

The Transpennine Route Upgrade Rail North Event

Thursday 20 October

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The Transpennine Route Upgrade

Neil Holm

Programme Director, Network Rail



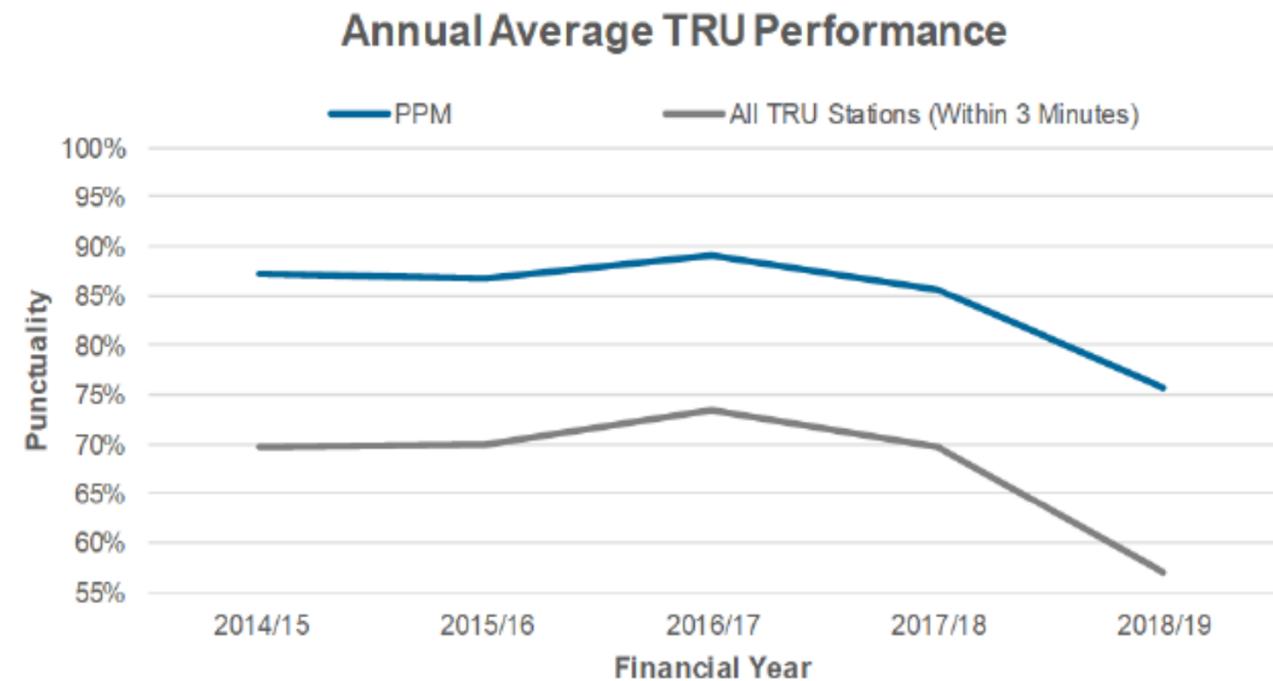
Why the Transpennine route?

The Transpennine route:

- Is the most direct route from York, Leeds to Manchester, Liverpool
- Is a key East-West artery across the North
- Has a mix of services: regional, local, freight
- Runs regional services that serve many destinations

Up to COVID*, the route was pretty dysfunctional with only 38% of services running on time in 2019. It's at full capacity with no room for growth without major enhancements (including freight).

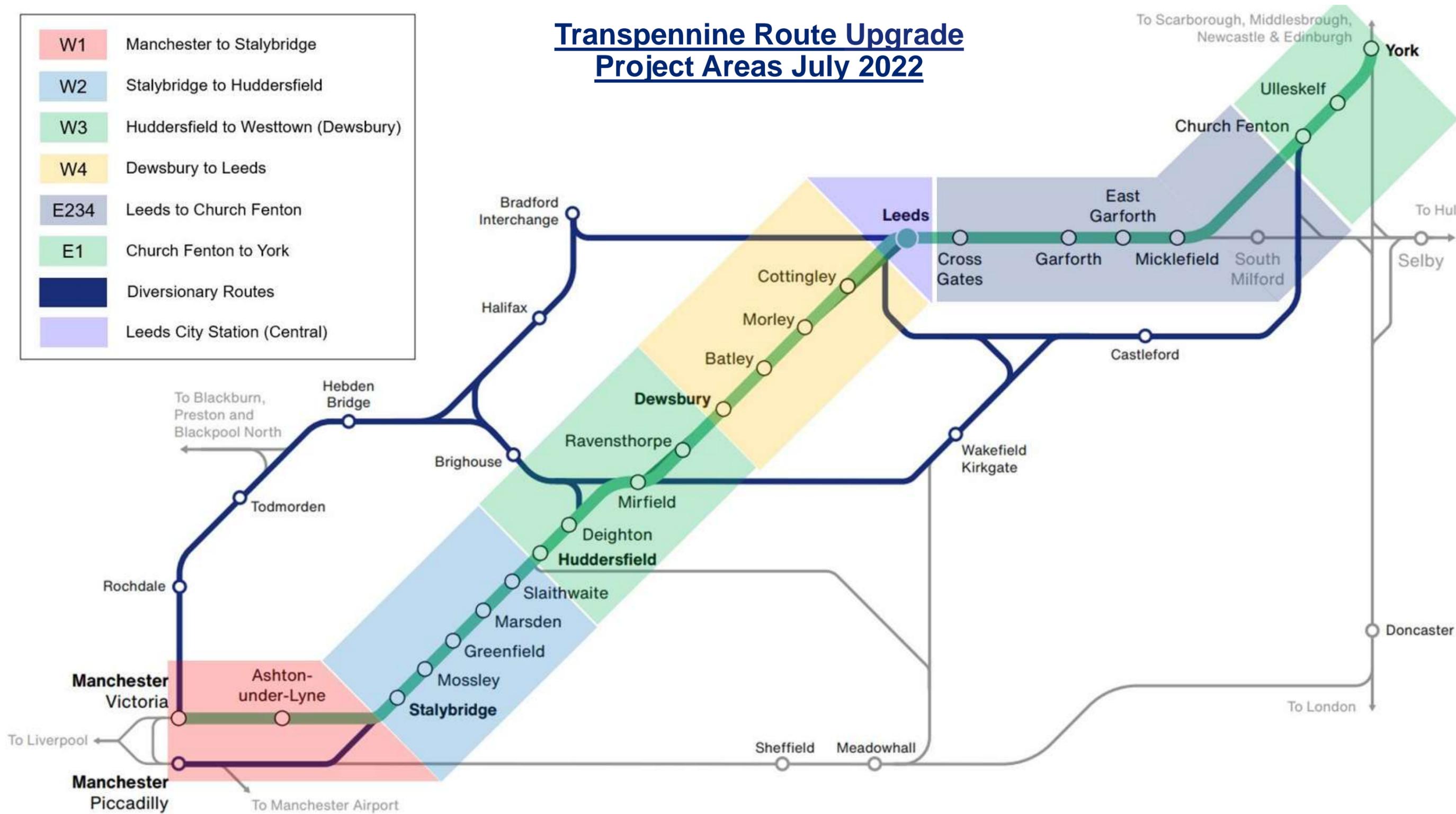
*Demand is already back to 80-90% and expected to go back to full capacity and above.



We're transforming journeys across the North, better connecting towns and cities and boosting local economies through more frequent, faster trains, running on a cleaner, greener and more reliable railway.

Transpennine Route Upgrade Project Areas July 2022

| | |
|------|-------------------------------------|
| W1 | Manchester to Stalybridge |
| W2 | Stalybridge to Huddersfield |
| W3 | Huddersfield to Westtown (Dewsbury) |
| W4 | Dewsbury to Leeds |
| E234 | Leeds to Church Fenton |
| E1 | Church Fenton to York |
| | Diversionary Routes |
| | Leeds City Station (Central) |



29
Level crossings

70
Miles of track

3
Miles of viaducts

23
Stations

6
Miles of tunnels

TRU Improvements

The total forecast cost range for the programme is currently £9bn-£11.5bn with expected completion dates of 2036 to 2041 for full realisation of benefits. However, the majority of benefits will be realised by the early 2030s.

Electrifying the whole route between Manchester and York via Huddersfield and Leeds

Installing a new digital signalling system

Doubling the number of tracks from two to four between Huddersfield and Westtown (Dewsbury)

Improving stations (including better accessibility)

Improving the railway on diversionary routes

TRU Benefits

More trains to choose from and more seats

Our improvements will enable more trains to run between Manchester, Leeds and York

Up to six fast/semi-fast services every hour between Leeds and Manchester and up to two stopping services for local connectivity.

Faster journeys

Travel to your favourite towns and cities more quickly.

Our fastest journey times are forecast to be 63-66 minutes between Manchester and York and 41-42 minutes between Manchester and Leeds.

More reliable journeys

Smoother journeys with trains that run on-time.

