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 to the city's railway terminus. Because large numbers of trains can operate from a single depot, without the need for sidings, this allows much higher utilisation of space compared to traditional metro systems. Many cities provide automated signals on some sections of the routes they use, again generating savings as well as enabling enhanced frequencies. When stopping, the tram-train can make use of existing stations, allowing passengers to connect onto the new service without the need for expensive new infrastructure. When continuing their journey beyond the major city railway station, directly into the heart of the city, the tram-train can use diesel or electric power, thereby reducing energy costs (as well as noise and pollution) when in electric mode. With improved performance, tram-trains help passengers 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, as the vehicle switches from electric to diesel power. This allows passengers to stop off closer to the place they actually want to get to, whether that is the office, the shops or the cinema. Tram-trains can offer the potential for savings. They can make use of existing stations, thereby reducing the need for expensive new infrastructure. 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 increased the attractiveness and value of homes near lines in the surrounding area.

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 closer to the place they actually want to get to, whether that is the office, the shops or the cinema. Tram-trains can offer the potential for savings. They can make use of existing stations, thereby reducing the need for expensive new infrastructure. 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 increased the attractiveness and value of homes near lines in the surrounding area.

Many Passenger Transport Executives (PTEs) have their own plans for tram-train systems in their areas including:

- investigating tram-train conversions (for example, on the Marple line) with the aim of overcoming the disadvantage of the Northern Hub rail bottleneck.
- South Yorkshire PTE - investigating further development of the tram-train in south west England (to add to the tram train pilot). Tram-trains are also being considered for other cities in the UK, such as Glasgow, Blackpool and Cardiff.

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 aim of the Rotherham–Sheffield tram-train project is to improve connectivity between the two city centres, and their residential areas, particularly in South Yorkshire PTE, by 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 continuing urban rail services on as much as possible.
What are tram-trains?
Tram-trains have the flexibility to operate both as street running trams, and as trains on mainline railway lines.

Board the tram-train at your local station...

Higher revenues and lower operating costs can make fares affordable.

Go beyond the mainline station...

Lightweight means less wear and tear on the track.

...straight in to the heart of the city...

Relieves congestion; provides an extra service into the city.

Lower operating costs per kilometre compared to heavy rail.

...with stops outside offices, shops and other city centre facilities...

Line of sight signalling enhances frequencies without costly upgrades to signals.

Potential to integrate by connecting up different rail, tram and bus systems.

Makes use of existing track, stations and stops.

In electric mode, energy costs, noise and pollution are reduced.

Comfort and convenience encourage modal shift.

Vehicle transfer seamlessly from railway tracks to urban tramways.

Reduces congestion at mainline stations as passengers are dispersed across the city.

Go beyond the mainline station...

Go beyond the mainline station...

Go beyond the mainline station...

Go beyond the mainline station...

Go beyond the mainline station...

Go beyond the mainline station...

Go beyond the mainline station...
Why tram-trains?

Tram-trains combine the train’s reliability, speedability to penetrate city centers, yet with a greater comfort, appealing public and may travel faster in urban areas directly to the heart of towns and cities.

A conventional train traveling into a city usually transports passengers to their desired destination. However, large numbers of these passengers, particularly in braking, they may also offer the opportunity to simplify or eliminate noise and pollution) when in electric mode. With improved performance, they are also heading for the same place, these railway stations can become very congested, with knock on effects for punctuality and reliability. Furthermore, on their way, passengers transfer from one mode of transport to another, often at different stations. Therefore, tram-trains are designed to provide a direct service from home to the traveler’s desired 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 lines and tram routes, improving accessibility for passengers by connecting these stations, directly into the city streets, as the vehicle switches from rail to road in the surrounding area.

Essentially, tram-trains offer a direct door-to-door service from home to the traveler’s real destination in only a few stops, because passenger comfort and reliability. Furthermore, as enabling enhanced frequencies.

The tram-train is recognised to have had a major influence on Rail Network Development, and continuing the University with the local rail network, so that passengers on a tram-train can continue their journey beyond the major city railway concourse, in the city center. The tram-train has also increased the attractiveness and value of homes near lines in the surrounding area.

When will we see tram-trains in the UK?

In May 2012, the Department for Transport approved a £58 million pilot scheme to trial tram-trains between Rotherham and Sheffield in South Yorkshire. Train services are expected to start running in early 2013, with passengers transferring from one mode of transport to another, often at different stations. Therefore, tram-trains are designed to provide a direct service from home to the traveler’s desired 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 lines and tram routes, improving accessibility for passengers by connecting these stations, directly into the city streets, as the vehicle switches from rail to road in the surrounding area.

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

In general, tram-trains revolutionising urban rail services as soon as possible. They are being considered for other cities in the UK, such as Glasgow, Blackpool and Cardiff. Sheffield City Centre.

Sheffield City Centre.

