



Sydney Metro West

A new railway for Western Sydney

Project overview, March 2018



Contents

Project overview	4
A new railway for Western Sydney	6
Servicing key precincts	7
Sydney Metro	8
Growing with the west	10
Westmead	14
Connecting with the T1 Western Line	16
A growing Central City	18
Sydney Olympic Park	20
Connecting with the T1 Northern Line	21
The Bays Precinct	22
Intermediate stations	24
Delivering new metro rail for Sydney	32
Community consultation	34
Stakeholder engagement	36
Appendix	40

Strategic planning

Mass transit services are a fundamental part of a growing international city. Public transport improvements between Sydney's three cities – the Eastern Harbour City, Central River City and Western Parkland City – is part of Transport for NSW's Future Transport Strategy 2056. We are not only responding to the needs of today, but also planning for the future with new transport strategies and technology – looking beyond the current pipeline of projects to ensure communities are better places to live, work, play and visit.

Sydney Metro West is a critical step in the delivery of the Future Transport Strategy along with other initiatives such as the Western Sydney Rail Needs study, Parramatta Light Rail, and improvements to the heavy rail system.

Community and industry consultation will be vital in developing the Sydney Metro West project so that an investment decision can be made by the NSW Government at the appropriate time.



In the first half of next year, 13 metro stations will open in the booming North West region of Sydney on the world-class Sydney Metro railway.

Then, in 2024, Sydney Metro will be extended under our iconic Harbour, through new stations in the Sydney central business district (CBD) and beyond to Bankstown – all up, 31 metro stations and 66 kilometres of new metro rail.

Since we started work on this new generation railway system in 2011, we've been working hand in hand with the community to shape Sydney Metro for our city's future – adding new stations, extra car parks and more services following community feedback.

Now, as we progress down the development path for the city-shaping Sydney Metro West project, please take this opportunity to help us shape the future of our great global city.

Gladys Berejiklian MP
PREMIER OF NEW SOUTH WALES



Right now, across and under Sydney, a truly transformational mega project is taking shape.

From next year, Sydney Metro will forever change how we get around this great city.

Under the Sydney CBD, Sydney Metro will be able to operate a new metro train every two minutes in each direction – bringing us in line with other great global cities.

Remarkably, with two new metro lines already under delivery, it's this next step that will be the biggest – linking the Parramatta and Sydney CBDs, our two great centres.

Welcome aboard Sydney Metro – now's the time to have your say as the NSW Government delivers the biggest urban infrastructure investment in the nation's history.

Andrew Constance MP
MINISTER FOR TRANSPORT AND INFRASTRUCTURE

Project overview

In November 2016, the NSW Government announced the Sydney Metro West project – the city’s next underground metro railway.

Connecting the Parramatta and Sydney central business districts, this once-in-a-century infrastructure investment will transform Sydney for generations to come; doubling rail capacity between these two areas, linking new communities to rail services and unlocking housing supply and employment growth between the two CBDs.

Sydney Metro West will service the key precincts of Greater Parramatta, Sydney Olympic Park, The Bays Precinct and the Sydney CBD.

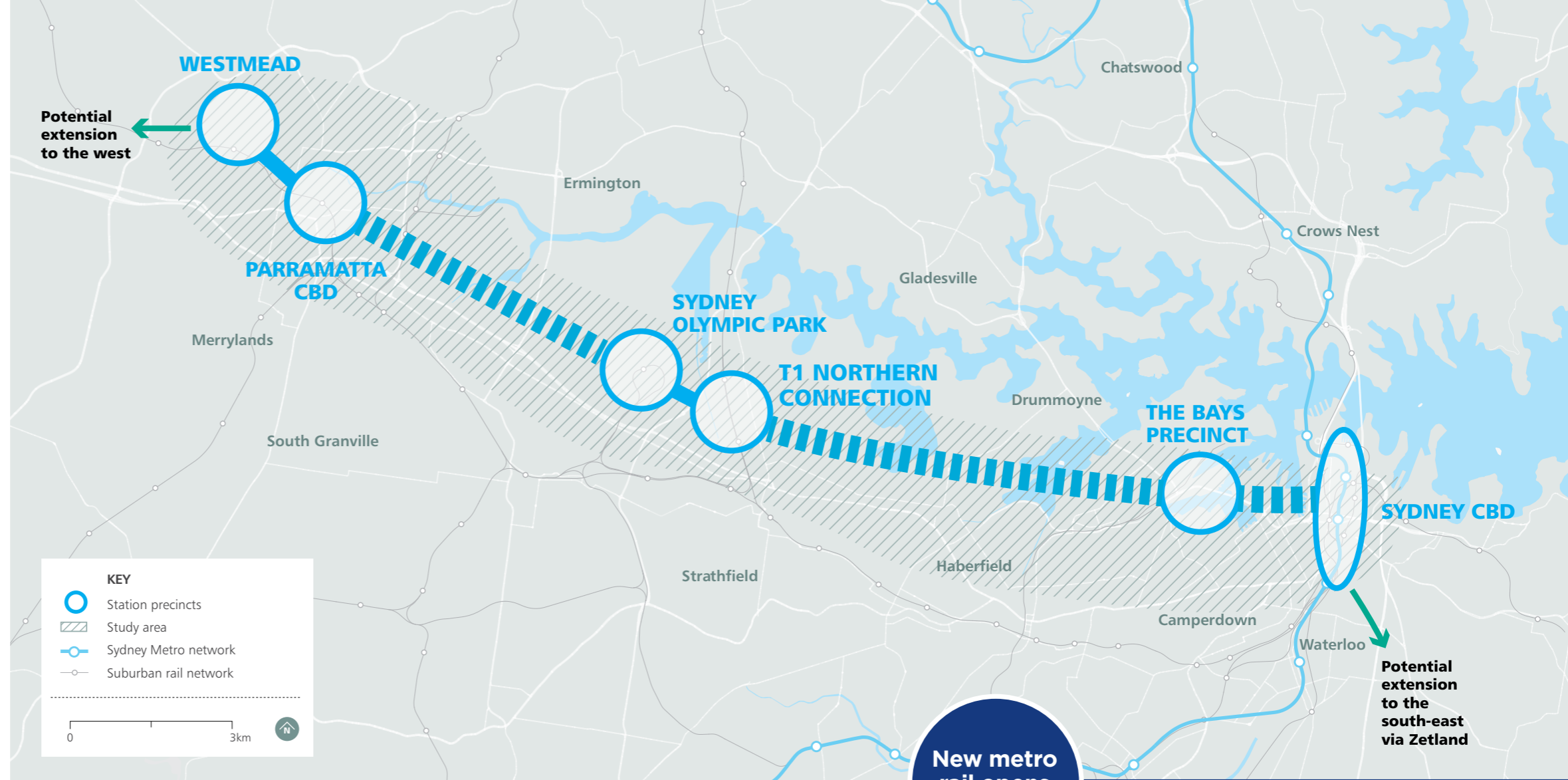
Following extensive community and industry consultation in 2016 and 2017, the Sydney Metro West scope of works has been expanded and refined. It now includes:

- > a new underground metro station at Westmead, to support the growing residential area as well as the health, research and education precinct
- > a new metro station under an existing suburban station on the T1 Northern Line east of Sydney Olympic Park – allowing faster connections for customers from the Central Coast and Sydney’s north to Parramatta and Sydney through a quick and easy interchange between suburban and metro services
- > further consultation on new intermediate metro stations between Parramatta and Sydney Olympic Park and between Olympic Park and the Sydney CBD
- > at least one Sydney Metro West station under the Sydney CBD, delivering an easy interchange between suburban rail, new light rail and the new metro stations currently under construction.

It is also proposed that Sydney Metro West will have an underground interchange with an existing suburban station on the T1 Western Line either at Parramatta or Westmead, allowing a fast and easy interchange to metro rail services for customers heading to and from the outer west and Blue Mountains.

Community and industry consultation is continuing into potential new metro stations between the key precincts.

The NSW Government will also safeguard the ability to extend Sydney Metro to the south-east of the Sydney CBD via Zetland, serving the Green



Square town centre, as well as towards the west beyond Westmead – where one option could be to the new Western Sydney Aerotropolis.

Delivering a fast, safe and reliable metro service will be balanced with improving community benefits: Sydney Metro West will deliver faster public transport journey times than currently possible between the two CBDs while also getting the best outcomes for communities, connecting as many people as possible to a new world-class mass transit system.

In 2018, further community and industry consultation will take place to refine the project before any investment decision is made by the NSW Government.

This engagement process has been used by the Sydney Metro Delivery Office within Transport for NSW since 2011, and has delivered improved customer and community outcomes like extra metro stations, more car parking on metro rail projects currently being delivered by the NSW Government and reduced community impacts during construction.



Sydney’s new metro train being tested at Rouse Hill

New metro rail opens next year

The new Sydney Metro railway system opens in the city’s North West in the first half of next year – 13 stations between Rouse Hill and Chatswood will be serviced every four minutes in the peak in each direction by new fully-automated metro trains.

In 2024, Sydney Metro will be extended under Sydney Harbour, through new underground stations in the Sydney CBD and beyond to Bankstown – all up, delivering 31 metro stations and 66 kilometres of new metro rail.

Then, the Sydney Metro West project is expected to be operational in the late 2020s.

