

Project overview

SEPTEMBER 2015





CONTENTS

4	Sydney Metro
6	About Sydney Metro Northwest
9	Sydney's Rail Future
10	Key project benefits
12	Trains
18	Stations
20	Cudgegong Road
22	Rouse Hill
24	Kellyville
26	Bella Vista
28	Norwest
30	Showground
32	Castle Hill
34	Cherrybrook
36	Tunnels
38	Skytrain
40	On track

Cover: Sydney's new metro train

This page: Artist's impression of the new landmark cable-stayed bridge over Windsor Road

Premier's message



Welcome to Sydney Metro – Australia's largest public transport project.

We're already halfway through delivering Stage 1 of this world-class infrastructure project – the 36km Sydney Metro Northwest, formerly known as the North West Rail Link.

Services will start in the first half of 2019 with a metro train every four minutes in the peak.

And now we've given the go ahead to Stage 2, with the funding stream secured by the NSW Government for the 30km Sydney Metro City & Southwest.

We're extending metro rail from the end of Sydney Metro Northwest at Chatswood, under Sydney Harbour, through new underground stations in the CBD and west to Bankstown.

Services are expected to start in 2024 with the capacity to run a metro train every two minutes each way under the centre of Sydney.

Sydney Metro is Australia's first fully-automated metro railway and will help deliver more trains and faster services across all of Sydney.

Working together with upgrades to the Western Line, Sydney Metro will help deliver around 200 trains an hour into the Sydney CBD from all across Sydney in the busy morning peak – that's 60 per cent more than now.

This massive capacity growth – enough room for an extra 100,000 customers an hour – can only be achieved by delivering this new metro rail system to work together with the existing suburban rail network.

So welcome aboard Sydney's brand new railway system, delivering a level of customer service and safety never before seen in Australia.

Mike Baird MP
PREMIER OF NEW SOUTH WALES
AND MINISTER FOR WESTERN SYDNEY

Minister's message



Fifteen trains an hour. That's one train every four minutes in the peak. And that's just for starters.

The new Sydney Metro railway network is being delivered for Sydney's future – and will grow with our global city for generations to come.

Around the world, metro train systems are high-frequency train services which operate on their own line.

With a new generation of fast, safe and reliable trains, Sydney Metro customers won't need a timetable – they'll just turn up and go.

Australian-first technology like platform screen doors will deliver world-class levels of reliability and customer safety – these doors keep people and objects away from the edge of platforms, allowing trains to get in and out of stations faster.

Sydney Metro trains will run at 98 per cent on-time running – this high level of reliability has been written into the operating contract.

Fares will be set the same as the rest of the Sydney train network and customers will be able to use their Opal card.

Sydney Metro has been given its new customer-friendly name following ongoing community and stakeholder feedback since the concept of Sydney Rapid Transit was announced a year ago.

Future customers said they want a simple name – just like London has the Tube and Paris and Dubai have the Metro.

As we get closer to the first services starting, this project overview outlines the benefits of this world-class railway network.

Andrew Constance MP
MINISTER FOR TRANSPORT
AND INFRASTRUCTURE

SYDNEY METRO

Sydney Metro is Australia's largest public transport project. It will transform Sydney, delivering more trains and faster services for customers across the network.

A new stand alone railway network, Sydney Metro is the solution to clearing the city's public transport bottlenecks and will deliver a quality of rail service never before seen in Australia.

Working together with major upgrades to the Western Line, Sydney Metro will deliver the capacity to increase the number of trains entering the CBD across the entire Sydney railway system from 120 to about 200 in the busiest hour of the day.

This means the railway network across greater Sydney will have room for an extra 100,000 train customers an hour in the peak.

The fully automated, state-of-the-art Sydney Metro network will have the capacity to operate 30 trains an hour through the CBD in each direction – a train every two minutes each way – with trains required to run on time 98 per cent of the time.

Sydney Metro will better connect our city's major centres by providing a comfortable, frequent, fast and high capacity link between suburban regions and Sydney's CBD new metro trains.

Sydney Metro has two core components:

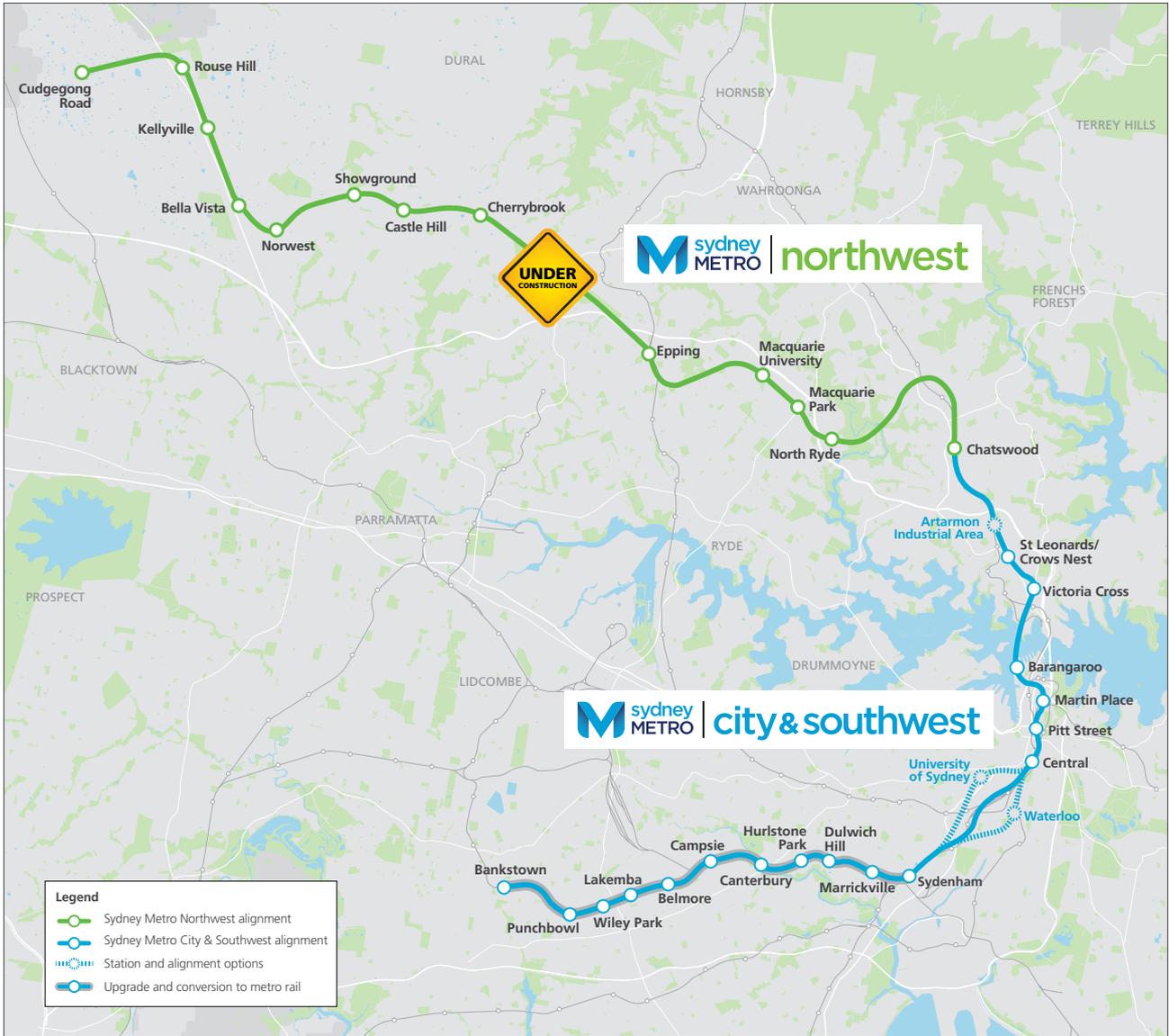
- ▶ **Sydney Metro Northwest** – formerly the 36 kilometre North West Rail Link. This project is now under construction and will open in the first half of 2019 with a metro train every four minutes in the peak
- ▶ **Sydney Metro City & Southwest** – a new 30 kilometre metro line linking with Sydney Metro Northwest at Chatswood, and then under Sydney Harbour, through the CBD and south west to Bankstown. It is due to open in 2024 with the capacity to run a metro train every two minutes each way under the centre of Sydney.

