



The economic and emissions impacts of Auckland rail infrastructure improvements

July 2024

KiwiRail 



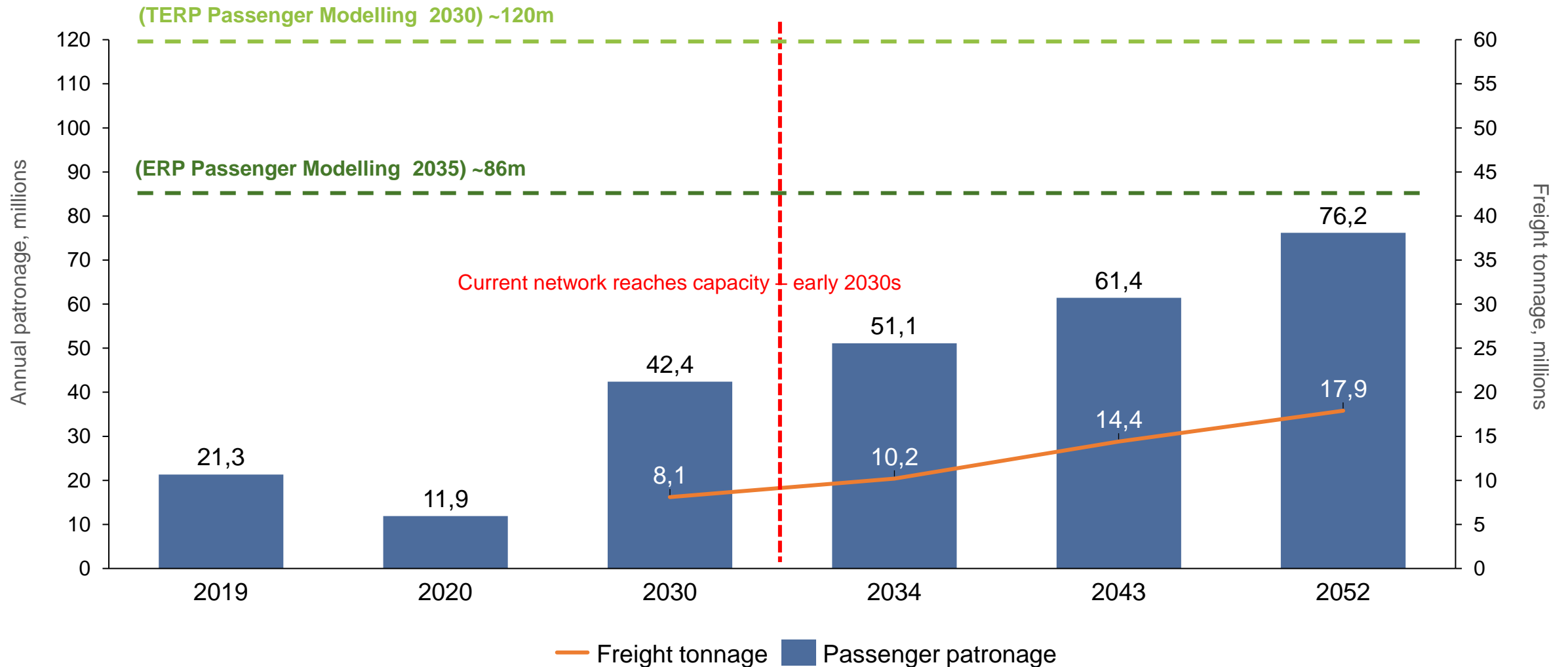
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The rail network in Auckland will be full soon after CRL opening

Forecast organic growth beyond CRL opening will quickly consume existing wider network capacity – new capacity will be needed to enable growth to continue. Patronage to meet emissions targets remains beyond this forecast growth.





We need to look forward and provide for next stages of growth

Mixed mode is an inefficient use of capacity

Mixed mode networks are 10-20% less efficient than dedicated mode

- Mixed mode networks have capacity constraints that progressively need to be removed, or accept capacity constraints or timetable fragility

Segregation is essential for reliability – and making best use of what we've got

The network will still be mixed-mode and all users want and need to grow

- Freight and passenger
- All stop and express
- Commuter and regional

The rail network and the road / active mode networks are not segregated

The network needs to work for all users – and beyond Auckland

The rail network and its criticality is not limited to Auckland

- The Auckland rail network is part of the National rail network – KiwiRail has to think beyond the Auckland region boundaries

To be successful and to justify investment at scale, the rail network needs to fulfil multiple roles