This new underground railway will become the fastest, easiest and most reliable journey between the Sydney and Parramatta CBDs.

Sydney Metro will have a capacity of a train every two minutes in each direction under the Sydney CBD, a level of reliable service never before seen in Australia but common around the world.

A new railway for Western Sydney

Sydney Metro West will deliver a new direct underground connection between the CBDs of Parramatta and Sydney.

This city-shaping infrastructure investment will link communities between the two centres that have not been previously serviced by rail, unlocking housing supply and boosting employment growth.

New metro rail will become the fastest, easiest and most reliable journey between the Sydney and Parramatta CBDs.

This means existing suburban and inter-city services will be freed up for customers from the city's outer west in areas like Blacktown, Penrith and the Blue Mountains.

In turn, these services will become more reliable, with less crowding and faster travel times.

As a new railway, Sydney Metro West will work together with the existing T1 Western Line, effectively doubling rail capacity from Parramatta to the CBD and supporting the Greater Sydney

Commission's vision for better connections between these two major centres. Sydney's busiest rail corridor will be served by two stand-alone railway systems, working together to give customers more choices and delivering more reliable services for generations to come.

The NSW Government will integrate transport with planned land-use outcomes along the corridor, with the new metro railway line expected to be built largely underground.

Community, stakeholder and industry consultation is helping shape Sydney Metro West's development, including determining the alignment and potential station locations.

Servicing key precincts

The final number of potential stations will be identified following community and industry consultation. Key precincts to be serviced have initially been identified at:

- **Westmead**, one of the largest health, education, research and training precincts in Australia
- **Parramatta**, where the number of jobs is expected to double over the next 20 years to 100,000
- **Sydney Olympic Park**, where 34,000 jobs and more than 23,000 residents will be located by 2030
- **The Bays Precinct**, Sydney's new innovation hub where 95 hectares of land is being regenerated
- **The Sydney CBD**, allowing easy access to the existing public transport network and Stages 1 and 2 of Sydney Metro, which are currently under construction.

The need for new rail

More mass transit services are needed between Parramatta and the Sydney CBD because:

- › an extra 420,000 people are expected to move into the corridor between Greater Parramatta and central Sydney over the next 20 years
- › more than 300,000 new jobs will be created by 2036 in the corridor between Greater Parramatta and central Sydney at places like the Parramatta CBD, Sydney Olympic Park and the Bays Precinct
- › the T1 Western Line needs relief because it will be severely overcrowded by the early 2030s.



The Parramatta CBD

Sydney Metro

Opening in the first half of 2019, Sydney Metro will transform the way Australia's biggest city travels and help shape its future.

This new world-class mass transit system will evolve with the city it will serve - cutting travel times, reducing congestion and delivering major economic and social benefits for generations to come.

Metro rail means a new generation of fast, safe and reliable trains easily connecting customers to where they want to go. Customers won't need timetables - you'll just turn up and go.

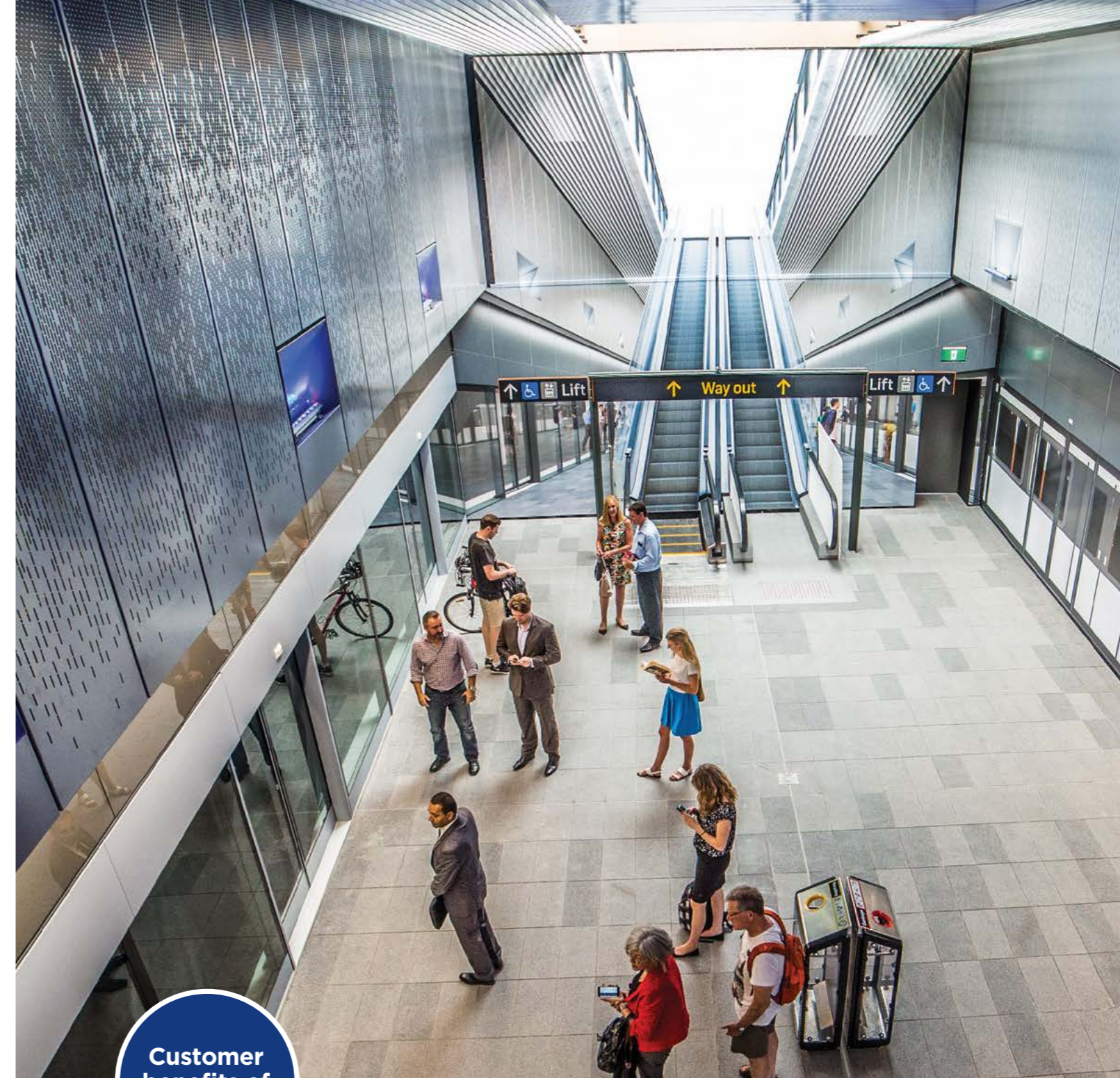
Sydney Metro will make it easier and faster to get around, boosting economic productivity by bringing new jobs and new educational opportunities closer to home.

With customers at the centre of all design decisions, stations will be fully accessible and quick and easy to get in and out of; trains will be fast, safe and reliable; and technology will keep people connected at every step of the journey.

Sydney Metro will integrate with new communities and transform existing urban centres, as well as the broader transport network so customers have a range of transport options to get to and from their destinations.



Sydney Metro



Customer benefits of metro rail

Australian-first platform screen doors keep people and objects away from the edge, improving customer safety and allowing trains to get in and out of stations much faster. These doors run the full length of all metro platforms and only open at the same time as the train doors.

- No timetable - customers just turn up and go
- Video help points
- Level access between the platform and train
- Opal ticketing
- Continuous mobile phone coverage
- Heating and air-conditioning in all metro trains
- New generation of fast, safe and reliable trains
- On-board real-time travel information and live electronic route maps

Sydney Metro's prototype underground station, including platform screen doors

Growing with the west

Sydney Metro West is expected to be built largely underground and to be operational in the second half of the 2020s.

The NSW Government has identified the key growth regions that need to be serviced by Sydney Metro West: Westmead, Parramatta, Sydney Olympic Park, the Bays Precinct and into the CBD.

This means a corridor will be investigated between the Parramatta River and existing T1 Western Line to:

- › maximise the potential for growth
- › transform and connect communities
- › generate interest within industry to help deliver this mega project.

The NSW Government will work with the community, industry, businesses and local stakeholders like councils along the route to get feedback on potential station locations and the best outcomes to serve Sydney for the next century and beyond.

The NSW Government will integrate transport and land-use planning along the corridor.

The project supports the Greater Sydney Commission's vision for a Central City based around Parramatta that's connected to the established Eastern City by providing improved travel times and service frequency between these two CBDs.

Beyond this corridor, opportunities to extend the line east and west will also be considered.

The costs, final route and the final number of stations will be determined through more detailed planning and industry engagement.

Doubling rail capacity to the west

Congestion busting

The new metro will take customers off existing suburban rail lines, especially in the busy morning peak - cutting crowding and easing congestion.

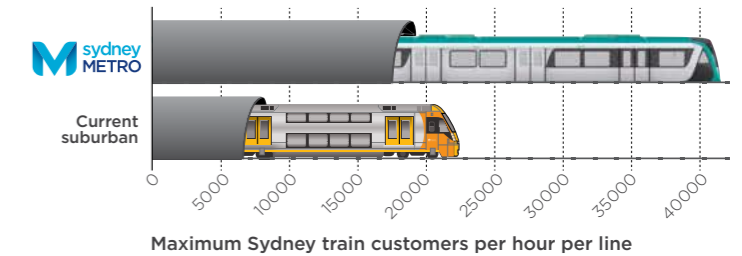
This means more efficient Sydney Trains services in the west, outer west and regional areas like the Blue Mountains.

