



northwestrailink

Project Overview June 2012



Transport
for NSW



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northwestraillink snapshot

- Delivered as part of Sydney's Rail Future.
- Construction starts later this year.
- Multi-billion dollar tender process underway.
- Planning well advanced.
- Tunnelling begins in 2014.
- \$3.3 billion in State Budget over the next four years.

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FRONT COVER: Artist's impression: North West Rail Link Skytrain at Rouse Hill

Minister's foreword

The North West Rail Link is a key infrastructure project for the NSW Government.

The Government has made a clear commitment to get on with the task of building this massive project, and to have tunnel boring machines in the ground by 2014. The project will deliver benefits to the north west of Sydney and the broader metropolitan area for generations to come.

Today, many people in north west Sydney rely on buses to meet their public transport needs – or they have to use cars to get to work, study or services. Modern, reliable and safe rail will provide commuters with faster and more convenient journeys

compared with current unpredictable peak hour road trips.

While delivering public transport choice and flexibility to the north west, the Government has been working on its Fixing the Trains initiative which is designed to improve rail services across the network.

The Government has also been developing a draft long term Transport Master Plan to identify priorities for the next 20 years.

One major outcome of this work is Sydney's Rail Future – a long term rail plan that will transform the way our trains operate and the services they provide our customers.

Of course, the North West Rail Link cannot be developed in isolation to the rest of the rail system.

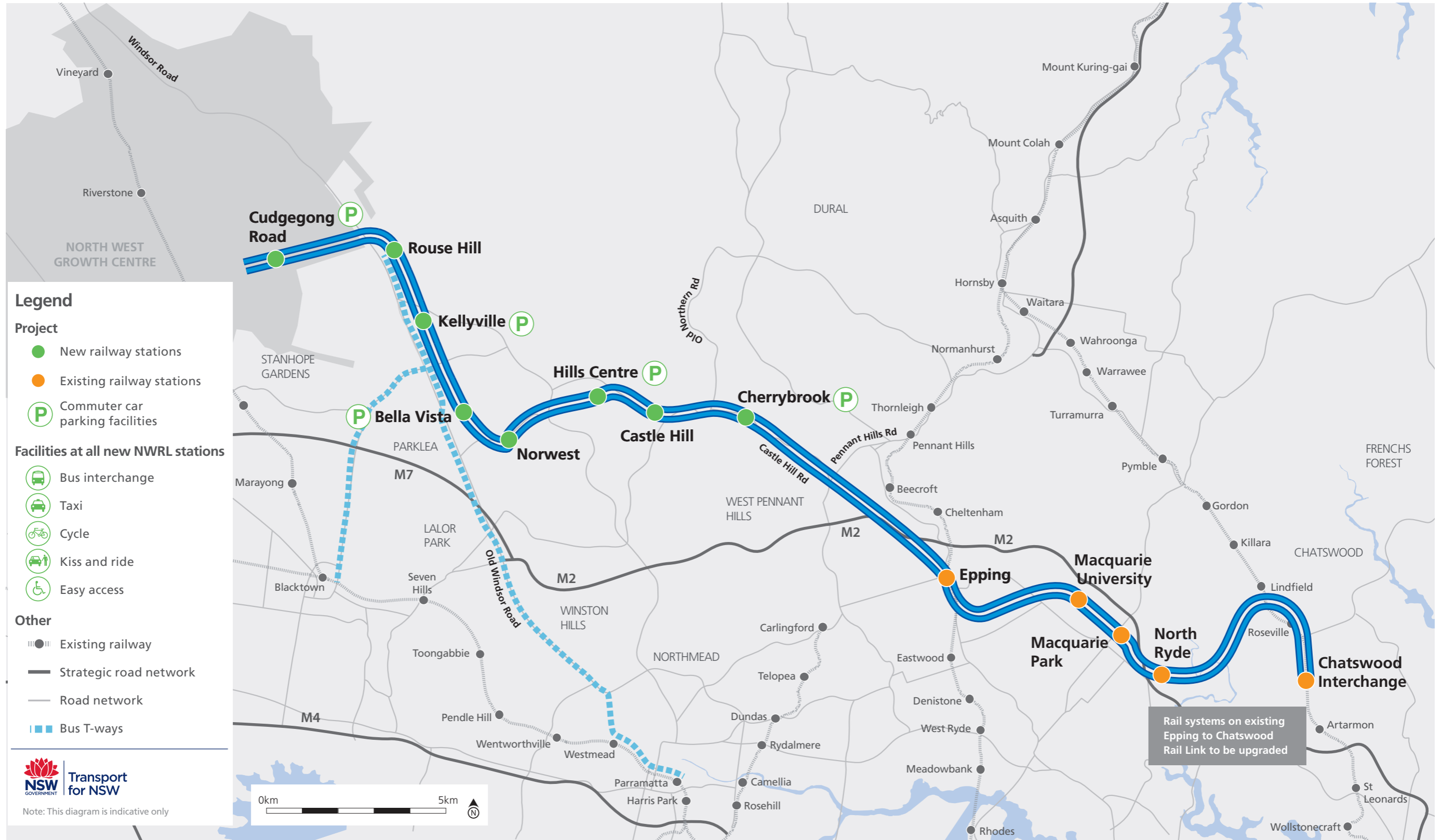
It is for this reason that the North West Rail Link – the newest part of the system – will be at the forefront of change designed to improve the entire rail network. The North West Rail Link will be the first line in Sydney to enjoy a new generation of rail travel – in fast, safe, efficient single deck trains.

