

Transpennine Route Upgrade

David Lawrance - Chief Engineer - Transpennine Route Upgrade



What TRU brings

More trains to choose from and more seats

- Up to six fast services every hour between Leeds and Manchester and up to two stopping services for local connectivity
- Boosting capacity by over 33% with more seats

Faster journeys

- Manchester to York is cut by 14 mins down to 63 mins & Leeds to Manchester is cut by 10 mins down to 41 mins
- Four tracking to create network capacity

More reliable journeys

- Delays minutes cut by 50%
- £150m+ on diversionary routes
- New trains with >60 new carriages

Better stations

- Accessible stations throughout bringing passengers a better travel experience
- Dedicated £100m station improvement fund

Greener travel

- Electrified from York to Manchester
- Reducing our carbon footprint and improving air quality
- 1000 lorries taken off the roads with capacity for 15 freight trains per day

Transpennine Route Upgrade Project Areas

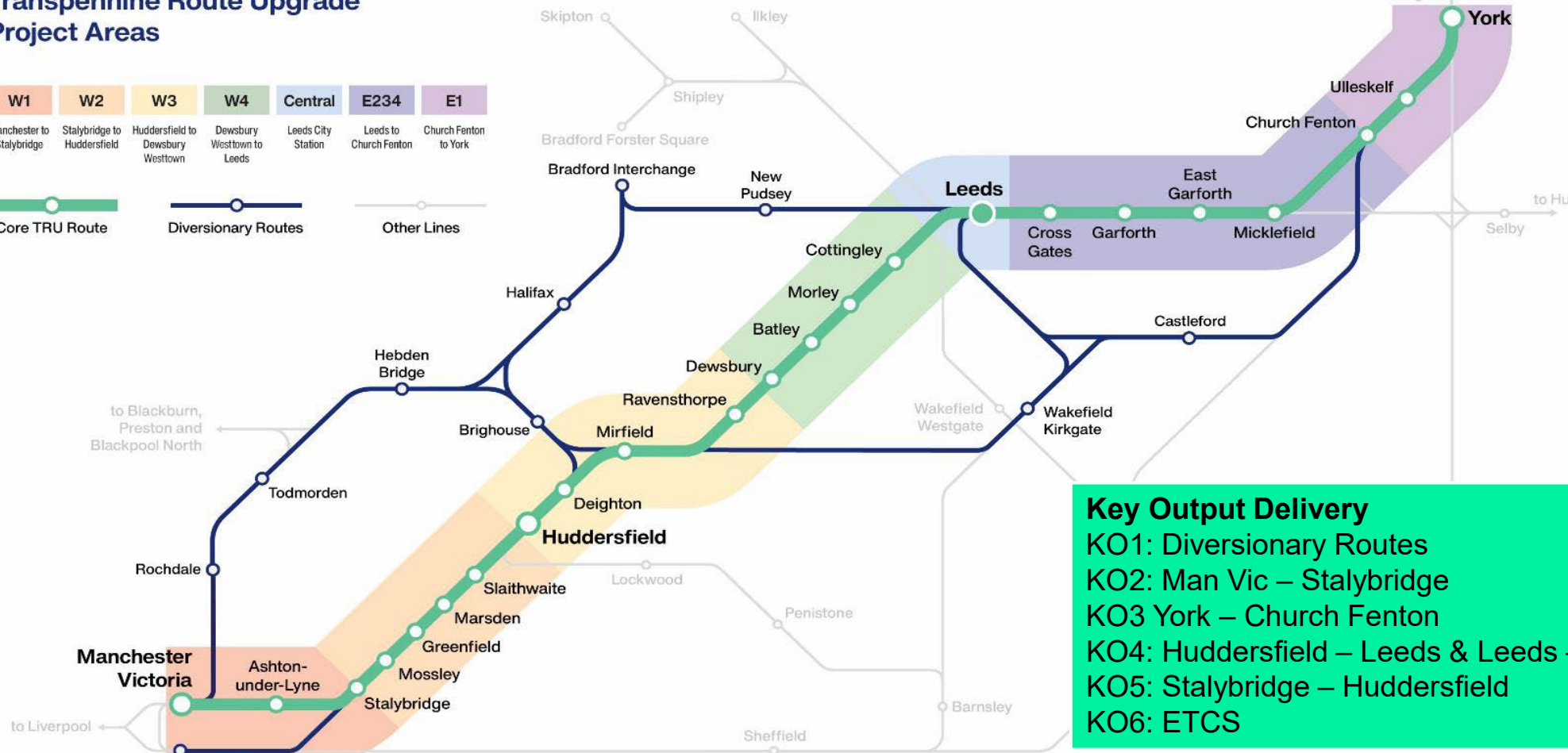
W1 W2 W3 W4 Central E234 E1