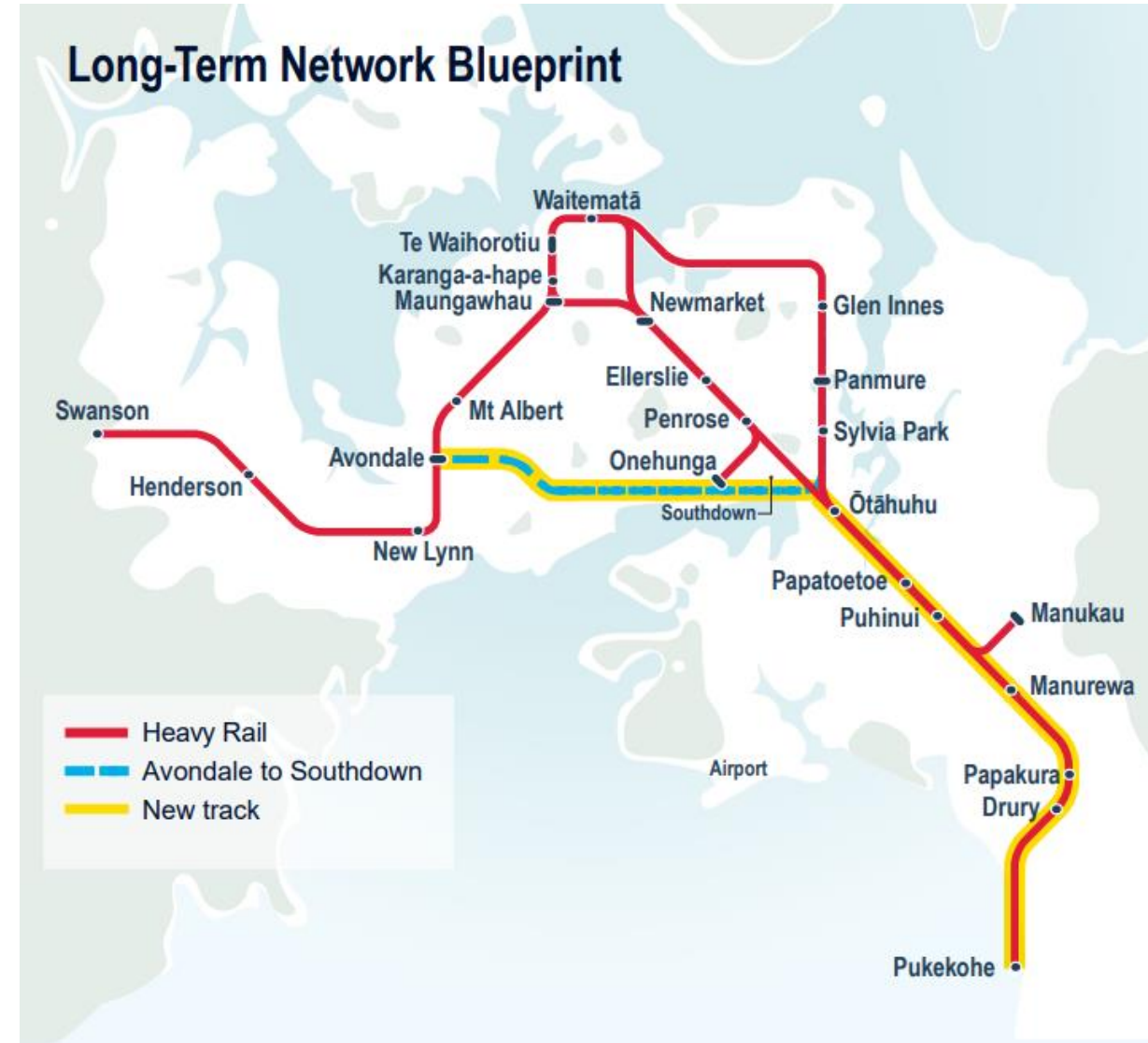
Benefits to, and arising from all users are needed to justify the investment



