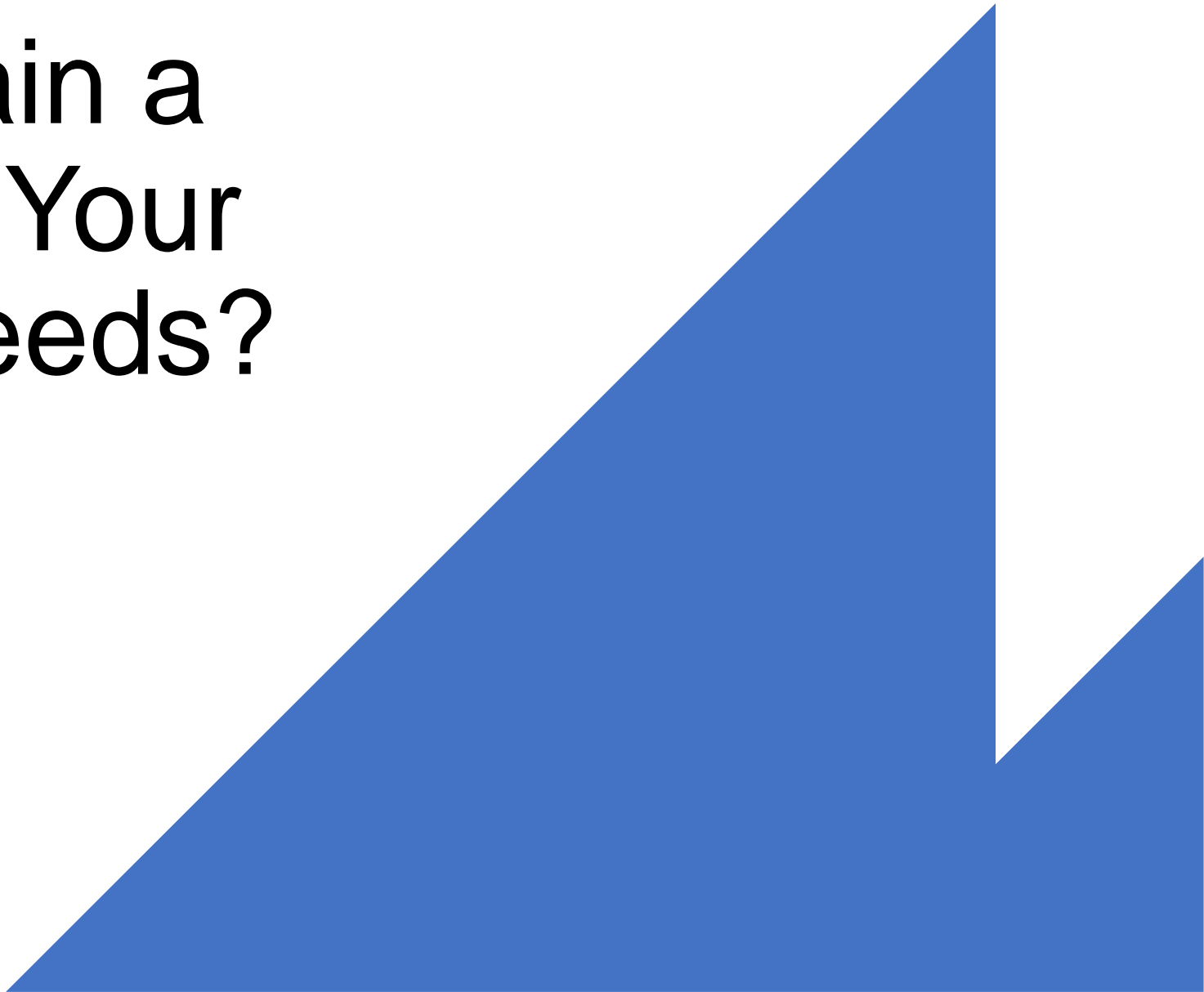


Is Tram-Train a Solution for Your Transport Needs?

Rob Carroll

Technical Principal - Materials



What is Tram-Train?



Manchester Metrolink?



Gmunden



Blackpool?



Tyne and Wear Metro?

A Tram-Train is...

- A light rail vehicle that can operate with few operational restrictions as a tram on the tramway and as a train on the railway.



