

Introduction

Germany's eastern neighbour Poland [in Polish 'Polska' or 'Rzeczpospolita Polska'] is known for its troubled history, which even when dealing with tramways has to be taken into account. After all, when the first horse-drawn and electric tramways were built, Poland did not exist as an independent country, having been divided up several times among the neighbouring great powers. Of today's 15 cities with tram systems, a total of eleven were then located in the German Empire, three (Warsaw, Łódź and Częstochowa) were under Russian rule in 'Congress Poland', and one (Krakow) lay in the extreme north of the Austrian-Hungarian Empire.

Poland has had its present borders since the end of World War II. Since 1999, the country has been divided into 16 provinces (voivodeships), which are now also in charge of regional rail transport. However, the cities are directly responsible for their buses and trams. In most cases, the municipalities comprise the entire metropolitan area, an exception being the Upper Silesian Industrial Region around Katowice, where numerous small towns and cities form a single conurbation; however, a single "municipal" transport company serves almost the entire metropolitan area. A common fare system like e.g. in Greater London, which also includes regional and suburban railways or buses serving the hinterland, is yet to be found anywhere in Poland, even though steps towards full fare integration have been taken in some cities. There are hardly any S-Bahn-style rail services, especially as local trains mostly lack regular headways throughout the day and are not fully integrated into the city's public transport fare structure.

In general, Polish fares are significantly lower than those in Western Europe. Day tickets (usually 24-hour tickets) cost an average of 12 PLN [2.80 EUR/2.50 GBP].

Instead of the typical single-journey tickets, most cities offer time-based tickets for short periods too. Depending on the city, those periods may vary (e.g. you may choose from 20-, 40- or 60-minute tickets); these have to be validated on buses or trams and allow transfers within the time chosen; they can also be used to return to the starting point of the first journey. If one stays in the same vehicle, a ride to the end of the line is possible regardless of the time stamped on the ticket.

In Poland, an independent industry has survived in the tramway sector. Even in the days when the Czech company ČKD supplied most Eastern Bloc countries with robust Tatra vehicles, the Polish tramway cities for several generations purchased almost all their cars from Konstal's plant in Chorzów near Katowice. However, since Konstal was taken over by Alstom in 1997, the factory has hardly manufactured any tram cars. Instead, PESA, a company based in Bydgoszcz, has become the main supplier not only for the Warsaw tramway, but also for other cities. With the product family Swing/Jazz/Twist, PESA has developed low-floor vehicles capable of coping with tracks often still in urgent need of repair in some places, and they are therefore worthy successors to the still omnipresent Konstal 105Na high-floor cars. Besides PESA, Solaris, a Poznań-based company renowned for its bus production, has also been able to establish itself as a tram manufacturer, and its 'Tramino' has even been delivered to three German cities. A third manufacturer, Modertrans, has become well-known through the modernisation and rebuilding of older cars, including imported vehicles from Germany, but this manufacturer has also designed some new vehicles.

At the end of 2015, Olsztyn opened a completely new tram system, which is rather unusual in Central and Eastern Europe, but even in Poland no new tram networks can be expected in the medium term. Most cities with a significant population already boast some kind of urban electric transport, be it a tramway or a trolleybus system. The largest cities in the country (over 200,000 inhabitants) without such a transport system are Białystok (275,000), Radom (230,000), Kielce (215,000) and Gliwice (215,000; trams were withdrawn here in 2009!). In the territory of present-day Poland, electric tramways also used to operate in Bielsko-Biała (1895-1971), Cieszyn (1911-21, Czech Český Těšín), Gubin (1904-38), Inowrocław (1912-62), Jelenia Góra (1900-69), Kostrzyn (1925-45), Koszalin (1911-38), Legnica (1898-1968), Słubice (1898-1945, then part of Frankfurt an der Oder), Słupsk (1910-59), Tarnów (1911-42), Wałbrzych (1898-1966) and Zgorzelec (1897-1945, then part of Görlitz). Trolleybuses once also ran in Dębica (1988-90), Gorzów Wlkp. (1943-45), Legnica (1943-45, 1949-56), Olsztyn (1939-71), Poznań (1930-70), Słupsk (1985-99), Wałbrzych (1944-73), Warsaw (1946-73, 1983-95) and Wrocław (1912-13). In 2011, a horse tramway returned to Mrozy, located 65 km east of Warsaw.

BYDGOSZCZ

The city of Bydgoszcz lies on the route from Poznań (110 km) to Gdańsk (140 km) and is thus easy to reach by train. Via Toruń there are direct trains to Warsaw (230 km), although the journey takes at least three hours. Capital duties for the Kujawsko-Pomeranian Voivodeship are shared by Bydgoszcz and Toruń, which lie 40 km apart. The Brda River flows through the city, but in the east, the municipal area reaches the banks of the Vistula River.

From 1815, Bydgoszcz (German 'Bromberg') belonged to the Prussian province of Poznań, and was thus part of Germany when the first tramways emerged at the end of the 19th century, but the town had long been bilingual. As was often the case, the first horse tramway was built to link the somewhat remote railway station with the Old Town, which lies on the south bank of the Brda River. This was completed in as early as 1886. In 1892, the route along Gdańska up to Artyleryjska was added, before the electrification of the existing routes started in 1896. Shortly afterwards, new routes were opened along Grunwaldzka to the former 'Kleinbahnhof', the terminus of a local railway (1898); eastwards along Jagiellońska to today's Rondo Fordońskie (1900/1903); and along Nakielska to Słoneczna (1901). From 1920 to the beginning of World War II, Bydgoszcz came under Polish administration; during this time the tram route along Chodkiewicza to Bielawy was built (1936/38).

After World War II, with Bydgoszcz now lying in the middle of Poland, the city became an important industrial centre, leading to a considerable expansion of the tram network in the early 1950s: in 1950, the trams reached Wilczak in the west, and in 1953, via Babia Wieś, the current termini Glinki and Kapuściska in the southeast as well as the rural Łegnowo in the east. In 1955, the northern route was extended to the stadium, and in 1957, a short extension to the Bałtycka loop was added in the east. While this route was extended to the Wyciągowa loop in 1969, the original sections through the Old Town were shut down in 1969 and 1974, respectively. In 1970, the

southeastern districts were also connected to the eastern route at Rondo Fordońskie via the newly built Most Pomorski. To serve new residential areas, a tram line was built along Wojska Polskiego in 1975/1984. Its terminus is located only 600 m south of the Old Town, but line 2 has always made a detour of more than 6 km to reach the city centre! The construction of the missing link as well as extensions towards the southwestern districts are planned.

With the northern route having been extended to Las Gdański [Gdańsk Forest] in 1989, tramway operation to the railway station via Dworcowa was discontinued in 1990, although a track connection remained in place until 1998 to provide access to the old tram depot. On 24 November 2012, trams finally returned to the railway station, now on a new route further west with a purpose-built bridge over the Brda River. At the same time, an extension to the Rycerska loop was put into operation.

The tram network was significantly expanded on 16 January 2015, when a 9.3 km route, planned for many decades, from Fordońska/Wyścigowa to the district of Fordon opened, serving a population of 72,000. The most important structure on this route is a 500 m viaduct spanning the railway tracks, including a tram stop right above Dworzec Wschód [Eastern Railway Station]. Beyond the terminus at Łoskoń, a second depot was built. While the loop at Niepodległości was established as a regular terminus, another loop is available at the Przylesie stop.

Besides the light-rail-style alignment of this new route, the section between Zbożowy Rynek and Rondo Toruńskie is also worth mentioning, as it was built in 1953 on the south bank of the Brda River on a right-of-way which does not follow major roads.

In Bydgoszcz, a 24-hour ticket is available for 12 PLN, a 60-minute ticket for 4.20 PLN, while single trips without transfer cost 3 PLN.

Older vehicles from Konstal also still dominate the tram fleet in Bydgoszcz, but since 2006, low-floor trams produced locally by PESA have also been in service, with more expected in the mid-term future.

CZĘSTOCHOWA

The city of Częstochowa lies some 70 km north of Katowice and 125 km south of Łódź. Although it is now part of the Silesian Voivodeship, it was never under Prussian or German rule for any lengthy period of time. The city is well known as an important place of pilgrimage. Częstochowa is located on the old main line from Vienna to Warsaw, but today many trains take a new route built some 50 km further east, thereby reaching Warsaw in about 2 hours, i.e. 30-45 minutes faster than via Piotrków Trybunalski; many long-distance trains, however, do not stop at the main railway station, but at Częstochowa-Stradom. Katowice and Częstochowa are connected by line S1 of Koleje Śląskie (Silesian Railways) with a local train about once an hour (travel time 1½ hours), while long-distance trains are 15-20 minutes faster.

