Welcome

SKILLS SYMPOSIUM

17 November 2023

Lydia Fairman
Head of Capability & Skills Development
Network Rail

Skills, STEM and our workforce

NetworkRail

# UK Rail Workforce Headlines

240,000

Workers employed within the Rail sector

Current attrition rate is between 10 and 15 percent (compared to a 'usual' attrition rate of 5 to 8%).

Demand for replacement alone to 2030 will be around 50,000 workers not accounting for growth and skilled project staff who'll be needed to deliver capital investment programmes

Attrition Rate: 15% Current, 8% Benchmark

40%
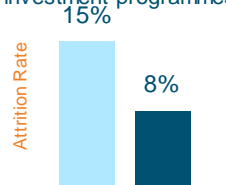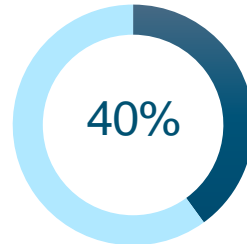
40% of active trainers will reach retirement age by 2030.

15.6%

Of workers within the Rail sector are women (down from 17% pre pandemic)
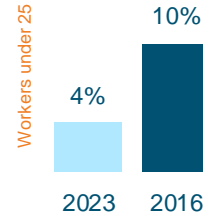
Workers under 25: 4% 2023, 10% 2016

There are less than half the number of workers under 25 in the sector now compared to 2016. Over the 5-year period the trend shows the decline from 10% to 4% of the overall workforce

<1%

New Apprentices employed by the sector per annum, a figure we need to double

45yrs

Average age within the Rail sector is 45 years old

33%
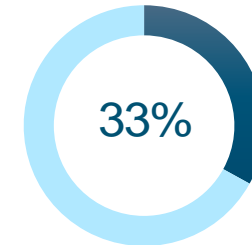
33% (just over 80,000 workers) of the Rail sector are **aged 50 or over**

UK Rail Workforce demographics

Replacement demand - all of the roles below have more than 250 workers in the sector and an average age in excess of 50:

Train Driver

Customer Service Manager

Revenue Control Inspector

Team Leader - Track Inspection

Driver Instructor

Team Leader - Rail Testing

Senior Technician

Customer Service Supervisor

Shift Signaller Manager

Construction Manager

Predictions: replacement demand

- Retirement: 50,000 are expected to reach the age of 65 by 2030 – 89% male and 11% female

- 39% of those work in Capital Projects and 38% in Operations

- The most prevalent roles for likely retirees are:

  - Technician (L3) – 6,500
  - Driver (L3) – 3,600
  - Customer Service – 2,800
  - Engineer – 2,000

- 54% of those expected to retire are based in London and the South East, followed by North West (9%) and the West Midlands (8%).

Predictions: additional demand

- Higher levels of capital investment e.g. HS2, TRU, East West Rail and schemes from the IRP – this dramatically increases predicted demand.

- Gaps grow in the projects workforce between 2025 – 29, peaking in 2026 with a shortage of around 10,000 workers.

- Shortages in Signalling & Telecoms, Civils and Structures, Traction & Rolling Stock, Electrification and Plant and Systems Engineering

- These job occupations face the greatest shortages:

    - Technician

    - Engineer

    - Supervisor

    - Project Manager

    - Operative

Headlines

- Current attrition rate is between 10 and 15 percent (compared to a 'usual' attrition rate of 5 to 8%). Demand for replacement alone to 2030 will be around 50,000 workers not accounting for growth and skilled project staff who'll be needed to deliver capital investment programmes;

- The sector employs fewer than 1% (2,000) new Apprentices per annum, a figure we need to double;

- 40% of active trainers will reach retirement age by 2030.

- There are less than half the number of workers under 25 in the sector now compared to 2016. Over the 5-year period the trend shows the decline from 10% to 4% of the overall workforce;

- Analysis over the last five years or so has indicated that the proportion of women within rail remains steadfastly below 20%.

NetworkRail

Where can we make an impact?

- Workforce planning
- Training: forecasting and investment
- Early engagement with schools
- Work experience: T-levels, pre-apprenticeships, Uni placements
- More innovative approach to attraction: EVP
- More ways to enter the industry: grads, apprentices, transferrable skills
- Career mobility: reskilling, upskilling, shared placements and schemes

Starting early: developing a diverse pipeline…

- Total replacement demand: **32,000 industry wide over 3 years**

STEM Subjects taken per annum

GCSE – 725,000

A Levels – 300,000

Degrees – 175,000

Industry requires…

Level 2 = 0.3% pa

Level 3 = 2% pa

Level 6 = 1% pa

Apprenticeship	19,500
Skill Level 3	18,600
Capital Projects	13,500
Operations	11,000
Degree	7,400
Technician	6,800
Skill Level 2	5,100
Other	5,100
Maintenance	5,000
Skill Level 6	4,800
Engineer	3,300
Driver Train	1,700

Q	Qualification
SL	Skill Level
JR	Job Role
WT	Work Type

Working together…

NetworkRail

Why work in rail

Join an industry that offers varied and exciting careers.

