



Trains, trams, metros ...oh my!

Part 1: Sydney Metro City & Southwest opens

Owen Roberts

The second half of 2024 will go down in history as a particularly significant period in the story of Sydney region public transport. During those few months, the first stage of the Sydney Metro City & Southwest (CSW) and Parramatta Light Rail were due to officially open, Sydney Trains' New Intercity Fleet (NIF) *Mariyung* trains were to be commissioned, and the new Regional Rail *Civity* hybrid railcar sets were also due to commence mainline testing during September. At the same time, and at the other end of the operational spectrum, the Sydenham to Bankstown section of Sydney Trains' T3 line is to be closed from 30 September, so that it can be converted to metro standards as part of Stage 2 of the Sydney Metro CSW.

These changes all realise work that commenced almost a decade ago by the previous Liberal State Government, as part of an increase in public transport mega-projects, partly enabled by the sale of State-owned electricity infrastructure in 2015. In the first of a series of articles covering these unfolding events, we will look at the commissioning of the first stage of the Sydney Metro CSW project, which opened to the public from Monday morning 19 August.

The new operation was originally slated to open on Sunday 4 August, however, with final approvals necessary from Office of the Rail Safety Regulator (ONRSR) not yet finalised a week out, the State Government chose to postpone its own, somewhat ambitious timetable. A few days later, on 1 August, a firefighter participating in one of several emergency evacuation exercises, suffered a mild electric shock when he inadvertently

Above: Run 101-00 formed by set 13, now better known as the first public train into the city from Tallawong, has just arrived in Chatswood at 5:14am with a large crowd already aboard. Several more passengers joined the train here, and at both Crows Nest and Victoria Cross, for this historic first trip under the harbour into Sydney, Monday 19 August. Chris Walters



Above: In time for the opening, the route map information at Chatswood Station has been updated to include the new stations from Crows Nest to Sydenham, Monday 19 August. Chris Walters

earthed residual power from the otherwise shutdown high voltage supply. The exercise, one of several conducted throughout July and August, was being conducted in the tunnels near Barangaroo Station.

The *Sydney Morning Herald* reported that subsequent investigations revealed that the shock amounted to 118 volts of direct current, with Metro Train Sydney (MTS) stating that the network is designed in line with European standards of 150 volts, with the line's substations equipped with voltage-limiting to ensure this. Nevertheless, the incident did little to ease existing tensions between Transport for NSW, MTS and the Fire Brigade Employees Union, which had earlier instructed its members to boycott Sydney Metro testing exercises due to alleged safety issues, until lifting the ban during early August. Adding to tensions, the 'furies' were also engaged in a pay dispute with the NSW Government.

After days of anticipation and speculation, the State Government announced on the afternoon of Thursday 15 August, that the necessary accreditation had been secured from ONRSR and that the new line was now clear to open. Within hours, confirmation was issued that the new section between Chatswood and Sydenham would open to the public from Monday 19 August. That is how this story ends.

But how did it begin?

Background

When the announcement was made in 2012 that the then North West Rail Link between Epping and Rouse Hill (Tallowong) would be built as a Metro with autonomous train operation, wheels were already in motion to incorporate the existing Epping – Chatswood Rail Link (ECRL) into the new route, with an intent to eventually extend the line south, via the lower North Shore into the Sydney CBD. This planning also involved identifying route extensions beyond the CBD, which eventually came to include Bankstown and Hurstville, but utilising (and converting) existing Sydney Trains' lines.



When the project was formally announced in 2015 as the Sydney Rapid Transit (SRT) project, Bankstown was the chosen destination, with the T3 line between Sydenham and Bankstown earmarked for metro conversion. At that stage, however, the precise details and station locations for the Chatswood to Sydenham section were not yet finalised, other than the fact that it would be, except for some short sections at each end, constructed entirely underground. Geotechnical core sampling for the proposed railway tunnel beneath the harbour commenced later that year, while other early works were also underway by 2017.

