Centre of Rail Excellence | Professor Andy Doherty FEng, Chief Technology Officer, GCRE | 24 | N/A | No |
| 24/01/2024 | A decarbonisation strategy for UK rail | David Clarke, Technical Director, Railway Industry Association | 38 | 33 | No |
| 28/02/2024 | Future of Rail – South East Division & Chair’s Address | South East Young Members and Andrew Skinner, Railway Division Chair | 39 | N/A | No |
| 20/03/2024 | New DLR Rolling Stock | Andrew Dunsby, Senior Rolling Stock Engineer, Transport for London | 48 | 26 | No |
| 17/04/2024 | Revolution VLR programme overview’ | Tim Burleigh, Head of External Relations, Everholt | TBC | TBC | No |

MILTON KEYNES, CHAIR’S REPORT BY TOM SCARRAMUZZA

Current IMechE Milton Keynes Centre Committee

Tom Scaramuzza (centre chair), Rory Dickerson (centre treasurer), Marco Baretta (centre secretary), George Webb (young member’s rep), Malcolm Dobell, Mike Corbett, Reza Samavati, Tim Dugher, Neil Halliday, Rashid Wahid and, Payam Zagarzadeh.

The only change to the centre committee over the course of the year has been the addition of Payam Zagarzadeh. There is a desire to increase engagement with Network Rail given the location of the centre events and the re-introduction of Milton Keynes based graduate engineers from September 2024. The introduction of new committee members will allow for succession planning for positions on the committee. The centre plans to work more closely with other institutions over the remainder of 2024 and the course of 2025 to widen the exposure of the centre and potentially attract new committee members and attendees.

Events & Attendance

Over the course of the year, the IMechE RD Milton Keynes Centre has delivered its programme of events in a hybrid format to allow for people to attend either online or

in person. Events were held at Network Rail's headquarters at The Quadrant:MK, Milton Keynes. Overall, it was found that the vast majority of attendees joined the events online, but in person attendance has steadily increased over the course of the year. The final event of the centre's calendar will be in person only due to the event being co-hosted with the Railway Correspondence and Travel Society (RCTS) who host their events in person. The event will be a good indication of potential numbers for future face to face events.

The centre's experience with the use of its hybrid setup has developed and improved over the course of the year. Recordings post-event have been shared with the IMechE's social media page to both give attendees who were unable to attend the event the possibility to view the event at their convenience, as well as increasing the exposure of the centre events. The 'Class 805/7 Introduction' event has gained just under 1000 views on YouTube, demonstrating both the power and importance of using social media to promote centre activities.

Attendance at events, both in terms of face to face and virtual has been mixed despite the centre's endeavours to publicise events. To date, the two most popular events over the course of the year were linked to the introduction of new passenger vehicles – this will be taken into consideration as part of the development of the programme for the coming year.

The list of events over the course of the year was as follows: -

- IMechE Railway Division Chairman's Address – 'Along the Way' 19th October 2023. Speaker – Andrew Skinner
- HS2, an Integrated System – 14th December 2023. Speaker – Harry Knight
- Class 805-7 Introduction – 18th January 2024. Speakers – Liam Hockings & Martin Ward
- West Midlands Trains Introduction – 21st March 2024. Speaker – John Doughty
- Future of Rail – Young Member Presentations – 11th April 2024. Speaker – Gordon Potin

SCOTLAND, CHAIR'S REPORT BY GARETH EARLE-PAYNE

This year's session has included a number of interesting events but has also unfortunately included a number of gaps primarily due to speaker unavailability. As always, the highlight was the Chair's address where the now traditional opportunity

for the Chair to meet some of Scotland’s Railways young engineers involved visits to Scotrail’s Shields Depot and SPT’s Govan depot with the opportunity to get an advanced look at the new Glasgow subway trains. I am most grateful to Scotrail and SPT for supporting this.

Also of note was the presentation on the IMechE Railway challenge which has resulted in the start of a collaborative “Team Scotland” approach to supporting this event.

Our preferred format for our standard events remains hybrid format and it is always a pleasure to have “attendees” from around the UK and occasionally beyond, but we have taken the decision to make some events “in person” only where we feel that physical attendance is important e.g. Chair’s address / Future of Rail.