The tramway age began rather late in Częstochowa, and only after Poland had finally consolidated its present borders. The first route started in 1959 from a loop north of today's stop Al. Jana Pawła II and ran south along the city's central thoroughfare, Aleja Tadeusza Kościuszki/Aleja Wolności, then southeast along Aleja Niepodległości to residential areas built in the 1950s. South of the depot, the route turned east towards Raków railway station before finally reaching the hospital at Kucelin, not far from the steelworks; even today the section beyond the Raków railway station runs through partly uninhabited areas. From Raków railway station, a branch used to go south along Łukasińskiego to Stary Raków. While this branch was abandoned in 1971, the remaining route was extended north into the district of Tysiąclecie (Promenada Niemena), and finally in 1984, on a grade-separated alignment, to today's terminus Fieldorfa-Nila in the Pótnoc district.

For 28 years, Częstochowa then had a single 10 km tram line, with 'Line 2' labels always being used for short workings. On 3 September 2012, the network was expanded with a 4.5 km branch to Raków Stadium, which improved service to the Wrzosowiak and Błeszno neighbourhoods. On the section shared by all three lines, a tram passes at least every 6 minutes during daytime hours.

In Częstochowa, paper tickets are available as single tickets without transfer (3 PLN), 45- or 60-minute tickets (3.40/4.60 PLN), or 24-hour tickets for 10 PLN.

While the Konstal cars operate largely in their original condition, the new line 3 also features some modern low-floor vehicles from PESA.

ELBLĄG

Elbląg (until 1945 the Prussian city of Elbing) is located in the Warmian-Masurian Voivodeship, just 60 km southeast of Gdańsk, but about 90 km from the capital of the province, Olsztyn. The Russian border (Kaliningrad Region) is some 50 km away. Once a stop on the Prussian Ostbahn from Berlin to what was then Königsberg, Elbląg is now a one-hour train journey from Gdańsk.

At the beginning of the tramway era, Elbing was part of the province of West Prussia. Unlike most cities in the region, Elbing did not have any horse tramways, but started directly with electric trams, which were introduced in 1895. The first route went from today's junction north of Królewiecka/Światowid to the railway station, passing through the Old Town, with a branch to the landing pier at the Elbing River. Just two years later, the route was extended north beyond the current terminus Marymoncka to the city forest, Bażantarnia (the outer section was abandoned in 1956). After 1897, the approximately 7 km network remained unchanged for 30 years.

After World War I, unlike other West Prussian tramway cities, Elbing remained a part of Germany, but in 1920 it was integrated into the province of East Prussia. In the mid-1920s, a major network expansion began: in 1927, northwards along Rycerska, Pocztowa, Robotnicza and Browarna to approx. Obrońców Pokoju/Wiejska, including the depot still found on this route today; and also in 1927, eastwards along Grobla Świętego Jerzego and Gen. Józefa Bema to Pädagogische Akademie (now Zespół Szkół Ekonomicznych), near the present terminus at Saperów. In 1928, a branch northeast from Grobla Świętego Jerzego via Traugutta and Agrykola to the cemetery followed. This was, however, shut down in 1967. Thus by the beginning of World War II, the network had reached a total length of 15.6 km, with just 1.6 km being double-track.

After World War II, the southern part of East Prussia, including Elbląg, became part of Poland. Already in 1951, the route to the railway station was extended along Aleja Grunwaldzka by about 1.8 km to Druska. With the branch to the landing pier having been out of service since 1945, trams were completely withdrawn from the Old Town in 1968. In 1986, the northern route was extended by 1 km to

the intersection Płk. Dąbka/Ogólna. The 1.7 km link from Królewiecka to Płk. Dąbka/Niepodległości followed in 2002, while the 1.5 km extension along Ogólna to today's terminus in the residential area Nad Jarem, which was built in the 1980s, was completed in 2006.

In recent years, the existing network has been upgraded, with the route along Browarna being fully double-tracked in 2014. A new route is scheduled to open in late 2017 along the streets 12 Lutego and Gen. Grota Roweckiego (900 m), to be served by a rerouted line 4 (and possibly also line 5). This link is part of an expansion project which also includes a link between Królewiecka/Energia and the loop at Ogólna as well as a branch off Płk. Dąbka/Ogólna westwards along Aleja Odrodzenia.

In Elbląg, some tickets can be bought from the driver: a 1-hour ticket for 3.40 PLN and a 24-hour ticket for 13 PLN. Other fares are only available with electronic cards.

About half of the tram fleet is made up of the typical 805Na cars from Konstal. In 1997, some GT6 cars were taken over from Mainz. They remained in operation until 2013, before being replaced the following year by modernised M8C cars from Augsburg. In 2016, more of the same type followed from Mülheim an der Ruhr. Since 2006, some modern low-floor vehicles from PESA have also been available. Three more were ordered from Modertrans in 2017.

GDAŃSK

The city of Gdańsk is located some 400 km northeast of Berlin and 290 km northwest of Warsaw. For a long time, the old Hanseatic city on the Bay of Gdańsk was part of Prussia, but after World War I it became an independent state known as the 'Free City of Danzig', a territory which included Sopot and the southern hinterland. After temporary German rule during World War II, the city was eventually integrated into Poland in 1945, and, together with its neighbouring cities Sopot and Gdynia (the so-called Trójmiasto [Tricity]), has since become the most important centre in the north of the country.

The historic city centre is located at the confluence of the Mottawa River and the Martwa Wisła [Dead Vistula]. For a long time, the city grew mostly towards the northwest, with a second urban centre having developed in the Wrzeszcz area. Accordingly, the first horse tram line was opened in as early as 1873 to link the Old Town with Wrzeszcz and Oliwa. Despite some initial problems, a southern route to Orunia followed in 1878 (its electrified successor was shut down in 1971/72). Besides some routes through the city centre, a westbound horse tram line was opened in 1886 to serve Siedlce (Emaus). The Berlin-based A.E.G. purchased the horse tram company in 1894 and electrified all the existing routes in 1896/97 (except Wrzeszcz – Oliwa, 1901). At the beginning of the new century, the 'Allgemeine Lokal- und Straßenbahn AG', which had been established by the A.E.G., faced competition from the 'Danziger Elektrische Straßenbahn AG', which in 1900 opened a line from the main railway station via the shipyards and along the river to Nowy Port and on to Brzeźno (the riverside line was relocated to Marynarki Polskiej in 1929). Just a year later, a link between Wrzeszcz and Brzeźno followed, but until 1961, this route ran some 200 m further west along Bolesława Chrobrego. In 1903, the older tram company was integrated into the newer one. Besides some minor additions to the network, in 1908 the seaside resort of Jelitkowo was connected by tram with a route from Oliwa.

In 1927, in the now independent Danzig, a 9 km route whose construction had already begun before World War I was finally opened from the city centre via Siennicka to the beach at Stogi. This was followed in 1930 by a branch from Opera Baltycka via Hallera and Plac Komorowskiego to Legionów. At the outbreak of World War II, the tram network had thus reached a total length of approximately 43.5 km, of which 14.5 km was single-track.

Just a few months after Gdańsk had become Polish, a short new section was opened from Oliwa to Sopot to provide a link to the terminus of a trolleybus line. However, after the creation of an S-Bahn connection, this section was closed again in 1960. Major changes took place in 1959 when the last important route through the Old Town, the one across Długi Targ [Long Market], was abandoned and moved to a new road built on the south side of the Old Town, the Podwale Przedmiejskie (formerly Leningradzka).

After the above-mentioned relocation of the route from Bolesława Chrobrego to Hallera in 1959/61, a partly double-track line, which is now only used in the southbound direction, was built via Wczaszy in Brzeźno in 1962. To serve new housing estates built on what used to be Gdańsk's airport, a 4 km link through Zaspas was put into operation in 1977. In 1980, a route paralleling the main tram route in the city centre was built on the eastern side of the railway corridor on 3 Maja; this alternative route is currently used by several lines, and will remain so until the construction work at the stop Śródmieście SKM is completed in 2018. In 1990, the 'southern bypass' was upgraded all the way to Akademia Muzyczna. Since then, the tram stops have only been accessible via pedestrian subways. In 1995, this route was further extended to Brama Żuławska, replacing an old route on Łąkowa and Długie Ogrody from 1896. A southern branch along Łąkowa to the former depot remained in operation until 2004.