Manchester to Stalybridge Stalybridge to Huddersfield Huddersfield to Dewsbury Westtown to Leeds Leeds City Station Leeds to Church Fenton Church Fenton to York

Core TRU Route

Diversiónary Routes

Other Lines



Key Output Delivery

- KO1: Diversiónary Routes
- KO2: Man Vic – Stalybridge
- KO3 York – Church Fenton
- KO4: Huddersfield – Leeds & Leeds – CF
- KO5: Stalybridge – Huddersfield
- KO6: ETCS

70
Miles of track

23
Stations

29
Level crossings

6
Miles of tunnels

3
Miles of viaducts

Programme Development

Business Case Updates

- Completion of major infrastructure
- Procurement of new trains

Digitisation

Completion of core TRU Programme

TRU benefits fully realised

Early 2020s

Mid - Late 2020s

Early 2030s

Mid 2030's

TRU IN NUMBERS

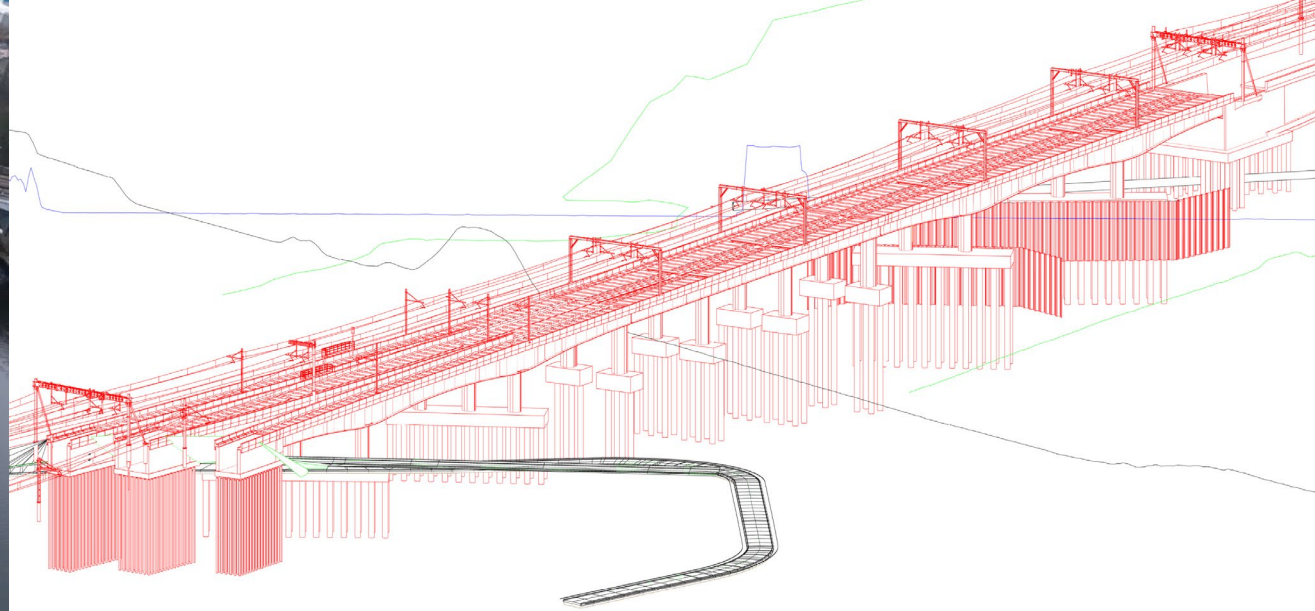
- £11.5bn total programme
- £7.3bn awarded so far
- £840m forecast spend next 12 months
- 5000 people at work
- 70 project sites across 70 miles



A graphic consisting of a series of vertical white bars of increasing height from left to right, resembling a stylized train or a bar chart.

