South East Queensland's Rail Horizon

Queensland Government

Foreword

The Queensland Government is committed to revitalising and transforming the South East Queensland (SEQ) rail network so it can meet the challenges of a growing population and provide customers a high performing rail service.

Delivering an accessible, safe and reliable transport system in Queensland is a priority. By 2036, the population of SEQ is forecast to reach around 4.9 million people, placing increasing pressure on our transport system, particularly in growth corridors and where the system converges in the Brisbane CBD.

The passenger rail network is reaching the limits of its capacity and if we fail to tackle the challenges ahead, we will face a transport crisis in the southeast corner. An efficient and integrated transport network is essential to ease congestion and improve accessibility and liveability in the region.

The average travel time budget is about one hour, per person, per day. SEQ's Rail Horizon outlines network solutions to ensure more residents in the Brisbane metropolitan region can reach their place of work, study or recreation within 30 minutes on public transport.

All levels of government must work together to fund critical infrastructure projects such as Cross River Rail. We must deliver the right projects at the right time to ensure efficient use of public funds.

Investment in the rail network will give people better access to their places of work and connect businesses and communities. It will support our economic growth and generate jobs.

South East Queensland's (SEQ's) Rail Horizon highlights the need for a better rail system to keep pace with growth and provide a better experience for customers, with more seats on more trains, more stations, shorter journey times and more efficient services. It puts the customer at the heart of the decisions we make to deliver on our rail network vision.

We are already addressing rail network challenges outside Brisbane by delivering projects such as Moreton Bay Rail Link, due for completion in 2016, and the Coomera to Helensvale Duplication, due for completion in 2017. These projects will improve access, reliability and increase service frequency across the passenger network.

We will roll out 75 new generation six-car trains from late 2016 to boost the number of trains by 30 per cent, and timetable and signalling improvements will improve capacity and access by allowing more trains to move more quickly through the network. A taskforce is reviewing fare structures to improve affordability and introducing practical measures to make public transport more accessible for everyone.

As demand continues to grow, there will come a time when new inner-city capacity is needed. By around 2021 there will not be any capacity to increase services on parts of the network during our busiest peak periods. The network will be operating at its limits.

The core of our long-term strategy for the rail network is the new Cross River Rail project. With over 100 design and alignment options investigated, this project design responds to feedback from transport experts and the community. Combined with existing rail infrastructure and new service initiatives, Cross River Rail will make it possible to move up to 240,000 people by rail into the inner-city during the two hour peak.

Stirling Hinchliffe MP
Minister for Transport and the Commonwealth Games

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Introduction

The region's population is doubling every 30 years, with a forecast population of around 4.9 million by 2036.[1]

While most residential growth is expected to be outside Brisbane in areas such as the Gold Coast, Moreton Bay, Ipswich and the Sunshine Coast, almost half of total jobs growth will remain in Brisbane. Jobs in the Brisbane area are forecast to grow by almost 450,000 by 2031.[1] This means more people travelling to and from work in Brisbane each day.

The Infrastructure Australia Audit states that unless transport capacity is improved, congestion on the Brisbane–Gold Coast– Sunshine Coast transport network will cost the economy around $9 billion a year by 2031.[2]

Public transport plays a key role in alleviating urban congestion by providing alternative travel options and moving more people more efficiently. Without investment in critical rail infrastructure, the network will be unable to expand its reach, trains will be over capacity and there will be more people standing, more often and for longer periods of time.

FIGURE 1

The closer we get to network capacity, the greater the impact on customers, with less reliable rail services and increased overcrowding. Ultimately, this means reduced access to jobs and education and lower productivity.

Rail is one of the most efficient and sustainable forms of mass transit. **Figure 1** illustrates the contrasting capacity of a private car, bus, ferry and train.

Investment in the rail network shapes a city and improves the quality of life for its residents. Rail infrastructure has a life span of over 100 years and in that time the majority of a city's buildings will be built, demolished and built again two to three times over. Rail infrastructure is therefore a frame around which a city grows and evolves.

1 Queensland Government population projections, 2013 edition
2 Infrastructure Australia Audit Report, May 2015

SEQ's Rail Horizon outlines the strategic priorities for the region's rail network, which include optimising the existing network, upgrading services and infrastructure and delivering critical new infrastructure. It identifies the key capacity challenges facing the rail network and solutions to address them.

SEQ's Rail Horizon aligns with the Queensland Government's desired outcomes for the community and the objectives of the *State Infrastructure Plan* (2016):

- Improving prosperity and liveability
- Infrastructure that leads and supports growth and productivity
- Infrastructure that connects our communities and markets
- Providing sustainability and resilience.

It also adopts key rail elements of *Connecting SEQ 2031: An Integrated Regional Transport Plan for South East Queensland*. A long-term strategy for all major transport modes, Connecting SEQ 2031 outlines the government's vision to continue to develop a transport system that can realise the region's potential for liveable, connected communities by providing easy access to jobs, services and attractions.

SEQ's Rail Horizon will assist Building Queensland, Queensland's independent infrastructure advisory body, to develop a pipeline of priority projects to help ensure the government invests in value for-money infrastructure projects that provide long-term community benefits.

Many enhancements to the rail network are underway or have been completed recently. Initiatives such as those illustrated in **Figure 3** means the network continues to modernise and meet community needs. However, increasing the reach of the network and adding more services will ultimately depend on addressing constraints through the inner-city.

SEQ's Rail Horizon responds to key challenges facing the SEQ rail network by identifying the key initiatives needed to unlock network capacity.

A new generation signalling system, the European Train Control System (ETCS), will be put in place in the core of the network where capacity, safety and reliability is needed the most. Cross River Rail will unlock inner-city rail network capacity, triggering a transformation of the entire regional transport network and providing a platform for regional growth, development and prosperity. Longer trains will also be used on parts of the network to significantly boost capacity and provide more seats to contribute to the government's vision for a modern, high-capacity rail system.

The growth driving the projected increase in demand for public transport will also drive increased demand for freight transport. As the regional and interstate freight task grows, there will be increasing pressure on freight capacity in SEQ.