Benefits of Tram-Train

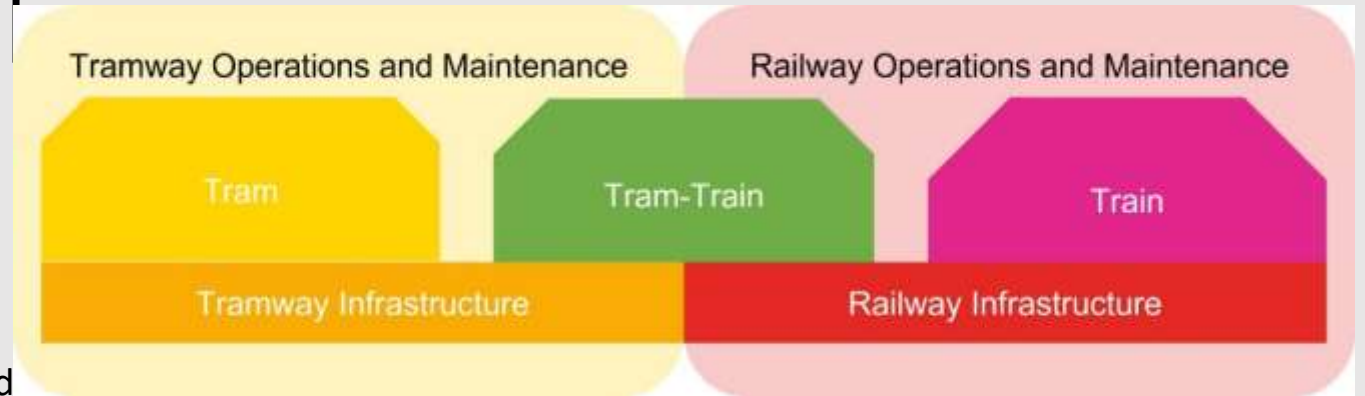
- A seamless journey for passengers
- Better links to the heart of City Centres
- Faster journeys for passenger even though the services can be slower
- Use existing infrastructure
- Reduced costs compared to new build

Increased sustainability/reduced capital carbon

- Provide additional heavy rail capacity at city centre stations by moving local services on to tramways
- Better integration into destination areas



Challenges of Tram-Train



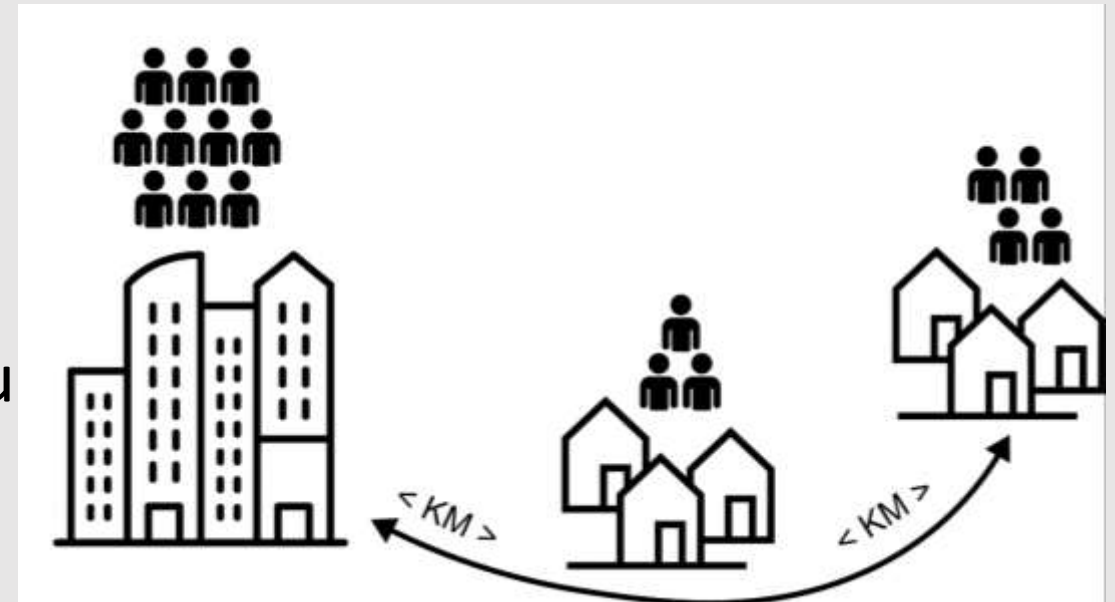
- Technically complex
 - Multiple interfaces
 - Different standards
- Operational and cultural differences between tramways and railways
- Vehicles more expensive and heavier than trams but cheaper and lighter than trains
- Multiple stakeholders
 - Tramway/Highways and Railway
- Safety Assurance
 - Tramway/Highways and Railway
- Operational Capacity and Performance
 - Tramway/Highways and Railway



