

Introduction to the technical visits programme

On **Friday 10th June**, delegates have the chance to attend a technical site visit of their choosing. This is an opportunity to explore state-of-the-art research, development and innovation facilities, railway cultural highlights, major infrastructure project sites, and much more.

Information about the programme of technical visits can be found in this booklet and on the [WCRR 2022 website](#). You can make your selection when you register for the conference, and if you have already registered, you can [modify your booking](#). To secure your place, please book as soon as possible and **before 13th May**.



Please note that:

- all visits are scheduled to take place on **Friday 10th June**
- there is **no cost** for registered WCRR 2022 delegates
- visits **may be subject to change or cancellation** e.g. due to external factors or minimum numbers, and additional visits may be added to the programme – we will advise of any changes at the earliest opportunity
- delegates must **wear appropriate clothing** i.e. smart/casual and comfortable, flat soled shoes that are suitable for walking - no open-toed shoes, sandals or high heels – **in some cases safety shoes and/or personal protective equipment (PPE) is required**, please refer to the visit overview for more information
- most visits are fully accessible, any **constraints on accessibility** are noted in the visit overview

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Research Facilities and Academic Collaboration: University of Birmingham

Full-day visit

The Birmingham Centre for Railway Research and Education (BCRRE) at the University of Birmingham is one of the world's largest and widest-reaching academic centres of its kind, delivering railway science and education. With over 145 academics, researchers and professional support staff, BCRRE provides world class research and thought leadership within railways and offers an expanding portfolio of high-quality education programmes. BCRRE's key themes are in digitalisation and decarbonisation, and our notable recent project, HydroFLEX, made history in autumn 2020 by operating the UK's first Hydrogen-powered train on the mainline railway and was on show at the COP26 climate change conference in Glasgow.

BCRRE is lead partner in the £92m UK Rail Research and Innovation Network (UKRRIN), a collaboration between academic centres of excellence and the rail industry. The University of Birmingham provides a home to one of UKRRIN's four Centres of Excellence, the Centre of Excellence in Digital Systems (CEDS). Together with a growing cohort of Industrial members and managed by a coordinating hub run by the Rail Safety and Standards Board (RSSB), UKRRIN is revolutionising innovation in the rail industry by bringing together academic centres with industrial partners from all over the supply chain.

This technical visit will include laboratory and facility tours and an opportunity to explore a range of themes, such as:

- Smart and autonomous systems
- Whole-system simulation
- Driving and energy simulation
- Data integration applications
- Cyber security
- Climate and resilience (current live project SIRMA)
- Robotics
- Energy and traction
- Power electronics applications
- Decarbonisation projects
- Aerodynamics and the effects on structures of passing vehicles

Schedule

09:00 Meet at WCRR 2022 venue and walk to station

09:30 Depart Birmingham New Street Station

10:00 Welcome and introduction to University of Birmingham's BCRRE and UKRRIN

10:20 Groups to tour facilities and engage with subject matter experts

11:00 Coffee and networking

11:20 Groups to tour facilities and engage with subject matter experts

12:40 Lunch and networking

13:30 Groups to tour facilities and engage with subject matter experts

15:20 Technology summary

16:00 Depart

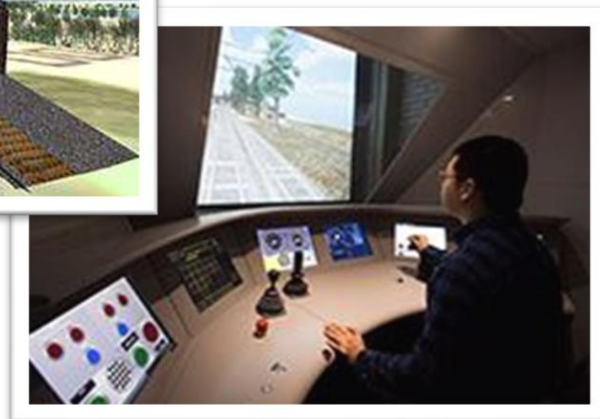
17:00 Arrive at WCRR 2022 venue

Maximum number of participants: 70 delegates.

Refreshments: A buffet lunch and light refreshments will be provided.