With Poland having joined the E.U. in that year, a major network expansion programme, particularly in the west of the city, was launched. Trams reached the Chelm district (2.6 km) via a steep light-rail-style route in 2007. Since 11 May 2012, they have continued to the current terminus at Łostowice (3 km). Most recently, an extension with two branches (4 km) with considerable gradients was put into operation on 31 August 2015. It starts from the terminus in Siedlce, which has existed since 1887. No turning loops were built at the two termini, Migowo and Brętowo. The latter provides cross-platform interchange with PKM services to the airport. In the west of the city, more new lines are planned to serve various other neighbourhoods spread out over the hilly terrain.

The Gdańsk tram fleet has been renewed in recent years with some modern low-floor vehicles from PESA, but also with second-hand cars from Dortmund and Kassel rebuilt with a low-floor centre section. Compared to other Polish cities, only a few vehicles without a low-floor entry are still in service today.

For the municipal area of Gdańsk, which covers the entire tram network, ZTM offers 60-minute tickets for 3.80 (at night 4.80) PLN as well as 24-hour tickets for 13 PLN. To travel freely throughout the Tricity region, combined tickets issued by the regional transport authority MZKZG are sold at SKM stations (Bilet metropolitalny - including SKM, PKM and PolRegio trains, trams, buses and trolleybuses in Gdynia): 24 hours - 23 PLN, 72 hours - 46 PLN.

GORZÓW WIELKOPOLSKI

Gorzów Wielkopolski is located 145 km east of Berlin on the old Prussian Ostbahn. Known as 'Landsberg an der Warthe', the city was part of the Prussian province of Brandenburg until 1945. Today, Gorzów is the co-capital of the Lubusz Voivodeship along with Zielona Góra. By changing trains in Kostrzyn at the German-Polish border, Gorzów can be reached from Berlin in about 3 hours.

At the end of the 19th century, when the first tram line was built, Landsberg was a small town of just 35,000 inhabitants. The first route ran north from the railway station via the Old Town to the barracks in the area of the stop known today as Sąd [Courthouse]. - Additionally, a west-east line was opened from Frydrychowo (ca. Żelazna) to Chmieliniec, with the eastern terminus located on Warszawska some 500 m beyond the current bend on Podmiejska. The outer section was abandoned in 1967. In 1903, a short branch off the northern route to Słowiński Park was added, while the western route was extended to Plac Słoneczny in 1904, increasing the total length of the network to 6.5 km. In 1926, a route to the south bank of the Warta River was completed. It took advantage of the newly built Most Staromiejski [Old Town Bridge] before running for about 1.5 km through Zamoście along Grobla.

During World War II, the entire tram network was converted to trolleybus operation, but after 1945, now under Polish administration, the tram tracks were upgraded and tram operation resumed. By the early 1950s, the first new routes had already been opened: in 1952 along Podmiejska, Pomorska and Walczaka to Stilon (in 1955 further on to Szpital Psychiatryczny, then called Elektrownia), and in 1953 a short stretch north along Kazimierza Wielkiego to Chodkiewicza. With the routes to Chmieliniec and the south bank of the Warta River having disappeared in 1967, more new sections were added in the early 1970s: from Plac Słoneczny to the terminus at Wieprzycze railway station in 1972; a northern extension to the Piaski terminus in 1973, and the last 1000 m to Silwana in 1975, which completed the network as we know it today. The short branch to the railway station has not been used by scheduled trams since 2012.

The latest extensions in the northern part of the city were built to serve new housing estates. In recent decades, the population of the district of Górczyn has grown to some 40,000, and the areas between the two tram routes have also been built up. The city is therefore planning to expand the tram network in Górczyn, first with a line along Piłsudskiego, Górczyńska and Okulickiego (2021), and later with links between the different routes.

The modernisation scheme adopted in 2013 includes not only the upgrading of existing routes and the construction of new lines, but also the purchase of modern vehicles. Until 2019, most sections will be out of service for track renewal, with the westernmost section on Kostrzyńska being reduced to single-track operation. Meanwhile, 14 low-floor trams have been ordered from PESA which will eventually replace the second-hand cars taken over from Kassel.

In Gorzów, single-ride tickets currently cost 3 PLN, and day tickets are available for 13.80 PLN.

GRUDZIĄDZ

Like Bydgoszcz (some 60 km southwest) and Toruń (50 km south), Grudziądz is located in the Kuyavian-Pomeranian Voivodeship, about 100 km south of Gdańsk. By train, the city on the Vistula River can be reached from Toruń in just over an hour, but from Gdańsk or Bydgoszcz, a change of trains is usually required at Laskowice Pomorskie.

In 1896, when the city was more known by its German name 'Graudenz' as it belonged to the province of West Prussia, a standard-gauge horse tram line was launched from the railway station north via the Old Town in the direction of Tarpno, where a trade exhibition took place at the 'Tivoli' during the summer of that year. But just three years later, the line was electrified, rebuilt to metre gauge and extended by approximately 600 m to the present terminus. In 1911, the first section of the southern route along Toruńska and Chełmińska up to Bydgoska was put into operation, and two years later it was extended to Wiejska. After World War I, the city came under Polish administration, and by 1938, the southern route had reached the loop at Południowa.

In 1978, a 1.9 km single-track extension south to Mniszek was added, but due to unstable ground conditions it was shut down just a year later. The new housing estate of Rządź was first served by trams in 1996. Since 2011, the branch to the railway station has not been in regular service, and just a few journeys to and from the depot are listed in the timetable. In recent years several sections have been renewed, in particular the route through the Old Town and to Tarpno. Through the historic centre, lengthy previously single-track sections were rebuilt with interlaced tracks featuring a passing loop at Rynek Główny, while the entire section along Wybickiego and Legionów has been double-track throughout since August 2015. Like on Toruńska and the northern part of Chełmińska, the tracks on the Tarpno leg are still embedded in the roadway. On the southern route, however, a separate right-of-way is available from Chełmińska/Wiejska to the southern terminus at Rządź. A ride on the entire line 2 takes 24 minutes.

A single-journey ticket without transfer from tram to bus costs 2.60 PLN, a 2-hour ticket for bus + tram is available at 5 PLN, while a 24-hour ticket costs just 7 PLN.

In the late 1990s, some Duewag GT6 cars were taken over from Mannheim and Würzburg. Most of these were handed on to Łódź in 2010 and replaced with GT8 cars from Krefeld. At the beginning of 2015, a Swing tram from PESA was on demonstration in Grudziądz, but no modern low-floor cars have been ordered yet. In August 2017, however, the purchase of eight new trams was announced.

KATOWICE (Górnośląski Okręg Przemysłowy)

The Upper Silesian Industrial Region is similar in many ways to the German Ruhr area and the English industrial areas of South Yorkshire and the Black Country. The area is made up of numerous large and small municipalities and today lies in the centre of the Silesian Voivodeship. The largest city and capital of the Voivodeship, Katowice, is the undisputed centre of the region. While Katowice and Chorzów, for example, grew rapidly as a result of industrialisation, the history of Gliwice and Bytom goes back to the Middle Ages. This coal-mining district used to be a border region for many years: towards the end of the 19th century, the Brynica and Przemsza Rivers formed the border between the German Reich (with the Prussian province of Silesia) and "Congress Poland", which was under Russian rule; a short distance southeast of Mysłowice was the Austrian region of Galicia. In 1922, the eastern part of the Upper Silesian Industrial

Region with Katowice and Chorzów had to be ceded to the new Poland; just Bytom, Zabrze and Gliwice remained with Germany.

Located about 260 km southwest of Warsaw, Katowice is accessible from there by train in 2½ hours, while Wrocław (170 km) is a 2¼-hour train journey away. For a trip to Kraków, which is just 70 km further east, you also have to plan at least 2 hours by train.

The tramway era in the Upper Silesian Industrial Region began in 1894, when a steam tramway using 785 mm gauge was opened from Gliwice via Zabrze and Chebzie to Chorzów (Targowisko), and then north via Bytom to the pilgrimage town of Piekary Śląskie (approx. 34 km). A similar route was built in 1896 from Katowice (Rondo) to Siemianowice. But even in the coal-mining district, which was used to soot, this form of traction was not convincing in urban areas, and horses were thus harnessed for a short while before the routes were electrified in 1898/99. In 1899, the 'Oberschlesische Dampfstraßenbahn' faced competition from the 'Oberschlesische Kleinbahn', which built an initial route from Bytom and Chorzów via Świętochłowice and Katowice to Mysłowice in the east (similar to today's lines 7+14). The two companies, however, merged into the 'Schlesische Kleinbahn AG' in 1900. Subsequently, almost the entire network west of the Brynica River was built within just a few years (except for the north-south route in Zabrze, the northern route in Bytom and the southern route in Katowice). In 1906, the total route length was already 120 km. In 1909, the A.E.G. took over operation with the intention of regauging the network to 1435 mm and doubling most routes, a plan that was delayed due to the outbreak of World War I.