When is Tram-Train Appropriate?

- Tram-Train is not a nirvana – it is not a solution for all transport problems
- Needs to be used in the right circumstances

- What are the right circumstances?
- How do you assess if your scheme is su



Tram-Train Implementation Support Tool (T-TIST)

- Developed by Sander Willer as part of an MSc at TU Delft sponsored by Mott MacDonald

Refined over the last few years by Mott MacDonald

Provides a quick assessment of potential schemes for suitability of using tram-train

18 scoring criteria that includes:

- Population of city and regional corridor
- Transport demand
- Relation between urban region and city
- Existing rail and tram networks
- Connection between networks
- Sustainability of project – cost and carbon
- Quality of integrated network
- Political and Commercial environment



Tram-train: when is it a suitable mode?

Development of a model to determine applicability of tram-train

January 2019

Sander Willer

T-TIST Output

Each criteria is scored based on information readily available on the proposed scheme

Each criteria has a weighting assigned to it based on expert knowledge of scheme development

Some critical criteria are classed as “Show Stoppers”

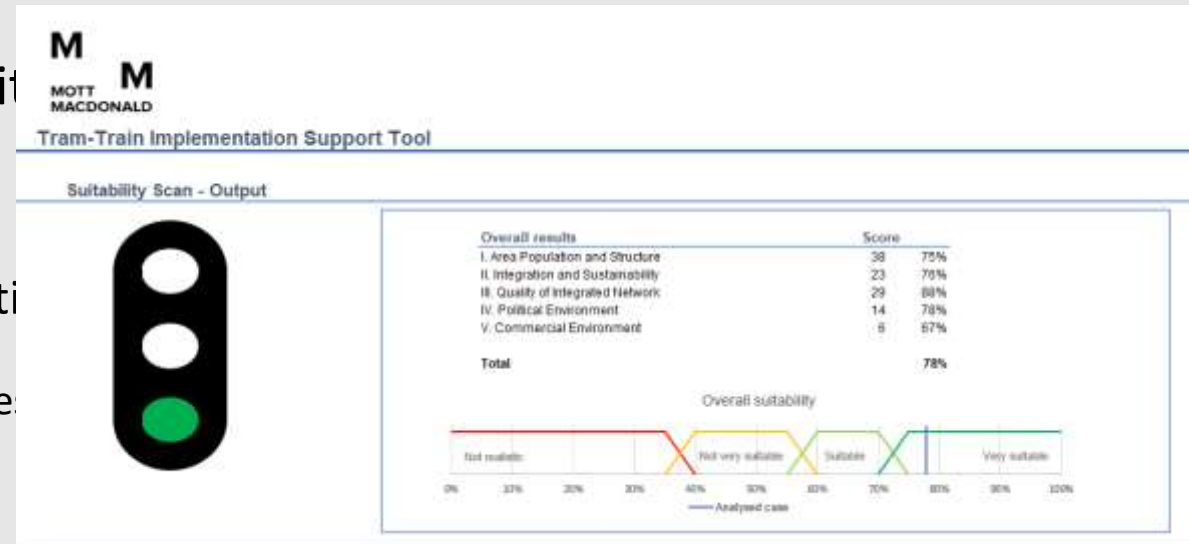
Output is an overall score and a ranking of suitability

With a traffic light :

Green – Suitable or very suitable for further investigation

Amber – Could be suitable with refinement

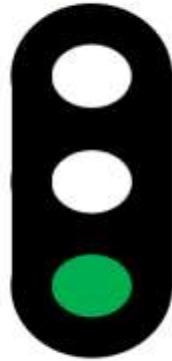
Red – Not suitable or show stoppers that need to be addressed