Whether it's building state-of-the-art stations, designing more energy-efficient trains, or finding innovative ways to keep people safe, there's a route into rail for everyone.

Billions in investment mean rail needs thousands more professionals over the coming years

Help build a sustainable future

Rail is a diverse and inclusive industry aiming to have a workforce that represents the passengers it serves

Rail plays a central role in supporting the UK economy and connecting communities

Choose from a wide range of roles

Be part of an exciting and innovative industry

Transfer your existing skills to a career in the rail industry

Travel the country as part of your work

routesintorail

Your one-stop-shop for rail careers, funded by industry employers.

Search careers…   Search

Careers   Apprenticeships

Graduate schemes

Ex-armed forces

Building together…

NetworkRail

Inform, inspire, engage

STEM

Rail Industry
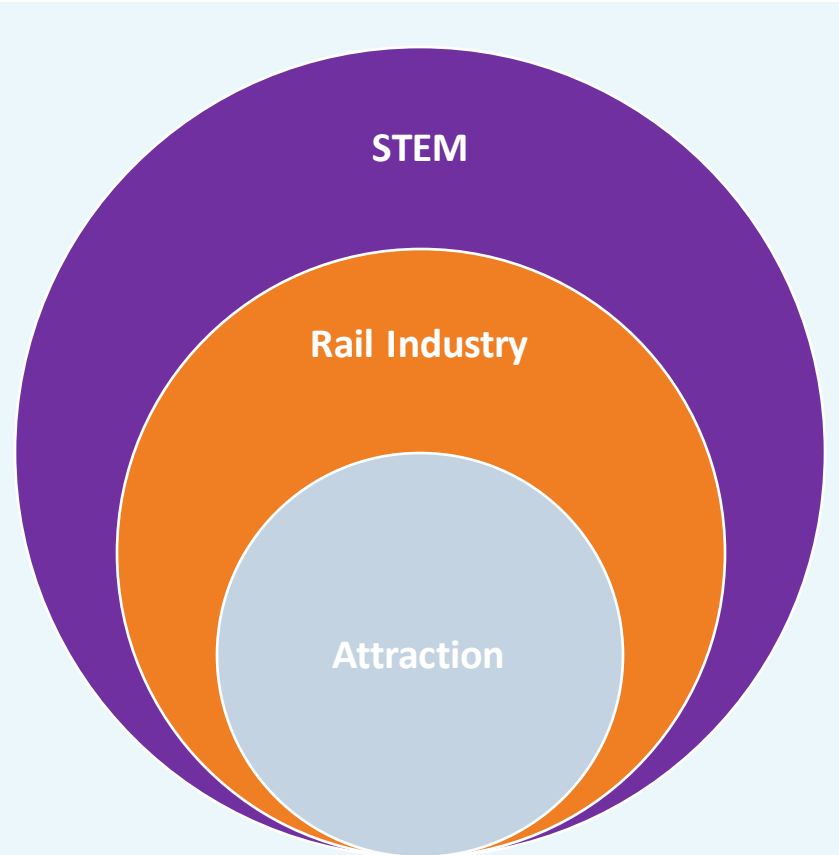
Attraction

Encourage children aged 5 – 16, to choose STEM Subjects
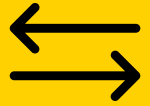
"you can't be what you can't see"

Promote rail via role models, attract to rail

Change perceptions of rail, and rail roles, improve industry image

Attract to the employer: Brand, adverts, campaigns

Increase Diversity, enable social mobility

Where we focus:

Do you love working in the STEM (Science, Technology, Engineering and Maths) sector?

Skills:
Plan: Using strategic workforce planning information (internal and external forces), tools and activities, we chose initiatives that will build skills where they will be needed. Create good entry level schemes.

Diversity and social mobility:
Inform and inspire: Diverse role models, good work experience, we will increase the diversity of our future talent pipeline. We want young people to be able to relate to role models and see that rail jobs could be for them.

Increasing Confidence:
Equity: Give young people the information they need to make informed choices and support teachers. This will build confidence, their networks where they may not have them and enable social mobility.