Already, Sydney Metro Northwest between Rouse Hill and Chatswood is well under construction with more than half of the tunnelling now completed. Sydney Metro Northwest will open in the first half of 2019 and deliver fast, safe and frequent services between Rouse Hill and Chatswood.

From Chatswood, Sydney Metro City & Southwest will extend metro rail under Sydney Harbour, through new stations in the Sydney CBD and south west to Bankstown.

KEY FEATURES

- ▶ **66km** of metro rail from Rouse Hill to Bankstown
- ▶ **New generation** of fast, safe and reliable metro trains
- ▶ **No timetable** – just turn up and go
- ▶ **Higher frequency** trains during the day and late at night
- ▶ **Reduced travel times** for customers across the rail network
- ▶ **More trains, more often** in the peak through the CBD, providing more options for customers and less crowding on trains, stations and platforms
- ▶ Sydney Metro will **help reduce crowding** on the T1 Western Line and on trains from the south west by creating extra capacity
- ▶ **More trains** from Sydney's west and south west
- ▶ **Opal ticketing** and fares the same as the rest of Sydney providing a seamless journey for customers, making it even easier to move around
- ▶ **Fast and easy** to change to trains, buses, ferries and light rail
- ▶ **Stand alone line** operating independently of the existing rail network, not subject to wider suburban delays
- ▶ **Connecting** Sydney's economic centres with a boost of activity up to \$5 billion per year
- ▶ **New choices** for jobs, education and recreation
- ▶ **Faster transport** to employment growth areas.



Sydney's new 66km long high-frequency metro rail system

Welcome to Sydney Metro Northwest

The North West Rail Link's name has changed – we're now Sydney Metro Northwest.

Nothing else about the project has changed.

It is still Stage 1 of Sydney's new stand alone railway network, which will now be known as Sydney Metro.

Feedback from our future customers told us you wanted a simple name – just like London has the Tube, and Paris and Dubai have the Metro.

Stage 2 of Sydney Metro is proposed to be built from the end of our project at Chatswood, under Sydney Harbour, through new underground stations in the CBD and south west to Bankstown.

Sydney Metro is Australia's biggest public transport project.

For more information about Sydney Metro visit sydnymetro.info

ABOUT SYDNEY METRO NORTHWEST

The \$8.3 billion Sydney Metro Northwest project is currently under construction and on track to open to customers in the first half of 2019.

Sydney Metro Northwest will deliver eight new railway stations and 4000 commuter car parking spaces to Sydney's growing North West. Trains will operate every four minutes in the peak with at least 15 trains an hour. Customers won't need a timetable, you'll just turn up and go.

Sydney Metro Northwest - formerly the North West Rail Link - is the first stage of Sydney Metro and will be the first fully-automated metro rail system in Australia. Metro City & Southwest is the second stage.

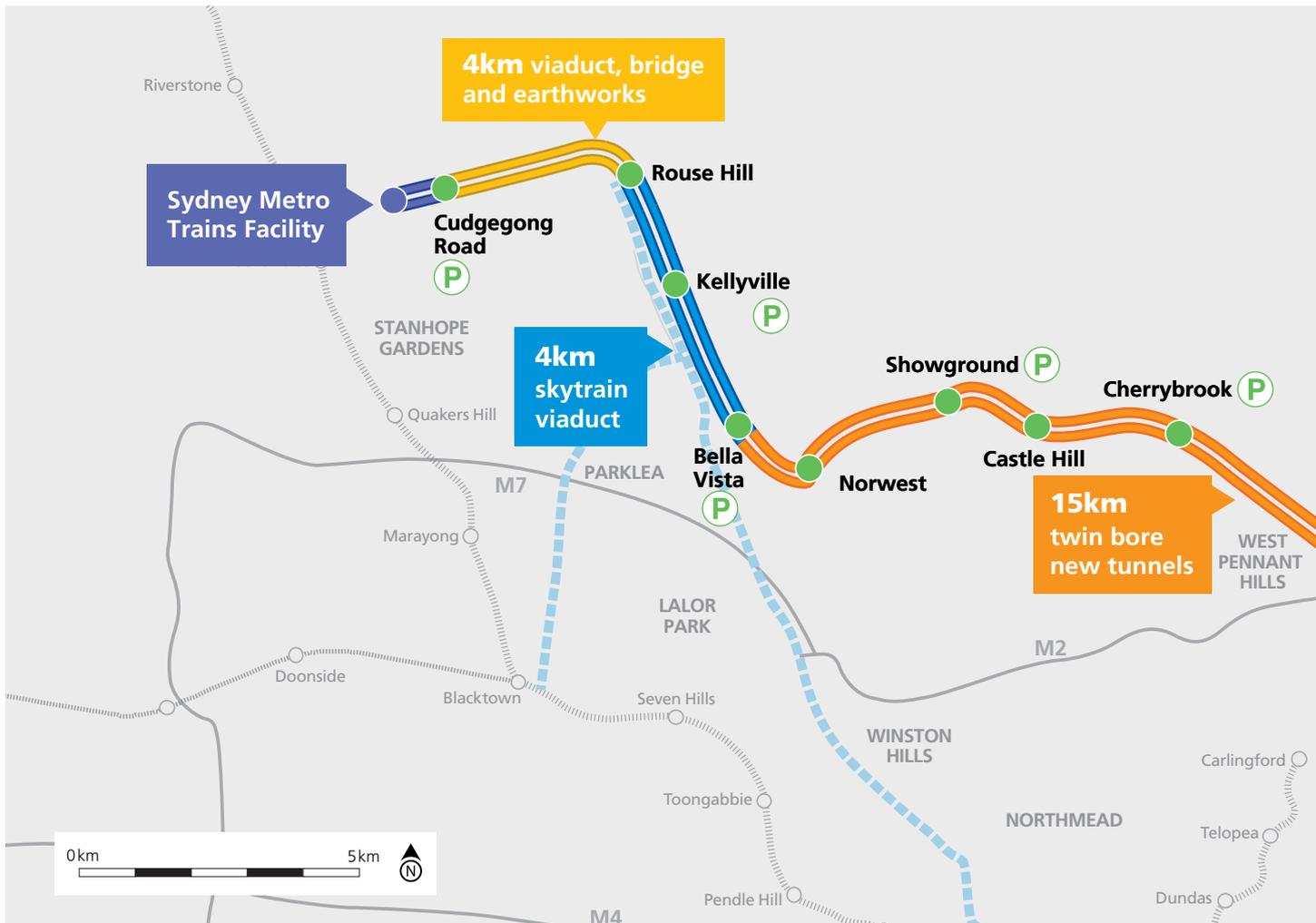
Sydney Metro Northwest will deliver, for the first time, a reliable public transport service to a region which has the highest car ownership levels per household in Australia. In fact, it is expected to reduce car trips by more than 14 million a year - or 12,000 fewer car trips in an average two-hour weekday morning peak.

Over the coming decades, an extra 200,000 people will move into Sydney's North West, taking its population above 600,000, or twice the size of Canberra.

Sydney Metro Northwest has been shaped by a commitment to deliver a transport link that meets customer expectations.