Better stations

Station improvements across the Transpennine route, bringing passengers a better travel experience through improved, more accessible stations

Greener travel

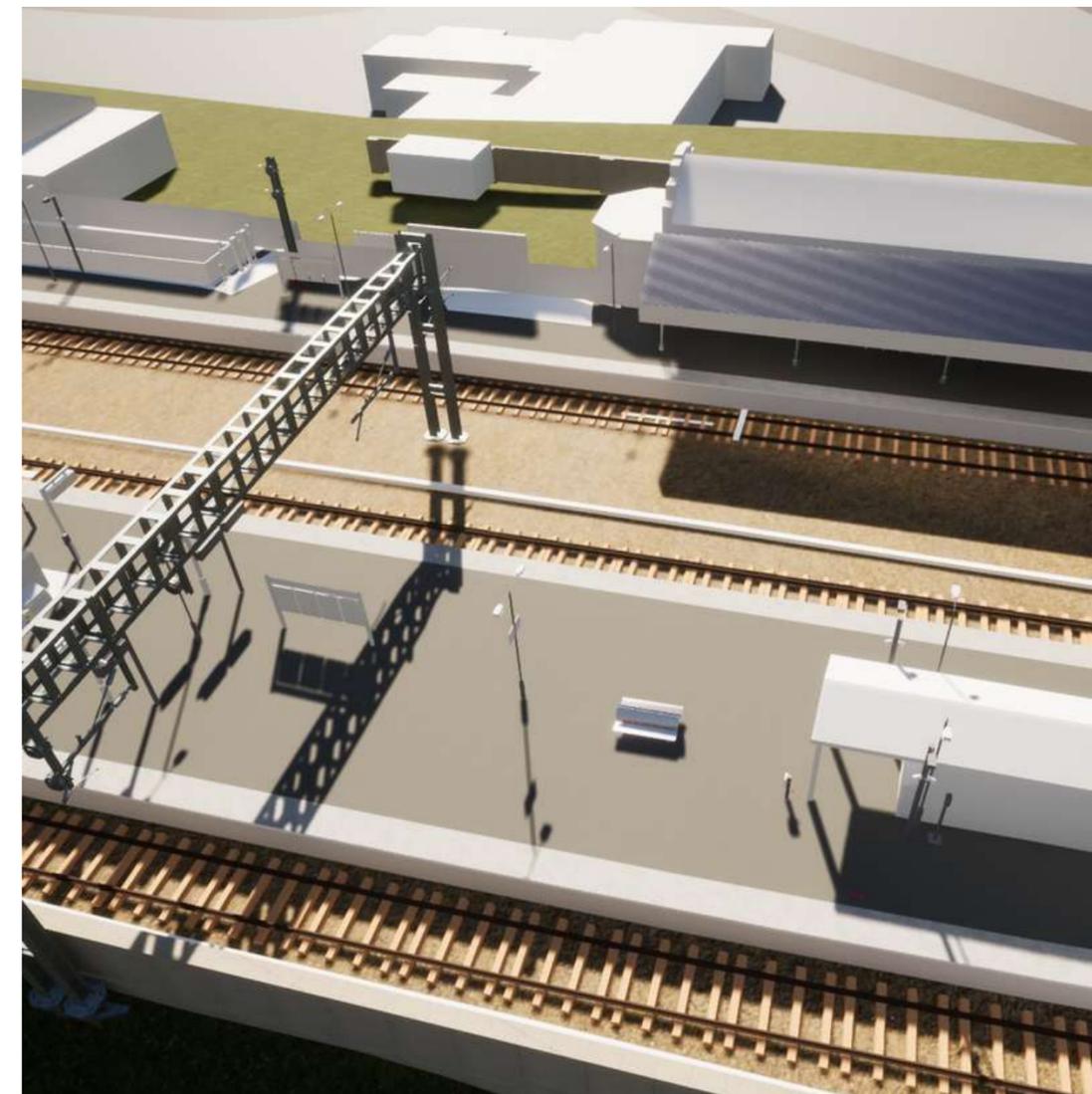
Reducing our carbon footprint and improving air quality.

We're also developing a proposal to move more goods by rail (up to 15 more freight trains) removing over 1,000 lorries off the road each day.

TRU in numbers



Future key interventions



Project maturity



Supporting local communities

80% of team on TRU Alliance live within 40miles

71% of team on TRU Alliance live within 25miles

£98.7m (53%) spent with local businesses

£68.3m (37%) spent with SME businesses

110 apprentices

77 graduates

32 internships and 6 Kickstarters

6,292 days work experience for young people

1,051 days work experience for adults

15,670 young people engaged in STEM

3,366 hours volunteered

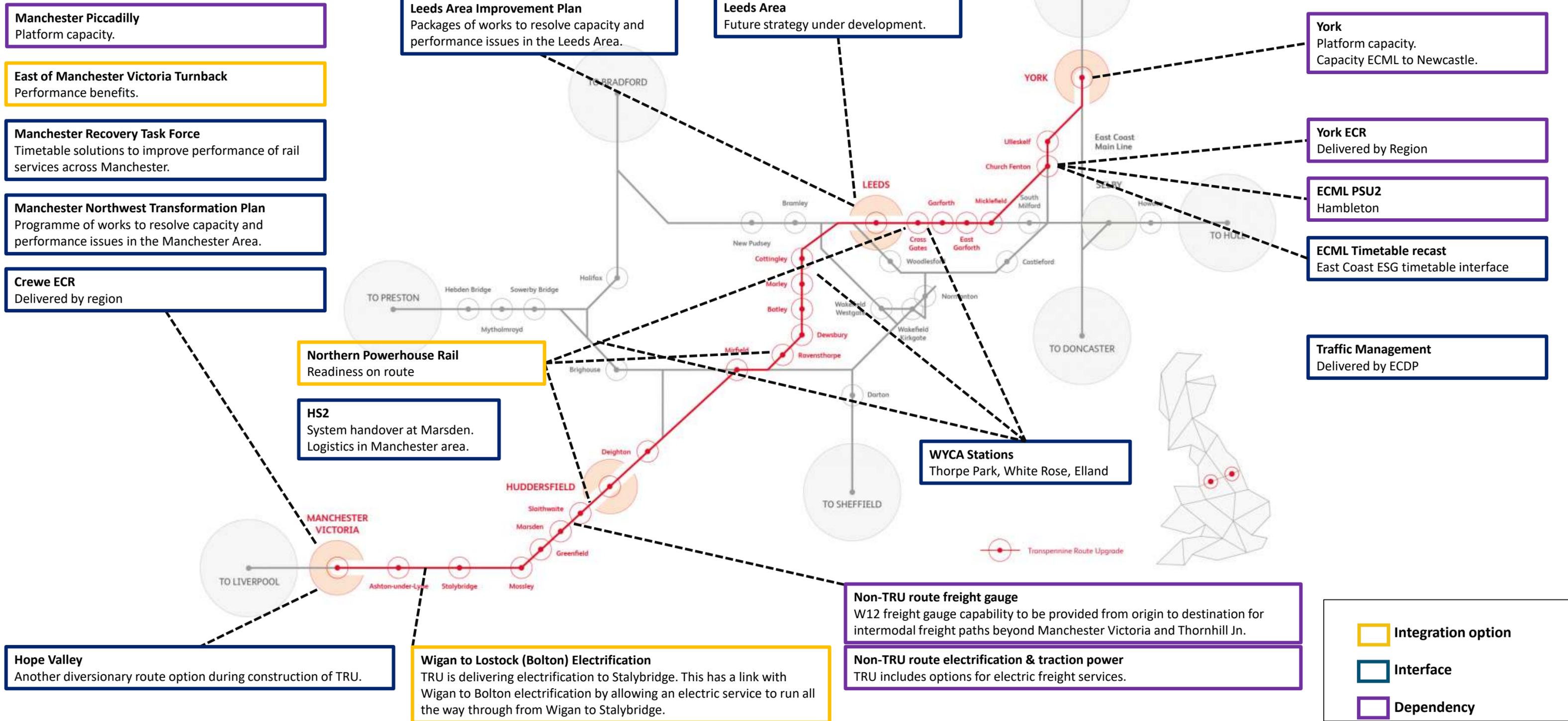
232.5 hours mentoring economically inactive adults

Freight improvements



- TRU is developing proposals for DfT to deliver significant freight benefits
- We're committed to working with freight industry partners to deliver these much-needed improvements
- W12 gauge is already in formal development and we continue to develop our wider freight plan with the DfT
- We aim to complete our freight proposals this year for consideration by DfT in early 2023

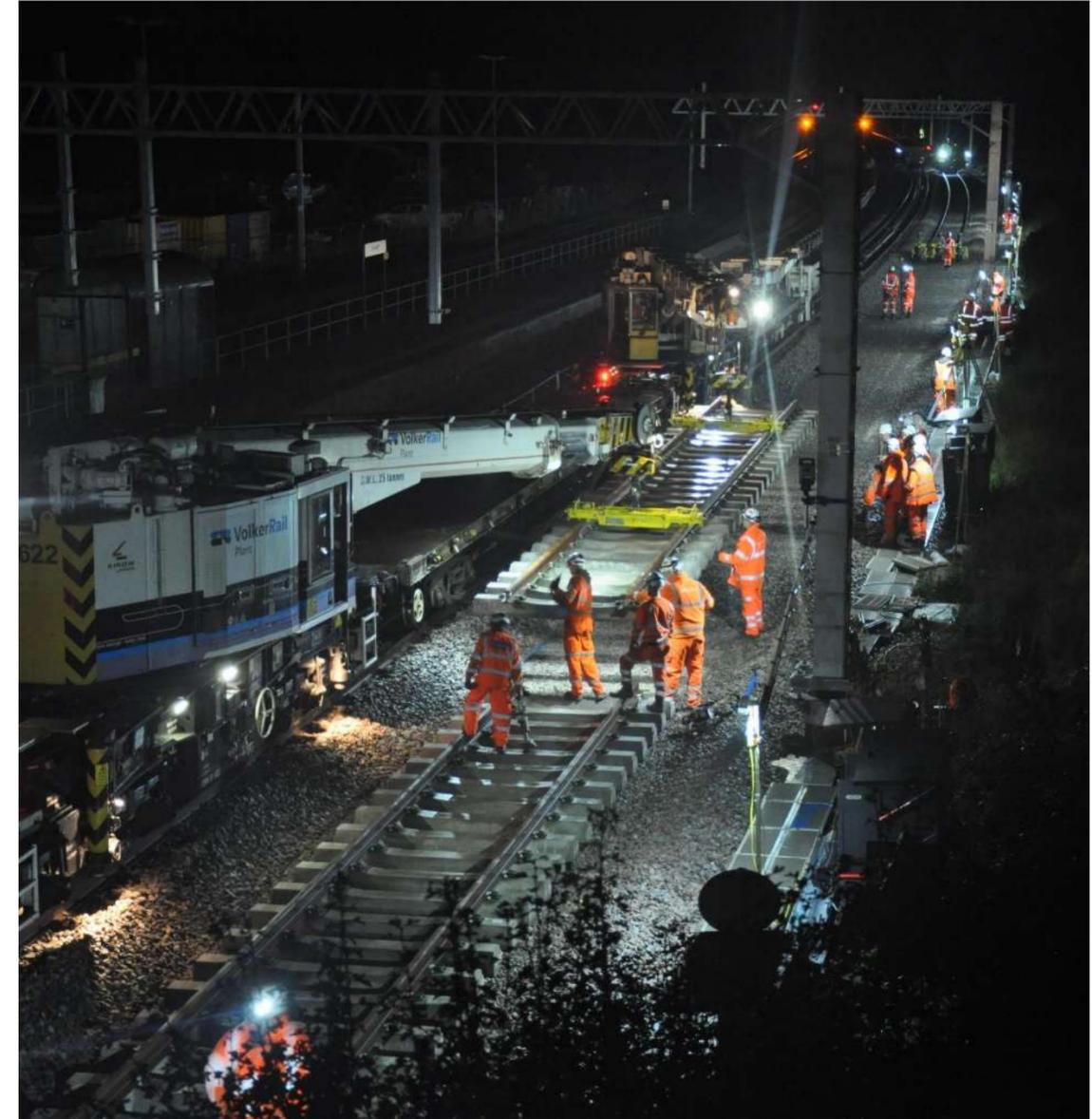
Integrating into wider projects in the North/IRP



