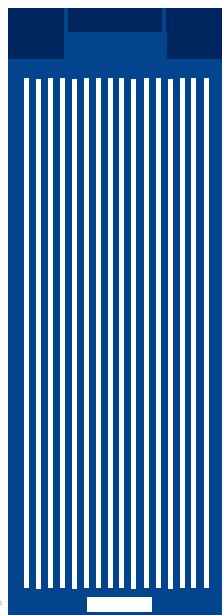
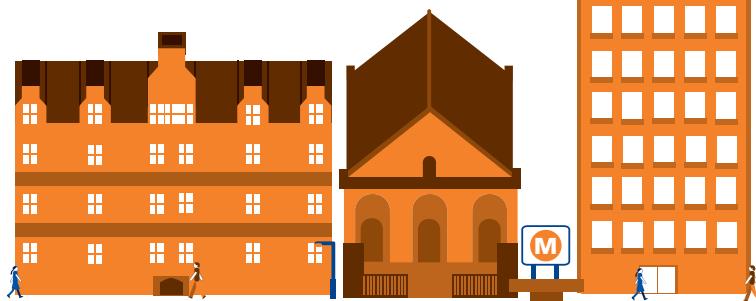
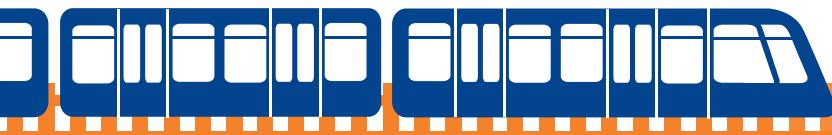


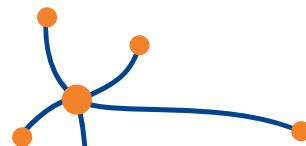
# From suburban station to the heart of the city



# tram



# trains



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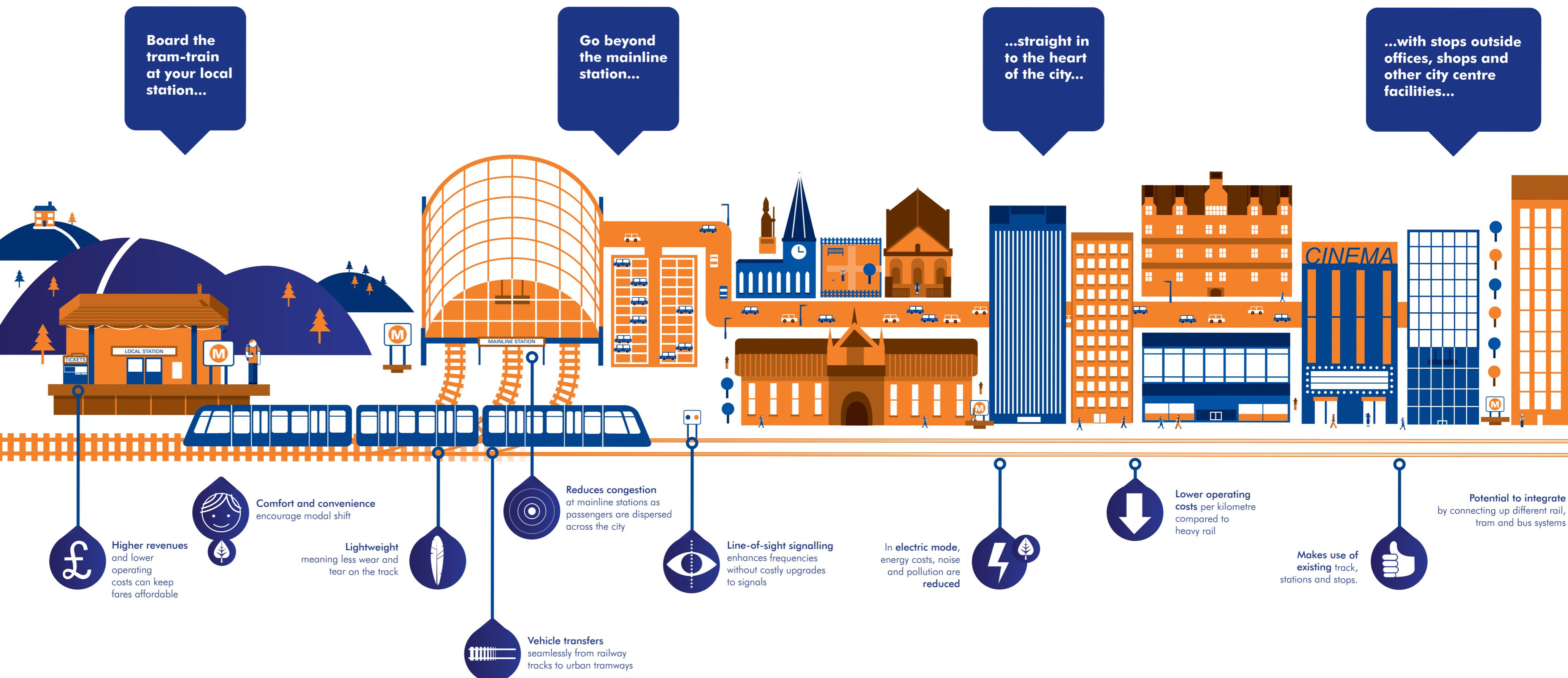
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# What are tram-trains?

