



# City Rail Link

## Business Case Summary

This document is AT's internal business case to facilitate the Gateway Review process prior to letting contracts for enabling works construction.

It is not a joint business case with government.



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Dr Lester Levy  
Chairman, Auckland Transport Board

***“The CRL builds on investments in rail upgrades that have seen rapid patronage increases averaging 18% year-on-year for 12 years.”***

## Message from the Chair of the Auckland Transport Board

### The City Rail Link

The CRL is Auckland Council’s priority project to support central Government’s economic productivity aims and its own vision of being the world’s most livable city.

It is a 3.45km underground rail link from the current Britomart Transport Centre to the North Auckland Line at a redeveloped Mt Eden Station with two new underground stations, Aotea and Karangahape.

The CRL is part of an integrated transport and land-use plan for Auckland including major investments in motorway and arterial roads. It builds on investments in rail upgrades, which have had significant Government contributions, such as double tracking and electrification. These investments have resulted in rapid patronage increases averaging 18% year-on-year for 12 years.

Auckland Transport is committed to providing a first class, integrated public transport network with the CRL central to this goal. It will provide a massive step change in the metro rail system: removing a dead-end terminus at Britomart where trains have to enter and reverse out on the two tracks available; and ending western line trains reversing at the second busiest station, Newmarket. These changes will close a significant gap in customer service levels, better matching public transport demand and supply.

By doubling rail capacity into the City Centre and providing two new stations in the heart of Auckland’s commercial hub, the CRL will expand the economic potential of the city, driving needed productivity increases by enhancing access to business and jobs.

The central city station at Aotea will generate uplift in activity in that area - as Britomart has closer to the waterfront. The

new and redeveloped stations, at Karangahape Road and Mt Eden, will support the economic and land-use changes planned in those areas. Significant development is expected in all the station precincts, valued at some \$1.2 – \$1.4b, adding income for the Council where the development occurs on its land holdings, in addition to enhanced transport patronage.

The CRL will help achieve Government and Council objectives for the economy, including housing provision, by enhancing access to the Special Housing Areas and making affordable housing in outer areas more viable through effective transport access. The CRL is needed as Auckland’s rapid population growth sees it develop from some 1.5m people to 2.5m in around 30 years. It will be a section of the metro rail system where high capacity trains – Electric Multiple Units (EMUs) – can provide the means to move the large volumes of passengers associated with a city of this size.

The CRL is costed at \$2.5b (in ‘dollars of the day’), and with monetised benefits of \$1.60 to \$1.70 for each dollar invested the outcome will be well worth the investment.

The business case summarised here will continue to evolve. This version is suitable for the AT Board’s decision on letting Enabling Works contracts. As the project is further developed the costs (and benefits) will be refined and the business case advanced.

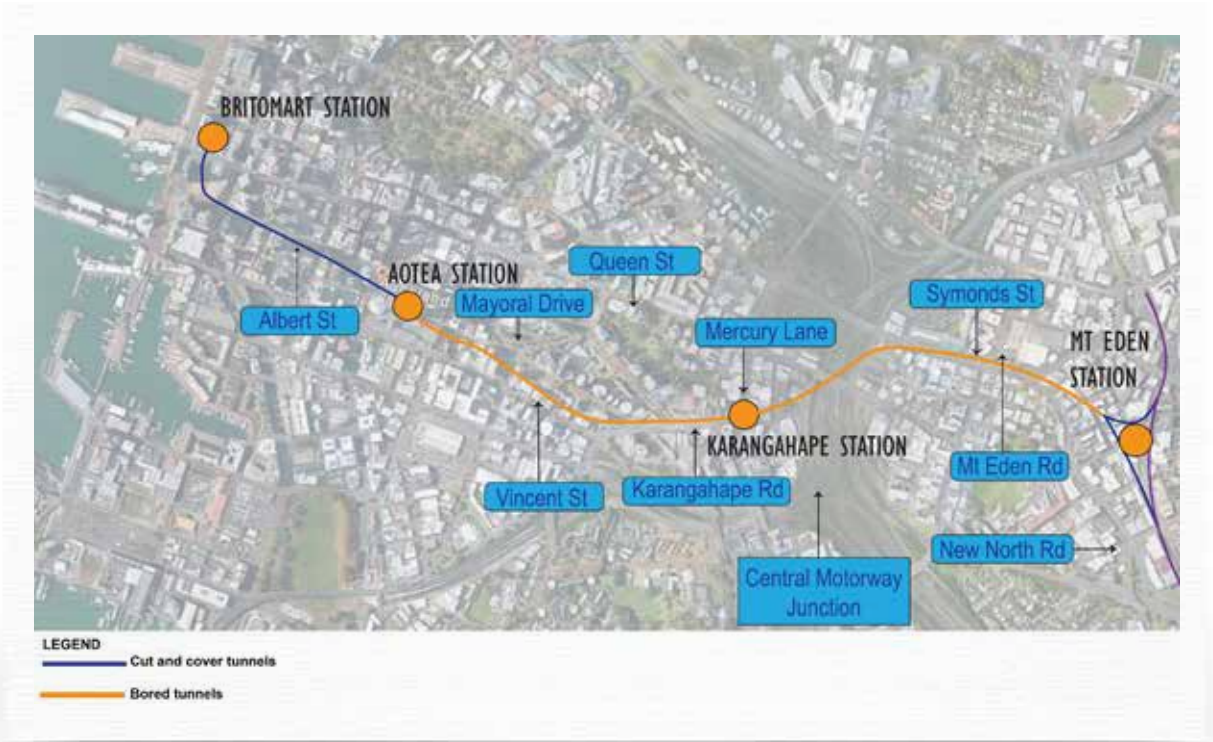


# Introduction

Studies have consistently shown that the CRL is the best investment to enhance access to the City Centre. Metro rail has the capacity required for a rapidly growing Auckland and its City Centre. This project will release that capacity. The route and design have been progressively refined to enhance value-for-money, while maintaining a customer focus.

The route runs underground from Britomart Station via new stations at Aotea and Karangahape Road to a reconfigured Mt Eden Station providing a second route into the City Centre – doubling the number of inbound trains and increasing the capacity of the entire metro rail system.