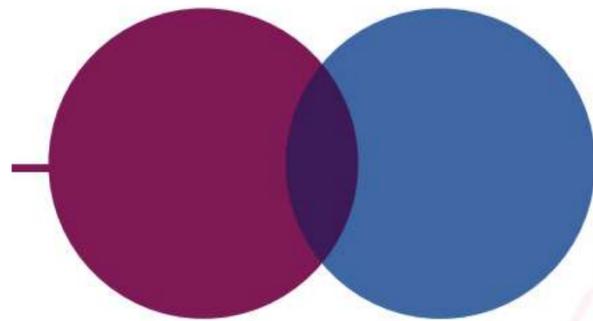
What we've **delivered to date**

Hannah Lomas
Principal Programme Sponsor, Network Rail

Work to date



The last five months...

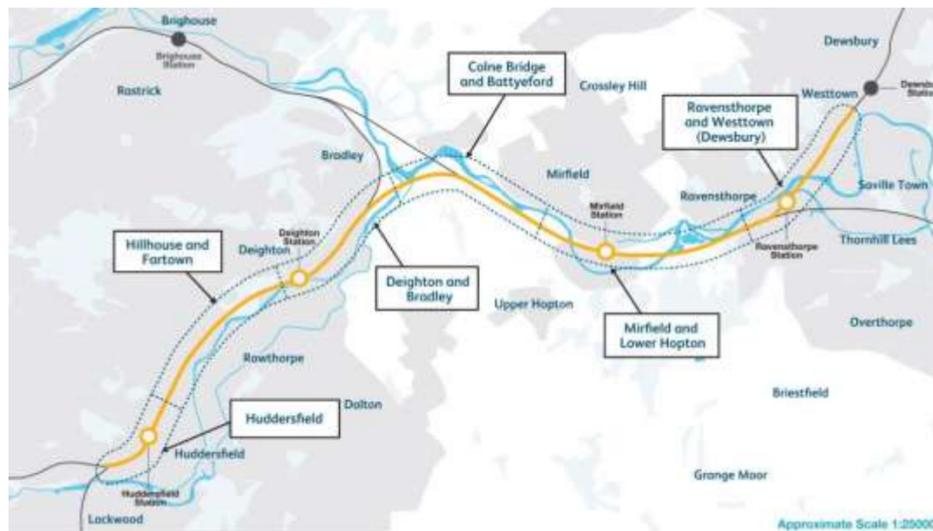


National Audit Office (NAO) Report

The Transpennine Route Upgrade Programme

Department for Transport and Network Rail

W3 TWAO approval



E1 electrification wire runs



First part of York to Church Fenton electrification is complete



Yorkshire Evening Post



Leeds to Manchester train journeys could be 30 minutes quicker if £2.5bn upgrade goes ahead

The Transpennine Route Upgrade (TRU)

On Monday, we were on site between Tink and Church Fenton where we welcomed regional and trade media who were taking a look at the first mile of electric wires that have been installed as part of TRU.



First electrified track in decades built



Grant Shapps • Following

It's incredible to see Yorkshire's first new electric railway in 25 years get up and running. As part of our record breaking £96bn Integrated Rail Plan, this will deliver faster, greener and more frequent connections across the North, helping level up the country.



Yorkshire's first new electric railway in 25 years set to cut carbon and slash journey times

The last five months...

Cobra sidings



Batley



Castleford station



Morley



Fieldhouse Lane bridge

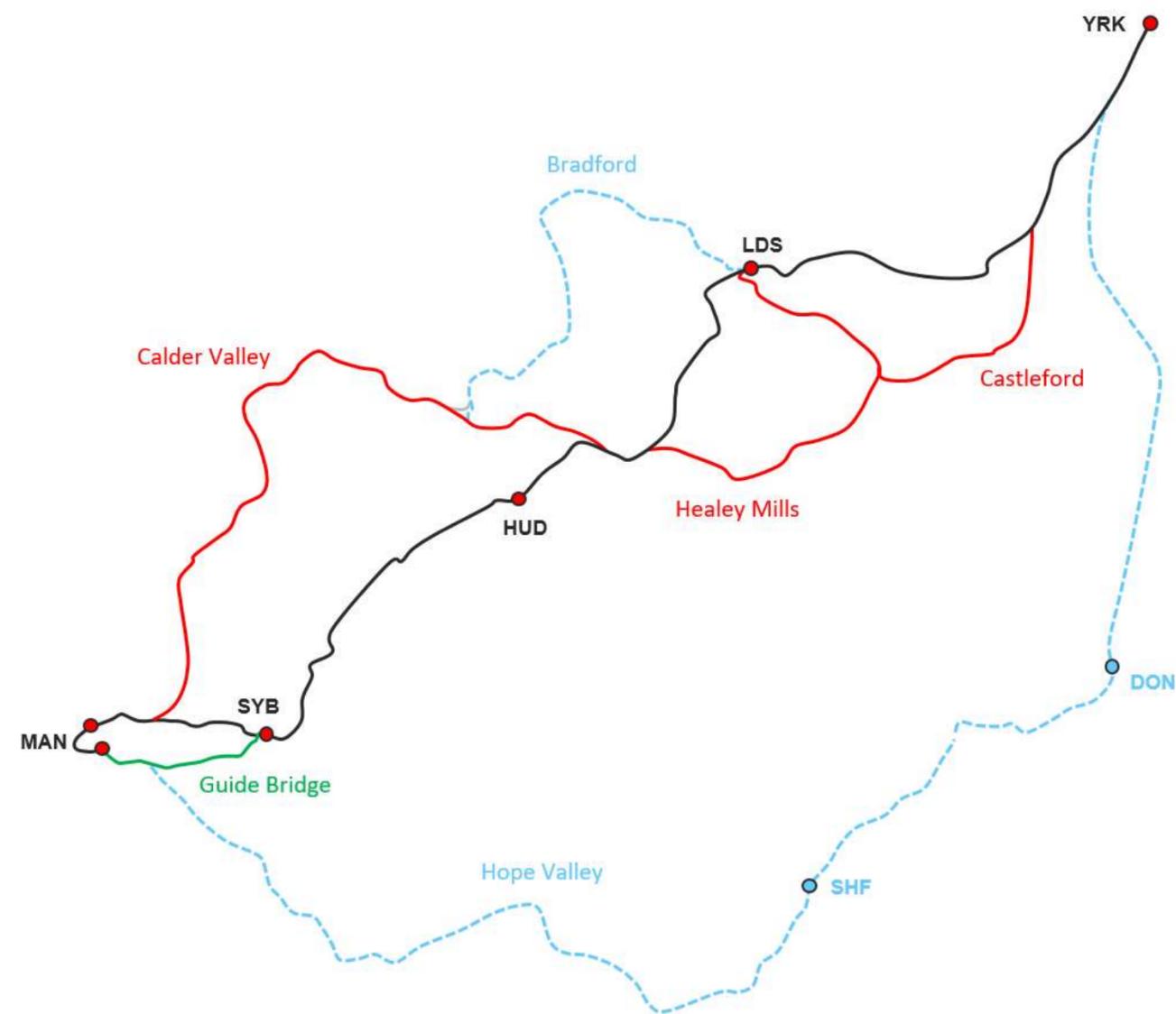


- Core Route
- Primary Diversionary Route
- Supporting Diversionary Route
- - - Supporting Routes

Forward look – 2023

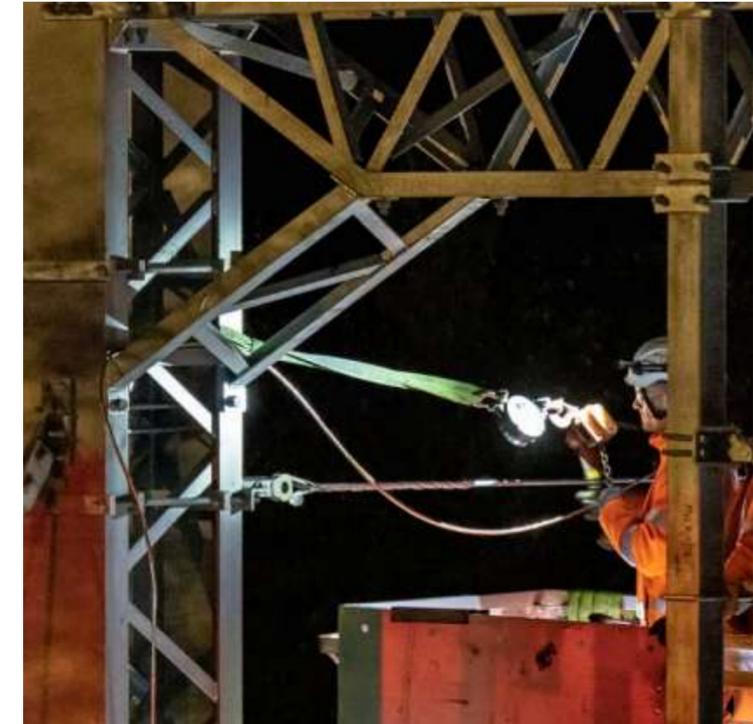
Next year, the key focus for the programme is achieving Key Output 1, which is focused on completing the improvement work to the diversionary routes. We're upgrading three of the railway lines near the Transpennine route, that we'll use as 'diversions' to keep passengers on trains while TRU work takes place on the core route.

In May 2023 we will complete our programme of upgrades on these diversionary routes and run more trains on them whilst we upgrade the line. Once we're finished, the improved capacity and reliability of the diversionary routes will provide longer term legacy benefits to passengers.