Initiatives such as the Melbourne to Brisbane Inland Rail will improve rail freight access between Brisbane and the rest of Australia, while new terminal sites will reduce the competition for scarce capacity on inner-city rail networks and the reliance on long-haul road transport.

> **Cross River Rail, combined with existing rail infrastructure and new service initiatives, will make it possible to move up to 240,000 people by rail into the inner city during the two hour morning peak.**

Putting the customer first

By 2036, there will be nearly 1.2 million daily passenger transport trips in the Brisbane metropolitan region.[3]

The quality of the SEQ transport system affects residents, visitors and businesses. Individuals not only benefit in economic terms from effective public transport but also through social connections which contribute to their quality of life.

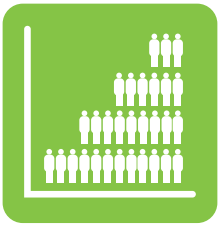
SEQ's Rail Horizon focuses on delivering a better experience for customers, with more seats on more trains, more stations, more frequent and reliable services, and shorter journey times – all in a safe, modern environment.

Figure 2 illustrates the most important factors influencing customer satisfaction for TransLink public transport users. Expanding rail into growth areas and modernising the network will ensure rail can respond to the growing transport task and customer needs. In particular, customers throughout the SEQ rail network will benefit from additional capacity provided by the CRR project in combination with longer trains and ETCS. These initiatives will allow the network to grow, reduce rail network congestion and remove conflicting train movements at a number of key junctions.

What rail customers want

- More frequent services, less waiting time at stations
- Better interchange with buses
- More reliable, on-time services
- Stations closer to key activity hubs
- Safety and security
- Services that are competitive with other modes (cost and time)
- Access to seats on trains

1.2 million
passenger transport trips per day in 2036



Population
doubling every 30 years in SEQ

FIGURE 2

3 Cross River Rail Project Model (2015)

Network enhancements being delivered

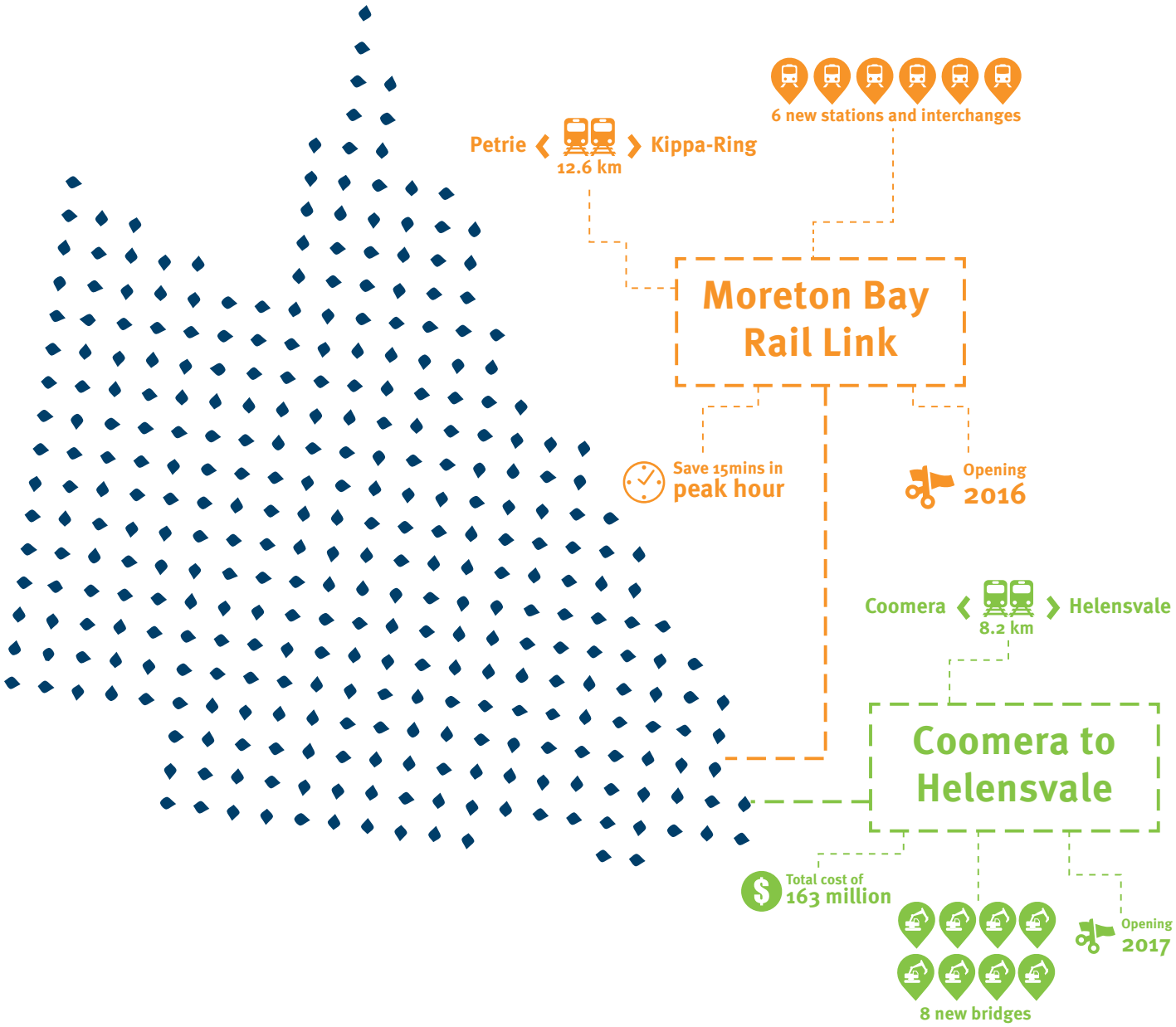


FIGURE 3

The challenges

The SEQ rail network spans almost 810 kilometres of track, stretching from Varsity Lakes on the Gold Coast to Gympie North, and from Moreton Bay and Cleveland in the east to Rosewood in the west.