Route alignment map



# Benefits

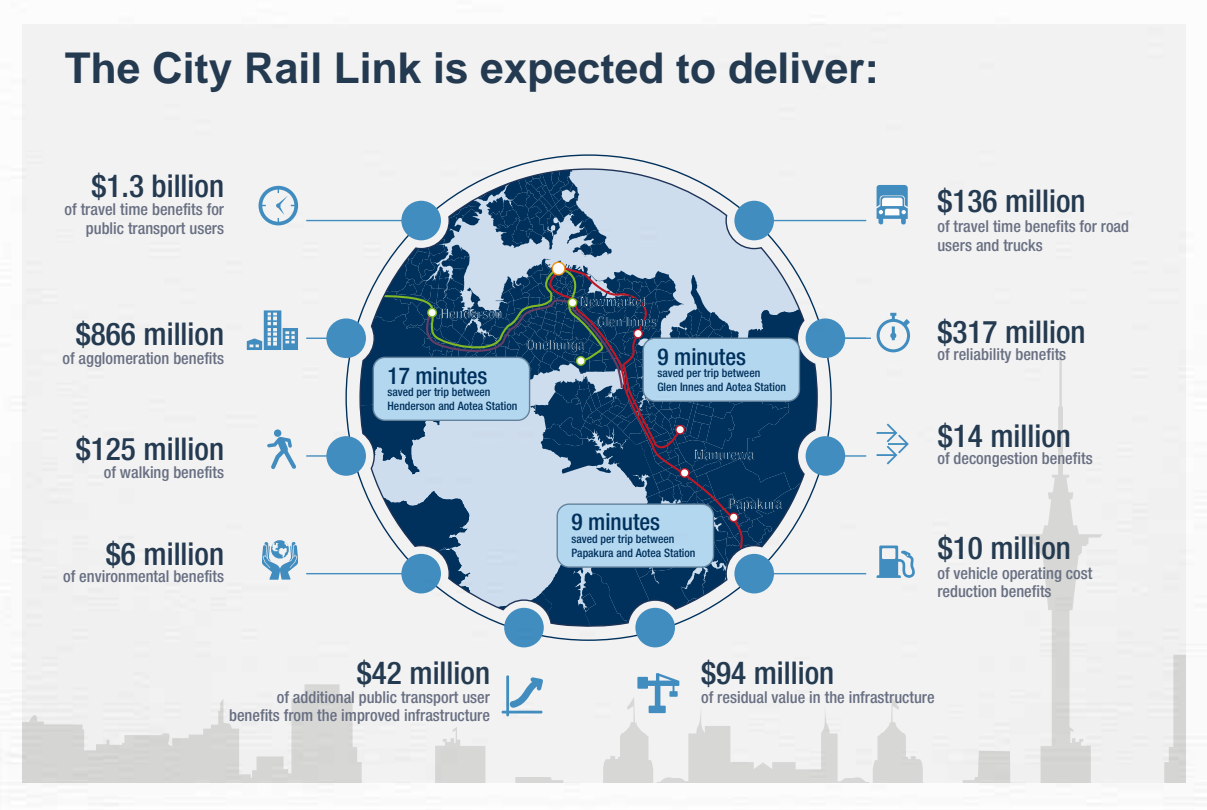
A detailed appraisal of the net economic, financial and sustainability impacts of the project has been undertaken. A cost-benefit analysis of the project, based on the predicted demand over a 40-year period with a 6% discount rate, has identified \$2.96 - \$3.2b worth of benefits (in Net Present Value\*(NPV)) depending on the level of population and employment growth. When compared to the expected project cost, also in NPV terms, and allowing for the operating costs of the tunnel and new stations, this gives a benefit-cost ratio (BCR) of 1.6 to 1.7. The BCR has

been tested against a standard range for benefits and costs applicable at this stage of the project development and is shown to be robust.

Both the costs and benefits will be refined as the project is further developed.

\* Net Present Value: the sum of the discounted cost or benefits over the evaluation period.

## Expected Benefits



# Strategic context

The CRL has been included for many years in Auckland’s strategic plans. Repeated analyses have shown that effective metro rail is an essential component of Auckland’s transport system and that a rail link that removes the Britomart Station dead-end is the best way to provide the necessary step change in capacity.

CRL remains the number one priority in Auckland’s current plans. It is also identified in the City Centre Masterplan: “The City Rail Link is our opportunity to create highly accessible city precincts – or growth nodes – around the existing and new (Aotea, Karangahape Road and Newton\*) City Rail Link stations,” and: “will be implemented in a way that encourages city centre development in the right place at the right time.”

\*Now Mt Eden Station

The project is rated High for Strategic Fit and High for Effectiveness in the AT Integrated Transport Programme prioritisation calculator, based on the New Zealand Transport Agency ratings. It is the highest priority among contestable projects.

## CRL IS THE TOP PRIORITY ACROSS THE CURRENT PLANNING FRAMEWORK



### PURPOSE

- Multi-objective plan for the Auckland region
- 30-year timeframe
- Statutory

## CRL IS THE TOP PRIORITY ACROSS THE CURRENT PLANNING FRAMEWORK



### PURPOSE

- 30-year timeframe
- 10 years in detail
- Gives effect to the transport components of the Auckland Plan
- Focuses on integrating all transport modes into a single transport plan
- Provides more detailed programmes and deliverables

### PURPOSE

- Sets out the public transport strategy and services required



### PURPOSE

- 10-year timeframe
- 3 years in detail
- Sets out the activities, services and projects and the required funding
- AT is required to give effect to the LTP
- Statutory

### PURPOSE

- 10-year timeframe
- 3 years in detail
- Prioritised list of transport projects with funding requirements
- Statutory



*The proposed Karangahape Road Station and Mt Eden Station upgrade will generate urban renewal within the inner city fringe catchment.*





# CRL and the economy

The CRL will support economic growth and increased productivity by ensuring access to employment as Auckland grows.

## The economic challenge

Despite recent improvement, New Zealand’s economic performance remains weak relative to its OECD peers. Relatively low GDP per capita is the major reason why New Zealand does not reach the top of the various inter-country comparisons. Auckland – and in particular its City Centre - is critical to reversing that trend through the higher productivity it offers. Labour productivity in the Auckland region is estimated to have a premium of 30 to 50 percent relative to the rest of New Zealand, with average labour productivity in the City Centre at least twice that of the rest of New Zealand (excluding the Auckland Region).\*

Studies by the Productivity Commission show a generally poor productivity performance, which is stated to underscore the need for New Zealand’s policy environment to be strongly supportive of productivity growth and for firms to have a clear focus on improving productivity.