Forward look – 2024

For 2024, our key focus moves to achieving Key Output 2, which is bringing electric trains onto the railway between Manchester and Stalybridge, meaning better, greener and more reliable trains for passengers.



TRU Stations

TRU's 'core' route covers 20 stations, with a further 30 on 'diversionary routes'.

- Manchester Victoria, Leeds & York are not part of the TRU programme, as they have standalone investments.

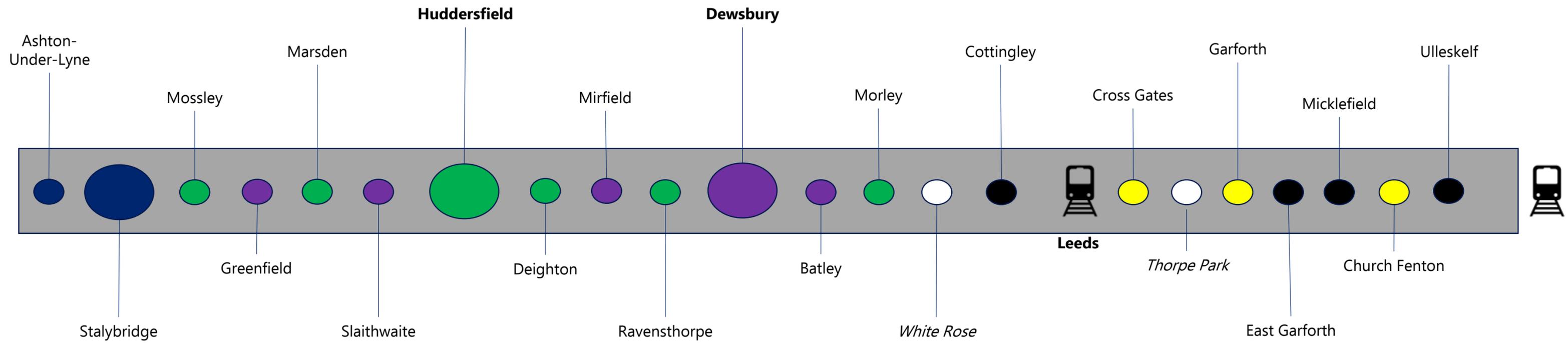
There are three main focuses for station enhancement on TRU core route stations;

- I. **Step-free access:** Most often through new footbridges with lifts, TRU will provide step-free access at almost all stations on the core TRU route.
- II. **Platform Lengthening:** As train lengths increase to enhance TRU seating capacity, platforms will be lengthened to accommodate them, up to 150m at 'local' stations and up to 200m at 'regional'.
- III. **On-Station Improvements:** Facilities and station furniture will be refreshed and enhanced to give an improved and consistent experience across all TRU stations, including items such as seating, waiting shelters, tactile paving, and more.
 - I. Some of these works will also take place on Diversionary Route stations in support of customer handling.

○ 'Intermediate' Station

○ 'Intercity' Station

🚂 'Major' Station – *not in TRU scope*



- Station Re-build
- Accessibility Enhancement
- Accessibility & Platform Lengthening
- Platform Lengthening Only
- New Station (WYCA)
- TBC

Social Value and Sustainability

Anna Humphries

Head of Sustainability & Social Value, Network Rail

The Why

Wider govt. objectives

Grow and level up the economy: raise productivity and empower places so that everyone across the country can benefit from levelling up (MHCLG)

Net Zero and the environment: reduce UK greenhouse gas emissions to net zero by 2050 (BEIS) and improve the environment through cleaner air and water, minimised waste, and terrestrial marine wildlife (DEFRA)

DfT priority outcomes

Build confidence in the transport network and improve transport users' experience, ensuring that the network is **safe, reliable, and inclusive**

Improve connectivity and **grow the economy** by enhancing the transport network, on time and on budget

Tackle **climate change and improve air quality by decarbonising transport**

TRU programme objectives

To improve rail users' experience by providing more frequent, more reliable, faster and less crowded trains

To improve connectivity to **level up and grow the North**

To attract new users to rail, both passenger and freight

To "green" the railway to contribute to **decarbonisation and other environmental benefits**

We will create **northern jobs** to build and operate a local railway that **enhances the environment** and **satisfies customer's** needs, by **working with our communities**.



Where are we heading?

New Enterprise-wide Sustainability Strategy – consultation ongoing now

Northern jobs

- We will help the north prosper, through the **employment of people and businesses** along the Transpennine corridor.
- We will encourage new entrants into the rail industry through **work experience and apprenticeships** opportunities, whilst also ensuring our team reflect the **rich diversity of the communities** we serve.
- We will **work with local businesses**, no matter the size, to deliver a legacy of economic growth in the region.



K'Nex Bridge Building with Slaithwaite C.E School



Realising Rail Event – Route into rail



Project Recce – Interview Workshop

Where are we heading?

New Enterprise-wide Sustainability Strategy – consultation ongoing now

Enhanced environment

- We will act as a custodian for the **natural environment through design, delivery, and operation**.
- We will **remove carbon** from the infrastructure, adopt **circular economy** principals and support sustainable sourcing.
- We will **minimise pollution** while maximising opportunities for **renewable energy** and **biodiversity** on or near the line



Saddleworth – City of Trees



Solar Generator trial at Brumber Hill



Using technocrete as an alternative to concrete



Solar Battery link lights

Where are we heading?

New Enterprise-wide Sustainability Strategy – consultation ongoing now

Satisfied Customers

- We will deliver more **frequent trains** on a railway that is **resilient to current weather and future climate change**, providing **safe** and **reliable travel** for both freight and passengers.
- We will enable **better travel integrated accessible journeys** and ensure the railway that can be **used and enjoyed** by all



'Sure Ground' -a soil strength enhancement system for t haul road construction, reducing dust during construction and operation

Where are we heading?

New Enterprise-wide Sustainability Strategy – consultation ongoing now

Working with our communities.

- We will keep our **communities safe**, ensure we **minimise disruption** and deliver on the commitments we have made to our communities.
- We will **invest in our communities**, their **wellbeing, education and community spaces**, to leave a net positive impact on society.



STEM Event – Trinity CofE, Leeds



Strawberry Fields' School Community Greening Project



Micklefield Community Wildflower Meadow

What have we achieved so far?



Enhanced environment - Deliver net positive biodiversity

TRU is the first major UK rail upgrade to target 10% biodiversity net-gain

We will leave the route measurably better.

Offsets have been delivered across the route, providing natural regrowth of scrub on site:

- In 2020 we delivered two offset projects at Saddleworth; replanting trees to create a woodland offset and creating a woodland habitat and scrubland offset
- The TRU East of Leeds team transformed a disused Micklefield bowling green to create a wildflower meadow that is **delivering a biodiversity enhancement of over 40%.**

All projects will deliver improved habitat and green space for all.



Northern jobs - Achievements to date: £704.6million in Social Value



Inclusive Growth

- 71% of employees on TRU Alliance live within 25 miles
- £151.2m (54%) spent with Local businesses
- £93.3m (36%) spent with SME businesses



SKILLS

- 8,162 days work experience young people
- 1,068 days work experience for adults
- 102 Graduates 4 Interns to Graduate
- 143 Apprentices
- 39 Internships 6 Kick starters



Community Investment

- 4,292 hours volunteered
- 23,462 Young people engaged in STEM



Thinking ahead

Social Value has reached a level of maturity on TRU; however, we must continue to develop and focus our approach in order to lead Levelling Up across the North of England and greening the railways

- Transitioning away from outputs > outcomes
- Future focus on **social inclusion led** outcomes
 - Rail Social Value Tool and Project Mapper to identify 'where' & 'who'
 - Strawberry Fields as gold standard for our Social Value approach
 - Whole Life Carbon and utilising innovation to address the challenges of the future
 - CEEQUAL Excellent rating



Summary

- There is a lot of great sustainability work being delivered to date on TRU.
- Further opportunities are possible, and we are continually stretching what can be achieved.
- Enterprise approach will really drive sustainability across the programme and leave a lasting legacy to the route and local communities.