At around the same time, the city of Bytom started to build its own tram system in 1913, using standard-gauge tracks from the beginning. However, the Bytom network remained rather modest, and today only line 38 as well as the western section of line 6 along Wrocławska have survived, while the outer sections via Karb to Dąbrowa Miejska and via Miechowice to Wieszowa and Stolarzowice were abandoned in the 1970/80s. Line 38 is currently the only line without turning loops and it is still operated with ancient two-axle type N trams.

In 1922, the new border between Germany and the re-established Poland also led to the division of the tram network, although cross-border operation was maintained. The western network on German territory, which from 1929 was operated by 'Verkehrsbetriebe Oberschlesien' (VBO), comprised some 45.2 km, whereas the Polish eastern network, operated from 1928 by the Katowice-based 'Śląsko-Dąbrowskie Kolejowe Towarzystwo Eksploatacyjne', covered some 83 km.

While regauging had largely been completed on the western network by 1930, on the eastern network this process continued until 1940, and on certain routes even into the early 1950s. In as early as 1928, however, network expansion began from Szopienice to Sosnowiec and further on via Będzin to Czeladź as well as Dąbrowa Górnicza (in 1975/78 partly relocated on a new alignment). For this purpose, the company 'Tramwaje Elektryczne w Zagłębiu Dąbrowskim' was founded. In Sosnowiec, an east-west route from Miłowice (ca. Centrum Handlowe) along Narutowicza to Konstantynów was opened in 1934/35. At about the same time, a north-south route was built in the west through Zabrze from Mikulczyce to Skansen Guido. At the beginning of World War II in 1939, when the region was involuntarily reunited by the German occupation, the network length in the German part was 38.4 km (of which 9.5 km was single-track) plus the Bytom network of 18.3 km (16.1 km single-track), while 74.2 km (55.9 km single-track) is quoted for the eastern part in Poland.

After World War II, the entire region became a part of Poland, and all the tram companies were merged into the company 'Koleje Elektryczne Zagłębia Śląsko-Dąbrowskiego', which in 1951 became the 'Wojewódzkie Przedsiębiorstwo Komunikacyjne w Katowicach' (WPK Katowice). Having been opened in 1912 as far as Park Kościuszki (ca. Szpital), the southern route in Katowice reached its present terminus at Brynów in 1947, and by 1949, the total network length had increased to 175 km.

Network expansion was resumed in the early 1950s, for example in 1951 in Sosnowiec with an extension to the terminus Miłowice, and in 1952 to Klimontów in the east (and by 1962 further on to Kazimierz Górniczy); in 1952 in the south of Zabrze to Makoszowy; and in 1954 a link between Dańdówka and Mysłowice. In addition, there were some routes that no longer exist, such as from Będzin northwest to Wojkowice (1951-2006, 9.8 km) or from Bytom east to Dąbrówka Wielka (1952-2006, 5 km). The most important extensions in the following decades were the routes from Bytom to Stroszek (1967); from Dąbrowa Górnicza (Reden) to Huta Katowice (1976); and finally, in 1980/82, the light-rail-style line to Zagórze in Sosnowiec. Since then, there have been no new routes in the Upper Silesian Industrial Region, while besides the above-mentioned closures, the direct link between Chorzów and Wetnowiec (Plac Alfreda) (4.9 km) as well as the last line to Gliwice (7.7 km) were abandoned in 2009; the trams now turn around at the Gliwice depot. More recently, the connection between Bobrek (Pod Brzozami) and Ruda Południowa via Ruda Śląska railway station (3.8 km) was permanently closed in February 2015. Thus since 2005, some 31 km of mostly single-track routes has disappeared from the tram map.

Since 2003, the tram system has been operated by 'Tramwaje Śląskie S.A.'. Despite extensive upgrading measures carried out in recent years, roughly one third of the overall network continues to be single-track and tracks are often still in a rather bad condition. Most lately, the important section between Szopienice and Sosnowiec was doubled in 2014. As far as route alignments are concerned, the Upper Silesian tram network boasts everything possible for tramways, from on-street running through narrow lanes such as in Chorzów, to single-track reservations alongside interurban roads, and to private rights-of-way, e.g. in northern Bytom.

Even though the region is divided into countless municipalities, for public transport purposes it is generally seen as a unitary territory which is administered by 'Komunikacyjny Związek Komunalny Górnośląskiego Okręgu Przemysłowego' (KZK GOP). The time-based fares common in Poland are supplemented here by a city-based fare:

- 1 municipality or 15 minutes - 3.20 PLN
- 2 municipalities or 30 minutes - 3.80 PLN
- 3 or more municipalities or 60 minutes - 4.80 PLN

When an electronic stored-value card (ŚKUP) is used, fares are calculated according to the distance travelled. A ŚKUP card is also required for visitors who want to purchase a 24-hour or 48-hour pass (17/27 PLN) or a 5-day or 7-day pass (43/49 PLN) for the entire network. The ŚKUP card is only available at KZK GOP customer centres (in Katowice e.g. on Poczтовая near Rynek) and costs 5 PLN (deposit)!

Suburban trains operated by 'Koleje Śląskie' [Silesian Railways - KŚ*] or other companies are not yet integrated into the KZK GOP network. Although KS trains are labelled as S1, S8, etc. on network maps and in timetables, the service provided cannot be classified as S-Bahn. Only a few routes have two trains per hour throughout the day, while e.g. on line S8 between Bytom and Katowice there is, at most, one train per hour, though with a gap of three hours between trains in the late morning period.

KRAKÓW

Located about 250 km south of Warsaw (2½ hours by train), Krakow (or Cracow) is Poland's second-largest city and the capital of the province of Lesser Poland. A train journey to Katowice, which is only 70 km away, also takes more than two hours.

While large parts of Poland were under either German or Russian rule when the first trams started to operate, Krakow belonged to the Kingdom of Galicia and Lodomeria until 1918, and was thus part of the Austro-Hungarian Habsburg Monarchy. Urban rail transport in Krakow began in 1882 with a horse tram line from the railway station through the Old Town south to the district of Kazimierz. It was not until 1896 that a second line opened, running from Rynek Główny [Market Square] along Karmelicka to Park Krakowski (ca. Pl. Inwalidów). The original network used a track gauge of 900 mm and was electrified in 1901. In 1902, several short sections were added, e.g. along Długa as far as Nowy Kleparz and to Park Jordana in the west. The last additions to the narrow-gauge network were an approximately 1 km northeastern extension in 1928, as well as an extension from Park Jordana to Cichy Kącik in 1937.

In 1913, the first standard-gauge line was opened from Salwator via Dominikańska and the streets of Westerplatte and Lubicz to the area of today's Rondo Mogiłskie. This was complemented by a southern branch along Starowiślna to the former depot on Św. Wawrzyńca. In 1917, this branch reached Limanowskiego on the south bank of the Vistula River. Concurrently, some sections of the narrow-gauge network were regauged, although the 900-mm tracks through the Old Town remained in service until 1953.

Other than a short extension to today's Rondo Matecznego in 1925, the next new sections were only opened in the mid-1930s: to Cmentarz Rakowicki (1934), and to Bronowice, Łagiewniki and Cmentarz Podgórski (1938).

After World War II, network expansion was resumed in as early as 1946 with a connection via Most Piłsudskiego. This was followed in 1948 by a route along Grzegórzecka (the eastern section was moved to Al. Pokoju in 1966); in 1949 by an extension along Mogilska to a point just before the freight by-pass line; and in 1950 by a branch to Borek Fałęcki in the south of the city.

In the 1950s, the planned socialist town of Nowa Huta was built immediately east of old Krakow to house steel workers. Accordingly, in 1952, a tram route was opened along the present Al. Jana Pawła II to Plac Centralny in Nowa Huta, from where three branches radiated: one to the steelworks at Kombinat, from where trams continued to Walcownia (1952/55) and Koksochemia (1954, moved further south in 1967); a second along Al. Andersa to Rondo Kocmyrzwoskie (1954); and a third east to Klasztorna (1958). In the city centre, the connection between Rondo Mogiłskie and Rondo Grzegórzeckie was completed in 1956.

