

# SYSTEMS FACTFILE

No. **161** Sheffield,  
United Kingdom

Sheffield's Supertram was physically little changed after its 1994 debut as the UK's first low-floor tramway, but a 2018 addition marked another first in British light rail operations.



**T**he city of Sheffield in South Yorkshire has also held metropolitan borough status since 1986. The current population is around 585 000; conurbation definitions vary, but it is in the top ten largest in the UK.

The 'Steel City' epithet refers to an historic and remaining presence in that industry, although many claim that it is also the UK's greenest city, with the highest ratio of trees per person than anywhere else in Europe.

Involving the local authorities of Sheffield, Rotherham, Doncaster and Barnsley, the Sheffield City Region Combined Authority was established in 2014 with aspects of transport amongst its delegated responsibilities. Now responsible to the Combined Authority, South Yorkshire Passenger Transport Executive (SYLTE) created

in 1974 is the body accountable for public transport. Most services within its remit are run by private sector operators, including the Supertram light rail network which SYLTE identifies as having around 12m annual journeys.

Sheffield spreads over unusually hilly terrain for a major British city, a feature recognised in the council's logo. Extending from around an historic fortification as recalled by Castle Square on today's tramway, it grew during 19th Century industrialisation that drew upon plentiful local coal and water. A target for competing railway companies, Sheffield became a centre for goods and passenger traffic; it is located 265km (165 miles) north of London St Pancras using the Midland Main Line.

Sheffield introduced horse trams in 1873, with electrification from

▲ **Siemens-Düwag 102 at Castle Square in central Sheffield on 9 December 2020. The colours on these shelters and overhead masts are as originally used on Supertram stock.**

1899. Developing into a mainly radial cross-city system that peaked in the 1930s, the 1960 closure put it amongst the last traditional British tramways.

Supertram grew from a 1976 recommendation to create a segregated regional passenger transport system. A 1985 submission to the UK Parliament was more specifically for light rapid transit, with contracts for infrastructure and stock being placed in 1991. Along with the challenging topography, two structures became emblematic of the new bi-directional system. Carrying tracks and a walkway into the central area, a new bowstring bridge spanned a road intersection; the adjoining delta junction of double tracks to integrate the three tramway arms was built on the Park Square traffic island.

Services on the second-generation tramway were launched as South

Words and pictures by Neil Pulling.



## THE FLEET

Equipped for gradients up to 10%, both of the eight-axle, bi-directional, 2.65m-wide Supertram types provide level access and low-floor areas in the outer of their three sections. Without exterior doors, the centre sections have a raised floor and facing seats. Interior fittings are similarly styled.

Unique to the Sheffield system, the first of the 34.8m Siemens-Düwag trams now numbered 101-125 was received from Germany in 1993. A mid-life refurbishment programme completed between 2006 and 2009 and other works have been completed at Nunnery depot. Stagecoach identifies capacity for 88 seated and 162 standing. Air-conditioning is only provided in driving cabs.

The option to refurbish the current fleet in 2024 to extend their life by 15 years has been considered, but assessments undertaken in 2017 indicate that replacement would be more cost-effective. Plans envisage a new fleet of 28 trams entering service by 2027, allowing for frequency improvements on the core routes to 7.5 trams per hour.

There are also seven 37.2m fully air-conditioned Stadler (originally Vossloh) *Citylink* tram-train vehicles (96 seats, capacity for a further 140 standing). These are classified as British Rail 399, numbered 399201-399207, with the first received from Valencia, Spain, in late 2015. The initial four were for the Rotherham service, with the remainder to increase stock for tramway services. They accordingly have wheel profiles to match their areas of operation.

As with the trams, there has been re-formation of tram-train vehicles after accident repairs. Sheffield's *Citylink* are dual-voltage, although only the 750V dc capability is currently used as the 25kV ac standard railway electrification has yet to reach the Sheffield area.

▲ ABOVE LEFT: Installed to take tracks beneath a road junction, the short inclines near the University of Sheffield stop are extreme, even by the system's standards.

◀ LEFT: Meadowhall South/Tinsley, with 116 having cleared the single-track Meadowhall Interchange access. The junction for Tinsley Chord, a 160m connection between tramway and railway, is to the far right.

**“Sheffield spreads over unusually hilly terrain for a major British city, extending from around an historic fortification as recalled by Castle Square on today’s tramway.”**

Park Square Bridge, built for the Supertram project. One of two trams in this advertising wrap in 2020, 111 heads away from the city centre with a driver instruction working.





▲ ABOVE: The only end-of-line terminus with two platform faces, Meadowhall Interchange. Here in April 2007, this Stagecoach livery was becoming replaced by the blue 'beachball' style.