The network currently includes 149 stations and nine separate rail lines that transport passengers and freight traffic throughout the major metropolitan area surrounding Brisbane. With the completion of the Moreton Bay Rail Link in 2016, a further six stations will be added to the network.

Passenger trains are the vast majority of traffic on the SEQ rail network. Even with operational efficiencies such as timetable improvements and signalling upgrades, and the introduction of New Generation Rollingstock from 2016, the current rail network is approaching capacity for both service volumes and passenger numbers.

There has not been any major rail infrastructure investment in inner-city Brisbane since 1996 when the track through the inner city was duplicated.

Rail projects in SEQ over the past 15 years have focused on extensions of the network on the outskirts of Brisbane, such as Moreton Bay Rail Link, Keperra to Ferny Grove Duplication, the Springfield line and the extension of the Gold Coast line to Varsity Lakes, adding more pressure to the congested inner-city network.

Accelerating growth and demand

While population growth is expected to mostly occur outside Brisbane, employment growth in the inner city and CBD is set to grow substantially. Public transport enables economic growth by getting people to their place of employment, education or other activity centres.

Increasing growth and demand will continue to add significant pressure to the rail network, as illustrated by **Figure 4**. Without major investment in the inner-city, there will not be room for more trains and current trains will become increasingly crowded.

Rail demand is expected to double by 2026, and triple by 2036, yet the current rail system will soon be approaching capacity.

Network demand and crowding on trains is forecast to exceed capacity sometime between 2021 and 2026. **Figure 5** shows what crowding on the SEQ rail network could be like in ten years if SEQ's Rail Horizon is not realised.

Forecasts indicate that pressure will initially be most concentrated on the southern (Brisbane–Gold Coast) and northern (Brisbane–Sunshine Coast) corridors. While the north – south axis is the first priority, substantial pressure is also expected on the western (Brisbane–Ipswich) rail corridor in the long-term.

Without action to address growth and demand, customers will be impacted by reduced reliability, increasing overcrowding and longer waiting times.

FIGURE 4


Peak period crowding in 2026 without investment
Key
Seats available
Approaching standing room only
Excessive level of crowding
Note: conceptual map only - not to scale
Not all stations are shown
North
Gympie North
Nambour
Landsborough
Beerwah
Caboolture North
Caboolture
Kippa-Ring
Petrie
Strathpine
Shorncliffe
Ferny Grove
Mitchelton
Northgate
Enoggera
Alderley
Eagle Junction
Wilston
Airport (International)
Airport (Domestic)
Doomben
FIGURE 6 INNER CITY CONSTRAINTS
Roma Street
Bowen Hills
Fortitude Valley
Central
Milton
Toowong
South Brisbane
South Bank
Park Road
Indooroopilly
Buranda
Mornington
Cannon Hill
Wynnum North
Manly
Thorneside
Birkdale
Cleveland
Yeerongpilly
Oxley
Darra
Salisbury
Goodna
Redbank
Springfield Central
Altandi
Kuraby
Ipswich
Loganlea
Rosewood
Beenleigh
Ormeau
Coomera
Helensvale
Varsity Lakes

FIGURE 5

Locked inner Brisbane capacity

Around 80 per cent of morning trips to work in the Brisbane CBD are made by public transport.[4] Rail users make up 35 per cent of the total 602,000 average weekday public transport trips in Greater Brisbane.[5]

The Gold Coast–Brisbane corridor is Australia's busiest inter-city commuter corridor.[6] Queensland Rail surveys indicate the Gold Coast and Ferny Grove line trains are considerably more crowded than other lines into Central station during the morning peak.

Long-distance trains from the Gold Coast all use a single inbound line across the Merivale Bridge and through the CBD to Bowen Hills, which is shared with suburban services from the Beenleigh and Cleveland lines.

Rail junction conflicts at Roma Street and Park Road and a track merge at Milton and Park Road add extra constraints for southern and western services by causing operational conflicts.

Through the CBD, all rail services merge into one corridor, with every service across SEQ stopping at all four inner-city stations from Roma Street to Bowen Hills. The city centre is the most popular commuter destination on the regional public transport network yet there are only two CBD rail stations.

Central station caters for the majority of passengers, with 62 per cent of morning peak rail passengers travelling to the CBD alighting here. The station's capacity is constrained by pedestrian infrastructure such as platform size and lift and escalator capacity.

Inner-city platforms are becoming increasingly overcrowded during peak hours. Without any new inner-city stations, Central station would need to accommodate around 57,000 passengers in the morning peak period in 2036, or 133 per cent above the current situation.[7] The effectiveness of any improvements to the outer rail network will be dependent on alleviating constraints in the inner-city.

4 Household Travel Survey 2009-2011
5 Ticket data for weekdays, March 2015
6 The Gold Coast's seductive lifestyle underpins rise of extreme commuting, KPMG 2013
7 Cross River Rail Project Model, 2016

Figure 6 shows the key constraints currently impacting Brisbane's inner-city rail network.

Lack of CBD accessibility

Rail can efficiently move more people into Brisbane's CBD than other forms of transport, making investment in rail infrastructure critical for the future.

Major cities around the world rely on heavy rail to transport large numbers of people efficiently and to support growth and economic prosperity.

Rail does not currently serve the whole of the Brisbane CBD, resulting in poor accessibility to some areas.

Roma Street and Central stations are a 10-15 minute walk from southern and eastern parts of the CBD. Major current CBD activity centres such as the City Botanic Gardens, River Stage and Queensland University of Technology (Gardens Point campus), as well as future destinations such as the Queen's Wharf Brisbane precinct, are all outside a comfortable walk to a train station.

Future travel patterns

The average distance people travel to work will increase as more people move to areas around Brisbane. People commuting from outside Brisbane into the CBD will make up a larger proportion of the total travel demand, up from 18 per cent today to around 33 per cent by 2036 (during the morning peak). As the road network is effectively at capacity and car parking is heavily restricted in the inner-city, only marginal increases in private vehicle traffic can be accommodated.