Events this session are as follows: -

| Date | Speaker | Title | In person | Online |
|----------|------------------------|----------------------------|-----------|--------|
| 24/10/23 | Andrew Skinner | Chairs Address | 20 | N/A |
| 22/11/23 | David Shirres Yi Ge | IMechE Railway Challenge | 22 | N/A |
| 18/3/24 | Various | Future of Rail Competition | 30 | N/A |
| 18/4/24 | Jason Hennessey | Edinburgh Tram Extension | 20 | 14 |

BOARD ADVISORY FORUM

The Railway Division’s Board Advisory Forum, in its second year of operation, is chaired by the Immediate Past Chair of the RD, Noel Travers and has been enthusiastically contributed to by a number of previous Board members.

In 2023/24 BAF has provided advice and input to the RD Board and Chairman on a number of very significant issues and challenges including: -

- The future of the HQ, 1 Birdcage Walk
- IMechE governance issues
- IMechE financial position
- Risks to the RD and IMechE as a result of a proposed change of name for the Permanent Way Institution
- IMechE Council requests for input.

The BAF continues to allow the Board to focus on the issues that are important to the development of the Railway Division and not be distracted by wider IMechE issues and is able support the RD Chair to input to the many areas they are asked to contribute to within the Institution.

RD YOUNG MEMBERS' ACTIVITIES, REPORT BY TOM SCOTT

The committee continues to support the Railway Division through representation on regional centres, and by running key events and initiatives both longstanding, and newly introduced. This report will summarise the past 12 months.

Executive Update

The RDYM has a full executive committee, with all positions filled and all members engaged. David Pearce assumes the role of immediate past chair, supporting the committee as required since January 2024. Tom Scott is the current chair, in post January 2024 – December 2025; elections for 'Chair Elect' will take place in November 2024, for the January 2026 position, allowing a 12-month handover period. Alice Callaghan and James Hill were elected as vice chairs in January 2023 and November 2023 respectively, for 2-year terms.

Events

Young Engineers and Apprentices Railway Seminar (YEARS) took place in November 2023, in Sheffield, and was well attended. Feedback from delegates was overwhelmingly positive, and the RDYM looks to continue the success of YEARS in Cardiff in 2024.

Future of Rail continues to be a successful national event, with all centres being represented in the final. The RDYM has produced updated briefing documents and guidance to support all centres in their regional heats, and final.

The RDYM continues to support the railway challenge, both financially and with volunteer support. The RDYM on multiple occasions has been involved in construction works at Stapleford Railway over the past 12 months, strengthening the relationship between the railway and the IMechE. The RDYM has two named members on the railway challenge committee. The RDYM will continue to provide volunteer support on the event weekend, and other occasions where it may be required.

Young Rail Tours is a key investment for the RDYM, and over the past 12-months we have looked to renegotiate the funding terms with the YRT, to ensure the agreement is mutually beneficial for both parties. This has been well received by the YRT and RDYM.

Buddy Scheme

The Buddy Scheme was launched in March 2024, after significant efforts were made by the RDYM over the past 12-months. The launch was successful, with young engineers globally getting in touch.

Board & Committee Support

The RDYM continues to ensure it has young member representatives on a wide range of boards and committees within the IMechE, including Railway Division Board, Communications, Learning and Development, Young Members Board, Events and Railway Challenge.

The RDYM also has representatives on 6 of the Railway Division regional centres. The RDYM is working with the NE centre to support them in young member engagement, with the aim of establishing a named young members representative on both the NE Centre and the RDYM.

ANNUAL LUNCHEON COMMITTEE, REPORT BY JAMES COLLINSON

The 2024 Railway Division Annual Luncheon continued to be the biggest railway event in the calendar, with over 1,100 industry colleagues and friends attending to network and catch up.

This year, we introduced a number of practical improvements following feedback from the 2023 event. These included: -

A larger room for the Chair's Reception, enabling a broader selection of guests to be invited to this pre-luncheon gathering.

A new 'RD Board member' table, enabling RD Board members attending as individuals to meet up and enjoy the event together.