This Project Overview explains how the North West Rail Link will integrate with the long term transformation of the network and deliver better outcomes for our customers across north west Sydney.



Gladys Berejiklian MP
MINISTER FOR TRANSPORT

Project map



New rail and improved customer service

Sydney's Rail Future is the blueprint for improving rail across Sydney over the next 20 years ... a customer focused transport plan to modernise our rail system.

It includes the introduction of new style rapid transit and will deliver more trains and more choice for customers.

Developed as a core component of the Long Term Transport Master Plan, it will create the largest increase in capacity to the Sydney rail network for 80 years.

The North West Rail Link is part of Sydney's Rail Future and will be built as the first of Sydney's new rapid transit services.

The existing 13 kilometre Epping to Chatswood Rail Link will be incorporated into the North West Rail Link, and the entire 36 kilometre line between Cudgegong Road, Rouse Hill and Chatswood will feature new single deck trains.

This will require upgrading of signalling and train operating systems between Epping and Chatswood to integrate with the North West Rail Link.

Until construction of a second harbour crossing, the new line will initially operate as a high frequency service between Rouse Hill and Chatswood.

Customers will simply cross the platform at Chatswood and wait a few minutes for the next train to St Leonards, North Sydney, the CBD and beyond.

Planning work will start immediately on a second harbour crossing. The second harbour crossing will extend the new rapid transit system through to the city, eventually linking up with lines to the south that will be converted to single deck operation (including the Bankstown and the Illawarra lines).

SYDNEY'S RAIL FUTURE

Transport for NSW has carefully assessed how to deliver the North West Rail Link in the context of Sydney's broader rail network, identifying how this new project can provide the best possible service to meet the needs of the future.

The previous reference scheme developed for the project outlined proposals to extend the existing rail network with the same style of double deck trains currently experienced across the rest of Sydney.

However, through the development of the Transport Master Plan, Sydney's Rail Future has emerged as the preferred approach to meet customer and capacity needs.

The long term planning associated with Sydney's Rail Future has taken a whole-of-network approach, in the context of where the anticipated growth in population and employment will be.

It has analysed the forecast future demand across the network to identify areas requiring significant

capacity increases, while at the same time better meeting the needs of our customers with faster journey times and services that are more regular, more reliable and tailored to different journey types.

Clearly, the key employment centre of the Sydney CBD lends itself to a rapid transit service.

In addition, Sydney's global economic corridor contains many of Sydney's employment and education centres and is now extending further to the north west, with Rouse Hill emerging as the next major centre. It is a key area for transit work trips, with many people embarking and disembarking at the various destinations along the corridor.

These trips also lend themselves to a turn up and go, fast and frequent stopping service.

For these reasons, the North West Rail Link has been identified for the first new single deck services which will be introduced across key parts of the network in the next decade and beyond.

The North West Rail Link

KEY FEATURES

Key features of the North West Rail Link are:

- The North West Rail Link will be the first line in Sydney to feature new single deck trains.
- New high frequency single deck train service from Cudgegong Road through to Chatswood - 12 trains per hour in the peak.
- Convenient “cross platform” interchange at Chatswood.
- In the future, north west trains will use the second harbour crossing to access the city and beyond.
- Railway systems on the existing line between Epping and Chatswood will be upgraded to create an integrated line with the North West Rail Link.
- Major bus interchange facilities at Rouse Hill and Castle Hill.
- 4,000 car parking spaces spread across five stations.
- Bus, pedestrian, car, cycling and accessible facilities at all stations.
- 15 kilometres of new tunnels.
- Smaller diameter tunnels will be excavated for single deck trains.
- 4 kilometres of Skytrain between Bella Vista and Rouse Hill.



Why single deck trains?

Sydney's Rail Future is driven by the recognition that current suburban and intercity services of double deck trains, while suitable for particular lines on the network, cannot meet the needs of all customers and all journeys.

The long term planning process has investigated the needs of customers.

For example, many passengers make the daily commuter trip to Parramatta and the CBD from the west and south west. These longer journeys are suitable for regular express services on double deck trains. Other people have shorter journey times where fast and frequent services are an incentive to travelling by rail.

Sydney's global economic corridor contains many of Sydney's employment and education centres and is now extending further to the north west with Rouse Hill emerging as the next major centre.

It is a key area for transit work trips, with many people embarking

and disembarking at the various destinations along the corridor.

Single deck trains have the advantage of being able to load and unload quickly at stations, allowing more trains per hour on any given line. This is a particular advantage on lines of high demand which include multiple major employment destinations.