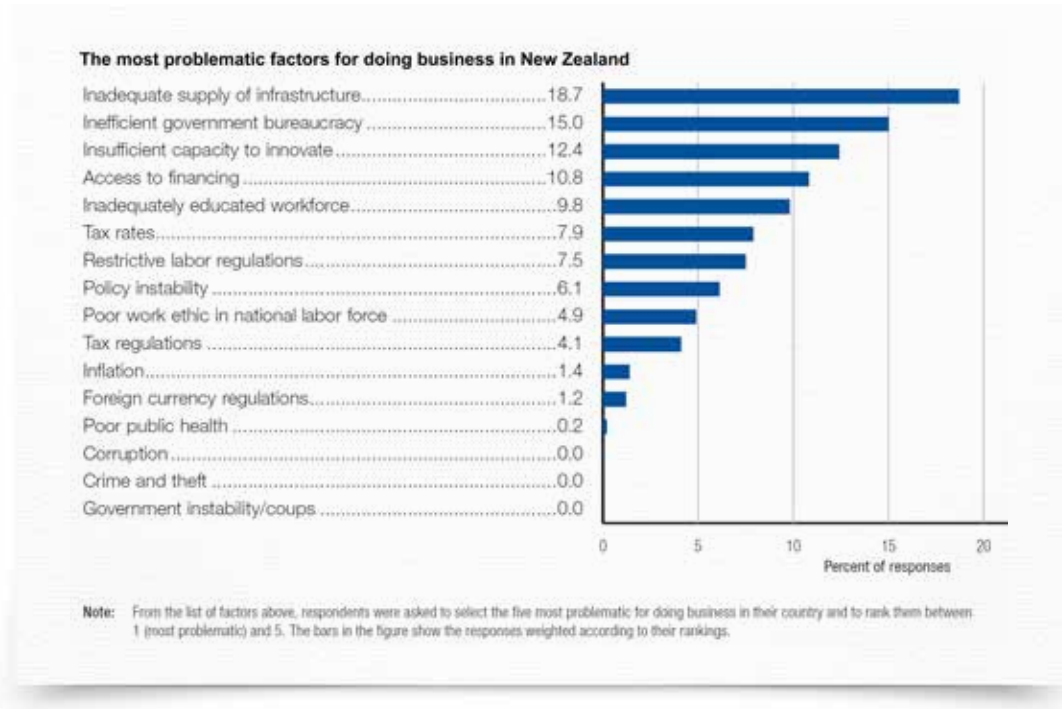
The CRL will contribute to improving productivity growth through enhancing access to central city businesses for skilled workers throughout the region. This is reflected in the estimated Wider Economic Benefits (WEBs) of CRL, which is equal to some \$866m – the quantified assessment of the agglomeration benefits generated by the CRL. It is particularly able to lift economic activity as the underlying conditions for growth of the centre – a high level of demand, a supportive planning regime and local government at the appropriate scale#, are all in place.

The project is also expected to catalyse economic development at sites adjacent to the stations, in the same way that the Britomart Transport Centre has transformed the neighbouring area.

New Zealand’s position in key competitive factors



The most problematic factors for doing business in New Zealand



\* Population and Growth: why bigger can be better, Rachael Logie – Senior Economist, Auckland Council, Auckland, Economic Quarterly, January 2013 – citing Maré, D.C.: Labour Productivity in Auckland Firms, Motu. Working Paper 08-12 (and MED Occasional paper 08/09).  
 # Ahrend, Dr Rudiger – What Makes Cities (More) Productive, National Urban policy Conference, Economic productivity and the city, Sydney May 2013.

# Auckland's transport challenges

Auckland's public transport network is daily shown to have substantial shortcomings. Even as rail patronage continues to grow and the EMUs improve the service, there is a further opportunity to develop the metro rail network by ending the constraint at the Britomart Station. With only two lines feeding the five platforms in a terminal station the maximum capacity is 20 trains per hour. With six trains on each of the main lines in the peak (southern, eastern and western) and two trains per hour on the Onehunga line, Britomart at peak periods is already at practical capacity.

Auckland's travel demands are growing rapidly. They will continue to do so with projected increases in population and employment. By 2041 City Centre access will be dominated by public transport.

There are expected to be more people coming to the City Centre; more on trains, more walking and cycling, and similar numbers in cars and buses.