TRANSPENNINE ROUTE UPGRADE

ON TRACK TO **BETTER**





Huddersfield



Mirfield



3 Innovation Focus Areas

The TRU Enterprise's key objective is to deliver a positive outcome for all involved:

- for the TRU East and West Alliances and all other delivery vehicles
- for the people that work, study and live alongside the railway
- for Network Rail's customers and stakeholders.

In response to the above deliverables, the Senior Leadership Team has committed to implementing a culture of innovation across the programme. The Innovation team draws upon individuals who have many years' experience in the rail industry, construction

and other sectors and possess key skills with reference to Design, Engineering, Sustainability, Safety, Innovation and Quality Management, Construction, Digital and Business systems.

Our goal is to embed a culture of innovation across all functions and project teams. We will identify and embed best practice using a collaborative approach breaking down traditional siloed working that is often encountered on major infrastructure projects.

To maintain focus, the TRU Enterprise has agreed to concentrate effort on developing innovative ideas in three areas; Safety, Carbon Reduction and Production Efficiency, as shown in Figure 2.



1 Safety

Helping to deliver innovations to improve health, safety and wellbeing



2 Carbon

Implementing innovations to meet TRU's carbon reduction targets



3 Productivity

Investigating new and novel production methods, and working with delivery teams to validate new innovations

Delivering Innovations

CHECKPOINT
AUTHORITY

CHECKPOINT AUTHORITY

WHAT DOES IT DO?

It is an app-based system for use by the Engineering Supervisor to help manage railway Personnel seeking authority to enter a worksite.

Securely Grant Authority & Sign Out:

2 stage security required to grant authority

2 stage security required to request to sign out

ES must acknowledge IWA/COSS request to sign out before they can sign out.

Start Work Simultaneously:

Reduces pressure on contractors.

Reduces pressure on hand back.

Reduces pressure on the ES

Broadcast

Broadcast

Highlight

Live View

Quick view

Personnel

The ES can

1



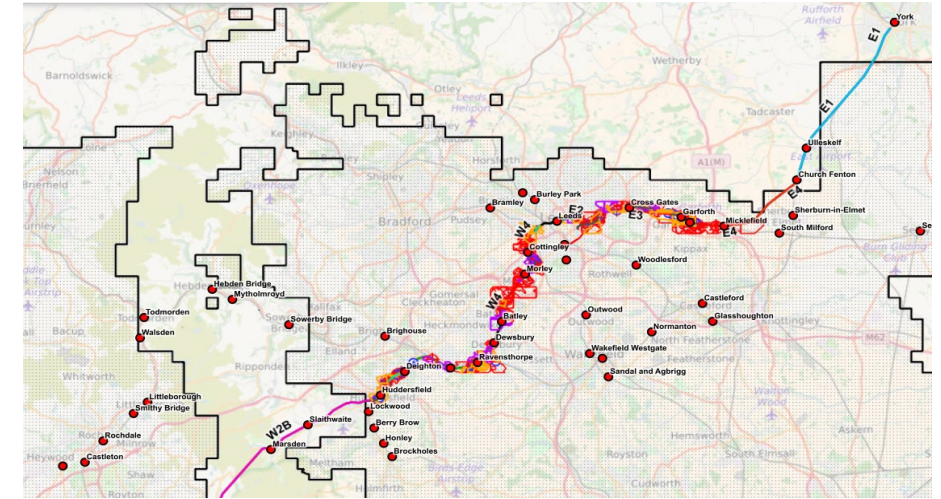
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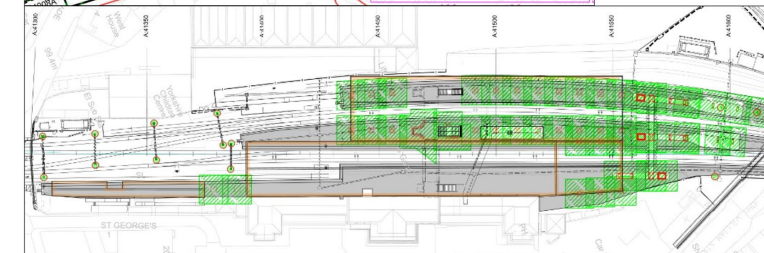
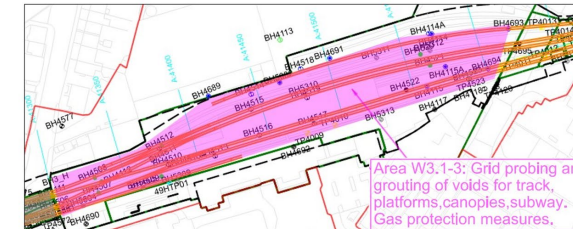
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Explicit Risk Estimation approach to Mining Risk