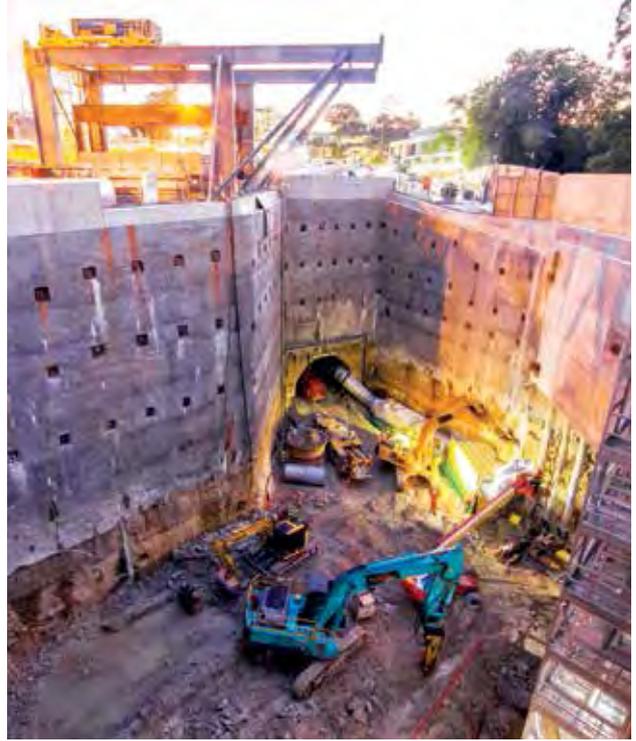
Major construction is underway and will continue to take place over the coming years at the 16 construction sites along the project alignment.

For more detailed information about the project visit sydneymetro.info/northwest

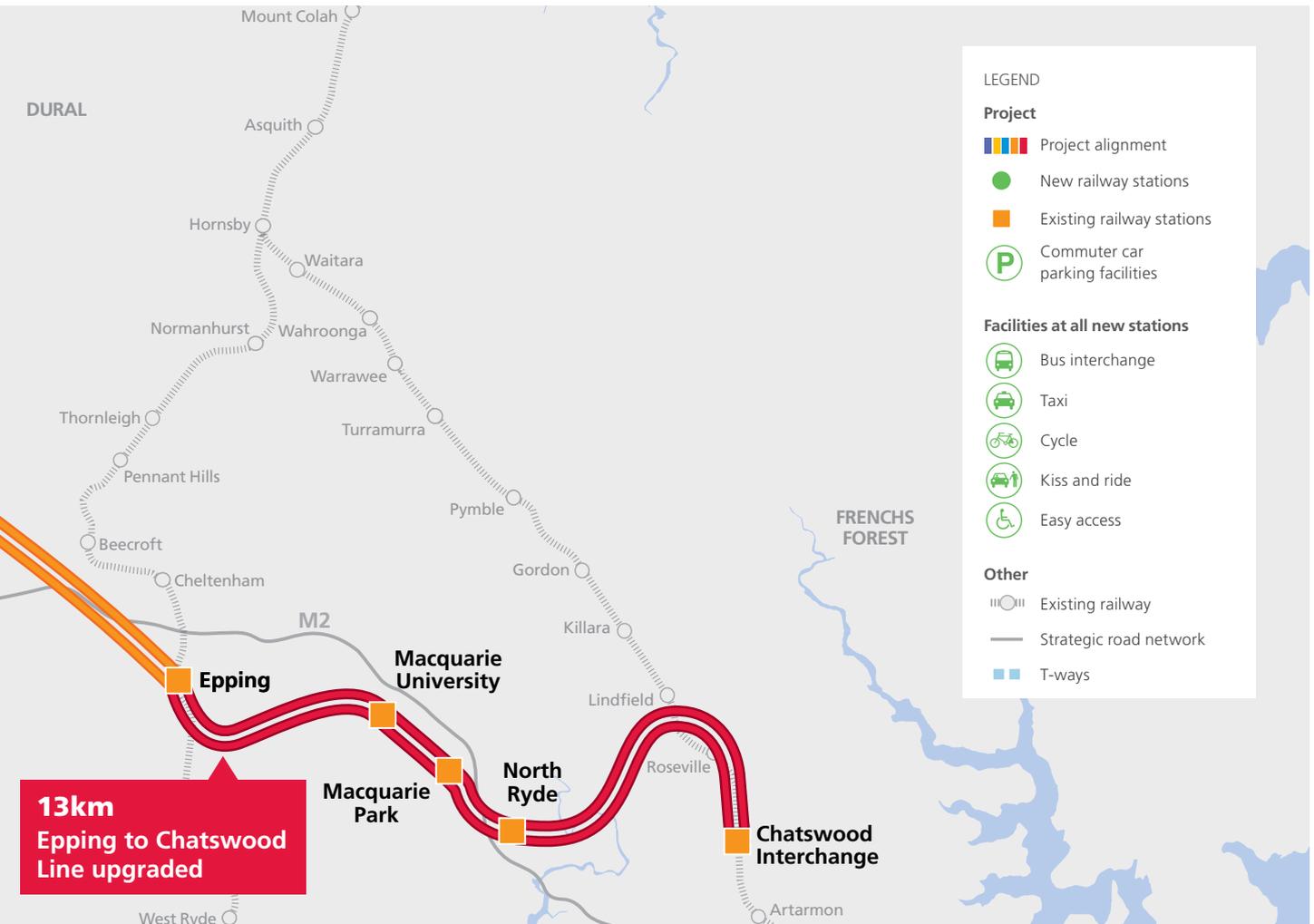




Breakthrough of TBM2 Florence at Showground Station - June 2015



Excavation works at Epping - February 2015



KEY FEATURES



A train at least every **4 minutes** in the peak



4000 commuter car parking spaces



8 new railway stations



5 existing railway stations **upgraded**



36km total project length



23km of new track



15km twin tunnels



4km elevated skytrain



16 major construction sites



3 major construction contracts

Three major contracts

There are three major contracts to deliver and operate Sydney Metro Northwest.

► Tunnels and Station Civil Works

\$1.15 billion contract awarded to Thiess John Holland Dragados on 24 June 2013. This contract involves building the 15 kilometre twin tunnels between Bella Vista and Epping – the longest railway tunnels to ever be built in Australia.

► Surface and Viaduct Civil Works

\$340 million contract awarded to the Impregilo-Salini joint venture on 17 December 2013. This contract involves building the four kilometre elevated skytrain between Bella Vista and Rouse Hill, including a 270 metre cable-stayed bridge over Windsor Road at Rouse Hill.

► Operations, Trains and Systems

\$3.7 billion operations contract awarded to Northwest Rapid Transit on 15 September 2014. This contract involves delivering 8 new railway stations, 4000 commuter car parking spaces, Sydney's new metro trains and upgrading the railway between Chatswood and Epping. It is the largest Public Private Partnership ever awarded in NSW.



Project Director Rodd Staples signing the Surface and Viaduct Civil Works contract – December 2013

SYDNEY'S RAIL FUTURE

Sydney's Rail Future is a long term plan to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure.

It's a five-stage program to meet the challenges of a growing population and the needs of customers in the future.

The plan, released in 2012, aims to modernise and transform Sydney's rail network.

The plan identifies Sydney Metro Northwest as the first stage of Sydney's new metro network, operating

fully-automated metro trains with levels of customer service not seen before in Sydney.

Sydney's Rail Future forms part of the NSW Long Term Transport Master Plan.

For more information about Sydney's Rail Future and the metro network go to www.transportmasterplan.nsw.gov.au

Sydney's Rail Future - a three tier railway



LEGEND

- Rapid Transit Network (Single Deck)
- Suburban Network (Double Deck)
- InterCity (Double Deck) and Regional Diesel

0 2 4 6 8 10 km

KEY PROJECT BENEFITS

Sydney Metro Northwest will deliver fast, safe and reliable public transport to the people of the North West region for the first time.



Artist's impression of an underground metro railway station

No timetable

A train every four minutes in the peak means customers won't need a timetable – they can just turn up and go.

Key benefits include:

- ▶ A train every four minutes during peak periods – or 15 an hour
- ▶ The trip from Cudgegong Road Station at Rouse Hill to Chatswood Station will take about 37 minutes
- ▶ The journey from Cudgegong Road Station to Wynyard Station, including interchanging at Chatswood Station, will take about 57 minutes
- ▶ Integration of bicycle, bus, taxi and car parking at stations, allowing seamless interchange.

Sydney Metro Northwest is being delivered to meet future growth in the North West region.

Metro rail

Sydney Metro Northwest is the first stage of Sydney's new metro system.

A metro system means trains will be controlled by modern operating systems and signalling technology to deliver fast, safe and reliable services.