After the southern route had been extended from Cmentarz Podgórski along Wielicka to Malborska (ca. Kabel) in 1960 and to the Prokocim loop in 1965, the Nowa Huta subnetwork was connected to the old network via a second route along Al. Pokoju (1966/68) and expanded with several new routes: to Rondo Hipokratesa (1965); from Kombinat to Wzgórze Krzesławickie (1965/68); along Bieńczycka and Kocmyrzwoska (1969); and from Klasztorna to Kopiec Wandy (1971). The northern termini in Nowa Huta were reached in 1974 (Mistrzejowice) and 1976 (Os. Piastów), respectively. In the 1970s, however, a significant connection was also created in the west of the city via Most Grunwaldzki (1975), and further on along the streets of Monte Cassino and Kapelanka to the Podgórze depot in Łagiewniki (1978). Also in 1975, trams started running northwest to the current terminus at Bronowice Mate, and in 1978, south to Nowy Bieżanów.

After an extension in the north from Dworzec Towarowy [Goods Station] to Krowdrza Górka in 1984, a longer break followed until the branch to the new housing estate of Kurdwanów was put into operation in 2000. In the new millennium, the inner city route along Pawia was opened in 2006/07, which was supplemented on 11 December 2008 by a 1.4 km tunnel section with two underground stations, one of which lies directly below the main railway station. In the last ten years, the network has been extended by approximately 9 km: Rondo Grzegórzeckie – Mały Płaszów (2010, 4.2 km); the branch Lipińskiego – Czerwone Maki (2011/12; 3.3 km); the link Wielicka – Lipska via Płaszów railway station (2015, 1.4 km, including a 600 m cable-stayed bridge over the railway tracks). Although often referred to as a 'rapid tramway', this is by no means a grade-separated line, even though a reserved right-of-way, albeit with numerous level crossings, is available, but this is also true for new routes built in earlier decades. The construction of an extension in the north of the city from Krowdrza Górka to Górka Narodowa (5 km), which is set to open in 2020, is about to start shortly.

Ever since the 1960s, there have been proposals for the construction of a metro or premetro in Krakow. In 2014, such a project was approved by the local population in a referendum. Studies are currently underway to build an east-west route from Bronowice to Nowa Huta via the city centre and the central railway station.

In the city of Krakow, which includes the entire tram network, a time-based fare system is used:

20/40/60/90 minutes for 2.80/3.80/5.00/6.00 PLN.

For visitors, 24/48/72-hour tickets are available at 15/24/36 PLN. For 4 days or more, a weekly pass for 48 PLN may be worthwhile.

A suburban rail service is operated by 'Koleje Małopolskie'* as SKA (Szybka Kolej Aglomeracyjna) but the trains, labelled S1, S2 and S3 (or SKA1 etc.), are only partially integrated into the urban tram and bus fare system (and not with the aforementioned fares!). While line S1 between Lotnisko [Airport] and Wieliczka runs approximately every 30 minutes throughout the day, the service on line S2 to Sędziszów and S3 to Tarnów is somewhat irregular with about one train per hour. By 2020, the railway route through the city centre will have been quadrupled, featuring a new station at Kraków Grzegórzki.

In as early as 1989, Krakow received the first second-hand tram vehicles (T4+B4 und GT6+B4) from its German twin city Nuremberg. Even today, the tram fleet is extremely diverse. In addition to numerous typical Konstal cars, there is a wide variety of modern low-floor cars as well as second-hand vehicles from Germany and Austria. Many of these have been modernised and equipped with a low-floor centre section.

ŁÓDŹ

Poland's third largest city, Łódź [pronounced 'Woodge'], is located in the centre of the country, about 120 km southwest of Warsaw (1½ hours by train). Łódź is the capital of the Voivodeship of the same name. While most Polish cities boast a well-restored medieval Old Town, Łódź only grew rapidly from village to city in the second half of the 19th century (1872 – 100,000 inh., 1915 – 600,000 inh.). However, since 1988, after a peak of 850,000, the population has declined.

After a short-lived attempt with horse trams in the middle of the 1880s, the electric tramway era began in Łódź in 1898 when the city,

like Warsaw and Częstochowa, was part of "Congress Poland" and thus part of the Russian Tsar's empire. Starting from the old depot on Tramwajowa, the first routes were built along Narutowicza, Nowomiejska/Piotrkowska and Cmentarna/Legionów/Pomorska. This basic network was rapidly expanded in the following years, e.g. with tracks along today's Al. Piłsudskiego (1900), along Gdańska as well as Kilińskiego and Przybyszewskiego to Plac Reymonta (1904), or along Żeromskiego (1908).

At the same time, several *interurban* lines were built around Łódź, first in 1901 to Zgierz in the north and Pabianice in the south (initially to Duży Skręt, then in 1905 to Zamkowa/Narutowicza; and in 1910, a short branch to Ruda Pabianicka). In 1910, the interurban routes to Konstancin Łódzki and Aleksandrów Łódzki were put into operation, but the latter was abandoned beyond the present Choczoła terminus in 1991.

With Poland gaining its independence after World War I, the expansion of the urban tram network continued. Besides some shorter extensions of existing routes, the northeastern branch along Wojska Polskiego up to Palki as well as the route along Rzgowska to Chojny railway station in the south were opened in 1924. With the first section along Dąbrowskiego in 1928 came a second depot, which remained in use until 2011. In 1934, the northern route along Łagiewnicka to Rondo Powstańców 1863 r. was added.

In the 1920s, the interurban network was also significantly expanded: in 1922 from Zgierz to Ozorków (until 1926 using steam traction); in 1924 to Pabianice railway station; in 1927 from Ruda Pabianicka via Rzgów to Tuszyń in the southeast (gradually abandoned in 1978-1996); in 1929 from Konstancin to Klasztor, and finally in 1931 to Lutomiersk. Since February 2017, the Konstancin – Lutomiersk section has been operated with buses, and its future is uncertain. Until 2012, the interurban lines were operated by independent companies in which the City of Łódź was involved. However, from the beginning they had shared the urban tramway's tracks. Today they are fully integrated into the MPK urban network, and lines 45 and 46 run through to termini in the east of the city.

The expansion of the tram network continued right after World War II ended: east to Stoki (1946/48); northeast to Doty (1947); southeast to Dąbrowa as well as northeast along Warszawska to Wycieczkowa (1948). In addition, in 1949 trams also started travelling on a western branch from Unii Lubelskiej to Cyganka as well as on a northern branch along Łagiewnicka, but these were closed down in 1992 and 1998, respectively.

In 1950, today's most important north-south axis along the streets Zachodnia/Kościuszki was completed, before trams were withdrawn from the northern section of the parallel main street Piotrkowska in 1960. Apart from that, the most important addition in the 1950s was an extension to the west side of Kaliska railway station along Bratysławska to Retkińska. In 1959-1965, the route along Politechniki/Paderewskiego was opened in stages, while the southern section along Kilińskiego was also completed. Between 1967 and 1970, another north-south axis was developed along Śmigłego-Rydza/Niższa, and from 1968 to 1976, a western tangential line was finished along Aleja Włókniarzy. The southern terminus at Kurczaki was reached in 1975. In 1978, the grade-separated route on Mickiewicza between Kaliska railway station and the city centre as well as a western extension to the terminus at Retkinia (formerly Wyszyńskiego) followed. Also in 1978, trams first crossed the southeastern railway by-pass on a new route along Przybyszewskiego, which by 1980 had been extended to Rondo Inwalidów. This route reached Augustów in 1990, before a link between Widzew Stadium and Rondo Inwalidów was established in 1992. In the meantime, the northern interurban route had been extended by 1.7 km in Ozorków in 1986. After that, no new sections were opened for many years, while, as mentioned above, the 1990s saw the closure of several interurban and urban sections and all efforts were concentrated on the modernisation of the existing network. Eventually on 31 October 2015, the network was again enlarged with a new route from Augustów to Olechów (4.5 km) in the southeast of the city. At the same time, the main east-west axis was upgraded, including a four-track transfer station at Piotrkowska/Centrum with a showy roof structure.

In and around Łódź, time-based fares apply on the MPK Łódź network: 20/40/60 minutes for 2.80/3.60/4.40 PLN. For day tickets (since 2017 only valid until midnight!), there are two options: the city of Łódź (1 zone - 11 PLN) or the city + the surrounding region (2 zones - 13.20 PLN). Discounted tickets are available at weekends (Fri 18.00 – Mon 03.00 - 10/12 PLN)!