Tram-trains have the flexibility to operate both as street running trams, and as trains on mainline railway lines.



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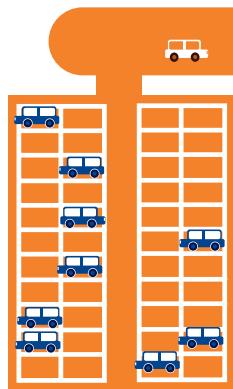


# Why tram-trains?

Tram-trains combine the tram's flexibility, and ability to penetrate city centre streets, with a train's greater speed, allowing quick and easy travel from suburban stations directly into the heart of towns and cities.

A conventional train travelling into a city typically transports passengers from their local railway station to the city's railway terminus. Because large numbers of trains are all heading for the same place, these railway stations can become very congested, with knock on effects for punctuality and reliability. Furthermore, on arrival at the station, passengers usually have to make an additional journey to reach their desired destination.

A tram-train allows passengers to board at their local station and continue their journey beyond the major city railway station, directly into the city streets, as the vehicle switches seamlessly from railway track to urban tramline. Passengers can alight at various tram stops along the way, meaning that no single place is overly congested and passengers can get off closer to the place they actually want to get to, whether that is the office, the shops or the cinema. Tram-trains can accelerate more rapidly than many heavier conventional trains which means frequent stops can be made whilst keeping end-to-end journey times attractive.



Essentially, tram-trains offer a direct service from near home to the traveller's real destination in the city centre, be it for work, leisure or shopping. Tram-trains also offer the potential for savings. They can make use of existing stations, railway tracks and tramlines, improving accessibility for passengers by connecting these assets up, rather than requiring the construction of expensive new infrastructure.

In operation, tram-trains have lower costs per kilometre compared to heavy rail. They are lighter than conventional trains, meaning less wear and tear on the track, and they can use diesel or electric power, thereby reducing energy costs (as well as noise and pollution) when in electric mode. With improved performance, particularly in braking, they may also offer the opportunity to simplify or eliminate signalling on some sections of the routes they use, again generating savings as well as enabling enhanced frequencies.

The comfort and convenience offered to passengers (encouraging modal shift and higher revenues), combined with lower operating costs can also help keep fares affordable.