Schools Engagement Statistics From Academic Year September 2022 - July 2023

NetworkRail

5,000 Emily the Engineer books distributed to young people aged 6 – 8 at stations across the country.

123 colleagues signed up as STEM ambassadors in the last year.

3,923 people have visited our Early Engagement website.

250 colleagues have volunteered in our national programmes and events.

4,469 primary school aged children took part in the Primary Engineer Rail Project programme from 82 schools, 70 engineers volunteered and 82 teachers trained to deliver the programme.

Big Bang Fair. **1,142** young people visited the Network Rail stand over 3 days.

Students achieve more. Our support reaches **160,000** young people through Network Rail supporting national STEM outreach activities, increasing engagement, aspiration and attainment.

125 young people attended a Network Rail Bring Your Child into Work Day, Internal STEM session or Work Experience Programme.

Our funding supported **400** schools to participate in a STEM outreach activity.

We have supported **10** national schools' programmes and delivered **47** events over the last academic year.

140 children from 7 schools took part in our Track to the Future mentoring programme.

There were **20,669** meaningful interactions between Network Rail role models and young people in the past academic year.

How can I sign up?
To sign up, please contact
earlyengagement@networkrail.co.uk

4

NetworkRail

Where can you make an impact?

- Workforce planning
- Training: forecasting and investment
- Early engagement with schools
- Work experience: T-levels, pre-apprenticeships, Uni placements
- More innovative approach to attraction: EVP
- More ways to enter the industry: grads, apprentices, transferrable skills
- Career mobility: reskilling, upskilling, shared placements and schemes

NSAR

Rob Forde

Director of Strategy and Skills
Global Centre of Rail Excellence (GCRE)

Rob Forde – Global Centre of Rail Excellence

Director of Strategy and Skills

GCRE Skills Strategy

Background to the Global Centre of Rail Excellence

There has always been a missing piece of the jigsaw in rail testing and, particularly, infrastructure innovation

UK & Europe lacks an integrated facility to test infrastructure, rolling stock, signalling and new technology

Infrastructure design and innovation in the UK has been slow to move on owing to a lack of adequate testing facilities

Rolling stock is tested in over-subscribed European facilities and infrastructure tested in USA

Results: Innovation deferred, delayed or denied – standards lag not standards led

Inadequate workarounds e.g. testing on mainline

A purpose-built facility for whole life, endurance testing and validation of infrastructure is needed in the UK and across Europe

Global Centre of
Rail Excellence

Outer Loop
7km track for rolling stock testing

Inner Loop
7km track for infrastructure testing

Depot and sidings
Train shed and sidings for maintenance and fitment

Washeries campus
Offices and training area for classrooms and practical training

You can't be what you can't see

Average age 45 years old

10% under 30 years old

16% female workforce

87% workforce are white

Global Centre of
Rail Excellence

Skills Strategy

GCRE will provide best in class training facility focused on:

- **Routes to Rail for the South Wales community:** Enable the local community accessible, all-age routes into the Railway via education, training and wider employability programmes, leading to employment

- **Developing and industry centre for specialist technical training:** GCRE will becomes the industry centre for specialist technical courses, utilising our unique to Europe railway facilities to enable delivery of high-end technical training courses

- **Collaborating with local educators and training institutions:** Working with the top-class colleges, universities and training providers in Wales to utilise a site that offers industry leading courses and practical experience beyond anything on offer today

- **Developing a long-term pipeline:** Working with schools and pupils in a de-industrialised area, from the youngest ages, to develop interest in STEM, engineering and GCRE