Car commuter travel to the CBD has already plateaued at about 40,000 people per day, therefore the growth in inner-city travel demand will need to be serviced primarily by rail and bus networks. Rail trips will see double the growth of bus as more people travel longer distances to and from areas in the north, south and west.

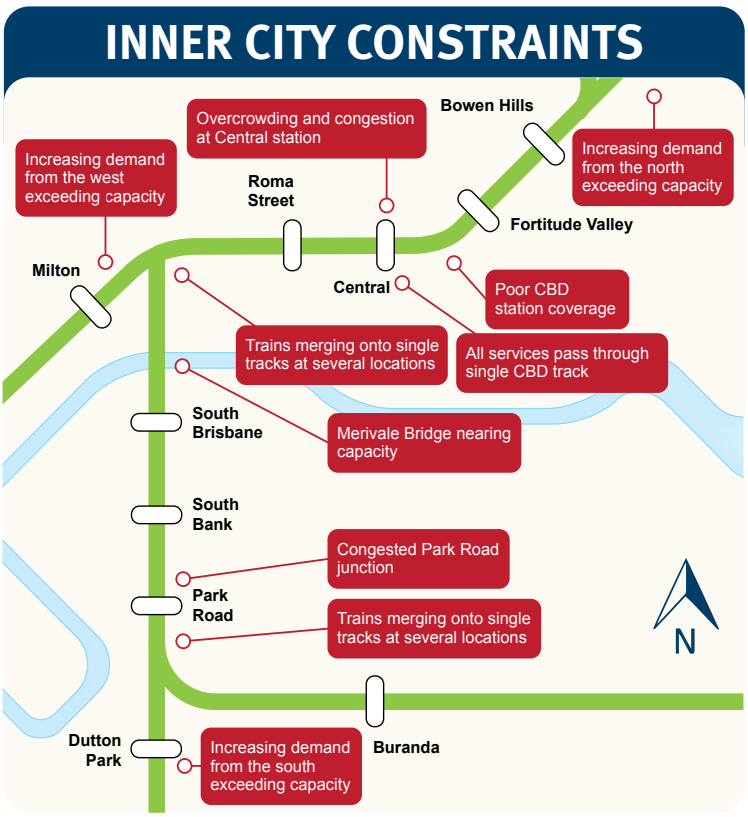


FIGURE 6

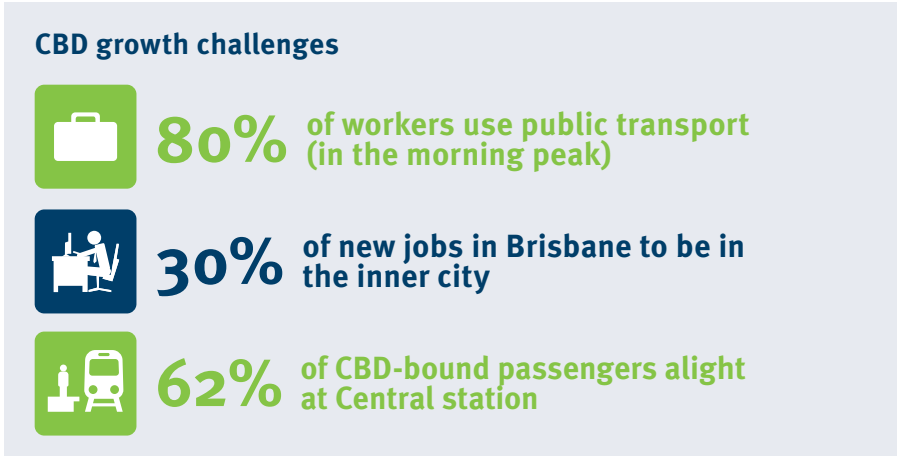


FIGURE 7

Public transport integration

Capacity enhancements focused on getting the right trips on the right transport modes are an important priority. An effective, integrated public transport system will better meet the travel needs of customers and support Brisbane's economic productivity.

Figure 7 illustrates the critical role of passenger transport in increasing the efficiency of movements into the Brisbane CBD, with rail and bus playing a complementary role in an integrated transport system. For example, key rail/bus interchanges will enable higher frequency services, a seamless transition for customers between the two transport modes and less waiting time at stations.

As the city grows and matures, it will be important to ensure that rail and bus work together to create a more effective and efficient network.

Rail Freight

Queensland's future freight task is expected to be driven by strong economic activity and international trade. Freight volumes are estimated to increase from 871 million tonnes in 2010-11 to between 1643 and 1741 million tonnes by 2026.[8] Rail is generally the most efficient mode for bulk freight travelling from regional areas to urban destinations and export hubs such as the Port of Brisbane. As the regional and interstate freight task grows, there will be increasing pressure on freight capacity in SEQ.

An efficient freight rail network will reduce the competition for scarce capacity on rail networks and the reliance on road transport. It will also reduce road congestion and road crashes, lower carbon emissions and improve amenity in areas along current road freight routes.

Parts of the SEQ rail network are shared between passenger and freight rail services, with freight restricted from using the network in peak periods. Without targeted investment, growth in demand for passenger services and an increase in off-peak frequencies over time will leave fewer paths for freight services in the future.

The main existing constraint on freight connectivity to the port is the section between Dutton Park and Salisbury and from Rosewood to Corinda where freight trains and passenger trains must share track.

Poorly located rail terminals, limitations to the length, carrying capacity and speed of freight trains and the need to share with passenger services is currently restricting freight rail's appeal and growth potential. Significant investment will be required in the longer-term to address the growing freight task.

> "The Australian economy is heavily reliant on efficient freight networks. It is estimated the transport and logistics sectors of the economy contribute 14.5 per cent of gross domestic product, with the supply chain worth an estimated $150 billion every year.

8 Moving Freight Strategy, Department of Transport and Main Roads, 2013

Community consultation

The rail network improvements outlined in SEQ's Rail Horizon put the customer and the community at the centre of the decision making process. It delivers solutions that respond to community and stakeholder feedback.

Comprehensive community and stakeholder consultation was undertaken in the development of Connecting SEQ 2031. The plan was released for consultation to the community and a wide range of state and federal government agencies, SEQ local governments, elected representatives, industry, peak bodies and special interest groups.