The project would help improve the reliability of the T1 Western Line from areas such as Penrith by cutting crowding.

On the T1 Northern Line, crowding could be reduced as people move to new metro options.

Working together with the existing T1, Sydney Metro West effectively doubles rail capacity between the Parramatta and Sydney CBDs.

Metro rail moves more than 40,000 people an hour in each direction - significantly more than a current suburban line.



The Parramatta CBD



More than 300,000 jobs are expected to be created the corridor between Greater Parramatta and central Sydney by 2036.

Western Sydney is home to about 47 per cent of Sydney's residents, 36 per cent of Sydney's jobs and one-third of Sydney's Gross Regional Product.

By 2036, 3.2 million people will live in Western Sydney - a population about the same size as Adelaide and Perth combined today.

An extra **420,000 people are expected to move into the corridor** between Greater Parramatta and central Sydney over the next 20 years.

By 2036, over 50 per cent of Greater Sydney's population will live in Western Sydney.

There are currently more than **4.7 million weekday trips using all transport modes** to, from and within the Greater Parramatta to central Sydney corridor, with just over one million trips during the AM peak period alone. This is expected to increase by 36 per cent in 2036.

Sydney Olympic Park

Priority No. 1 – Greater Western Sydney

New metro rail means a new focus on Parramatta and the outer west.

Sydney Metro West will make it faster and easier to get to Parramatta – from both the east and west, reinforcing it as the Central City.

Extra rail capacity will be delivered to both sides of Parramatta.

From the east, new metro rail on a stand-alone system will become the easiest and most reliable journey within this growing corridor and between the CBDs of Sydney and Parramatta.

This frees up capacity on the existing suburban rail system to the west, increasing the reliability of services to and from Blacktown, Penrith and the Blue Mountains, and cutting crowding.

The number of customers using the T1 Western Line has grown 8 per cent over the past two years, not the forecast 2 per cent.

It would be difficult to add significant extra capacity to this line: it cannot be widened for extra tracks without causing widespread community disruption and the acquisition of nearby properties.

Currently, trains can operate as little as every 15 minutes between Parramatta and Sydney outside peak hours, while freight trains also use the line.

The solution is Sydney Metro West – a new, stand-alone metro railway built mostly underground and able to move more than 40,000 people an hour in each direction, effectively doubling the rail capacity of the area.

More rail capacity



“Connections are the key to realising the Greater Sydney Commission's vision for Three Cities to rebalance growth and opportunity across the region. With Greater Parramatta and the Olympic Peninsula (GPOP) as the unifying heart of the Central City, Sydney Metro West has the potential to help drive GPOP's transformation into one of Australia's most liveable and productive cities, by providing fast, frequent and reliable connections with the Eastern City's Harbour CBD.”

Lucy Turnbull
Chief Commissioner,
Greater Sydney
Commission

- › The existing T1 Western Line – which is more than a century old – is expected to be severely overcrowded by the early 2030s, despite ongoing upgrade works and more services.
- › Currently, it moves around 40,000 people in the morning peak hour and is operating at 135 per cent seated capacity.
- › New metro rail will be able to move more than 40,000 people an hour in each direction.
- › Sydney Metro West will work together with the T1 to service the growing needs of Western Sydney, effectively doubling the rail capacity of the Parramatta to Sydney corridor.
- › The project also means faster and more frequent services can be delivered on the Sydney Trains network from outer western Sydney areas like Penrith and Blacktown, with increased capacity for those customers into Parramatta and the CBD.

Westmead

Westmead is one of the largest health, education, research and training precincts in Australia.

Following community and industry consultation in 2016 and 2017, the locality has been identified for a station location on Sydney Metro West.

Further stakeholder engagement and technical and engineering work is now taking place.

A metro station at Westmead would support the area's health, education and residential precinct.

It would deliver a more efficient rail link between Westmead and Parramatta. Customers would also be able to interchange with the new Parramatta Light Rail, T-way and other bus services.

Major employment areas include Westmead Hospital, The Children's Hospital at Westmead, The University of Sydney, Western Sydney

University, the Westmead Medical Research Institute and the Children's Medical Research Institute.

By 2036, the number of full-time staff working across Westmead will increase to more than 30,000 and the number of students will grow beyond 10,000.

The NSW Government will also safeguard the ability to extend Sydney Metro towards the west beyond Westmead – where one option could be to the new Western Sydney Aerotropolis.

More travel choices for Western Sydney



The Westmead health precinct, the Parramatta CBD and the Sydney CBD in the distance



Artist's impression of Westmead Station

“ The Westmead health and education precinct is transforming into a globally recognised health and education innovation district. It is already home to one of the most educated populations in Sydney will see more and more people residing, innovating, and producing on the precinct in partnership with the onsite clinicians, researchers, educators and the community. Sydney Metro West, linking directly into the Westmead Precinct, allows an accelerated achievement of the economic and social benefits that the precinct can offer. It will allow Westmead to be strategically located between the two remaining cities and will provide a competitive advantage to business opportunities in Sydney domestically. ”



Danny O'Connor
Chief Executive, Western Sydney Local Health District (on behalf of the Westmead Precinct Partners)

Connecting with the T1 Western Line

One of the key objectives for the Sydney Metro West project is to relieve pressure on the T1 Western Line and to provide greater transport options for customers in the Greater Parramatta area.

The T1 - which is more than a century old - is expected to be severely overcrowded by the early 2030s, despite ongoing upgrade works and more services.

To deliver the best outcomes for customers and take the pressure off the T1, Transport for NSW proposes connecting a new underground metro station to an existing suburban station - allowing customers a quick and easy interchange between metro and suburban rail services.

This interchange could happen at Westmead or Parramatta.

Sydney Metro West would take pressure off the T1 Western Line by reducing platform crowding at existing stations and also deliver more public transport options for customers in the Greater Parramatta area. The final decision will take into account the best outcomes for customers, the wider transport system and overall community benefits.



Westmead Station services the suburb's education and health precinct



More
trains,
more
choices

Customers from the Blue Mountains or Blacktown will be able to interchange from suburban rail to Sydney Metro at the T1 Western Line interchange station - for a faster journey to the Sydney CBD or a quick and direct trip to Sydney Olympic Park or The Bays Precinct on the metro.

In turn, this frees up space on the existing T1 Western Line from the west into Sydney.

Conversely, customers will use the metro for the fastest journey between eastern Sydney and Greater Parramatta - this means more space on the existing suburban system for those travelling beyond to Blacktown, outer Western Sydney and the Blue Mountains.

Sydney Metro West will work together with the T1 to support the Parramatta CBD and service the growing needs of Western Sydney, effectively doubling the rail capacity of the Parramatta to Sydney corridor.



“

City of Parramatta supports the Sydney Metro West as part of our vision to deliver Australia's next great city right here in Parramatta.

For just over 150 years, the Western Rail Line has driven the development of Greater Sydney, and decades of population growth has led to it becoming Australia's most heavily congested public transport route.

Our future growth potential is intertwined with delivering local jobs and housing at key precincts. By 2036 our target is to deliver and additional 22,000 jobs at Olympic Park, 10,000 homes and 8,850 jobs at Camellia, 20,236 homes and 48,763 jobs in the Parramatta CBD and an additional 30,000 jobs at Westmead.

We will need to do this, while simultaneously addressing the need to free up east-west travel capacity between Sydney and Parramatta.

Andrew Wilson

City of Parramatta Lord Mayor

”



North Stathfield

A growing Central City

Over the next 20 years, the number of jobs in Parramatta is expected to double to 100,000.

Its central location will be one of its greatest advantages and it will be an important area for advanced manufacturing and innovation-driven enterprises.

By 2036, it will be one of Greater Sydney's major administrative and business centres, and the Westmead health and education super precinct will continue to grow and lead best practice in medical and education-related industries.

In November 2016, the Greater Sydney Commission released Towards our Greater Sydney 2056, which states now is the time to conceive and plan for Greater Sydney maturing into 'a metropolis of three cities'- the Eastern City (Sydney CBD), the Central City (Greater Parramatta) and the Western City (Western Sydney Airport).



A Metropolis of Three Cities. Source: The Greater Sydney Commission

Travel times

Sydney Metro West will become the fastest, easiest and most reliable journey between the Sydney and Parramatta CBDs.

However, the need for fast metro rail will be balanced with delivering improved community benefits.

Sydney Metro West will deliver faster public transport journey times than currently possible between the two CBDs while also getting the best outcomes for communities, connecting as many people as possible to a new world-class mass transit system.

Currently, the fastest trip between Parramatta and Wynyard takes between 31 and 33 minutes on the T1 Western Line.

Sydney Metro West will deliver a significantly faster journey time.

It will link communities between the two CBDs not previously serviced by rail and will support the Greater Sydney Commission's 30-minute city concept, where new infrastructure is focused on giving more people access to jobs, schools, hospitals and services within 30 minutes of their home.

Fast, safe and reliable metro rail



Sydney Olympic Park

More than 23,000 people will call Sydney Olympic Park home by 2030. This new growth area will house 34,000 jobs.

