

THE INTERNATIONAL LIGHT RAIL MAGAZINE

TRAMWAYS & URBAN TRANSIT



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OCTOBER 2023 No. 1030

REINVENTION AND RENEWAL IN ŁÓDŹ



Grand transit plans to link up Poland's post-industrial city



Edinburgh's plans

Next steps for the Scottish capital



LRT vs Metro?

Lyon focuses on tramway growth

- › Tel Aviv opens long-awaited Red Line
- › Jakarta's 44.5km metro completed
- › San Francisco celebrates 150 years



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CONTENTS



NEWS **372**
Jakarta's metro scheme completed; Bogotá tram-train project paused; new *S-Bahn* trains for Munich; Rotterdam reveals proposed future tram network plan; Israel opens Tel Aviv Red Line; Latest generation of Piccadilly trains on test.

EDINBURGH: NORTH TO SOUTH **376**
New plans that stretch from North to South mean that Edinburgh's Newhaven line won't hold its 'new' title for long – the network will be growing even further...

LYON: RAPID GROWTH FOR LRT **382**
The focus falls on tramways, rather than metro; as Andrew Thompson provides an update on one of France's largest tramways.

THE SWISS ORBE **386**
Standardisation looks to bring Switzerland's 'orphan' system into line after 129 years.

METROFLOW **389**
Richard Foster uncovers how a quiet freight line in Tyne and Wear, UK, now handles 200 light rail services daily.

SYSTEMS FACTFILE: ŁÓDŹ **393**
Neil Pulling explores a city where post-industrial development has meant better integration with wider railway networks.

WORLDWIDE REVIEW **399**
Canada's PM launches Montréal's REM metro; Marseille Alstom deliveries begin; Prague approves Dedina line extension.

MAILBOX **403**
Generational steps away from heavy rail thinking; Educating the public is key.

CLASSIC TRAMS: HALBERSTADT **404**
Mike Russell on celebrations to mark 120 years of trams in the small German town.

Light rail has the upper hand over metro



The case for lighter rail is proven, and we can read this month how some major cities worldwide are ditching their plans for metros and going for more tramways because they are simply much cheaper and faster to install.

Lyon, France's second city to Paris, is a showpiece of transport planning with a wide variety of modes that fit bespoke local needs: a metro, tramways, trolleybuses, buses, and even two funiculars. However, it is feeling a cold draught following the pandemic, and inflation triggered by the Russia-Ukraine conflict. Phrases like, 'keeping an eye on ballooning costs' are code language for investment reviews (i.e. metro extension cancellations), which is a wonderful opportunity for lighter rail to step in and fill the gap.

This might also be the case in Sydney, Australia, where the Metro West extension to the central business district is in jeopardy because construction prices have risen by almost half. New South Wales Premier Chris Minns says he has to work out a way to pay for the scheme that doesn't destroy the budget... that's a likely 'no' then.

The UK always has to be different, in that neither metros nor light rail seem to get very far. Bristol (where the population is a quite thinly-spread 700 000) has been pushing for a GBP18bn (EUR21bn) underground scheme when it currently hasn't a penny in the cash tin. The abandonment of the proposed workplace parking levy means that the idea, like so many others in Bristol, is now in the waste paper basket.

Why does this happen so often? Just 150km (100 miles) north, ruling West Midlands politicians once squandered millions and delayed the hard-pressed region's economic resurgence by perhaps 20 years when they also insisted on pursuing a sub-surface scheme instead of more light rail. Democracy or lunacy? *Matt Johnston, Editor*

COVER: Piotrkowska Centrum, a tramway hub which has become a symbol of post-industrial renewal in the Polish city of Łódź. Neil Pulling

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Jakarta opens 44.5km Jabodebek LRT

Metro scheme completed for Indonesian independence day



▲ ABOVE: Two trains on the elevated Jabodebek line serving Indonesia's capital. HENDRA EKA

Indonesian Independence Day took on extra significance this year when President Joko Widodo opened Jakarta's new Jabodebek Light Rapid Transit system. The first trains that ran on 17 August marked the end of a decade-long saga to build the new network.

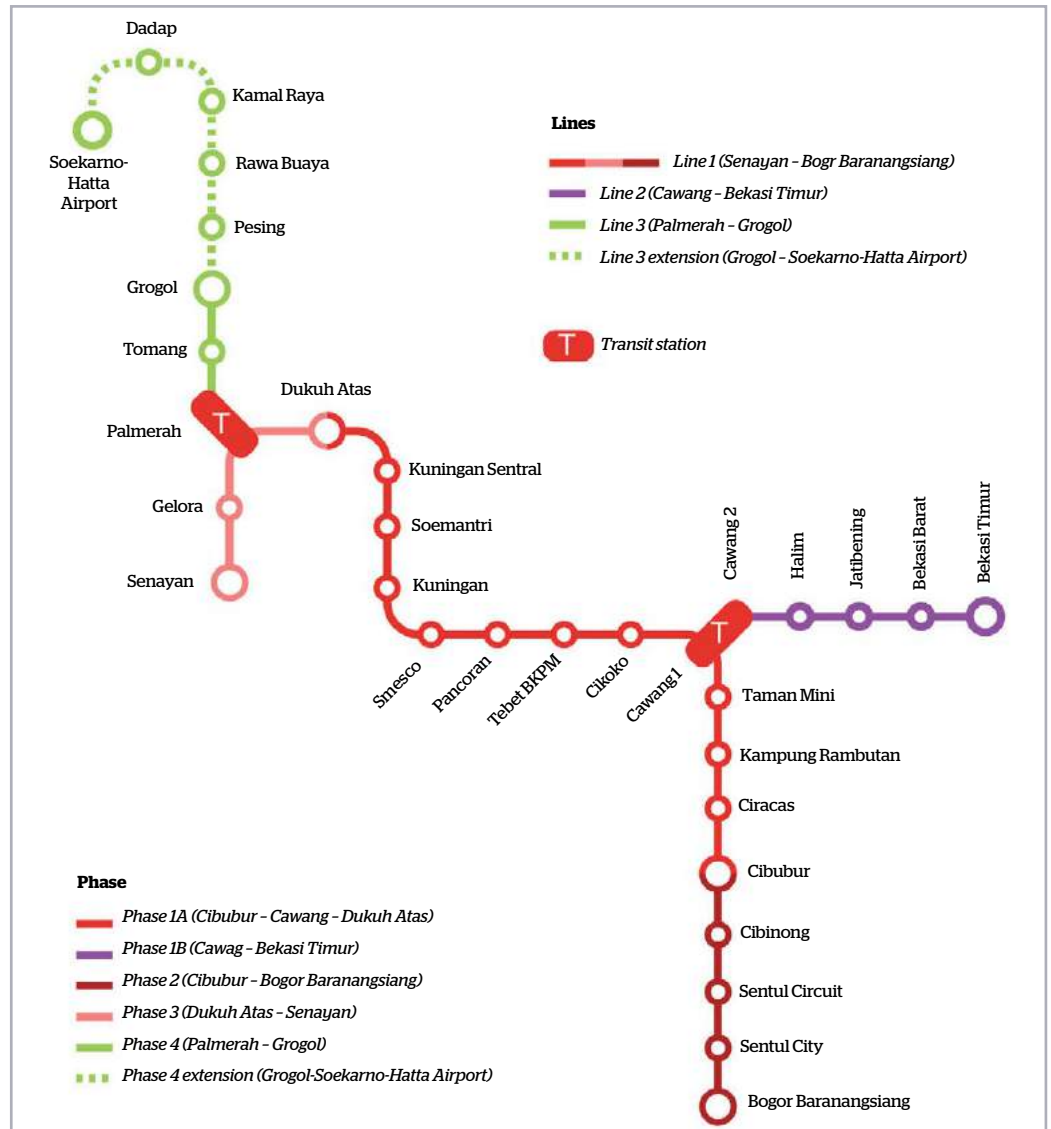
Construction started on a new monorail in 2013 but, in 2015, the city government decided to build a light rapid transit system instead. This was due to open in 2019 but further delays pushed completion back to 2023.

Although it is called light rapid transit, Jabodebek is essentially a 1435mm-gauge metro. The 44.5km (27.7-mile) two-line system cost IDR23.8tr (USD1.8bn) to build.

Line CB links Dukuh Atas in the centre of the Indonesian capital (where it meets the metro system) with Harjamukti in the southern suburbs, while Line BK runs from Dukuh Atas to Jatimulya (Bekasi Timur). Both routes are operated by Kereta Api Indonesia, owned by central government.

There are 18 stations and the peak service is every six minutes. It requires 31 six-car INKA 750v DC third-rail trains.

Jakarta (population 28m) also has a 15.7km (9.8-mile) 1067mm-gauge metro as well as the elevated 1435mm-gauge LRT Jakarta, which runs the 5.8km (3.6 miles) from Velodrome to Kelapa Gading Mall. Both systems opened in 2019.



Rotterdam's controversial plans detailed after protests from residents

A first look at what Rotterdam's future network could look like has been revealed in the *Future Tram Plan*.

Earlier this year, operator Metropoolregio Rotterdam Den Haag proposed swingeing cuts to lines and services on the city's

tram system to boost ridership and cut costs. However this led to bitter protests from residents.

Under the new proposals, the Molenlaan - Kleiweg sections of Lines 4 and 8 will be retained and Line 21 will continue to run to Schiedam Woudhoek while

a further study takes place. All lines will be renumbered 21-28.

However, trams will no longer serve Oudedijk, 's-Gravenweg, Nieuwe Binnenweg, Benthuiserstraat, Zaagmolenstraat and Scheepvaartkwartier.

Weather fails to dampen Finnish opening

High winds brought power cuts to the Finnish city of Tampere on 7 August, causing minor delays to the opening of its newest section of tramway. In the event, however, the first trams to use the EUR61.7m extension to line 3 were only delayed by ten minutes.

The 2km (1.2-mile) line links Pynikintori to Santalahti, with three new stops.

Bogotá tram-train project paused

Environmental concerns delay schemes for Colombian capital

▼ BELOW: The first CRRC tram-train for Bogotá in the Chinese factory. CRRC

Environmental concerns have stopped work on Colombia's Regiotram de Occidente tram-train project.

China Civil Engineering Construction Corporation was awarded a 26-year design, build and operate contract for the line in January 2020. However, Colombia's National Authority for Environmental Licences (NAEL) has withheld permission for the scheme on the grounds that detailed environmental studies have not been carried out and the effect on wetlands is unclear. It contends that CCECC has also failed to provide information on the release of potential hazardous particles or noise pollution.

Bogotá Mayor Claudia Lopez has urged the companies involved to respond quickly to the environmental demands so that work on the COP3.6tr (USD875m) project can resume.

This is not the first issue to hit the 39.6km (24.6-mile) line that will link the capital Bogotá with Facatativá and Cundinamarca



in the Sabana Occidente region. It was due to open in 2024 but delays with compulsory purchase orders on properties means that it will not carry passengers until 2026 at the earliest.

The line uses the trackbed of the Bogotá - La Savannah railway that closed in 1990. It is expected that 130 000 passengers/day will

use the tram-train, with services running to six-minute peak headways, and a 55-minute end-to-end journey time.

CRRC is building 18 three-section tram-train vehicles, the first of which was delivered in December. A depot is being built at El Corzo, 5km (three miles) from the outer terminus.

Colombia has plans to build two further tram-train systems. The Bogotá - Zipaquirá Regiotram Norte is a 47.5km (29.5-mile) line that would be partly underground and partly elevated on viaduct.

Little progress has been made on the third project, Regiotram Sur.

Munich orders new S-Bahn trains

The German state of Bavaria has placed a EUR2bn order with Siemens Mobility for 90 new trains for its S-Bahn network; the first should enter service in late 2028. S-Bahn München, a subsidiary of DB Regio Bayern, will lease the new trains from LHI Leasing of Pullach.

Each 13-car train will be 202m long with 28 axles, and can carry a maximum of 1841 passengers. They will have a top speed of 160km/h (100mph) and will use European Train Control System electronic signalling, due to be introduced from 2030.

Passengers will be to enjoy the benefits of air-conditioned

interiors with variable lighting, as well as family/group areas, specially-designed wheelchair areas, and multi-purpose areas with bicycle spaces. The 1.4m-wide doors will allow easy access and passengers will be kept informed by 166 passenger information displays.

München's (Munich's) S-Bahn, with its cross-city tunnel, was established for the 1972 Olympic Games. The network is now 444km (276 miles) long and its eight lines attract on average 840 000 people per day. DB Regio started its current 12-year operating contract in December 2020.



◀ LEFT: An artist's impression of the new S-Bahn train for München. Siemens



▲ ABOVE: The first 24m HyundaiRotem tram for Warszawa at Dworzec Wilenski interchange on Line 28. A. Thompson

Warsaw HyundaiRotem fleet grows

The delivery of 123 new trams from HyundaiRotem to the Polish capital Warszawa (Warsaw) has passed another milestone: the first of the 24m-long Type 142Ns entered service over the summer.

Tramwaje Warszawskie placed the order in June 2019, becoming the first European operator to order new trams from the South Korean manufacturer. The order comprised 85 bi-directional

Type 140Ns, 18 33m-long unidirectional Type 141Ns and 20 Type 142Ns. The first two double-ended cars reached Poland by sea in the summer of 2021 and entered revenue service that December. The Type 141Ns entered service on Lines 22 and 26 in early 2022.

However, Warszawa's authorities have decided not to exercise the option for another 90 vehicles.

London Travelcard axe causes upset

Mayor of London Sadiq Khan has controversially pulled the plug on the capital's Travelcard discount fare scheme in a bid to raise GBP40m (EUR46.7m) to reduce his debt to the UK government.

He has directed Transport for London to end the sale of Day Travelcards that are valid across all modes of transport from January 2024.

Oyster smart card and contactless pay-as-you-go fare caps are unaffected, along with longer-term Travelcards, but the Mayor has argued there is little choice as extra revenue worth GBP500m (EUR583.3m) has been demanded as part of the UK capital's post-pandemic transport funding settlement.

TfL suggests that customers in London will pay the same or less by switching to capped pay-as-you-go, while people travelling from outside London using combined rail tickets and Day Travelcards may pay more.

Passenger groups say that the current scheme is well used and popular with visitors. Khan says that if the extra money can be found from another source, he would rescind the instruction.

Sydney Metro West "needs to happen"

Sydney's beleaguered Metro West project "needs to happen", says Labor MP Andrew Charlton. Construction of the new 24km (14.9-mile) underground railway from Greater Parramatta to the Australian city's Central Business District is underway.

However, as costs have increased by AUD17bn (EUR10.15bn) to AUD25bn (EUR14.9bn) and delays continue, New South Wales Premier Chris Minns has questioned whether the scheme should be completed. Minns said: "We have to work out a way to pay for Metro West that doesn't destroy the budget."

However, Andrew Charlton, MP for the federal seat of Parramatta, said: "To keep Parramatta's growth on track, Metro West needs to happen".

Israel's PM opens Tel Aviv Red Line for passengers

Free travel after national leader inaugurates Dankai light rail transit

Israel's Prime Minister Benjamin Netanyahu formally opened the 24km (15-mile) Red Line Dankai light rail on 17 August. Regular passenger services started at 05.30 on 18 August and 100 000 passengers took advantage of the

offer of free travel that day.

There are three services: R1 Bat Yam (HaKomemiyut) – Petah Tikva; R2 Bat Yam – Kiryat Arye; R3 Elifelet – Kiryat Arye. Payment for travel is by the Rav Ko smart cards. Ticket prices start from NISS5.5 (EUR1.34).