During 2016, the portfolio of metro 'mega projects' was reorganised and rebranded as Sydney Metro, with the former NWRL becoming Sydney Metro Northwest and SRT becoming Sydney Metro CSW. Like the Northwest Metro before it, the CSW Metro mega-project was delivered in a series of interconnected packaged projects, broken broadly up into the 15.5-kilometre Chatswood to Sydenham tunnelling (stage 1), the Sydenham to Bankstown 'metro' conversion (stage 2), the trains and systems components, and the Central Station upgrade, along with several other smaller packaged projects including the Sydney Yard (road) Access Bridge and early works.

The completion of CSW Stage 1 has also included the commissioning of 23 additional Alstom *Metropolis* trainsets, an expansion of the 22-set fleet that was commissioned during 2017-19 for the Northwest Metro. All 23 of the new sets were commissioned between 2022 and early 2024 in readiness for the opening of Stage 1, with enough sets having been procured to account for the addition of the Stage 2 to the network in 2025. A significant milestone was reached on 21 April 2023 when one of the new sets operated a test run through the new tunnel beneath the harbour for the first time. Within 12 months, all 45 sets had completed at least one test run along the full line between Tallawong and Sydenham at normal operational speeds – these runs operating as regular passenger services between Tallawong and Chatswood, before continuing south empty.

In the months leading up to the opening of the metro service between Chatswood and Sydenham, Sydney Metro began to hold community open days for some of the new stations as they neared completion. First to be thrown open was Waterloo (also the first of the new stations to be completed) on 29 October 2023. This was followed by Barangaroo on 26 November 2023, Victoria Cross on 25 February 2024 and Crows Nest on 26 May 2024.

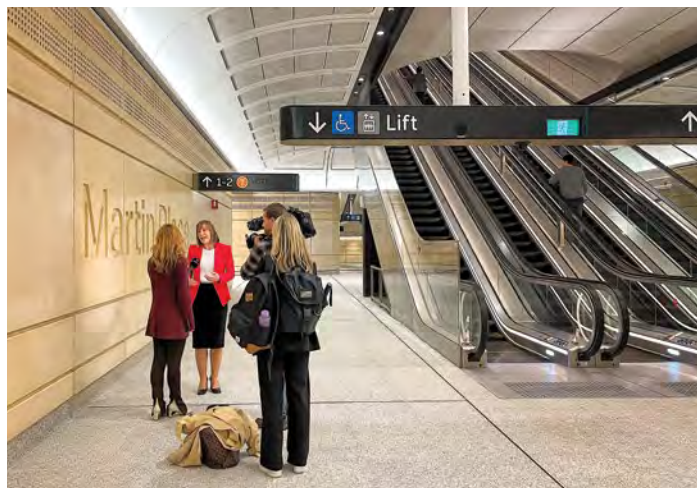
From Chatswood into the City

The new line continues south from the Northwest Metro, through the existing Chatswood turn back, before entering a new tunnel just before Mowbray Road, and diving underground, broadly following the route of the Pacific Highway to Crows Nest, where the first new station is located. Additional stations were originally proposed for Artarmon and St Leonards, however, for a number of reasons, among them the likely depth and expense of these platforms, they were removed from the final project. From Crows Nest the line continues south to a new station called Victoria Cross, uphill from the existing Sydney Trains' T1 (Penrith/Emu Plains)/T9 (Hornsby via Strathfield/North Shore) North Sydney Station, then down grade to pass under the harbour between Blues Point (where a construction site and tunnel boring machine pit was located for a number of years) and Barangaroo, where a new station was built immediately north of the new Crown Sydney tower.

From Barangaroo, the line veers east to climb up into a new public transport hub that incorporates new metro platforms interconnected with the existing T4 (Eastern Suburbs & Illawarra Line) at Martin Place. The line again turns south after Martin Place, broadly following the route of Castlereagh Street, and thus running in parallel with the eastern side of Sydney Train's City Circle lines, to the new Gadigal Station under the block ringed by Pitt, Park, Castlereagh and Bathurst streets, quite close to nearby Museum station served by T2 (Inner West), T3 (Bankstown/Liverpool) and T8 (Airport/South) services.