The region will provide for 10,700 homes and retail space will be increased to 100,000 square metres to service the growing community on the Olympic Peninsula, including Wentworth Point and Newington, and the future Carter Street community.

The suburb has grown quickly over the past 16 years since hosting the Sydney 2000 Olympic Games, with its Master Plan 2030 being re-calibrated to cater for the growth. This includes identifying potential sites for future primary and high schools.



Sydney Metro West is an exciting prospect for Sydney Olympic Park. Sydney Olympic Park is a rapidly growing precinct that is a key to the success of growing Sydney – providing jobs, homes and places to study with a truly unique lifestyle and events offering unlike anywhere else in Australia. Sydney Metro West will accelerate this evolution whilst also unlocking even further opportunities for the growth and development of Sydney Olympic Park, re-imagining the possibilities under Master Plan 2030 as well as providing greater connectivity and sustainable transport solutions.

Charles Moore
Chief Executive Officer,
Sydney Olympic Park Authority



Connecting with the T1 Northern Line

Following community and industry feedback, Transport for NSW is investigating a potential new metro station connecting to an existing suburban station on the T1 Northern Line east of Sydney Olympic Park.

This metro station would take even further pressure off the T1 Western Line, including Strathfield Station.

The most direct and convenient metro connection for customers would be at Concord West or North Strathfield. The final decision will take into account the best outcomes for customers, the wider transport system and overall community benefits.

Customers from the Central Coast and Sydney's north will have faster journey times to Parramatta, The Bays Precinct and the Sydney CBD through a quick and easy interchange between suburban and metro services.

Customers from the Central Coast who travel to Parramatta could save about 30 minutes a day by changing to metro services, giving people more job opportunities and also leaving more time for families and recreation.

From Sydney's north, customers could save almost 20 minutes a day travelling between Hornsby and Parramatta, bringing more job opportunities closer to home for more people.



The Bays Precinct

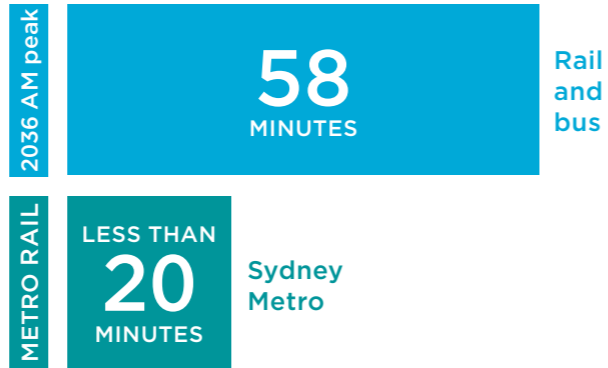
Almost 100 hectares of land is being regenerated at The Bays Precinct.

Sydney Metro West will facilitate the NSW Government's commitment to the area's renewal and creation of high value jobs in the precinct.

It will incorporate a mix of commercial, residential and retail developments to encourage innovation and the jobs of the future.

Recognising that an efficient transport system is an enabler to urban transformation, the new metro line will integrate with planning for the growing area.

Travel times (indicative) Parramatta to The Bays Precinct



“ Sydney Metro will forever change how we get around our great city, bringing new opportunities closer for the next generation and beyond. At The Bays Precinct, a metro station will help turn this prospective innovation hub into a world-class beacon of ingenuity that will grow with Sydney and deliver opportunities we haven't yet even thought of. Our global city's prospects are only limited by our imagination; the delivery of world-class infrastructure like Sydney Metro takes us one step closer to a strong a vibrant future. ”

Patricia Forsythe
Chief Executive,
Sydney Business Chamber



More CBD metro stations

Currently, the NSW Government is delivering new underground CBD metro stations at Barangaroo, Martin Place, Pitt Street and Central, which will all open in 2024.

As part of the Sydney Metro West project, at least one further underground metro station is proposed – giving customers more options including an easy interchange with metro rail,

suburban rail, the new Sydney Light Rail and buses.

Following community and industry feedback, the location for new metro services under the Sydney CBD is still under consideration.

The final decision will take into account the best outcomes for customers, the transport system and overall community benefits.

Intermediate stations

Sydney Metro West will deliver a direct connection between the CBDs of Parramatta and Sydney, linking communities along the way that have not been previously serviced by rail and unlocking housing supply and employment growth between the two major CBDs.

Transport for NSW is investigating new metro stations between the four key precincts that the project will service.

Delivering a fast, safe and reliable metro service will be balanced with improving community benefits: the project will deliver faster public transport journey times than currently possible between the two CBDs while also getting the best outcomes for communities, connecting as many people as possible to a new world-class mass transit system.

Transport for NSW is investigating the following precincts within the Sydney Metro West corridor which could benefit from a station. We are asking the community and stakeholders like local government and industry for feedback and whether other areas warrant investigation.

Rydalmere

Sydney Metro West could support urban renewal opportunities, including education, residential and mixed-use employment opportunities in the suburb's light industrial and warehouse retail sectors.

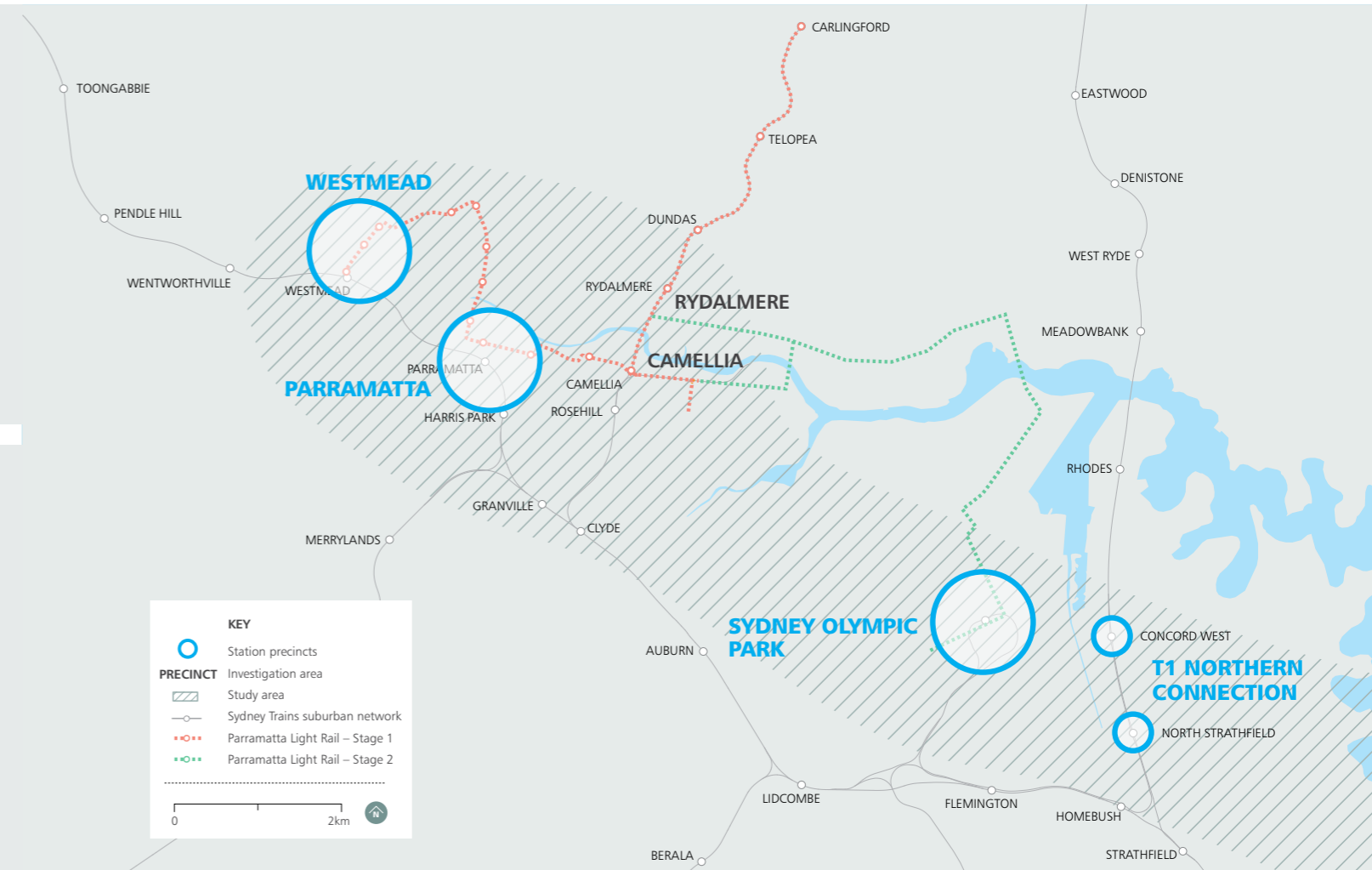
A Rydalmere metro station could offer opportunities to interchange with Parramatta Light Rail and Victoria Road bus routes.



Camellia

A Camellia metro station offers opportunities to support planned urban renewal for this residential and industrial area on the Parramatta River.

There are opportunities for an interchange with Parramatta Light Rail and a metro station could support increased employment opportunities as well as residential growth.



Burwood North

A metro station at Burwood North could bring mass transit rail to a new area and could support planned employment and residential growth.