It follows the granting of a safety certificate to the NIS18.6bn (USD5bn) line at the end of June (TAUT 1029). The route has 11km (6.3 miles) and ten stations in tunnels, including the Central railway station. The depot/workshop is at Kiryat Aryeh near the suburban railway station.

Operation and maintenance is in the hands of a consortium formed by local bus operator Egged and Shenzhen Metro with China Civil Engineering Construction Corporation. CRRC Changchun in China has supplied 90 double-ended 100% low-floor 34.8m trams that run in coupled sets and carry up to 274 passengers per car.

Also under construction to serve the Israeli city is the 27km (16.7-mile) Purple Line and the 35km (21.7-mile) Green Line, due to open in 2027 and 2028.



▲ ABOVE: Israeli Prime Minister Benjamin Netanyahu cuts the ribbon to inaugurate service on the Tel Aviv light rail Red Line. NTA

Turkish guided tourist 'trams'

Garatren's new 'guide rail tram' system continues to enjoy take-up by Turkish cities. Work to complete the 13.5km (8.3-mile) Boztram system in Bozüyük is nearing completion, with the trolley poles being clad in wood to lessen their impact. Meanwhile, the city of Gölbaşı has started building a 2.8km (1.7-mile) 'guide-rail' line.

Garatren claims that its system is cheaper and quicker to install than a conventional fixed track tramway. The Turkish firm specialises in

producing rubber-tyred tram- and train-outline vehicles. However, it has developed a new range of rubber-tyred vehicles that also use a single side rail to "minimise driver error". The 8.3m 'trams' are 2.2m wide, use lithium-ion batteries for propulsion and can carry 24 seated passengers

Guidance wheels engage with a side rail to provide directional control. Speeds of 20km/h (12mph) and a relatively light weight put comparatively little stress on the guide wheel.



▲ ABOVE: Two rubber-tyred 'trams' on test in Bozüyük. GARATREN



▲ ABOVE: An Utsunomiya tram runs between Green Stadium and Yuinomori-west, on private right of way; there is also on-street running. Y. Hanafusa

Japan's new trams

Passenger services started on Japan's Utsunomiya Light Rail Co Ltd – called Lightline – on 26 August. The 14.6km (nine-mile) line is the first new tram system built in Japan for 75 years.

The 1067mm-gauge Lightline has 19 stops between Utsunomiya Station East and Haga Takanezawa Industrial Park. It features both street operation and private right-of-way.

Services operate from 06.00 - 23.00. There are plans to extend the line in the early 2030s.



▲ ABOVE: The decorated historic car 1 by the Powell Street turntable. P. Ehrlich

150 years of San Francisco cable cars celebrated

Surprise trip and parade mark historic anniversary

San Francisco Municipal Railway celebrated the 150th anniversary of the opening of the US city's iconic cable car system on 2 August, with a ceremony at Powell and Market. The celebrations began with a surprise morning trip on California Street using 1883-built Sacramento/Clay double-ended car 'Big 19'. This vehicle was restored in 2019 after being out of use since 1942.

The ceremony at the Powell/Market turntable featured speeches from San Francisco

Mayor London Breed, Market Street Railway President Rick Laubscher and Congresswoman Nancy Pelosi. Guest of honour was Fannie Mae Barnes who, in 1980, became the city's first female gripman (operator).

Historic Powell car 1, representing the Powell Street Railway Co. of the period 1888-93, headed a parade of cable cars including 16 carrying Muni's 1939 blue and gold livery. Mayor Breed dedicated car 1 after Tony Bennett who died in July; one of the singer's most famous hits was 'I left

my heart in San Francisco'.

The event also commemorated the Scottish-born inventor Andrew Smith Hallidie, whose cable car made the first trip down Nob Hill on 2 August 1873. In addition, it remembered Friedel Klussmann, whose campaign saved the Powell St line in 1947, and former Mayor Dianne Feinstein, who led the rescue and rebuilding of the system in the early 1980s.

A special USD5 hop-on hop-off pass for cable cars has been on sale. A day pass for all Muni services costs USD13.

Setbacks for Bristol Underground hopes

Politicians' hopes of an underground system for Bristol (UK) have been stalled by the abandonment of a proposed workplace parking levy. The reversal is blamed on inflation.

The proposed charges would have been based on those in Nottingham, with the money going into urban transit to cut congestion and pollution.

Bristol has seen major changes in working patterns during and after the pandemic, with habits also affected by the introduction of the Clean Air Zone, for which GBP11m (EUR12.8m) has been secured to help people purchase compliant vehicles.

There are now no plans to introduce charges or take mass transit forward.

First new Piccadilly Line train on test

The first of a new generation of trains for the London Underground's Piccadilly Line is now on test. Built by Siemens, the *Inspiro* is the first of 94 trains that will replace the 1970s fleet. It was built in Siemens' plant in Wien (Vienna) in Austria, although later deliveries will come from the new Siemens factory in Goole (UK).

The first train is undergoing test running at Siemens Wegberg-Wildenrath test and validation centre in Germany. These tests cover acceleration, braking, noise and vibration, as well as onboard hardware and software and interfaces with off-train equipment. The first

delivery to the UK will be early in the New Year, with entry into service planned for 2025.

The articulated design of the *Inspiro* reduces the total number of bogies, making the new trains lighter than predecessors. An air-conditioned walk-through interior increases capacity by 10% compared with the current 1973 stock. Wider doors will speed up boarding and alighting.

The Piccadilly Line fleet replacement contract, awarded by TfL to Siemens Mobility in November 2018, is valued at almost GBP2 billion. There are options for further trainsets for the Bakerloo, Central and Waterloo and City lines.

Havering goes for trams... or buses

Havering Council in the North East of the UK capital, London, is considering a tram route as part of plans to boost the local economy. A next step would be a study into trams connecting the north of the borough to its south – or using rapid buses as an alternative.

The current public transport offering mainly provides east-to-west journeys into central London or towards Essex.

Consideration is being given to a route centred on Harold Wood through Romford and Upminster, towards a railway station at Beam Park in Rainham. The line could connect with the Docklands Light Railway and the proposed Essex-Kent tram link (KenEx Tram).

The local authority has criticised London Mayor Sadiq Khan's policies for outer London, saying that the hoped-for 'Superloop' buses do not meet the needs of farther-flung residents. Transport for London says it is looking at increasing the frequency and capacity of bus services in Havering as part of a wider travel strategy.

New coaches for Hartford

Connecticut's Department of Transportation (US) has ordered 60 new commuter rail coaches from Alstom, in a deal worth USD315m. They will be used on CTRail-branded regional services to Hartford, Danbury and Waterford. These services form part of the New York Metropolitan Transportation Authority's Metro-North network, but the coaches will be owned by Connecticut.

The 26m stainless-steel coaches will feature easy wheelchair access and bicycle storage areas. Delivery is to start in 2026 and there is an option for 313 more.

Light rail for Las Vegas?

The US Department of Transportation has awarded the Regional Transportation Commission of Southern Nevada a USD5.9m grant, which could progress Las Vegas' first light rail system. Building a light rail line along Charleston Boulevard was first proposed in 2021.

However, with the 206 bus route along the boulevard at maximum capacity, the city is keen to explore other options.

The grant will go towards a feasibility study that will include the proposed 27.2km (17-mile) line. Other options include new bus rapid transit and active travel.

NORTH TO SOUTH: EDINBURGH'S EVOLVING NETWORK

The Newhaven line won't be Edinburgh's newest extension for very long - *TAUT* uncovers the plans that will see the Scottish capital's system grow even further in coming years.

▼ Edinburgh's growing tramway forms part of an integrated transport offering for the city - but the *City Mobility Plan 2021-2030* has broader aims beyond just a well-rounded transport offering. Its ultimate objective is to create a city "in which it's a joy to live".



The date of 7 June 2023 was momentous in the history of Edinburgh's public transport. Civic dignitaries jostled with local schoolchildren and musicians played as the first trams headed north from the new tram stop at Picardy Place.

Those trams headed first to Leith, before bearing west, along the Firth of Forth to the new terminus at Newhaven, consigning the old York Place terminus to the history books.

The opening of the Newhaven extension brings the total length of Edinburgh's tram system to 18.5km (11.5 miles). But it won't remain as this for long, for the city has ambitious plans to expand the system to meet the demands of the 21st Century.



▲ ABOVE: While the Newhaven route is the city's newest line – how long it retains this title is questionable. Plans are already underway for further routes to new areas of Edinburgh. All images courtesy of Edinburgh Trams

Routes around the city

Edinburgh, like most cities, is one of contrasts. The castle, the Royal Mile, Princes Street Gardens – to name but three – are world renowned attractions and continue to draw tourists from around the globe. Yet just a few streets over are areas of poverty and deprivation.

The city also has interesting relation with transport. A 2022 survey by TomTom revealed that Edinburgh was the UK's fourth worst place for congestion. Goods are taking longer to deliver, some bus journeys are now taking 20% longer to complete and, in data compiled by the city council, congestion is costing the average Edinburgh driver GBP764 (EUR893) per year.

The council's data also reveals some surprising statistics: 59% of Edinburgh's residents say that they do not use a car for commuting, with 28% of commuters preferring to take the bus. This is the highest rate of bus commuters in Scotland. Active travel ranks highly too, with one in four residents cycling at least once a week and most schoolchildren walking to school.

As with all cities, Edinburgh is growing. Between 2001-21, the city's population expanded by over 10% and 37 000 new homes are expected to be built in the next few years. The city faces the challenge of how to manage that growth as sustainably as possible – and, again, it's not unique here.

Scotland is arguably the most proactive of the home nations in tackling the climate emergency. It wants to achieve net zero carbon emissions by 2045. Edinburgh is

taking that a stage further, and wants to achieve net zero by 2030.

The city council recognises that transport is the number one generator of carbon emissions, which is why it has published the *City Mobility Plan 2021-2030*. This impressive document sets out how the city will meet challenges, such as reducing congestion, improving connectivity and managing sustainable growth. Rather than being full of grand dreams, the plan lays out 39 individual action points that could improve Edinburgh's transport network by 2030.

These 39 'Movement Policies' are wide ranging. Some changes are small, such as implementing Low Emission Zones and changing traffic light priorities to favour public transport and active travel. Others are much bigger, such as developing a new governance and operating structure to ensure greater integration between council-owned public transport modes.

It's perhaps no surprise that the number one Movement Policy is Mass Rapid Transport. That means an expansion of the tram network, which will come in the form of the North South Tram project.

From North to South

This new scheme offers many benefits, in particular easing pressure on the city's bus network, which is nearly close to capacity. Resident and visitor alike will benefit from closer co-operation with the city's buses, as well as improved links to the Borders Railway. The city will also benefit from those by-products of new tram line construction, such as development opportunities and reducing



FUTURE OF NETWORK IS BEING BUILT ON FIRM FOUNDATIONS

While decisions on the future expansion of the tram network will ultimately lie with the City of Edinburgh Council, the operator of the existing line is firmly focused on building upon its undoubted popularity and success to date.

The opening of the route to Newhaven marked an important new era for Edinburgh Trams and the city it serves, bringing the benefits of light rail to some of its most densely populated neighbourhoods.

Before the launch, the operator was all set to match pre-pandemic patronage levels but, in the weeks since, it has seen customer numbers double when compared to last summer.

Lea Harrison, Edinburgh Trams Managing Director, explained: "While the Trams to Newhaven launch has proved an undoubted success, its immediate



"Our diverse, talented and enthusiastic team is committed to building on a formula that has brought wide acclaim from the wider transport sector."

Lea Harrison, Managing Director, Edinburgh Trams

popularity has been based on years of hard work by our dedicated team.

"We've previously enjoyed year-on-year growth in annual patronage, culminating in a pre-pandemic high of around 7.5 million customer journeys.

This was achieved alongside near-perfect customer satisfaction scores and sector-leading levels of service delivery.

"As a result, decisions made on the continuation of the line through to Newhaven could be taken with confidence, and now communities in areas such as Leith and Ocean Terminal are embracing the tram as the most convenient and cost-effective way to access

the city centre and other key destinations in the city."

Although the launch of the new route has enjoyed swift success, Edinburgh Trams refuses to become complacent and is constantly striving to enhance its offer to both residents of the city and tourists, an approach that has already earned it the title of Scottish Transport Operator of the Year for 2023.

"Looking to the future, our diverse, talented and enthusiastic team is committed to building on a formula that has brought wide acclaim from the wider transport sector, as well as the thousands of people who rely on it every day for work or pleasure," Harrison said.

"For example, we will continue our support for major sporting and cultural events in the city while building partnerships with local businesses that are vital to Edinburgh's future prosperity.

"In fact, our front-line colleagues are already acting as ambassadors for the city, helping millions of visitors make the most of its world-famous sights and attractions.

"At the same time, we will continue to invest in the entire Edinburgh Trams team by providing innovative training programmes and exciting opportunities for career progression.

"As a result, they will continue to lay down firm foundations for the future of light rail in Scotland's capital, wherever it should lead."

◀ **LEFT:** Edinburgh's existing tram network runs from the airport, through the city centre and onto Leith, Ocean Terminal and Newhaven. The communities now served by the new routes into Leith and Ocean Terminal have readily embraced the tram as "the most convenient and cost-effective way to access the city centre and other key destinations in the city."

▼ **BELOW:** St Andrew Square is one of the stops along the Newhaven route, a short walk from St James Quarter - a new retail-led lifestyle district.

poverty and social exclusion factors.

What will give the city a boost will be the confidence in its ability to deliver big infrastructure projects. The 4.7km (2.9-mile) Newhaven extension cost GBP207m (EUR257.7m) and took four years to build, including an enforced break caused by the COVID pandemic. This is in contrast to the seven years it took to build the 13.8km (8.6-mile) line from the airport to York Place. Costs spiralled from an initial budget of GBP375m (EUR439m) to GBP776m (EUR909m). Lengthy delays and ripping up streets didn't endear the tram to the city's citizens. While lessons can always be learned, the city wants to strike while the success of its Newhaven line is still hot.

There are several potential route options for the North South Tram, but Granton will definitely be at one end. This district lies on the Firth of Forth, just to the west of Leith and Newhaven, and is the subject of a radical transformation.

The Granton Waterfront project aims to create what has been described as 'a new, vibrant, sustainable coastal town on Edinburgh's waterfront'. Some 3500 net zero homes are being built, with the aim that none will be more than 20 minutes away from schools, medical centres and retail areas. Those who live there will have 200 hectares of green space to enjoy, not to mention views of the Firth of Forth, and a huge effort is being made to provide green corridors and an active travel network.

Granton Waterfront is a perfect example of the *City Mobility Plan 2021-2030*'s ultimate objective, which is to create a city in which it's a joy to live. The plan includes seven policies that aim to replace congested streets with attractive, vibrant spaces.

The tram extension will provide Granton Waterfront with much needed connectivity, but beyond this, there are two options for the route into the city centre. The first, originally suggested when plans for a second generation tramway were proposed early in the 21st Century, would go via the suburb of Roseburn. The second option goes slightly to the east, via Orchard Brae, which would take it closer to the Western General Hospital.

On the southern side of the city is the Bioquarter. Edinburgh is particularly proud of this 65 hectare area. As its name suggests, it's home to the Royal infirmary of Edinburgh, but the intention is for the area to become home to a GBP1bn (EUR1.17bn) health innovation district. This would be served by North South Tram, but where this line would terminate is still to be decided. Options include a direct south-east line to the current park-and-ride facility at Sherriffhall. This could also be served by a slightly more circuitous route via Shawfair, which also offers improved connection to the Borders Railway. A better connection with would also be provided by a branch from the Bioquarter area to Newcraighall.