Because of its strong connection to the global economic corridor, the North West Rail Link will be built as the first of these single deck services under the new rapid transit system.

The creation of this system will provide a vital link to key destination points through Sydney's major employment centres at Macquarie Park and Chatswood, with a seamless interchange at Chatswood on to St Leonards, North Sydney, the CBD and beyond.

There will be significant loading and unloading of passengers at all of these destinations which can happen much more efficiently and quickly on

single deck trains and can allow more trains per hour to travel on the line.

The new service will also consolidate centres at Castle Hill, Norwest Business Park and the emerging centre of Rouse Hill and it will have

the important effect of further extending the reach of the global economic corridor further into the north west.

SINGLE DECK TRAINS: FIRST IN THE NORTH WEST

- North West Rail Link leads change for Sydney's trains.
- Reliable, safe, frequent.
- More trains for the north west – more choice.
- Just turn up and go ... new rail far more reliable than buses in the peak hours.
- Safety – clear view inside and outside the carriages.
- New single deck trains – three wide doors per car – easy to get on and off.
- New trains can carry about 50 per cent more people than double deck trains in an hour.
- More trains between Epping and Chatswood.

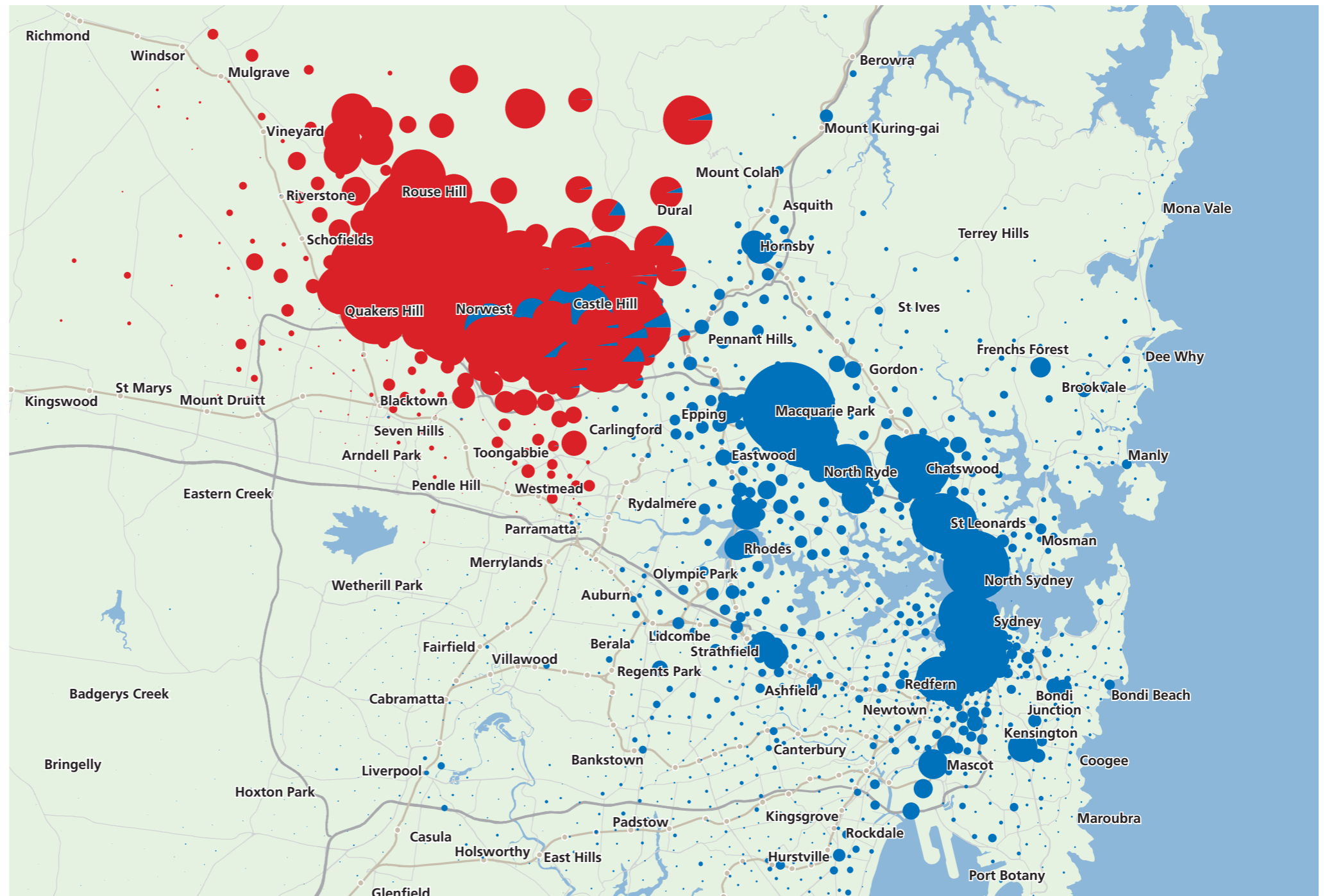
Strategic context

The majority of the population and employment growth in Sydney's north west is focused near the existing Hills District and the planned North West Growth Centre.