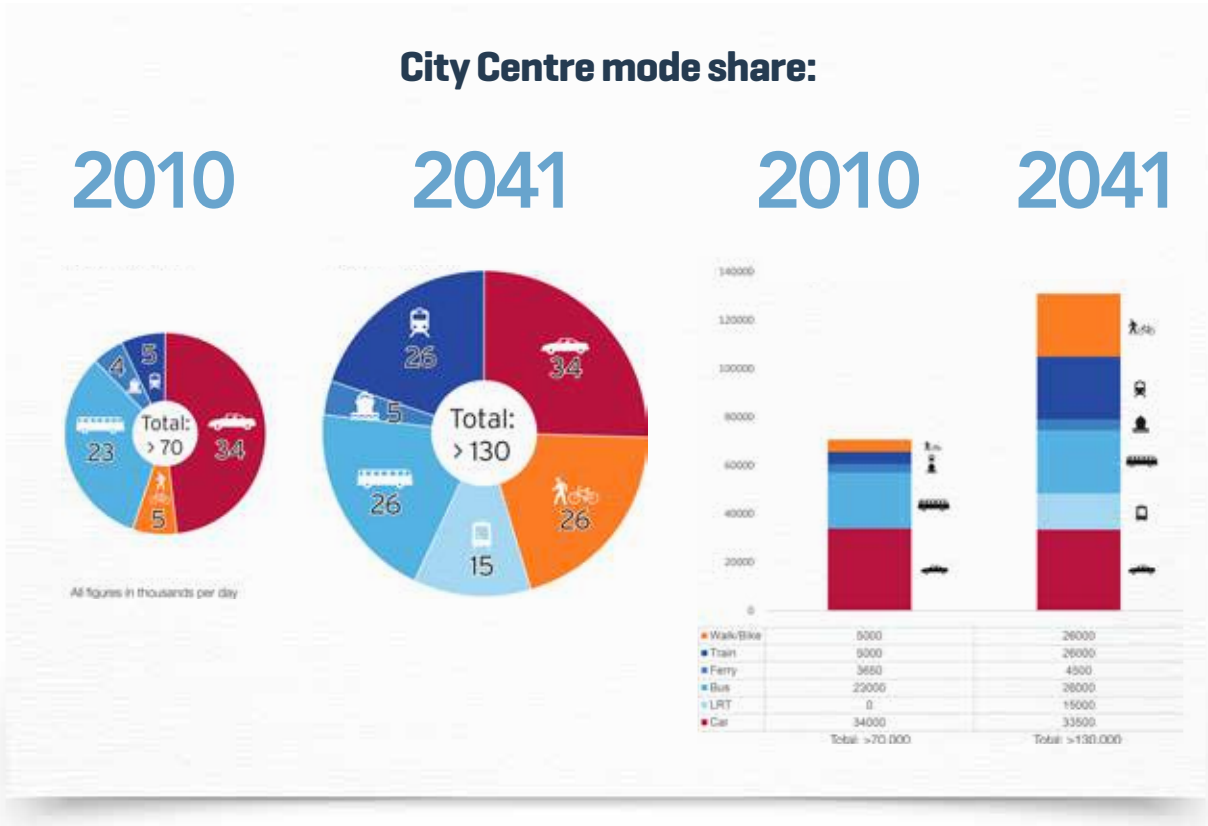
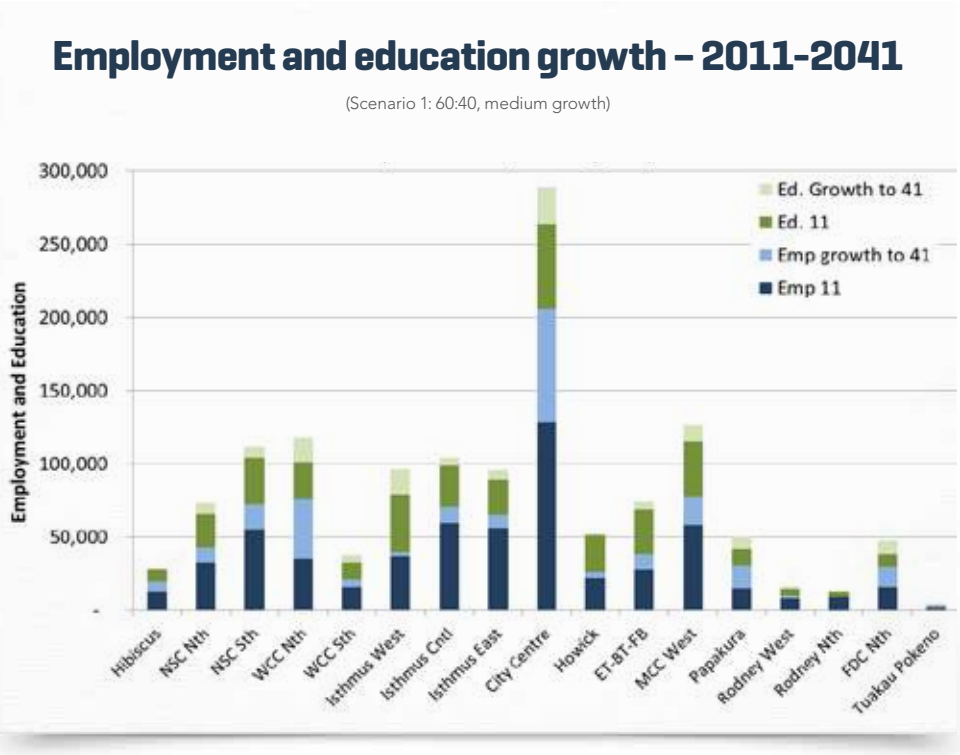
# Public transport patronage

To forecast likely usage of the metro rail network with the CRL, a demand analysis was undertaken using the Auckland suite of advanced transport models run by JMAC\*. These models draw on inputs, such as population and employment forecasts, future land-use patterns, transport plans and parking availability to understand the likely future demand. The models also show the expected change in use of other modes – including buses and cars – so that the reduction in congestion can be estimated.

The models estimate that in a two-hour morning peak period in 2046 there would be 50,000 rail passengers compared with 32,000 without the CRL and 12,000 in 2014. Aotea Station will be the busiest on the network

with some 13,000 passengers boarding or alighting in the two hour morning peak, Britomart Station will have 12,000 passengers against 8,500 without the CRL.

\*JMAC: Joint Modelling Applications Centre – AT/Council/Transport Agency.