Key benefits include:

- ▶ Single deck, air conditioned trains with comfortable seats
- ▶ Three doors per carriage, making loading and unloading of customers faster and safer
- ▶ Level access between platform and train
- ▶ Modern customer information systems
- ▶ CCTV cameras monitoring inside and outside trains
- ▶ Priority seating for the mobility impaired, elderly and parents with prams.



Artist's impression of a metro train interior

TRAINS

Sydney’s new metro trains will run every four minutes in the peak – or 15 an hour.

At the start of operations, 15 metro trains an hour in the peak will move at least 17,280 people in each direction – with plenty of room to grow in the future.

Trains are required to operate on time 98 per cent of the time (contract mandated).

There will be a train every 10 minutes outside peak hours, at night and weekends.

The internal layout of the trains is being fine-tuned but there will be between 5500 and 6000 seats in each direction per hour when operations start.

The trains will be built by international train supplier Alstom and based on the Metropolis model currently used on other metro systems in global cities including Singapore, Barcelona and Amsterdam.

Metro trains will feature:

- ▶ Single deck, air conditioned carriages with comfortable seats
- ▶ Three doors per carriage, making unloading and loading of customers faster and safer
- ▶ Level access between platform and train
- ▶ Modern customer information systems
- ▶ Dedicated wheelchair spaces and separate priority seating
- ▶ Two large multi-purpose areas for prams, luggage and bicycles

- ▶ High levels of customer safety including customer service officers and CCTV monitoring inside and outside trains, as well as live links to the train control centre.

Train services

Sydney Metro Northwest will deliver frequent metro rail services seven days a week. It will operate throughout the day from early morning until late at night.

The trip from Cudgegong Road Station to Chatswood Station will take about 37 minutes.

The trip from Cudgegong Road Station to Wynyard Station, including interchanging at Chatswood Station, will take about 57 minutes.

Station	INDICATIVE TRAVEL TIME (MINUTES) TO			
	Macquarie Park	Chatswood	North Sydney	Wynyard
Cudgegong Road	28	37	51	57
Rouse Hill	26	35	49	55
Kellyville	24	33	47	53
Bella Vista	21	30	44	50
Norwest	19	28	42	48
Showground	17	26	40	46
Castle Hill	15	24	38	44
Cherrybrook	12	21	35	41

Note: Indicative travel times when Sydney Metro Northwest opens. Trips beyond Chatswood include interchange times.



The inside of Sydney’s new metro train



Artist's impression of the station platform at Kellyville Station

Safety

All parts of the new railway, from the trains to the platforms, have been designed with safety as a key priority.

Sydney's new trains will need to travel thousands of kilometres under strict test conditions well before the first customers board them.

Platform screen doors will also be introduced at all new stations. Located on the edge of station platforms, this Australian first technology keeps people and objects away from the tracks and mean trains can get in and out of stations faster.

The NSW Police Transport Command will patrol the new metro network just as they do across the rest of the Sydney rail network.

FAST FACTS

A train at least every **4 minutes** in the peak
– or 15 an hour

Fast, safe and reliable metro trains
7 days a week

The trip from Cudgong Road Station to Wynyard Station will take about
57 minutes

Australia's first **fully-automated** rail system

A new **state-of-the-art** control system will manage all aspects of the trains

A **specialised** train stabling and maintenance facility will be built as part of the new metro rail network

Epping to Chatswood

Sydney Metro Northwest is an integrated transport solution from Rouse Hill through to Chatswood.

Sydney Metro Northwest will connect directly with the existing Epping to Chatswood railway to allow the new trains to operate a distance of 36 kilometres between Rouse Hill and Chatswood.

While the second harbour crossing is being delivered, extending metro rail from Chatswood, customers will walk across the platform at Chatswood to change to an existing service.

In peak hours, there will be a train at least every five minutes. On the North Shore Line from Chatswood toward the city, there will be a train every three minutes.



The existing Chatswood Station interchange

Sydney Metro Trains Facility

A specialised train stabling and maintenance facility will be built at Tallawong Road, near the end of Sydney Metro Northwest.

The facility is planned to be built progressively, with capacity for 20 metro trains when Sydney Metro Northwest opens in the first half of 2019. It will operate 24 hours a day, seven days a week.

The facility is being designed to cater for the future needs and growth of Sydney's broader metro rail system – meaning stabling will be provided for up to 45 eight-car trains and maintenance facilities for a fleet of 76 trains. This takes into account plans for the second stage of the metro network, Sydney Metro City & Southwest.



Artist's impression of the Sydney Metro Trains Facility



Artist's impression of metro trains under Sydney Harbour

Operations of the new metro

Northwest Rapid Transit (NRT) will operate Sydney Metro Northwest when it opens in the first half of 2019 for 15 years.

As a Public Private Partnership, NRT will need to meet strict performance targets including running on time 98 per cent of the time, and having trains available 99.5 per cent of the time.

NRT will also need to meet the highest level of customer service standards ever seen in public transport in Sydney including clean trains and stations, or risk financial penalty.

The NSW Government will set fares, which will be set in line with the rest of the Sydney rail system.

Second harbour crossing

Sydney Metro Northwest is the first stage of Sydney Metro. Metro City & Southwest is the second stage.

The metro system will extend from the end of Sydney Metro Northwest at Chatswood, under Sydney Harbour, through the CBD and west to Bankstown, a total of 66 kilometres of metro rail.

Sydney Metro will help reduce crowding right across the city, with three brand new stations in Sydney's CBD and ultimately a train every two minutes through the city on the new line. That means moving 100,000 more people every peak hour.

Working together with major upgrades to the Western Line, Sydney Metro will deliver the capacity to increase the number of trains entering the CBD across the entire Sydney railway system from 120 to about 200 in the busiest hours of the day.

SYDNEY'S NEW METRO TRAINS

KEY FACTS



Open to customers in the first half of 2019



8 new railway stations



15 trains an hour in peak



Peak train every 4 minutes



Off peak train every 10 minutes

TRAIN FEATURES

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



168m long platforms - longer than most of Sydney

Heating and air conditioning

SAFETY

Australia's first fully-automated metro rail network. Around the world, millions of people use these networks everyday 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



4000
new commuter car parking spaces



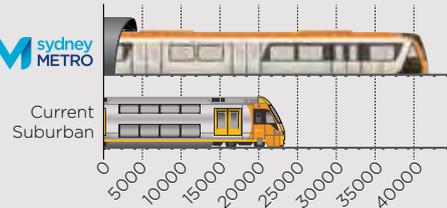
Continuous mobile phone coverage throughout network



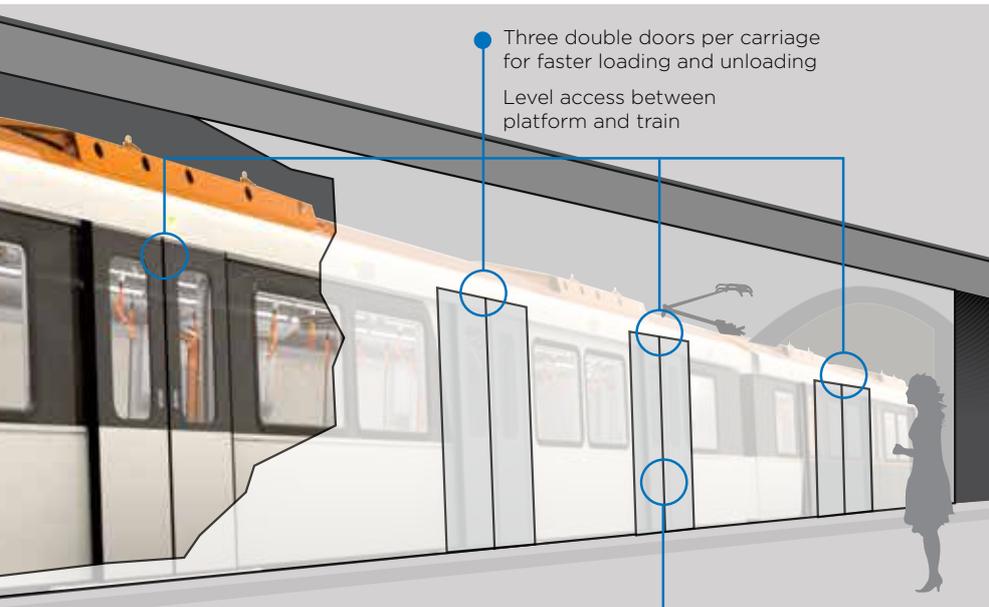
No timetable - just turn up and go



Opal ticketing



Maximum Sydney train customers per hour per line



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



26 CCTV cameras per train; inside you can see from one end of the train to the other



Platform screen doors keep people and objects away from the edge and allow trains to get in and out of stations much faster