Currently all options are being discussed but we should expect routes to be decided in the next 18 months. Whichever route is chosen, the Newhaven line won't be the newest stretch of the Edinburgh tram network for long. **TALIT**



▲ **ABOVE:** Edinburgh Trams uses a fleet of 27 CAF Urbos 3. More trams are likely to be required for the future North South Tram project.

▼ **BELOW:** Edinburgh's tram system provides an easy link to its key tourist destinations, pictured here on Princes Street. However, any further developments will also benefit areas suffering from transport-related social exclusion.





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▼ **BELOW:** In the city centre, the north-south tram tracks of line T4 run parallel with the SNCF main line corridor for a short section. The Part Dieu main station, and modern business district surrounding it, can be seen in the background. All images by Andrew Thompson, July 2023.

► **RIGHT:** Lyon's modern football stadium was built for the Euro 2016 tournament. Ahead of that football festival, the new tram branch to the stadium opened in January 2016. Initially it was only used on match or concert days, but since the launch of T7 in February 2021, trams now serve the short one stop branch and the Décines OL Vallée terminus on a regular basis. The long *Citadis* variant is seen at the terminus platform in front of the main entrance. Line T7 is the shortest in the Lyon system and mainly designed to provide access to the stadium as well as function as a booster service to the busy line T3.



LYON: FAST GROWTH FOR RAPID TRANSIT

Andrew Thompson provides an update on France's third-largest tram network, which has chosen to focus on rapid tram rather than metro.



▲ **ABOVE:** The double-arched Pont Raymond Barre was opened for regular tram traffic in February 2014 as part of the 2km (1.2-mile) long extension of line T1 from Hôtel de Région-Montrochet to Debourg. It is presently one of two tram bridges in Lyon spanning the River Rhône and the only one without automotive traffic. Instead, the bridge features ample space for pedestrians and cyclists.



Since its opening in 2001 with an initial two lines, Lyon's second-generation tramway has seen continuous growth, with significant network extensions and game-changing service additions in the past four years. These include the grand opening of the 6.7km (4.2-mile) new line T6 in November 2019 from Debourg to Hôpitaux Est Pinel; the regular deployment of T5 services to the eastern Eurexpo terminus in October 2020; the launch of the all-new line T7 in February 2021, including regular service to the stadium terminus Décines OL Vallée (formerly known as Grand Stade and only used during events); plus the extension of line T2 on the west bank of the River Rhône to Hôtel de Région-Montrochet in March 2021.

Currently Lyon's modern tram network has a length of roughly 73km (45 miles), including the light rail airport link branded as Rhônexpress. As the second largest metropolitan area in France, with about 522 000 residents in the city and 2.3 million in the wider conurbation, this presently gives Lyon the third largest tram system in France after Paris and Bordeaux.

Already, Lyon's tram network is more than twice the size of the city's metro (32km/20 miles), which first opened in 1978 and features the unique combination of the steel-wheeled rack and pinion line C, as well as the more-typical French rubber-tyred lines A, B and D, of which B and D are driverless. Indeed, line B has only been fully automated since June 2022, using the short two-coach *type MPL16* Alstom *Urbalis* sets that can now run at intervals as frequently as 2min 20sec. The three-coach *type MPL75* units formerly used on line B have been redeployed to line A.

As part of the newest addition to the Lyon metro network, line B was extended to the

west bank of the River Rhône in December 2013, going one extra stop from the previous terminus Stade-de-Gerland to the railway interchange at Gare d'Oullins. Another 2.5km (1.6-mile), two-stop extension of line B further south to Saint-Genis-Laval is in the final stage and is expected to open in October 2023. It will take the metro further south to the important health care complex at Hôpital Lyon Sud.

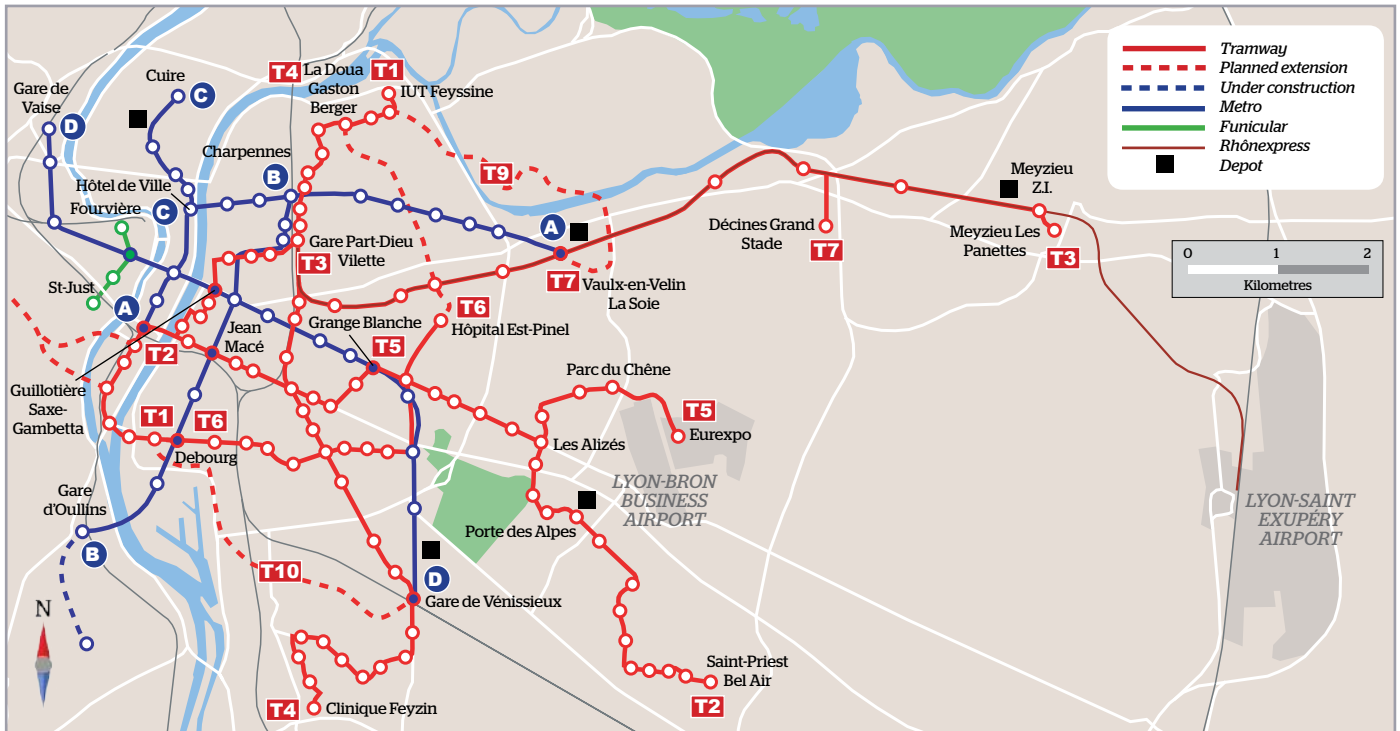
Express tram over metro

For the foreseeable future, this will be the last extension of the Lyon metro, because in 2022 the municipal authorities and public transport authority Sytral Mobilités announced that they were cancelling all proposed expansion schemes, including line E, which had already reached an advanced planning stage and was supposed to connect Alaï and the main SNCF station at Part-Dieu via Bellecour.

This political decision was made in the aftermath of the pandemic and with an eye on ballooning costs. Instead, the construction of new express tram routes is to be pursued with vigour, including rapid tram lines that use a high degree of grade separation and even purpose-built tunnels. Several studies concluded that abandoning the metro in favour of trams represented better value for money and would enable the implementation of more projects. ➤



▲ ABOVE: Since 2010, the Rhônexpress has provided a direct and accelerated link between Lyon's main railway station Part Dieu and Saint Exupéry Airport. The total route is 23km (14.3 miles) long, and between Part Dieu and the junction station Meyzieu-ZI shares the eastern trunk route of tram line T3. Beyond Meyzieu, the Rhônexpress accelerates up to 100km/h (62mph) in order to provide an end-to-end journey time of roughly 30 minutes. Along the whole line, the only two intermediate calling points are Vaulx-en-Velin - La Soie and Meyzieu-ZI. Using six customised Stadler *Tango* LRVs, the service runs between 04.25 and midnight, providing a consistent 15-minute interval all day long, seven days a week. Fares are comparatively expensive, with a walk-up one-way ticket costing EUR18, although there are discounts for online pre-bookings or certain return journeys. In this picture, *Tango* 103 is ready to depart Part Dieu station from its dedicated Rhônexpress platform.



▲ ABOVE: Running on T6, which was launched in November 2019, *Citadis 47* approaches the diamond junction at Desgenettes, where the tracks of line T6 cross T4 at a right angle. The curve to the left is only used as a possible diversionary option. T6 is now slated for another 5.4km (3.4-mile) extension further north, which will take the line to the university campus by 2026 and is expected to see ridership increase to 55 000 a day. The EUR176m project is expected to be completed by 2026, together with the construction of the new orbital lines T9 in the northeast and T10 in the south.



▲ ABOVE: Sain-Bel is the western terminus of the two SNCF tram-train lines out of Lyon Saint-Paul. Aside from the Alstom *Dualis* LRVs, there aren't really any light rail characteristics in this operation, as both tram-train branches only have heavy rail features. Originally there were plans to extend the two tram-train routes beyond the Saint-Paul terminus into the narrow streets of the Old Town and over the river to Part-Dieu, but this proved impractical. They do intersect with metro line D at the Gorge de Loup interchange, one stop west of Saint-Paul.



◀ LEFT: Opened in 2001, the original line T1 is carefully threaded through the streets of the city centre, near the growing business district that surrounds Part Dieu station.

Initially the flagship project will be the so-called Tramway express de l'ouest lyonnais, designed to serve the west of the city and connect the Alaï district with the current western extremity of the tram network near Montrochet/Confluence. The exact routing is still being evaluated but the general benchmarks of the western tram extension are 6.5km (four miles) of total route (with somewhere between 3-4km/1.9-2.5 miles in underground tunnels), four or five new stations, and an end-to-end journey time of around 15 minutes. Costs are currently projected at EUR800m, and once the line is operational anywhere between 45 000 - 60 000 daily passengers are expected. Construction is expected to commence in 2026, with full completion by 2031. By comparison, had a metro solution been sought to connect the west of the city and the Alaï district, expected costs would have been greater than EUR1.4bn.

Three projects target 2026

A further three schemes are at an advanced planning stage and scheduled for an even earlier implementation, perhaps 2026. One is the continuation of line T6 from the current terminus Hôpitaux Est Pinel by another

5.6km (3.5 miles) to La Doua – Gaston Berger, to serve the university campus and provides a junction with line T4 in the north of the city. *En route* this extension will link up with line T3 at Gare de Villeurbanne and then metro line A at Gratte-Ciel. Ten new stations would be served.

In the same northern district of the city, a new 9km (5.6-mile) line T9 is to be built as a north-eastern orbital route. Diverging from T1 at Croix Luizet it will run further east, before turning south just before Stade Francisque Jomard and eventually terminating at the major interchange Vaulx-en-Velin – La Soie, where connections to metro A, Rhônexpress and lines T3 and T7 will be provided. The end-to-end journey time of line T9 should be 36 mins, with 27 000 - 36 000 daily riders expected, based on initial calculations.

Another new orbital route is also planned in the south of the city on the east bank of the River Rhône, where the future line T10 is to run for roughly 8km (five miles) from the junction station Halle Tony Garnier to Gare de Vénissieux, where it will provide interchange with metro D and tramway T4. The T10 project is presently budgeted at EUR295m. The expected end-to-end

journey time should be 25 minutes and daily ridership is expected to exceed 22 000.

Boosting the fleet

In addition to the original fleet of 73 five-part 32m long Alstom *Citadis type 302*, since 2012 a dozen seven-part 43m long *Citadis type 402* have been delivered. These LRVs feature a different front-end and modified livery with a red stripe. They are predominantly used on line T4 to the university and line T3 on the major trunk route connecting the eastern districts.

While the tramway and metro form the backbone of efficient mass transit in Lyon, the city also boasts two funiculars and the largest trolleybus network in France, with nine lines and more than 143 trolleys.

The most important trolleybus trunk routes are lines C1, C2 and C3, which connect to neighbourhoods not served by light rail.

Trolleybus line C3 also provides the link between the tram and metro network and the two tram-train lines that run from Lyon-Saint Paul station on the west bank of the Rhône. These two overland routes to Sain-Bel in the west and Brignais in the south have run since 2012 and are operated by SNCF using Alstom *Dualis* LRVs. **TAUT**



▲ ABOVE: The south of the city and the neighbouring commune of Vénissieux is served by line T4, which opened in 2009. Here one of the shorter *Citadis* is seen passing the local water tower as it is just about to arrive at the calling point Herriot – Cagne. The rapid growth of Lyon's modern, second-generation tramway has been very impressive and has exceeded 70 route kilometres in just two decades. However, this still pales by comparison to Lyon's original first generation tramway, which ran from 1880-1957 and at its zenith in 1926 had over 300 route km using both metre and standard gauge tracks, including numerous interurban lines. The main advantage of the modern tramway, however, is that it has a far greater proportion of segregated track and is well connected with the metro.



◀ LEFT: The 43m Alstom *Citadis type 402* trams have a modified front-end, and are predominantly used on the high demand T4 and T3. Car 94 is at the eastern junction Meyzieu-ZI, where the airport line of the Rhônexpress diverges from the network. The right-side curve leads to the nearby T3 terminus Meyzieu Les Panettes, while the Rhônexpress continues straight on to the Lyon Saint Exupéry airport.

▶ RIGHT: Just a few days after metro line B was switched to driverless operation in late June 2022, the new Alstom *Urbalis* two-coach unit 719 stands at the southern line B terminus Gare d'Oullins. Instead of using a glass enclosure with automatically opening doors, line B is fitted with optical infrared sensors near the platform edge, just like Lyon metro line D.

▼ BELOW: Lyon's trolleybus network uses both articulated and shorter non-articulated vehicles. The important trolley line C3 serves Gare Saint-Paul, where there are connections to the SNCF tram-train service. Here the articulated type *Cristalis Irisbus 1910* is idling at the Saint-Paul terminus loop with the namesake Eglise Saint-Paul behind. Lyon's trolleybus network is expected to grow from nine lines to 15 by 2026, as city authorities seek to electrify more of the bus network and reduce diesel routes. Much of the trolleybus network growth will be achieved without adding new overhead power lines.





ORBE: ODD MAN OUT - BUT FOR HOW MUCH LONGER?

Andrew Thompson visits a non-standard Swiss system that is being brought into line after 129 years.

Operating the 3.9km (2.4-mile) standard gauge branch between Orbe and Chavornay in western Switzerland has always been a challenge because it is electrified at 750v DC, unlike anywhere else in the country. However, all this could soon change as there is pressure to bring in long-awaited standardisation.

The decision taken 129 years ago to use unconventional power has always forced the operators to procure customised passenger rolling stock, rather than being able to acquire off-the-shelf, mass-produced vehicles. Any problems with its small fleet have resulted in an annoying suspension of services, something that has happened a number of times.