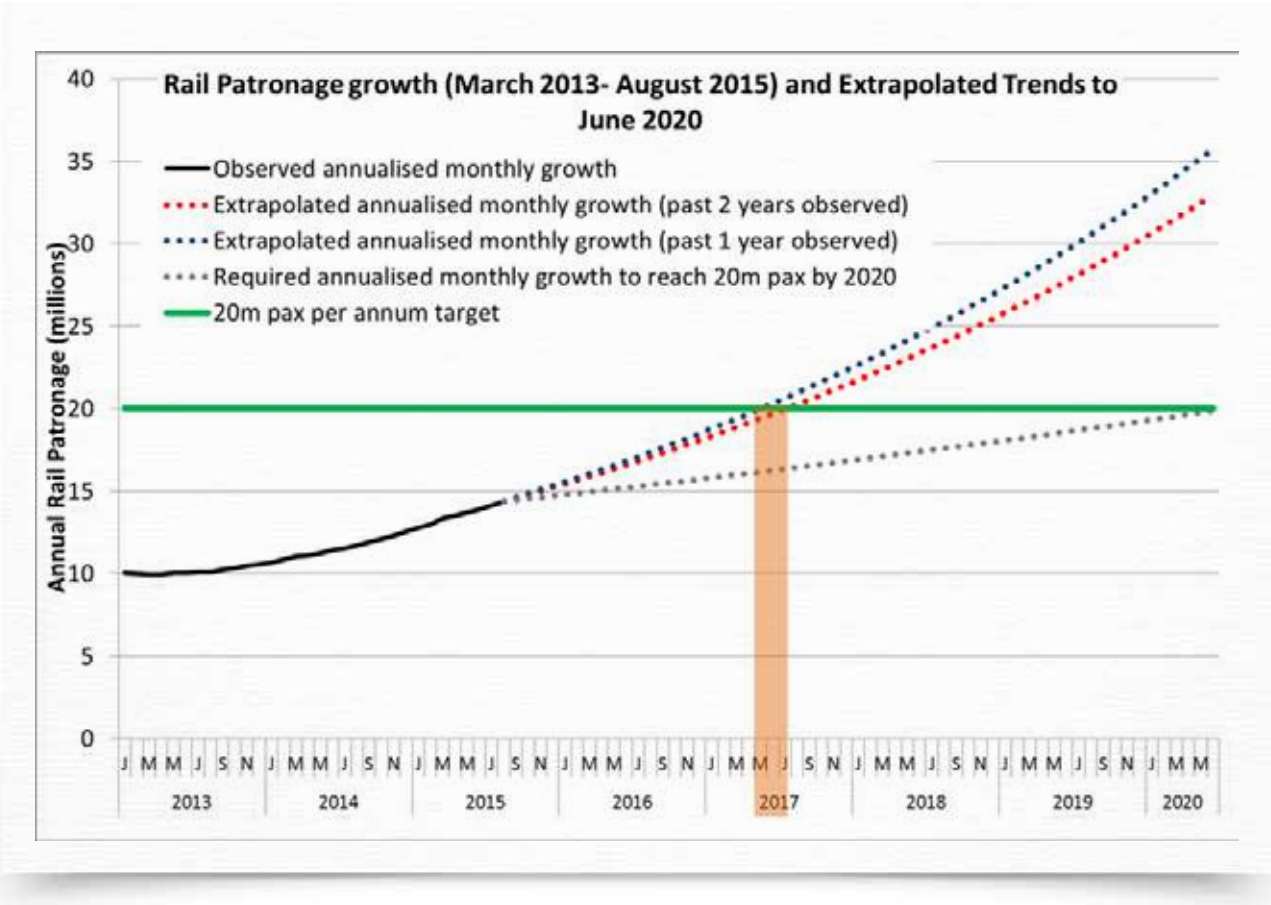




# Public transport patronage

Rail patronage has been growing rapidly in recent years. If the trend were to continue 20m passengers could occur as soon as 2017. Being on track to achieve 20m passengers well before 2020 is a Government criterion for considering an earlier start to the CRL.

Observed Rail Boardings



# Development opportunities

Sympathetic integration of Transport Oriented Development (TOD) with the CRL infrastructure, and the surrounding urban fabric will support an increase in patronage and deliver the urban outcomes sought in the Auckland Plan, City Centre Masterplan and precinct plans. As well as the direct opportunities adjacent to the CRL it is expected that the market will respond to the improved accessibility across the network.

The CRL will improve access to most parts of the City Centre and major employment areas. It will double the number of people who can access the city within 30 minutes by train. This creates the targeted connections and accessibility sought and will promote substantial redevelopment around station precincts.

Investment in well-designed quality rail infrastructure has been shown to accelerate private investment and broader regeneration projects. TOD will provide the opportunity for the ratepayer and taxpayer to capture and leverage value from public investment. This additional revenue may assist funding for either CRL or other Council projects. The proposed Karangahape Station and Mt Eden Station upgrade will unlock additional high density residential

capacity and generate urban renewal within the inner city fringe catchment. This will provide housing stock to help reduce Auckland's housing shortage over time.

Research has identified significant TOD potential within the CRL project footprint. This includes 4.9 hectares of developable land, and between 210,000sqm to 250,000sqm of potential development gross floor area, which has the potential to provide for 3,000 additional workers, 3,700 – 4,700 additional residents and 1,800 – 2,300 additional dwellings. This scale of development, if fully realised, will unlock a total end real estate developed value estimated to be between \$1.2 and \$1.4b. The potential development opportunity relating to each station within the project footprint is shown opposite.

*“In a two-hour morning peak period in 2046 there would be 50,000 rail passengers compared with 32,000 without the CRL and 12,000 in 2014.”*



*“The CRL will create the targeted connections and accessibility which Auckland sought in the Auckland Plan and provide the spur for increased development around stations as happened at Britomart.”*





# Development opportunities

Potential Transport Oriented Development around the new station.

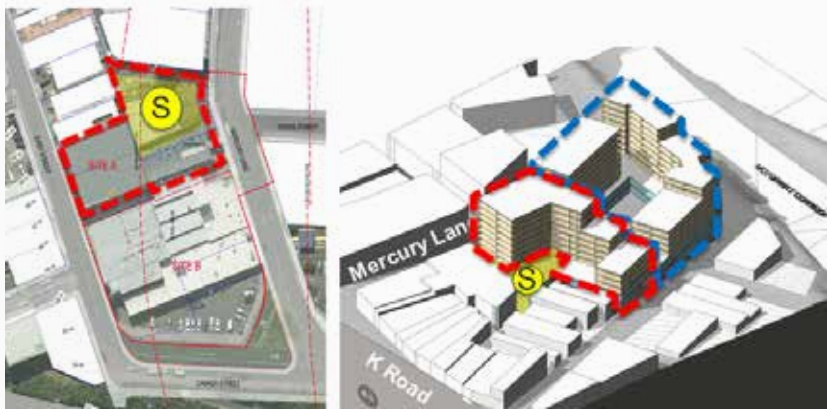
## Transport Oriented Development at Britomart



# Development opportunities

Potential Transport Oriented Development around the new and redeveloped stations.

## Karangahape Station



- LEGEND**
- Site A: For construction of station box, operation and maintenance of CRL.
  - Site B: For construction purposes (includes road reserve).
  - Station box.

## Mt Eden Station



- LEGEND**
- Conceptual development planning undertaken inside Mt Eden construction yard (CRL).
  - Mt Eden project land outside the construction yard. Conceptual development planning to be undertaken in collaboration with CRL technical team.
  - North Auckland Line (NAL)
  - CRL Line



***“New Lynn demonstrates the type of  
Transport Oriented Development that can  
result from rail/bus infrastructure.”***





# Special Housing Areas

Auckland Council and the Government have been working closely together to advance the availability of housing in Auckland. The Special Housing Areas include some 14,000 potential sites\* that are adjacent to the rail network (either in walkable distance or with convenient park-and-ride), and for which the CRL will allow enhanced service.

New housing legislation (Housing Accords and Special Housing Areas Act) is in place allowing the Council to identify Special Housing Areas (SHAs) to quickly free up

land in existing urban areas and new areas for homes. Development of new sites and homes in these areas will be ‘fast-tracked’ through the planning process.