We also collaborated with 'Women in Rail' to promote a more diverse approach to making the event accessible for all. Notable changes to achieve this included: -

- Introducing Aimee MacDonald as ED&I lead on the Luncheon Committee
- Creation of a voluntary 'about yourself' demographic survey for the event
- A Women in Rail information stand at the event

We will continue to build on the work done this year, at next year's event, to strengthen the reputation of the IMechE and the Railway Division as a balanced, fair and high performing institution.

Finance

With a continuing high level of corporate sponsorship but slightly lower overall attendance, the result was worse than budget, with a shortfall of £22.5k against the gross profit target:

- Delegate revenue: £163,510 (Budget was £184,900)
- Sponsorship income: £70,800 (Budget was £75,000)
- Expenditure: £150,745.79 (Budget was £153,871)
- Gross Profit: £83,564.21 (Target was £106,029)

Participants

With 112 tables filling the venue, 15 organisations hosting sponsored bars in the Ballroom and over 1,100 people in the Main Room, the classic “full” atmosphere was once again achieved.

Thankyous to everyone involved: -

- Event Sponsors & Supporters – AtkinsRealis, Aura Brand, Enigma (Fisa/ Polarteknik TDS, Train FX), Frazer Nash Consulting, Reliability Consultancy Services, PTM Design, RSSB, RTS Infrastructure, Sabre Rail Services Ltd, Stadler, TUV Rheinland and Siemens Mobility
- Guest Speakers – Andrew Skinner (as Railway Division Chair) and his guest Jim Steer (Non-Executive Director, Steer and Director, Greengauge 21)
- Table hosts and the IMechE staff

RAILWAY CHALLENGE CHAIR REPORT, BY SIMON IWNICKI

Overview

The Railway Challenge again held a successful final in June 2023 - the 'Best challenge yet' according to the excellent article in Rail Engineer (link:

<https://www.imeche.org/events/challenges/railway-challenge>)

Eight teams participated (three further teams had registered but were unable to bring a working loco to the final) with the team from Poznan University being declared the overall winner. Derby/Alstom, Aachen, Sheffield, TfL and Network Rail/Colas Rail all won individual prizes.



Poznan University – winners of the 2023 Railway Challenge

Sponsorship income was the highest it has yet been at £26k but as expenditure was around £37k and other income £8.5k this left an overall deficit of £2.5k.

The Rules subcommittee has revised the rules and technical specification for the 2024 competition. Key updates are the removal of the noise challenge and the addition of four optional challenges (teams must enter at least one of these): Autocoupler Challenge; Aerodynamic Drag Challenge; Location Announcement Challenge; Remote Data Recording and Monitoring Challenge.

14 teams have entered the 2024 Competition with 4 new teams undertaking the 'Entry level challenge' (Heriot Watt University; IIT Kharagpur; Siemens Mobility and the University of Edinburgh) meaning that they submit a CAD design rather than a physical locomotive. The final will take place on 27th to 30th June.

Work on the expansion of the Railway Challenge has continued and the new turntable is nearing completion. Funding of £25k was provided by the IMechE as well as generous in-kind donations from Network Rail including design work and all the ballast required. Volunteers from the IMechE and from several of the teams have supported the working weekends.



The new turntable nearing completion

EVENTS COMMITTEE CHAIR REPORT, BY MATTHEW PROSSER

The events delivered in 2023-24 are summarised in the table below. Hybrid events are in place for the two free evening lectures planned in the year, allowing more people to join online. Engagement of the online audience through asking questions of the speaker via the chat option works well.

The Events Committee meets regularly and has a large membership, although attendance at meetings is variable. Each meeting is well supported by the Institution staff.

Four one day seminars plus the YEARS event are planned each calendar year. For the 2023-24 period covered by this report three seminars and the YEARS event have taken place.

Overall, delegate numbers have been disappointing and overall have delivered below budget revenue. The feedback on all of the seminars has been extremely positive and the organising committee for each seminar has done excellent work attracting high-quality speakers. The reasons for lower attendance are thought to be a combination

of tighter training budgets, marketing and tailoring the subject matter of the events to delegates' needs.