T-TIST Example Results

Tram-Train Implementation Support Tool

Suitability Scan - Output



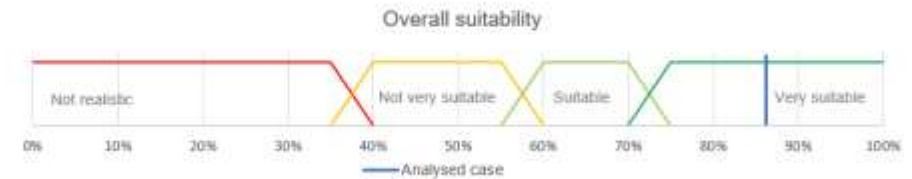
Sheffield – Rotherham

Overall results

	Score	
I. Area Population and Structure	44	88%
II. Integration and Sustainability	26	85%
III. Quality of Integrated Network	29	88%
IV. Political Environment	14	78%
V. Commercial Environment	9	100%

86%

Total **86%**



Suitability Scan - Output



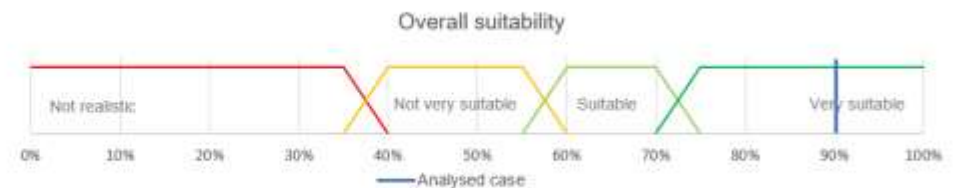
Cardiff - Core Valley Lines with
Planned Tramway Extensions

Overall results

	Score	
I. Area Population and Structure	51	100%
II. Integration and Sustainability	23	78%
III. Quality of Integrated Network	26	79%
IV. Political Environment	18	100%
V. Commercial Environment	9	100%