There is a growing demand, and increasing demand, for rail travel from these areas to the global economic corridor and the Sydney central business district. However, there is currently no direct rail access from large parts of Sydney's north west to the global economic corridor and the city, and there is limited capacity in the regional bus system to cater for the growth in demand.

The North West Rail Link will provide the people of north west Sydney with direct rail access to centres such as Macquarie Park and Chatswood. Patronage studies indicate that around 30% of customers using the North West Rail Link from the hills district will get off the train before Chatswood.

One third of customers will get off the North West Rail Link at or before Chatswood, including the major employment hubs of Macquarie Park and Norwest and the Macquarie University precinct. Another 11 per cent will not travel into the CBD and get off the train before North Sydney.



● Origin ● Destination

CUSTOMER FOCUS

The new rail link will provide:




- Approximately 300,000 people living in north west Sydney with rail access to Epping, Macquarie Park, Chatswood, St Leonards, North Sydney and the Sydney central business district.
- New rail services to existing suburbs in the hills district as well as new areas that are planned for residential and commercial development.
- Frequent, regular rail services and improved travel time reliability compared with bus and private car.
- Travel time savings from many areas of the north west district to the city and Macquarie Park, and within the region, including to the Rouse Hill Town Centre.
- An increase in train services to Macquarie University and Macquarie Park.

PROJECT OBJECTIVES

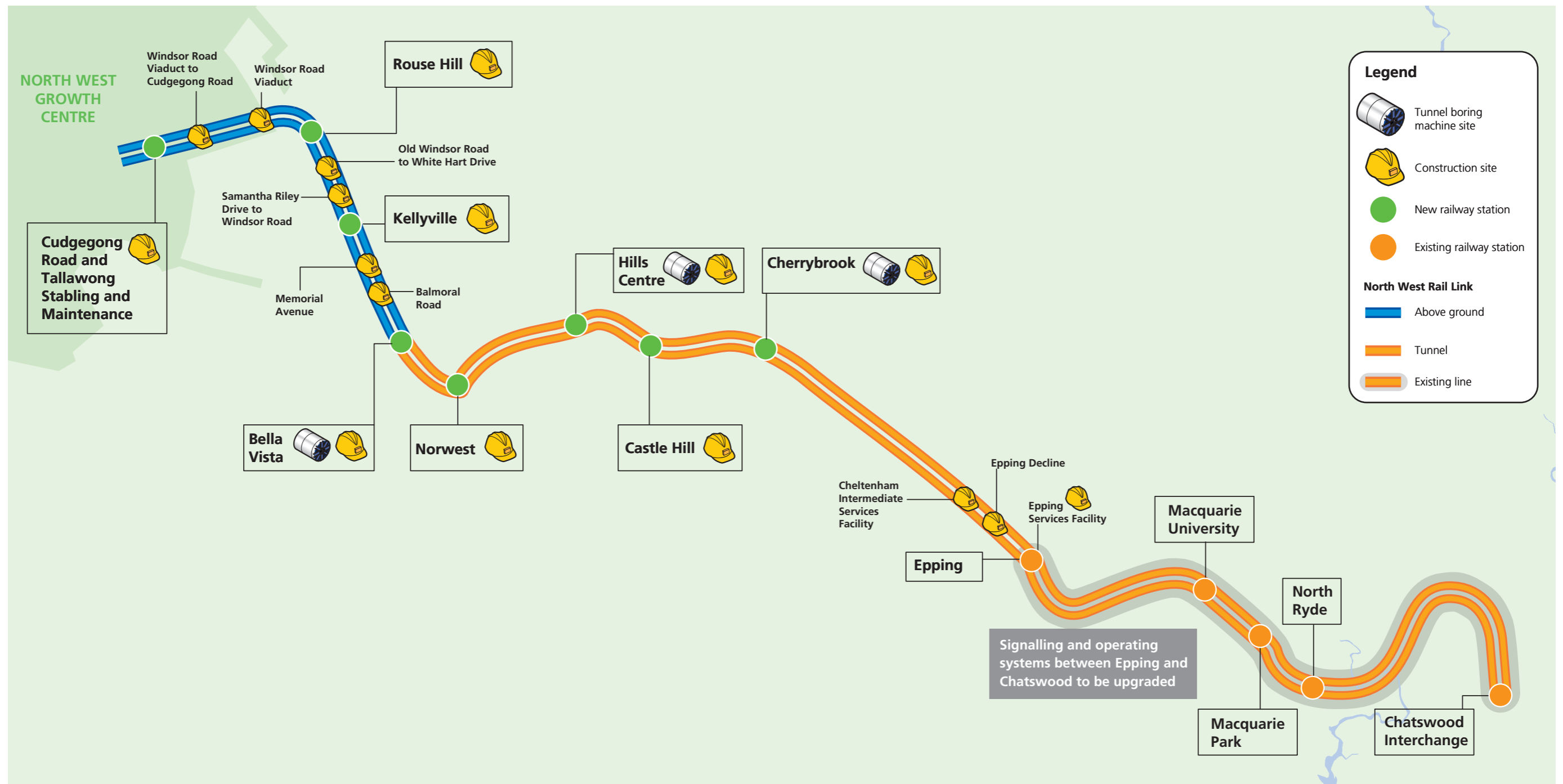
- Ensure customer needs are met through provision of a safe, high quality, integrated and affordable transport service.
- Link existing communities and new growth areas in north west Sydney with jobs and services in the global economic corridor (Macquarie Park - Chatswood - North Sydney - city).
- Deliver a transport service that has been informed by engagement with communities and stakeholders and represents value for money.
- Improve transport network reliability by facilitating a shift from road to rail for trips to and from the north west, to reduce bus and road congestion and improve amenity in the Sydney central business district.
- Contribute to environmental and social sustainability by improving liveability and minimising impacts on the environment, stakeholders and the community.
- Support the Government's challenge to accommodate population growth in the north west by increasing the potential for a range of housing and employment opportunities.



