# Tram Train Pilot – LRTA Members' Day

## Programme for the day

- 12:00 Arrival and Teas/Coffees
- 12:30 Welcome – Paul Rowen
- 12:35 Tim Kendell – Introduction to Tram Train and a Brief History of the Pilot
- 12:55 Simon Coulthard – Network Rail
- 13:15 What to look out for on Tram Train journey & Questions
- 13:30 Go to Meadowhall South/Tinsley Tram Stop
- 13:44 Tram Train to Rotherham Central
- 14:03 Tram Train to Parkgate


# Tram Train Initiatives
# The Sheffield – Rotherham Pilot
# LRTA Members Day

7th February 2019

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Technical Director
LRTA

TramForward

# What is a Tram Train

- Is it a Tram?


- Or is it a Train?


- Or is it both
- A general panacea to local transport problems
- An abomination that should not be let near “Real Railways”

# Tram Train Types

1. **Full integration with Main Line services – Karlsruhe Model**
   - Karlsruhe, Kassel, Saarbrücken, Sheffield Pilot, Tyne & Wear metro - Sunderland.
   - Ideal if there is existing main line with some spare capacity.
   - Expensive vehicle option but can save the costs of installing new infrastructure.

2. **Full Segregation by conversion of mainline to tramway.**
   - Manchester, Croydon, Nottingham, Sheffield, Midland Metro
   - Ideal if there is a redundant line or where the tram trains will replace all existing services.
   - Cheaper vehicle option as main line compatibility is not required.

3. **Segregation by time of day.**
   - Ideal for a lightly used line where say, freight trains can run only at specific times. The route must be proved to be clear of tram trains before the freight train is permitted to access the route.
   - Often used where main line traffic can be limited to night times.

# Why are we interested in Tram Trains?

- Is it a Solution looking for a Problem?
- Is it a Solution for a Problem we didn't know we Had?
- Is there the Problem that it may Solve?
  - Urban Connectivity
    City Station Congestion
  - Rural Branch Lines


# Problems & Opportunities

- Some City Mainline Stations are congested
- Some under-used suburban lines could be connected to city tramways
- Pacers need to be replaced by 2020 to meet accessibility requirements

TramForward

# Is Tram Train the Answer?

- ACoRP Study Trip to Karlsruhe and Kassel (Dec 2006)
- An Executive Level visit to Kassel (DfT/NR/NedRail) (March 2007)
- A trial was proposed using a borrowed Kassel Diesel/Electric Tram Train
- A Project Team was Established (DfT/NR/Northern)
- Budget £25M


TramForward

# Trial Objectives

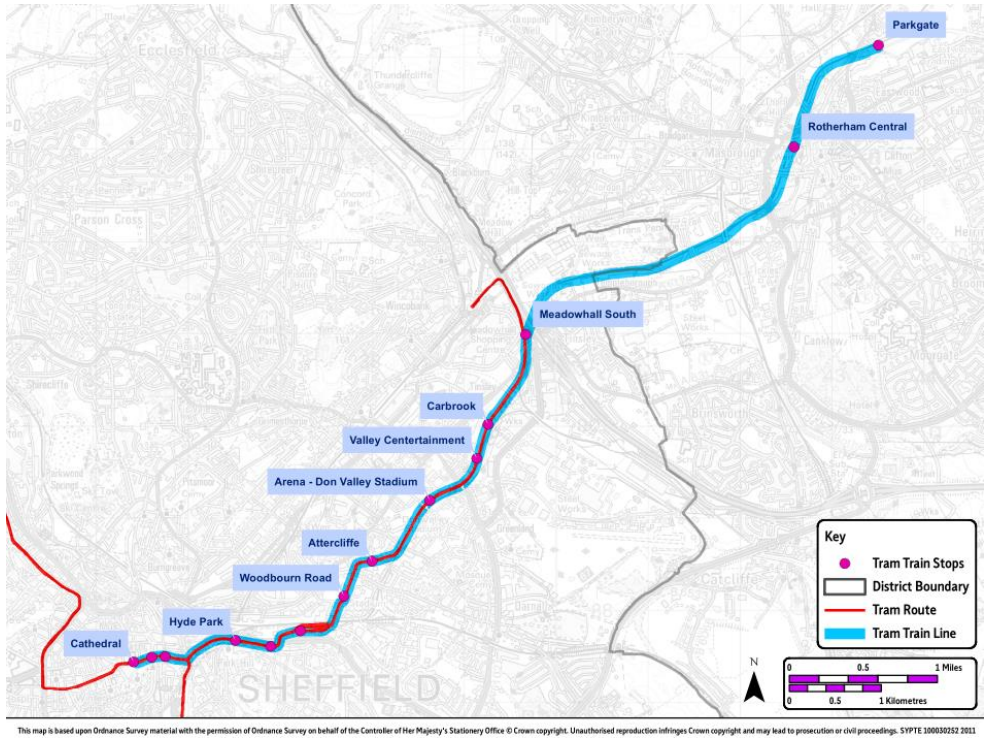
- Understand the changes to industry costs of operating a lighter weight vehicle with track brakes on the rail network.
- Determine the technical standards both to allow inter-running of lighter weight tram vehicles with heavy rail passenger and freight operation and to gain maximum cost benefit from tram-train operation.
- Gauge passenger perception and acceptability of the light rail tram-train service
- Determine the practical operational issues of extending tram-train from heavy rail to on street running