Central Station

From Gadigal the new line steers south west to pass beneath the City Circle and North Shore underground lines, as well as Belmore Park, to arrive in the new metro platforms beneath the existing country platforms 13 and 14 at Sydney Central. A large component of upgrade work for the



Top: NSW Transport Minister Jo Haylen is interviewed by Channel Seven News at Martin Place Station on the first morning of City metro operations, Monday 19 August. Mikela McDonald

Above: One of three banks of triple escalators within the new platforms 26 and 27 at Central Station on Monday 19 August. Measuring 45 metres in length, these are reputedly the longest escalators in the southern hemisphere. Benjamin Carter

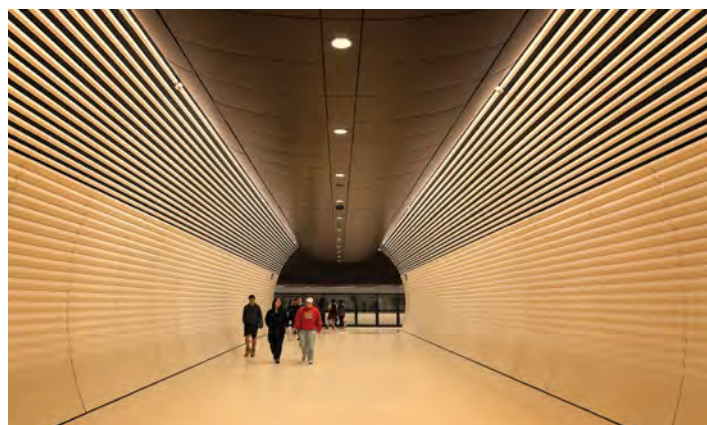
Sydney Central precinct was built into the SRT project planning, which included a new 'Central Walk' to improve the connections between the suburban platforms (16 to 25), the new metro platforms and the country platforms by a newly expanded and redeveloped Northern Concourse and expanded public areas. Other than the new metro platforms, and new platforms 13 and 14, the remainder of the upgrades all opened during 2022/23. Work on completing the new platforms 13 and 14 was completed in time for the metro opening.

Meanwhile, the construction of the new metro platforms has caused some knock-on effects to the existing Sydney Central platform arrangements. Firstly, the construction of the new station box for the metro platforms saw platforms 12, 13, 14 and 15 closed and demolished for the duration of the project. However, when the precinct was rebuilt following the completion of the metro station box, and new platforms 12, 13 and 14 were built, platform 15 was not reinstated. The space occupied by the former platform 15 appears to have been retained to enable continued road transport access via the Sydney Yard Access Bridge, which was built to enable construction vehicle access to the terminal area from Regent Street in 2016. Additionally, the two new metro platforms have been numbered 26 and 27, which were identifiers previously allocated to the incomplete and unused platforms that were built above, and at the same time as the existing the T4 (Eastern Suburbs/Illawarra services) platforms 24 and 25.

For those keeping score, that leaves the current numbering of Central Station's platforms as follows:



- 1 to 14 – country (above ground) platforms
- 16 to 23 – suburban (above ground) platforms
- 24 and 25 – suburban T4 – Eastern Suburbs/Illawarra line (underground) platforms
- 26 and 27 – metro platforms.
... with platform 15 no longer existent, and the two unused (and unconnected) underground platforms above 24/25 otherwise unidentified.



Top: In between the ‘first train’ crowds and the peak hour commuter rush, the mural of local dancer Roscoe, by artist Nicole Monks, presides over a few moments of quiet at Waterloo Station, Monday 19 August.

Mikela McDonald

Above: Gadigal Station has been constructed as a binocular-style complex, with two individually tunnelled platforms, linked by cross passages. It is also one of the more spectacular of the new metro stations, as seen in this view looking through one of the cross passages, Monday 19 August.