Opened in 1894, as a link to the growing national network, the Orbe line runs west

from the junction with the Lausanne - Yverdon main line at Chavornay. It is short, and originally served numerous mills and light industrial facilities, before terminating at the medieval hilltop town of Orbe. Due to the topography, gradients of 3% had to be overcome and for operational efficiency, electric traction was chosen from the very beginning.

This early electrification made the line a pioneering engineering achievement. Even today, the combination of DC voltage and standard gauge tracks not only makes the line unique, but also separates it as a somewhat exotic 'island' operation. This is because the rest of the Swiss standard gauge network and the wires beyond Chavornay are electrified at the conventional voltage of 15kV AC.

From the line's original railcars, the vintage 1895 EMU *CFe 2/2 11* has been

preserved at the Swiss Museum of Transport in Lucerne since 1974, having been formally retired four years earlier. In 2013, another historic EMU was laid aside after 93 years of successful service. Stored by Swiss private collectors for four years, the vintage 1920 railcar *Bde 4/4 13* was sold to Germany's Buckower Kleinbahn in 2017, an electric heritage railway that runs to the east of Berlin, near the Polish border. Repainted into a local livery, car 13 continues operating touristic excursion trains on the 4.9km (three-mile) Buckower Kleinbahn route.

Until 2003, the operating company Chemin de fer Orbe - Chavornay (OC) was owned by the municipal power plant, which also supplied the traction energy. After some financial difficulties, OC was taken over by the regional public transport operator Transports Vallée de Joux-Yverdon-les-Bains-Ste-Croix (TRAVYS) in June 2003. Three years later, Travys acquired a pre-used, two-coach electric multiple unit from Sihltal-Zürich-Uetliberg-Bahn (SZU), which was also capable of running under 750v DC.

This vintage 1960 set comprised the *Class Bde 4/4* power car and a type *Bt* driving trailer. After undergoing minor refurbishment, the unit was launched on the OC line in 2006 and numbered 15. It complemented the short two-axle electric railbus *Be 2/2* car 14, which Stadler had purpose-built for OC in 1990.



◀ LEFT: Car 450 004 departs the Orbe terminus with an eastbound service for Chavornay. The quaint station building dates from the opening of the line in April 1894 and is located at an elevation of 470 m above sea level. Behind it, on the left, is the defunct Stadler railbus 14, which had to be withdrawn in August 2021 due to a lack of available spare parts.

▼ BELOW: Another view of the Orbe yard, with the historic goods shed marking the very end of the line. True to its function as a reserve vehicle, 450 003 is stabled in the sidings. These tram-trains feature very comfortable seating in the centre module without doors, which was designed for the long distance journeys that the LRVs would complete on the large interregional Karlsruhe network. At their new home, the timetabled journey time from Orbe to Chavornay is only nine minutes. The only drawback of these units from 1994 is their lack of low-floor access. The OC line will only become barrier-free once it was been integrated into RER Vaud and can be served by SBB's fleet of Stadler *Flirts*.





▲ ABOVE: On the very first day of regular service on 4 July 2022, the former Karlsruhe light rail vehicle 450 004 has just arrived at Chavornay, the line's junction station. To the rear is the SBB main line with passenger platforms for RER Vaud services operated with SBB Flirt EMUs for connections south to Renens and Lausanne, or north to Yverdon and Grandson.

By 2020, the 60-year old two-coach set with car 15 had to be withdrawn, forcing the railway to rely entirely on railbus 14, without the availability of any other reserve vehicle. After the Stadler railbus suffered significant damage in August 2021, the line was suddenly left without any operational passenger stock and forced to implement a rail replacement bus service. This far from satisfactory situation lasted almost a full year, until early July 2022.

At that point, regular trains were able to start running again, after Travys had managed to acquire two secondhand tram-trains from Albtal-Verkehrs-Gesellschaft (AVG) in southern Germany. Built by Duewag in 1994, these type *G78-100C* dual-voltage trains were originally delivered to DB Regio and then only taken over by AVG in 2019, where they became 819 and 820.

Due to their ability to run under both the Karlsruhe tram current of 750v DC and the

German main line voltage of 15kV AC, the two vehicles were an ideal fit for the unique requirements of the Orbe line, where they have been renumbered 450 003 and 450 004. The availability of these two tram-trains, and one vehicle in reserve, ensured that a more stable and resilient passenger service was finally once again possible.

After initial teething problems with the pantographs and the need to adapt their design to the parameters of the local catenary, the Duewags have run reliably. On weekdays, the timetable offers a general half-hourly interval, though during peak times the train services are also boosted by Travys buses, which then provide a 13- or 15-minute headway between Orbe and Chavornay, with the two request stops at Les Granges and St-Eloi along the way.

During weekday off-peak hours, there isn't a consistent interval pattern, though the frequency is still half-hourly or hourly,

with the first train running at 06.40 and the last ones at 00.24 and 00.49. On Sundays, the service is hourly, without the deployment of any booster buses. Given that Orbe is a town with about 7500 residents, this service pattern is remarkably good, but also typically Swiss.

With the introduction of the former Karlsruhe units, the OC line has developed into a unique rural tram-train operation.

Officially, the German units are only intended as a stopgap solution until the OC branch line can be converted to 15kV AC voltage and integrated into the regional *S-Bahn* network known as RER Vaud. Trains coming from Lausanne should then be able to run through to Orbe and provide enhanced connectivity without the need to change services at the junction station in Chavornay.

These infrastructure upgrade plans are currently on hold, however, since the municipality of Orbe itself is blocking this project with legal objections. This is because local officials hope to replace the current level crossing at the Orbe St-Eloi request stop at the 3.5km (2.2-mile) point of the line with a more expensive cutting for an underpass, which would allow elimination of the level crossing.

The case is currently pending at the Swiss Supreme Court, where a ruling will need to decide what form the future infrastructure of the re-electrified OC branch will take. **TAUT**



▲ ABOVE: A view of the Orbe yard, with the electric locomotive *E 2/2 1* in the foreground. Built in 1970, this is one of two such electrics used to haul freight trains. The railway also deploys the diesel locomotive *Em 3/3* no.3 from 1985. In the background is the withdrawn Stadler railbus 14.



▲ ABOVE: Car 450 004 passes through the light industrial estate at Chavornay, which also includes various sidings that are served for freight forwarding by the railway, using both electric and diesel locomotives. This view is facing west and shows the Jura mountains on the horizon.



▲ ABOVE: Track work takes place at Victoria Road bridge, Bill Quay, during Metro Flow construction work in autumn 2022. Nexus

METRO FLOW QUIET FREIGHT LINE GETS 200 METRO SERVICES A DAY

Taking over a little-used goods branch for intensive Tyne and Wear Metro services was fraught with challenges, but it's all peace and harmony now. Richard Foster visited the UK's North East to meet the project leaders and learn how they organised the transition.

What the UK's Tyne and Wear Metro wanted to do was simple: increase the frequency of its services. Achieving this, however, would not be easy. The Metro runs through a dense, urban environment centred on Newcastle and Gateshead, and it couldn't simply conjure new lines out of thin air. Any new construction would be prohibitively expensive and likely to take years to even get to the point of being able to put spades in the ground. Operations on the Metro are finely balanced. Green Line services between Airport and South Hylton share the same track between South Gosforth and Pelaw with Yellow Line services from South Shields to St James (via Whitley Bay). This means that Green Line services have to mirror Yellow Line services; any imbalance can cause havoc on that central corridor between South Gosforth and Pelaw. The spanner that hung precariously over the works was a single track section on the Yellow Line, beyond Pelaw Junction to a point just before Bede station. Beyond Bede,

the Yellow Line is dual track all the way to its terminus at South Shields. That's not to say that the formation between Pelaw and Bede was single. There were two lines there, but Nexus only had use of one, while the other belonged to Network Rail (NR). This was problematic, as Nexus Head of System Development Tom Hardwick explained: "For every train that went into that section late," he said, "it ended up coming out later than when it went in." This had a huge knock-on effect to that central corridor and played havoc with the entire system. If Pelaw to South Shields was double track throughout, it would have a big impact on reliability. The simplest solution would be for Nexus to run on the NR line, just as the Green Line does, using the Durham Coast route from Pelaw to Sunderland. The issue was that the NR operation was little more than a long siding from Pelaw to Prax Group's oil terminal at Jarrow, 'one train working' without track circuits. Instead, when a train joins the Jarrow branch, a red light appears on the control

panel telling signallers that the line is occupied. When the train leaves it, the red light goes out. It's unsophisticated, but effective for such a lightly used line. However, it's not compatible with the track circuit block system used on the Tyne and Wear Metro, which is designed for intensive use. To move forward, the existing freight operation had to be merged into the Metro system rather than upgrade NR's signalling with an added control desk and more staff. "We have about 200 services a day travelling on that section," said Hardwick, "and NR had one freight a day going in in the morning, coming out in an evening – and then about three times a week. "From an ownership perspective, we were fairly ambivalent. We already maintain [our side] of that branch and although it was three miles [5km] of track in total, because of the passing loops that we already look after, it was only about two miles [3km] of additional track that we'd be taking on." After many conversations, the solution was comparatively simple: Nexus would buy the line from NR. ▶



➤ **RIGHT: New trackbed installation west of South Drive.**
Nexus

“We worked really well with NR,” said Hardwick, “and we got buy-in from the very top. [Route Managing Director] Rob Mackintosh sent a letter to Tobyn Hughes, our Managing Director at the time, saying ‘Look, we support you on this, we’re willing to divest, we just need to go through the process now’.”

That ‘process’ would prove more challenging than anyone had expected. The first task was to agree a price for the line.

“It had a commercial value of zero,” said Hardwick. “It was a net liability to NR as it cost more to own, operate and maintain than it ever recovered through track access fees. You also couldn’t use the land for anything else – such as building houses - because it was a railway next to our railway.

“We had to use the Regulatory Asset Base, which [gives] the total value of all NR’s assets across the country and we prorated that down to the 5km (three miles) of track.”

Both the UK Government’s Treasury and Department for Transport had to be convinced that the scheme offered value for money. The Benefit-Cost-Ratio was positive and, in March 2020, Nexus got the funding to progress with the project.

“Then Covid hit,” said Hardwick. However, Metro Flow, as the project had become known, “became central to Nexus’ ‘building back better’ plans after the pandemic. With Metro Flow and the new fleet combined, we showed we could deliver a transformational service.”

Taking over the Jarrow branch didn’t require a Transport and Works Act, which, according to Hardwick, took “about a year out of the process” but the network changes that were required caused other headaches.

“As we were divesting the branch from NR, it had to consult any affected party about any change to the network and that’s when we got our first objections from freight operators.”

At the time, DB Cargo had the contract to move fuel and oil from Prax’s Jarrow terminal but because the branch was still part of the national freight network, all the other UK freight operating companies, such as GBRf and Freightliner, had access to the line. And they objected.

“They thought we were without the correct protections,” said Hardwick, “and that we could, in the future, turf them off [the branch].”

The paperwork required before work started on site comprised three network changes, two connection contracts, five access contracts as well as agreeing a regulatory structure and consulting on the network licence. To describe it so succinctly doesn’t do justice to the months of hard work and protracted discussions between Nexus and other stakeholders. The network licence was a particular headache.

“Following the Railways Act 1993 when everything was privatised,” Hardwick said, “there were a number of railways that didn’t fall under the act. Tyne and Wear Metro and other light rail systems, preserved railways

– essentially anything that doesn’t form part of the national rail network - is exempt. The Jarrow branch wasn’t exempt, but our infrastructure was.

“The interesting challenge was this: when you joined the Jarrow branch, it wasn’t exempt from the Railways Act. But from where our passing loop started, it was exempt. Once you went through the passing loop and back onto what was the former branch, you’re back on non-exempt infrastructure. It was a real patchwork.

“The only way to get around it was to get the Secretary of State to repeal the exemption. That was a bit overkill, so what we actually did was use a piece of the Railways Act, Section 10, which had never been done before. Essentially, we gave up our exemption, so that the line could be used by potentially all operators.”

Nexus had to rely heavily on its legal advisors to find that loophole and then worked closely with the Office of Rail and Road to put it into practice.

“In terms of the regulatory structure,” Hardwick said, “we’re unique in the way in which we’re positioned now. We’re called a service provider, not an infrastructure manager like NR, the Core Valley Lines or High Speed 1. We allow freight operators to use our branch line, so we are effectively on a par with a freight terminal. We’ve never had a light rail operator act as a service provider before. It was about a year’s work with the ORR to understand that.”



◀ **LEFT: New track installation immediately east of the Pelaw Junction Inbound Cord.** Nexus



➤ **RIGHT: Track lowering at Hebburn Metro station.** Nexus



▲ ABOVE: The new track formation being laid east of Hebburn Metro Station. Nexus



▲ ABOVE: New track installation on the outbound line at Hebburn Platform 2. Nexus



▲ ABOVE: The ground breaking-ceremony for the project took place on 20 January 2021, attended by local officials. Nexus

▼ BELOW: A real effort was made to involve the community in the project - here, the Jarrow School ambassador speaks to local schoolchildren in November 2021. Nexus

EXTRA SERVICES MEAN MORE CLASS 555S

Nexus has invested in four additional Stadler Class 555s for Metro Flow. It had only ordered 42 to replace its 45 Metro-Cammell units because of significant reliability improvements, but a more intensive timetable is now possible over the dual track between Pelaw and Bede.

▼ An additional four Stadler Class 555s have been ordered for Metro Flow, allowing for a more intensive timetable.

Howard Johnston

**“The challenge was this:
When you joined the
Jarrow branch, it wasn’t
exempt from the
Railways Act. But from
where our passing loop
started, it was exempt.”**





HELPING BREAK DOWN BARRIERS

Alex Dodds, Network Rail's Light Rail Knowledge Manager, played a vital role in the implementation of Metro Flow, and he has explained how the scheme has helped improve the relationship between NR and other operators.

"The biggest challenge from an operations point of view was interfacing with an external third party which operates to very similar but different operating principles," he said. "[Nexus] operates a fixed, segregated network with its own internal rule book.

"Obviously, Nexus operates onto our infrastructure to Sunderland, but it began when there was different thinking. Based around a very much 'them and us' methodology.

The extension of Sheffield Supertram to Rotherham in 2016 changed opinions.

"NR is more open to effectively considering the needs of other operators and other infrastructure managers," Dodds said, "and incorporating some degree of compromise into allowing a closer working relationship.

Obviously, we're not going to budge on the core safety principles for customers and staff, but commonsense dictates that where rules are roughly similar there is scope for integration."

Metro Flow offered an opportunity for even greater change within NR.

"The biggest challenge," Dodds recalled, "was changing people's mindsets. Some within NR may not have seen the Metro as aligning with heavy rail requirements. Some within Nexus maybe saw NR standards as too draconian."

Metro Flow has also provided NR with the opportunity to address improvement notices issued in the wake of the investigations into the Sandilands accident in Croydon (London) in 2016.

"This requires us to be more specific about how we define boundaries and how we manage access to third party infrastructure," Dodds explained, "At the moment there is a six-month staff protection trial at the Jarrow chord.

"Traditionally, we would draw lines, but we've obviously realised that that is impractical, and NR staff have Nexus infrastructure up to maintenance boundaries that we jointly maintain, and vice versa.

"This is revolutionary, because the only other location is on the Sheffield tram-train connection at Tinsley. If this trial is successful, we would be looking to roll this arrangement out permanently from January 2024 and also apply it to the Pelaw chords as well.

It creates flexibility, and potentially makes local maintainers' lives an awful lot easier."