- What are the Cost differences
- How do Standards need to change
- Do Passengers like them
- How do you operate between the different systems

Legal, Operations & Timetabling

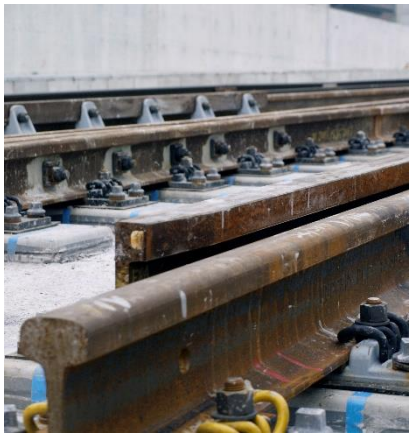
# Tram Train Pilot

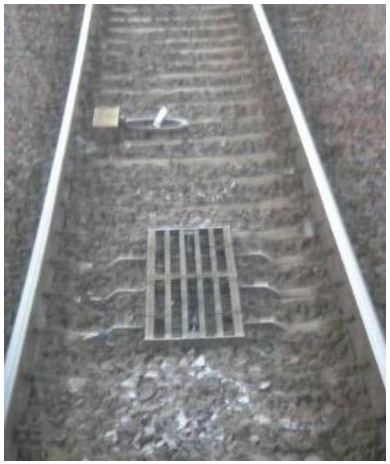
- Team established (Spring 2007)
- Initial Route Selection (October 2007)
- Penistone Line Chosen
  - Phase 1 Main Line only - Good for testing Joint & Solo running
  - Phase 2 – link into Sheffield Supertram system.
- Diesel/Elec Tram Trains too expensive – New power pack required to comply with NRMM regs Phase 2b
- Phase 1 terminated & Learning logged.
- Phase 2 initiated SYPTE & SYSL joined the Team



# Why So Long?

- They do it Germany – What's the Problem?
- Just Get on with it
- German Track Designs are different
  - Rail inclined 1 in 40 UK 1 in 20 – New Wheel Profile required
  - Raised Check Rails are normal Not so in UK (or France)
- German Signalling Different
  - Indusi full ATP widely used
  - UK has TPWS only on critical signals



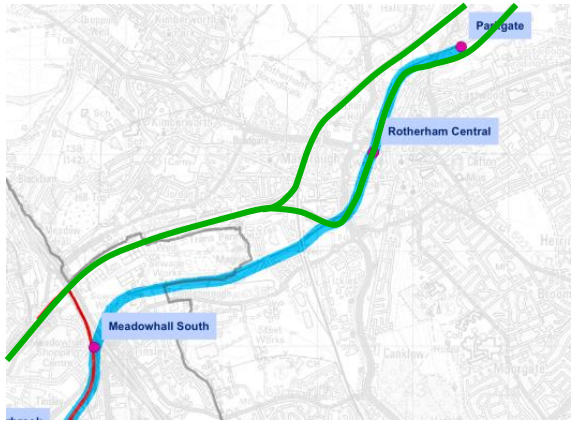
# The Devil is in the Detail

- Crashworthiness
- Platforms
- Track standards
- Signalling immunisation
- Electrification
- EMC
- Telecoms
- Timetable planning
- Tramway mindset

- Wheel Profiles
- Tramway standards
- Signalling detection and protection
- Stray Currents
- Driver training
- Cost
- Heavy Rail mindset
- Trespass risk

# Other Projects

- Re-control of Signalling to York ROC
- Midland Mainline Electrification
  - Vehicles – 25kV ready
  - Electrification system changed from Tramway style to NR Series 2 ready for 25kV
  - Series 2 adapted for 750V dc
  - Impact on bridges
  - College Road bridge raised for 750V dc




# Service Starts – 25th October 2018

- Lets Celebrate the Achievement

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# DfT News story
# Potential of light rail schemes hailed for future urban travel

- The DfT have launched to a ‘Call for Evidence’ on Light Rail today.
- LRTA/TramForward will be responding to this Call with responses co-ordinated by the Campaigns Group (ERG) and the Discussion Forum.
- Closes 19th May 2019
- See https://www.gov.uk/government/news/potential-of-light-rail-schemes-hailed-for-future-urban-travel for details.