30-Year Rail Investment Programme

A holistic assessment of the whole rail system

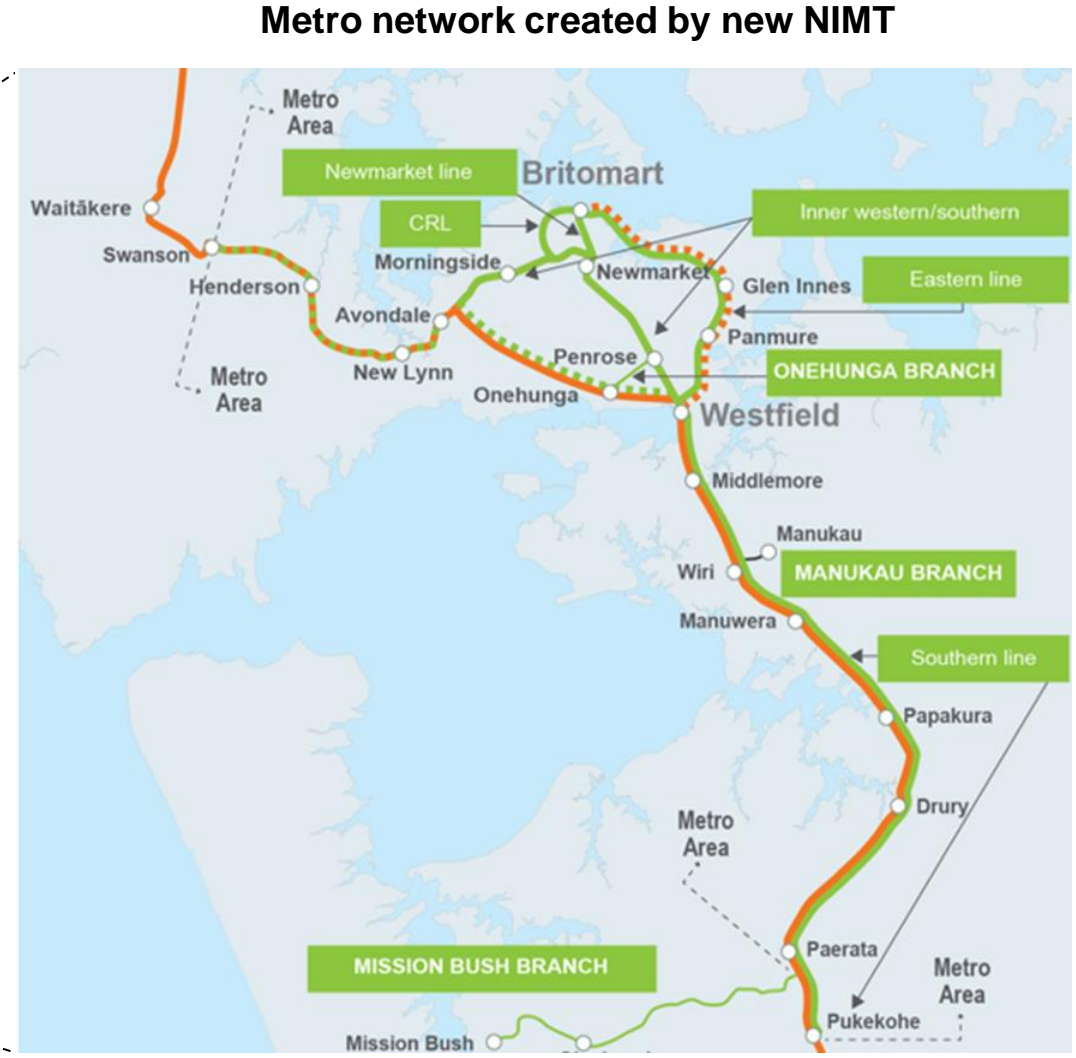
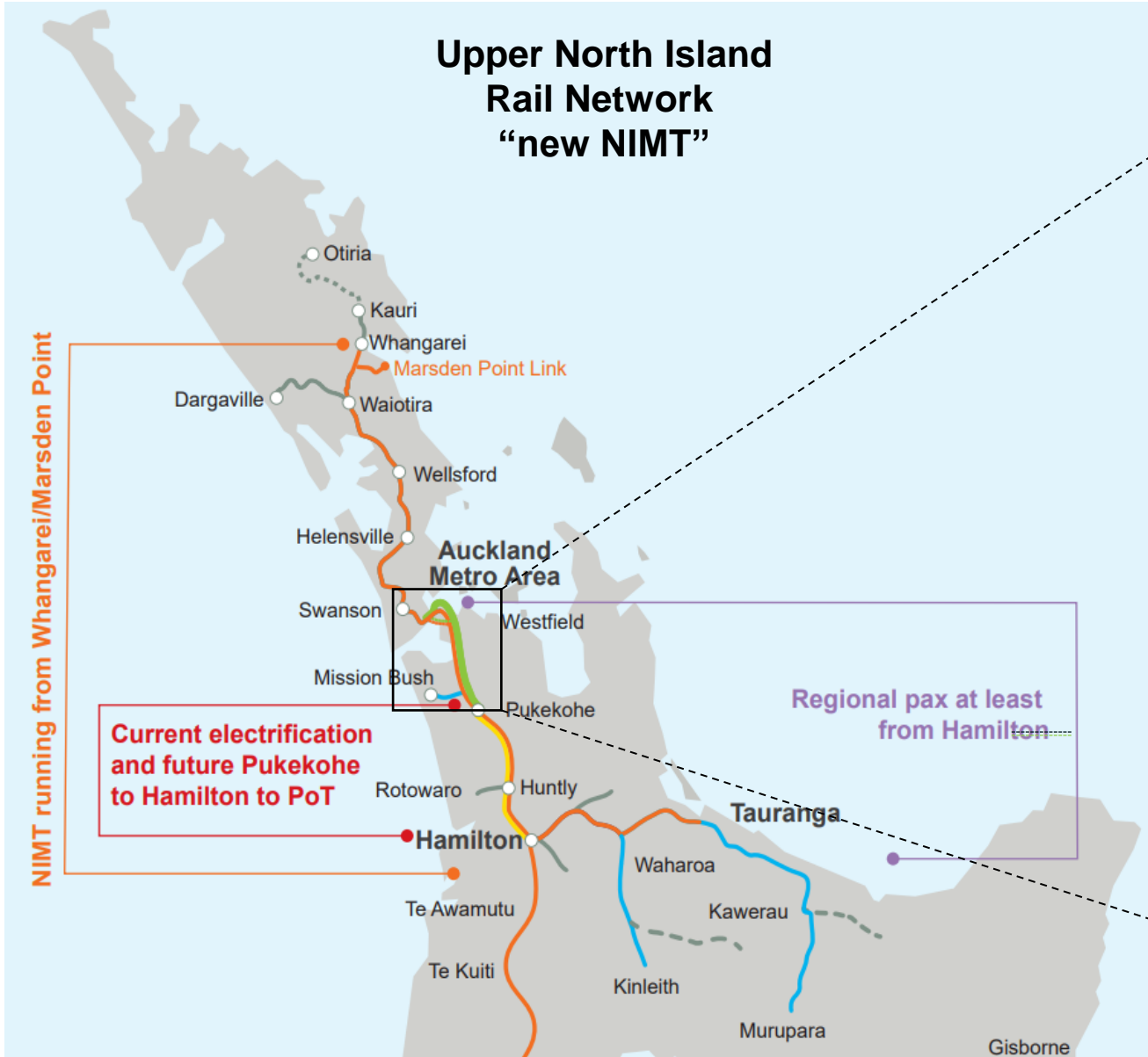
<p>Maintenance & renewals</p> <p>Step change in maintenance & renewals levels and delivery methods to improve reliability and reduce disruption from track works</p>	<p>Level crossing removal</p> <p>Closure or grade separation of all level crossings</p>	<p>Signalling & Power</p> <p>Upgrade signalling for capacity</p> <p>Upgrade power supplies for greater passenger frequency and electrified freight</p>
<p>Fleet, depots & stabling</p> <p>New and replacement trains, depots & stabling to meet future demand</p>	<p>New Track</p> <p>Four tracks: Westfield Junction to Pukekohe</p> <p>Shared Crosstown corridor enabling port options and freeing the inner isthmus for higher frequency passenger services</p>	<p>Station upgrades</p> <p>Station upgrades to improve access and amenity and to accommodate forecast growth</p>