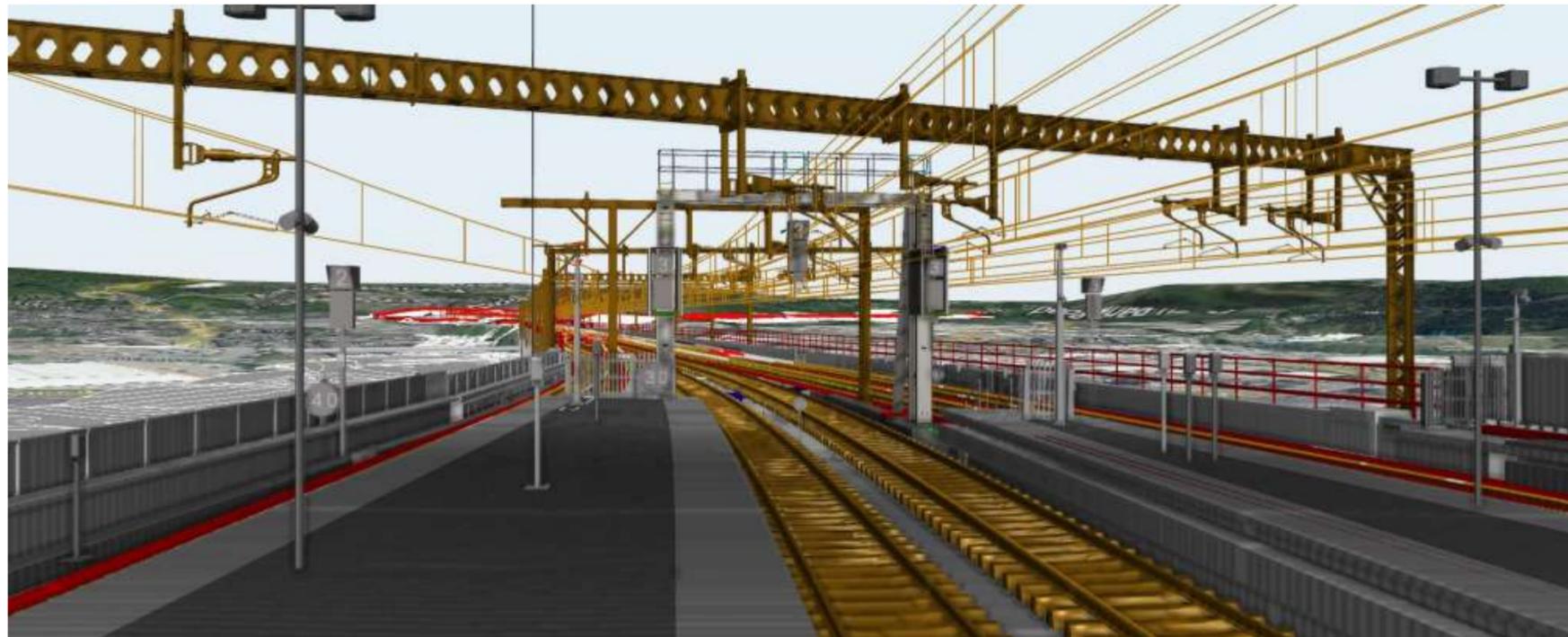
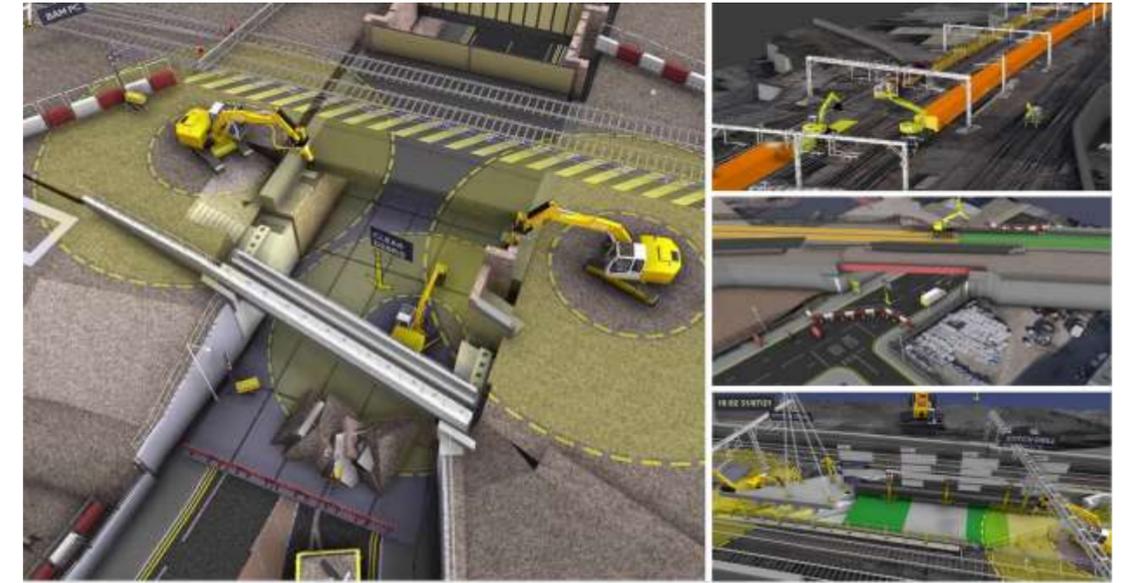


TRU Innovation & Challenge

David Lawrance
TRU Chief Engineer, Network Rail

Innovation & Challenge - Headlines

- Lots happening already
- We need more (TRU Efficiency Challenge)
- We want your help

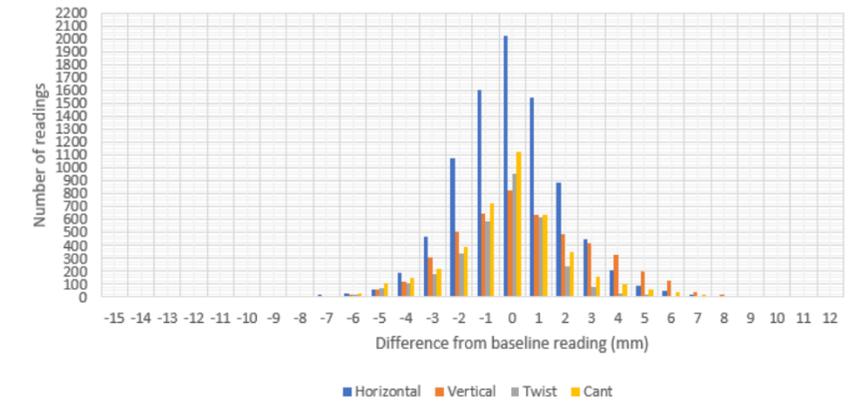


Innovation & challenge examples

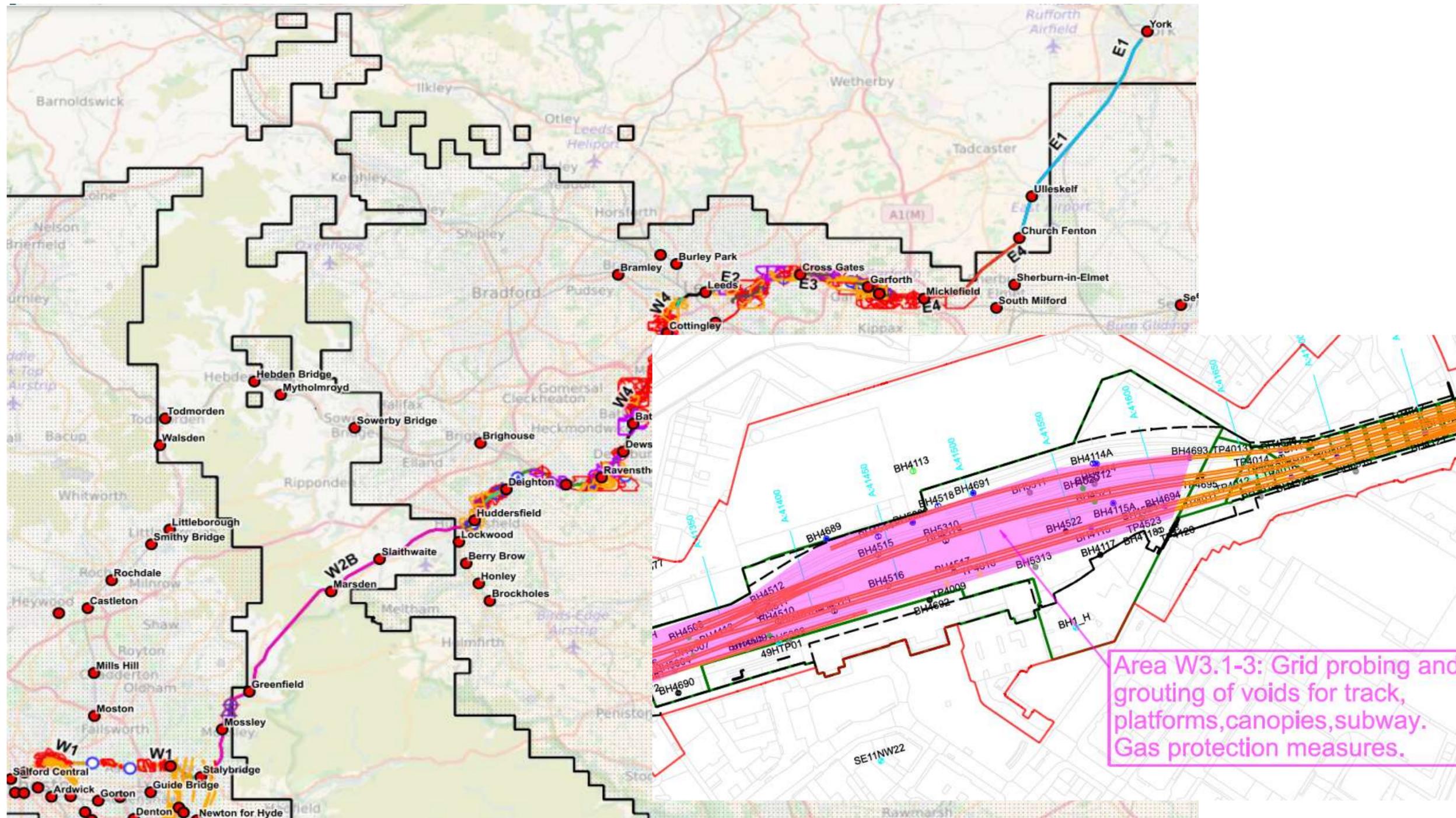
- Track monitoring requirements
- Piling in mining risk areas
- Technocrete postmix alternative
- BaFix ballast retention

