

NAPOLI Master Plan



Bringing together Napoli's networks

A master plan for Napoli envisages a 10-line metro network, with extensive use being made of existing suburban lines in and around the capital of Campania. **Benjamin Zelki** reports.

A 10-line metro network is an ambitious goal for a city of only 957 000 inhabitants, but this is what Napoli's transport master plan envisages. The vision includes the upgrade of several suburban railways that serve the metropolitan area of 3.1 million.

These aims contrast with the existing transport situation. One metro line, all tram lines and three of the city's six trolleybus routes are currently suspended, and the remaining services run at low

Metro Line 2 is operated by Trenitalia.

frequencies. Most operate only between 06.00 and 22.00, with the last trains to several eastern suburbs departing as early as 20.00.

This situation has come about owing to a shortage of funds and available rolling stock for the operators. ANM manages all the tram routes, funiculars, trolleybuses, and metro lines 1 and 6, as well as most bus routes. The suburban railways and most regional bus routes are operated by Campania region transport operator EAV. Metro Line 2 is

run by national rail operator Trenitalia, and CTP manages some bus routes in Napoli and around Caserta. Integrated ticketing can be used on all lines.

Developing the existing metro

The master plan includes the extension of the city's only existing heavy metro line. Line 1 is to become a circular route with the connection of its termini at Piscinola and Garibaldi via the airport.

The first section of Line 1 opened in 1993, and the most recent extension was inaugurated in December 2013. The opening of Duomo station, on the most recent extension, has been delayed by archaeological works, and is expected next year. Line 1 is currently 18 km long and serves 18 stations, carrying 110 000 passengers a day.

Signalling on Line 1 allows 3 min headways, and 110 m long platforms can take six-car trainsets. However, as no rolling stock was procured for the latest extension, services run at 8 min headways and trains have been shortened to four cars, explains ANM's Metro Operations & Maintenance Manager Vincenzo Orazio. Even maintaining the existing fleet is a challenge, as spare parts are hard to find for the 88 cars that Ansaldo Trasporti and Fiore supplied in 1991-92. Besides this, the municipality, which owns ANM, is facing financial difficulties.

The situation should improve following the signing of a €98m contract in June 2016 for CAF to supply 10 six-car trainsets, with an option for 10 more. These are to be delivered by 2019, with the first expected to enter service in September that year and the last 10 months later.

Work on the Line 1 extension is divided into two lots. The municipality is in charge of delivering the Garibaldi – Capodichino section, on which the contractor is a consortium of Ascosa Ferroviaria, Ansaldo STS, AET, Imeco, B & P and LDB. Centro Direzionale will provide interchange with Circumvesuviana services, which have been serving the station since August 2014.

The Piscinola – Capodichino works package is owned by the Campania region, with EAV acting as contractor. Work was suspended on both sections, but eventually restarted in early 2017 and is estimated to be completed by 2022. At that point EAV's MetroCampania NordEst line, which runs from Piscinola to Aversa, would become a branch of Line 1.

EAV operates MetroCampania NordEst along with two other suburban lines to the north of Napoli. The former heavy railway reopened as a metro line linking Piscinola with Mugnano in 2005

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following a 29-year closure; an extension to Aversa Centro opened in 2009.

MetroCampania NordEst uses 12 MA 100 twin-car trainsets from the 1970s, procured second-hand from Roma. Services used to run every 15 min, but now run every 30 min, as several trains are unavailable, explains Mario D'Avino, from EAV's Railway Transport Division. The line is used by only 9000 passengers a day.

Plans exist to extend MetroCampania NordEst to Santa Maria Capua Vetere along the former alignment of the original railway dating from 1913. The northern part of this route, between Santa Maria Capua Vetere and Piedimonte Matese, operates as a branch off the Napoli – Roma main line. There are 10 direct train pairs between Napoli and Piedimonte Matese, worked with 14 diesel multiple-units mostly from the 1950s and 1960s, of which four are in service on an average day.

The single-track line to Benevento via Cancello was also opened in 1913. Of the ageing fleet of eight trainsets, four are in service on the average day, in addition to nine Alfa 2 vehicles ordered from Titagarh Firema Adler under a €52m contract. These were produced at its nearby Caserta plant, and the first three vehicles entered service in February and March 2017. Services run 12 times a day in each direction.

Metro Line 6 is also to be extended, from Mergellina to Municipio, where interchange will be provided with Line 1. Work on the extension started in 2002, but was suspended, and completion is now envisaged in April 2019. If this deadline is missed, the city will have to pay back the €90m of EU funding that it received for the project. Ansaldo STS is the contractor. Once extended, Line 6 will be 5.5 km long with a design capacity of 7200 passengers/h per direction, with trains running at 4½ min headways.