UNIVERSITY OF
BIRMINGHAM



Rail History and Sustainability Through the Ages: National Railway Museum

Full-day visit

Based in York, The National Railway Museum tells the story of rail transport development and growth, diving into the past, present and future of the railways, and of the impact it has had on society. In the midst of a transformation, the Museum is currently on a journey to become a global engineering powerhouse and a reinvented, inspiring 21st century attraction.

For this specially curated visit, delegates will embark on a journey of rail and sustainability through the ages. With a behind the scenes tour of the archives, a presentation from the Assistant Director, examples of artifacts that have had a direct influence on the future sustainability plans for the GB rail network. There will also be the opportunity to speak with museum experts and for delegates to explore exhibits at their leisure.

Schedule

- 08:30 Meet at WCRR 2022 venue
- 08:50 Depart for York by coach
- 11:00 Arrival and introduction to National Rail Museum
- 12:00 Lunch and networking
- 13:00 Tour of museum
- 14:30 Introduction to 'Vision 2025 – Becoming the World's Railway Museum'
- 15:00 Depart
- 17:20 Arrive WCRR 2022

**RAILWAY
MUSEUM**



Maximum number of participants: 45 delegates.

Refreshments: A buffet lunch and light refreshments will be provided.

High Speed Rail: HS2 – Curzon Street

Half-day visit - choice of morning or afternoon

A visit to the HS2 high speed railway station construction site in the heart of Birmingham. Curzon Street station will be the first brand new intercity terminus station built in Britain since the since the 19th century.

With a presentation on HS2's low carbon approach to stations including Curzon Street and nearby Interchange Station just outside of Birmingham. A showcase on the historical importance of the site, and how it integrates into the local transport network. As well as an opportunity to see the work underway on site, including a visit to the original Curzon Street Station building, dating to 1838.

Schedule

HS2

Morning session

- 09:00 Meet at WCRR 2022 venue
- 09:15 Depart for Curzon Street site by minibus
- 09:30 Presentation and tour of site
- 12:30 Depart
- 12:45 Arrive at WCRR 2022 venue

Afternoon session

- 13:00 Meet at WCRR 2022 venue
- 13:15 Depart for Curzon Street site by minibus
- 13:30 Presentation and tour of site
- 16:30 Depart
- 16:45 Arrive at WCRR 2022 venue



Maximum number of participants: 40 delegates (20 in both the morning and afternoon sessions).

Refreshments: A buffet lunch and light refreshments will be provided.

Innovation in Action: Network Rail, Rail Innovation Development Centre, Melton Mowbray

Full-day visit

Network Rail works round-the-clock to provide a safe, reliable experience for the millions using Europe's fastest-growing railway each and every day. RIDC Melton is a purpose-built test track for the testing of rolling stock, plant, on-track machines, infrastructure, equipment and technology. The facility has been designed to support high and low speed testing and has 25kV overhead line equipment and 3rd/4th rail DC equipment.

During the visit you will get a chance to learn more about the important work being conducted and visit key parts of the facility where the testing is being carried out. This includes hearing from key members of delivery teams working on technology being demonstrated at the site, with topics such as how 5G is being tested and used on the railways and how new signalling equipment is being tested and deployed.

Safety requirements: The host will provide full personal protective equipment (PPE), including safety shoes.

Schedule

- 08:15 Meet at WCRR 2022 venue
- 08:30 Depart for Melton Mowbray by coach
- 10:00 Arrive at RIDC for presentations and tour
- 12:10 Lunch and networking
- 13:10 Continue presentations and tour
- 15:10 Depart
- 16:40 Arrive at WCRR 2022 venue



Maximum number of participants: 40 delegates.

Refreshments: A buffet lunch and light refreshments will be provided.

Innovation in Action: Network Rail, West Midlands Signalling Centre

Half-day visit - choice of morning or afternoon

The West Midlands Signalling Centre is critical to the smooth and safe running of the railway network. As the unified control and command centre for the region it brings together all key functions to monitor the operations and quickly react to any incident.

During this visit you will be given a guided tour around the command centre, hear from the different functions and learn about how technology has transformed the monitoring and respond capabilities of the railway. You will also visit gold command where you will learn about the development of the centre and its impact on the smooth running of the network.

This visit may be subject to industrial action, which could potentially result in cancellation.