Two new young committee members took the lead in organising this year's YEARS event which took place in Sheffield in November. This was an excellent event and huge effort was put into organising it, although again the delegate numbers were disappointing. This event is re-establishing itself after the Covid break and it is anticipated this year will be better attended.

Planning for 2023-24 seminars has just commenced and the focus will be on choosing subject matters that have been historically well-attended, are relevant and linked to building professional knowledge.

| Date | Event Type | Title and Speaker(s) | Delegate Numbers |
|-------------|-------------------|--|-------------------------|
| 5/07/23 | Seminar | Improving Passenger Comfort: Why we need good trains and sound track | 25 |
| 9/11/23 | Seminar | Rolling Stock Whole Life Cost Optimisation | 33 |
| 30/11/23 | Seminar | YEARS | 18 |
| 11/12/23 | Lecture | Sir Seymour Tritton Lecture – Andy Cooper | 15 in person, 12 online |
| 19/03/24 | Seminar | Innovation in Railway Traction | 39 |
| 19/03/24 | Lecture | George Ramshaw Curry Memorial Lecture – Philip Haigh | 20 |

SKILLS TASK FORCE, REPORT BY JOHN REDDYHOFF

The Skills Task Force (STF) continues to provide a focus on skills for the Railway Division at a time when there is a potential skills gap across all railway engineering disciplines due to the age profile of the workforce and the need to develop new digital skills. Membership of the STF has been increased over the last year and now provides better representation of younger engineers and across rail industry sectors.

The last year has seen a reduction in work in both rolling stock new build and the aftermarket, resulting in an immediate loss of skills despite an impending skills shortage.

NSAR has published its Annual Rail Workforce Survey for 2023. This identifies the relatively high average age profile of those working in the industry, the number of people who are expected to leave the industry over the next five years, a particular issue with the number of trainers who are likely to retire and the reducing number of younger people who want to join the industry. Apprentices form 1.65% of the workforce and this needs to increase to 2.5% to meet industry needs.

The Skills Task Force is particularly focused on traction and rolling stock skills, where there is a forecast shortage of people by 2028. The recruitment of Level 3 apprentices has continued in train operators, Network Rail and TfL but there has been a reduction in graduate recruitment with the potential of repeating the hiatus of the mid-1990s where the reduction in recruitment is now contributing to the skills shortage. The combination of reduced recruitment and negative media cover is influencing the views of younger people who might not consider a career in rail or may consider leaving the industry.

The Skills Task Force is raising awareness of this risk to the industry and is seeking to promote the positive aspects of a career in rail. Those people who are experiencing their first challenging time in the industry are more likely to be affected than those who have worked through similar times in the past and the positive messages need to be regularly reinforced.

The lack of recruitment of apprentices does not just affect the rail industry. The report of the inquiry led by Lord Knight and Lord Willetts has now been published. STF and the Railway Division contributed to the consultation. The inquiry was launched because of a 34% reduction in the number of apprenticeships starts in engineering and manufacturing technologies compared to 2014/15. The Government is unlikely to respond on this before a General Election but the Royal Academy of Engineering is developing a manifesto to seek to influence the education policy of whichever party is in Government after the election.

The first cohort of students studying for Engineering & Manufacturing T Levels will qualify in summer 2024. Even at this stage, there are unresolved questions about the relationship between T Levels, employment and further academic training. The Skills Task Force is working with the IMechE to ensure that information can be circulated as it becomes available.

The Teachers in Residence scheme continues to be funded by the IMechE. This scheme is run by the Design & Technology Association and seeks to place teachers in industry to improve their knowledge of modern practices. The STF continues to promote this scheme within the Railway Division and some rail businesses have now provided placements.

LEARNING AND DEVELOPMENT ACTIVITY REPORT BY IAIN RAE

During 2023/24, we continue to support the IMechE L&D Team. Main areas of support being: -

- Supporting and leading two steering groups, which is always informative both ways
- Welcome Jenny Irish, into the steering group team
- Supporting L&D Material on: -
 - Asset Management in the Railway
 - Vehicle Dynamics Development - Jenny Irish support
- Assisting with promotion on over 10 events that the L&D run through our RD Exec and now via the Regional Chairs and Secretaries
- The L&D Insight session for the steering group was very helpful – will look to expand this

Regrettable L&D have seen a decline in the uptake on their rail specific training, but I am confident the Steering Group will rise to the challenge and assist with reversing this trend.