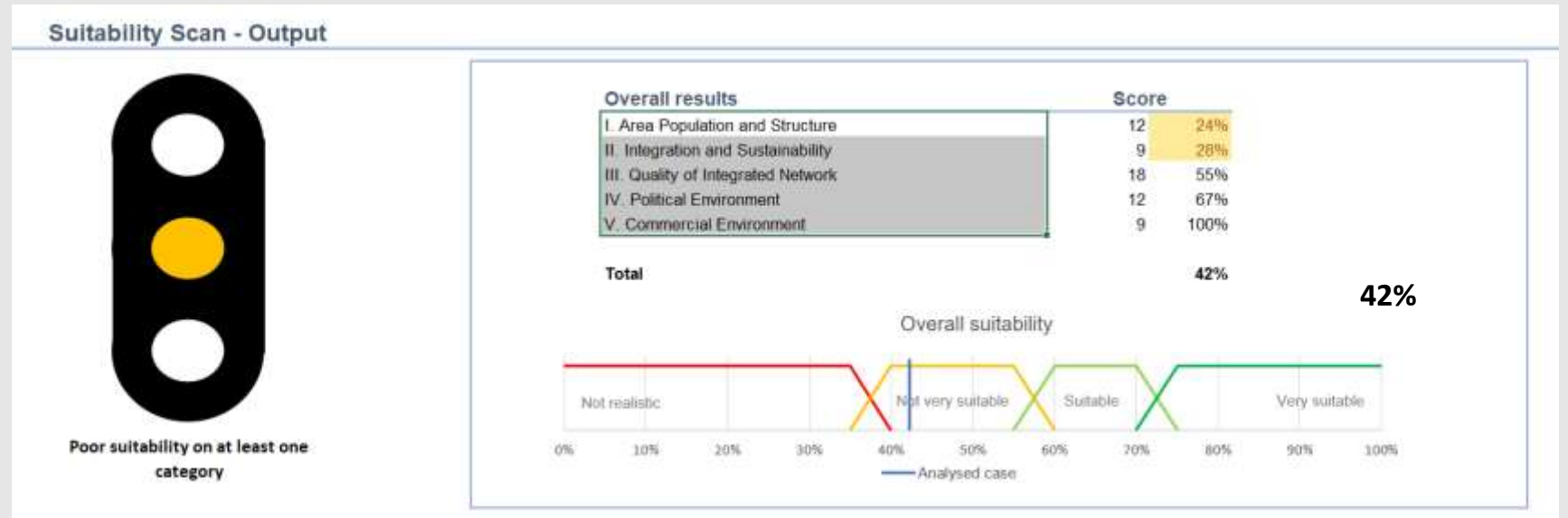
90%

Total **90%**

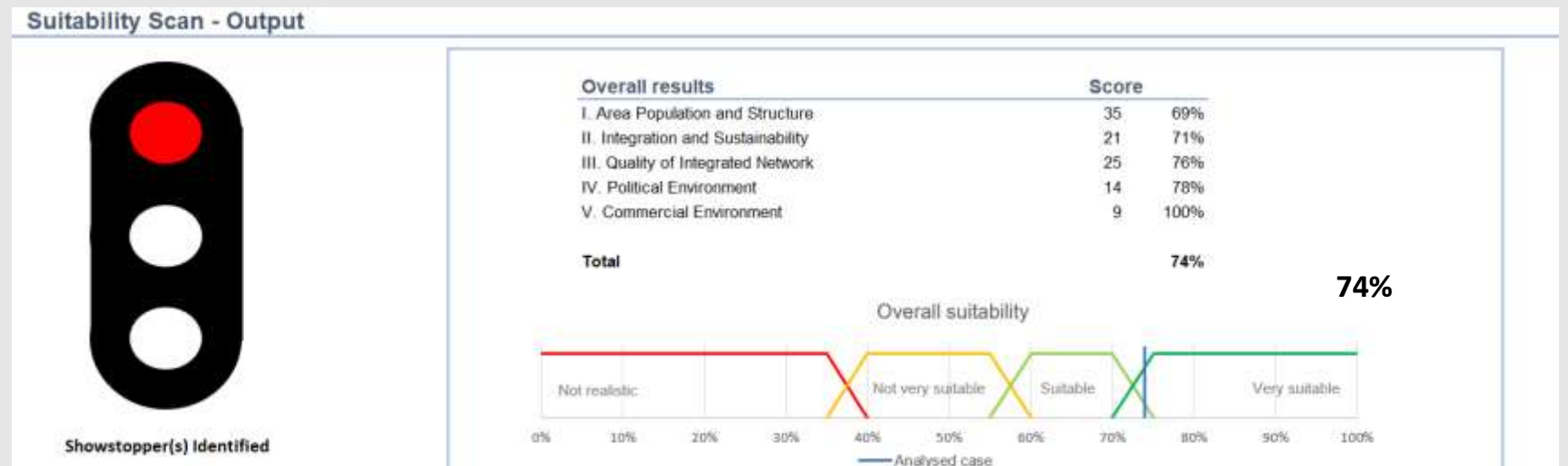


T-TIST Example Results

Reopening Railway –
Rural Branch Line



Reopening Railway – Connecting Two Railway
Lines



Show Stopper - Need for Tram-Train over heavy rail

Restoring Your Railway

- UK Department for Transport Scheme
- £500m to “Reverse Beeching”
- Anyone could promote a scheme – as long as it was supported by an MP
- 3 rounds of bids 2020 to 2021
- Open to all forms of transport technology