Benjamin Carter

On to Waterloo and Sydenham

South of Central Station and on to Sydenham, finalisation of the route for the new metro took some time to be completed, with one proposal to run via Sydney University (with its own station) and another sending it via Waterloo. The high-density development potential at Waterloo (seen as ‘another Green Square’ – a reference to the high-density housing surrounding that Airport Line station) won the day, with the announcement coming in late 2015. The station at Waterloo sits at the corner of Raglan Street and Botany Road and is thus quite close to the route of the pre-existing T8 Airport Line & South Line, which is only a couple of blocks to the east, albeit without a station in the immediate vicinity. The station is close to the Australian Railway Historical Society (ARHS) bookshop, café and publishing office for this magazine.

From Waterloo, the line veers more to the west, running beneath Erskineville and St Peters to emerge from the tunnel south-west of Bedwin Road to be greeted by the new Sydney Metro Train Stabling and Maintenance Facility South. As the name suggests, this new precinct has been established to support the maintenance and stabling of Metro trains and take pressure off the existing Sydney Metro Train Facility at Rouse Hill (actually just west of Tallawong station), which is where more significant repairs and maintenance will continue to be undertaken.

The line, for now, terminates in newly constructed platforms 1 and 2 at Sydenham Station, slightly to the north of where the original platforms 1 and 2 were located. Following the closure of the original platforms 1 and 2 on 24 December 2019, T3 Bankstown Line trains were diverted to use platforms 3 and 4 at Sydenham, with the track work immediately south of the station rebuilt to allow for a quick and efficient slewing of the Bankstown line to connect with the new platforms 1 and 2 when the time comes. Meanwhile, platforms 3 and 4 will continue to serve the local Illawarra Lines as well as access/egress for movements into and out of the nearby Sydenham Maintenance Centre (previously known as the Meeks Road XPT Depot). This depot will be a stabling/light maintenance centre



for the CAF *Civity* train sets forming the New Regional Rail Fleet (NRRF) now being delivered to replace the XPT, *Xplorer* and *Endeavour* fleets although heavy maintenance will be carried out at a purpose-built facility at Dubbo (see page 13, this issue).

Who built it and what did it cost?

The lead contractor for the metro extension was a John Holland, CPB Contractors and Ghella joint venture, which was awarded the contract in 2018 to build the tunnels from Chatswood to Sydenham. In the same year, a contract was awarded to Systems Connect (as an unincorporated joint venture between CPB Contractors and UGL) to lay 31 kilometres of underground railway track in the twin tunnels and 31 kilometres of overhead wiring and 11 new substations to provide 1,500-volt DC for the new line including substations for the Bankstown Line to convert it to metro standards. Laing O'Rourke won the contract for the new metro platforms and the extensive concourse and walkway upgrades at Central Station. Signalling is provided by Alstom's *Urbalis* 400 moving block CBTC Automatic Train Control allowing full driverless operation without any staff on board – known as Level GoA4.



Top left: On board set 13 as it approaches Sydenham, and the completion of the first public run from Tallawong to Sydenham, Monday 19 August.

Chris Walters

Left: Artist Callum Morton has created two tiled works for the twin entrances to Gadigal Station. Together titled 'The Underneath', they reflect both urban transport and the history of this part of the Sydney CBD. Monday 19 August. Benjamin Carter

Below: The expansion of Martin Place Station to cater for the new M1, and provide connection to the existing T4 Eastern Suburbs & Illawarra Line, has resulted in a massive, and somewhat complex underground transport hub, which has resulted from an unsolicited proposal by Macquarie Bank, who desired the air rights above the station. One of the new pedestrian walkways linking the T4 platforms (1 and 2) and those of the M1 (3 and 4) is this artistically lit tunnel, titled 'Mulu Giligu', meaning "path of light" in the Gadigal language. Monday 19 August.