The regional rail company 'Łódzka Kolej Aglomeracyjna' (ŁKA*) is implementing an S-Bahn system. Within the city of Łódź, MPK tickets are also valid on ŁKA trains. Due to its late development into a major city, Łódź has always been located somewhat off the main railway routes. This historic problem is to be solved by the construction of an inner-city railway tunnel and, in the long term, with a new high-speed line via Kalisz to Poznań and Wrocław (Polish 'Y' project). In the first step, the city's main railway station Łódź-Fabryczna was put underground in December 2016. On the square in front of the station, a four-track tram stop was built. This is served by line 4 via a new route from the old tram depot in Tramwajowa and by lines 9, 12 and 13 via Plac Dąbrowskiego, whereas lines 1 and 5 stop nearby at 'mBank'.

In line with the network's size, the Łódź tram fleet is rather diverse. Konstal cars, in a more or less modernised condition, still represent the largest group, although a significant number of modern low-floor trams is also available. As a temporary solution, numerous second-hand vehicles were taken over from various German cities, such as Bielefeld, Mannheim/Ludwigshafen (RNV) and Bochum; the delivery of more Duewag MGT6D cars is expected from Bochum in the future.

OLSZTYN

Until 1945, the German city of Allenstein was located in the south of the province of East Prussia; today Olsztyn is the capital of Poland's Warmian-Masurian Voivodeship. Elbląg, situated some 85 km northwest, can be reached by train in about 1½ hours, while the capital Warsaw, 180 km further south, requires at least a 2½-hour train journey.

Olsztyn is the only city in Poland which has already experienced two generations of tram systems, although the original network operated in the German era has nothing to do with the modern tramway opened in 2015. However, even the first-generation system was built rather late. Starting in 1907, the trams linked the railway station with the city centre, but unlike today, on a more direct route along Dąbrowszczaków. In addition, there was a northern route to Jakubowo in the city forest, and from 1909, a branch to Olsztyn Zachodni railway station [formerly Allenstein Vorstadt]. The small metre-gauge network was extended west to Jezioro Długie in 1930, but tram operation was eventually discontinued in 1965. From 1939 to 1971, trolleybuses also used to run in Olsztyn.

With the new tram system having opened in December 2015, Olsztyn is to date the only city in Eastern Central Europe to have launched a modern tramway. Its main purpose is to connect the city centre with the extensive residential districts in the south (Jaroty).

The main route from the railway station to Kanta was built double-track throughout, while the branch to the Old Town ends with a single track (doubling planned), and the longer branch to the university is mostly single-track. The route alignment and equipment largely follows the standard known from modern French tramways, with track reservation, partially covered stops, next-tram indicators and ticket machines. Just along Żołnierska and Kościuszki, the tracks are separated from individual traffic merely by road markers, and at the stops Filharmonia and Kętrzyńskiego, raised road lanes serve as platforms. Obiegowa street, which the trams follow on its western side between the stops Szpital Wojewódzki and Pstrowskiego/Sikorskiego, was only laid out in conjunction with the tramway construction. All the termini were built with stub tracks instead of the turning loops otherwise common in Poland. The decision to use bidirectional vehicles allowed for the construction of some island platforms and single-sided platforms on single-track sections. The terminus Kanta was generously laid out with four stub tracks. The new system was brought into service in three stages:

- 19 Dec 2015: Wysoka Brama – Kanta (Line 1)
- 27 Dec 2015: Skwer Wakara – Dworzec Główny (Line 2)
- 31 Dec 2015: Galeria Warmińska – Uniwersytet/
Prawocheńskiego (Line 3).

In the coming years, the length of the network will almost be doubled with the construction of a second north-south axis to the east of the existing one.

For the city of Olsztyn, short-period tickets are available: 30/45/90 minutes for 3.00/3.60/4.80 PLN. A 24-hour ticket costs 10 PLN, and a 72-hour pass 20 PLN.

POZNAŃ

Poznań is the capital of the Voivodeship of Greater Poland and is located about halfway between Berlin and Warsaw; from Berlin it can thus be reached by train four times a day in just under 3 hours. A train journey to Wrocław takes 2¼ hours, to Warsaw 2½ and to Gdańsk 3½ hours.

For many centuries, Poznań alternated between Polish and German/Prussian administration. When the first horse trams appeared on the streets of Poznań, the city was the capital of the Prussian province of Posen in the German Empire. In 1880, an initial west-east line started operating from the main railway station via Święty Marcin and Rynek [Market Square] to Ostrów Tumski [Cathedral Island] on the east bank of the Warta River. While a second route, analogous to today's tram route through the northern part of the city centre, only lasted until 1884, shortly before the start of electrification, a western branch opened from the former depot on Gajowa via Rynek Jeżycki to Dąbrowskiego/Polna, as did a southern branch along Półwiejska to Brama Wildecka. With all these routes having been electrified in 1898, the network was expanded with a line to the west of the railway station following Głogowska towards Górczyn, as well as a southern extension along Górna Wilda to approx. Kosińskiego in the district of Wilda. Before World War I, some significant links were still realised:

- in 1902/10 along Grunwaldzka to Wojskowa
- in 1906 along 28 Czerwca 1956 r. to Dębiec (ca. HCP)
- in 1913 along Aleja Wielkopolska to Sołacz
- A route opened in 1900 to the slaughterhouse and Garbary railway station, however, was abandoned in 1977.

In 1920, the mostly Polish-speaking region around Poznań (including the city) came under Polish administration. In the interwar period, when the city's population increased rapidly to 275,000, the routes to Dębiec (1925/37) and Górczyn (1928) were extended, while a branch to Gołecin (abandoned in 1974) was added to the Sołacz route in 1925, when a northern extension to Winiary (Bonin) also opened. In 1926, the trams reached Ogrody and in 1931/36 Grunwald (Drzewieckiego), after a short branch along Reymonta off Grunwaldzka had been put into operation in 1929.

After the end of World War II and thus the end of German occupation, the expansion of the tram network was immediately resumed. In 1949/50, a 2.8 km new route to today's terminus Junikowo was completed, which was followed in 1952-57 by an west-east axis along Matyi and Królowej Jadwigi which from Rondo Rataje continued south along Zamenhofska to Stomil. In 1957/60, a northern route was opened along Pułaskiego to Kmieca. Since 1959, the line on Jana Pawła II, which is part of an eastern tangential route, as well as the line along Warszawska to approx. Pusta have also been in service. Fewer line openings were celebrated in the 1960s: the currently disused stretch on Towarowa (1962); from Kmieca to Wilczak (1964); and from Stomil to Starołęka (1967).

At the beginning of the 1970s, the network was again expanded considerably with the construction of a semicircular line through the southern parts of the city. A new line between Plac Wielkopolski and Rondo Śróodka was also built in 1974/77, with no trams having crossed Ostrów Tumski since the end of the war. Also in 1974, the outer section to Miłostowo as well as the branch along Murawa to the terminus at Połabska were completed. In 1979, an off-road section was built for the first time, namely between Kórnicka and Osiedle Lecha in the east of the city. At the very beginning of the 1980s, a similarly aligned extension was opened from Winiary to the terminus at Piątkowska. In 1983/85, the southeastern section of the outer semicircular line between Rondo Starołęka and Osiedle Lecha through the large housing estate of Żegrze was completed.

Already in the 1970s, proposals for rapid tram lines had been put forward to connect new districts, but despite a construction start in 1982, the implementation of the northern route was delayed until 1 February 1997, when the 'Poznański Szybki Tramwaj' (PST) was finally launched. The route was initially connected to the existing network at Most Teatralny, from where it runs 5.7 km north on a grade-separated alignment to Osiedle Sobieskiego. The five intermediate stations are located below crossing roads, and have side platforms which are accessible via stairs and ramps. A fence was erected between the tracks in the station area to prevent people from crossing them. The PST route is not signalled, however, but is operated by line-of-sight. In 2011, construction work on a southern extension of the rapid tram route started taking advantage of free space in the existing railway cutting. Since 1 September 2013, the trams have run to Dworzec Zachodni [Western Station] on the west side of the main railway station. At the southern end, a connection to the old tram route on Głogowska was created, so that the trams can continue in different directions, albeit with some detours. The rapid trams first started calling at the new central interchange point at Rondo Kaponiera on 22 October 2016, once the crossroads on the surface had also been

rearranged. The entire PST route is now 7.3 km long.

In the meantime, on 14 August 2007, a third link (1.8 km) from the city centre to the eastern districts was brought into service, namely along Podgórna and over the new Most Św. Rocha to link up directly with the tram line towards Os. Lecha, which dates from 1970. On 11 August 2012, this axis was finally extended by 2.2 km to Franowo, where a new depot had been built. An approximately 900 m section of this extension, including the triangular junction at Os. Lecha and two stations, was constructed underground.