Vision for the Auckland rail network

Future local, regional & national strategic context – maximising segregation



- North Island Main Trunk (NIMT)
- Exclusive metro use
- Dotted lines = shared use



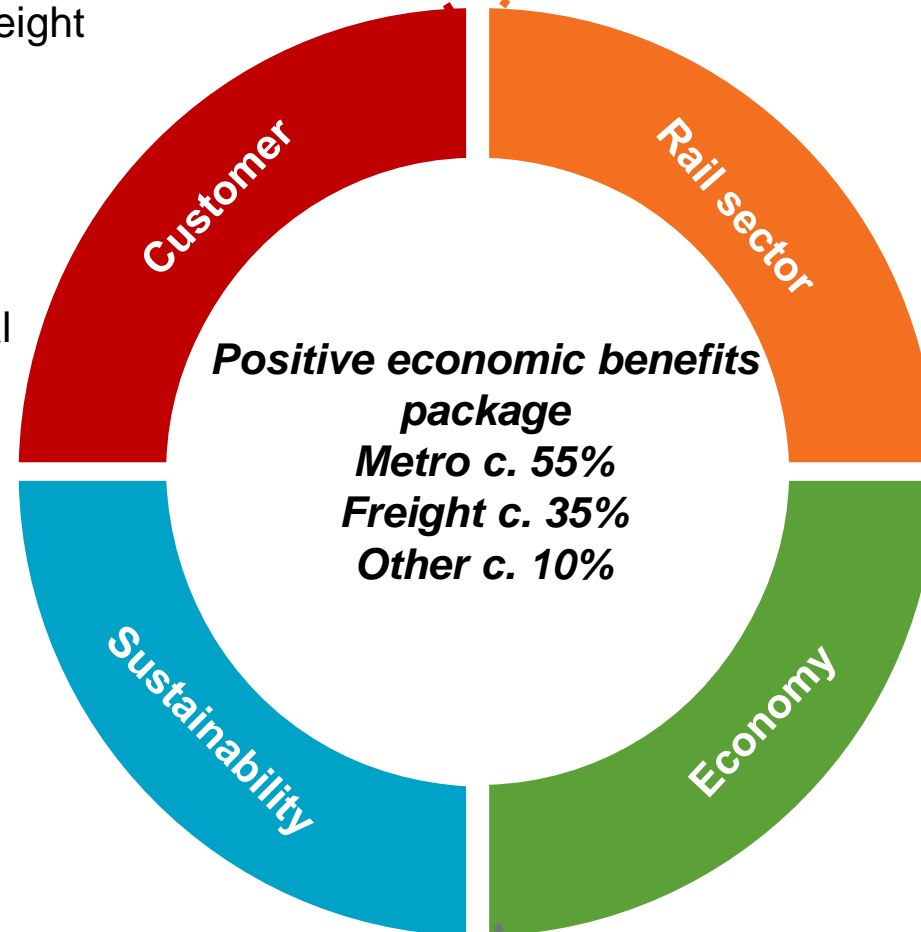
The programme has broad benefits

Customer benefits

- Triple duty - for metro, regional & freight customers at once
- Step-change in levels of service & frequency
- More reliable, less disruption
- Well connected & integrated to local and regional networks

Sustainable transport

- Key to delivering regional and national emission-reduction targets
- Reducing congestion to support ongoing growth
- Improve safety and reduce road maintenance and renewals costs



Rail sector

- Sustainable pipeline of work
- Certainty for firms to invest
- New industries and opportunities
- Building a skilled workforce
- Employment

Economic development

- Access to opportunities
- Local and Regional connections
- Improved national and international supply chain efficiency and productivity
- Decongesting Auckland's transport network



30-Year rail programme – national and regional economic impact

The economic and emissions impacts of rail infrastructure improvements
An MDG-NZ dynamic Computable General Equilibrium analysis
Sense Partners, Final report, April 2024.

To aid better understanding of its impacts across the NZ economy, KiwiRail commissioned a Computable General Equilibrium (CGE) analysis of the economic and emissions impacts of the 30-year strategic rail programme for Auckland (i.e. the recommendations of the Rail PBC 2023). The analysis extends to 2100 (i.e. 50 years beyond completion of the programme).

It sets out 4 scenarios:

- A **baseline**, in which there is no new investment in the rail network beyond that already committed plus future maintenance and renewals. All other scenarios are compared to this.
- A **Core** scenario, which reflects the investment programme recommended by the Rail PBC
- A *variation* of the Core scenario, which envisages more growth at **Northport** – and brings forward the construction of the Avondale-Southdown corridor (and also removes some additional track investment in the southern corridor no longer required)
- A **Delayed** investment scenario, in which there is limited and later investment only on the southern corridor. Avondale-Southdown is not built.

These are what might be considered the ‘conventional’ macroeconomic and emissions impacts. The proposed rail investment would generate several other social and economic benefits that are challenging to include in a CGE model but should be considered as additional to the quantified estimates. These include:

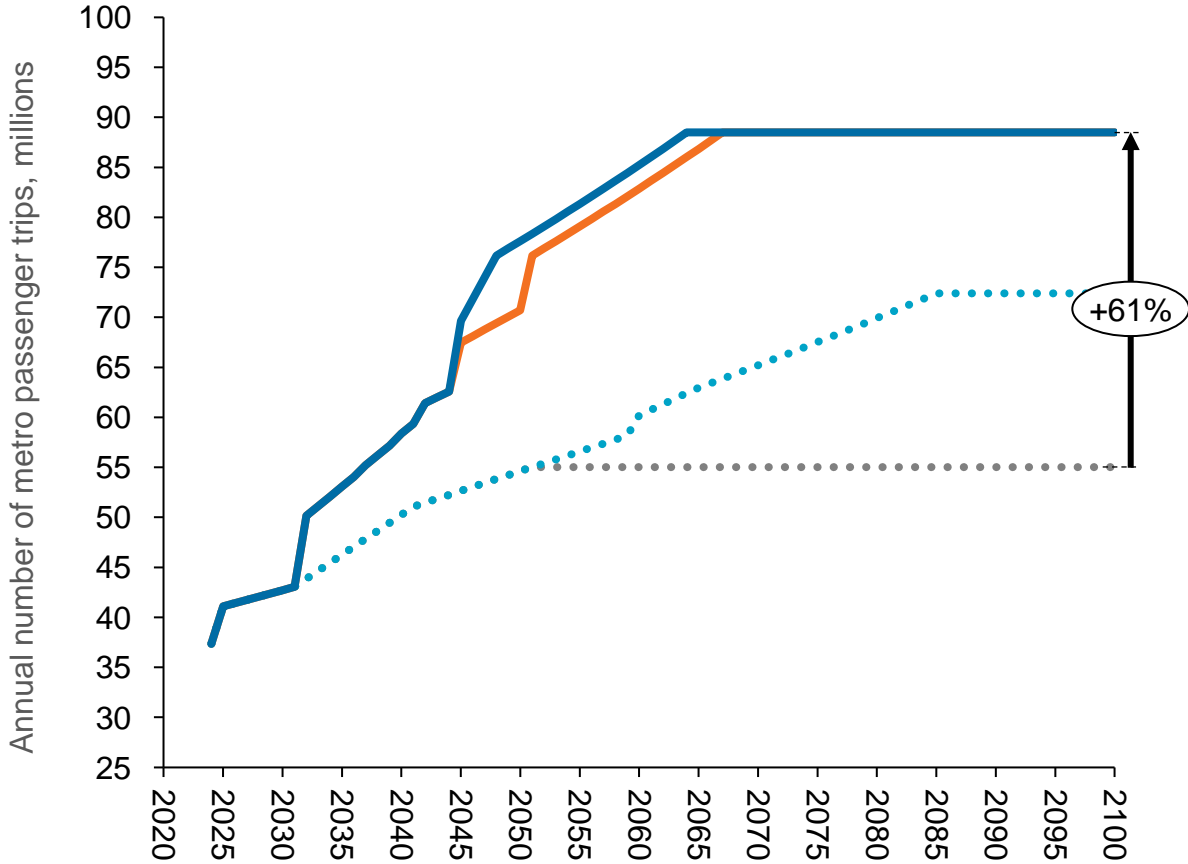
- Safety benefits and time savings associated with the greater use of rail.
- Time savings from reduced road congestion.
- Improved urban design and liveability, which will also present the possibility of opportunities for value capture.
- Reduced road and vehicle maintenance for a given amount of economic activity.



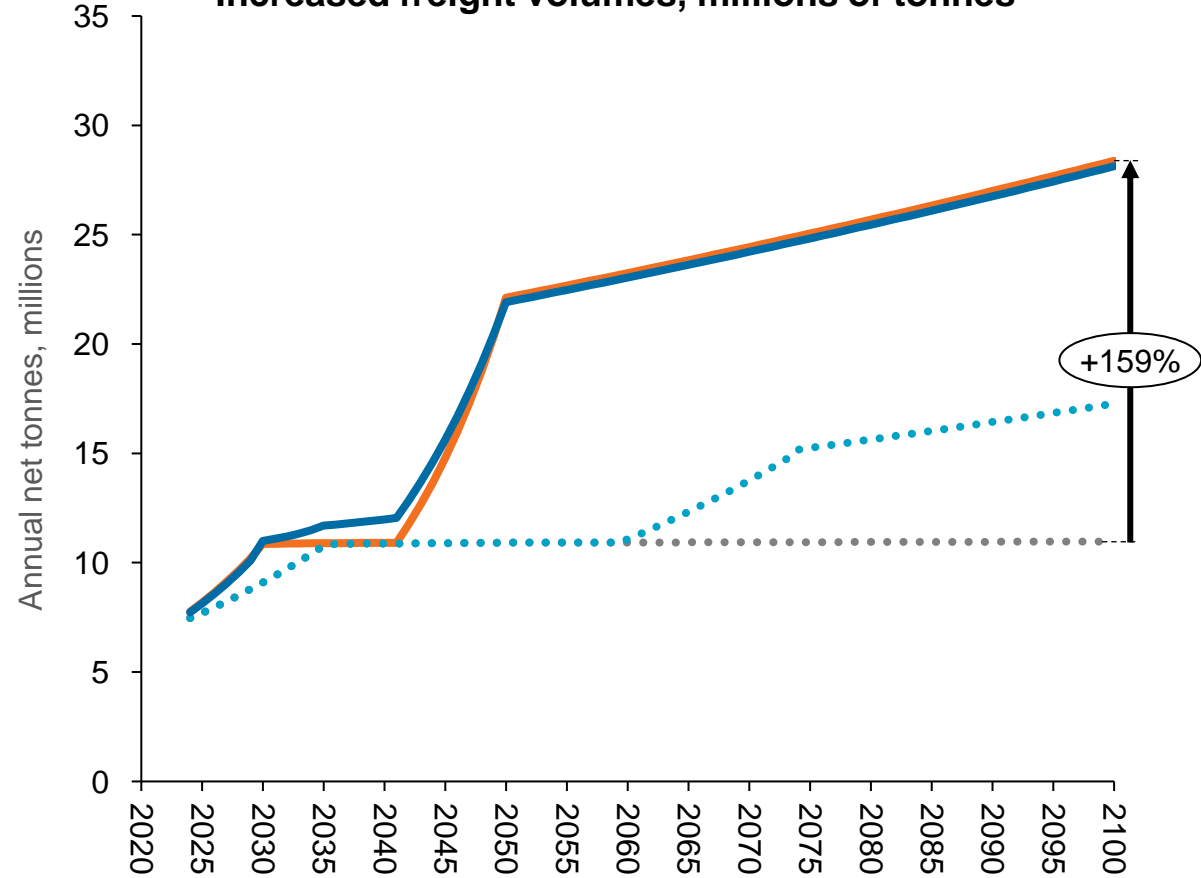
Investment in the Auckland rail network will support forecast increased passenger and freight volumes by rail