Schedule

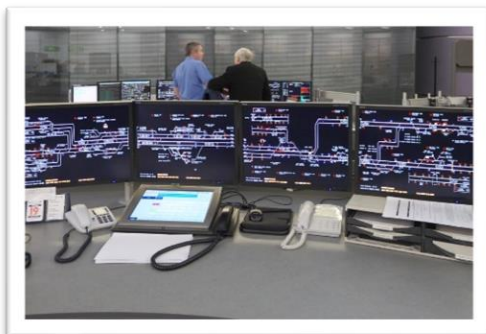


Morning session

- 09:00 Meet at WCRR 2022 venue
- 09:15 Walk to Birmingham New St station for train to Duddeston
- 10:00 Arrival and welcome
- 10:30 Tour of control centre and gold command
- 11:30 Mobile command unit
- 12:00 Depart
- 12:45 Arrive at WCRR 2022 venue

Afternoon session

- 11:00 Meet at WCRR 2022 venue
- 11:15 Walk to Birmingham New St station for train to Duddeston
- 12:00 Arrival and welcome
- 12:30 Tour of control centre and gold command
- 13:30 Mobile command unit
- 14:00 Depart
- 14:45 Arrive at WCRR 2022 venue



Maximum number of participants: 80 delegates (40 in both the morning and afternoon).

Refreshments: No refreshments, delegates are advised to bring water.

Smart Rail Solutions: Alstom, Litchurch Lane

Morning visit

Alstom is the UK's leading supplier of new trains and train services, and a leading signalling and infrastructure provider. Building 40% of the UK mainline train fleet, including for the Elizabeth line, and supporting two thirds of the nation's trains and trams, Alstom provides the widest range of smart solutions in rail, from high-speed rolling stock, metros and trams to maintenance, modernisation, infrastructure and signalling.

Employing 6000 people in the UK, Alstom design and build trains at Derby, the UK's largest train factory, operate major sites at Crewe, Ilford, Plymouth and Widnes, and keep Britain moving from 30 frontline depots.

This visit will include a tour of the Aventura Train Assembly, a ride on the 1.6km Aventura Train Test Track, and a tour of the Cairo Monorail Export Assembly.

Safety requirements: *Delegates must provide their own safety shoes i.e. with steel toe protection. A small number of shoes may be available on the day, but the host cannot guarantee the appropriate size for 40 guests.*

Accessibility: *The site is all ground level, but the tour will cover ~2km. Wheelchair users must be chaperoned due to the tracks on site (please advise in advance).*

Schedule

- 08:15 Meet at WCRR 2022 venue
- 08:30 Depart for Litchurch Lane by coach
- 09:30 Arrival, tour of facilities and test track ride
- 12:00 Lunch and networking
- 13:00 Depart
- 14:00 Arrive WCRR 2022 venue



Maximum number of participants: 40 delegates.

Refreshments: A buffet lunch and light refreshments will be provided.

Decarbonising Rail: Ricardo

Full-day visit

A visit to the Hydrogen Testing Site in Shoreham, which is part of the global centre of excellence for hydrogen, defossilised fuels and electric transport engineering, and designed to support Ricardo's existing work in hydrogen and other alternative fuels for use in engine and fuel cells.

The new facility delivers state-of-the-art test and development capability and significantly increases the range of future powertrain solutions which can be delivered to Ricardo's global customers. A particular focus for the new facility will be a systems-led approach to vehicle development, integrating our enhanced test capability with our leading-edge digital and simulation tools to deliver fully optimised hardware and software system solutions for our customers. Whilst on site, visitors will have an opportunity to visit other R&D and production facilities, including manufacture of high-performance automotive engines and propulsion and vehicle emissions research centres.

Accessibility: Most of the site is accessible; however, some areas may not have wheelchair access. The hosts will seek to minimise any such impact on the tour.

Schedule

07:30 Meet at WCRR 2022 venue

08:00 Depart for Shoreham by coach

11:00 Arrival and tour of facilities, including lunch and networking

15:00 Depart*

18:00 Arrive WCRR 2022

**Delegates can be dropped off at a mainline station for trains to London and elsewhere.*



Maximum number of participants: 80 delegates.

Refreshments: A buffet lunch and light refreshments will be provided.