- 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



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

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

System approach to Electrification Clearances

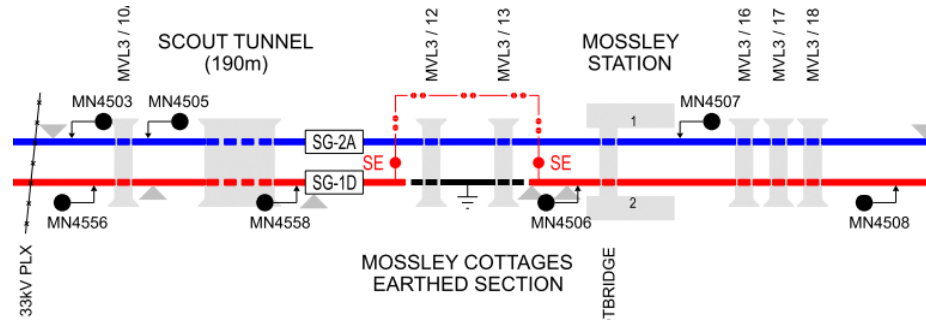


- Started by GWEP, systemised by TRU
- Balances the competing interests of Electrification, track, drainage, structures
- Surge arrestors used where necessary to avoid voltage spikes and enable reduced electrical clearances

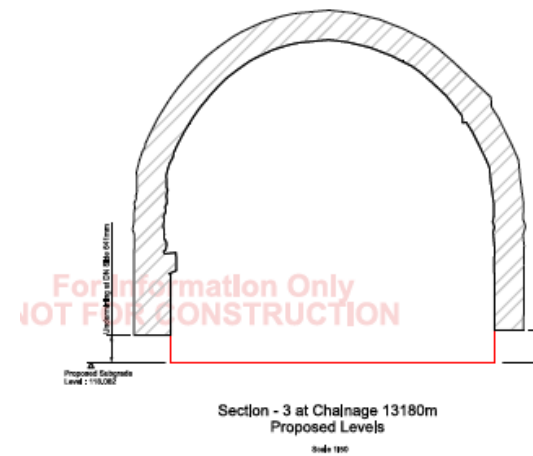
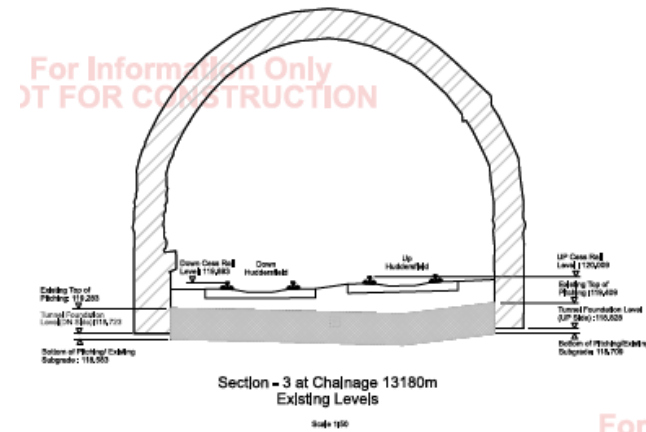
TRUST Centre Safety Training