Real time travel information and live electronic route maps

Security

More than 230 tunnel cameras

Signalling and communications systems

Controls the trains, tunnels, platforms and skytrain to deliver a safe and reliable journey

Platform doors



Faster journeys

System minimises the time trains are stopped at stations and the time between each train

STATIONS

Sydney Metro Northwest will provide eight new stations at:

- ▶ Cherrybrook
- ▶ Castle Hill
- ▶ Showground
- ▶ Norwest
- ▶ Bella Vista
- ▶ Kellyville
- ▶ Rouse Hill
- ▶ Cudgegong Road, Rouse Hill.

Existing stations on the Epping to Chatswood railway will remain at Epping, Macquarie University, Macquarie Park and North Ryde – and are being upgraded to accommodate metro services, which will operate at least every five minutes in the peak.

All stations will be designed to reflect the character of local areas they serve.

There are three types of stations being built for Sydney Metro Northwest.

Underground stations

Castle Hill, Showground and Norwest are being built underground in tunnels using a 'cut and cover' technique. This means they will be dug or cut out from the ground and then covered.

Open cut stations

Cherrybrook, Bella Vista and Cudgegong Road are being built as open cut stations. This means they will be open to the sky, but below ground level.

Elevated stations

Kellyville and Rouse Hill will be stations along the skytrain. This means they will be elevated as above ground stations.



Artist's impression of the open cut Cherrybrook Station



Stations will meet needs of buses and taxis



Stations will allow for seamless interchange

All stations will meet the needs of:

- ▶ Pedestrians
- ▶ Cyclists
- ▶ People using buses and taxis
- ▶ People being dropped off or picked up in cars.

All stations will provide easy access for people with a disability.

Commuter car parking for 4000 cars is being provided at:

- ▶ Cherrybrook - 400
- ▶ Showground - 600
- ▶ Bella Vista - 800
- ▶ Kellyville - 1200
- ▶ Cudgegong Road - 1000.

FAST FACTS

8 new stations will be delivered by Sydney Metro Northwest

All stations will be **designed** to reflect the **character** of the local areas they serve

Commuter parking for **4000** cars

Kellyville and **Rouse Hill** stations built on the **skytrain**

Stations will provide for a **seamless interchange** between transport modes

Rouse Hill and **Castle Hill** stations will feature **major bus interchanges**

Sydney Metro Northwest will use **Opal ticketing**

Fares will be **set by the NSW Government** on the same basis as applies to the **broader Sydney rail network.**



Stations will meet needs of cyclists

Cudgegong Road Station



In the heart of the North West Growth Centre, the new Cudgegong Road Station will become the transport hub for booming residential growth at places like The Ponds and western parts of Rouse Hill.

The station will be located parallel to Schofields Road between Cudgegong Road and Tallawong Road.

The station is the last one on Sydney Metro Northwest; however the NSW Government has secured a transport corridor west into Marsden Park to ensure future growth can be catered for when the time comes.

There will be a strong emphasis placed on pedestrian access at the station and a dedicated pedestrian bridge across the rail line providing direct connections to the local shops and commercial activities.

Cudgegong Road Station is 48 kilometres north west of Sydney CBD.

FAST FACTS

Located between Cudgegong and Tallawong roads

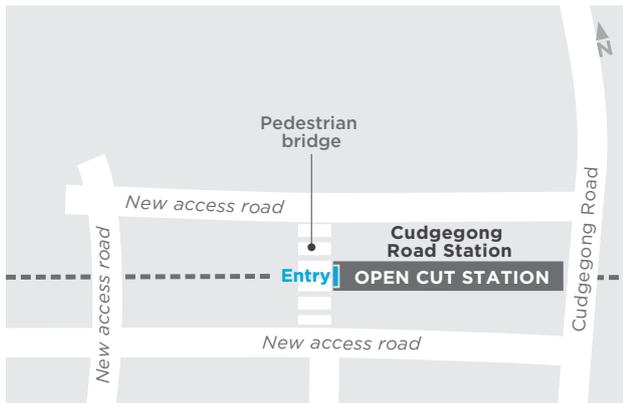
 **1000** commuter car parking spaces

 **6** spaces for buses

 **15** kiss-and-ride spaces

 **9** taxi spaces

 Parking and storage for **45** bicycles



Key features

- ▶ Two new internal access roads between Tallawong Road and Cudgegong Road, providing access to the station and car park areas
- ▶ Construction of a road overbridge midway between Tallawong Road and Cudgegong Road linking the access roads
- ▶ New traffic lights off:
 - Cudgegong Road
 - Tallawong Road
- ▶ Pedestrian bridge across the rail line
- ▶ Access for emergency, delivery and maintenance vehicles.

Location

Between Cudgegong and Tallawong roads.

Station type

- ▶ Village centre station (local shops and commercial activities)
- ▶ Open cut station - that is, open to the sky, but about six metres below street level. A canopy will cover part of the platform for shade.

Station entrance

Via a new access road on the northern side of the station, between Cudgegong Road and Tallawong Road.

Indicative travel time

Cudgegong Road Station to Wynyard Station - approximately 57 minutes (including interchange).



Rouse Hill Station



Located directly outside the Rouse Hill Town Centre and above the existing T-way, the new Rouse Hill Station will service the growing retail and entertainment precinct of this area. Along with Kellyville Station, it is one of two stations located on the skytrain.

Rouse Hill has a long term employment target of 12,000 jobs by 2036. As such, the station will serve as a major public transport interchange and the T-way will be modified to accommodate the station above it. An interchange on both sides of the T-way will be provided for 12 buses, and six taxi spaces will be provided along Tempus Street.

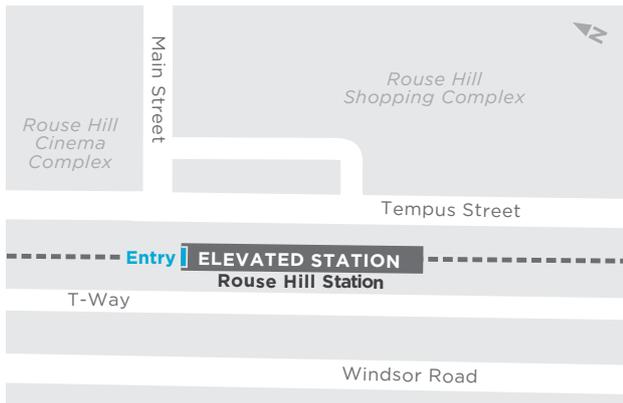
Recent residential development lies to the south of the station.

Rouse Hill Town Centre is 37 kilometres north west of Sydney CBD.

FAST FACTS

Located above the existing T-way, outside the Rouse Hill Town Centre

- B** 12 spaces for buses
- 25** kiss-and-ride spaces
- 6** taxi spaces
- Parking and storage for **40** bicycles



Key features

- ▶ Surrounding roads and footpaths will be modified and upgraded
- ▶ Reinstatement of traffic lights at the corner of Rouse Hill Drive and White Hart Drive
- ▶ Reconfiguration of the bus interchange
- ▶ T-way and road layout reconfigured
- ▶ Footpath upgrades along Tempus Street and Windsor Road
- ▶ Pedestrian crossings on Tempus Street, Main Street and on the T-way.

Location

Above the existing T-way, outside the Rouse Hill Town Centre.