Benjamin Carter





Arguably the simplest of the new above ground M1 station complexes is that of Barangaroo, which sees passengers emerging into an open area within metres of the harbour, and in the shadow of Crown Casino and the towers of the Barangaroo South complex, looming in the background. Monday 19 August. Benjamin Carter

In 2020, the *Sydney Morning Herald* reported that an internal government review found the project had blown out by \$4.3 billion for a projected cost of \$16.8 billion. Detailed budgeting was not released as part of the business case in 2016, but the project was originally estimated to cost between \$11.5 and \$12.5 billion. These increases were in part driven by unexpected costs of building the underground CBD stations.

The Minns Labor government, elected in 2023, initiated a broad review into the Sydney Metro projects in April 2023, and announced that internal documents under the previous coalition government of Dominic Perrottet had shown that the CSW project was budgeted to cost \$20.5 billion, a \$9 billion escalation from the initial projections. The ABC reported that further increases were possible before the line is fully completed to Bankstown in 2025.

How long do I have to wait?

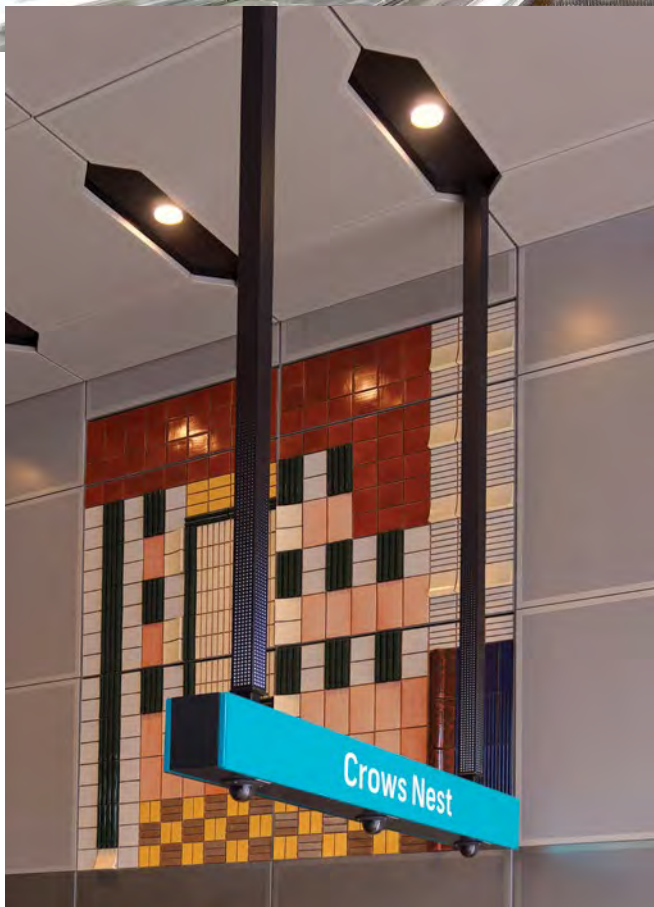
The metro timetable provides a four-minute frequency during weekday peak periods, five minutes between peaks on weekdays, and 10 minutes at other times. Trains can operate at up to 100km/h between stations. The running time between Tallawong and Sydenham is 61 minutes over 51.5 kilometres, calling at 19 intermediate stations – all trains are all-stations services. Of interest the metro running time from Chatswood to Central is 16 minutes, which contrasts with the average Sydney Trains all-stations timing of 26 minutes northbound and 27 minutes southbound for the same journey. This highlights the winding nature of the line, especially between North Sydney and St Leonards, and the fact that the metro has five intermediate stations compared with eight for the Sydney Trains line.

The Big Day

During the small hours of Monday 19 August, as a full moon was setting over Sydney, hundreds of people from all walks of life left their homes and trekked to stations along what is now, from this day forward, the Sydney Metro M1 line. Drawn by the promise of being among the first to catch a train into history, they made their way to meet either the 4:38am train from Tallawong or the 4:54am from Sydenham. Between them these services would be the first public trains through the new metro extension between Chatswood and Sydenham, including the new harbour tunnels between Blues Point and Barangaroo.