Innovation in Light Rail: Black Country Innovative Manufacturing Organisation (BCIMO)

Half-day visit - choice of morning or afternoon

Very Light Rail (VLR) is a new mode of rail-based public transport, designed to supplement existing heavy and light rail systems, supersede other (less efficient) modes of transport, and support the transition towards end-to-end (Hub-to-Home) journeys using public transport. The Very Light Rail National Innovation Centre (VLRNIC), operated by the Black Country Innovative Manufacturing Organisation (BCIMO), has been built to facilitate the development of a new VLR industry, including: the market for integrated VLR systems, both in the UK and overseas; the technologies required to deliver high value manufactured and fully integrated VLR system solutions; the supply chain required to deliver this; and the skills required by our current and future workforces for VLR manufacture and implementation. The aim is to develop a world-class, market-driving, centre of excellence for integrated VLR transport systems.

Safety requirements: All visitors are required to bring their own safety shoes and personal protective equipment (PPE), including a hard hat and high-visibility jacket or vest.

Accessibility: The test track is not wheelchair accessible.

Schedule



Morning session

09:00 Meet at WCRR 2022 venue
09:15 Coach to BCIMO
10:00 Arrival and tour of the VLRNIC facilities and test track
12:30 Depart
13:15 Arrive at WCRR 2022 venue

Afternoon session

12:30 Meet at WCRR 2022 venue
12:45 Coach to BCIMO
13:30 Arrival and tour of the VLRNIC facilities and test track
15:00 Depart
15:45 Arrive at WCRR 2022 venue



Maximum number of participants: 60 delegates (30 in both the morning and afternoon).

Refreshments: Light refreshments e.g. tea and coffee will be provided.

Innovative Design and Manufacturing: Oleo International

Half-day visit - choice of morning or afternoon visit

Part of the T A Savery group with a rich history dating back to 1698, Oleo have been a leading design and manufacturer of energy absorbing technology for a variety of industries for over 60 years. Oleo boasts one of the largest drop test towers in the world with design, manufacture and testing all under one roof at its facility in Coventry. The technical visit will tell a story of the evolution of energy absorbing technologies, include a behind the scenes factory tour, live impact test demonstrations, and introduce delegates to how Oleo are leading the digital era of rail with its Digital Twinning software, DigitalTrains.

DigitalTrains is a complete rail project software and cloud-based environment for Digital Twins of rail infrastructure, rolling stock & sub-assemblies allowing the user to simulate multiple 'what-if scenarios' for rail infrastructure projects.

Accessibility: Some areas of the visit e.g. where the introductory presentation will be given will not be accessible as there is no lift. However, alternative arrangements can be made for a small group. The tour of the factory is accessible as it is on the ground floor.

Schedule

Morning session

08:00 Meet at WCRR 2022 venue
08:15 Coach to Coventry
09:00 Arrival and tour of Oleo facilities
12:00 Depart
12:45 Arrive at WCRR 2022 venue

Afternoon session

12:45 Meet at WCRR 2022 venue
13:00 Coach to Coventry
13:45 Arrival and tour of Oleo facilities
16:45 Depart
17:30 Arrive at WCRR 2022 venue



Maximum number of participants:
40 delegates (20 in both the morning and afternoon sessions).

Refreshments: A buffet lunch and light refreshments will be provided.

Innovative Design and Manufacturing: Warwick Manufacturing Group

Morning visit

WMG is an academic department within University of Warwick, a top-ten UK university, a member of the prestigious Russell Group, and ranked within the top 100 universities globally. It is a role model for successful collaboration between academia and the public and private sectors to develop the brightest ideas and talent that will shape the future.

Delegates will tour WMG's world-class cutting-edge labs, experiencing the latest research, facilities, and technologies, particularly those associated with energy-storage, net-zero and sustainability, optimising materials and manufacturing methodologies and management, intelligent vehicles and digital technologies. Delegates will also learn how WMG's expertise and innovation is being applied to the track and vehicle design on the Coventry Very Light Rail (VLR) programme, and the work on the hybrid powered lightweight railcar project - Revolution VLR.

Accessibility: *Some areas of the site e.g. laboratories may not be fully wheelchair accessible, and some stairwells do not have lift access.*

Schedule

- 08:15 Meet at WCRR 2022 venue
- 08:30 Depart for University of Warwick by coach
- 09:15 Arrival, followed by tour of facilities
- 12:15 Depart
- 13:00 Arrive at WCRR 2022



Maximum number of participants: 60 delegates.