People could have more transport options with the potential to integrate the existing bus network to get customers where they need to go faster.



Kings Bay

A metro station at Kings Bay could support planned renewal of this precinct and provide a mass transit service to an area currently reliant on road-based transport.

A station could open a new rail catchment to provide customer benefits with a more frequent, reliable and fast mass transit service, and some interchange opportunities with local buses.



Five Dock

This area is currently not served by rail and relies on road-based transport.

A metro station could support planned urban renewal and could be a significant bus interchange point for Victoria Road and Parramatta Road services.



Pyrmont

Metro rail could improve accessibility to the suburb's jobs precinct and attractions.

It could also provide an opportunity to connect to the Inner West Light Rail line.



KEY

- Station precincts
- Investigation area
- Study area
- Sydney Metro Network
- Suburban rail network
- Parramatta Light Rail - Stage 2
- Inner West Light Rail
- CBD and South East Light Rail

0 2km

“ Residents in the City of Canada Bay have identified traffic, public transport and parking as key themes they want to improve in the future. This makes the NSW Government’s investigations on Sydney Metro West an important initiative for our area. A metro between the Sydney and Parramatta CBDs creates a real opportunity to reduce traffic and provide an effective transport solution for planned growth along the Parramatta Road corridor. ”

Mayor Angelo Tsirekas
City of Canada Bay

T1 Northern Connection

A new metro station connecting to either Concord West or North Strathfield station, would take more pressure off the T1 line.

See page 21 for more information.



Tunnelling

Sydney Metro West is expected to be built largely underground and operational in the second half of the 2020s.

A number of factors determine the tunnelling route and alignment. These include:

- > the location, depth and structure of the stations
- > vertical track grade
- > rock conditions
- > track curvature, to allow high train speeds
- > the physical constraints of the route, including crossing under bodies of water like the Parramatta River.

Sydney Metro tunnels

Twin 15-kilometre tunnels from Bella Vista to Epping were completed in early January 2016 – after just 16 months. At the time, they were the longest railway tunnels in Australia and were delivered by four mega tunnel boring machines.

Tunnelling will soon start again for Stage 2 of Sydney Metro – from Chatswood, under Sydney Harbour, through new underground CBD stations and southwest to Sydenham. The first of five tunnel boring machines (TBMs) will be in the ground by the end of 2018.



Tunnelling finished on 14 January 2016 with TBM2 Florence's break-through at Cherrybrook

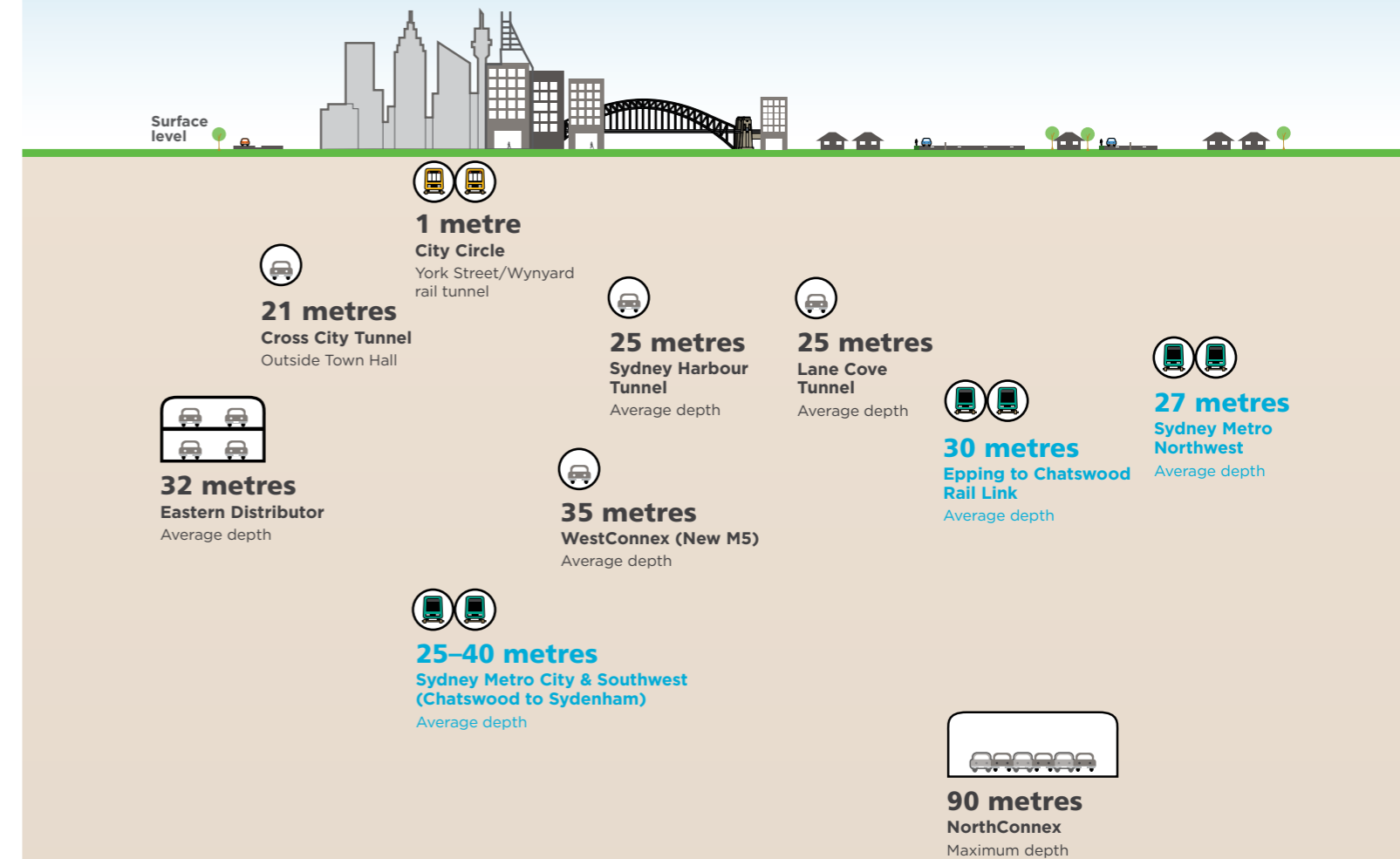


Australia's longest railway tunnels run 15 kilometres from Bella Vista to Epping on Sydney Metro Northwest

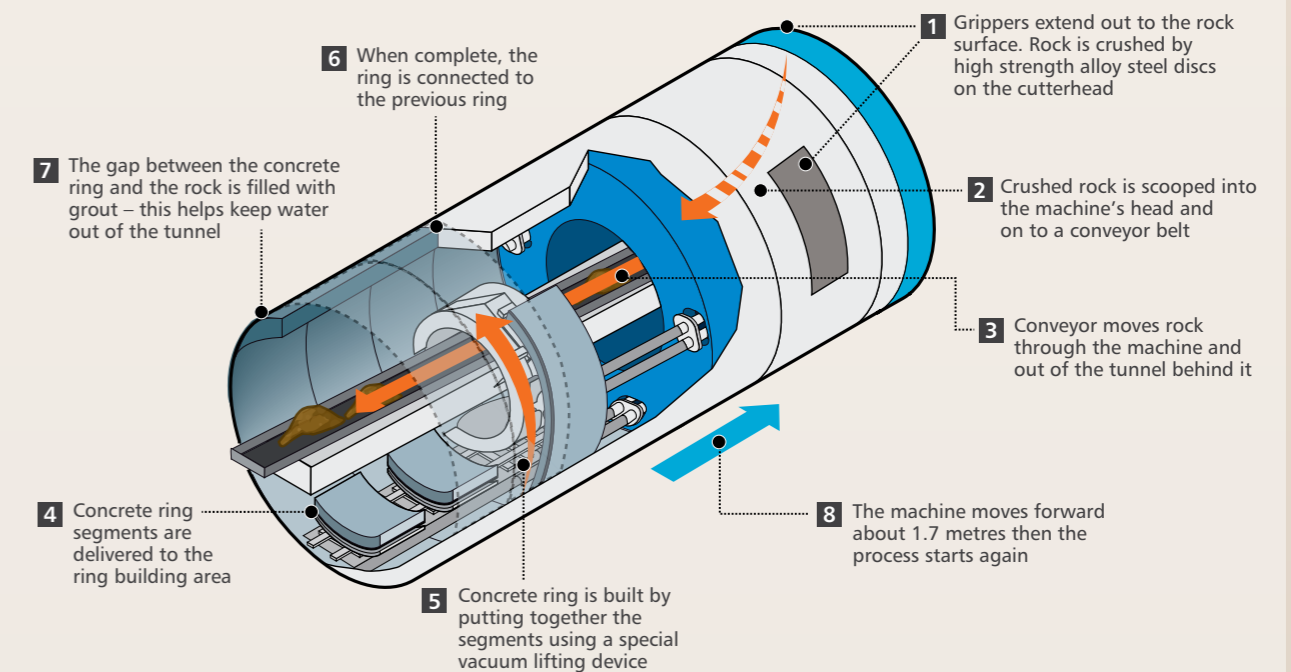


Florence was the second of four mega tunnel boring machines which tunnelled 30 kilometres on Sydney Metro Northwest