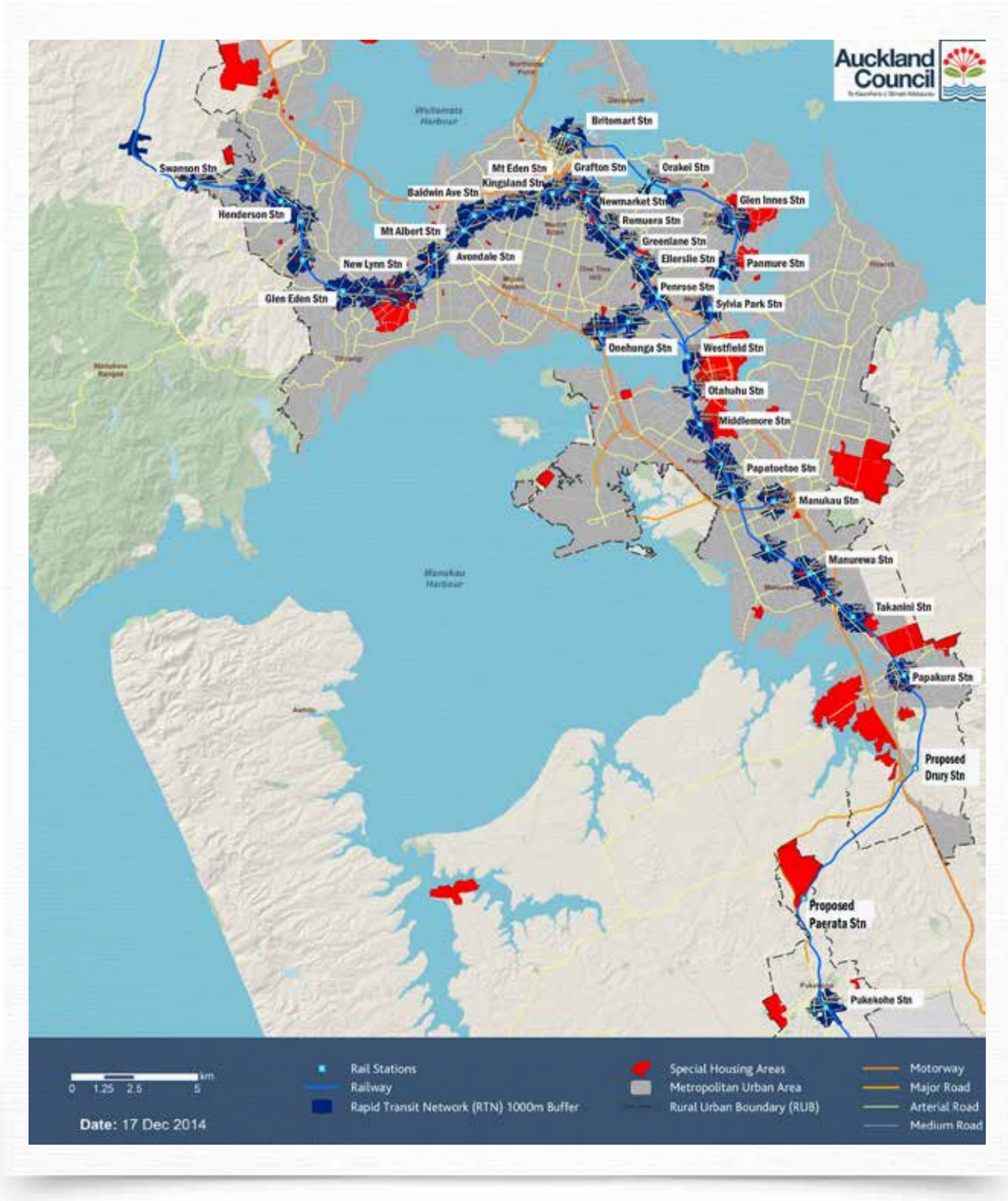
### Special Housing Areas aim to:

- Ensure that critical infrastructure, such as water, storm water, wastewater and transport, is planned and delivered in the same place at the same time.
- Deliver more homes and require more affordable homes for Auckland families and first-time buyers without compromising quality.
- Fast-track consents and plan changes.
- Contribute to achieving the target of 39,000 new homes or new sites to be consented over the next three years.

*“Enhanced post-CRL rail services will directly support many of the strategic Special Housing Areas at locations such as New Lynn and Otahuhu Coast (while other areas will also benefit from the integrated approach to transport and land-use of which CRL is a part).”*

\* Auckland Council calculations

## Special Housing Areas

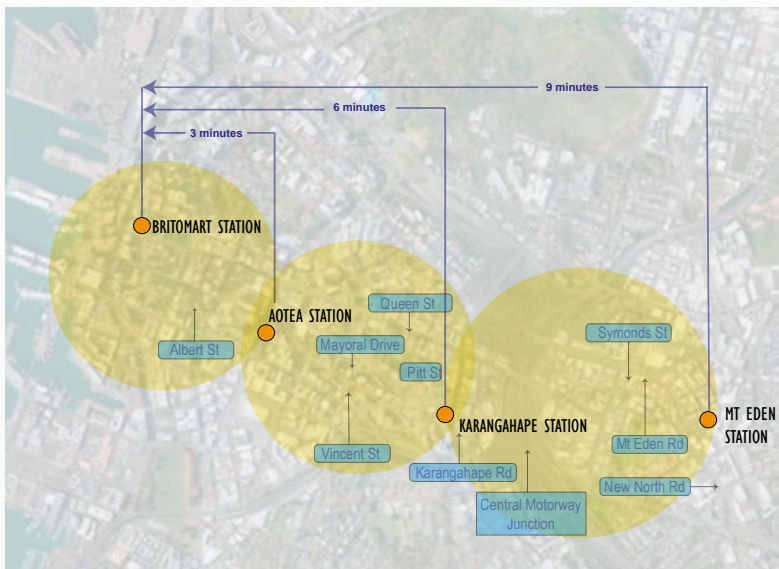




# Travel times

The CRL will have a radical effect on public transport travel times. The current times below are based on having to take a train to Britomart and then walking to Aotea Centre, and taking a train to Britomart then a bus to Karangahape Road.