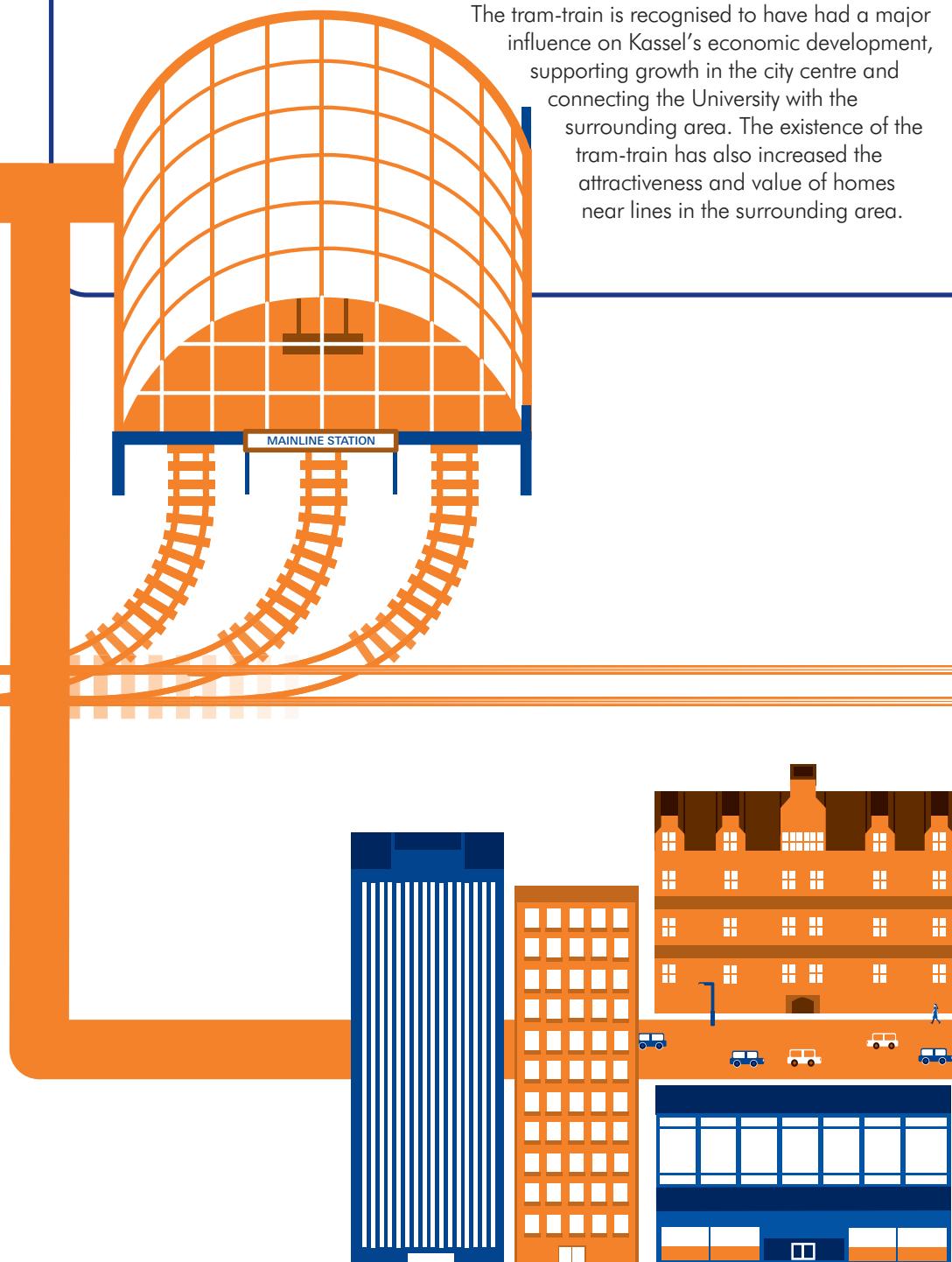
## Tram-train in action – Kassel, Germany

Germany is a leader in tram-train operations – the concept was pioneered in Karlsruhe, south-west Germany, where the first true tram-train technology was introduced in 1992. Its success has seen the ‘Karlsruhe Model’ adopted by many cities across Europe, including Alicante in Spain, The Hague in the Netherlands and Kassel, also in Germany.