▲ ABOVE: The Malin Bridge branch, with 115 passing the facade of the former Holme Lane depot from the original system, used now as the Tramways Medical Centre.



▲ ABOVE: Sheffield Station/Hallam University stop in September 2016. The Granville Street alignment has been considered for conversion to road use, with the tramway re-routed on the opposite side of Sheffield's main station.

Yorkshire Supertram in March 1994 (YouTube has videos of these early operations) with branding soon changed to The Supertram. The initial service ran between a temporary city centre terminus, Fitzalan Square/Ponds Forge, and Meadowhall. Near the M1 motorway in the north of Sheffield, Meadowhall was an early 'out of town' regional shopping centre, the second-largest in the UK at its opening in 1990. The transport interchange opened in the same year, with the later dedicated tram platforms adjoining those used by trains.

The Meadowhall line includes the Supertram depot and control centre, sited next to Nunnery Square stop, bounded by the tramway and the Sheffield - Retford railway. Although with several road crossings, the Meadowhall line mainly occupied reserved space.

Later openings added more of this format but also introduced shared road space on city streets and outer main roads. The north-western arm which passes just north of the main central shopping area was completed by late 1995. Immediately outside of the city's cathedral, the so-named tramstop functions as a terminus for two lines

with two more passing through, despite having no loop or siding space.

More than most of Supertram, the north-western arm replicated some route of the city's first-generation tramway. In the Hillsborough area, which often has dense traffic on its narrow streets, the tramway diverges to two termini, Malin Bridge and

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Middlewood. Supertram's long south-eastern arm opened in spring 1995, bringing a connection with the main railway station - often called by the old name of Sheffield Midland - by way of a cross-platform footbridge. Although well-signposted, this is something of a back-door access, with the station's main entrance on the opposite side

which is also nearer the city centre and bus interchange.

The south-eastern arm has a notably scenic climb on hillside and viaduct away from central Sheffield. It also has two termini, Herdings Park and Halfway. The latter's route fringes countryside, including a brief incursion to the county of Derbyshire between White Lane and Birley Lane. Two stops serve another large shopping complex, Crystal Peaks.

Organisational change in 1997 introduced the service's present branding, Stagecoach Supertram. Based in Perth, Scotland, and also having a strong presence with Sheffield bus routes, Stagecoach acquired the tram maintenance and operation concession in a deal that runs until March 2024. The company bought out the specially constituted public body, South Yorkshire Supertram Limited, although the principal assets remain with SYPTE.

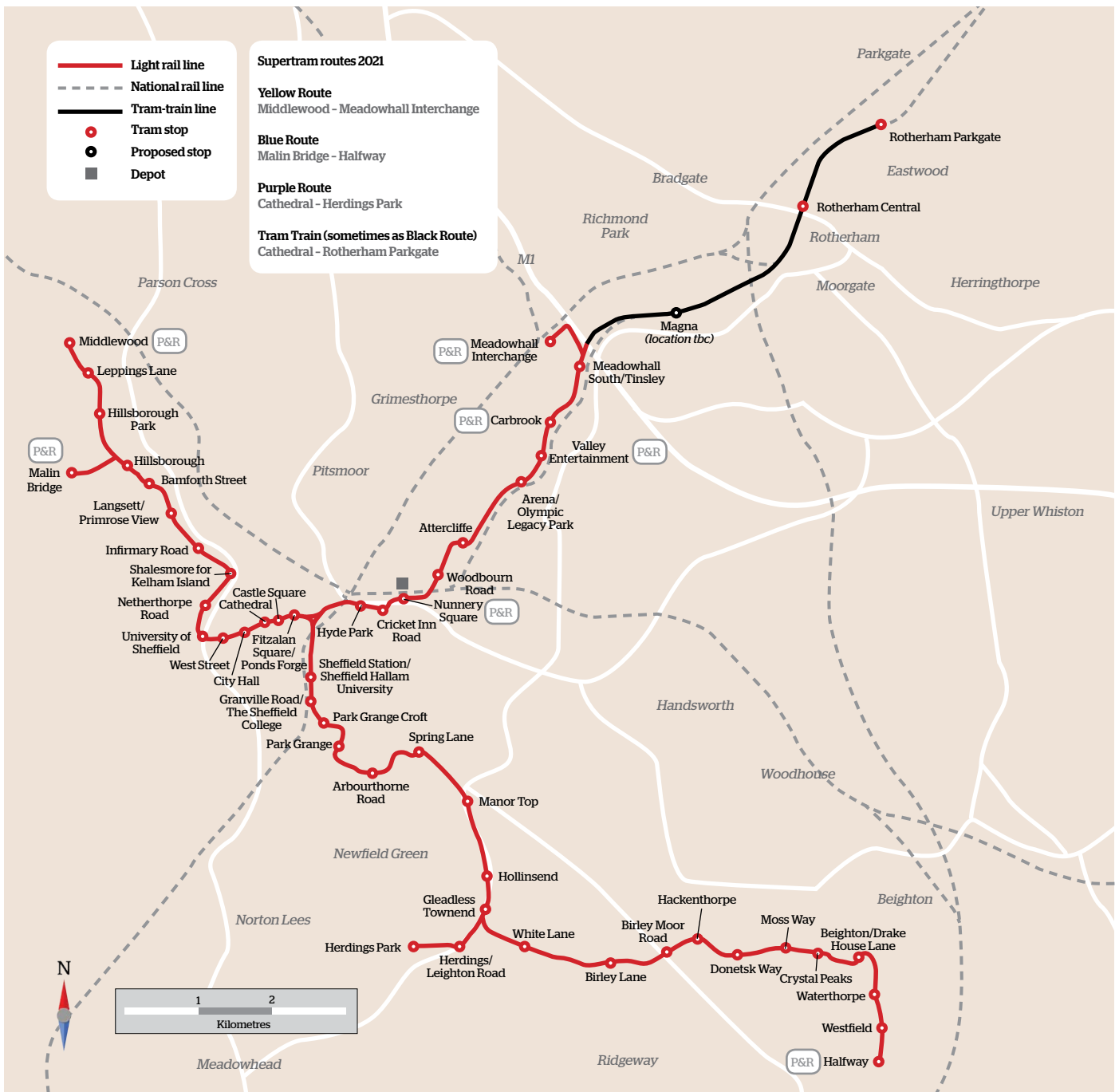
Stagecoach adopted a mainly white livery as then used on the company's buses to replace the trams' original pale grey and dark blue. Those colours remain however on most shelters and overhead equipment masts. A later mainly blue Stagecoach livery was applied from January 2006 as trams