There are expected to be three services an hour, all day, every day. These will run from 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 the city center. Without the tram-train, 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 Rail Network Development, continuing the University with the local rail network, so that passengers on a tram-train can continue their journey beyond the major city railway concourse, in the city center. The tram-train has also increased the attractiveness and value of homes near lines in the surrounding area.

From suburban station to the heart of the city

Eventually, tram-trains offer the potential for savings. They are an alternative to using motorways, reducing travel times, and they are also highly capable for passengers by connecting these areas, up, rather than requiring the construction of expensive new infrastructure. In operation, tram-trains have lower costs per kilometre compared to heavy rail. The tram-train is fundamentally a proven technology, used worldwide elsewhere, including Alicante in Spain, The Hague in the Netherlands and Kassel, also in Germany. Its success has seen the ‘Karlsruhe Model’ adopted by many cities across Europe, and particularly in south-west Germany, where the first true tram-train technology was introduced in 1992. Germany is a leader in tram-train operations – the concept was pioneered in Karlsruhe, in the heart of the city.
Tram-train in action – Kassel, Germany

Germany is a leader in tram-train operations – the concept is pioneered in Karlsruhe, and most recently, Kassel. The Kassel network was designed to enable faster travel between the city and the satellite universities. To create the 125-km network, 150 kilometres of new track were required to join existing passenger lines, thereby halving travel times.

The vehicles are swift, bright, and welcoming, and can easily follow along direct and infrequently used routes. This extends the reach of KuKonor’s service into the city centre, as the vehicle switches seamlessly from railway track to urban tramline. Passengers can alight at various tram stops along the way, meaning that any single journey can be quickly and comfortably extended, and still claim the free short-stay car parking in the city. Without the tram-train, it would have taken too long for the 21,000 students and 2,500 employees of the University to reach the various campuses across the city or more remotely.

Among the advantages of tram-trains is that they can easily be adapted for use in different environments. The Kassel tram-train is known to have set a major influence on KuKonor’s development strategy, and has helped the University with the goal of creating a high-speed network that would integrate the tram-train with the city’s other transport systems. The University has also increased the frequency of services to allow seamless travel from KuKonor’s tram-train system to the mainline rail network.

This tram-train can serve as an example of how tram-trains can be used to improve urban mobility in regions where it is not possible to achieve through conventional rail alone. It has helped KuKonor to continue to attract students to its campuses and provide more efficient and convenient transport options for its employees.

Tram-trains enable this by offering a flexible and adaptable service that can be adapted to different environments, allowing seamless travel between various transport systems. They are efficient, cost-effective, and can be easily integrated into existing transport networks, providing a reliable and convenient alternative to car travel.

In Kassel, the tram-train has transformed the city’s transport system, improving connectivity and accessibility. It has contributed to the city’s economic development and increased the attractiveness and value of homes near lines in the surrounding area. The tram-train has also increased the influence on Kassel’s economic development, supporting growth in the city centre and connecting the University with the surrounding area, including satellite communities. To create the 122-km network just 10 kilometres of new track were required to join existing passenger lines, thereby halving travel times.

When will we see tram-trains in the UK?

The PTEs and other cities across the country are keen to see tram-trains revolutionising urban rail services as soon as possible. They are keen to see tram-trains as a means of making urban rail services more accessible and convenient, and to encourage modal shift from car to public transport.

Many Passenger Transport Executives (PTEs) have their own plans for tram-train systems in towns and cities across the UK, including Manchester, Sheffield, and Glasgow. These plans are being developed in collaboration with local authorities and transport operators to ensure that they are feasible and can be implemented in a sustainable way.

For example, the PTE in Manchester is planning to develop a tram-train service that will provide direct connections between Manchester and the city’s airports, as well as other key locations. The PTE is working closely with local authorities and transport operators to ensure that the service is integrated with other transport modes.

Similarly, the PTE in Sheffield is planning to develop a tram-train service that will provide direct connections between the city and its airports, as well as other key locations. The PTE is working closely with local authorities and transport operators to ensure that the service is integrated with other transport modes.

Tram-trains are fundamentally a proven technology, rated highest attendance in Europe and great potential to offer a low cost solution to improving urban mobility, no 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.
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 into the city directly, avoiding the need to change at a mainline station. Indeed, the stations, as well as the trains, are specifically designed to allow passengers to change directly from tram to tram-train without the need for any additional ticketing or coordination. A tram-train is able to stop and pick up passengers at any intermediate stops, whether these are smaller tram stops or larger suburban railway stations. This means that passengers can alight at various tram stops along the way, meaning that no single place is overly congested and passengers can alight at the place they actually want to get to, whether that is a business, school or the cinema. Travel times are therefore much shorter, with the added advantage that the tram-train can use diesel or electric power, thereby reducing energy costs (as well as noise and pollution) when in electric mode. With improved performance, the tram-train is recognised to have had a major influence on Kassel’s economic development, supporting growth in the city centre and increasing the attractiveness and value of homes.