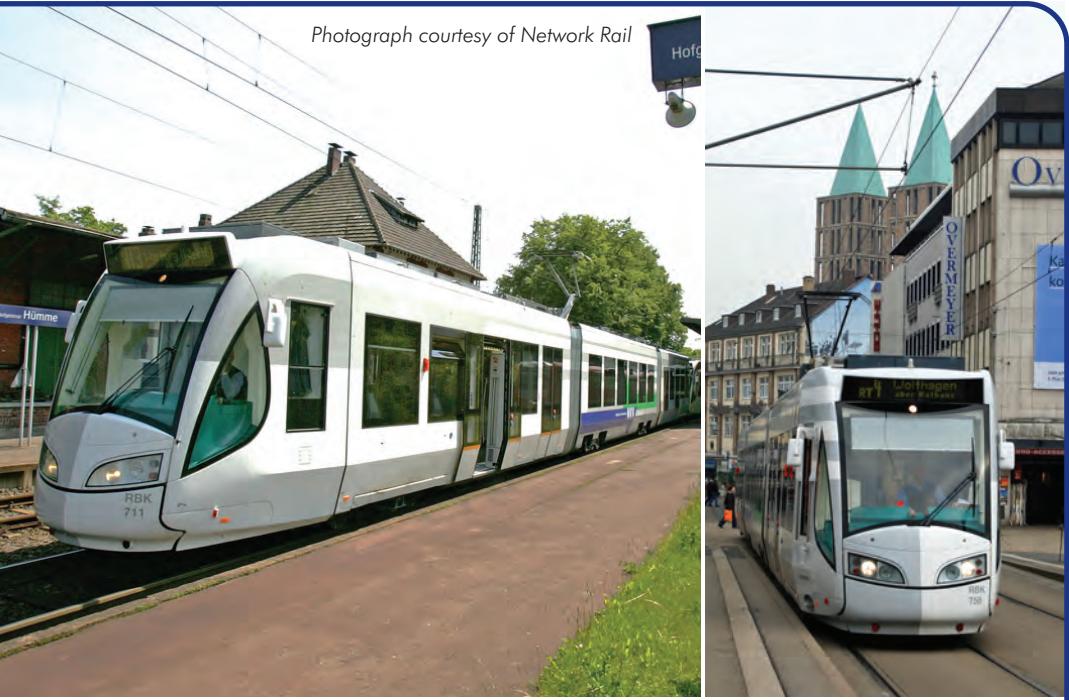
The Kassel network was designed to enable better connections between the city and its satellite communities. To create the 122 kilometre network just 10 kilometres of new track was required to join up existing passenger rail, freight and tram networks.

The vehicles are swift, bright and welcoming, and most importantly allow direct and comfortable transport from outlying communities direct into the city centre. Without the expanded network, it would have been very difficult for the 21,000 students and 2,500 employees of the University to reach the various campuses across the city, for example.