Average tunnel depths





How a tunnel boring machine works





Sydney's new metro train


KEY FACTS


- 


2019
Northwest
Opens 2019
- 


2024
City & Southwest
Opens 2024
- 


Late 2020s
Sydney Metro West
Late 2020s
- 


00:04
In peak
Train every
four minutes
- 


31 M
31 metro stations
State-of-the-art,
fully accessible
- 


66 kilometres
New metro rail
for Sydney
- 

No timetable
Customers will
just turn up and go
- 

98%
On-time
Running
reliability
- 

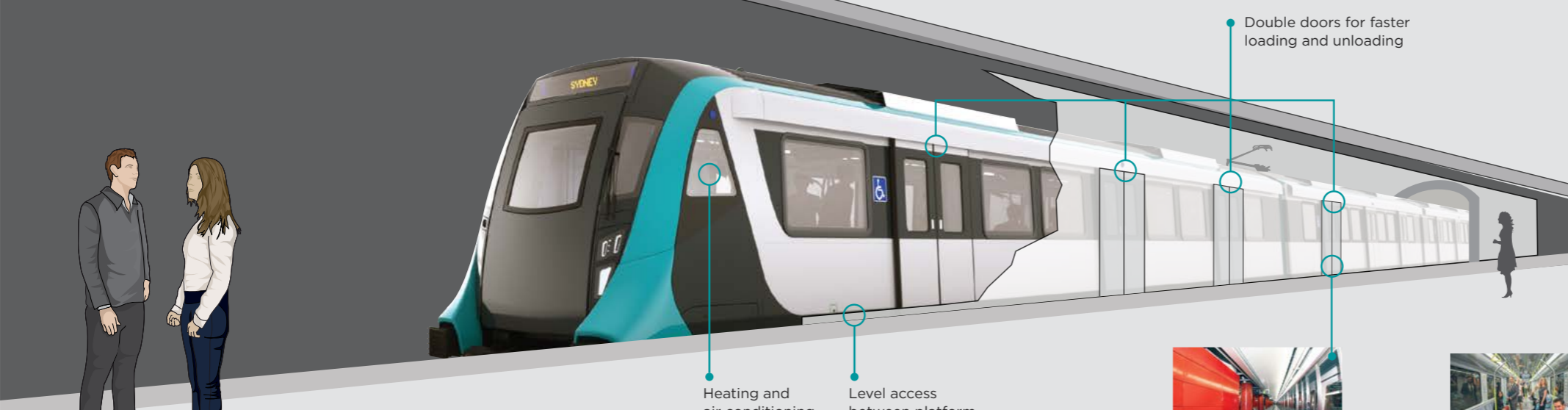
Connected
Continuous mobile
phone coverage
through network
- 

**38 cameras
on each train**
- 

**Video help points
on all platforms**
- 

**Opal
ticketing**

TRAIN FEATURES




- Double doors for faster loading and unloading**
- Heating and air conditioning**
- Level access between platform and train**
- Platform screen doors keep people and objects away from the edge and allow trains to get in and out of stations much faster**
- Inside you can see from one end of the train to the other**
- Two multi-purpose areas per train for prams, luggage and bicycles**
- Wheelchair spaces, separate priority seating and emergency intercoms**
- Real-time travel information and live electronic route maps**

Customer service assistants at every station and moving through the network during the day and night

SAFETY

Sydney Metro is Australia's first fully-automated metro rail network

Around the world, millions of people use these networks every day in cities like Paris, Singapore, Dubai and Hong Kong



- Constant monitoring**
Expert train controllers monitor entire metro system
- Operations Control Centre**
State-of-the-art network controlled from new high-tech facility at Tallawong Road
- Security**
More than 230 tunnel cameras on Sydney Metro Northwest alone
- Signalling and communications systems**
Control the trains, tunnels, platforms and skytrain to deliver a safe and reliable journey
- Faster journeys**
System minimises the time trains are stopped at stations and the time between each train

An example of a metro operations control centre

Tunnel | Train | Track | Platform

Delivering new metro rail for Sydney

Customers are at the centre of Sydney Metro's stations – safety is our No. 1 priority.

Stations are designed to be an easy part of daily journeys.

State-of-the-art technology keeps customers connected – from planning a journey from home using smartphone travel apps to real-time information at metro stations and on board trains.

Sydney Metro stations are fully accessible for people with reduced mobility, prams and children including level access between platforms and trains.

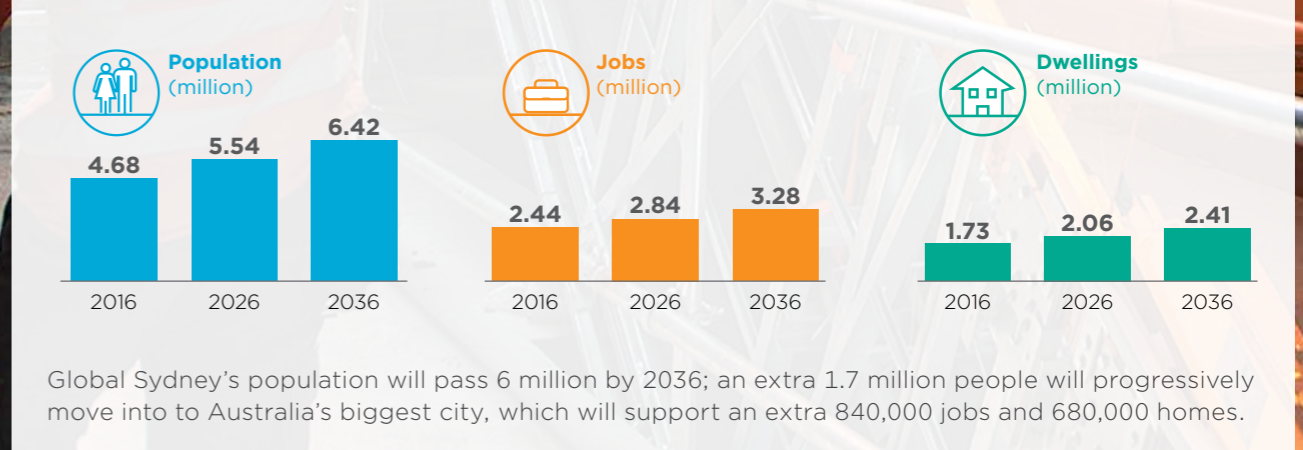
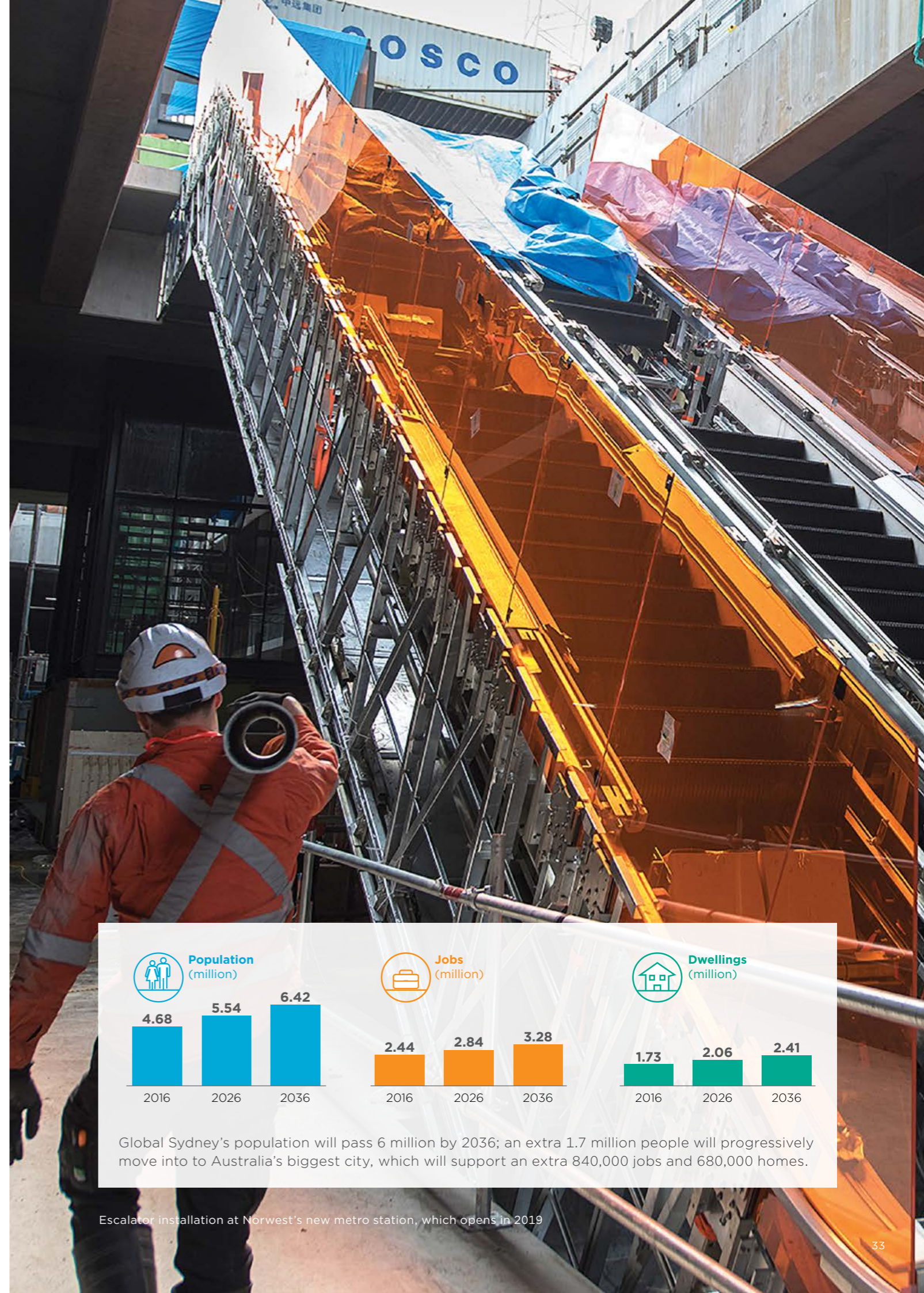
Platform screen doors on all metro platforms keep people and objects away from the edge, improving customer safety and allowing trains to get in and out of stations much faster.