Core project activities

MILESTONE	INDICATIVE TIMING
Environmental Impact Statement 1 (Civil works)	
Exhibition	April - May 2012 
Approval	Q4 2012
Environmental Impact Statement 2 (Tracks, stations, operations)	
Exhibition	Q4 2012
Approval	Q2 2013
Property	
Site readiness and essential property demolition commences	June 2012 
Finalise all acquisition (freeholds and tenancies)	Q4 2013
Early Works	
Early works commence	Q4 2012
Major Tender, Tunnelling	
Release EOI	June 2012  End June 2012

North West Rail Link construction map



Latest project news

- Site readiness work at the first of the 17 construction sites about to begin.
- Delivery scope including contract packaging and operating model complete.
- Land required to build the stations and stabling yard under acquisition.
- Early works contracts including power and utility relocations, road works and other project start-up works commence later this year.
- Major industry engagement process completed.
- Planning work for the project is now well advanced.
- Environmental Impact Statement 1 (EIS1) examined major construction work including tunnelling, station excavation and major above ground construction, including the 4 kilometres Skytrain viaduct – exhibited April - May 2012.
- A total of 350 submissions were received following EIS 1.
- A second and separate EIS is now being prepared and will be released later this year, examining railway station design, operations, maintenance, rail infrastructure and systems including signalling.



ROUTE ALTERNATIVES

During the development of the North West Rail Link concept, a range of alternatives, including routes to Parramatta, were analysed.

The North West Rail Link via Epping was deemed to meet the greatest need and serve Sydney's long term objectives for land use and transport planning.

More recent analysis of travel behaviour continues to support the current route and alignment for the North West Rail Link. Investigations undertaken by Transport for NSW indicate that, of the north west's total workforce of approximately 121,000, four per cent work in Parramatta, compared with 20 per cent in the global economic corridor (Macquarie Park-Chatswood-St Leonards-North Sydney-city).



Artist's impression: North West Rail Link Skytrain at Rouse Hill

Sydney's Rail Future

Sydney's trains are the backbone of the city's public transport system, carrying over a million people a day.

But there's a limit to what our current system can do, and Sydney is outgrowing its rail network.

The challenge posed by the complex ageing system means the network cannot grow sufficiently to meet forecast demand.

The current network does not deliver what customers want – shorter journey times and services that are more regular, more reliable and tailored to different customer needs.

Sydney's rail system needs to be modernised.

The solution is Sydney's Rail Future.

A whole-of-network approach has been taken to long term planning for Sydney's Rail Future.

It has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.

Change will not be delivered overnight. Implementation of the strategy will unfold over through a long term program of service improvements, capital works and network upgrades.

THE FIVE STAGES OF SYDNEY'S RAIL FUTURE

STAGE	COMPONENT	DESCRIPTION
1	Operational efficiencies	<ul style="list-style-type: none"> Timetable overhaul to introduce standardised and regular "clockface" stopping patterns, more express services Significantly improved dwell management, with better management of door closure Platform de-cluttering to allow clear passenger entrance and exit Better incident recovery management through improved operational processes
2	Network efficiencies	<ul style="list-style-type: none"> Completion of South West Rail Link, station upgrades and Rail Clearways projects Introduction of even simpler timetables across the network Introduction of Automatic Train Operations Transition to dedicated fleet types for some lines Track infrastructure enhancement Platform re-design
3	New rapid transit system	<ul style="list-style-type: none"> Rapid transit trains are used to offer a comfortable, frequent, fast and high capacity link to busy inner areas Completion of the North West Rail Link and procurement of rolling stock for the new rapid transit single deck train system initially operating between the North West and Chatswood, with a cross-platform interchange to suburban services for those customers travelling to the CBD There will be a train from Chatswood to the CBD every three minutes in peak periods In line with the North West Rail Link, upgrade of the Epping to Chatswood Rail Link to a high capacity rapid transit system
4	Second Harbour Crossing	<ul style="list-style-type: none"> Completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the North West Rail Link to extend direct to the Sydney CBD The second Harbour Crossing will create the largest increase in capacity to the Sydney rail network for 80 years Untangling the CBD enables major capacity increases on the Western line
5	Southern sector conversion	<ul style="list-style-type: none"> Extension of the new single deck service to Bankstown and Hurstville Continue major timetable changes to existing suburban services to continue major capacity increases to South West and Western Sydney Better express services introduced due to separation from rapid transit

Understanding the challenges

A GROWING CITY

Sydney is a modern international city experiencing growth in population and employment. Sydney currently has a population of about 4.6 million, but this is projected to grow significantly over the coming years to 5.1 million by 2021 and 6 million by 2031.