## NETWORK FACTS

- ▶ **Opened:** Tramway 1994; Tram-Train 2018
- ▶ **Length:** Tramway - 29km (18.1 miles); Tram-Train - 5.5km (3.4 miles)
- ▶ **Stops:** 50
- ▶ **Lines:** 4
- ▶ **Depots:** 1
- ▶ **Approx. weekday hours:** 05.30-00.00
- ▶ **Main frequency:** 10-12 minutes
- ▶ **Gauge:** 1435mm
- ▶ **Power:** 750V dc, overhead supply
- ▶ **Fleet:** 25 trams; 7 tram-trains
- ▶ **Operator:** Stagecoach - [www.stagecoachbus.com/supertram](http://www.stagecoachbus.com/supertram)
- ▶ **Regional network:** [www.travelsouthyorkshire.com](http://www.travelsouthyorkshire.com)
- ▶ **Civic information:** [www.sheffield.gov.uk](http://www.sheffield.gov.uk) and [www.southyorks.gov.uk](http://www.southyorks.gov.uk)
- ▶ **Tourist information:** [www.welcometosheffield.co.uk](http://www.welcometosheffield.co.uk)



▲ ABOVE: At the end of a route which lost potential demand due to demolition of housing blocks, Herdings Park in April 2009. Like most Supertram termini, it has one platform face.



▲ ABOVE: On railway tracks near where tram-trains diverge to a siding containing Rotherham Parkgate's Supertram platform. The River Don Navigation is to the left.



▲ ABOVE: Sheffield-bound passengers are not fooled by 399201's destination display at Rotherham Central on the first day of tram-train services, 25 October 2018. Ramps either side of the tracks lead to higher main line platforms.



underwent refurbishment. Another early change was to remove platform ticket machines in favour of onboard conductors, still a system feature. The request stop operation introduced in 1999 is emphasised by onboard audio and visual announcements.

Sheffield had a post-World War Two building programme to handle growth and replace old housing stock, but many of the resulting tower blocks were being demolished when and after Supertram was launched. The fewer concentrated employment centres, particularly along the Don Valley as served by the Meadowhall line, plus the continuing effects of bus deregulation, are also held to have inhibited demand. Despite good park-and-ride provision and bus interchanges, overall the system did not enjoy passenger levels that might have encouraged early expansion.

The only extension since the 1994-95 openings was the product of a protracted and closely-observed development to introduce tram-train technology to the UK. Coincidentally, Supertram's October 2018 expansion recalled a local connection between Sheffield and Rotherham, formerly represented

▲ **TOP LEFT:** Track-sharing from October 2018: tram-train 399204 is about to cross a Class 20-powered railhead treatment train near the future Magna stop site, between Meadowhall South and Rotherham.

▲ **MIDDLE LEFT:** The interior of a Supertram Citylink. As with the system's Siemens-Düwag trams, the centre car has a higher-level floor and the types have similar interior fittings.