The 6 areas where steering is available to support L&D are: -

1. Allowing the L&D team a slot at the RD Executive – to demonstrate their breath of courses. (new for 2024)
2. Review of existing material – advice and guidance
3. Validation of new trainers that we on-board
4. Industry insight
5. New opportunities we should focus on- e.g. digital & AI

6. How to get more engagement from rail engineers on and greater promotions of

RAILWAY DIVISION P&L 2023

| Budget | Actual |
|-----------------|-----------------|
| £112,113 | £130,603 |

The Railway Division exceeded the budget surplus by just over £8K. This was largely due to the Railway Division Annual Luncheon over performing budget expectations.

Andrew Skinner
Railway Division
Chair
Institution of Mechanical Engineers

26th April 2024

APPENDIX 2. THE RAILWAY DIVISION BOARD AS OF 30th April 2024

| Position/Role | Name | Organisation |
|----------------------------------|-----------------------|--------------------------|
| Chair | Andrew Skinner | Great Western Railway |
| Deputy Chair | Iain Rae | Brodie Engineering |
| Vice Chair | Howard Parkinson | Digital Rail Ltd |
| Vice Chair | Rebeka Sellick | Sellick Rail |
| Vice Chair | Matt Prosser | Angel Trains |
| Vice Chair | Jason Groombridge | Consultant |
| Committee Chairs | | |
| Annual Luncheon Chair | James Collinson | Consultant |
| Communications Chair | Howard Parkinson | Digital Rail Ltd |
| Board Advisory Forum Chair | Noel Travers | XRail Group |
| Events Committee Chair | Matthew Prosser | Angel Trains |
| Finance Committee Chair | Rebeka Sellick | Sellick Rae |
| Learning & Development Chair | Iain Rae | Brodie Engineering |
| Prizes & Awards Chair | Emil Tschopp | Transport for London |
| Railway Challenge Chair | Simon Iwnicki | Huddersfield University |
| Railway Challenge Representative | Tim Poole | London Underground |
| Skills Task Force Chair | John Reddyhoff | Consultant |
| Young Members Chair | Tom Scott | Angel Trains |
| Centre Chairs | | |
| Midlands Centre Chair | Martin Elliot | Railway Approvals |
| Milton Keynes Centre Chair | Tom Scaramuzza | Network Rail |
| North-East Centre Chair | Andy Batters | Aegis Engineering |
| North-West Centre Chair | Lyndon Platt | Siemens |
| Scottish Centre Chair | Gareth Earle Payne | Brodie Engineering |
| South-East Centre Chair | Toby Johnson | RSSB |
| South-West Centre Chair | Tom Moore | Siemens |
| India Centre Chair | Lalit Chandra Trivedi | Consultant |
| Immediate Past Chair | Noel Travers | XRAIL |
| Past Chair (2021/22) | James Collinson | Consultant |
| Past Chair (2020/21) | Felix Schmid | University of Birmingham |
| Ordinary Members | | |

| | | |
|-----------|-------------------|------------------------------|
| 2022-2025 | Aimee MacDonald | Tilt Consulting |
| 2022-2025 | Farzana Hampshire | Atkins |
| 2022-2025 | Ben Ackroyd | Porterbrook |
| 2021-2024 | Graham Taylor | CAF |
| 2023-2026 | Graeme Clarke | Siemens |
| 2023-2026 | Jenny Irish | Mott MacDonald |
| 2023-2026 | Chipo Madzikwah | Network Rail |
| 2023-2026 | Richard Graham | Keolis |
| 2023-2024 | Paul Burkitt-Gray | TfL |
| Co-opted | Richard Lockett | Consultant |
| Co-opted | David Clarke | Railway Industry Association |
| Co-opted | Bridget Eickhoff | RSSB |