There was widespread support for the proposed 2031 rail network plan and associated projects to achieve the improved network.

Extensive consultation was undertaken for the previous Cross River Rail and the Bus and Train project (an alternate tunnel design that combined bus and train travel), allowing local residents and the broader community to help shape project design.

There was broad-scale support for the concept designs, with many people recognising the need to improve inner-city public transport capacity and frequency. However, there was some local community concern at high impact points along the alignment. Major projects such as Cross River Rail will result in short-term disruptions to some parts of Brisbane City but the benefits will continue to be realised for more than 100 years.

> Community engagement will continue as the Cross River Rail project planning progresses.

The solutions

Connecting SEQ 2031 outlined the strategy for a 'rail revolution' – a complete overhaul of the rail system to provide a modern, high capacity network that means, for most passengers, rail transport will be quicker and more reliable than driving a car.

A range of rail network optimisation initiatives have already been implemented such as timetable improvements and measures to reduce train waiting times at CBD stations and allow more trains through the system. Additional track upgrades, removing key rail crossing conflicts and targeted inner-city signal upgrades are also planned to further optimise the network. This work will ensure the capacity of the existing rail network is maximised so as many trains as possible can be run on the network.

New rail lines will expand the reach of the network to growing communities across the region and will provide direct rail connections to the Brisbane CBD.

SEQ's Rail Horizon acknowledges the need to maintain, manage and optimise the current network to meet future growth and demand, while minimising investment in temporary measures and maximising investment in long-term solutions.

The network design principles outlined in Connecting SEQ 2031 include a progressive transition to a more connected network within the major urban areas, where changing between bus and rail is a more common feature of travel. The establishment of public transport hubs across the region will provide a foundation for the development of connected networks by providing logical transfer points for public transport services.

There may be opportunity to progressively reorient targeted bus corridors – where there is a benefit to the customer – to more effectively feed buses to the rail network at key interchange locations. This will further alleviate road traffic congestion and help address looming capacity constraints on the inner-city busway network.

A framework for the SEQ rail network

There is an urgent need to develop a more integrated rail network to meet the significant challenges of growth and demand. A framework to guide investment and planning and to achieve a transformation of the rail network has been developed as part of SEQ's Rail Horizon and is shown in **Figure 8**.

Investment and planning to achieve an optimal rail network

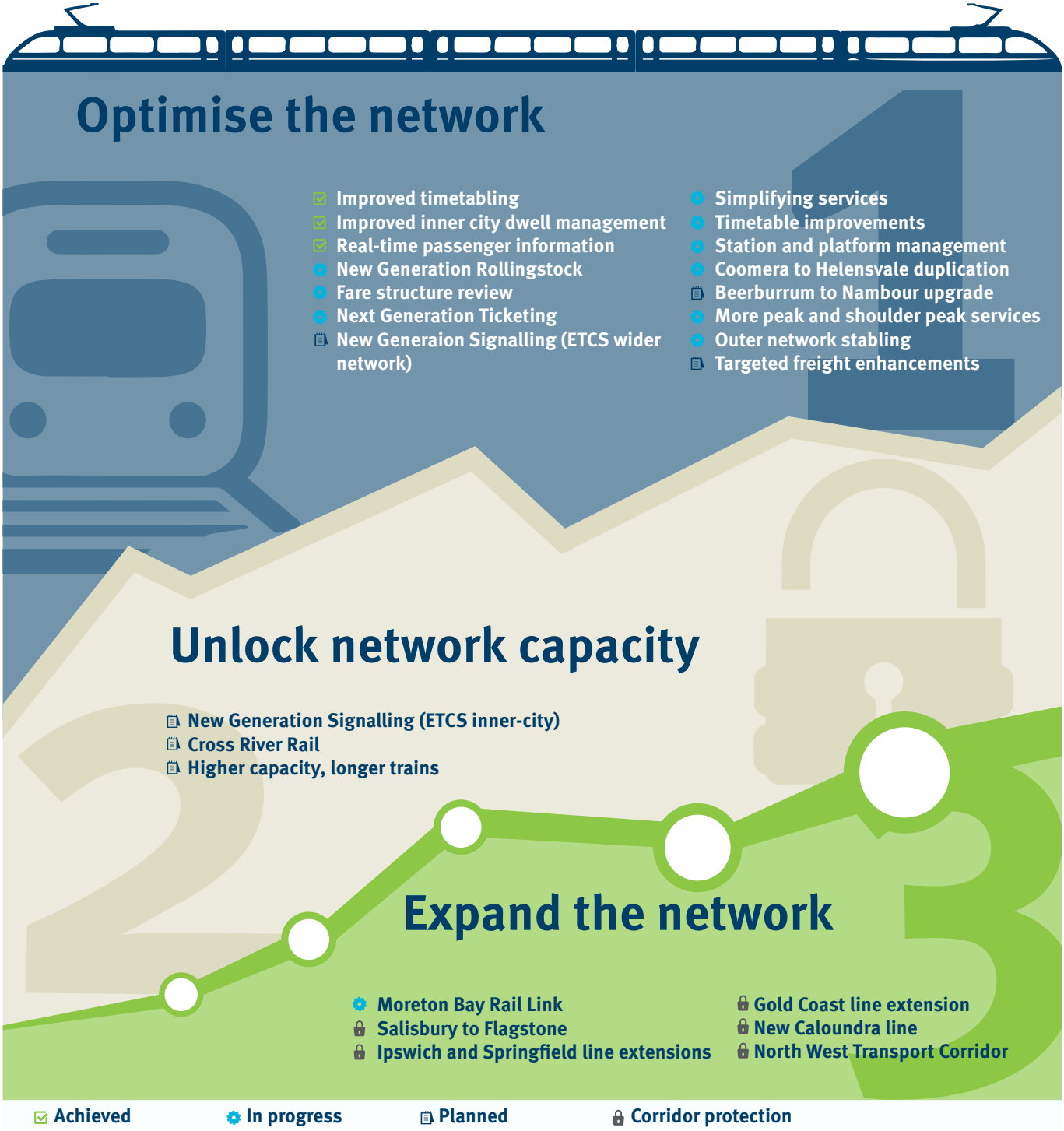


FIGURE 8

Optimise the network

New Generation Rollingstock

The New Generation Rollingstock project will deliver a 30 per cent increase to the current train fleet to meet the growing demand for rail services. The project is the largest single investment in trains in Queensland. It will also allow some older trains to be retired from service.