◀ **LEFT:** Stagecoach Supertram and bus services at Halfway. This potentially confusing name for a terminus is said to have originated from a public house in the area.

by through-running between the respective corporation tramways. A research project for future hybrid rail projects, the Tram-Train Pilot involved national railway infrastructure body Network Rail.

Of great local benefit since its inception, over 1.5m passenger journeys used the service during the pilot phase, after which tram-train formally became an integral Supertram operation. The approximately 5.5km (3.4 miles) added became the first British interspersing of heavy rail and street-running light rail stock: for further details of the project see *TAUT* 953 and 972. New dual-system stock running from central Sheffield on the Meadowhall line shares route beyond Meadowhall South/Tinsley stop with passenger and freight trains.

By way of a new 160m connection – also the transition point between the two control systems – Supertram began services to the new Rotherham Parkgate terminus. The only other new stop added, and becoming Supertram's third railway interchange, Rotherham Central has paired platform faces for the two rail modes which join end-on, albeit with different boarding heights.

## ESSENTIAL FACTS

**Local travel:** SYPTE staffed information points include Meadowhall Interchange and Sheffield Interchange (near the station). The Travel South Yorkshire website identifies all public transport services, including Supertram, irrespective of operator. Stagecoach embeds Supertram information amongst its much wider website.

The system features no platform ticket machines; fares are payable to onboard conductors, now accepting contact-free payments. Other pre-payment options are available. The all-system *Tram-only Dayrider* costs GBP4.40 (EUR4.95). Some passes include other modes, for example the tram/bus/train: *SYConnect+ Day* at GBP8.80 (EUR9.90) – zone maps can be found at [www.sytravelmaster.com/all-zone](http://www.sytravelmaster.com/all-zone). Supertram accepts English national travel cards (as per 'Pensioner Bus Pass') irrespective of the issuing authority for free travel.

### What is there to see?

Supported by a large student population, Sheffield is a regional entertainment centre. The city's Botanical Gardens are located a mile south-west of the centre. Kelham Island Museum near Shalesmoor tramstop focuses on local industrial heritage.

Nearby tram interest includes the Nottingham and Manchester systems, both around 65km (40 miles) distant by train. Like Sheffield in being on the eastern edge of the picturesque Peak District, the Crich Tramway Village ([www.tramway.co.uk](http://www.tramway.co.uk)) collection includes several former Sheffield Corporation trams.

▲ **ABOVE:** In a cream-blue livery applied in 2010 to celebrate 50 years since the original tramway's closure, 120 climbs towards Leppings Lane stop on 9 December 2020.

**“Sheffield city region is keen to expand tram-train coverage to make better local use of railways as feeders to central areas.”**

Funding was approved in March 2020 for a new tram-train stop with park-and-ride facilities at Rotherham’s Magna Science Adventure Centre as part of the UK Government’s Transforming Cities Fund.

The service is organised as four lines, distinguished as the Blue, Yellow, Purple and (styled as) Tram Train / Black routes, the colours and letter abbreviations also appearing on destination displays. Line overlaps make the system’s busiest point a short section serving Cathedral, Castle Square and Fitzalan Square/Ponds Forge – all three stops being within about 350 metres. Timetables have been subject to modification amongst the measures taken in response to the COVID-19 pandemic.

The multi-agency ‘Sheffield Midland Station and Sheaf Valley Development Framework’ published in March 2020 includes a proposal to remove trams from the Granville Street alignment past the main station, enabling reuse as an inner relief road. Replacement tracks would run between near the Sheffield College and Fitzalan Square stops, bringing improved city centre access and interchange facilities, with overall higher ridership potential than at present.

Sheffield City Region is also keen to expand tram-train coverage to make better local use of railways as feeders to central areas. Uncertainty rose in late 2020 over the eastern leg of the High Speed 2 railway project. For Supertram, as with Nottingham’s NET system, this relates to planning for any connecting role that light rail may have.

On the existing system, a six-year multi-million-pound programme to replace the majority of track on the system concluded in late 2020.

SYLTE is also reviewing its options for the future, with a report from last year confirming the need for a renewal of both the fleet and key infrastructure elements. These include the power supply system, control and communication systems due to life-expiry and obsolescence of crucial components.

Three options for operations and maintenance after the current concession ends in 2024 have also been shortlisted for consideration, with a preferred long-term plan for the establishment of an arm’s-length organisation to operate the services and maintain both the network and fleet. SYLTE would separately procure delivery of the network renewal, estimated at GBP439m (EUR494m). **TAUT**



▲ ABOVE: City-bound 399203 by the Sheffield & Tinsley Canal near Attercliffe stop.

► RIGHT: Towards the end of the climb from central Sheffield on Park Grange Road. As here in autumn 2016, new construction was apparent along the route.