Driven by population growth, employment in Sydney is expected to increase from its current level of 2.1 million workers to 2.6 million by 2031.

The Sydney central business district will remain the primary employment centre, and the global economic corridor, including Macquarie Park, North Shore, city and the airport, will account for about a third of the employment opportunity in Sydney.

This growth is going to place pressure on a rail system already straining to cope with current demand from years of under investment.

CAPABILITY

We cannot expect to continue to carry more and more passengers on a rail network that has not fundamentally changed for many decades. Even today, there are parts of the network where the daily task of transporting people is asking too much of a system that has been built over a period of more than 150 years.

Comparing Sydney's rail system to major world cities shows that we have pushed the complex two-door double deck network further than any other operator.

The ageing and complex system has a number of bottlenecks that effectively slow the whole network down.

- **Large numbers of junctions** – trains converge on the same line and must cross at junctions.
- **Complex train timetables** that demand trains with different service patterns share the same line, which can result in slower trains delaying fast and express trains.

- **Crowded trains** with 3 by 2 seating arrangements, which are slow to load and unload, resulting in long dwell times (the time a train needs to stop in a station for passengers to board and alight).
- **Crowded stations** that rely on stairs instead of escalators as the principal means of accessing platforms and concourse levels.
- **Narrow platforms** at busy city stations, which hinder passenger flow between trains and stairs and make it difficult for people on the platform to make way for passengers alighting from trains.
- **Traditional signalling technology**, which **impedes optimised train running** and maximum utilisation of line capacity.

CAPACITY

The closer we get to the capacity of the system, the less reliable it will be and the less it will meet the needs and expectations of rail customers.

Sydney's rail network faces a number of capacity challenges:

- There are parts of the rail network, such as the Western line, where 20 trains are scheduled to run in the busiest peak hour, yet frequently only 17 trains actually arrive during that same period.
- As reliability challenges have increased, journey times by rail have been increased – indeed, journeys on many lines are between 10 per cent and 20 per cent slower today than in 1992.
- On current projections, if we simply do the minimum with the rail network and allow for modest increases in capacity alongside committed rail projects, the network will run out of capacity at some point during the mid to late 2020s – this means that most lines running

through the network will experience overcrowding.

- Without action, capacity will be reached much sooner. This will mean that most lines running through the network will experience overcrowding, with the most affected areas being on the already heavily used lines coming into the city from the West and North Shore.
- The Government is adding new services to the network through the North West Rail Link and the South West Rail Link. This requires additional capacity on the rest of the system and in particular into the city.

CBD CONGESTION

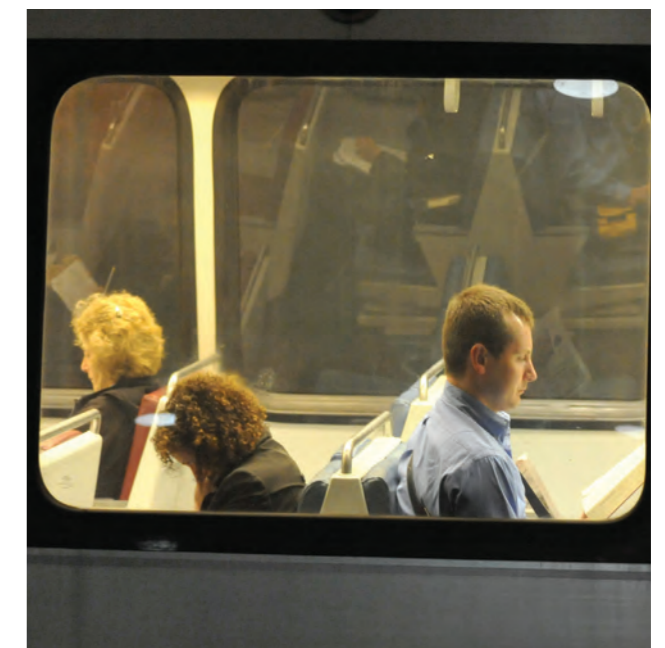
Without improvements, the CBD will experience significantly higher levels of congestion by 2031, as almost half of morning peak travel has a city station as its destination. Therefore, the expected growth in travel to the city is linked to the growth in demand across the various rail lines. By 2031 each of the three busiest city stations are expected to experience an increase of more than an additional 10,000 passengers per hour in the peak.