Without new capacity, both passenger and freight growth would stall from the mid-2030s and long lead times to new infrastructure creates urgency to progress now

Increased metro passenger volumes, millions



Increased freight volumes, millions of tonnes



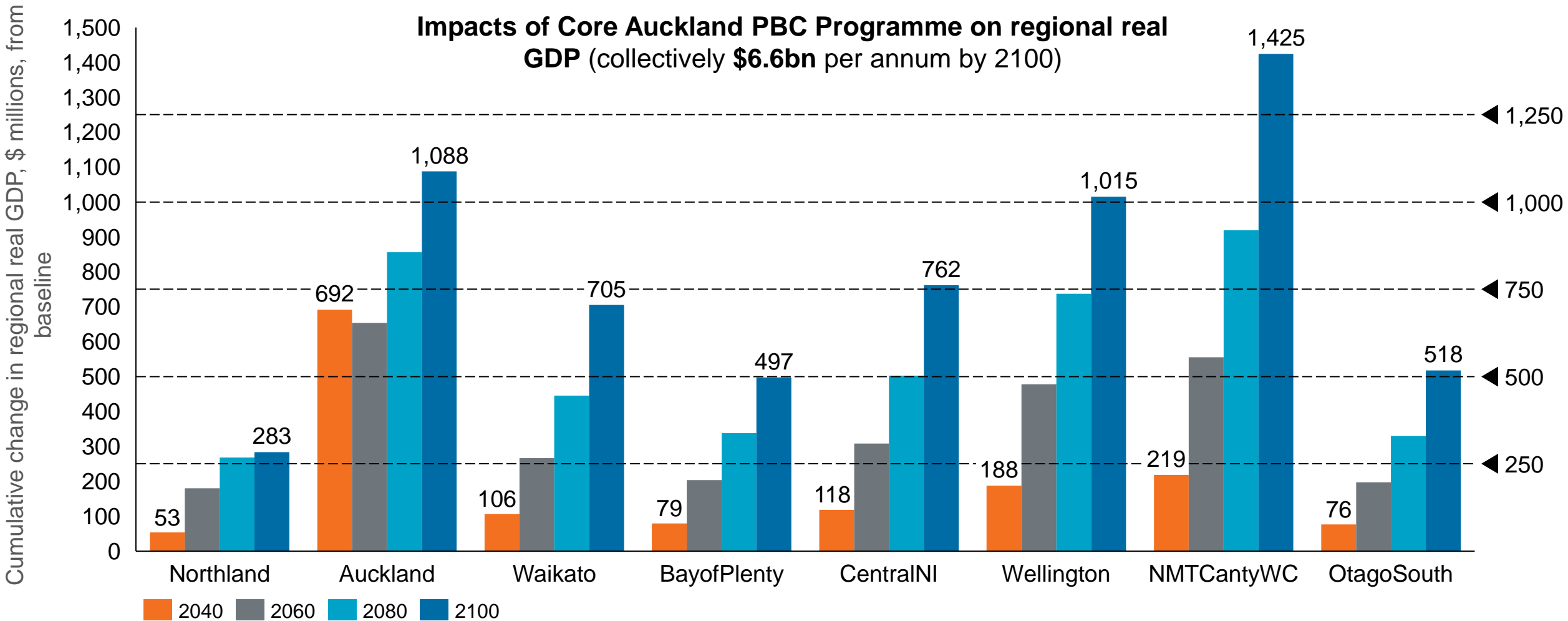
•• Baseline — Core •• Delayed — Northport