TRU West track monitoring results analysis - variance from baseline readings

Circular hollow steel piles for OLE foundations, installed during 2021

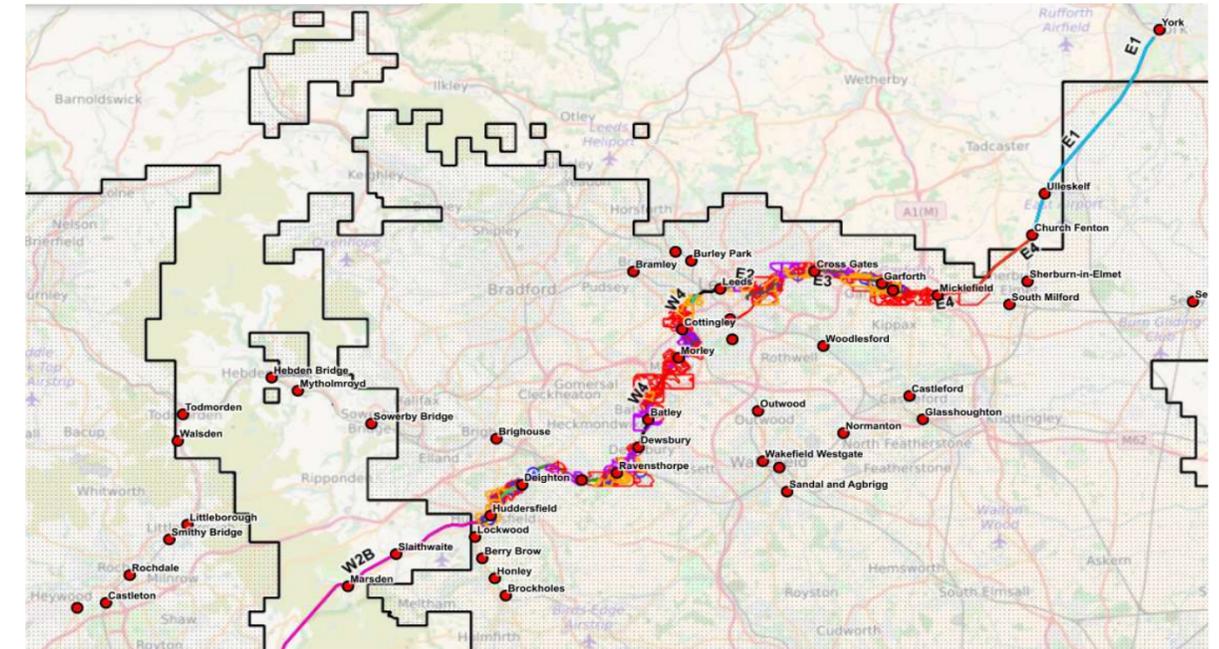


TRU Mining Remediation



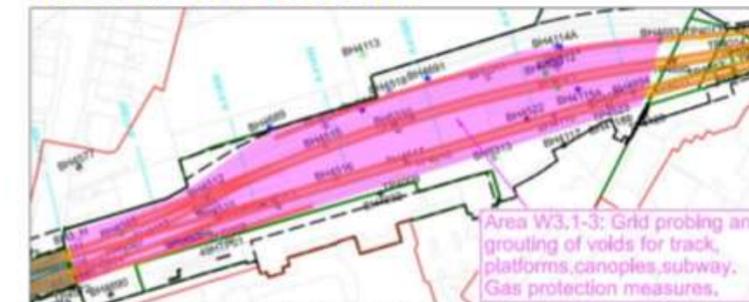
Explicit Risk Estimation approach to Mining Risk

- First of kind application of Explicit Risk Estimation (ERE)
- Estimates the probability of injury and fatalities - what is the justifiable spend on mitigations to avoid them?
- Huddersfield scope reduction ~ 60%
- TRU-wide and national application



Total Mining Remediation = **required to reduce operational risk to ALARP** + required for new foundation stability + required to control phase risk

Huddersfield Station



Current proposal in MRMR:

- Probe and grout beneath new structures.
- Probe and grout beneath tracks.
- Probe and grout beneath OLE.



Revised proposal

- No mitigation for sudden collapse.
- Probe and grout beneath new structures – red = new foundations, green = 5m zones around foundations - likely probing and grouting
- Probe and grout beneath OLE locations
- Trackbed reinforcement beneath areas of track

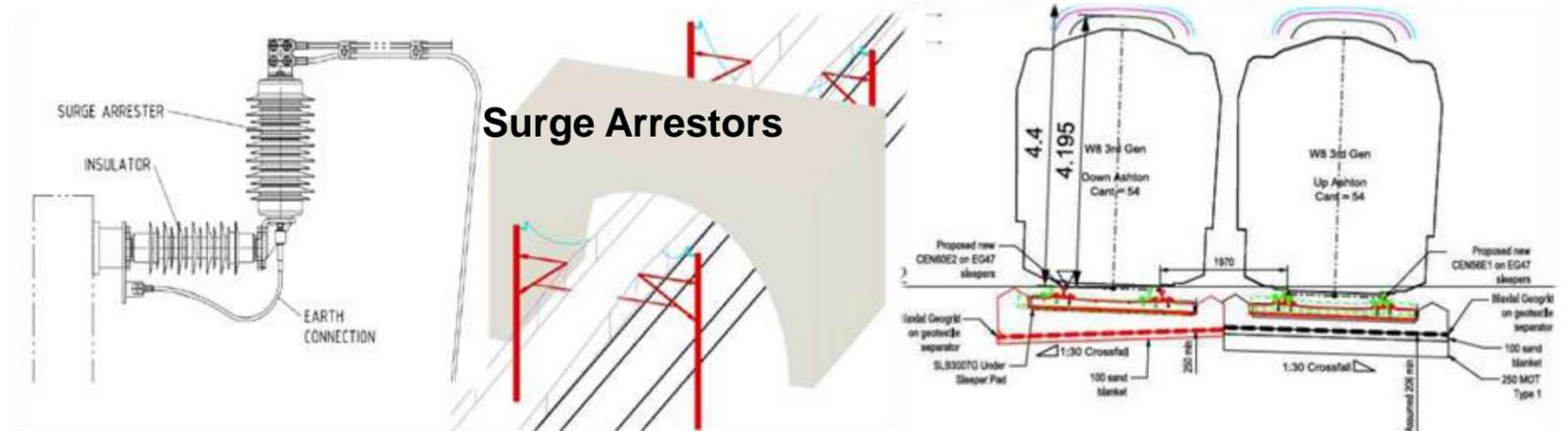
Credit W3 team: Jane Collins, Lucy Regan, John Thompson + teams
 Note ERE approach applied to mine workings, not shafts, and dealt with operational railway



Transpennine Route Upgrade Digital Ecosystem

System Approach to Electrification Clearances

- ~30% cost of electrification attributable to electrical clearance interventions
- GWEP Programme deployment of surge arrester technology
- TRU process to demonstrate whole life cost optimisation
- Competing interests and options across OLE, Track and Structures
- National Electrification Efficiency Panel
- 18 (8) bridge reconstructions saved on TRU



Credits: Richard Stainton (NR Technical Authority),
Tom Kemp (TRU Principal Engineer)
TRU Alliance design teams

Possession and Blockade Management Digitisation

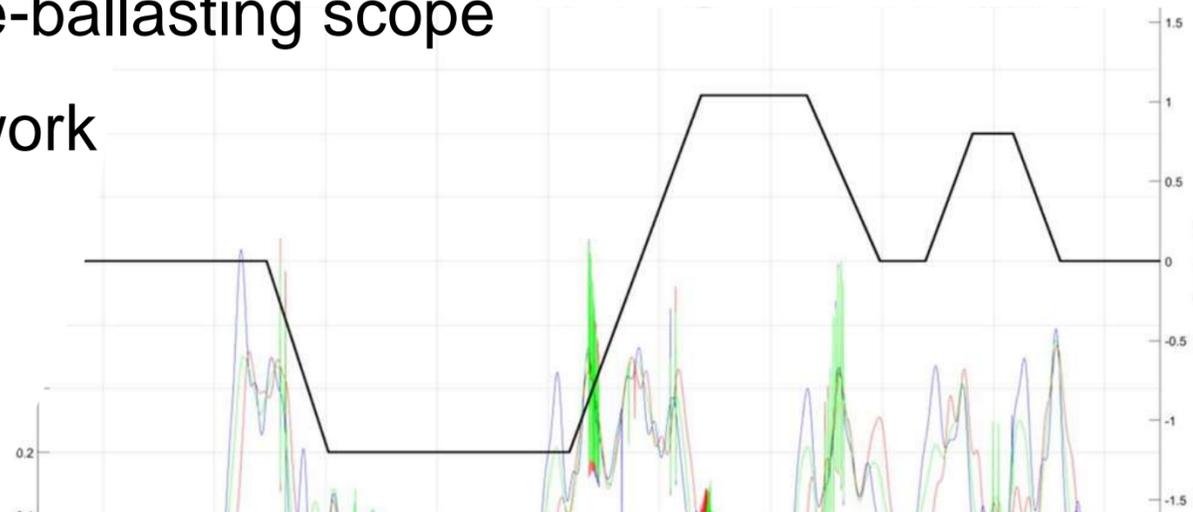


- Draws site-gathered data into a single BI system + CCTV + 4D simulation
- Presented in the Digital Collaboration Hub and available online
- Accurate real time information
- Returns the focus of the team to collaboration and timely decision making



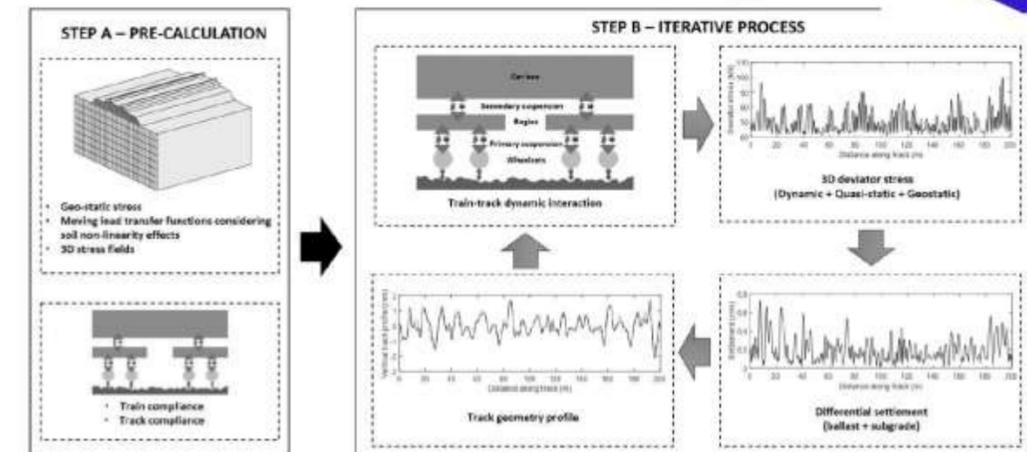
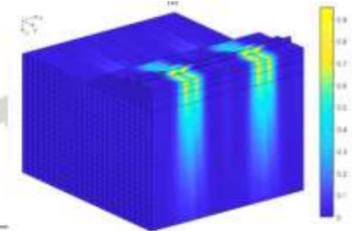
Exceptional track design parameters and University R&D

- Exceptional track design parameters (Huddersfield)
 - Passenger comfort assessed through computational modelling => optimising the track works cost / benefit ratio on TRU
 - Motion simulator used to explore boundaries of design standards (NR and RSSB)
- OLE contact force modelling (Huddersfield)
- Modelling of track formation performance over time (Leeds) => reduced re-ballasting scope
- UKRRIN network



Physics-based simulation

- Calculations from first principles
- Can compute future track geometry considering changes to track, rolling stock and operations