203 ideas submitted

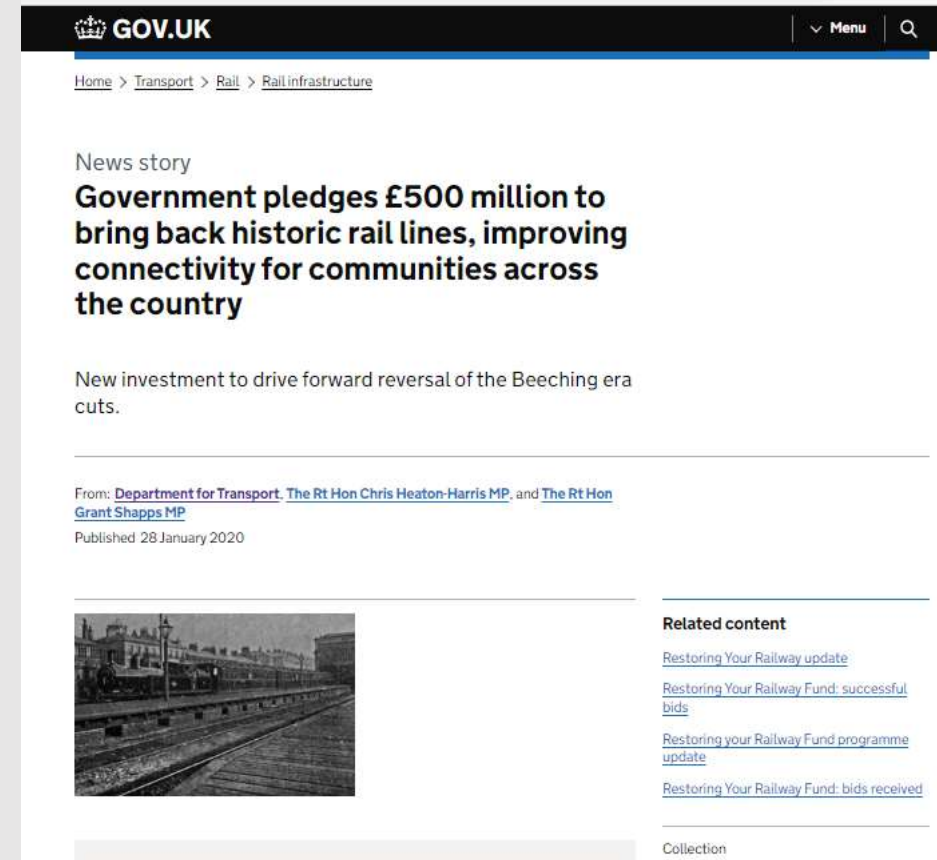
56 for station reopening

31 introducing passenger services on existing heavy rail lines

9 introducing public transport services on heritage railways

3 miscellaneous

104 schemes for reopening



The screenshot shows a GOV.UK news story page. At the top, there is a navigation bar with the GOV.UK logo, a menu icon, and a search icon. Below the navigation bar, there is a breadcrumb trail: Home > Transport > Rail > Rail infrastructure. The main heading of the news story is "Government pledges £500 million to bring back historic rail lines, improving connectivity for communities across the country". Below the heading, there is a sub-heading: "News story". The main text of the news story is: "New investment to drive forward reversal of the Beeching era cuts." Below the main text, there is a byline: "From: Department for Transport, The Rt Hon Chris Heaton-Harris MP, and The Rt Hon Grant Shapps MP". Below the byline, there is a publication date: "Published 28 January 2020". Below the text, there is a photograph of a railway station. To the right of the photograph, there is a section titled "Related content" with four links: "Restoring Your Railway update", "Restoring Your Railway Fund: successful bids", "Restoring your Railway Fund programme update", and "Restoring Your Railway Fund: bids received". At the bottom of the page, there is a "Collection" label.

T-TIST Assessment

T-TIST used to assess over 40 potential schemes – many from RYR plus some additional schemes identified by Mott MacDonald.