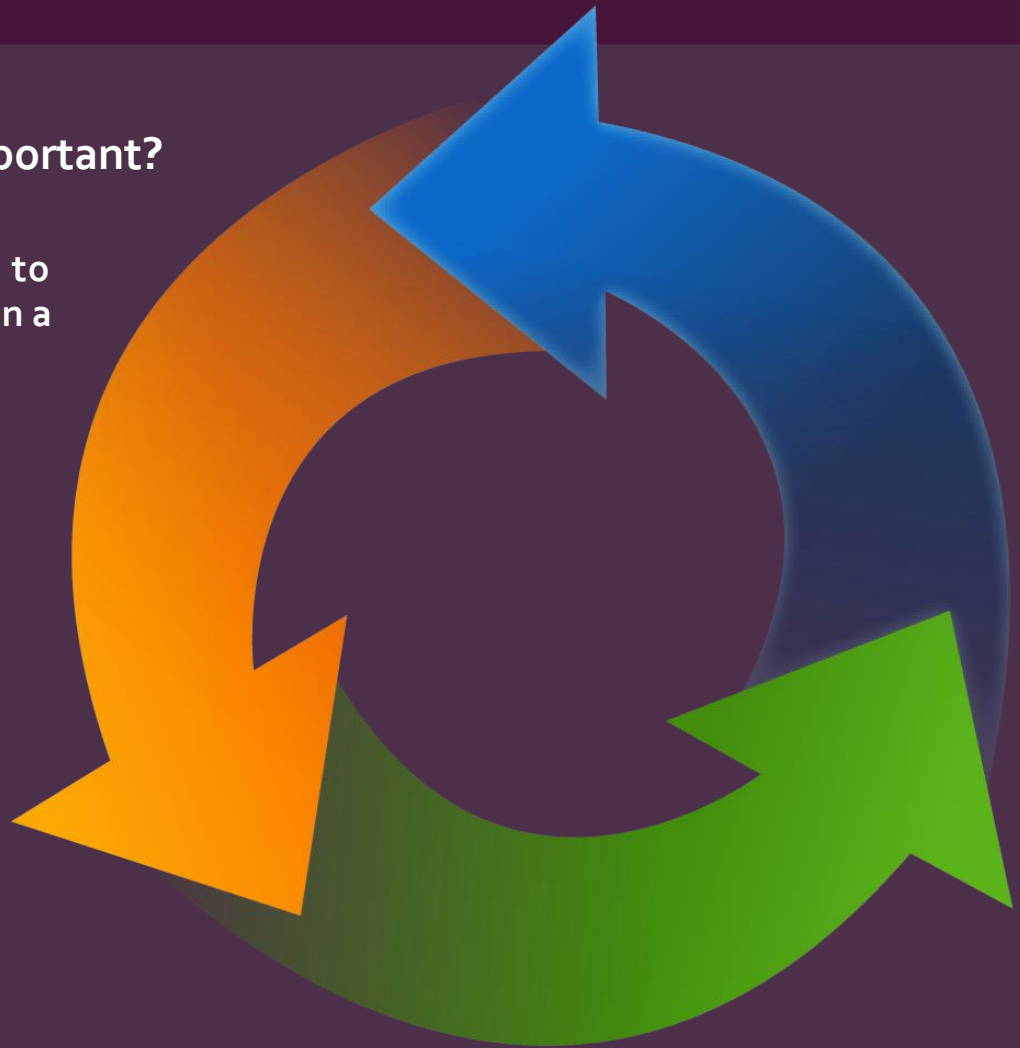# The Challenge

Joshua Brear
Fleet Competence Manager
East Midlands Railway

What is Competence and why is it important?

'The ability to undertake responsibilities and to perform activities to a recognised standard on a regular basis.'

- Building blocks of Competence

- Stages of Competence

- Platform to hold Competence Records

- Continuous cycle of improvement

What does Competence mean to East Midlands Railway?

- What would happen if all competence was removed?

- RAIB incident reports

- The main building block to a safe journey with EMR

How is Competence Managed?

- Structure of the
  Competency Management
  System

- Vocational requirements

- Occupational
  requirements

- Competency Management
  System requirements
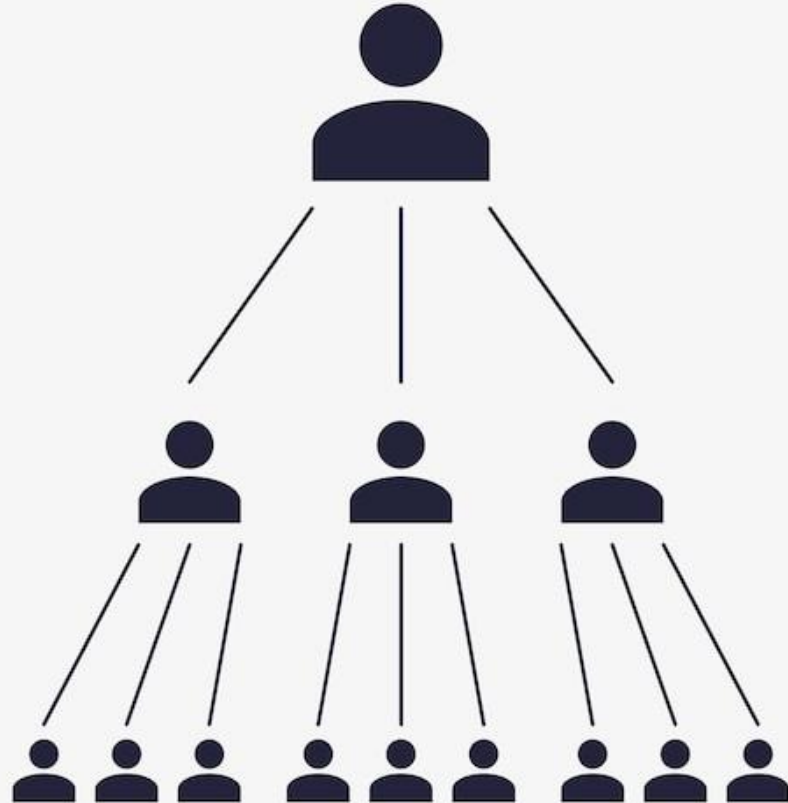
Role- Wheel Lathe Operator