Department for Transport

Light Rail (and other rapid transit solutions)

*A Call for Evidence on the opportunities available to introduce new Light Rail Systems or other rapid transit solutions into towns and cities in England.*

February 2019

# A Network Rail Viewpoint and a Look to the Future


## Simon Coulthard

Senior Sponsor - Tram Train Pilot

Network Rail

# Interface Design Challenges

- Wheel profile
- Traction power source
- Tram Train protection and crashworthiness
- Train/platform interface
- Accessibility
- Customer information

# New Low Height Platforms

# Approach to Approvals

The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended)

- Applies to both heavy rail and tramways
- Approval is different
- Tram Train exempt from Railway (Interoperability) Regulations 2011
- Approval from SoS (by the ORR) for operation under South Yorkshire Light Rail Acts

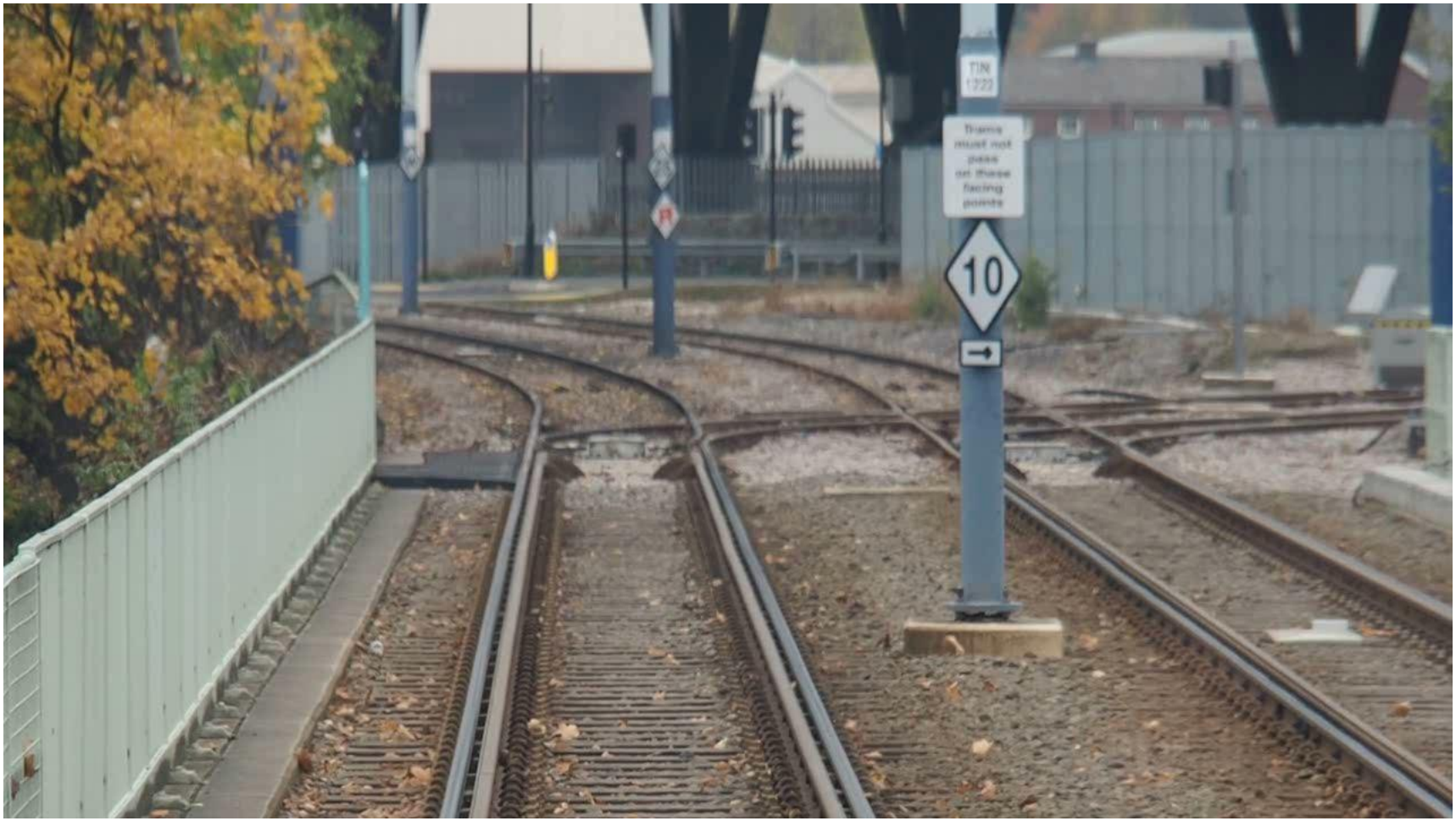
| Tram | Train |
|---|---|
| Safety Verification (SV) | Common Safety Method - Risk Evaluation and Assessment (CSM-RA) |
| Independent Competent Person (ICP) | Assessment Body (AsBo) |
| **Tram Train** | |
| AsBo incorporating ICP | |

# Future Application

- Proof of concept in UK – operating well
- Lessons and experience shared
- Supporting appraisal and development of other schemes
- Where next?
  - Tram Train in the UK public transport toolkit
  - Does it help to meet an opportunity; address a gap?
  - Is it the appropriate solution in the public transport strategy?
  - Benefits for connectivity and accessibility
  - Reducing dependency on car
  - Cost and capacity benefits for national rail

# The art of the possible

# Trip to Rotherham Parkgate
# What to look out for



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- Any Questions?