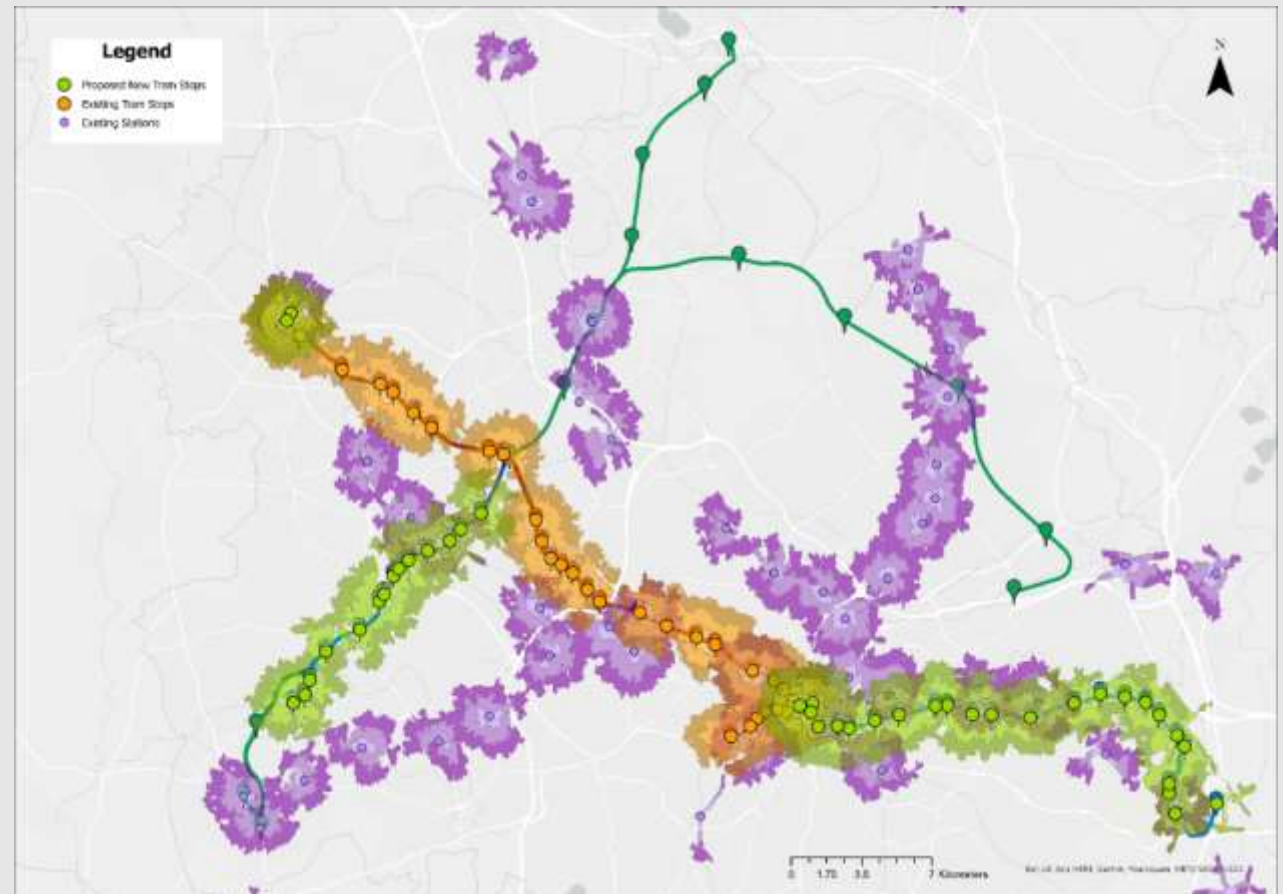
- 10 schemes very suitable
- 13 schemes suitable
- 15 schemes not very suitable
- 2 schemes not realistic

The schemes classed as suitable or very suitable include schemes around the UK with a significant number in the North and Midlands.

Some are schemes that are in the public domain with plans for development. Others are not currently identified as potential schemes.

Next Steps

- Shortlist
 - Some of the shortlisted schemes being investigated further.
 - Analysis using GIS software to study:
 - Demographics around potential stop locations
 - Integration with other transport modes
 - Potential alignments and construction types
 - Journey times
 - Likely capacity issues on tramway and railway
- Potential schemes to be discussed with likely promoters



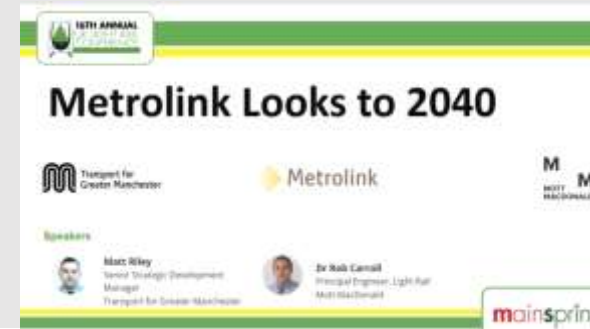
Come and Talk to Us

Mott MacDonald Tram-Train Group

- Light Rail and Tramway
- Heavy Rail
- Rolling Stock
- Transport Planning
- Operational Modelling
- Project Management
- Safety Assurance

If you have an idea for a potential scheme or want to know more about tram-train

- Email: tram-train@mottmac.com





Thank you