40-minute tickets with transfer cost 4.60 PLN. For visitors, 24/48/72-hour tickets for 13.60/21/27 PLN are recommended; these are also valid in the neighbouring municipalities of zones B+C, although the entire tram network actually lies within the city of Poznań (zone A).

In addition to the typical Konstal cars, Poznań also boasts a large number of vehicles rebuilt by Modertrans as well as many second-hand cars from Germany, some of which run in their old liveries (up until a few years ago, cars from Amsterdam too). The fleet also includes various types of modern low-floor vehicles from Siemens, Solaris and Modertrans.

SZCZECIN

The old Hanseatic city of Szczecin lies a short distance from where the Odra River empties into the Szczecin Lagoon. Ships, however, have to travel 65 km to reach the Baltic Sea at Świnoujście. As the capital of Pomerania, Stettin used to be part of Germany until 1945, when the international border was fixed some 12 km west of the city centre. Today, Szczecin is the capital of Poland's West Pomeranian Voivodeship. Szczecin is located about 125 km northeast of Berlin, and the cities are connected directly by train three times a day (2 hours). The journey takes slightly longer when a change of trains is required at Angermünde.

Urban rail transport in Szczecin started in 1879 with the first horse tram lines, which led from the city centre northwest along Aleja Wojska Polskiego to Łękno, north along Aleja Wyzwolenia towards Niebuszewo, northeast to Gołęcino, and south along Potulicka. In 1886, horse trams also started operating along the Odra River and past the railway station to Pomorzany in the south. All these routes were electrified between 1897 and 1900. At the same time, in 1897, a new route was opened along Niemierzyńska to the area of today's Museum of Technology and Transport, which is housed in a former tram depot.

At the beginning of the 20th century, some existing routes were extended, first to Cmentarz Centralny (1904), and then on the former Hansa Bridge [today Most Długi] across the Odra to the port area (1905). This was followed by an extension northwest to Las Arkoński (1906-1912). Before World War I, some new routes were still built in the inner city area. In the late 1920s, trams finally reached the former airport in the southeast, which lay north of today's stop Hangarowa (1927), Tor Kolarski in the northwest, Ku Słońcu in the west (1927) and Goctław in the northeast (1928/29). New branches were opened along Mickiewicza to approximately Wernyhory in Pogodno (1927-29) and along Aleja Piastów to Szpitalna (1928). Before World War II, the network had thus almost reached its current size.

Even though some sections were not rebuilt due to war damage, the three western branches were all extended to their current termini in as early as the mid-1950s, now under Polish administration. In 1961, the two southern branches were joined at Pomorzany, but in 1964, tram service to the east bank of the Odra River ceased, only to be resumed in 1973 up to Basen Górniczy. In that same year, the route along Aleja Bohaterów Warszawy in the western part of the inner city was opened, while some historic routes in the centre proper were closed, namely along the southern section of Aleja Wojska Polskiego as well as along Obrońców Stalingradu. Subsequently, the network remained largely unchanged for several decades, until eventually an **express tram** (Szczeciński Szybki Tramwaj - SST) modelled after the one in Poznań became a reality in the new millennium to provide a fast link between the city centre and the large housing estates in the southeast of the city. The first 3.9 km section of the completely grade-separated route from Basen Górniczy to the loop at Turkusowa on the western edge of the Stoneczne district was put into operation on 29 August 2015. A second 2.6 km section was to continue alongside a freight line to Kijewo, but this would only have served the district rather peripherally. An alternative route along Lubinowa is therefore being investigated, while a southern branch to serve the Bukowe district could also be added. Despite the new fast tram line, many express buses (lines A, B, D, E, G) continue to run from the southeastern suburbs directly to the city centre.

In addition to the network expansion in the southeast, a short extension from Gumieńce to the STER shopping centre in Mierzyn as well as a short link in the northwest is planned.

There is a 12-minute headway on most tram lines, resulting in a tram at least every 6 minutes during daytime hours on most sections. Line 2 is always operated with low-floor trams, but lines 3, 7, 8 and 10 only partially. Except for the loop in Gumieńce, the entire network is double-track, and the tracks are often aligned on a dedicated right-of-way. Despite considerable upgrading efforts in recent years, some track sections are in rather bad condition, so that lengthy disruptions due to upgrading work may be expected in the coming years.

Within the 'Zarząd Dróg i Transportu Miejskiego w Szczecinie' system, the tram is fully integrated with the city's bus service. The easiest way to explore the tram network is to use a 'bilet dobowy' for 24 hours for just 12 PLN, otherwise time-based fares apply (15, 30, 60 or 120 minutes - from 2 to 5 PLN).

Already before World War II, the suburban line to Police and further on to Trzebież was an important part of the local transport network. In the early 1980s, the entire route was electrified and a regular S-Bahn service was provided. With passenger numbers falling after the political changes in 1989/90, the train service was reduced accordingly until passenger service ceased completely in 2002. An S-Bahn-style network (SKM*)

around Szczecin is currently under preparation. This would also include the routes to Gryfino, Stargard and Goleniów (with a new route to the airport), while on the now disused semicircular line, additional stations are to be added where the line intersects with tram lines (Ku Słońcu, Arkońska), as well as at Łasztownia, a redevelopment area on the islands just east of the main railway station.

TORUŃ

Like Bydgoszcz, located about 40 km to the west, Toruń lies in the Kuyavian-Pomeranian Voivodeship, with the two cities sharing the role of the province's capital. Several direct trains run daily to Warsaw, some 200 km southeast, with the journey taking approx. 2½ hours.

Besides long-distance trains, regional trains operate every hour between Toruń and Bydgoszcz (47 minutes).

Over the centuries, like Bydgoszcz and Grudziądz, Toruń (German 'Thorn') repeatedly alternated between Polish and Prussian administration. At the beginning of the tramway era in the late 19th century and until 1920, it belonged to the province of West Prussia in the German Empire. In 1891, the first horse tramway started operating between the depot still in use today and Toruń Miasto railway station. The route, which used to run through the Old Town, was electrified in 1899. Still before the end of the century, a new route was added along Uniwersytecka and Grudziądzka to Kościuszki/Świętopetka in Mokre (this route was relocated to the wider streets Przy Kaszowniku and Władysława Warneńczyka in 1979). In 1917, the Mokre route was extended to what is now Toruń Wschodni railway station.

In 1907, the large loop near the depot in the western district of Bydgoskie Przedmieście was built, but until 1962, the westbound track used to lie on Mickiewicza. Also in 1907, a northern route was opened along Szosa Chełmińska. By 1958, it had been extended north to Wrzosey, but it was eventually shut down in 1991.

In 1920, Toruń was incorporated into Poland as a result of the Treaty of Versailles. In the interwar period, a line over the new Vistula bridge was built to serve the main railway station on the south bank of the river. A year later, an eastern extension from Toruń Miasto railway station to the district of Jakubskie Przedmieście followed, which terminated at the slaughterhouse at Targowa. However, traffic across the Vistula River ended soon after the Germans returned in 1939, as the bridge was destroyed at the outbreak of World War II; the tram service was not resumed until 1950, and the branch was eventually abandoned in 1984 (a track triangle still remains at Plac Rapackiego).

Before new routes were opened in the 1970s and 1980s, tramways had disappeared from the Old Town in 1970, and they have since by-passed it on the northern side. In 1971, the western route was extended to Motoarena (formerly Merinotex). In 1974, the northeastern branch to the Elana factory followed, but it was initially connected to the route on Traugutta/Lubicka via a link along Wschodnia (abandoned in 2011) until the connection from Dworzec Wschodni was finished in 1980. From 1981 to 1986, the route to the terminus at Olimpijska was put into operation in stages, serving several of that era's typical large housing estates. In 1986, a second east-west axis was created for the tram along Kraszewskiego/Odrodzenia, the main east-west road. After that, the network remained largely unchanged until the closure of the northern route through Chełmińskie Przedmieście in 1991. Eventually, on 24 June 2014, a 2 km branch to the university in the district of Bielany was opened. On the same day, a short new route along Aleja Solidarności in the city centre replaced the parallel route on Uniwersytecka, although the latter remained in place for non-revenue service. In October 2015, a new transfer station was completed at Dworzec Miasto, with a direct access from the tram stop to the railway station.