BARANGAROO

At the new Barangaroo development alone – the closest city station being Wynyard – employment is forecast to rise from an estimated 8,000 in 2016 to more than 20,000 in 2031. The Wynyard Walk, now under construction, will allow people to walk between Wynyard and Barangaroo. The current system is not set up to deal with the extra train network from commuters trying to get to work at Barangaroo.

SUBURBAN BOTTLENECKS

The Western and North Shore lines are the key bottlenecks of the network, as these lines have the highest level of interchange and station congestion in the city. A congested platform at Town Hall can create flow on delays at Blacktown and Penrith. Growth in south western Sydney and in the Sydney airport precinct will place increasing pressure on the East Hills lines which must share track through the city with the busy Bankstown line.



The customer experience

Sydney's Rail Future will improve the customer experience.

People travelling along lines linking the north west, the global economic corridor and the south will be able to 'turn up and go' without consulting a timetable.

Passengers travelling on other lines will use suburban or intercity trains that have improved reliability as well as extra services that will be greatly enhanced by technological innovation.

Some customers may need to interchange more than they currently do, but increased train frequency on the new rapid transit system will reduce the inconvenience of interchange, as people will not have to wait long for a connection.

Real time information will be provided at stations via more modern passenger information systems. High quality facilities will be introduced through the ongoing Transport Access Program, including new car parks and improved lighting and other safety features at stations. Integrated ticketing will also make it easier for customers to switch transport modes.

FASTER MORE RELIABLE SERVICES

- Timetable improvements – less crossings at busy junctions. .
- Improvements to platform efficiency and design.
- Less time that trains remain at stations (dwell time).

NEW RAPID TRANSIT

- A rapid-transit, high capacity, fast single deck train every five minutes, providing access to key destination points through Sydney's major employment and education centres.
- Rapid transit services for Hurstville, Bankstown, the lower North Shore, Epping to Chatswood and the North West Rail Link.
- A new high capacity service through the city.

- No timetable required on rapid transit system – turn up and go.
- Reliable with new infrastructure and technology.

INCREASED CAPACITY

- More than a 60 per cent increase in services to the Sydney CBD, the biggest step change in capacity since the construction of the Harbour Bridge and the city underground – an increase of up to 75 services over today's busiest peak hour.
- Ability to carry 90,000 to 100,000 more people per hour in the peak.
- Major capacity improvements across the network with increases in the peak of more than 60 additional trains across the harbour and through the city (30 each direction).
- Capacity to the CBD will increase by up to 14 trains per hour along the western lines.

THREE TIERS

TO MEET CHANGING CUSTOMER NEEDS, SYDNEY'S RAIL FUTURE WILL DELIVER A THREE TIER RAIL SYSTEM:

TIER 1: RAPID TRANSIT

- Frequent 'turn up and go' services without the need for consulting a timetable.
- Fast single deck trains, with plenty of seats, more doors, designed for easy boarding and alighting.