Refreshments: Light refreshments e.g. tea and coffee will be provided.

Knowledge Transfer from F1 to Rail: McLaren Applied Technologies

Full-day visit

For over 30 years McLaren has led the digital transformation of motorsport through electronics and data systems, and now also develop innovative technologies that drive positive, sustainable change in automotive, transport, the Internet of Things and beyond. McLaren's focus is delivering efficient lightweight electric powertrain and vehicle development; motorsport solutions that make series more sustainable and efficient; reliable connectivity solutions for transportation and insightful analytics and monitoring of transport fleets.

The visit will include a tour of the McLaren headquarters, including the Technology and Production centres where its cars are built.

Schedule

- 07:15 Meet at WCRR 2022 venue
- 07:30 Depart for McLaren HQ by coach
- 10:00 Arrival and tour of the McLaren Technology Centre
- 11:00 Transfer to McLaren's Victoria Gate office
- 11:30 Presentations
- 12:15 Lunch and networking
- 14:30 Depart
- 17:00 Arrive at WCRR 2022 venue



Maximum number of participants:

30 delegates.

Refreshments: Lunch and light refreshments e.g. tea and coffee will be provided.

State of the Art Logistics: DB Cargo, Wolverhampton Steel Logistics Centre

Morning visit

The £6 million Wolverhampton Steel Logistics Centre opened in 2018 and is used by some of the world's largest steel companies including ArcelorMittal, Tata Steel and SSAB. The centre spans 11,800m² with the capacity to store some 48,000 tonnes of steel, that's the equivalent of 3,324 steel coils. Steel is transported to the centre from UK Ports where it is forwarded to be used to manufacture items such as household appliances and cars.

This site visit to DB Cargo UK's Centre of Excellence for metal handling will provide an overview of activity and site operations, including how the rail freight sector supports the metal market in the UK.

Safety requirements: *All visitors are required to bring their own safety shoes.*

Accessibility: *The site is all at ground level but please advise of any mobility issues in advance.*

Schedule

- 09:45 Meet at WCRR 2022 venue
- 10:00 Coach to Wolverhampton
- 11:00 Arrival and tour of steel logistics centre
- 13:00 Depart
- 14:00 Arrive at WCRR 2022 venue



Maximum number of participants: 20 delegates.

Refreshments: Light refreshments e.g. tea and coffee will be provided.



Maintaining the Future: Hitachi and NCATI

Full-day visit

Doncaster is one of the UK's major railway centres and this site visit will encompass tours of both the Hitachi Train Maintenance Centre (TMC) and the National College for Advanced Transport & Infrastructure (NCATI).

There has been a railway depot located on the site of what is now Hitachi's TMC since 1876. Hitachi recently invested £80m in Doncaster TMC, with construction starting in spring 2014 and Hitachi staff moving into the TMC during early 2017. The TMC is currently responsible for maintaining bi-mode and electric fleets of 65 trains for LNER and 19 trains for Transpennine Express. The 11,000m site, which can hold up to 24 five-car trains at any one time, encompasses a maintenance shed with five separate tracks, a wheel lathe building and a separate train washing unit.

The National College for Advanced Transport & Infrastructure (part of the University of Birmingham group) has been established to provide highly skilled technicians, project managers and apprentices to lead the UK's rail, transport and infrastructure sectors. It is dedicated to producing a new generation of highly skilled professionals to lead the UK's future rail, transport and infrastructure workforce. The tour will encompass the college's project space, workshops and Computer Aided Design (CAD) facilities.

Safety requirements: *Visitors are required to wear either their own safety shoes or full toed flat sensible shoes.*

Accessibility: *Most of the visit will be accessible, but please advise of any mobility issues in advance.*

Schedule

- 08:00 Meet at WCRR 2022 venue
- 08:30 Depart for Doncaster by coach
- 10:15 Arrival and tour
- 12:00 Lunch
- 13:00 Tour continues
- 14:30 Depart
- 16:15 Arrive at WCRR 2022 venue

Maximum number of participants: 40 delegates.

Refreshments: A light lunch and refreshments e.g. tea and coffee will be provided.