▲ ABOVE: New rail being installed near Ray Roll Underbridge, Hebburn. Nexus

One final bombshell fell weeks before Nexus was due to take control of the Jarrow branch: Colas Rail took over the contract to move fuel and oil from Prax terminal.

"Colas hadn't engaged in the process up until that point because it had no business in the northeast region," Hardwick recalled. "We had to do a very quick education process. It was a case of 'So this is your access agreement, sign it!' But, Colas was really positive."

Nexus took ownership of the Jarrow branch on 11 September 2022, the day of the first post-Covid Great North Run, a mass-participation event, which Hardwick said, "cannot happen without Metro".

"We had to implement [a plan] with our contractor, the Buckingham Group, to keep the freight running," said Hardwick. "It was a 13-week programme of work where the freight access was protected. There were 300 people on site at any one time with all their plant and machinery, and we had to stand everyone down twice

a day for two two-hour windows, with all their equipment clear of the trackbed.

Replacement buses were provided during the work, and the track was handed back to Nexus on 10 December 2022 for passenger services to start on 14 December.

"We delivered GBP5m (EUR5.8m) under budget and on time," Hardwick said, with a touch of pride.

The full impact of Metro Flow will not be felt until the new Stadler Class 555 enter service, when frequencies will be increased. Even so, there has been a 10.4% increase in performance in the eight months the dual track has been operational.

Metro Flow proves that Nexus can undertake big infrastructure projects, a view reiterated by Tobyn Hughes, now Managing Director at Transport North East, at the UK Light Rail Conference in July (TAUT 1029). This puts it firmly in position to start work on re-opening the Leamside line towards Washington. **TAUT**

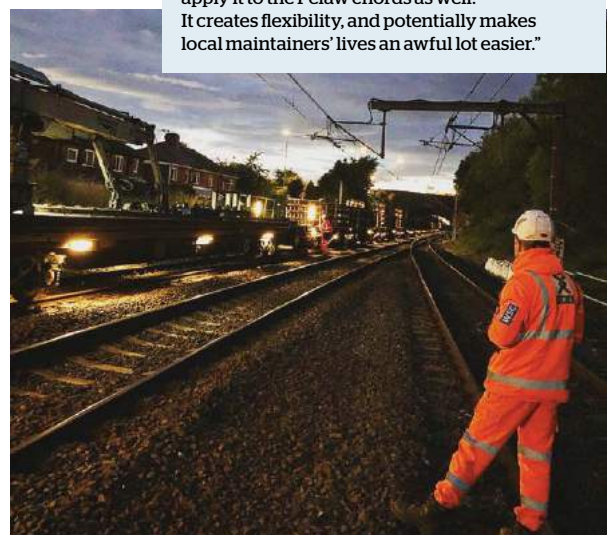


◀ LEFT: Drop-in sessions were held for local residents to find out and ask questions about the project. This was the roadshow in Pelaw in February 2022.

Nexus

▶ RIGHT: A long welded rail delivery train at Bill Quay.

Nexus



SYSTEMS FACTFILE

No. 192 Łódź,
Poland

Renewal of city transport and better integration with the national railway network are both part of the continuing reinvention of post-industrial Łódź.

Words and pictures by Neil Pulling



Centrally sited in Poland about 120km (75 miles) south-west of Warsaw, Łódź is the capital of the eponymous voivodeship (province). Łódź was identifiable in the 14th Century, but it would be through 19th Century industrialisation when under the control of the Russian Empire that it became Poland's second city by population. It is now identified as the country's fourth most populous city, with 661 300 residents (2022) in the municipality and 1.1 million in the wider area.

Łódź translates to 'boat' in English, being linked to a legend about the settlement's origin, albeit in an area little-marked by surface waterways. A rudimentary rowing boat is on the city emblem, which also appears on Łódź trams along with a more

▲ ABOVE: Piotrkowska Centrum was completed in 2015, located on the core east-west route and enabling the distribution of services around the complex system. Tram 1246 was an early (2005) modernisation to Konstal 805NaND specification, a variant which became a mainstay of Łódź operations.

impressionistic version used by the municipal operator. MPK Łódź runs about 60 bus lines and 19 tram lines, numbers which change as the network moves through stages of infrastructure change. The city colours of red and a rich yellow are in several liveries used across the tram and bus fleet.

MPK Łódź took its present form in 1993 and 2023 marks a triple anniversary, being 30 years after its foundation, 75 years since bus services began and 125 years of tram operation. The relatively-late growth of Łódź contributed to passenger trams using electric power on an initial 3km (1.9 miles) of route in December 1898.

In 2012, MPK Łódź incorporated four remaining interurban lines, of which only line 41 with a core 20-minute interval is currently

in use. Despite cutbacks, Łódź remains amongst the world's biggest metre-gauge tramways.

The rise of Łódź was driven by concentrating on the textile industry, when fast yet minimally-controlled growth was underpinned by an influx of rural dwellers and skilled workers from across Europe. Such factors contributed to Łódź sometimes being termed 'The Manchester of Poland'. Like Manchester in the north-west of England, Łódź found new roles to supplant reliance on textiles, with modern investment now evident in both cities. Unlike Manchester however, Łódź spawned few civic spaces in the manner of Albert Square or Piccadilly Gardens. More committed to transport than social gathering, Plac Wolności (Freedom Square) now offers little respite from traffic. Conversely, some

THE FLEET

Pesa of Bydgoszcz began supply of five-section, low-floor air-conditioned stock with ten *122N Tramicus* in 2007. Their successor *122NaL Swing* model is represented by 34 examples, 30.1 metres long and 2.4 metres wide, all allocated to Telefontyczna depot.

The initial batch received in 2015-16 (1578-1599) took over Trasa WZ line 10 coverage. The second batch, with 40 seats in a capacity for 207 (1881-1892) was delivered in 2018. Entering service in 2023 and based at Chocianowice depot, the newest trams (numbered from

2385) by Modertrans of Poznan are from an order for 30 five-section, Moderus *Gamma LF 06 AC*. They combine fixed and swivelling bogies, air-conditioning, plus 167 standing places and 60 seats over an 88% low-floor area. At 32 metres they are the system's longest trams.



▲ ABOVE: The return loop at Chocianowice-IKEA on 20 August 2012, a terminus for city services beyond which the inter-urban route used by line 41 extends to Pabianice.

Howard Pulling

➤ RIGHT: Konstal 805NaND 1003 and PESA *Swing 122NaL* 1885 cross at Piłsudskiego-Kilińskiego.



▲ ABOVE: Former Bielefeld bi-directional *Duewag 528* moved to Łódź in 2013. Rebuilt as *MGT6D 2698*, it approaches Cerwona near the Central Museum of Textiles. Coincidentally, Łódź and Bielefeld share associations with textile production.



▲ ABOVE: These tracks at Pomorska-Konstytucyjna are crucial for the system due to giving access to its biggest depot, Telefontyczna.

◀ LEFT: Rokicińska-rondo Inwalidów is the nearest stop to Łódź Widzew station. Until completion of the cross-city tunnel, this station will host long distance trains which currently bypass Łódź.

industrialists created extravagant residences which now have public access, and green space abounds in the central area. Another contrast is that trams disappeared from Manchester in 1949, with today's Metrolink being a wholly separate development. Łódź trams use a uni-directional system with direct links to the 1898 debut, thereafter growing, contracting and now undergoing renewals.

Using the tramway in 2023 brings contrasting experiences due to the catch-up measures being applied following years of low investment. Given the system's length and fleet size, transition could not be achieved rapidly, even with European Community support. There remain many high-floor *Konstal 805Na*-derived vehicles, although later second-hand or new trams are eroding their dominance.

Accessibility and aged stock are continuing challenges, but it is disruption caused by infrastructure failure or long-term projects which most affect day-in, day-out confidence in city transport. Visitors are likely to find some routes out of use and bus substitutions. The MPK Łódź website (www.mpk.lodz.pl) has an English language section which includes short-term timetable changes.

Today's system extends in most directions, yet a lattice of lines across the centre preclude it being termed radial. Although not on a strict grid pattern, the central track installations mainly have north-south or east-west orientations. In a major city without conventional focal points, the north-south ulica (ul./street) Piotrkowska functions as a linear city centre, largely pedestrianised where retail and leisure establishments are concentrated. A setting for early tram services, they are now only on Piotrkowska south of the intersection with the dominant axis represented by aleja (al./avenue) Adama Mickiewicza and al. marsz. Józefa Piłsudskiego. As much trunk road as city streets, these meet near Piotrkowska Centrum. This stop has a 100 metre-long, 13 metre-high transparent shelter spanning four tracks. It was completed in 2015, sited between junctions that distribute services around the system.

Al. Józefa Piłsudskiego hosts part of the 13km (8.1-mile) core east-west tram route, Trasa WZ. This was developed in stages to increase coverage of housing estates, now traversed by line 10B and its shorter form, 10A. The eastern end has the system's latest extension, 4km (2.5 miles) with eight stops between Augustów and Olechów, which opened in October 2015. Much of Trasa WZ is between busy carriageways with pedestrian underpasses, but this later section is sited to one side and so has better accessibility, with controlled surface crossings.



▲ ABOVE: Approaching Piotrkowska Centrum, Duewag G78NF 1521 was formerly Mannheim 429, coming to Łódź following service as Helsinki 162.



▲ ABOVE: Operational from 2008, the ten Tramicus 122N were forerunners of the more numerous Swing deliveries to Łódź by Poland's Pesa company. With original number in September 2022, tram 1853 is on ul. Piotrkowska.

► Now withdrawn, Duewag *GT8NF* 513 (ex-Mannheim 384) draws away from Łódź Fabryczna, an area radically changed by the station redevelopment.



“The many types in a mainly uni-directional fleet relate both to the system’s scale and to Poland’s political contexts.”



◀ LEFT: Westbound Pesa *Swing* 122NaL 1584 passes beneath railway upgrade works on the west of the city, where Bandurskiego-Dw. Łódź Kaliska stop is sited between two viaducts.



► RIGHT: A rebuilt small class, Konstal *805N-M12* 1266+1267 at a junction next to a new housing development near Pomorska-Konstytucyjna stop.



▲ ABOVE: Konstal *805NaND* 1246+1247 is near Telefoniczna depot, where the loop is an intermediate terminus on the Stoki route.

◀ LEFT: Zachodnia-Manufaktura stop has high patronage due to the retail and leisure outlets in repurposed factory buildings. Forthcoming Łódź Polesie station on the cross-city tunnel will channel some of this demand.

NETWORK

- **Opened:** 1898
- **Lines:** 19 (July 2023)
- **Depots:** 2
- **Approx. weekday hours:** 05.30-23.00
- **Line frequency:** 15 minutes
- **Gauge:** 1000mm
- **Power:** 600V dc, overhead supply
- **Fleet:** 416 (May 2023)
- **City network/operator:** MPK Łódź www.mpk.lodz.pl
- **Civic information:** <https://uml.lodz.pl>
- **Tourist information:** <https://lodz.travel>



▲ ABOVE: The later years of Poland's Communist era are represented both by a 1986-built Konstal 805Na pair and the 'panel' housing estate near Puskina-rondo.

The many vehicle types in a mainly uni-directional fleet relate both to the system's scale and to Poland's political contexts. Communism up to 1989, by which time the Konstal 805N dominated Polish tramways, was followed by growing integration with western countries and the 21st Century saw revival of domestic tram production.

Extension and upgrade of Trasa WZ had brought the introduction of new 29.5 metre-long fully low-floor Bombardier *Cityrunner* (1201-1215) from 2002. Second-hand stock is prominent, with 1960s Duewag *GT8NF* (with a low-floor centre car) from the Rhein-Neckar system. Some came by way of Helsinki, now joining Konstals amongst withdrawals as new stock is commissioned. Łódź received a few Duewag *M6S* from Bogestra (Bochum-Gelsenkirchen) in 2011, with that German system becoming the source of 35 *MGT6D*, introduced between 2018 and 2020. Many of these partially low-floor, three-section

trams built 1993-94 largely retain their original appearance. There are also Duewag *M8C* trams formerly used in Bielefeld. The later low-floor types from Polish suppliers Pesa and Modertrans are covered in 'The Fleet' panel. The biggest depot, opened in 1986 and expanded in 2019, is at the system's north-eastern edge, sited just off ul.Telefoniczna. Also peripherally sited and being modified for handling new Modertrans stock, Chocianowice depot is to the south-west.

Tramway infrastructure works are apparent, but Łódź's main transport project concerns heavy rail, albeit with implications for city transport. Formerly a surface terminus that closed in 2011, the transformed Łódź Fabryczna (Factory) station opened in December 2016. Using the same site about 1.6km (one mile) north-east of Piotrkowska Centrum, Łódź Fabryczna is now in a roofed trench and is the focal point of a redevelopment area. At present the station only has tunnel access for trains from the eastern end.



▲ ABOVE: With surface tram and bus platforms installed as part of the development, the transformed Łódź Fabryczna opened in December 2016. A new tunnel access from the west will make it a through station and add new tram-to-train interchanges.

It is mainly used by regional trains and a direct PKP Intercity service to Warsaw Wschodnia (1hr 40 min).

When a branching tunnel towards the west opens, now likely in 2024-25, Łódź Fabryczna will become a through station and integrated with long-distance services. The change will end this role which has been performed in recent years by Łódź Widzew. This eastern station is on a line that bypasses the city centre and has a fairly time-consuming tram connection at Rokicin'ska-rondo Inwalidów stop.

New surface platforms for tram and bus services at Fabryczna are already in use. Three closely spaced underground railway stations are included in the western tunnels which upon opening may obviate some tram use, as to the Manufaktura shopping area, but elsewhere increasing the potential for tram-to-train connections. **TAUT**

ESSENTIAL FACTS

Local travel: Ticket machines at main stops and on trams: tickets intended for the service which is boarded must be validated immediately. Zone 1 covers all tram services except for line 41 which runs south west from Chocianowice-IKEA. Time-based Zone 1 from PLN4.40 (EURO.99) for 20 minutes, PLN5.60 (EUR1.27) for 40 minutes, PLN18.00 (EUR4.07) for one day; Zones 1+2, PLN22.00 (EUR4.97) for one day. Note that day tickets are for a specific day, not 24 hours from validation (amounts as of July 2023).

What is there to see? Main tourism office at 28 ul. Piotrkowska. A converted power and heating plant which is readily identifiable when emerging from Fabryczna station, EC1 Łódź is 'a modern facility for culture, science and art'.

As with the nearby Księży Młyn Film Museum, it includes coverage of a modern Łódź industry, cinema and broadcast media production. Spread around former industrial buildings, Manufaktura retail and leisure complex opened in 2006, a forerunner for Łódź's new identity that has since grown as a major tourism attraction.

The Central Museum of Textiles also uses a former factory; other such buildings abound in various stages of picturesque dereliction. The Museum of Public Transport (www.muzeum.mpk.lodz.pl) is on the system's original depot site near Tramwajowa-Narutowicza stop.



◀ LEFT: Ex-Bogestra (Bochum/Gelsenkirchen) Duewag *MGT6D* trams have become significant in the Łódź fleet. The Bogestra identity remained evident externally and internally on 1952 which left Germany as 424 in early 2019.



◀ LEFT: Restricted to upgraded lines and some temporarily seeing early use in Geneva and Valencia, the Bombardier *Cityrunner* introduced fully low-floor operations to Łódź in 2002.

THE TRAMS RETURN...