Station type

- ▶ Major retail, commercial and residential centre station
- ▶ Elevated on the skytrain structure – about 12 metres above street level.

Station entrance

Via Tempus Street adjacent to Rouse Hill Town Centre forecourt.

Indicative travel time

Rouse Hill Station to Wynyard Station – approximately 55 minutes (including interchange).



Kellyville Station



An elevated station on the skytrain, Kellyville Station will work together with the adjacent T-way to service the public transport needs of this growing residential area. Along with Rouse Hill Station, it is one of two stations located on the skytrain.

Kellyville Station will provide rail access and a public transport interchange for people living at Kellyville, Beaumont Hills and Stanhope Gardens.

The station will have the biggest commuter car park on Sydney Metro Northwest, providing 1200 car spaces, plus an additional 160 T-way spots.

Kellyville Station will be located at the corner of Old Windsor Road and Samantha Riley Drive, east of the Riley T-way Station and car park.

Kellyville is 34 kilometres north west of Sydney CBD.



FAST FACTS

Corner of Old Windsor Road and Samantha Riley Drive



1200 commuter car parking spaces



4 spaces for buses



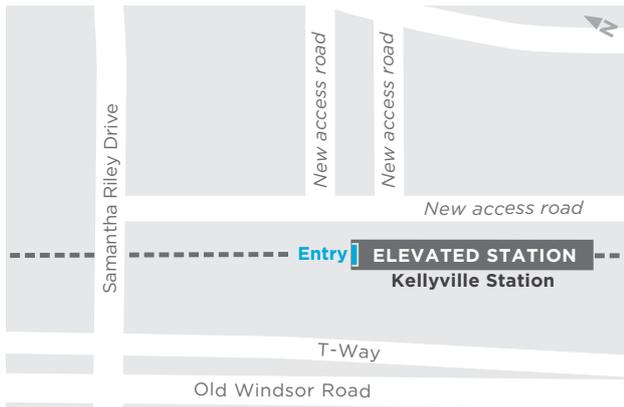
10 kiss-and-ride spaces



4 taxi spaces



Parking and storage for **45** bicycles



Key features

- ▶ New access roads will be built and parts of surrounding roads and footpaths will be modified and upgraded
- ▶ Samantha Riley Drive widened to accommodate additional turning lanes
- ▶ Existing roundabout on Samantha Riley Drive removed
- ▶ New traffic lights at Samantha Riley Drive
- ▶ New pedestrian bridge across Old Windsor Road and the T-way at the intersection with Samantha Riley Drive and Newbury Avenue
- ▶ Access for emergency, delivery and maintenance vehicles.

Location

Corner of Old Windsor Road and Samantha Riley Drive.

Station type

- ▶ Suburban village station
- ▶ Elevated on the skytrain structure – about 13 metres above street level.

Station entrance

Via a new access road off Samantha Riley Drive.

Indicative travel time

Kellyville Station to Wynyard Station – approximately 53 minutes (including interchange).



Bella Vista Station



Located on the western edge of the Norwest Business Park, Bella Vista Station is one of two stations added to the Sydney Metro Northwest project following detailed community feedback.

The station will serve the booming business park, one of Sydney's largest, as well as local residential areas of Bella Vista.

Bella Vista Station is uniquely situated just at the end of the twin railway tunnels and just before the skytrain takes to the air on its journey to Kellyville and Rouse Hill. A large area of residential development is located to the east of the station, with the business park to the south.

The station will be located off Celebration Drive, east of Old Windsor Road.

Bella Vista is 33 kilometres north west of Sydney CBD.

FAST FACTS

Located off Celebration Drive, east of Old Windsor Road

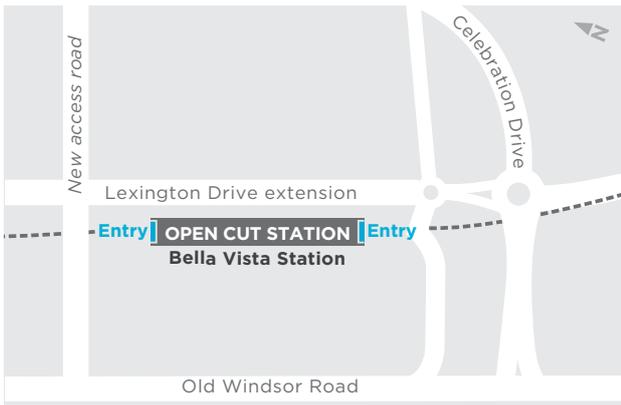
P 800 commuter car parking spaces

B 6 spaces for buses

16 kiss-and-ride spaces

4 taxi spaces

30 bicycles



Key features

- ▶ Retail space at station entries
- ▶ Local bus access provided from existing T-way
- ▶ New traffic lights at Lexington Drive and Celebration Drive
- ▶ A pedestrian bridge across Old Windsor Road
- ▶ Extension of Celebration Drive to link with new local access roads
- ▶ Footpath upgrades.

Location

Off Celebration Drive, east of Old Windsor Road.

Station type

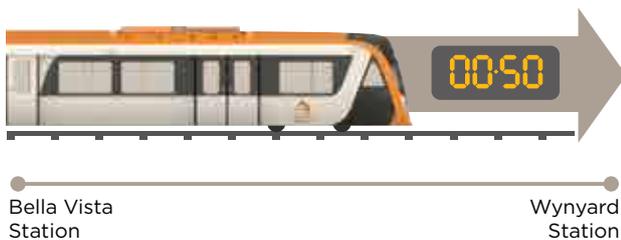
- ▶ Future town centre station
- ▶ Open cut station – that is, open to the sky, but about six metres below street level. A canopy will cover part of the platform for shade.

Station entrance

Main entrance from Norwest Business Park via a pedestrian plaza facing the new Lexington Drive extension, off Celebration Drive. A second western entrance from the future carpark and local shops.

Indicative travel time

Bella Vista Station to Wynyard Station – approximately 50 minutes (including interchange).



Norwest Station



Located in the heart of the Norwest Business Park, Norwest Station will serve one of Sydney’s biggest employment precincts. It will also serve a large area of recent residential development to the south of the station.

The business park has seen strong growth and has significant opportunity for further employment and residential expansion in the future. To cater for this, bus bays are being provided on both sides of Norwest Boulevard and nine taxi spaces on Brookhollow Avenue.

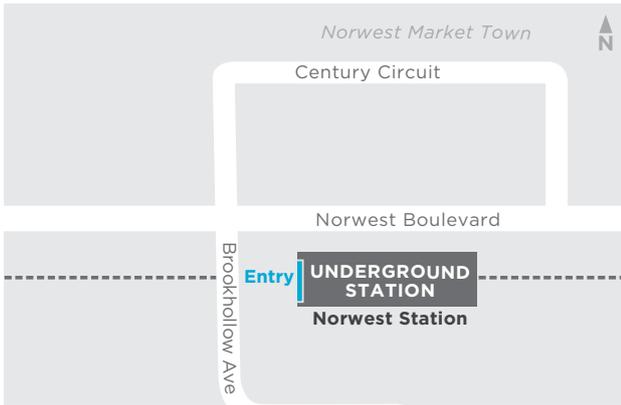
Norwest Station will be located in the Norwest Business Park, at the corner of Norwest Boulevard and Brookhollow Avenue.

The Norwest Business Park is 30.5 kilometres north west of Sydney CBD.

FAST FACTS

Located in the Norwest Business Park

- 4** spaces for buses
- 9** kiss-and-ride spaces
- 9** taxi spaces
- Parking and storage for **30** bicycles



Key features

- ▶ Retail space at station entry
- ▶ New traffic lights at the intersection of Norwest Boulevard and Brookhollow Avenue
- ▶ Pedestrian and bicycle upgrades along Norwest Boulevard and Brookhollow Avenue
- ▶ The area of land to the north east of the station entrance will be landscaped, including planting along Norwest Boulevard
- ▶ Provision for an underground connection to the north-eastern side of Norwest Boulevard.

Location

In the Norwest Business Park.

Station type

- ▶ Major employment centre station
- ▶ Underground station – about 20 metres below street level.