Seventy-five six-car trains are currently being built and will deliver more services across the network when they are rolled out from late 2016. The last train is expected to be operational by late 2018.

The trains will be permanently configured in a six-car set enabling customers to move through the entire length of the train. Modern and more efficient, these trains will offer customers improved security and comfort – each train will be equipped with toilet facilities and wi-fi.

Next generation ticketing

SEQ has one of the largest integrated ticketing networks in the world. Following the establishment of TransLink and the introduction of integrated ticketing, the public transport network experienced significant growth in patronage, with 175.3 million public transport boardings recorded in 2013-14, a 26 per cent increase over the past 10 years.

The *go* card ticketing system is currently used for over 85 per cent of all public transport trips in SEQ, with usage as high as 93 per cent on the rail network. As part of the next generation ticketing project, investigations are underway into options for a future easy-to-use automated fare collection system to replace the *go* card.

Simplifying services

Removing conflicts will allow the rail network to be progressively improved to transform the way train services operate. Essentially, this means different service types (all stops versus express) can operate independently of each other.

Connecting SEQ 2031 proposes a tiered operating strategy:

- Urban all-stops services – high frequency, 'turn up and go' allstops, with some limited express inner-suburban rail services operating inbound of Springfield, Cleveland, Beenleigh, Ferny Grove, Shorncliffe, Doomben and the airport.
- Suburban express services – new outer suburban express services between Brisbane and the Gold Coast and Brisbane and the Sunshine Coast, and from Rosewood via Ipswich and Kippa-Ring.

> The New Generation Rollingstock project incorporates a rolling program of service improvements including increased peak express services to offer travel time savings to more customers and enhanced off-peak services to offer more travel opportunities for customers.

Timetable improvements

TransLink and Queensland Rail have implemented a number of important timetable changes to improve network services and the customer experience. In 2011, major timetable changes were introduced on the Ipswich, Caboolture and Sunshine Coast lines which simplified stopping patterns and increased peak services.

In 2013, the Springfield line opened with the extension of services from Richlands to Springfield and Springfield Central. In 2014, there were major timetable changes on the Gold Coast, Beenleigh, Cleveland, Ferny Grove, Shorncliffe, Doomben and Airport lines which simplified stopping patterns and reallocated resources to areas of greatest need. These timetable changes created additional peak services in available paths to increase the services available to customers.

Timetable changes will be made upon opening the Moreton Bay Rail Link in 2016, with the addition of new services to Kippa-Ring and the all-day express on the Caboolture line.

Station and platform management

The time taken to load and unload passengers at stations is a major contributor to dwell time (i.e. the time allocated for each train to pause at a particular station) and therefore impacts service times and capacity. As patronage demand increases, dwell time at the more popular stations will rise as the proportion of heavily loaded trains increases, resulting in fewer trains per hour being able to use the station.

If the maximum capacity of the inner-city network is to be achieved, the efficient management of passengers during loading and unloading in the peak will become critical. Examples of station and platform management solutions to control passenger waiting areas, access routes and ensure orderly loading include:

- platform markings to show door positions, loading points and 'keep clear' exit routes
- loading managers to safely marshal passengers and ensure loading points and exit
- specific loading announcements via the station public address system.

These and other initiatives will be necessary to improve capacity at our busiest stations.

Beerburrum to Nambour upgrade

Building Queensland is developing a business case for the Beerburrum to Nambour upgrade project. It will investigate duplicating and straightening the rail line between Beerburrum and Landsborough and provide targeted upgrades between Landsborough and Nambour.

The project will provide a range of benefits to passengers and freight services on a 40 kilometre section of the North Coast Line.

More peak and shoulder services

A range of rail service improvements have been rolled out in recent years with 'turn up and go' services (trains every 15 minutes or better, all day, Monday to Friday) from Brisbane City to Darra, Ferny Grove, Northgate, Cannon Hill and Coopers Plains.

As the network expands and demand increases, service improvements will be an ongoing priority. Improving peak period services will be important, as will progressively providing more services just before and after these busy periods (the 'shoulder' periods).

More shoulder services will help meet changing travel patterns and ensure optimal use of capacity by managing demand during the busiest parts of the day.

Outer network stabling

Queensland Rail is implementing a $116 million project to construct new train stabling facilities in a number of outer locations including Woombye, Elimbah, Banyo and Robina.

A stabling facility is also being constructed at Kippa-Ring as part of the Moreton Bay Rail Link project.

These stabling facilities will support the rollout of New Generation Rollingstock and improve operational efficiencies by allowing trains to start their service in the most effective location.

Freight enhancements

The Australian Rail Track Corporation (ARTC) has begun work designing an inland railway for freight from Melbourne and Brisbane. Improving access for freight to the Port of Brisbane is also being considered.

Inland Rail will be a game changer for improving rail freight access between Brisbane and the rest of Australia. It will also enable better speeds, axle loads, train lengths and train path capacity from the Surat Basin to the Port of Brisbane.

With some investment in surface track infrastructure (e.g. passing loops) in the Park Road to Salisbury corridor, it is expected that rail freight demand could be met up to 2040[9]. After this time, a dedicated connection to the Port of Brisbane may be needed, depending on demand.

New terminal sites provide an opportunity to connect rail terminals directly with the SEQ motorway network and to co-locate freight distribution centres. Better terminal locations would lower overall rail supply chain costs and help to support rail shuttle services between rail terminals and the Port of Brisbane terminal.

New terminal sites have already been established in land use planning instruments at Ebenezer and Bromelton. Upgrades to the SEQ commuter rail network south of Nambour will benefit North Coast line rail freight services in terms of transit times and train path capacity.