A 5 km route is currently being planned to serve the future JAR estate in the north of the city, which is being developed on the site of a former Soviet military base. The first 1.8 km section along Szosa Chełmińska corresponds to the route to Wrzosey abandoned in 1991. When the turning loop at Motoarena was rebuilt in recent years, provisions were made for a possible western extension. In the west of the city, a new depot is also to be built, since the one dating from the horse tram days no longer provides the space required for all the vehicles, which is why fenced-off stabling areas have been established at the Motoarena and Olimpijska termini.

In Toruń, single trips without transfer cost 2.80 PLN, while time-based fares allowing unlimited rides are 2.80/4.00/5.00 PLN for 30/60/90 minutes, respectively. Since September 2016, day tickets for 11.20 PLN have also been valid for 24 hours in Toruń!

In addition to the classic, partly modernised Konstal cars, Toruń also boasts several low-floor vehicles from PESA, in three different versions: as three- and five-section single-ended trams, but also as five-section double-ended trams.

WROCLAW

Until the end of World War II, Breslau was the capital of the Prussian province of Lower Silesia. With some 630,000 inhabitants, Breslau was one of the ten largest cities in the German Reich in 1939. Today, with a similar population, Wrocław is the fourth largest city in Poland after Warsaw, Krakow and Łódź, and is the capital of the Voivodeship of Lower Silesia. The city is located about 300 km southeast of Berlin and 230 km east of Dresden. A train journey from Berlin to Wrocław takes 5½ hours with a change of trains at Poznań, while direct trains run from Dresden via Görlitz to Wrocław in four hours. From Wrocław to Warsaw, the fastest trains take some 3½ hours via Częstochowa, while Katowice, located about 170 km southeast, is a 2½-hour train journey away.

Even at the beginning of the tramway era, when Upper Silesia and Lower Silesia were still a single province in the Kingdom of Prussia, Breslau was a comparatively populous city (1885 - 300,000, 1897 - 400,000 inh.), while Poznań and even Krakow had just reached the 100,000 mark. Starting in 1877, an extensive horse tram network was therefore developed, with routes running from the city centre east over Most Pokoju to the Zoo; via Most Uniwersytecki to Nadodrze railway station; west along Legnicka to the slaughterhouse (ca. Małopanewska); south along Świdnicka and Powstańców Śląskich to Rondo; and southeast along Traugutta to Na Niskich Łąkach. By 1884, among other connections such as a link from the Old Town to the main railway station, the BSEG ('Breslauer Straßen-Eisenbahn-Gesellschaft') had also built a circular route ('Gürtelbahn'). Most of the horse tram routes were electrified in 1901, but the one on Parkowa in the east of the city continued to be operated with horse power until 1906.

In competition with the BSEG, the ESB ('Elektrische Straßenbahn Breslau'), in which the A.E.G. was involved, launched its first electric tramway in 1893 on a route from Cmentarz [Cemetery] on Grabiszyńska via the Old Town and the Cathedral District to Plac Bema, then east along Sienkiewicza and Grunwaldzka to Park Szczytnicki (ca. Kochanowskiego). The initial ESB network was complemented by a route heading east from Plac Legionów via Kościuszki (closed in 1935) and Pułaskiego to Plac Wróblewskiego, from where a route, which was not rebuilt after 1945, used to continue to the district of Rakowiec.

In 1898, the ESB opened a northern route along Poniatowskiego and Jedności Narodowej up to the Odra bridge as well as a southern route along Kościuszki and Krakowska, before the City proper appeared as the third tram operator in 1902 ('Städtische Straßenbahn - Breslau' - SSB). The SSB's first routes started at Dworzec Nadodrze and headed south via Most Sikorskiego, then along the city moat on the western side of the Old Town and Zielińskiego to Plac Powstańców Śląskich (Rondo), with a branch via Victoriastraße, which no longer exists, to Ślężna; on some sections, SSB trams used BSEG routes which had been electrified a few years earlier. At the same time, the BSEG extended its southern route to Krzyki and added a route along Borowska, Gliniana and Hubska to the former Strehlener Tor (ca. Kamienna). In the first decade of the 20th century, a long route to Osobowice was opened in the north, with approximately 1 km

equipped with 3-rail tracks shared with the narrow-gauge railway (750 mm) to Trzebnica. The early 1900s also saw a route along Sienkiewicza as well as via the new Most Grunwaldzki, before all the BSEG routes were finally taken over by the City in 1911. In the same year, the SSB opened a tangential route from Dworzec Nadodrże to Plac Grunwaldzki via Nowowiejska and Piastowska.

By 1924, the three ESB lines had also been fully integrated into the municipal tram system. Prior to that, only short extensions had been added, e.g. in 1913 from the old terminus at Zoo to the depot in Dąbie (Tramwajowa) in conjunction with the centenary which celebrated the liberation from Napoleon, which gave Wrocław the impressive 'Jahrhunderthalle' (Hala Stulecia). As a result of the merger, the routes in the city centre were bundled, and the following routes had opened by 1940: along Lotnicza to Kuźniki (ca. Metalowców) (1926); along Mickiewicza to Sępolno (1926/28); from Plac Grunwaldzki via Aleja L. Różyckiego to Stadion Olimpijski and Sępolno (1926-36); from the Dąbie depot southeast on Olszewskiego to Biskupin (ca. Spółdzielcza) (1930); from Dworzec Nadodrże north on Trzebnicka to ca. Broniewskiego (1929/30); to Tarnogaj (1930); on Mosty Warszawskie to Kromera (1930) plus a shuttle line to Kowale (1939); along Hallera (1937); and on Słężna up to Aleja Dębowa (ca. Jaworowa) (1938/40). By the beginning of World War II, the Wrocław tram system had thus reached a total length of 80 km.

In the course of the reconstruction of the city, which was badly damaged towards the end of the war, the new Polish city administration gave up some sections, but immediately started constructing several new extensions: about 500 m to the terminus at Biskupin (1947); a branch off Legnica to Park Przemysłowy [industrial park] (1948, re-aligned in 1964); approx. 500 m from the Grabiszyńska cemetery to the terminus at Oporów (1949); and most importantly, the 6.2 km suburban route from Kuźniki to Leśnica (1949, until 1981 single-track). In 1950, the 1 km partly single-track line from Park Wschodni to the terminus at Księża Mate followed, as well as the still single-track 1.8 km line from Krzyki to Klecina. With the opening of the route through the street Widok in the city centre in 1951, the postwar network was complete. The following decades only saw the addition of some shorter extensions, such as a link between Plac Orłąt Lwowskich and Plac Legionów in 1961; a gap closure in the southwest between the loop on Hallera and Grabiszyńska in 1967; about 600 m to the turning loop at Park Południowy in 1971; and in 1974, a tangential connection between Dubois and Plac Bema to replace an old route from 1901. Some important changes came in 1976-78, when the remaining routes through the Old Town were moved to a new alignment along the inner ring road Nowy Świat/Kazimierza Wielkiego. The track on Szewska used by lines 6 and 7 in the northbound direction has since then been the only one to remain in a narrow Old Town street.

In 1983, a northern extension along the Żmigrodzka to Poświętne (formerly Marino) was finally put into operation, partly using the old alignment of the 'Wrocławska Kolej Dojazdowa', which had been abandoned in 1967. Except for a short re-alignment in the area of Aleja Armii Krajowej in Tarnogaj (1987), the connection along Bałtycka in the north (1993), and the short diagonal stretch on Station Square (1999), no major changes took place on the tram network until some significant extensions were built at the beginning of the new millennium: labelled 'Tram Plus', a 1.6 km route to the southern district of Gaj (11 Sept 2011), and, driven by the construction of a new stadium for the Football Championship EURO 2012, two northwestern branches through the populous district of Kozanów (4.3 km, 31 March 2012) were added. The three new termini were built without the otherwise typical turning loops, since only the new double-ended vehicles of type 19T from Škoda were to be used.

At present, among others, a new line from the city centre to the Nowy Dwór district is planned, as well as a link via Popowice railway station, which was rebuilt in 2015.

Like in most Polish cities, a time-based fare system is also used in Wrocław for buses and trams: 30/60/90 minutes for 3.00/4.40/6.00 PLN. For visitors a 24/48/72-hour ticket is recommended for 11/20/26 PLN, which within Wrocław is also valid on KD local trains [www.kolejedolnoslaskie.eu].

Wrocław initially ordered new trams from the Czech car manufacturer Škoda to renew its fleet, but more recently Polish vehicles from PESA and Modertrans have also been purchased. In the mid-2000s, Protram had already started to deliver modernised Konstal cars which had been extended with a low-floor middle section.

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The metro & tram system in Warsaw will be dealt with in a special volume in the future.

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