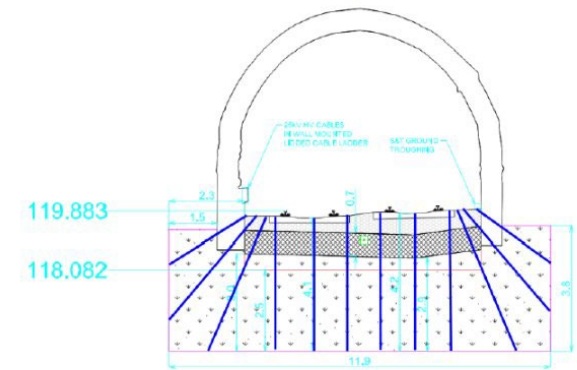
Development - Mossley Cottages



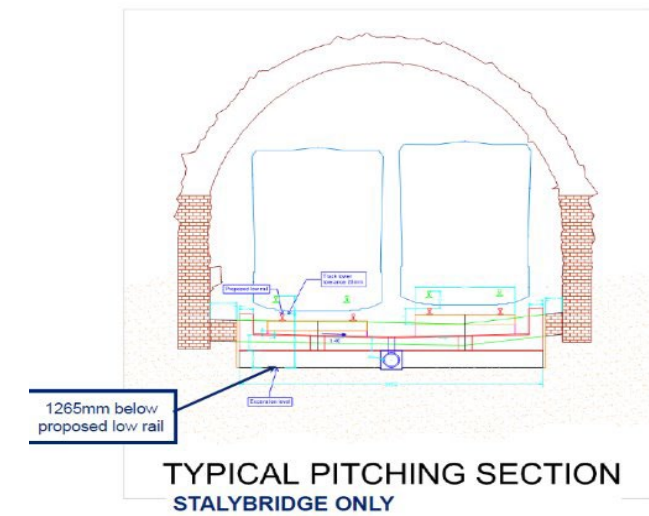
Stalybridge Tunnel



Permeation Grouting Solution Proposed



The section at Pitching Zone Showing the arrangement (tentative) of the Grouting Holes



TRU – Carbon Challenge

Working towards our 30% carbon reduction target

Our [programme commitment](#) is a minimum carbon reduction target of 12% and stretch target of 30%. To achieve this, we're focusing on value engineering and innovation across:

- New track, civils, drainage & OLE – reducing quantities and/or material re-use, use of low carbon & steel concrete.
- Construction & installation – optimising design, developing sustainable compound strategies and trialling use of low emission plant.
- Innovative construction products & materials – collaborating with our supply chain to use safer, lighter weight materials.

Ravensthorpe SFC Feeder Station: Potential use of Solar Panels with an orchard

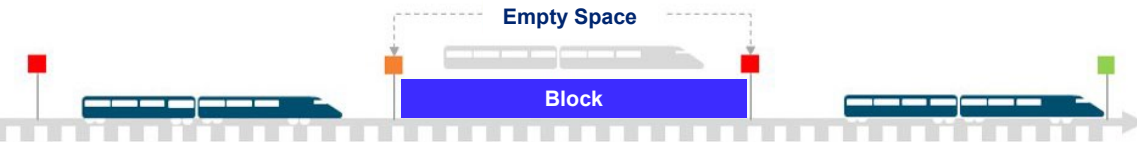


TRU Digital

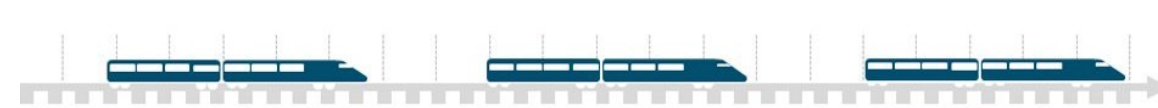
Vision: To lead the digital railway transformation for the North.

Mission: To make the digital railway the heart of the Transpennine Route Upgrade.

Current conventional signalling



Digital signalling increases capacity



ETCS Benefits



Safety

ETCS serves as an automatic train protection system (ATPS) to prevent trains entering unsafe conditions.



Cost

ETCS is an in-cab signalling system - so many trackside assets, including signals or axle counters, are not required.



Sustainability

ETCS requires less infrastructure. This leads to a reduction in environmental impact.



Capacity

An increased efficiency in signalling will result in allowing trains to run closer to each other.



Performance

Improved signalling allows for smoother and more efficient operations of trains, with less unnecessary stops.



Flexibility

More efficient centrally-controlled signalling increases train recovery from disruptions using bi-directional signalling.

Scope

- The TRU Digital project implements **ETCS Level 2** (no signals) between **Stalybridge and Church Fenton** (near York).
- The signalling end-state is targeting the deployment of ETCS Level 2, but they are areas where **overlays** (signals and ETCS co-existing in the same area) in a temporary state to support the driver training and unfitted signals rolling stock.