## Improved City Centre and fringe



## Travel time changes

TRAVEL TIME TO CITY RAIL LINK STATION					
From:	To:	Travel by train/bus (minutes)			% improvement in total time
		Current	Future	Difference	
Papakura	Aotea Station	66	57	9	14%
Manurewa	Aotea Station	56	47	9	16%
Papatoetoe	Karangahape Station	52	34	18	35%
Swanson	Karangahape Station	71	40	31	44%
Henderson	Aotea Station	52	35	17	33%
New Lynn	Britomart Station	33	26	7	21%
Manukau	Karangahape Station	55	43	12	22%
Parnum	Karangahape Station	35	23	12	34%
Glen Innes	Aotea Station	27	18	9	33%
Onehunga	Aotea Station	40	31	9	23%
Ellerslie	Karangahape Station	35	17	18	51%
Newmarket	Aotea Station	20	11	9	45%
Karangahape Station	Britomart	18	6	12	67%





# Financial

## Capital and operating costs

The CRL capital cost is \$2.5b, inflated to ‘dollars of the day’, and includes all construction costs, project management costs, property acquisition, risk, contingency and escalation. This cost has been reduced from where it otherwise would be through improving the design and removing a station. As the CRL allows a major productivity benefit from shortening the route from the west to Britomart, additional EMUs may not be required for the immediate post-CRL opening services. The shorter route means that the overall operating cost for the rail services will reduce.

The financial provision for the CRL is scheduled in Council’s 2015-2025 Long-term Plan:

- Programmed spend for the next three financial years of \$400m, initially funded by Council to allow enabling works and preparation for main works
- Enabling works to commence in the 2015/16 financial year with completion in 2018/19
- Investigation, design and procurement of the main works to proceed so that construction can commence in July 2018

- Main works contract commences in the 2018/19 financial year with completion in 2022/23
  - Property purchase extends into the 2018/19 financial year
  - Government funding commences in 2018/19 financial year.
- Alternatively, if government funding starts in 2020/21 then construction could start in 2018/19 backed by a firm commitment for government funding from 2020. The CRL works will be completed by 2023.

# Services

Once built, the CRL will be an important cornerstone for a significantly improved service pattern – enhancing service levels to the City Centre and across the entire network. Without the CRL higher frequencies cannot operate as the number of trains is limited by the terminus at Britomart.

Future extensions signaled in the Auckland Plan such as the North Shore Line, Avondale Southdown Line and Airport Line can also not be considered without the removal of the capacity constraint at Britomart Station.

# Sustainability

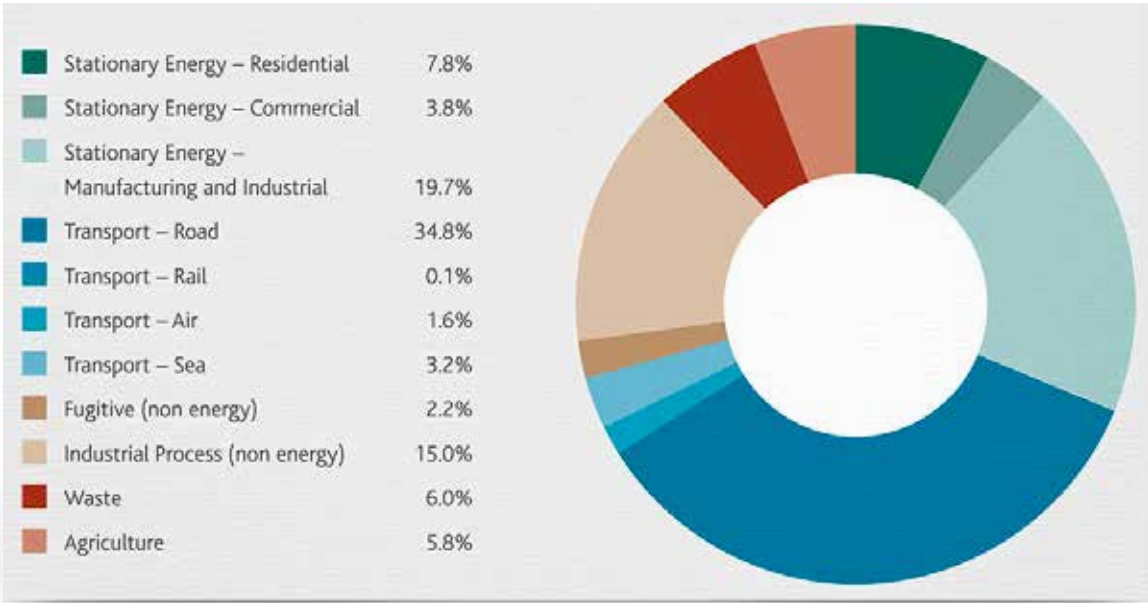
In line with the project objectives, the CRL will provide a sustainable transport solution that minimises environmental impacts: limiting visual, air quality and noise effects and contributing to the country’s carbon emission reduction targets. The CRL will provide substantial social, economic, environmental and cultural benefits to Aucklanders.

Road transport is a significant contributor to Auckland’s emissions profile. Providing enhanced access to efficient public transport to and from the city provides the opportunity to address this. Auckland Council’s ‘Low Carbon Auckland’ Action Plan identifies the delivery of CRL as a means of contributing to its goal of increasing the use of public transport.

Attracting some drivers from cars to electrified rail not only contributes to carbon emission reductions, but also to reduced local air pollution such as PM10 levels.

The new stations are being designed to enhance their urban settings with designs that reflect their locations and mana whenua narratives. The project is targeting a certified Infrastructure Sustainability (IS) excellent rating from the Infrastructure Sustainability Council of Australia (ISCA), considering the impacts of the design and construction of CRL. From innovation and the efficient use of resources to the impact on community values, the IS framework allows a holistic and structured approach to achieving high sustainability standards for AT’s biggest-ever project.

## Sources of Auckland’s greenhouse gases



# Infrastructure Sustainability framework

Infrastructure Sustainability Council of Australia (ISCA) icons



*The CRL aims to achieve an “excellent” ISCA rating for its design and as-built certification phases.*

# Consenting, design, procurement and construction

## Planning consents

The statutory framework for planning and environmental approval governing the CRL is the Resource Management Act 1991 (RMA). The consenting pathway for the construction, operation and maintenance for CRL has been via Notices of Requirement (NoRs) under Part 8 of the RMA. Once confirmed the NoR is designated in the district plan for the purpose of construction, operation and maintenance. Regional consents required prior to construction are in the process of being obtained.

## Property acquisition strategy and programme

Much of the land required for the CRL is within the road corridor under the control and management of Auckland Transport, or is Auckland Council land. This ownership has limited the land take requirements and the direct impact on private property. An acquisition programme is well advanced to address land take requirements where they do occur.

## Design optimisation

The concept design phase was completed in mid-2012 to support the Notices of Requirement and designation process. The design has been further developed through a ‘value management’ process, with the project reviewed and alternative design elements developed and assessed.