As far as 'ribbon cutting' exercises go, a pre-5am start on a Monday morning is one of the more interesting ways to crack a champagne bottle. If one were cynically minded, one might think it a move by a Labor State Government keen to open a new railway, without being forced to involve too significantly the former Liberal ministers who played key roles in its planning and delivery. If so, however, a remarkably bipartisan day followed, with ministers from 'both sides of the floor' proving effusive with public praise for each other's efforts and achievements in regard to the grand opening. Whatever the case, the grand opening was more a case of 'let us throw open the platform screen doors' and call it open. And Sydney's travelling public, from all reports, responded jubilantly.

By the time that the 4:54am from Sydenham reached Barangaroo, and the 4:38am from Tallawong arrived in Victoria Cross, both trains were, in the words of many on board both trains, "absolutely chockers". Metropolis set 29 was on the northbound run, with set 13 on the city bound service, both trains now having etched their place in history. NSW Transport Minister Jo Haylen, Transport Secretary Josh Murray, Sydney Metro CEO Peter Regan,



Top: Looking south along the striking Victoria Cross 'station box' from north to south. The north end of the station is so deep that it can only be linked to the street level by a bank of lifts, Monday 19 August. The Metro extension's station architecture has been widely acclaimed.

Benjamin Carter

Above: Artist Esther Stewart has constructed nine tiled collage panels for display at the new Crows Nest Station, including this one at the Clarke Street entrance, Monday 19 August. Chris Walters

Transport for NSW Coordinator General, Howard Collins, and Sydney Metro City & Southwest Project Director Hugh Lawson were among the throng travelling on the first train out of Sydenham, with the latter three gentlemen quickly changing trains at Victoria Cross to ensure a place on the first southbound run as well.

With the two 'firsts' out of the way, hundreds of members of the public fanned out through the line's eight 'new' stations to inspect some of the most spectacular new public architecture to open in Sydney for a long time. I say 'new', for only five of the stations are actually new – the other three, Martin Place, Central and Sydenham are now Sydney Trains/Sydney Metro interchanges, with the pre-existing stations now possessing new metro platforms. Of these three, Martin Place is arguably the grandest. Illustrating the metro's role in urban redevelopment and value capture, in 2016 Macquarie Bank submitted an unsolicited bid to redevelop the area above and around Martin Place station and in 2018 the company entered into binding agreements with the NSW Government to design and construct an integrated development incorporating two new office towers, a retail and recreational precinct and the new metro station. The entire redevelopment is reported to have cost Macquarie Bank around \$3 billion while the NSW Government has received \$355 million for air rights above the new station.

The new metro platforms at Martin Place are 'binocular' in nature – two separate tunnel tubes with platforms built out from them, and then linked by cross passages. A concourse between them allows pedestrian access to the pre-existing Eastern Suburbs Railway platforms. Provision has been made for future direct access from Martin Place to the Hunter Street terminus of the under-construction Sydney Metro West linking Westmead and Parramatta with the Sydney CBD. Built in a similar way was Gadigal (formerly Pitt Street) Station, which from an architectural standpoint, is arguably the most spectacular of the new complexes.

Perhaps a little more functional, at least comparatively, is the new metro extension to Sydenham Station, which for the next 12 months or so, will be a terminal for the M1. The current arrangement sees the bulk of inbound services from Tallawong crossing over to terminate in platform 1, and then departing on the return northbound run after a short pause. During the peak hours, with services operating at a four-minute interval, the trains linger for only a minute or so before returning north. Platform 2, in contrast, sees very little use at this point, and on the opening day, the first schedule train



Top: Set 11 is about to depart Sydenham with an early morning service to the City and Tallawong, Monday 19 August. Mikela McDonald
Above: Paul Thomas of the Sydney Trains Vlogs YouTube Channel interviews a buoyed Transport for NSW Coordinator General, Howard Collins, at Sydenham following the arrival of the first train from Tallawong, Monday 19 August. Mikela McDonald

to use this platform was the 6:59am in from Tallawong, departing again at 7:02am. This was the only service during the entire morning peak that was scheduled to use platform 2 – possibly a ‘de-rusting’ exercise, at least until the Bankstown extension opens and platform 2 enters regular use. Interchange between the Sydney Metro and Sydney Trains services requires passengers to use the northern footbridge to move between platforms.