9 Inland Rail Implementation Group Report to the Australian Government, 2015.

Unlock network capacity

Unlocking capacity at the core of the SEQ rail network is a critical strategy which will trigger the transformation of the entire regional transport network. Since the regional rail network relies on capacity through the inner city, unlocking the core will allow frequency increases and enable the rail network to expand its reach in line with demand.

New generation signalling

The European Train Control System (ETCS) is an in-cab signalling control and automatic train protection system that protects against train-on-train collision and over-speed derailment. The system also allows more trains in a given time period to use a particular part of the network, meaning more services, more often, unlocking inner-city capacity.

Train signalling systems across SEQ will be progressively upgraded to a more modern, reliable and safe system. ETCS is the preferred signaling technology to be rolled out across the SEQ rail network. The New Generation Rollingstock trains will be ETCS ready.

ETCS will be implemented on the inner-city network and integrated into the Cross River Rail tunnel to ensure efficient and safe operation.

The cost of the upgrade will be offset by reduced maintenance costs as the outdated lineside signalling system is replaced.

Cross River Rail

In recent years, two alternative solutions were developed to address Brisbane's inner-city public transport needs. Cross River Rail offers a rail-only solution while the Bus and Train project proposed combining a busway and rail line in a single, large tunnel, adopting a similar alignment to Cross River Rail. Both projects progressed from concept design and community consultation to detailed development phases.

An independent panel of experts commissioned in June 2012 confirmed the rail network was becoming increasingly constrained by existing inner-city track and platform capacity, with the southern line via the Merivale Bridge to become the first line to reach capacity. The panel found the Cross River Rail business case was robust and the project provided a comprehensive solution to inner-city rail capacity issues.

Recent investigations have confirmed the value of a rail-only solution and the Queensland Government supports Cross River Rail as the preferred solution.

Combined with new generation signalling, Cross River Rail will deliver the inner-city capacity and wider network benefits required as part of a broader vision to revitalise and transform rail services in SEQ.

Higher capacity, longer trains

Longer trains, coupled with a new signalling system, will contribute to the vision for a modern, high-capacity rail system. In the future, nine-car trains will operate on some parts of the rail network.

When compared to building new track infrastructure, nine-car trains can provide a more cost-effective solution to improving network capacity. The introduction of longer trains, alongside targeted station platform extensions, can potentially save billions of dollars compared to continued investment in expensive new track infrastructure and signalling upgrades. Nine-car trains will provide a significant boost to available seating for customers, especially on crowded Sunshine Coast and Gold Coast services.

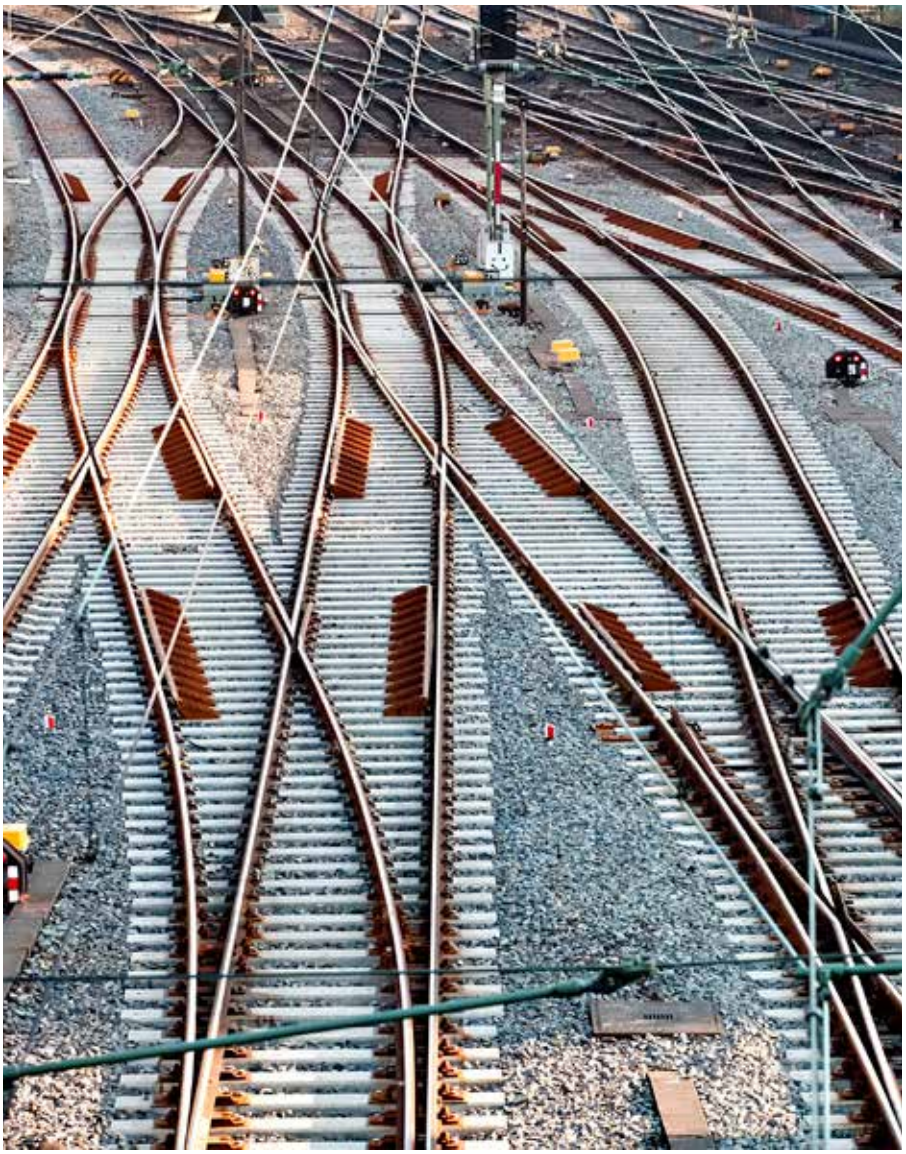
The Cross River Rail project will make provision for longer trains at stations so these trains can pass through the city centre. Currently, rail stations and platforms across the network are designed to accommodate six-car trains. Stations on the Gold Coast and Sunshine Coast lines will need to be progressively upgraded and platform lengths increased to support longer trains.