Station entrance

Via the corner of Norwest Boulevard and Brookhollow Avenue.

Indicative travel time

Norwest Station to Wynyard Station – approximately 48 minutes (including interchange).



Showground Station



Servicing the heart of the Castle Hill Showground entertainment and community precinct, the new Showground Station will be located at the corner of Carrington Road and Doran Drive – right next to the historic Castle Hill Showground.

The planning of the Sydney Metro Northwest project secured the future of the showground, home to the annual Castle Hill Show – which has been running for more than 125 years – by moving the station away from the historic community facility.

Showground Station will service its namesake as well as providing direct rail access to existing residential development to the north and east and employment areas to the south and west. Space will be provided for two buses on Doran Drive.

Showground Station is 28.5 kilometres north west of Sydney CBD.

FAST FACTS

Located at the corner of Carrington Road and Doran Drive

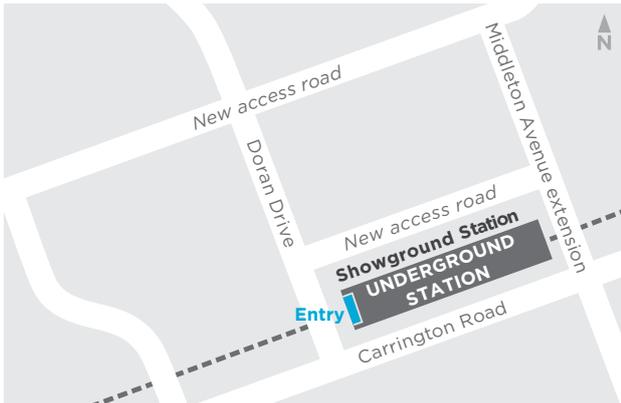
P 600 commuter car parking spaces

B 2 spaces for buses

15 kiss-and-ride spaces

4 taxi spaces

Parking and storage for **40** bicycles



Key features

- ▶ Public plaza and retail space
- ▶ New traffic lights at the intersection of Carrington Road and Doran Drive
- ▶ New access road between:
 - Carrington Road and Showground Road, with traffic lights at Showground Road
 - Doran Drive and Middleton Avenue
- ▶ Upgrade and widening of Doran Drive, to allow for two lanes of traffic
- ▶ Extension of Middleton Avenue and reconfiguration of roundabout at Carrington Road
- ▶ Footpath upgrades along Carrington Road (including towards Castle Hill Industrial Estate) and Doran Drive
- ▶ Pedestrian crossings on Middleton Avenue, Doran Drive and the new access road
- ▶ Access for emergency, delivery and maintenance vehicles
- ▶ Air control units to provide cool air in the warmer months.

Location

Corner of Carrington Road and Doran Drive, next to Castle Hill Showground.

Station type

- ▶ Suburban village station
- ▶ Underground station – about 20 to 25 metres below street level.

Station entrance

Via a forecourt at the corner of Carrington Road and Doran Drive.

Indicative travel time

Showground Station to Wynyard Station – approximately 46 minutes (including interchange).



Castle Hill Station



Servicing one of Australia’s largest retail and entertainment precincts, Castle Hill Station will be located underground – beneath Arthur Whiting Park and outside Castle Towers Shopping Centre on Old Castle Hill Road.

With Castle Hill expected to support 13,000 jobs by 2036, the new station will also serve as a major public transport interchange, helping to contribute to the strong growth of the area.

A bus interchange will be provided on Old Northern Road for 10 buses. There will also be 17 kiss-and-ride spaces on Old Castle Hill Road, as well as nine taxi spaces off Old Castle Hill Road. Underground pedestrian links below Old Castle Hill Road to connect to Castle Towers Shopping Centre will be safeguarded into the design.

Castle Hill is a major town centre, 26 kilometres north west of Sydney CBD.

FAST FACTS

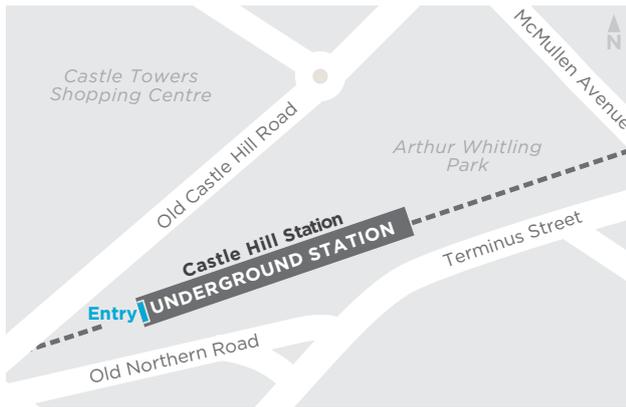
Located beneath Arthur Whiting Park, outside Castle Towers Shopping Centre

B 10 spaces for buses

17 kiss-and-ride spaces

9 taxi spaces

Parking and storage for **20** bicycles



Key features

- ▶ Retail space at station entry
- ▶ Landscaped park, including re-interpretation of historic elements from the park
- ▶ New traffic lights at Old Northern Road and Terminus Street
- ▶ Modification to the intersection at Crane Road, Old Northern Road, Castle Hill Road and Castle Street
- ▶ Footpath upgrades along Old Castle Hill and Old Northern roads
- ▶ Pedestrian crossings on Old Castle Hill and Old Northern roads
- ▶ Access for emergency, delivery and maintenance vehicles
- ▶ Major bus interchange facilities for local buses and Metro buses.

Location

Beneath Arthur Whiting Park, outside Castle Towers Shopping Centre.

Station type

- ▶ Major retail and commercial centre station
- ▶ Underground station – about 25 metres below street level.

Station entrance

Via an entry plaza at the intersection of Old Northern Road and Castle Hill Road.

Indicative travel time

Castle Hill Station to Wynyard Station – approximately 44 minutes (including interchange).



Cherrybrook Station



Located beside Castle Hill Road and between Franklin and Robert roads, Cherrybrook Station will service Cherrybrook, West Pennant Hills and Dural. As an established arterial road, Castle Hill Road provides good links east and west.

The station's location will allow designers to maximise the use of daylight and natural ventilation. New pedestrian and bicycle links will also be provided at the station.

Cherrybrook is a residential neighbourhood 23.5 kilometres north west of Sydney CBD.

FAST FACTS

Located beside Castle Hill Road between Franklin and Robert roads

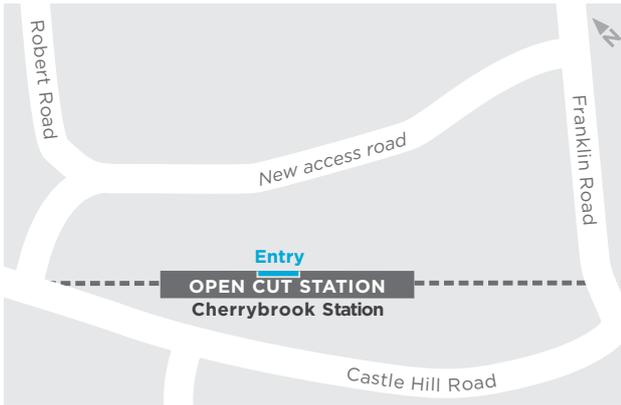
 **400** commuter car parking spaces

 **6** spaces for buses

 **14** kiss-and-ride spaces

 **4** taxi spaces

 Parking and storage for **40** bicycles



Key features

- ▶ Retail space at station entry
- ▶ New traffic lights and improved pedestrian safety at Glenhope Road and Castle Hill Road
- ▶ The current intersection of Castle Hill Road and Robert Road will be realigned to give priority access to the new station access road
- ▶ Intersection upgrade of Franklin and Castle Hill roads to allow left in/left out movements
- ▶ Widening of:
 - Castle Hill Road on northern side including right-turn bay at Robert Road
 - Franklin Road between Castle Hill Road and Kayla Way
 - Robert Road between Castle Hill Road and the new access road
- ▶ Footpath upgrades along Castle Hill, Robert and Franklin roads
- ▶ New intersection at Robert Road
- ▶ New access road on the northern side
- ▶ Access for emergency, delivery and maintenance vehicles
- ▶ Fencing, landscaping and public areas.