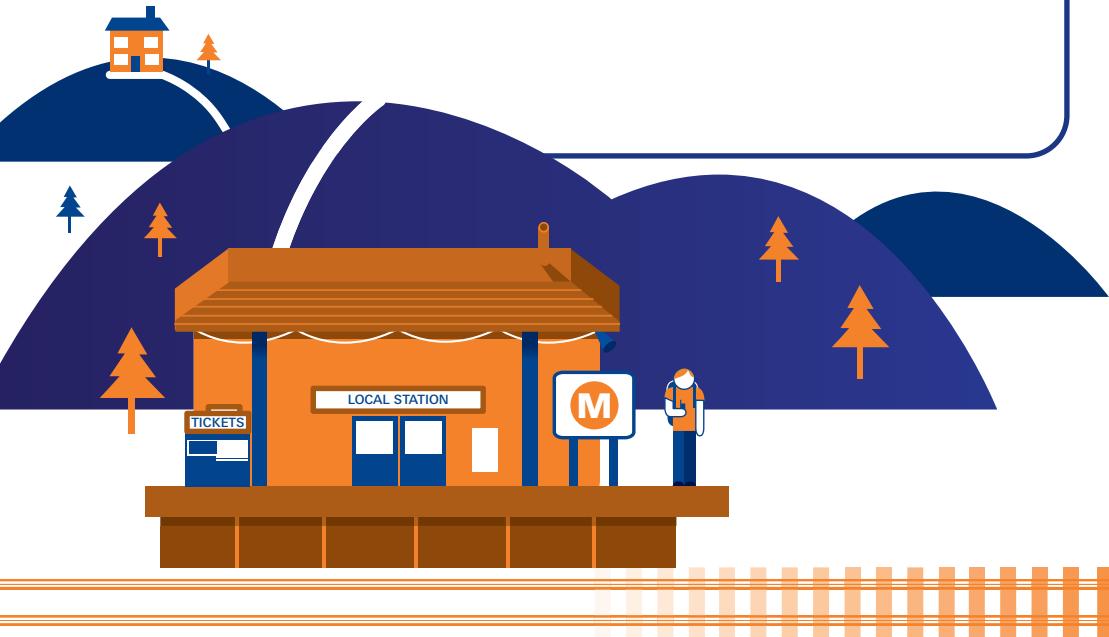
The tram-train is recognised to have had a major influence on Kassel’s economic development, supporting growth in the city centre and connecting the University with the surrounding area. The existence of the tram-train has also increased the attractiveness and value of homes near lines in the surrounding area.



Photograph courtesy of Network Rail



*Tram-train in Kassel – from suburban railway station... ...directly into the heart of the city*



## When will we see tram-trains in the UK?

In May 2012, the Department for Transport approved a £58m pilot scheme to trial tram-trains between Rotherham and Sheffield in South Yorkshire.

The service will begin in 2015 on Sheffield's Supertram network, and on part of the adjoining national rail network, which will be adapted to allow seamless travel from one to the other.

There are expected to be three services an hour, all day, every day. These will run from Parkgate Retail Park in Rotherham, through Rotherham Central Station and on to Meadowhall (a major shopping centre just outside Sheffield). At Meadowhall, the tram-train will transfer onto Sheffield's existing Supertram network, allowing direct access into Sheffield City Centre.

It is hoped that better connections between the two city centres, and their residential areas, will boost the local economy and encourage more people to leave their cars at home, thanks to the comfort and convenience offered by the tram-train.

Other cities across the country, will be closely monitoring the progress of the pilot. Many Passenger Transport Executives (PTEs) have their own plans for tram-train systems in their areas including:

- **Transport for Greater Manchester** – investigating tram-train conversions (for example, on the Marple line) with the aim of overcoming the disadvantage of the location of Manchester Piccadilly on the edge of the city centre and facilitating higher frequencies by avoiding the congested Northern Hub rail bottleneck.
- **Metro in West Yorkshire** - a number of potential tram-train routes are being considered, including conversion of the Leeds-Harrogate-York line and a link to Leeds Bradford International Airport.
- **Centro in the West Midlands** - working on plans to use tram-trains on stretches of a reopened Stourbridge - Walsall heavy rail freight line which could connect with the existing Midland Metro route between Wolverhampton and Birmingham. Other potential tram-train applications in the West Midlands include Wolverhampton – Walsall and Walsall – Wednesbury.
- **South Yorkshire PTE** - undertaking feasibility studies to develop tram-train schemes in South Yorkshire (in addition to the tram-train pilot).
- Tram-trains are also being considered for other cities in the UK, such as Glasgow, Blackpool and Cardiff.



**Tram-train is fundamentally a proven technology, used widely elsewhere in Europe and with great potential to offer a low cost solution to improving urban mobility in a way that is attractive and convenient to passengers. The PTEs and other cities across the country are keen to see tram-trains revolutionising urban rail services as soon as possible.**



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