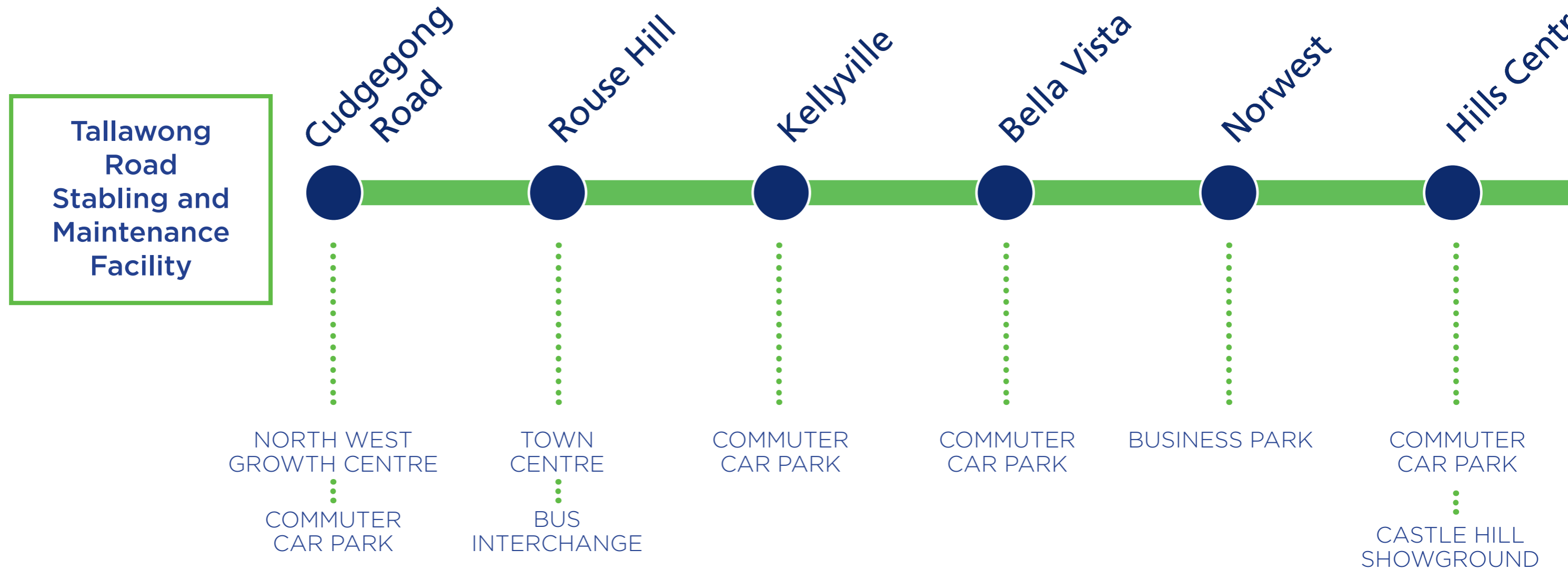
TIER 2: SUBURBAN

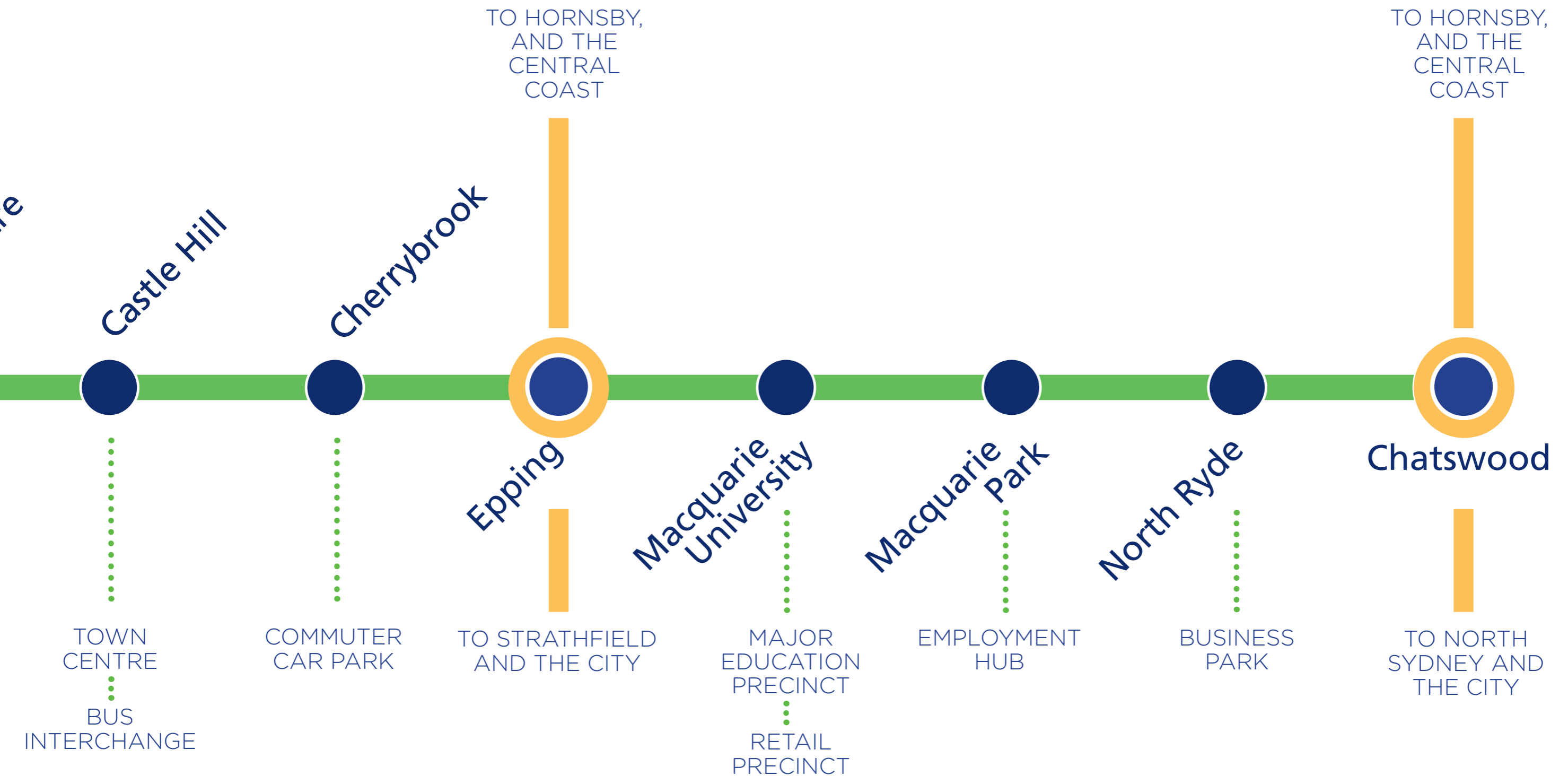
- Timetabled services.
- Double deck trains with more seats per train.

TIER 3: INTERCITY

- Timetabled services.
- Double deck trains for Central Coast, Newcastle, Wollongong and Blue Mountains services.
- Comfortable services for long distance commute and leisure travel with on-board facilities for improved customer convenience.

Stations...meeting customer needs





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