Expand the network

Addressing capacity constraints in the core of the network will enable future expansion of the rail network into new growth areas.

The Springfield Rail Line was completed recently and construction is nearing completion on the Moreton Bay Rail Link. Corridors are being protected to allow future expansion of the network to emerging communities such as Flagstone and Caloundra, as well as extensions to the Ipswich and Springfield lines, the Gold Coast line and a possible future North West Transport Corridor.

Planning will also be undertaken to determine the best long-term solution to address significant growth expected on the Ipswich rail line resulting from urban expansion in the western corridor.



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Cross River Rail

Cross River Rail is the result of significant planning and analysis.

Feedback from community consultation and recent technical investigations have been used to refine Cross River Rail's design. For example, as a result of feedback during previous consultation, Cross River Rail now incorporates a newly designed Roma Street station to avoid impacts on Victoria Park.

The new Cross River Rail design provides increased rail customer benefits and less local community impacts. It also supports the Brisbane City Council's plans for the CBD as outlined in the Brisbane City Centre Master Plan 2014.

As well as a river rail crossing, Cross River Rail will deliver new stations at key locations through the CBD. The tunnel will connect to both northern and southern rail networks from day one of operations, providing significant benefits to commuters from the north and south.

New stations will improve passenger interchange opportunities between bus and rail and will provide good access to Brisbane's growing southern CBD.

Crowding at Central station will reduce as more people use the new CBD underground stations. Workers in southern parts of the CBD will enjoy shorter walks to their workplaces and faster trips overall.

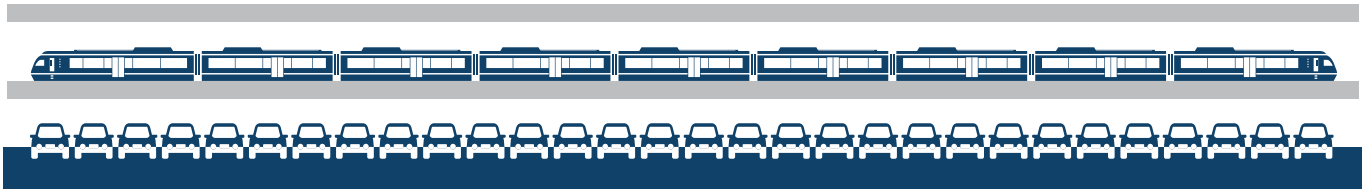
As part of SEQ's Rail Horizon, Cross River Rail will give more commuters faster, more direct journeys to the Brisbane CBD. More residents in the Brisbane metropolitan region will be able to reach their place of work, study or recreation within 30 minutes on public transport.

Pressure on the inner-city rail network will ease as Gold Coast services divert into the new Cross River Rail tunnel. Modelling shows the project will reduce travel time from the south to the CBD by eight minutes.

With a new rail river crossing, there would be much less reliance on the Merivale Bridge than there would be without the Cross River Rail project, freeing up line capacity to increase services across the network, and improving service reliability.

> The project has been configured to deliver capacity first where it is needed the most. When combined with other initiatives in SEQ's Rail Horizon, the new Cross River Rail project will provide much of the benefits of earlier designs, at less cost.

A second rail river crossing will provide the equivalent capacity of a 30-lane highway



Services from Caboolture and the Sunshine Coast will also be able to increase to meet growing demand and northern customers will have improved accessibility.

The new Cross River Rail project will take about seven years to procure, construct and become operational from the time an investment decision is made. This means a decision is required as a matter of urgency.

Cross River Rail will require significant funding contributions and cooperation from all levels of government. The Queensland Government is committed to exploring all possible funding arrangements for the delivery of Cross River Rail, including value capture options.

The Queensland Government is also committed to partnering with the private sector to improve affordability and deliver an innovative funding and financing strategy, providing better economic and financial outcomes for the region and the state.

CRR is expected to provide

1600
jobs per year during construction

Critical to supporting the growth of our state, easing congestion and improving accessibility into the Brisbane CBD, Cross River Rail is the Queensland Government's highest priority infrastructure project.

The previous Cross River Rail proposal was given 'ready to proceed' status by Infrastructure Australia in 2012 and 2013 and the critical need for this project continues to grow.

A project of this scale is expected to provide 1,600 jobs each year during construction. Once operational, Cross River Rail will provide the equivalent capacity of a 30-lane highway.

Metropolitan rail networks are proven to trigger urban revitalisation and growth. Cross River Rail will transform surrounding suburbs by providing real support for sustainable urban development.

Next steps

SEQ's Rail Horizon will guide government investment in the rail network to address a range of significant challenges and deliver on the government's vision for the network.

New Generation Rollingstock

The government will begin taking delivery of the New Generation Rollingstock in 2016. This will mean more services across the network.

New generation signalling

Queensland Rail will progressively implement ETCS, starting with the North Coast line in 2016. The ETCS inner-city project is subject to a detailed business case due to be submitted mid 2016.

The new Cross River Rail project

A detailed business case is currently underway with a view to submit to the Federal Government during mid 2016.

Following the business case submission, procurement may take up to 18 months, pending approval and funding arrangements. A project of this scale has an estimated construction timeframe of five years.

The Queensland Government will soon announce a preferred alignment and is committed to keeping the community, residents, businesses, landowners and government authorities informed as the project progresses.

The project team will provide further information to directly affected residents and businesses along the alignment in the near future.

Longer term planning

The government will continue to identify and protect corridors for future network improvements and extensions to meet growth and demand. Consultation will be undertaken on a project-by-project basis. Longer term strategic planning will consider options to address major growth in the western corridor – Springfield, Ipswich and Ripley Valley.

> While it is not intended to be a commitment of projects, SEQ's Rail Horizon provides a strong and clear vision for the future network to allow effective planning and investment decisions around land use and other modes of transport by all levels of government and the private sector.

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