HOW THE BATTLE WAS LOST... AND WON

Andrew Bradstock How did we get to where we are today? The story of the tram is a long one, and it is one that has been told many times over. But it is a story that is still being told, and it is a story that is still being written.

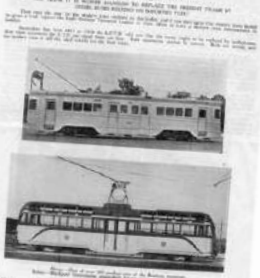
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The tram is a mode of transport that has been around for over a century. It has been a part of the urban landscape of many cities around the world. It has been a mode of transport that has been used by millions of people. It has been a mode of transport that has been a part of the history of many cities.

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London needs modern trams. You don't agree?



LOOK BACK IN ANGER

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TRAMWAY TECHNOLOGY



The Roadside The tram is a mode of transport that has been around for over a century. It has been a part of the urban landscape of many cities around the world. It has been a mode of transport that has been used by millions of people. It has been a mode of transport that has been a part of the history of many cities.

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THE TRAMS RETURN



Celebrating 1000 issues of *Tramways & Urban Transit*
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THE GREAT SURVIVORS



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Worldwide Review

AUSTRIA

WIEN (Vienna). Alstom *Flexity* 357 was delivered to the central workshops on 10 August and is expected to enter service on 4 September.

Line 46 is now wholly operated by *D Class* units while, from 4 September, *E2+c5* sets are no longer in service at weekends. Withdrawn *E1s* 4774 and 4808/61 are understood to have been sold to the museum group VEF.

tramwayforum.at

BELGIUM

ANTWERPEN/GENT. Operator De Lijn has awarded CAF a contract to refurbish all 125 *Hermelijn* vehicles used in Antwerp and Ghent over an eight-year period. Tram 7262 was the first to be sent to CAF's Spanish workshops.

OR

BRUXELLES (Brussels). The second Alstom low-floor tram, 3203, has entered service on the northern section of Line 51. There are now five of these cars in Brussels.

T-2000

DE PANNE - KNOCKE. The 67km (42-mile) Coastal Tramway was officially designated Line KT on 1 July. Its 12 stops have also been re-named. The 12 remaining BN trams are expected to stop running on 23 September for the winter.

T-2000

BRAZIL

TERESINA. The State Government has approved the renovation and expansion of the metre-gauge suburban commuter rail system. This includes converting 2.5km (1.5 miles) of freight line for passenger services. Work started on 9 August and should take eight months to complete.

RGI

BULGARIA

SOFIA. A further eight Siemens *Inspiro* metro trains have been ordered, in a deal worth EUR272m. They are to be delivered before the 6km (3.7-mile) line 3 extension opens in late 2026.

IRJ

CANADA

CALGARY. A CAD 3m (EUR2.04m) study has been launched to determine the best route for a rail link to Calgary International Airport. The study should be completed in August 2024.

Mass Transit

MONTREAL. Prime Minister Justin Trudeau officiated at the opening ceremony of the REM metro on 28 July (TAUT 1029). Teething troubles led to the service being suspended on three occasions during its first week.



▲ The first Toronto *Flexity* of a new batch, TTC 4604, is on test at the Queen/Leslie intersection. I. Folkard

OTTAWA. Services between Hurdman and University of Ottawa required single-track working for several days from 17 August after it was found that wheels were rubbing on a mis-aligned check rail on a curve.

CBC

TORONTO. The first of 60 new five-section *Flexity* trams being built by Alstom at Thunder Bay (4604) was delivered on 9 August. Eight are expected to have joined the fleet by the end of December. The number was previously the fleet identity of a PCC car.

Flexity Outlook 4471 and 4478 are still at Thunder Bay awaiting refurbishment after flood damage in 2018. The closure of the Scarborough RT line after the 24 July derailment lasted for four weeks (TAUT 1029).

D. Drum

CHILE

SANTIAGO. An order with CRRC Sifang for six EMUs for commuter rail service has been increased to 32.

RGI

CHINA

HEFEI. Only trial services started on the extension to metro Line 1 on 1 July, not revenue service as reported in TAUT 1029. These began on 21 July.

Skyscrapercity

CROATIA

ZAGREB. The city has bought 11 ADtranz *GT6M* 100% low-floor trams from the German city of Augsburg for EUR2.1m. Due to be delivered between

October 2023 and December 2024, they will replace *TMK201 Duro Dakovic* high-floor sets.

UTM

CZECH REPUBLIC

OLOMOUC. Tenders have been issued for the supply of nine 16m trams with rotating bogies and doors on both sides. This is to permit back-to-back operation as the city already operates *EVO1* and *Vario LF+* trams from TW Alliance/Pragoimex in this formation.

cs-dopravak

PRAHA (Prague). The city council has approved a 1km (0.6-mile) extension of the under-construction *Dedina* tram line so that it will reach *Dlouhá Mile* railway station. Work will not start until 2027.

RGI

FINLAND

TURKU. More detailed plans for the city's proposed tramline have come to the fore: it is to be 11km (6.8 miles) long, linking *Satama* to *Varissuo*. It will require 15 30m low-floor trams. The projected cost is EUR333m and passenger service could start in 2031.

Raitio

FRANCE

MARSEILLE. The first of 38 new Alstom four-car metro trains was delivered on the night of 27-28 July.

RGI

NANTES. A new depot and multi-modal interchange are under construction at *Babiniere* including a 12 000m² workshop and paintshop. The new centre will be served by the extension of Line 1 from *Ranzay*.

lineoz.net

TOULOUSE. The three-year closure of tramline T2 to the airport started on 5 June in order to permit the creation of the *Ligne Aéroport Express*. It will re-open in 2026, when the new metro Line C is also due to open.

lejournaltoulousain

GERMANY

AUGSBURG. *Tramlink* 901, the first of 11 new *Stadler* trams, was delivered on 3 August. It is not expected to carry passengers until early 2024. Each 42m *Tramlink* can carry 231 passengers (86 seated). They will replace the last of the high-floor *Stadtbahn-M* cars, which date from 1985, as well as some ADtranz *GT6Ms* built in 1996. *Tramlinks* are built in Valencia and delivered via Santander and Brugge.

BERLIN. The extension of tramline M10 from Hbf to U-Hbf *Turmstrasse* is due to open on 9 September.

DARMSTADT. From 4 September Lines 9 and 10 were temporarily replaced by buses. Line 4 returned to *Kranichstein*, while a new Line 5 operates from *Kranichstein* to *Böllental*.

DÜSSELDORF. Delays to the delivery and approval of *HF6* trams means that the 50-year old *GT8SUs* are likely to remain in service until December 2024.

DS

INDUSTRY. *Knorr-Bremse* is to sell *Kiepe Electric* to *Heramba GmbH*. The latter was founded in January 2023 to invest in companies that can accelerate decarbonisation of commercial transport.

RGI



▲ The first Alstom metro train for the Paris Grand Express group of lines is now under construction. Alstom

KARLSRUHE. Track work between Ebertstrasse/Albtalbahnhof and Hbf from 27 July to 17 August meant that a temporary line 10 was operated between Hbf and Marktplatz with stub termini and three AVG GT8-100D double-ended LRVs. DS

KÖLN (Cologne). The last four 1977-series *Stadtbahn-B* cars (2031/32/35/49) were withdrawn from passenger service on 14 August. They will be used by the driving school. *Kölnner Stadt-Anzeiger*

MANNHEIM-HEIDELBERG (RNV). Former OEG 1962 Rastatt trailer 192 has been turned into a weed-sprayer for use on sections of reserved track. It is hauled by works car 4359 (built by Rastatt in 1963). DS

MÜLHEIM/Ruhr. Tram 8002 operated the last service along the 2.8km (1.7-mile) Kahlenberg section of Line 104 on 6 August. Local residents and the Greens have fought against the closure of the Stadtmitte – Oppspring section. Line 104 will terminate at a new city terminus being created at Wertgasse (Evangelisches Krankenhaus) but, in the meantime, trams are reversing at Kaiserplatz. *urbanrail.net*

MÜNCHEN (Munich). Avénio 2511, the first of 73 four-section Siemens *Type T4.8* 100% low-floor trams, entered service on line 19 on 18 August – 651 days after delivery. The delay was the result of the vehicle awaiting approval by the technical supervisory authority of the government of Upper Bavaria. DS

NÜRNBERG (Nuremberg). The Steinbühl tramway underpass had to be closed on the afternoon of 17 August after heavy rain caused flooding. DS

INDIA

PUNE. Two metro extensions were opened on 1 August: the 7.9km (4.9-mile) line 1 from

Phugewadi to Civil Court and the 5.1km (3.2-mile) line 2 from Garware College to Ruby Hall Clinic. Civil Court is the interchange between lines 1 and 2. *urbanrail.net*

ITALY

MILANO (Milan). Severe storms at the end of July caused significant disruption to about 60% of the network, with falling trees being a particular problem. Lines 5, 12, 14, 19 and 33 were still affected in the second week of August and it is expected that services will not return to normal until early September. *A. Murray-Rust*

SALERNO. Infrastructure manager RFI has awarded the ETERIA consortium the contract to design and build the 9km (5.6-mile) metro extension to Costa d'Amalfi Airport. The work will take three years. *Itinera-spa.it*

JAPAN

OKAYAMA. The postponed 100m extension of the tramway to the JR station East Exit Square is to be completed. It is expected to open in 2025 at a cost of JPY1.05bn (EUR6.7m). *Y. Hanafusa*

KAZAKHSTAN

ASTANA. New Chinese funding means that a planned light rail system is to be built as a light metro system instead. The original financing deal collapsed. The 20km (12.4-mile) line will be operated by 20 CRRC Tangshan sets. It could open in late 2025. *RGI*

NETHERLANDS

AMSTERDAM. The Berlagebrug bridge is closed to all traffic from 24 July to 12 November. CAF trams 3053 and 3063 on Line 25 have received all-over liveries to promote next summer's opening of the light rail service to Uithoorn. *OR*



▲ Half of the first Stadler *Tramlink* for the German city of Augsburg is driven in to the depot. C. Brothier

DEN HAAG (The Hague). Line 11 will become the focus of a special celebration on 2 June 2024 to mark 75 years of PCC cars in Europe. PCC and other museum trams will be in action. *M.J. Russell*

NORWAY

TRONDHEIM. Tenders are being prepared for the purchase of eight new low-floor trams for delivery in 2027-28. The current fleet comprises seven high-floor LHB cars from the 11 that were delivered in 1984. *UTM*

POLAND

BYDGOSZCZ. The first of 40 new PESA *Swing* low-floor trams was delivered on the night of 22-23 August and ten should have arrived by the end of the year. *TP*

GDAŃSK. PESA *Jazz* 1078, damaged in a depot fire at Nowy Port in December 2021, has returned to service after repair at Bydgoszcz. *TP*

KRAKÓW. The 4.1km (2.5-mile) tramway extension from Krowodrza Górka to Górka Narodowa should open on 1 September. It will be used by Lines 18 and 50. Air-conditioning should have been fitted to 26 Bombardier *NGT6* trams by the end of the year. *TP*

ŁÓDŹ. A contract has been awarded to turn the mothballed Helenówek depot into a tram repair workshop in 2026. *TP*

TORUŃ. A new 5.5km (3.4-mile) tramway between Waly gen. Sikorskiego and Heweliusza should open on 1 September. It will be served by Lines 3 and 6. *urbanrail.net*

WARSZAWA (Warsaw). The reconstruction of Zachodnia station will mean that WKD commuter rail trains will terminate at Reduta Orłona for several months. The work is due to start on 3 September. *TP*

WROCŁAW. The 4.6km (2.9-mile) line 23 tramway extension from Park Przemysłowy

to Nowy Dwor was to open on 3 September. *urbanrail.net*

QATAR

DOHA. The Education City tramway network was completed on 30 July when the Green Line (North Campus – South Campus) started carrying passengers. One million passengers have used the Blue and Yellow lines since the network opened in 2019. *Thepeninsulaqatar*

ROMANIA

BRAILA. Funds from the National Reconstruction Programme have been released to permit the supply of six new trams (with an option for two more). Astra Vagoane's ROL48m (EUR3m) bid was the only one received. *TP*

RUSSIA

LIPETSK. Ust Katav has delivered two 71-628 low-floor bogie trams. *transphoto.ru*

MOSKVA (Moscow). President Putin and Mayor Sobyenin opened MS-3 on 17 August. This is the third Moscow Central Diameter cross-city express metro and it was created by linking existing lines to the north-west and south-east (Zelenograd – Ramenskoye).

A fifth line is to be built featuring a 12km (7.5-mile) tunnel under the city centre.

The extension of metro Line 8A from Rasskazovka to Aeroport Vnukovo was to open on 28 August. *Skyscrapercity*

SANKT PETERBURG (Saint Petersburg). Pionerskaya metro station was re-opened on 19 August following completion of repair work. *transphoto.ru*

VLADIKAVKAZ. Delivery of 28 Uraltransmash 71-412 partly low-floor trams has been completed. *cs-dopravak*

SINGAPORE

MASS RAPID TRANSIT. The first of six extra Alstom six-car



▲ A rare tramway closure in Germany affected the city of Müllheim/Ruhr on 6 August when the street-running Kahlenberg line was replaced by buses. Car 8014 is one of the city's latest Bombardier Flexity low-floor trams. *baertram*

metro trains entered service on the North East Line on 28 July. *RGI*

SLOVAKIA

BRATISLAVA. The first Škoda 29T3 trams, 7431 and 7432, were unveiled to the media at Jurajov dvor depot on 16 August. The fleet, which is being built by Škoda Ekova in Ostrava, will be numbered in the 7431-7350 series.

Plans have been approved for a 1.8km (1.1-mile) extension of line 4 north to Bory. Work should start in 2025-26. *Skyscrapercity*

SPAIN

SEVILLA (Seville). Tenders have been invited for the supply of power and signalling equipment for the 12.5km (7.8-mile) Alcalá de Guadaíra light rail line. This will feed metro Line 1 at Pablo de Olavide. *RGI*

SWITZERLAND

BERN. The first Stadler *Tramlink* is expected in passenger service in early November, with eight in use by the end of December. *tram*

BERN-SOLOTHURN (RBS). *RABe4/12 32*, which overturned during a storm on 31 March, has been deemed beyond economic repair and will be used as a source of spare parts for the other *Next* cars. *EA*

LAUTERBRUNNEN - GRINDELWALD (WAB). *Bt6* cars 241-244, built by Stadler in 1998, have been withdrawn due to concerns over their braking efficiency when used with *BDhe4/4* cars 119-124. Car 242 has been sold to the Weiz - Ratten Feistritzalbahn. *EA*

LE LOCLE - LES BRENETS (TRN). The threat to convert the metre-gauge line to electric bus operation has been put on hold after the cost of adapting the Petits-Monts tunnel turned out to be more than expected. *EA*

ZÜRICH. Cargo-tram *Xe4/4 1922*, together with its recycling trailers

1987/91, is to be withdrawn next year. Its bogies, which date from 1949, are life expired. The city council wants additional refuse/recycling collection points not on the tramway system. *EA*

TAIWAN

TAOYUAN. Metro Line A was extended by 800m (and one station) from Huanbei to Laojie Station on 31 July. *urbanrail.net*

THAILAND

BANGKOK. Passenger trials on the Pink monorail line started on 15 August. The 34.5km (21.4-mile) line will start commercial operation in November. *Bangkok Post*

UNITED ARAB EMIRATES

DUBAI. Some 123.4m passengers used the city's metro in the first six months of 2023; in the same period, 4.2m passengers used the trams while buses carried 83m passengers. *Khaleej Times*

UNITED KINGDOM

BLACKPOOL. A demonstration of the latest obstacle detection and avoidance technology has been staged for light rail professionals during a visit to Blackpool's Starr Gate Depot. UKTram's operations group was given an insight into Alstom's Collision and Overspeed Monitoring and Prevention Assistance System (COMPAS).