At the end of the day Transport for NSW reported that the M1 recorded 190,000 individual passenger trips – which translates as Opal card tap-on/ tap-off occurrences – with the afternoon peak hour period accounting for 71,000 of those trips alone. The opening day passed incident free, aside from some reported bottlenecking of students trying to exit to nearby schools from the north end of Victoria Cross Station during the morning. Due to the depth of this exit/entrance from concourse to street level, the northern end of Victoria Cross possesses only a bank of lifts for exit/entry – no escalators. Staff responded by directing students to the southern entrance as an alternative.

Interestingly, by the end of the following morning, Transport for NSW reported 55,000 passenger trips – a third more than for the same period the day before. Another interesting facet of the opening of the new Sydney Metro extension is how it was covered by the media. Firstly, it rated consistently – for a variety of reasons, during the lead up to the opening – a very high level of headline print media coverage. The *Sydney Morning Herald* took an almost blog-like approach, particularly during the period between the postponed opening date and the actual first day of operations, and then a live coverage throughout that Monday. The opening received national television and radio coverage. For example, Premier Chris Minns appeared on ABC’s national *News Breakfast* program promoting the new Metro.

Even more significantly, in some ways, was how the whole M1 ‘evolution’ has occurred during a time when citizen reportage is at an all-time high, and how much the new railway opening was embraced by this ‘new order’ of journalism. Throughout the first morning, well-known local YouTube Vloggers ‘Building Beautifully’ and ‘Paul’s Train Vlogs’ both managed to score one-on-one with interviews with Sydney Metro boss Peter Regan and Transport Coordinator General, Howard Collins, respectively. Meanwhile, Sydney Trains’ Vlog’s coverage of the opening day managed to rack up over 30,000 views on YouTube within 24 hours of the event.

Given that the Sydney Metro opening is the first in a series of grand transport changes coming to NSW over the next few months, it will be interesting to see just how these changes are reported and embraced.

In a reference to the “father” of the Sydney Harbour Bridge and the city’s existing underground railway, a spectator was overheard at Chatswood station on the opening morning saying, “John Bradfield would loved to have been here today”. No doubt he would.

References and further reading

- NSW Government Ministerial releases: <https://www.nsw.gov.au/media-releases>
- NSWrail.net: <https://www.nswrail.net/>
- Railway Digest* – various issues
- Sydney Metro: <https://www.sydneymetro.info/>
- Sydney Morning Herald* <https://www.smh.com.au/>
- Transport for NSW – Southwest Link: <https://transportnsw.info/southwest-link>

New Metro at a glance

Between stages 1 and 2, when finished the new Chatswood to Bankstown extension to the M1 Metro will have delivered:

- 30 kilometres’ additional dual track
- 23 additional six-car trains to join existing fleet of 22 six-car trains
- 18 new/upgraded stations
- 15.5 kilometres of new dual tunnels including new harbour tunnel
- 648 additional platform screen doors/platform edge barriers
- 100 new mechanical gap fillers for curved station platforms.
- Provision made at platforms for future operation of eight-car trains

Stage 1 between Chatswood and Sydenham opened on Monday 19 August, while the Sydney Trains T3 Bankstown line (between Sydenham and Bankstown) will close in stages during late-September:

- Bankstown to Campsie from Saturday 21 September
 - Campsie to Sydenham from Monday 30 September.
- The Bankstown Line closure will be covered next issue.