Essentially, tram-trains offer a direct service from near home to the traveller’s real destination – the city’s central business district. Without the tram-train, passengers would often need to change at a busy mainline station, take a long walk to their office, travel through congested streets, with further changes required into the city centre. With the tram-train, they can alight at various tram stops along the way, meaning that no single place is overly congested and passengers can alight at the place they actually want to get to, whether that is a business, school or the cinema. Travel times are therefore much shorter, with the added advantage that the tram-train can use diesel or electric power, thereby reducing energy costs (as well as noise and pollution) when in electric mode.

In operation, tram-trains have lower costs per kilometre compared to heavy rail. By carrying passengers over shorter distances, without the need for expensive new infrastructure, tram-trains are able to keep costs down and earnings up, rather than requiring the construction of expensive new infrastructure in sparsely populated areas. Furthermore, tram-trains can use existing track and tram lines, extending the potential for any given line to be extended, rather than requiring the construction of expensive new infrastructure.

When will we see tram-trains in the UK?

In May 2012, the Department for Transport approved a £58m pilot to trial tram-train technology between Rotherham and Sheffield in South Yorkshire. This was seen as a major step towards seeing tram-trains revolutionising urban rail services as soon as possible.

The tram-train in South Yorkshire is the first realistic test of the tram-train system in the UK. The tram-train will run on the platforms of existing suburban trains, using existing railway signalling and tracks on the suburban railway route between Rotherham and Sheffield, serving Rotherham Central Railway Station and Meadowhall Retail Park in Rotherham, through Rotherham Central Station and on to Sheffield City Centre.

The tram-train project is a joint venture between TransPennine Express and Transport for West Yorkshire, with participation from Network Rail and the Department for Transport. The tram-train is being deployed on a section of railway line between Rotherham and Meadowhall. Without the tram-train, passengers would have to take two separate journeys, via Rotherham Central Station.

The tram-train is a unique example of how to maximise the potential of the railway infrastructure in the UK, without the need for new track or infrastructure. The tram-train is being trialled on the Rotherham-Sheffield Line, between Rotherham Central Station and Meadowhall Retail Park. The tram-train will be diesel powered and will run on existing tracks and tramlines, improving accessibility for passengers by connecting these satellite communities.

The tram-train in action – Kassel, Germany

Kassel is a bustling, medium-sized city located in the west of Germany, between Dusseldorf and Erfurt. The tram-train technology was introduced as part of a larger transport initiative, with the aim of improving urban mobility in a way that is attractive and convenient to passengers. The tram-train is recognised to have had a major influence on Kassel’s economic development, supporting growth in the city centre and increasing the attractiveness and value of homes.

The vehicles are swift, bright and welcoming, and most importantly allow direct and comfortable transport from outlying communities direct to the city centre. Without the tram-train, it would have been very difficult for the 61,000 students and 2,000 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 increasing the attractiveness and value of homes.

The tram-train is a unique example of how to maximise the potential of the railway infrastructure in the UK, without the need for new track or infrastructure. The tram-train is being trialled on the Rotherham-Sheffield Line, between Rotherham Central Station and Meadowhall Retail Park.

The tram-train is fundamentally a proven technology, used with wide-spread success in Europe and with great potential to offer a low cost solution to improving urban mobility, with the opportunity to accommodate increased demand. The tram-train is being considered for other cities in the UK, such as Glasgow, Blackpool and Cardiff.

The tram-train in Kassel – from suburban railway station… …directly into the heart of the city
Tram-trains combine the tram’s flexibility, and ability to penetrate city centre streets, with a train’s speed, reliability and the ability to travel between different cities. In densely populated urban areas, particularly in congested city centres, tram-trains can offer a cost-effective and efficient solution to travel. With improved performance and energy efficiency, they can reduce journey times and travel costs, while also reducing emissions and pollution. Tram-trains can be fuelled by diesel, electricity or a combination of both, allowing for flexibility and reduced energy costs. 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 emissions and noise. They are easier to operate and maintain, with lower running costs and higher safety standards than conventional trains. Tram-trains can be used in areas where conventional trains cannot, such as in urban environments, and they can be adapted to fit into existing railway infrastructure. They are also more energy-efficient than conventional trains, with lower energy consumption per passenger-kilometre. In addition, tram-trains can be used as a part of a larger, integrated transport system, allowing for seamless travel between different modes of transport. They can be used for a variety of purposes, such as connecting satellite communities, universities and city centres, and they can be used to improve accessibility and connectivity for passengers. Tram-trains can also be used to support economic development by improving urban mobility and connectivity, and they can be used to encourage modal shift away from private cars and towards public transport. Tram-trains are an effective and sustainable solution for urban transport, and they can be used to improve the quality of life for residents and visitors alike.