Blackpool Transport Services hosted the gathering, which also included a presentation on the benefits of confidential reporting for employees and online developments.

GREATER MANCHESTER. Metrolink services will be disrupted into November. The Eccles line closure date is 15 July to 20 September, with buses operating beyond Weaste. On the Rochdale line, there will be no trams to the



▲ A Milano Peter Witt tram passes evidence of the storm that hit the city in July. *A.Murray-Rust*

town centre from Freehold on 24 September and 4-5 November.

On 22 October, work at Cornbrook will affect all services, and the pattern will be Bury - Ashton-under-Lyne, Altrincham - Old Trafford, Rochdale town centre - Deansgate-Castlefield, East Didsbury - Firswood, Manchester Airport - Firswood, and Trafford Centre - Wharfside.

LRSSB. The Light Rail Safety and Standards Board is stepping up support for specialist training to improve safety, operational performance, and staff wellbeing. It is conducting a survey, and is working to devise courses, provide access to practical information and share best practice.

NOTTINGHAM. Track renewal on Nottingham Express Transit at The Forest between Wilkinson Street and Old Market Square forced its closure between 18-31 August with trams replaced by buses. There were no services at all on 17 August when a communications fault prevented vehicles liaising with the control room.

SOUTH YORKSHIRE. The South Yorkshire Mayoral Combined Authority has met customers to support the development of a programme of significant investment and improvement works on the Supertram network. This will come once the tramway is operated by a new public sector company from next March, when the current contract with Stagecoach Group expires.

Track work in the Shalesmoor area was due to finish on 6 August, but was extended by a further two days due to the effects of wet weather. Services to Middlewood and Malin Bridge were affected.

TYNE & WEAR. The first of the Metro's new Stadler *Class 555* trains has successfully completed trial runs on the South Tyneside line to South Shields.

Another set has been moved to the Nexus Learning Centre at Mile End Road in South Shields to help train drivers and customer service teams. Three trains have been delivered so far, with two more expected before the end of the year.

WEST MIDLANDS. Storage space has become a problem at the West Midlands Metro depot at Wednesbury, forcing new deliveries of CAF trams to be sent elsewhere.

Two trams have yet to return from Dudley following body repairs, but there is also less capacity than normal while the depot is being extended. Up to five currently surplus *Urbos 3* trams have been sent to Harry Needle's secure site at Worksop in Nottinghamshire, which has seen various classes of new trains for UK rail operators stored.

This is the first time that light rail vehicles have been sent there for storage. The first tram (17) moved on 8 August and a second (26) followed on 17 August.

USA

CHICAGO - SOUTH BEND, IL/IN. Northern Indiana Commuter Transportation Board says that double-tracking the interurban line between Gary and Michigan City should be completed in November. A new timetable to take advantage of this is to be published in May 2024. Patronage is 54% of pre-pandemic levels. *R.Barrows*

CLEVELAND, OH. A six-week closure of the Blue and Green lines east of Tower City started on 20 August to permit track and signal repairs. Replacement buses ran to Shaker Heights. *J.May*

EL PASO, TX. The El Paso Streetcar expanded its hours of operation to seven days/week from 3 September: Monday-Thursday 07.00-19.00; Friday



▲ In the Russian Caucasus the city of Vladikavkaz has introduced its first low-floor trams, 71-412 cars from Uraltransmash. Rostech

07.00-23.00; Saturday 12.00-23.00; Sunday 12.00-18.00. *Kfox14*

FORT WORTH, TX. Consultants have been appointed to carry out the final design work for the USD167m, 3.4km (2.1-mile) TEX Rail extension to Southside. This diesel light rail line should open in spring 2026. *RGI*

LOS ANGELES, CA. CRRC Changchun's Springfield assembly plant in Massachusetts delivered the first of 64 HR4000 metro trains on 16 August. An option for a further 218 cars has been cancelled. *IRJ*

MINNEAPOLIS - ST. PAUL, MN. Plans have been unveiled to extend the light rail Blue Line from Target Field to Brooklyn Park in north Minneapolis. It is hoped that this can be built by 2028. *D.Drum*

NEW YORK, NY. Consultant WSP has been selected by the Metropolitan Transportation Authority to carry out the environmental review of the planned 22.5km (14-mile) Interborough Express light rail project. *Mass Transit*

PHILADELPHIA, PA. Refurbished PCC cars are to return to Girard Avenue Line 15 on 10 September, for the first time since January 2020. *J.May*

PORTLAND, OR. TriMet has dropped its long-standing practice of not applying new fleet liveries to older LRVs except when a car is being overhauled or receiving repair to major collision damage. S70 car 418 returned to service on 6 July after repainting in the new livery of blue with orange stripes. This is the first non-SD660 to receive this livery. Car 408 will also receive it. *S.J.Morgan*

TACOMA, WA. At least four Brookville Liberty NXT trams were in service on Line T in the week commencing 7 August, during trials on the 3.8km (2.36-mile) Tacoma Link Hilltop tramway extension.

Passenger service was due to start on 16 September. *S.J.Morgan*

WASHINGTON, DC. The promoters of a Beyoncé concert on 6 August paid Metro a fee of USD100 000 to extend service by 90 minutes after normal shutdown, so that concertgoers could get home. *Mass Transit*

MUSEUM NEWS

BERGEN (NO). The heritage tramway between the technical museum at Møhlenpris and Café O Pera (Engen) is to operate 12.00-16.00 on 3/10/17/24 September, 1/8/15/22/29 October and 5/12/19 November. There is also a Christmas tram on 16 December. A joint ticket for the technical museum and the tram ride costs NOK150 (EUR12.99).

CRICH (UK). Blackpool 645 has been acquired by the National Tramway Museum as a possible combined second 'Access Tram' and 'One Person Operation' vehicle. It was donated by Blackpool Transport Services, and museum members have given funds for its transport to Crich and to make it operable.

The tram is considered to be in reasonable condition and its flat floor and wide offset centre doors make it ideal for conversion, while it can be single manned when volunteer crews are in short supply. Car 645 also represents the final first-generation UK-built/operated tramcar, but needs full refurbishment and reinstatement of the traction electronics.

Crich Tramway Village has won a Tripadvisor 2023 Travellers' Choice Award. This honours businesses that have consistently received good traveller reviews over the last 12 months, and are among the 10% of all listings worldwide.

The tram service was curtailed to operate between Town End and Wakebridge only from early August due to overhead problems on the section to Glory Mine.



▲ A refurbished PCC during driver training on Philadelphia's Girard Avenue in readiness for the re-opening of line 15. H. Jackson

PONT D'EREZEE - LAMORMENIL (BE). Passenger service on the Tramway Touristique de l'Aisne resumed under a new management board on 26 July. It has been dormant since March 2020. Services are due to run on Saturdays in September and October with an autorail, but it is hoped to re-introduce steam tram operation in due course. *M.J.Russell*

VOLK'S RAILWAY (UK). The Brighton-based railway celebrated 140 years of operation over the weekend of 12-13 August. A line-up of the full fleet, including ex-Southend car 9 which recently moved back to the railway from off-site storage, was held at Aquarium station with television presenters Nicholas Owen and Tim Dunn joining local dignitaries in an official opening ceremony. Tours of the new depot and workshops were also organised.

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Heavy rail thinking – things are improving

David Holt makes a good point. In his piece ‘Too much heavy rail thinking for LRT’ (*TAUT* 1028), he highlights the loss of tramway knowledge with the demise of British tramways, especially Glasgow which had a huge network and tram fleet. Systems were abandoned with indecent haste in the postwar years, and skills and experience went with them.

When the new light rail systems arrived, tramway technology had all but vanished, and the management experience with it.

The possibility of street running with Tyneside Metro was considered by some but quickly dismissed. In the early years of this century, the Tyne and Wear PTE initiated ‘Project Orpheus’ which could have brought low-floor trams onto the network and enabled extensions which would be very difficult to achieve with fully segregated metro, notably the much-needed extension from Haymarket to the west.

Sadly, Orpheus disappeared without trace and the new rolling stock can never run on street.

When London’s Docklands Light Railway was first conceived, it could have included some street running in Mile End.

That was quickly dismissed when the decision was made to go for driverless operation and third rail.

Manchester struggled to maintain an element of tramway, but as David Holt knows well, it has too many heavy rail features. It did have to be high floor because when the first Bill was deposited in Parliament there were no low-floor cars on the market. However, virtually all the design and implementation engineers were from heavy rail. One genuine tramway engineer who worked on initial feasibility studies was Czech-born civil engineer Milan Touska who had worked on the Prague tramway. He had a major influence on the street running sections through the city centre, but was not involved in the contract.



▲ ABOVE: GMA engineers watch the first T68 ease around Debenham’s corner into Market Street on 15 September 1991. Tony Young

David is correct that the Government saw Metrolink as an opportunity to put its determination to privatise railways into practice, and insisted that the contractors had freedom of design and operation. The heavy rail overhead in Piccadilly Gardens horrified many – it was probably designed to withstand hurricanes!

I remember standing at the Market Street/High Street junction when the first T68 was gingerly moved round the 25m radius curve in the early hours. Many railwaymen watching it were convinced it would derail because they had never seen a rail vehicle go round a curve that tight (see picture).

An edict from Queens Road instructed that they were not to be called trams, but light rail vehicles running on a light railway. But ask any Mancunian on Market Street and they would say ‘trams’.

Later tramways in Britain, notably Nottingham and Edinburgh, have adopted more tramway characteristics, so things are improving. But it has taken a generation or two since tramway expertise was lost in Britain. As David says, our cities need a proliferation of tramways, and a new generation of tramway engineers to design and build them.

Tony Young, Skipton, UK

A need to educate the public

David Holt hits the nail succinctly on the head when he talks about loss of experience and skills in his letter in *TAUT* 1028.

No sooner had Britain’s city tramways been disposed of than the trolleybus systems came under similar attack with operators disposing of vehicles less than a decade old. In addition to the loss of skills, there has come a loss of memories on the part of the travelling public, all making the reintroduction of electric transport just that little bit more difficult.

I recently overheard a conversation in a Bradford pub about the trolleybus days when someone said, ‘Do you remember when every other trolleybus on Clayton Road turned round at Pasture Lane and the conductor would have to jump out with his stick and stand in the middle of the road to swing the poles round for the bus to go back to town? Imagine doing that in today’s traffic, even if they still had conductors!’

Sadly, this sort of false memory has even featured in public consultations which have ultimately prevented tram and trolleybus schemes from going ahead. Electric traction

is seen as different and difficult to operate, and over-engineering reaffirms this opinion.

There is as much a need to educate everyone today about the merits and the possible simplicity of electric street transport as there was nearly 90 years ago when LRTL members were fighting so valiantly to save trams in South London.

Phil Bott, Bradford, UK

Bergen’s ‘non-ticket’ machines!

Having just returned from a long rail trip that took in the Bergen line and the world’s most northerly tramline in Trondheim, it was timely that *TAUT* 1028 had news about the Bergen extension.

The light rail line has terminated at the bus station for the last month and does not proceed to Byparken; something of a nuisance as it’s a 15-minute walk to the centre.

While there, we found it almost impossible to buy a ticket as the previous machines have been replaced. At Bergen airport, there was only one machine working out of the three. Not only that, you cannot buy two tickets at a time and so have to go through the procedure

multiple times. That, and the almost complete failure to recognise any card.

I say tickets, but that isn’t actually what happens – you use a payment card and that card is your ticket so it can’t be used for more than one person. Most people gave up. We persisted, but no-one checked, so could have travelled free.

Interestingly, Trondheim has become almost ticketless as well, and at the terminus I had to download an app in order to buy a ticket. There are a few machines at stops but no way of knowing where they are. What a hopeless way to run things.

Jim Darroch, by e-mail

Edinburgh image collection

While the Edinburgh works were ongoing, I visited the sites regularly and took pictures that amounted to almost 900 shots. Having given these to Edinburgh Central Library, Librarian Clare Padgett chose a selection and formed them into an online book which can be viewed at www.capitalcollections.org.uk/view-item?i=53559

Brian Patton, by e-mail

HALBERSTADT CELEBRATES 120

The first weekend of June brought forth a double-headed event on one of Germany's smallest tramways. With a population of only around 39 000, Halberstadt is a very small town to have a system. Mike Russell reports on the weekend's proceedings.



This year marked the 120th anniversary of the start of Halberstadt's electric tramway service (there had previously been a horse-drawn tramway since 1887) and it had also been chosen as the location for the annual model tramways event, Kleine Bahn Ganz Gross. This is held in a different tram town or city each year, with some events also outside Germany. It was spawned as an offshoot of the annual AHN conference at which those involved with tramway preservation meet to discuss problems, developments and so on. Many participants are also modellers, so this separate event was created. For 2023 the location was Halberstadt, and it was held in a hall close to the Klus branch of the tramway.

It also provided an excuse to mark the 120th anniversary of Halberstadt's electric tramways. While 120 is not a particularly auspicious anniversary in the manner of 100th, 125th or 150th anniversaries, with Halberstadt having an interesting heritage fleet it seems to have provided a golden opportunity to stage a contemporaneous event enabling cars to be demonstrated to a wider public.

The town itself has a long history dating back to the 9th Century. By the early 20th Century it had become a significant industrial centre and soon developed importance in the fields of aircraft manufacture and operation; these were closed down in 1919 under the Treaty of Versailles, but airborne operations and manufacture resumed shortly before World War Two. The town itself contained a large number of typical German mediaeval buildings (*Fachwerkhäuser*), most but not all of which were destroyed by Allied aerial bombardment following the refusal of the Nazi authorities to surrender. A small percentage of the historic area was saved and remains served by the tramway, but much that survived has since been lost through neglect. Locals have said with barely-disguised contempt that 400 years of solid German buildings were brought to ruination by 40 years of Communist administration.

The fact that the tramway has survived to reach its 120th anniversary is itself remarkable. In 2015, even after arrival of the five *Leoliner* articulated low-floor cars that comprise the five-strong present regular service fleet, it was evident from the position of the *Land* (which underwrites the local transport operation) that the tramway would have to close by about 2025. Things in the political arena in Germany change just as elsewhere, and different attitudes towards the

retention of tramway operation, albeit at a price, have since prevailed. One cannot make any firm predictions for the future because this depends upon the willingness of the *Land* to continue to provide subvention for the tramway, but one can say that the operation seems safe for now, future funding having been confirmed late in 2022.

Classics outweigh currents

A remarkable feature of the present-day tramway is that the heritage fleet equals (or, depending upon one's interpretation, exceeds) the total of cars comprising the regular service fleet. Fortunately the depot has adequate space to house all these cars in covered storage, dating from the period when the fleet was considerably larger.

For the main event of the model exhibition a supplementary service of museum cars was programmed for operation on 3 June. There was a 30-minute service of heritage trams supplementing the scheduled service and operating on a route starting at Friedhof (the depot) via Holzmarkt and Herbingstrasse to Klus. The extension to Klus is today viewed as a line primarily retained to serve recreational traffic and is operated only at weekends. The location of the model exhibition was at a point close to the first stopping-place on this single-track line, and thus the supplementary service operated around 1km (0.6 miles) beyond this to the turning-circle at Klus.