These doors run the full length of the platforms and only open at the same time as the train doors.

Sydney Metro is the first railway network in Australia to use platform screen doors, which are common around the world.



Artist's impression of Rouse Hill Station



Global Sydney's population will pass 6 million by 2036; an extra 1.7 million people will progressively move into to Australia's biggest city, which will support an extra 840,000 jobs and 680,000 homes.

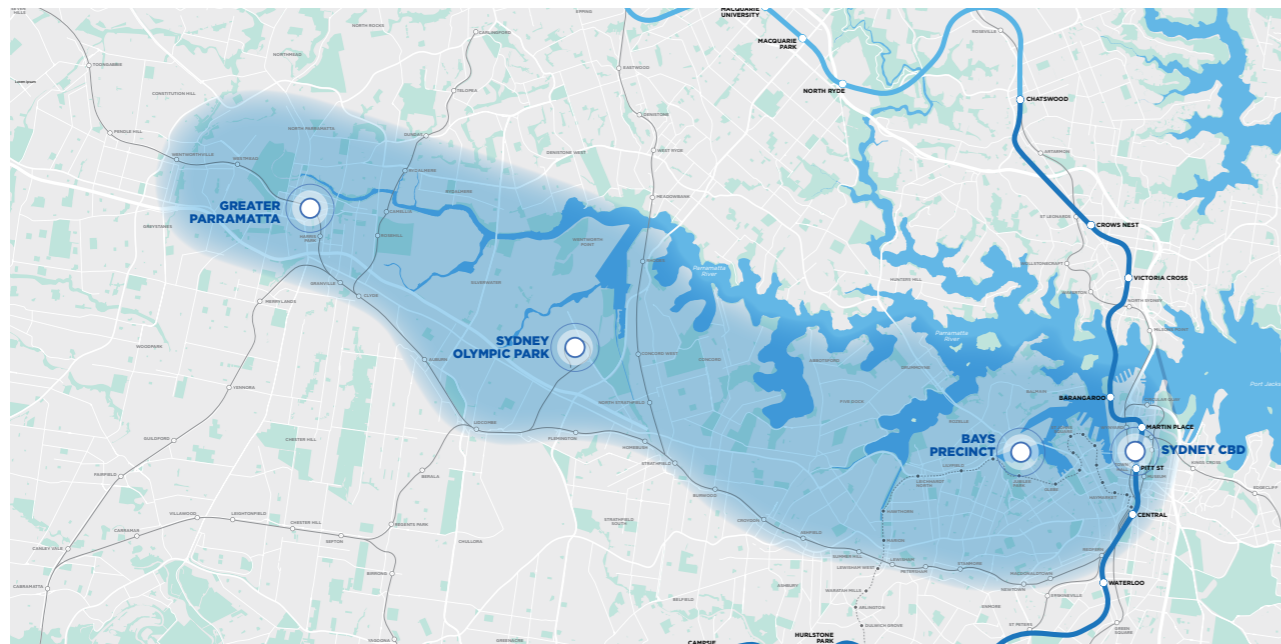
Escalator installation at Norwest's new metro station, which opens in 2019

Community consultation

Community consultation has helped plan Sydney Metro West.

Within the investigation area shown below, community consultation was initially planned to be undertaken from 27 June to 20 August 2017. However, due to the strong response from the community and stakeholders, the consultation period was extended until 3 September 2017.

The community information sessions were open events, where members of the public could view information about the Sydney Metro West proposal, talk to members of the project team and have their questions answered.



Sydney Metro West study area

Community information campaign

The residential and business community was invited to attend six information sessions staffed by project team subject matter experts. These sessions were advertised through:

- › leaflet drops to 220,000 properties and businesses within the Sydney Metro West investigation area
- › advertisements in the media prior to and throughout the consultation period
- › project website updates – sydneymetro.info and yoursay.transport.nsw.gov.au
- › email alerts to registered community members
- › regular project Facebook page updates
- › a project overview document, available on the project website and at all public information sessions.

Community consultation process

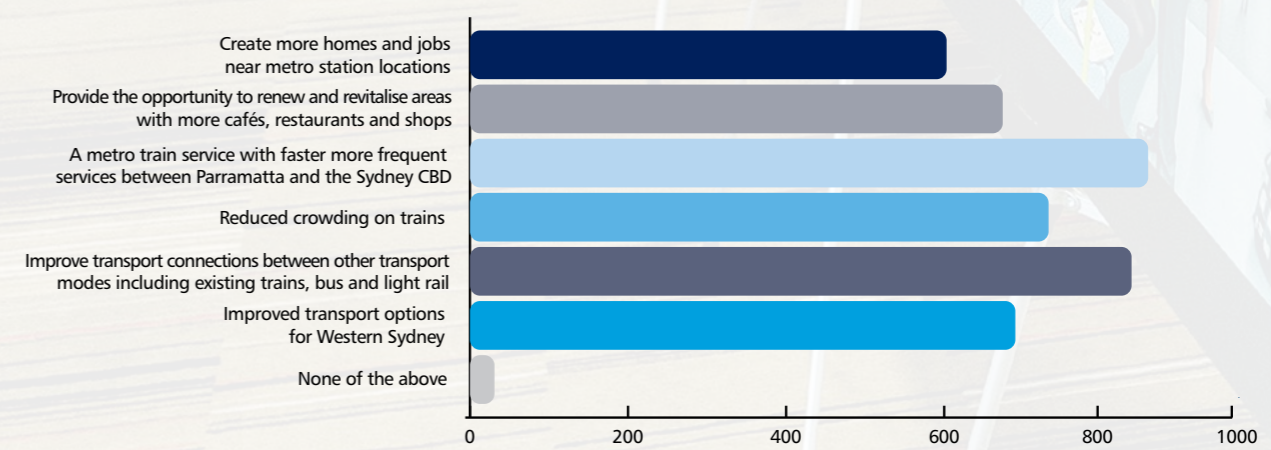
During the community consultation period, people were invited to provide feedback via:

- ✉ sydneymetrowest@transport.nsw.gov.au
- ☎ Sydney Metro West community information line 1800 612 173
- ✉ Sydney Metro West, PO Box K659, Haymarket NSW 1240
- 📄 Paper survey: completing a community consultation form at a public information session
- 🌐 'Have your say' on the project website at sydneymetro.info



Community feedback

Feedback from the community highlighted a need for faster and more frequent services between the two CBDs and reduced crowding on trains.



Survey results: Do you support any of the following potential project benefits?

Stakeholder engagement

Sydney Metro is committed to engaging with stakeholders at the early stage of project definition, to enable issues and concerns to be identified and addressed, in order to optimise project delivery outcomes.

Stakeholders consulted

Early engagement commenced with stakeholders in February 2017. Representatives from the Sydney Metro West project team briefed a number of key stakeholders from state government departments and agencies, local government, and peak organisations, listed in the table below.

Government departments and agencies	
Barangaroo Delivery Authority	Office of Environment and Heritage
Department of Education	Port Authority of NSW
Department of Family and Community Services	Property NSW
Department of Health	Roads and Maritime Services
Department of Industry	Sydney Motorway Corporation
Department of Planning and Environment	Sydney Olympic Park Authority
Destination NSW	Sydney Trains
Environmental Protection Authority	Transport for NSW
Greater Sydney Commission	UrbanGrowth NSW
Health Infrastructure	Venues NSW
Heritage Council of NSW	Western Sydney Local Health District
Land and Housing Corporation	Western Sydney Parklands Trust
Local government general managers, officers and administrators	
Burwood Council	Inner West Council
City of Canada Bay Council	Strathfield Council
City of Parramatta Council	Western Sydney Regional Organisation of Councils (WSROC)
City of Sydney Council	
Peak bodies, representative groups and organisations	
Olympic Park Business Association	University of Technology, Sydney
Royal Agricultural Society	Western Sydney University
University of Sydney	Committee for Sydney
Sydney Business Chamber	

High-level project information was provided at the briefings, including:

- › broader transport context
- › Western Sydney Rail Needs scoping study
- › Sydney Metro West network objectives
- › government-announced precincts at Parramatta, Sydney Olympic Park, The Bays Precinct and the Sydney CBD

- › features of the Sydney Metro Northwest and Sydney Metro City & Southwest projects, to meet the needs of customers
- › next steps.

Stakeholder consultation process

In addition to the high-level stakeholder briefings conducted in early to mid 2017, the following engagement activities occurred during the community consultation initially undertaken from 27 June to 3 September 2017.