## Procurement methodology

### Enabling works

An enabling works package will address the conflicting needs of the large number of capital works projects within the lower City Centre area that are programmed for construction at approximately the same time. By completing the CRL activities required in this area, the other projects will be able to progress as planned.

*“The approach to the procurement strategy development was a bottom-up analysis based on project characteristics, constraints, risks and value drivers.”*



# Consultation

The NoR process designating the route identified primary stakeholders who received briefings over a three-year period.

## Stakeholders included:

- Landowners of directly affected properties within the designation
- Occupiers of directly affected properties within the designation.
- Owners of properties in proximity to the designation
- Iwi / hapu
- Government and statutory agencies
- Key corporate businesses
- Emergency services
- Utility companies
- Elected community representatives
- Business associations
- The wider community.

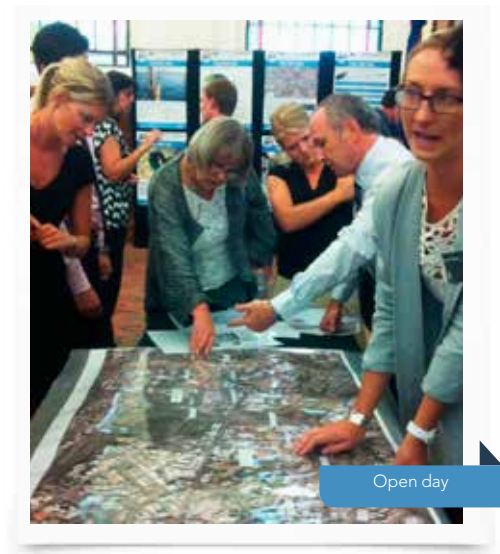
All landowners directly affected by the CRL were contacted individually by Auckland Transport in 2012 and by Auckland Council in 2013. Briefings or meetings were held with key corporate businesses and interests.

A total of 17 iwi across wider Auckland were invited to participate in the CRL project. Eight iwi are working on the project in a Mana whenua forum.

The first community liaison group (CLG) was established in March this year, with three more to be established along the designated route. These groups will meet regularly throughout the CRL's construction until six months after completion.

A specific CRL website ([www.cityrailink.co.nz](http://www.cityrailink.co.nz)) containing information videos, a dedicated phone number and email ([crlproject@aucklandtransport.govt.nz](mailto:crlproject@aucklandtransport.govt.nz)) were established in 2012. An email newsletter has gone to self-selected stakeholders since 2013. Open Days were held for the community in early 2013 and again in August 2014. A Facebook page was created in April 2015 and is regularly updated.

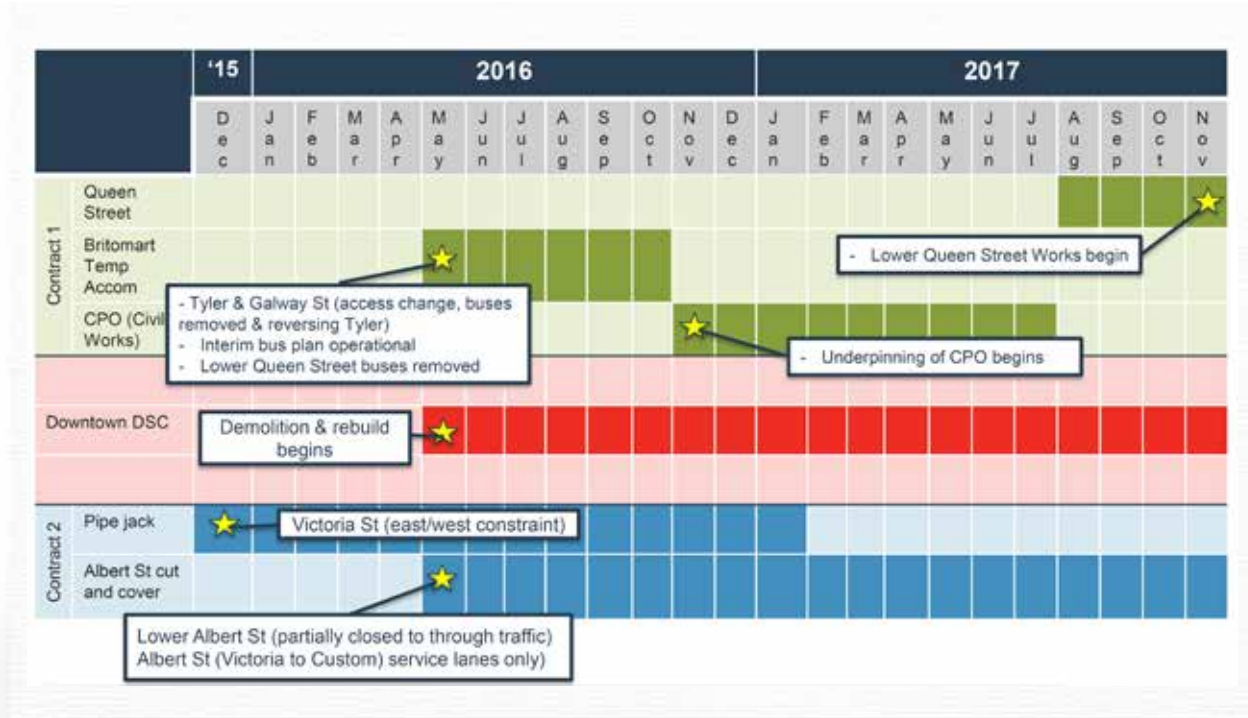
A CRL design showcase was held in the City Centre and town centres throughout Auckland during the first half of 2015.



“Eight Iwi are working on the CRL in a Mana whenua forum.”

# Enabling Works Programme Timeline

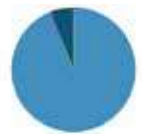
## Timeline





# The CRL citywide

## Auckland-wide benefits



An essential component of Auckland's transport network (7% of the planned \$40 billion spend to 2040).



Aligns rail capacity with SHAs, a catalyst for integrated land use development around the stations.



Doubles the number of people within 30 minutes travel of the City Centre.



Greater access to a wider range of higher paying jobs, and for employers a greater pool of talent.



Creates a better connected City Centre, fringe and region.



Unlocks rail network – 30% more capacity across the region and more than double at Britomart.



Complements new train/bus interchanges across Auckland for easier connections.



Reliable and efficient public transport provides a real choice for commuters.

**The CRL will promote substantial redevelopment around station precincts.**