Location

Beside Castle Hill Road between Franklin and Robert roads.

Station type

- ▶ Suburban village station
- ▶ Open cut station - that is, open to the sky, but about seven metres below street level. A canopy will cover part of the platform for shade.

Station entrance

Via a new access road off Franklin Road and Castle Hill Road.

Indicative travel time

Cherrybrook Station to Wynyard Station - approximately 41 minutes (including interchange).



TUNNELS

The Sydney Metro Northwest twin tunnels are the longest railway tunnels ever built in Australia.



Crew workers in the tunnel at Bella Vista – October 2014

They stretch 15 kilometres from Bella Vista to Epping and then link into the existing 13 kilometre railway tunnels between Epping and Chatswood, which will be upgraded to metro standards.

Sydney Metro Northwest is the first transport infrastructure project in Australian history to use four tunnel boring machines (TBM) at the one time.

Elizabeth was the first TBM to be launched from Bella Vista in September 2014, four months ahead of schedule.

The second TBM, Florence, was also launched from Bella Vista shortly after, in October. These two machines are now making the nine kilometre journey underground from Bella Vista to Cherrybrook.

Isabelle, the third TBM, was launched from Cherrybrook in November 2014, and will dig six kilometres from Cherrybrook to Epping.

A fourth and final machine, Maria, was launched from Cherrybrook in January 2015, joining Isabelle to dig the other tunnel to Epping.

The twin tunnels are, on average, 26 metres deep and 58 metres at their deepest point beneath Thompson's Corner at West Pennant Hills.

The tunnel contract is expected to be completed in 2017.

Naming the tunnel boring machines

On major tunnelling projects around the world, underground workers look to Saint Barbara for protection.

Because of this, machines that work underground are traditionally given female names.

Three of the four TBMs were named in public competitions under the theme: 'Women who have made a positive contribution to life in Sydney'.

The first TBM was named in a school competition after colonial pioneer Elizabeth Rouse - after whose family the suburb of Rouse Hill is also named. The competition was won by Alexandra Marshall from Rouse Hill Anglican College.

The second TBM, Florence, was named after Australia's first female engineer and architect Florence Mary Taylor.

The third TBM, Isabelle, was named after four-year old Isabelle Andersen by tunnel builders Thiess John Holland Dragados. Isabelle represents the families of the 900 workers who will deliver the twin tunnels between Bella Vista and Epping.

The fourth machine was named Maria after 19th century Aboriginal rights advocate Maria Lock.



Isabelle Andersen, 4, after whom TBM3 Isabelle was named - November 2014



A worker inside the tunnel boring machine



TBM1 Elizabeth breaks through at Norwest Station - January 2015

SKYTRAIN

The elevated skytrain runs four kilometres to Rouse Hill from Bella Vista, where Sydney Metro Northwest emerges from Australia's longest railway tunnels.



A straddle carrier lifts concrete segments onto a truck for skytrain construction – March 2015

It includes a landmark 270 metre long cable-stayed railway bridge over Windsor Road at Rouse Hill, similar in design to Sydney's Anzac Bridge.

The skytrain means the railway line will not cut communities in two. Instead, people and cars will be free to move around under it. A skytrain also means there will not be any impact from the local area flood plain.

The technical and architectural design of the skytrain is the result of a joint effort between local and international designers. The bridge will be unlike any other in Australia – it has the unique characteristic of being a rail bridge, supported by cables on a curve.

The skytrain was developed in response to community consultation and to help reduce construction impacts on motorists and the community. Its design also means any future upgrade of the Windsor and

Schofields road intersection will not be impacted by the operation of Sydney Metro Northwest.

Two of the eight new stations will be built on the skytrain, with the platforms at Kellyville and Rouse Hill stations elevated above the ground. The average height of the skytrain is nine metres.

The operator of Sydney Metro Northwest will have to follow strict rules about graffiti protection and maintenance of the skytrain that were set during the planning process.

Completion of the skytrain contract is expected in 2017, after which work will still continue to lay tracks, install overhead wiring and signalling, and fit out stations so Sydney Metro Northwest can open in the first half of 2019.

The gantries

Two giant horizontal cranes, or gantries, will build the skytrain, starting at each end and meeting in the middle near Kellyville.

Each gantry is 150 metres long, weighs 600 tonnes and sits about 30 metres off the ground.

The gantries will lift more than 1200 concrete segments into the air, joining them together to form the deck of the four kilometre skytrain. On average, about 70 metres of skytrain will be built every week.

A gantry is effectively a large horizontal crane which sits above the skytrain piers and pulls up each concrete precast segment which makes up the skytrain deck, aligning them into their final position.

Once they are aligned and attached, steel cables are inserted through and tensioned, giving strength to the structure.

FAST FACTS

The **skytrain** takes Sydney Metro Northwest above ground for **4km**

The **skytrain** will run from the end of the rail tunnels at **Bella Vista through to Rouse Hill**

Kellyville and **Rouse Hill** will be elevated stations on the skytrain

A **270m bridge** will be built over **Windsor Road** at Rouse Hill as part of the skytrain



The gantry crane which is building the skytrain - July 2015



Some of the 121 concrete piers which will hold up the 4km skytrain - June 2015



Launching gantry lifted into place - May 2015

ON TRACK

We're more than halfway through Sydney Metro Northwest, which started in 2011.



Aerial view of Norwest Station excavation – March 2015

Key milestones since this time include:

- ▶ 30km tunnelling task more than halfway finished, July 2015
- ▶ North West Rail Link renamed Sydney Metro Northwest, as part of bigger Sydney Metro project, June 2015
- ▶ Showground Station designs revealed, May 2015
- ▶ TBM1 Elizabeth breaks through into Showground Station, May 2015
- ▶ Excavation of Showground Station completed, May 2015
- ▶ Tunnel builders Thies John Holland Dragados complete 10 kilometres of tunnelling, April 2015
- ▶ Pre-cast concrete facility produces 50,000 segments, half the amount needed to line the tunnels, April 2015
- ▶ TBM2 Florence breaks through into Norwest Railway Station, March 2015
- ▶ Norwest Station designs revealed, March 2015
- ▶ TBM1 Elizabeth breaks through into Norwest Station, January 2015
- ▶ Fourth and final tunnel boring machine, Maria, launched January 2015
- ▶ Third tunnel boring machine, Isabelle, launched November 2014
- ▶ Cherrybrook station designs revealed, November 2014
- ▶ Second tunnel boring machine, Florence, launched October 2014
- ▶ \$3.7 billion operations contract awarded to Northwest Rapid Transit, September 2014

- ▶ First tunnel boring machine, Elizabeth, launched four months ahead of schedule, September 2014
- ▶ Starting construction (geotechnical drilling) on the skytrain and Kellyville Station, June 2014
- ▶ Approval of a railway bridge over Windsor Road at Rouse Hill by the Department of Planning and Environment, May 2014
- ▶ Completing the pre-cast concrete facility at Bella Vista, May 2014
- ▶ \$1.15 billion tunnelling contract awarded to Thies John Holland Dragados, June 2013
- ▶ Approval of Environmental Impact Statement 2 by the NSW Planning Minister, May 2013
- ▶ \$340 million skytrain contract awarded to Impregilo-Salini, December 2013
- ▶ Approval of Environmental Impact Statement 1 by the NSW Planning Minister, September 2012
- ▶ Appointment of Early Works contract to Baulderstone, August 2012
- ▶ Major scope improvements following community and industry consultation since June 2011 including going from six to eight new railway stations and an extra 1000 car parking spaces (for a total of 4000 spaces).



A completed section of tunnel at the Epping Services Facility - June 2015



Showground station excavation - May 2015



The concrete segments which will form the deck of the skytrain at Rouse Hill - July 2015



Some of the 100,000 concrete segments used to line the tunnels - June 2015



Further information

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Information in this document has been prepared in good faith and is correct at the time of printing. Please refer to project website for updates. September 2015.