Six museum cars were employed for this service, with each journey specified with the car scheduled to work it. Undoubtedly the flagship of the museum fleet is car 31, one of a series of 12 two-axle cars built over a period by Lindner of Ammendorf (Halle), this one dating from 1939 and having been lovingly restored for use as a heritage car for private hire work. Next in line came another gem, 36, a LOWA *ET-54* car dating from 1956. Several cars of this type have been preserved by tramways of the former DDR (East Germany) but almost all retain the converted single-ended layout to which they were rebuilt during their years of service operation. Halberstadt 36 is unusual in retaining its original double-ended layout.

Latter-day products of the DDR era also feature in the museum car roster. Car 39 is a Gotha *T57* car dating from 1960 that did not feature in the special operation, but the pair of later Gotha models *T2-62* and *B2-62* (30 and 61) comprised a two-car train of the type that was commonly seen on the tramway in later years. In common with many other DDR tramways, Halberstadt took delivery of some *Rekowagen*, rebuilds in the

state railway works using recovered trucks and with bodywork resembling contemporary Gotha products. However, the *Reko* cars have four side windows to the three of Gotha models and much narrower doorways, which have been known to cause problems for some passengers.

The current Halberstadt fleet includes five *GT4* articulated cars, which bridged the gap between the old two-axle rolling stock and the *Leoliners*. Of these, three are nominally retained as reserve cars for use in regular service when one or more of the low-floor fleet is unavailable; given that there are only five *Leoliner* cars and that Monday-Friday schedules require five cars, this situation can arise without warning, quite apart from the needs of planned maintenance. The posted information indicated that car 164 would operate selected journeys; this car was originally Freiburg-im-Breisgau 106. In practice, however, it was car 156 (originally Stuttgart 550) that undertook most of this work. The serviceable *GT4* cars that are not devoted to works duties also act as members of the museum fleet, so the numbers of the latter exceed those of the basic fleet.

Sunday 4 June saw a reduced level of operation of museum cars, with an hourly supplementary service between the depot and Klus, with three cars rotated during the day. The reduced level of service on the tramway at weekends results in a revised pattern of service on Sundays, requiring only two cars (and only three on Saturdays).

It is remarkable that the Halberstadt tramway, in common with several other small networks in the former DDR, has continued in operation. Its total single-track kilometrage amounts to just 16.9km (10.5 miles). Along with many of the smaller settlements in the former DDR, it has suffered considerable loss of population since 1989 and ridership on the tramway is now noticeably slender. Public transport, however, is definitely a requirement here, not least because the railway station is remote from the town centre, and growing realisation of the desirability of tramway retention even in such small pockets of operation has swung the political balance in favour of retention. How long this will continue, of course, is a matter of conjecture.

In the meantime, this little tramway operated by Halberstädter Verkehrs-GmbH soldiers faithfully on, riding such unwelcome disasters as an accident in 2020 which put two of the *Leoliners* out of service, and hopefully will continue to enjoy local support to ensure its future survival. **TAUT**



2

1. *Rekowagen* 29 heading south towards Klus, crossing the Halberstadt - Blankenburg railway line in Westerhäuser Strasse.

2. LOWA car 36 seen on the narrowest section of Gröperstrasse, heading south on two-way single track.

3. The twin set of Gotha two-axle cars, motor car 30 and trailer 61, seen here in Gröperstrasse emerging from the single track leading to and from the depot onto double-track.

4. New meets old in Voigtei as Lindner car 31 proceeds outwards towards Sargstedter Weg loop whilst *Leoliner* 1 on the regular service arrives in the opposite direction.

5. Wooden-bodied Lindner car 31 seen against a fine group of restored mediaeval buildings in Voigtei. Before the opening of the extension to Sargstedter Weg in 1993, the Voigtei terminus was a reversing triangle ending in front of these buildings.



3



4

6. LOWA car 36 returning from Klus on single track in Hans-Neupert-Strasse.

7. Motor and trailer sets were the standard Halberstadt formation in the later DDR era but the only such set to be seen now comprises Gotha T2-62 motor car 30 and matching B2-62 trailer 61. Both are in the museum fleet, and are seen here descending Hoher Weg on their way back to Friedhof terminus.



5



6

8. One of the surviving GT4 articulated cars was scheduled to undertake some trips on the museum service on both days. This is 156, originally Stuttgart 550, ascending Hoher Weg.



7

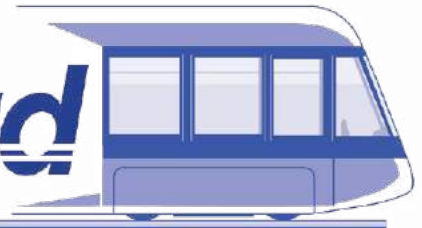


8

All photography by Mike Russell on 3 and 4 June 2023.



TramForward



NEWS FROM THE LIGHT RAIL TRANSIT ASSOCIATION

Big ambitions for KenEx

Ambitions to build a tram tunnel beneath the River Thames and provide a light rail link between south Essex and north Kent could be realised within ten years, according to the scheme's promoter.

"Our vision is to support the development of an integrated transport system within the Estuary area," says Thames Gateway Tramlink's Managing Director Gordon Pratt. "The tramway will provide vital links between rail and bus hubs (including Fastrack), as well as employment and leisure areas in a sustainable, socially inclusive, and non-polluting way."

The KenEx proposal would initially link Purfleet and the Lakeside Regional Shopping Centre in Essex with Ebbsfleet and Gravesend in Kent. Extensions towards Basildon and Canvey Island to the north of the river may come later. The crossing of the Thames would connect Grays to the north with the

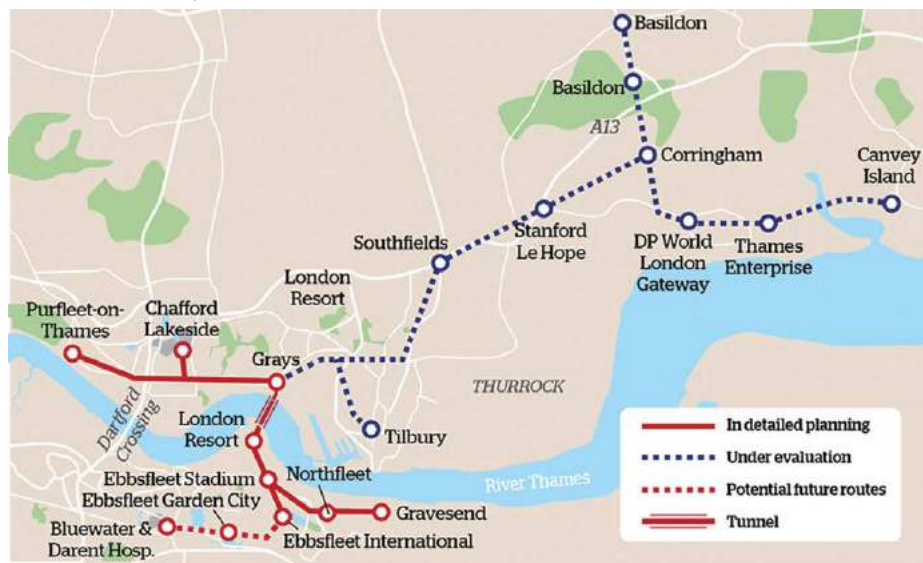
Swanscombe Peninsula which is to the south and east of the Dartford Crossing

Construction would involve building a 1.2km (0.8-mile) immersed tube tunnel.

"We see the initial scheme as being the catalyst for local economic development and social mobility, while increasing inclusive transport options," Gordon says. "Rather than the Thames being a barrier, it would become something you rapidly cross on the tram."

Keen interest has already been shown in extending the system to Canvey Island, which is disconnected from opportunities and is a location where a suitable access road is considered inappropriate. Canvey Island is an ideal opportunity for a tram and cycle/pedestrian routes.

The project is currently estimated at around GBP1bn (EUR1.17bn) and is progressing towards a Full Business Case.



Case for new tramways

The LRTA is campaigning for a number of new light rail schemes in the UK. Over the next few months we intend to publish articles about each of these.



George Shanks

Christine Shanks

It is with sadness that I learned of the recent passing of Gordon Shanks, long-time member of the LRTA and Edinburgh Area Treasurer until ill health forced his retirement.

Gordon gained his lifelong interest in trams as a boy in Glasgow, and was a regular attendee at Edinburgh LRTA meetings. He was also a member of the Summerlee Transport Group and a supporter of the *Waverley* paddle steamer, undertaking many voyages around Britain. **GM**

MEETINGS & EVENTS

Compiled by the LRTA. For a full list of the year's events and meeting places, including online meetings, visit www.lrta.org

NOVEMBER

- > **Tuesday 7.** Southampton 19.30. Branch AGM followed by members' digital slides. Eastleigh Railway Institute, E3. (LRTA/SEG)
- > **Wednesday 8.** Sussex 19.40. Paul Coles: Tram toys and models. Southwick Community Centre, BN42 4TE. ussex@ttrs.info. £2. (TLRS)

- > **Saturday 18.** Taunton 14.00. David Wood: Recent techniques in small scale modelling. West Monkton Village Hall, Monkton Heathfield, TA2 8NE. Contact westofengland@ttrs.info. £2 inc. light refreshments. (TLRS)
- > **Monday 20.** Merseyside 19.30 for 19.45. Martin Jenkins: Wallasey's last tram. Also, Closures in years

- ending in 3. Sefton Park Community Association, 3 Croxteth Drive, Liverpool L17 3AG. Contact: merseyside@ttrs.info. (TLRS)
- > **Tuesday 21.** London 14.30. John Laker: 40+ years of UK light rail. The Model Railway Club, Keen House, London, N1 9DA. £2. (LRTA)
- > **Saturday 25.** Garstang 14.00. Christmas party with quiz,

- exhibits, models and photographic competition. St. Thomas' New Church Hall, Church St, Garstang PR3 1PA. Contact via: alo@ttrs.info. £2 inc. light refreshments. (TLRS)
- > **Saturday 25.** Nottingham 14.00. Modelling session - bring along what is on your bench. Beeston Scout Hut, Middle Street, Beeston, NG9 1GA. Contact: alo@ttrs.info. (TLRS)

For more information on the Association and its activities visit www.lrta.org

Order online from www.lrta.info/shop - or by post from:

LRTA Publications, 38 Wolseley Road, SALE, M33 7AU

(Please provide telephone contact details and quote LRTA membership number if applicable)

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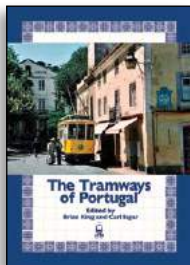


Calendar for Ukraine 2 - 2024

Following the success of our first calendar aimed at raising funds for the people of Ukraine, the 2024 Mike Russell Electric Traction calendar includes a further selection of full-colour images of trams and trolleybuses at work in 17 Ukrainian cities, together with a location map and list of world systems.

More than £5000 was donated last year through the LRTA and our partners the National Trolleybus Association, the British Trolleybus Society and Sandtoft Trolleybus Museum to the Disasters Emergency Committee Ukraine Humanitarian Appeal. Please be prepared to donate to this worthy cause once more.

For full details see the order form for LRTA members sent with this magazine, or please visit our online shop.

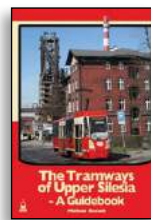


The Tramways of Portugal

This new fifth edition of the popular LRTA handbook has been expanded to include the new installations in Lisboa and Porto. It also provides wider coverage of the trolleybuses, providing a comprehensive overview of electric street traction in Portugal.

➤ A4 softback, 328 pages, 400+ black & white and colour pictures and 57 maps.

£48.50 (UK); £55.00 (outside UK); £59.50 (Airmail Z1);
£65.00 (Airmail Z2/3); LRTA Members: £4.50 discount



The Tramways of Upper Silesia A Guidebook

Tells the story of a truly remarkable network in a region of Poland rich in mineral resources, which has survived the risk of closure and become an important player in the regional transport infrastructure.

➤ A4 softback, 240 pages, 300+ black & white and colour pictures plus large-scale folding track plan.

£38.50 (UK); £45.00 (outside UK); £49.50 (Airmail Z1);
£55.00 (Airmail Z2/3); LRTA Members: £3.50 discount

Tramways in Milan in Colour (1954-1978)

I tram di Milano - Immagini a colori (1954-1978)



Third in the series of colour albums exploring the fascinating combination of urban and interurban tramways in and around Milan. The variety of rolling stock is amazing and is richly illustrated. English and Italian text.

➤ A4 hardback, 144 pages, 176 colour pictures plus two maps.

£33.50 (UK); £40.00 (outside UK); £47.50 (Airmail Z1);
£52.50 (Airmail Z2/3); LRTA Members: £3.00 discount



Scottish Transport No. 75 - 2023 Edition

Annual magazine of the STTS

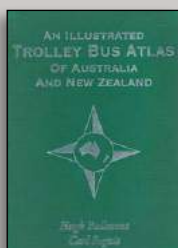
Includes Edinburgh's cable car system and the preservation of its last vehicle, new Glasgow Subway cars, Aberdeen's four-wheel streamliners, the opening of the Edinburgh Trams Newhaven extension and an update on electric buses in the West of Scotland.

➤ A5 softback; 64 pages, illustrated in colour and black & white.

£9.50 (UK); £12.50 (outside UK); £14.00 (Airmail Z1);
£16.00 (Airmail Z2/3); LRTA Members: £0.75 discount

For further details of all these books go to our website.

Order direct from the website shown (not from the LRTA)



An Illustrated Trolleybus Atlas of Australia and New Zealand

Comprehensive coverage of the seven Australian and five New Zealand systems which existed during the years 1924 to 2017 with wiring maps, fleet details and route-by-route opening and closing dates. Trolleybus preservation is covered too.

➤ A4 hardback; 118 pages; 144 black & white and 137 colour pictures, 46 maps.

£35.00 – www.nationaltrolleybusassociation.org



Fahrt in die Vergangenheit Öffentlicher Personen-Nahverkehr in Österreichischen Museen

This is an amazing book which takes the reader, as its title says, on a ride into the past by describing in detail the treasures preserved in public transport museums in Austria (or by the operators), as well as looking at the historic tram collections of other countries. German text.

➤ A4 hardback; 364 pages, 400+ black & white and colour pictures.
EUR59.00 – www.phoibos.at

European Light Rail Congress



TWO days of **interactive debates...** EIGHT hours of **dedicated networking...** ONE place to be

Hotel Melia Lebreros – Seville, Spain

13-14 March 2024

The **European Light Rail Congress** brings together key decision makers and leading professionals from across Europe for two days of debate covering the role of technology in the development of sustainable urban travel.

With presentations and exhibitions from some of the industry's most innovative suppliers and service providers, this congress also includes a technical visit and over eight hours of networking sessions.

For 2024 we are taking the congress to the beautiful Spanish city of Seville, home of the Metro de Sevilla system. Both metro and trams run throughout the city providing modern and efficient public transport, with safety and the environment being key factors which contribute to improving the quality of life of the citizens of Seville and the surrounding areas.

The event will be held at the Hotel Melia Lebreros, which provides a superb conference centre that offers everything under one roof for everyone to enjoy. We will be working with our partners once again to offer a superb behind-the-scenes depot visit for delegates; and have also arranged an evening reception with some fantastic food and drinks to allow for maximum networking opportunities.



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