Photos: Benjamin Zeiki

Work is underway to make metro Line 1 into a circular route.

Services on Line 6 have been completely suspended since 2011, and are only due to resume once the second phase opens. As the route overlaps with Line 2 and the Cumana suburban line, it has suffered from low ridership. Line 6 was originally due to open in time



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for the 1990 FIFA World Cup, but the initial 2.2 km section with four stations eventually opened in 2007.

Line 6 is worked by six T67 articulated light metro cars made by Officine Fiore, Ansaldo and Stanga in 1990-94. Station platforms are long enough for three-car sets, but only single units were used when the line was operational. A new fleet is to be purchased for the opening of the extension. This is to be stabled at a depot that is to be built near Mostra. The central government is providing €38m towards the construction of the depot.

Metro Line 2 is the name given to the central section of an urban heavy rail line operated by Trenitalia and maintained by infrastructure manager RFI. The first phase opened in 1925, and was renamed metro Line 2 in 1997, following the opening of Line 1. Line 2 was most recently extended in December 2014, and carries 90 000 passengers a day.

There are four trains/h in the peaks on the route between San Giovanni-Barra and Pozzuoli Solfatara. These are augmented by main line services that run through to Campi Flegrei from destinations further out: Salerno every 30 min, Caserta 12 times a day and Castellammare di Stabia seven times a day. This means that there are up to eight peak-hour trains between Campi Flegrei and San Giovanni-Barra.

Line 2 uses ALe 724 high-floor rolling stock. A fleet of 12 Alstom Coradia Meridian low-floor electric multiple-units is in service on the routes to Salerno and Castellammare di Stabia; the first entered service in April 2016.

SURFACE NETWORKS

Trams, trolleybuses and funiculars

Napoli once had extensive tram and trolleybus networks, but both have been significantly cut back, and all tram routes are currently suspended for unknown reasons.

The first trams ran in the city in 1875. The most recent closures took place in 2000, but in 2013 Line 1 was extended from Emiciclo Poggioreale to Via Stadera. By this time there were only three routes left. Services on lines 1 and 4 were suspended between Cristoforo Colombo and Sannazaro in July 2016 to allow construction of Municipio station on metro Line 6. Services on the rest of the tram network, including route 2, were subsequently suspended.

The tram fleet consists of 22 AnsaldoBreda Sirio trams delivered in 2004, and 30 historic CT139K Peter Witt streetcars.

Napoli's first trolleybus line opened in 1940, and at one point the city had 31 routes. Only three are operational today: 201, 202 and 254. M13 was converted to a conventional bus route in 2015. ANM owns 87 AnsaldoBreda F19 trolleybuses built

in 1999-2002, and CTP owns three AnsaldoBreda F19 and 10 Ganz-Solaris Trollinos from 2004.

Despite the recent closures, the municipality is planning new trolleybus and tram routes. A tram line is proposed to connect Marano, Mugnano and Villaricca in the northwest with Piscinola metro station. A trolleybus route is planned to replace bus route R4 between Zona Ospedaliera and Piazza Municipio, and another would replace bus route 147 between Piazza G B Vico and Vomero; the two lines would meet at Museo metro station. A third trolleybus line is planned to connect Piscinola and the existing wires at via Roma Verso Scampia that connects Via Teverola in the northern suburbs and Via Casanova near Garibaldi.

Four funiculars operate in Napoli, all of them opened between 1889 and 1931. Three serve the Vomero district, while Funicolare di Mergellina lies west of the historic centre. All run every 10 min, and the four routes carry a combined 60 000 passengers a day, making them an important part of the city's transport. ■

Services to Caserta use ALe 506/426 loco-hauled double-deck formations.

Incorporating the Circumvesuviana

Lines 3 and 4 of the master plan refer to two lines of the existing Circumvesuviana network to the east of Napoli. All five 950 mm gauge Circumvesuviana lines operated by EAV run between Porta Nolana in central Napoli and areas around Mount Vesuvius. The proposed metro lines 3 and 4 would be extended from their current city terminus to Municipio station on Line 1.

Line 3 refers to the shortest and

newest Circumvesuviana line, which terminates at San Giorgio a Cremano. This was inaugurated in 2004 following the construction of a chord connecting Bottegghelle and Madonnelle. Trains run every 30 min at peak times and every 60 min off-peak, with the last train leaving San Giorgio a Cremano at 18.49.