Date of review- 27/10/2023

RBTNA panel members - Paul Caffrey- Engineering Manager & Josh Brear- Fleet Competence Manager

Wheel Lathe Operator

Ref:	Task Description	Understanding requirement (*documentation signpost*)	Freq.	Diff.	Task	Lik'hd	Sev.	Risk	Score	NTS (Max 3)	Additional Controls	Training fidelity (*method*)	NOS
B)	Demonstrates the ability to obtain and interpret, from the approved source, the required vehicle and task documentation, including procedures/ manuals/ specifications/drawings/instructions that are relevant, current and valid.	Rail Industry Standard RIS-2766-RST Issue Two: Wheelsets EMR/EP/013: Management of Wheel Tread Condition on T&RS EMR/EP/024: Planned Wheel Turning EMR/SMS/072: Maintenance & Overhaul Policy EMR/SMS/073: Policy for the Engineering of Wheelsets EMR/SMS/076: Managing & Monitoring of Fleet Safety Performance	1	1	1	3	5	5	5	2, 4, 7	Transferred from previous Wheel Lathe Operator Assessment Q (2.1), and E, M and V (2.2). Amalgamated E, M, Q and V from the previous assessment. Amended wording to 'Demonstrates the ability to obtain and interpret, from the approved source, the required vehicle and task documentation, including procedures/ manuals/ specifications/drawings/ins tructions that are relevant, current and valid.' to incorporate all documentation requirements, emphasising the importance of the documentation being relevant, current and valid	Completion of Etches Park Depot Site Induction Brief. Shadow a competent Wheel Lathe Operative for an amount of time to gain experience of all Wheel Lathe activities, specified by the competent Wheel Lathe Operative and Line Manager. This is with the aim to provide staff with underpinning knowledge and practical application of the Wheel Lathe Operator role. Completion of the Wheel Lathe Mule Training. Conduct Wheel Lathe Operative Assessment.	RETC/056
C)	Demonstrates the ability to adhere to/apply the depot protection and vehicle safety protection for the relevant activity.	Rail Industry Standard RIS-2766-RST Issue Two: Wheelsets EMR/EP/013: Management of Wheel Tread Condition on T&RS EMR/EP/024: Planned Wheel Turning EMR/SMS/072: Maintenance & Overhaul Policy EMR/SMS/073: Policy for the Engineering of Wheelsets EMR/SMS/076: Managing & Monitoring of Fleet Safety Performance	1	1	1	3	5	5	5	1, 2, 7	Transferred from previous Wheel Lathe Operator Assessment (R 2.1). Amended wording to 'Demonstrates the ability to adhere to/apply the depot protection and vehicle safety protection for the relevant activity.' to incorporate both depot and vehicle protection	Completion of Etches Park Depot Site Induction Brief. Shadow a competent Wheel Lathe Operative for an amount of time to gain experience of all Wheel Lathe activities, specified by the competent Wheel Lathe Operative and Line Manager. This is with the aim to provide staff with underpinning knowledge and practical application of the Wheel Lathe Operator role. Completion of the Wheel Lathe Mule Training. Conduct Wheel Lathe Operative Assessment.	RETC/056
		Rail Industry Standard RIS-2766-RST Issue Two: Wheelsets										Completion of Etches Park Depot Site Induction Brief.	

Challenges and consequences?

- Journey from compliance to development

- Range in roles

- Consequences of incompetence?

Top 3 reasons people fail their driving test in GB:

1. Junction Observations.

2. Not using Mirrors correctly when changing direction.

3. Not having proper control of the steering.

The future of Competence- Non-Technical Skills

Technical Skills

Non-Technical Skills

What's next for the EMR Engineering Competency Management System?

- Integration of NTS

- Skills ID Project launch

- Updates to EMR CMS standards (including RBTNA)

- Further development of Engineering competency requirements

- Scoping & delivering further Skills ID phases

- Continue to develop competency staff & system