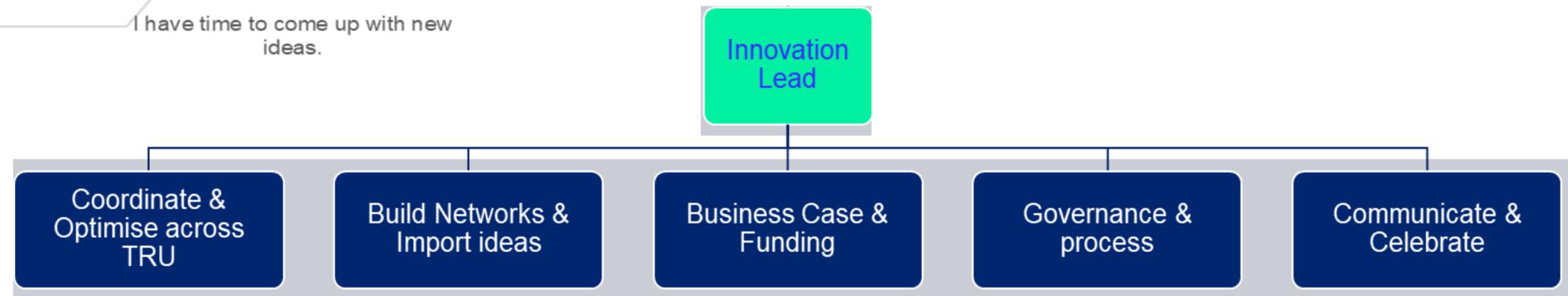
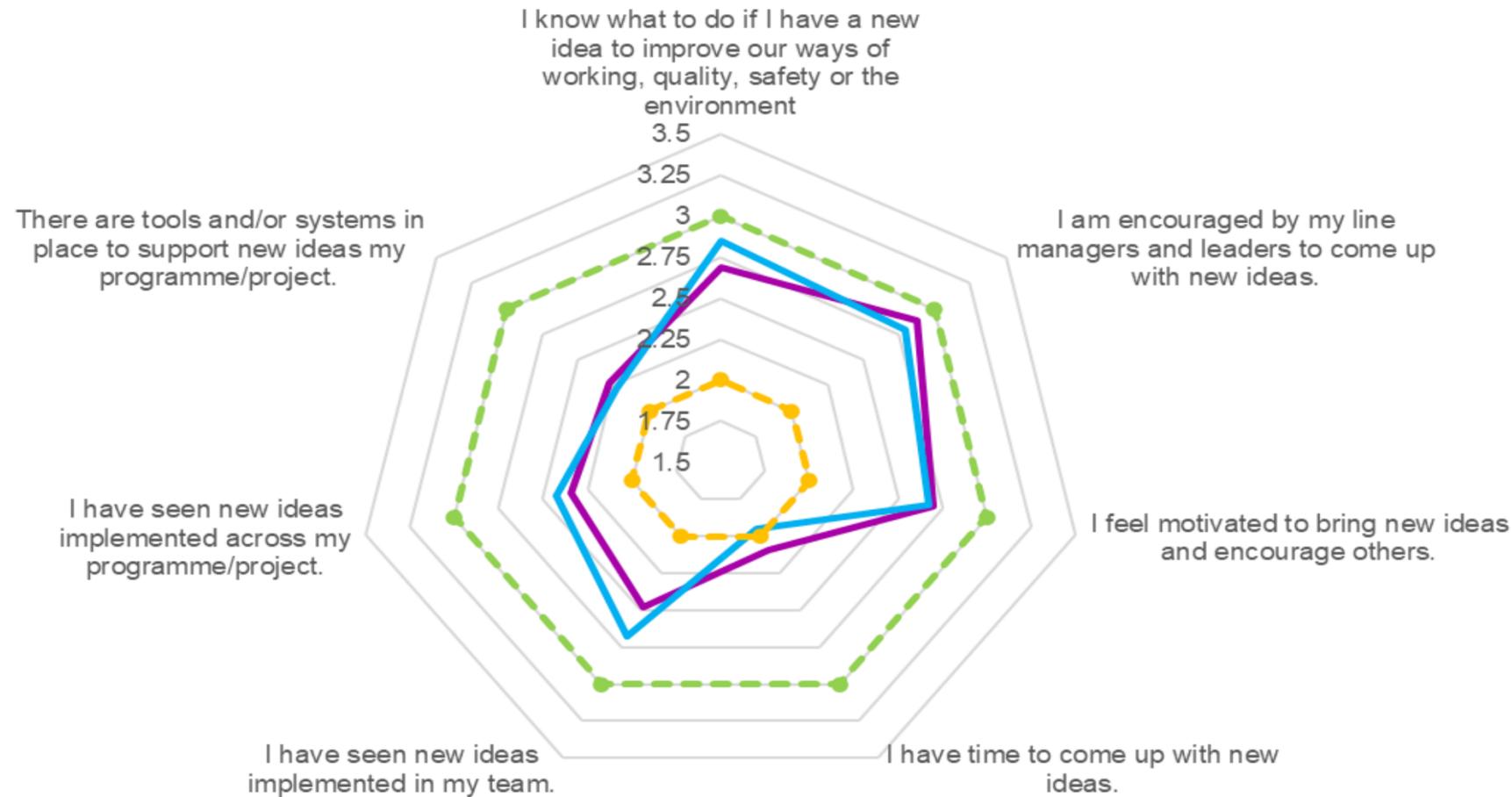
Carbon Reduction Investment Principles

- Ambitious embedded carbon reduction target
- Need client agreement of principles to go beyond MVP
- Draw-down from fund on the basis of reaching a ££ spent / T CO2 saving threshold
- Legacy impact



TRU Innovation - Strategic Review

—●— TRU Average
 —●— Industry Wide Response Average
 -●- Neither / Undecided
 -●- Agree



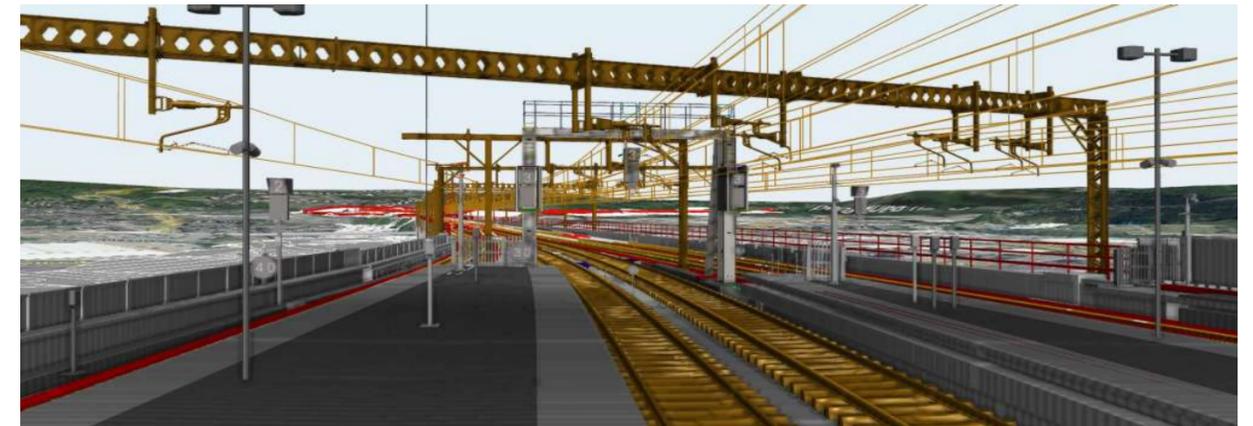
Innovation & Challenge – Round up

- Lots happening already
- We need more (TRU Efficiency Challenge)
- We want your help

improvements@truwest.co.uk

improvements@trueast.co.uk

truidea@Networkrail.co.uk



Reviewing our standards

Home > Industry and commercial > Third party investors > Network Rail is Open for Business > Reviewing our standards

Industry and commercial

- Information for operators
- Network Rail Property
- Rail freight
- Research, development and innovation
- Supply chain
- Third party investors
 - Network Rail is Open for Business
 - Hansford Review Response
 - Increasing our capability and capacity

We are encouraging changes to our standards to encourage greater innovation, cost efficiency and safety.

Standards are the detailed requirements that we use to ensure the safe and reliable operation of the railway. We have already updated and streamlined our standards to reflect the changes in the industry. We've adopted a collaborative and iterative approach with the [Industry Association \(RIA\)](#) and a number of other stakeholders.

As part of the process, suppliers and contractors can provide feedback if they think our standards are incorrect, not enable the application of their expertise, or if they have received, and conduct a rigorous impact assessment to ensure the standards are fit for purpose and compatible with the railway's needs.

SPEED

Swift, Pragmatic and Efficient Enhancement Delivery

Standards Challenge Workstream

Sponsored by:

- Andrew Murray (DEAM – Eastern)
- Alan Ross (DEAM – Scotland)

Lead:

- Tom Chapman (CoE)

How we're keeping passengers moving

Chris Nutton
TransPennine Express

Title

Text

Importance of TRU in West Yorkshire

James Nutter
Lead Policy Manager,
West Yorkshire Combined Authority

West Yorkshire Combined Authority and West Yorkshire



- The Combined Authority and LEP work in partnership with one another – and local councils and business – to ensure everyone in our region benefits from a strong, successful economy and a modern, accessible transport network.
- Investing around £2 billion, working with local authority areas of Bradford, Calderdale, Kirklees, Leeds and Wakefield.



2.3 million people



1.1 million workforce



95,000 businesses



7 universities, 91,000 students and 30,000 graduates



UK's largest regional finance centre



More manufacturing jobs than anywhere in the North



1.6% of the land area of England, and 4,600 hectares of national parks

West Yorkshire Objectives



Objectives and Mayor Pledges

Help deliver on a wider objectives and inclusive growth

Mayor Pledges

- Create 1,000 well paid, skilled jobs for young people.
- Prioritise skills and training to ensure everyone in West Yorkshire has the skills they need to secure work.
- Support local businesses and be a champion for our regional economy.
- Lead a Creative New Deal to ensure our creative industries are part of the broader recovery strategy.
- Appoint an Inclusivity Champion to work to ensure that the region's recovery benefits us all.
- Recruit 750 more frontline policy officers and staff to fight crime.
- Put keeping women and girls safe at the heart of my policing plan.
- Bring buses back under public control, introduce simple fares, contactless ticketing and greener buses.
- Build 5000 sustainable homes including council houses and affordable homes.
- Tackle the climate emergency and protect our environment.