Line 4 is the line to Sarno, which runs along the north side of Mount Vesuvius. Opened in 1887, it is mostly single-track, apart from the Porta Nolana – Cercola section. Trains to Sarno run every 30 min in the peaks and every 60 min off-peak. A realignment of the route to serve Ospedale del Mare is planned.

The other three Circumvesuviana lines are not included in the master plan. These include the lines to Sorrento and Poggiomarino, which run on a double-track alignment to Torre Annunziata, where they split. Work is underway to double-track the Pompei Scavi – Castellammare di Stabia section of the Sorrento line.

These lines carry a lot of tourist traffic in addition to commuters, serving stations in Pompei, as well as stations providing onward services to Mount Vesuvius and the Amalfi Coast. Trains run every 30 min to Sorrento and every 30 to 60 min to Poggiomarino.

The oldest of the Circumvesuviana lines runs to Baiano. Opened in 1884, it is double-tracked between Napoli and Saviano. In 1974-77 a branch was built from Pomigliano to serve the Alfa-Lancia industrial complex, and this was extended to Acerra in 2005. Trains run between Napoli and Baiano every 30 min in the peaks and 60 min

Porta Nolana is the terminus for Circumvesuviana services.



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off-peak, with an additional train every hour to Accerra. The last train to Baiano departs at around 20.00.

The five Circumvesuviana lines together carry 100 000 passengers a day. The fleet consists of 144 trains, of which 85 are in use. The oldest date from the 1970s: of the 83 Fe220 sets, 12 are scheduled to be renovated. There are also 35 T21 trains, built in 1990-93, and 25 of these are to be modernised. The newest trains are 26 Metrostar EMUs which AnsaldoBreda supplied in 2008-14.

Five more lines

Lines 5, 7 and 8 would use parts of two existing suburban lines to the west of Napoli: the Cumana and Circumflegrea. These are operated by EAV and connect Montesanto station in Napoli with Torregaveta, although most Circumflegrea services run only as far as Licola.

Circumflegrea is in the process of being partly double-tracked, whereupon it will become metro Line 5 (work is also in progress to double the only single-track section of Cumana, which accounts for around one-third of the route). An interchange station is planned to be built at Cilea, where Circumflegrea meets Line 1.

Line 7 would be a new circular line using the Cumana's alignment between Montesanto and Edenlandia, and the Circumflegrea between Montesanto and Soccavo, linked by a newly built alignment.

Construction of the link started in 2008, but work was suspended in 2012 owing to financial disputes between project owner Campania region and the contractor, the Interflegrea consortium

of Astaldi and Giustino Costruzioni. Work restarted in September 2016 with the same contractor, and the first section from Soccavo to Monte Sant'Angelo is scheduled to open in March 2019. This costs €68.8m, and includes a station designed by Anish Kapoor.

Construction of Parco San Paolo station began in September 2017 at an estimated cost of €83.7m. It is scheduled to open in 2021, along with Via Terracina station, which costs €121.2m. The rest of the line currently has no estimated completion date.

When completed, Line 7 would be 5.5 km long with six stations. Current

Montesanto is the terminus for the Cumana and Circumflegrea suburban lines running west from Napoli.

Alfa 3 trains are in use on Cumana and Circumflegrea services.

plans envisage EAV operating services at 10 min headways. The 5 km Line 8 would be based on the Fuorigrotta – Dazio section of the Cumana, which is to be rebuilt with seven stations.

The Circumflegrea and Cumana together carry 42 000 passengers a day. The current timetable has 20 min frequencies on each line, but in practice headways are sometimes increased to 40 min, owing to the small number of available trains, explains D'Avino.

The fleet consists of 10 ET 100 sets dating from 1960, seven EN 300 sets built in 1976 and 13 ET 400 vehicles manufactured in 1990-94; almost all of the latter have been renovated. Only 13 sets are used on an average weekday. EAV ordered 12 ET 500 Alfa 3 trainsets from Titagarh Firema Adler in 2007. The first entered service in May 2017, and the last is due to be delivered by the middle of this year.

Line 9, planned since 2000, would be a light metro connecting Colli Aminei and Museo stations on Line 1. Line 10 would be a heavy metro line. The first agreement for the line was signed in 1985, and plans were most recently updated in November 2016. It would connect Museo with the new Afragola high speed rail station via Di Vittorio and Casoria Piazza Dante.

Ambitious as the metro plans are, perhaps more important are the recent rolling stock orders. Once these are completed, they will allow frequencies and reliability to improve on Line 1, as well as the Cumana and Circumflegrea. However, problems are likely to remain on other lines. ■



Photo: EAV