In person:

- › project briefings, meetings and speaking opportunities were held at the request of peak bodies, representative groups and organisations
- › a stakeholder deliberative forum was held on 30 August 2017. The forum was attended by 37 senior stakeholders from a range of state, government departments and agencies, councils and some key local institutions. The primary objectives of the forum were to identify:
 - work that has already been done on developing a future vision for the corridor by local stakeholders
 - relevant issues and constraints in and around the four nominated precincts
 - stakeholder preferences in relation to the number and location of stations, journey times, and land-use opportunities and feedback on how best to connect important destinations along the alignment
 - possible stabling locations for metro train.

Written correspondence:

- › Stakeholders were kept informed about the project at the following key milestones:
 - public consultation announcement, including a consultation overview and how to get involved
 - public consultation period extension notification
 - invitation to participate in a stakeholder deliberative forum.

Stakeholder consultation will continue throughout the planning process for Sydney Metro West, forming part of an ongoing engagement program undertaken by the project team.



Industry engagement

Purpose of industry engagement

Working with industry has been a hallmark of Sydney Metro since 2011.

Consultation has helped define and refine our projects by harnessing industry expertise and world's-best practice

The NSW Government has been working with industry on Sydney Metro West to foster innovation and to help shape the project's development, maximising industry input at the early stages.

Transport for NSW has met with local and international industry participants, government agencies, peak bodies, comparator metro owners and operators, academics and other project stakeholders to get feedback.

Industry engagement process

Stage 1 of the industry engagement process took place in the second half of 2017 to build awareness of the project and to obtain market information to shape its scope and definition, ensuring the desired transport and land-use outcomes are met.

There was a high level of interest with local and international industry stakeholders:

- › More than 200 enquiries from interested parties across the world and over 160 registrations to participate in the industry process;
- › One-on-one meetings were held with 63 organisations, and 34 organisations provided written submissions
- › Meetings included government stakeholders, peak bodies, infrastructure developers, investors and financiers, international trains and systems suppliers and land owners along the proposed corridor.

International benchmarking survey

Transport for NSW is also engaging with leading local and international metro owners and operators through an international benchmarking survey to help inform the project's development.

Topics discussed include train configuration, speeds, signaling and stabling, project delivery and lessons learned.

Participating organisations included Crossrail, GVB (Amsterdam Metro), MTR, Melbourne Metro Rail Authority, Cross River Rail Delivery Authority, Serco (Dubai Metro), Sound Transit Seattle and Régie Autonome des Transports Parisiens.

Next steps – industry engagement stage 2

A second round of industry engagement is being undertaken to seek feedback on:

- › Market sounding on the level of industry appetite and preference for packaging options, contracting options, and transaction principles as identified in the initial delivery strategy
- › The initial delivery strategy, particularly in relation to the packaging of metro operations and maintenance, and integrated place making, stations, and development
- › Specific technical issues to inform the definition design and project definition report
- › Options to enhance the benefits of Sydney Metro West through value sharing or the possible use of non-government land in partnership with the private sector to deliver greater value for money to the people of NSW.

For more information, contact the industry engagement team:
industry.sydneymetro@sydneymetro.info

Next steps

Developing the project will involve the following key stages, as outlined below.



Sydney Metro has worked with the community every step of the way since 2011, refining the program of works for better outcomes.

From the planning stage and now into delivery, the Sydney Metro Delivery Office within Transport for NSW has been constantly talking to the community and taking on board their feedback – so the best projects possible can be delivered.

Ongoing consultation every step of the way has been a hallmark of Sydney Metro since the establishment of the first project team in 2011.

The projects have been refined and defined through community consultation.

Further information

Further information can be found on the project website at sydneymetro.info or by contacting the project team via:

- ✉ sydneymetrowest@transport.nsw.gov.au
- ☎ Sydney Metro West community information line **1800 612 173**
- 📮 Sydney Metro West, PO Box K659, Haymarket NSW 1240



Since 2011, Sydney Metro has worked with industry

Appendix

Appendix A

The map illustrates the Sydney Metro Northwest, City and South West and Sydney Metro West Alignments.

Stage 1 of Sydney Metro is under construction. There are thirteen stations including:

- | | | |
|------------------|------------------------|------------------|
| - Cudgegong Road | - Showground | - Macquarie Park |
| - Rouse Hill | - Castle Hill | - North Ryde |
| - Kellyville | - Cherrybrook | - Chatswood |
| - Bella Vista | - Epping | |
| - Norwest | - Macquarie University | |

Stage 2 of Sydney Metro will run from Chatswood to Bankstown including the following stations:

- | | | |
|------------------|------------------|--------------|
| - Chatswood | - Waterloo | - Belmore |
| - Crows Nest | - Sydenham | - Lakemba |
| - Victoria Cross | - Marrickville | - Wiley Park |
| - Barangaroo | - Dulwich Hill | - Punchbowl |
| - Martin Place | - Hurlstone Park | - Bankstown |
| - Pitt Street | - Canterbury | |
| - Central | - Campsie | |

Stage 3 of Sydney Metro will run from Sydney CBD to Westmead. The map shows the study area and includes announced stations and precincts being considered at Sydney CBD, The Bays Precinct, T1 Northern Connection, Sydney Olympic Park, Parramatta and Westmead.

Appendix B

Average tunnel depths

- City Circle, York Street/Wynyard rail tunnel – 1 metre
- Cross City Tunnel, outside Town Hall – 21 metres
- Sydney Harbour Tunnel, average depth – 25 metres
- Lane Cove Tunnel, average depth – 25 metres
- Sydney Metro Northwest, average depth – 27 metres
- Epping to Chatswood Rail Link, average depth – 30 metres
- Eastern Distributor, average depth – 32 metres
- WestConnex (New M5), average depth – 35 metres
- Sydney Metro City & Southwest (Chatswood to Sydenham) – 25–40 metres
- NorthConnex, maximum depth – 90 metres

How a tunnel boring machine works

1. Grippers extend out to the rock surface. Rock is crushed by high strength alloy steel discs on the cutterhead
2. Crushed rock is scooped into the machine's head and on to a conveyor belt
3. Conveyor moves rock through the machine and out of the tunnel behind it
4. Concrete ring segments are delivered to the ring building area
5. Concrete ring is built by putting together the segments using a special vacuum lifting device
6. When complete, the ring is connected to the previous ring
7. The gap between the concrete ring and the rock is filled with grout – this helps keep water out of the tunnel
8. The machine moves forward about 1.7 metres then the process starts again

Appendix C

SYDNEY'S NEW METRO TRAIN

Key Sydney Metro facts

- Stage 1 – Sydney Metro Northwest opens in 2019
- Stage 2 – Sydney Metro City and Southwest opens in 2024
- 66 kilometres of new metro rail for Sydney
- 31 state-of-the-art, fully accessible metro stations
- 98 percent on time running reliability
- A train every four minutes in the peak
- A train every 10 minutes in the off peak
- Continuous mobile phone coverage through the network
- No timetable – customers will just turn up and go
- Opal Ticketing

Train features

- Three double doors per carriage for faster loading and unloading
- Level access between platform and train
- Two multi-purpose areas per train for prams, luggage and bicycles
- Wheelchair spaces, separate priority seating and emergency intercoms
- Real-time travel information and live electronic route maps
- Platform screen doors keep people and objects away from the edge and allow trains to get in and out of stations much faster
- Inside you can see from one end of the train to the other
- Heating and air conditioning
- 170 metres long platforms – longer than most of Sydney
- Customer service assistants at every station and moving through the network during the day and night

Safety

- Sydney Metro is Australia's first fully-automated metro rail network. Around the world, millions of people use these networks every day in cities like Paris, Singapore, Dubai and Hong Kong

Operations Control Centre

- State-of-the-art network controlled from new high-tech facility at Tallawong Road
- Constant monitoring – Expert train controllers monitor entire metro system
- Security – More than 230 tunnel cameras on Sydney Metro Northwest alone
- Signalling and communication systems – Control the trains, tunnels, platforms and skytrain to deliver a safe and reliable journey
- Faster journeys – System minimises the time trains are stopped at stations and the time between each train

Appendix D

This infographic outlines the factors we consider when planning a new metro including:

- planned population and supporting new jobs
- connecting centres
- transport integration
- meeting customer needs
- cost and value for money
- engineering feasibility
- local heritage
- local environment
- stakeholder industry and community feedback.

Appendix E

This infographic outlines:

- population in 2016 at 4.68 million, in 2026 at 5.54 million and in 2036 at 6.42 million
- jobs in 2016 at 2.44 million, in 2026 at 2.84 million, in 2036 at 3.28 million
- dwellings in 2016 at 1.73 million, in 2026 at 2.06 million, in 2036 at 2.41 million.

Appendix F

This graphic describes community comments in 2017 about a need for faster and more frequent services between the two CBD's and reduced crowding on trains:

- a metro train service with faster more frequent services between Parramatta and the Sydney CBD – over 800 comments
- improve transport connections between other transport
- modes including existing trains, bus and light rail – over 800 comments
- reduced crowding on trains – over 700 comments
- improved transport options for Western Sydney – over 650 comments
- provide the opportunity to renew and revitalise areas with more cafés, restaurants and shops – over 600 comments
- create more homes and jobs near metro station locations – over 600 comments
- none of the above – over 20 comments.