The Importance of TRU in West Yorkshire

- Delivery in full vitally important to the economic recovery of West Yorkshire and rebalancing the UK economy.
- Improved:
 - Faster journey times
 - Reliability
 - Punctuality
 - Capacity
 - Longer trains, more seats
 - Station experience, fully accessible
 - Capacity for freight
- Decarbonisation:
 - Electrification
 - Reduction in emissions



Place Making

- Work ongoing in Huddersfield and Leeds.
- Jobs across Pennines.
- Rail transport is a critical enabler of sustainable and socially inclusive economic growth. Core part of economic plan.
- Support economic recovery from Covid-19.
- Make our stations attractive and pleasant places, well rooted in their communities.
- Fundamental principles that all stations throughout the network must be fully physically accessible to all.
- Create 21st century experience between two economic powerhouses.

Alignment Investment

- Ravensthorpe station remodelling aligns with major investment - WYCA/Kirklees Council/Homes England
- Dewsbury Riverside
 - 4,000 homes, master-planned alongside new infrastructure and a community hub.
 - Looks to address local, regional and national shortage of housing, contributing to wider area.



The last mile and end-to-end journeys

Hannah Lomas

Principal Programme Sponsor, Network Rail

Graham Meiklejohn

Head of Regional Development,

TransPennine Express

TRU improvements

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More reliable journeys

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Better stations

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Greener travel

Reducing our carbon footprint and improving air quality.

We're also developing a proposal to move more goods by rail (up to 15 more freight trains) removing over 1,000 lorries off the road each day.

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 - I. Some of these works will also take place on Diversionary Route stations in support of customer handling.

What about the rest of the journey?

Faster commutes will mean longer bedtime stories





Better connected rail services with the towns and cities they serve by improving the onward journey from station to end destination.

Scale of the opportunity

- Connectivity – improved cycle/walking options, reasons to leave the car at home
- Development – build on TRU investment, transform areas round stations
- Enhancement – localised investment to distribute widely TRU effect
- Social & economic benefits – through enhanced connectivity
- Stronger and safer communities – using transport to enrich lives

Last mile outputs

- Accessibility – gateway to/from stations, town centres and communities that are accessible to all
- Sustainability – greener, sustainable well plan gateways enabling carbon free or electric based journeys, realise freight opportunities
- Way marking / marking – easily connected routes
- Active travel – putting walking/cycling as a first choice
- Celebrating heritage / Stations as destinations – gateways that are public spaces and create civic pride

Partnership working for delivery of the last mile

- Last mile is outside the railway, but partnership working delivers it
- Major plans being considered with Combined and Local Authorities that harness existing developments and identify new priorities
- Coalition to secure funding and identify opportunities for match funding
- Align railway and combined/local authority proposals to streamline delivery of projects once agreed and funded
- Enhance and compliment by removing contradictory workstreams and developments

Last mile TRU partners



Initial outputs delivered

- Last mile workshops with local authorities
- Alignment of priorities and delivery of hub vision
- Local authorities collaborative working
- Working groups structure developed for local stations
- Masterplans commenced for Stalybridge, Huddersfield and Dewsbury
- Funding sources being identified

Next steps

- Continued focus on understanding developments and opportunities.
- Alignment and visibility of cross-industry developments and categorisation of opportunities across the full TRU route
- Identification of existing funding and future funding opportunities
- Determination of priorities, delivery timescale aspirations and sustainable passenger and freight opportunities
- Establish Last Mile Working Groups or through existing forums
- Delivery of early achievable and transformational outputs

Importance of TRU for Freight

Maggie Simpson
Director General, Rail Freight Group

Freight Stakeholders

- Diggle, Hope, Calder – the bulk freight traffic

The logo for Drax, featuring the word "drax" in a bold, lowercase, blue sans-serif font.The logo for Cemex, consisting of a stylized graphic of two parallel diagonal lines (one red, one blue) to the left of the word "CEMEX" in a bold, uppercase, blue sans-serif font.The logo for Network Rail, featuring the words "NetworkRail" in a bold, blue sans-serif font, with "Network" in a regular weight and "Rail" in a bolder weight. Below the text is a stylized orange graphic consisting of several overlapping, upward-pointing chevron-like shapes.The logo for Total, featuring a stylized globe icon composed of red, blue, and yellow curved segments to the left of the word "TOTAL" in a bold, uppercase, red sans-serif font.The logo for Breedon, featuring a stylized graphic of two overlapping triangles (one blue, one yellow) above the word "BREEDON" in a bold, uppercase, blue sans-serif font.The logo for Suez, featuring a stylized green and yellow swirl icon to the left of the word "suez" in a lowercase, blue sans-serif font.The logo for Tarmac, featuring a blue circular icon with a white center to the left of the word "TARMAC" in a bold, uppercase, blue sans-serif font, with "A CRH COMPANY" in a smaller, uppercase, blue sans-serif font below it.

Freight Stakeholders

- What bulk really delivers... power, infrastructure, civic services, and maintenance



Freight Stakeholders

Intermodal – continually growing, feeding our consumption

- Leeds - Freightliner
- Wakefield – Maritime Transport
- Doncaster - iPort Rail, Freightliner
- Trafford Park – Maritime Transport, Freightliner
- Currently north – south flows from SE ports and Midland terminals
- Regional un-met demand is strong for intermodal connections East <> West



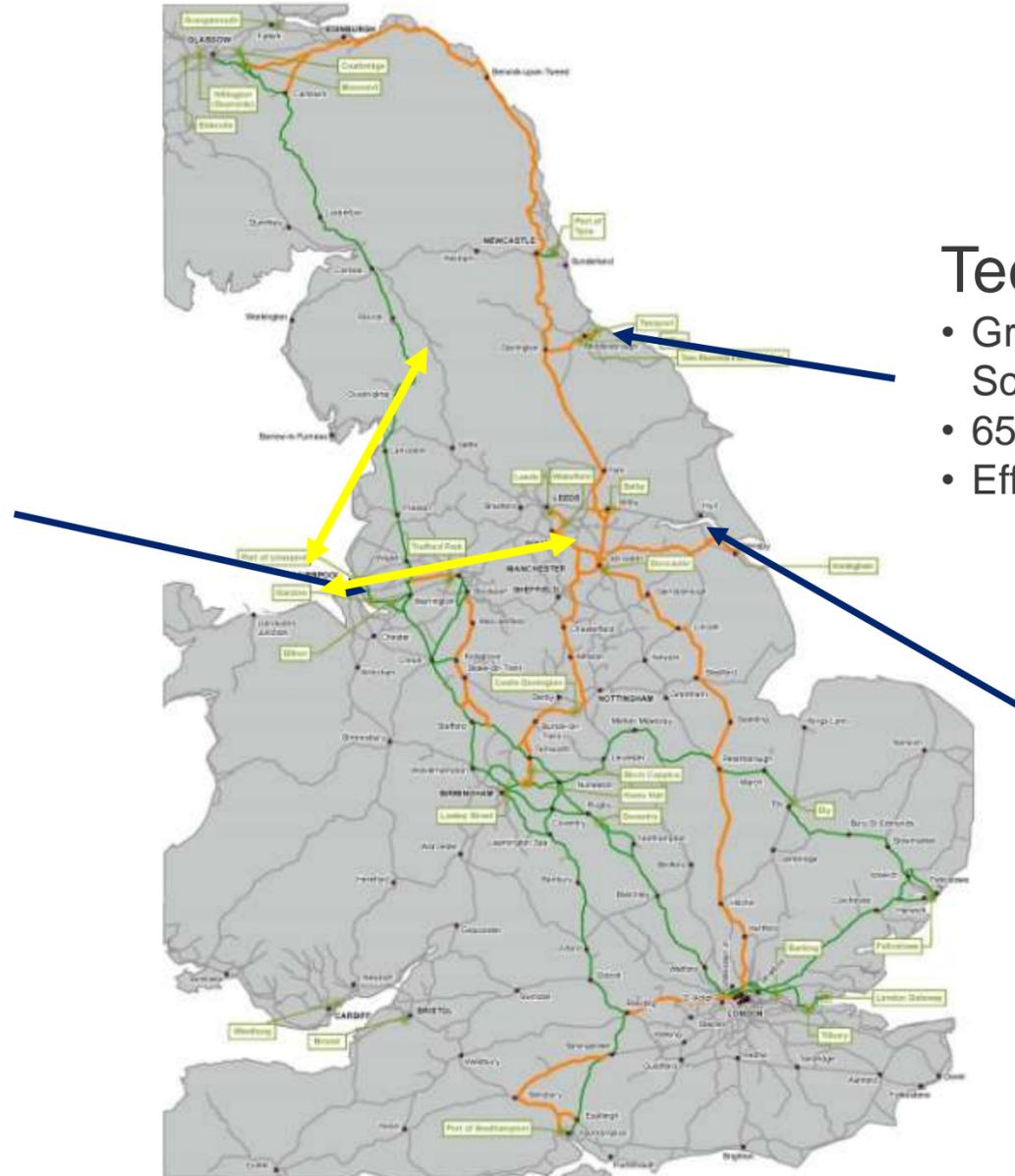
ONE
OCEAN NETWORK EXPRESS



Supporting Trade

Liverpool freeport

- Two container terminals
- 60 vessels / month
- Deep and short sea
- North and South connection
- Efficient North East / Yorkshire reach possible with TRU



Teesside Freeport

- Growing gateway for Yorkshire, Midlands and Scotland
- 650,000+ unit capacity through ports per year
- Efficient North West reach possible with TRU

Humber Freeport

- 26 vessel calls per week
- European short sea
- 40% volume growth in 5 years
- 500,000-unit capacity through port per year
- Efficient North West reach possible with TRU

The Vision

- A gauge cleared route via TRU linking ports to warehouses and customers across the north of England.
- Capacity for new intermodal and bulk trains and existing traffic.
- Ability to use low carbon electric locomotives.
- Efficient end to end paths, and flexibility to accommodate change.
- 24/6 railway to maximise productivity and growth

Delivering the Potential

- Delivery of gauge clearance as soon as possible.
- Commitment to delivery of capacity.
- Power supply adequate for freight
- Minor works beyond TRU to deliver efficient end-to-end decarbonised rail freight services.
- Using digital signalling and technology to deliver a 24/6 railway.
- Continued collaboration across the project to find the right solution.
- Focus on delivering the right thing for customers.

The Transpennine Route Upgrade Rail North Event

Thank you