Current Key Milestones

Sep 2025

Development Phase Gate

May 2026

ES4 Award

Dec 2027

ES4 Complete

Apr 2028

ES5-8 Award

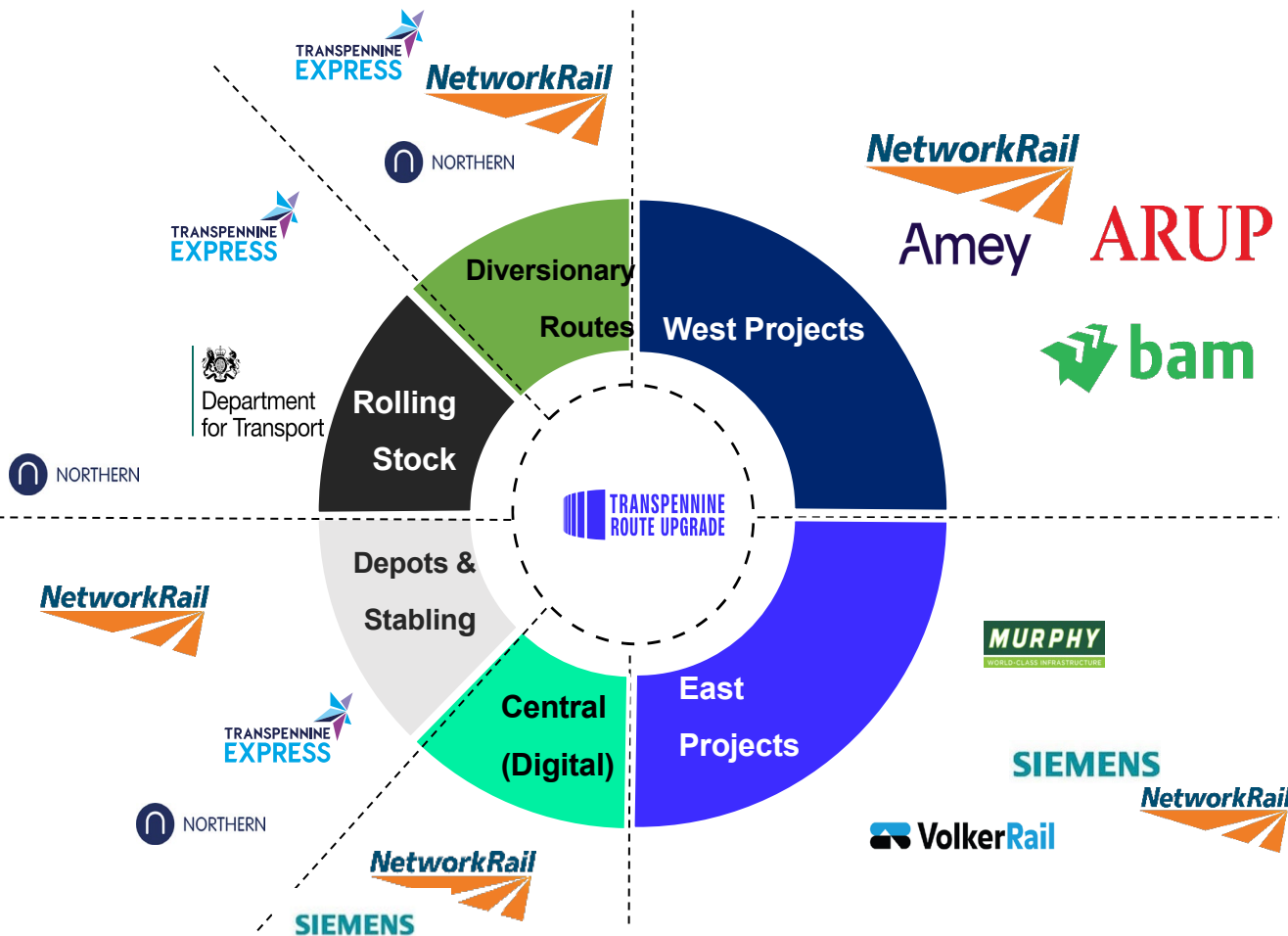
May 2037

Commissioning complete for all tranches

Nov 2039

Project Complete

The TRU Enterprise



Sustainability & Social Value



£566m spent with local businesses

£291m spent with SMEs

346/600 Apprentices

178 graduates

72 interns

15,514 days young person work experiences

4,507 days adult work experience

55,143 children engaged in STEAM

16,220 hours volunteering

1,003 community and school engagement events

Thank you