•• Baseline — Core •• Delayed — Northport



The benefits of investment in the Auckland rail network are shared with regions across the country – not only in Auckland

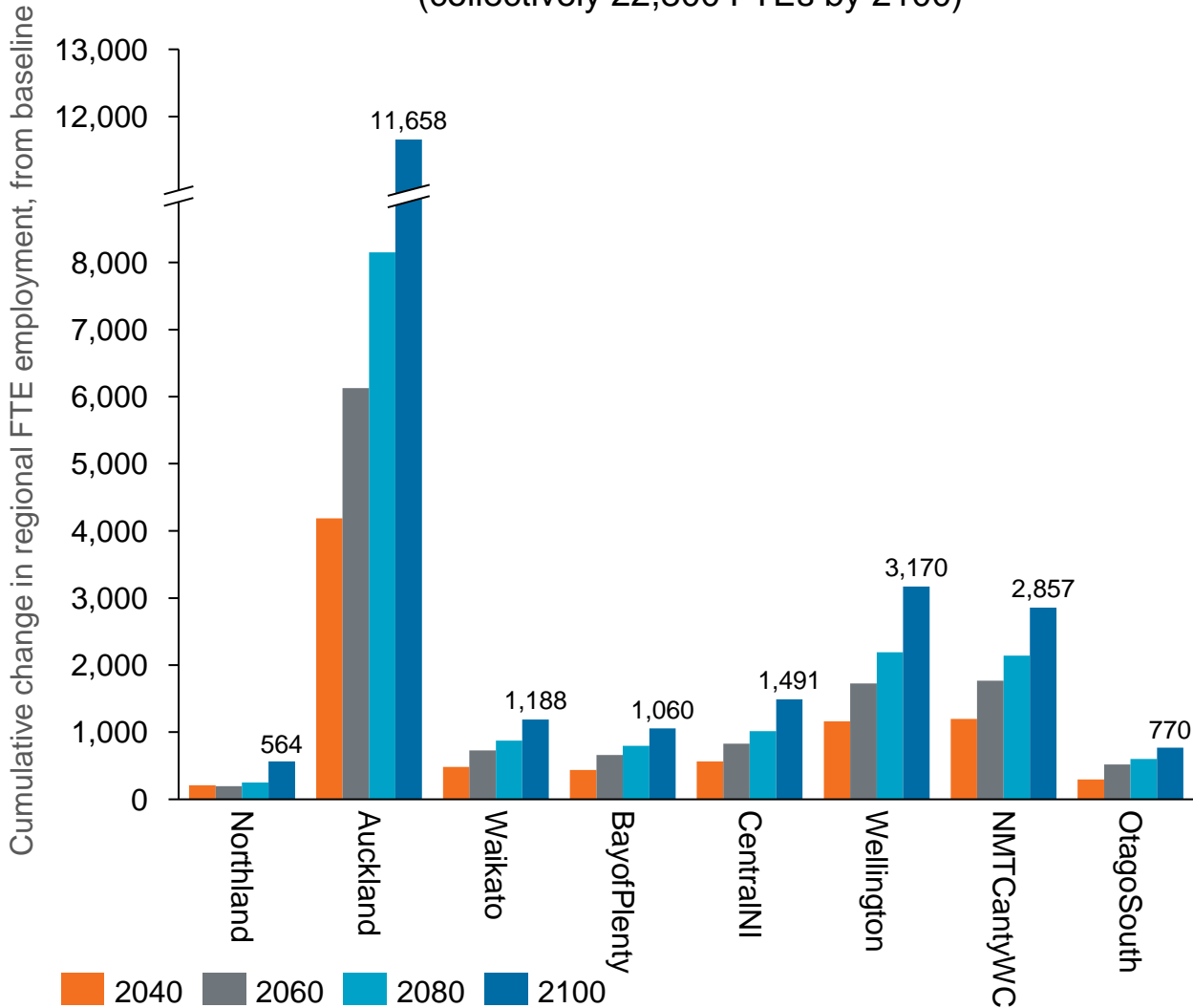
The programme delivers solid and ongoing improvements in New Zealand's real GDP. On completion in 2050 the programme will grow national GDP by \$2.2bn per annum – increasing to \$6.6bn per annum after 50 years (in 2100)





A larger economy means more jobs and higher real wages

Impacts of Core PBC Programme on regional FTE jobs (collectively 22,800 FTEs by 2100)



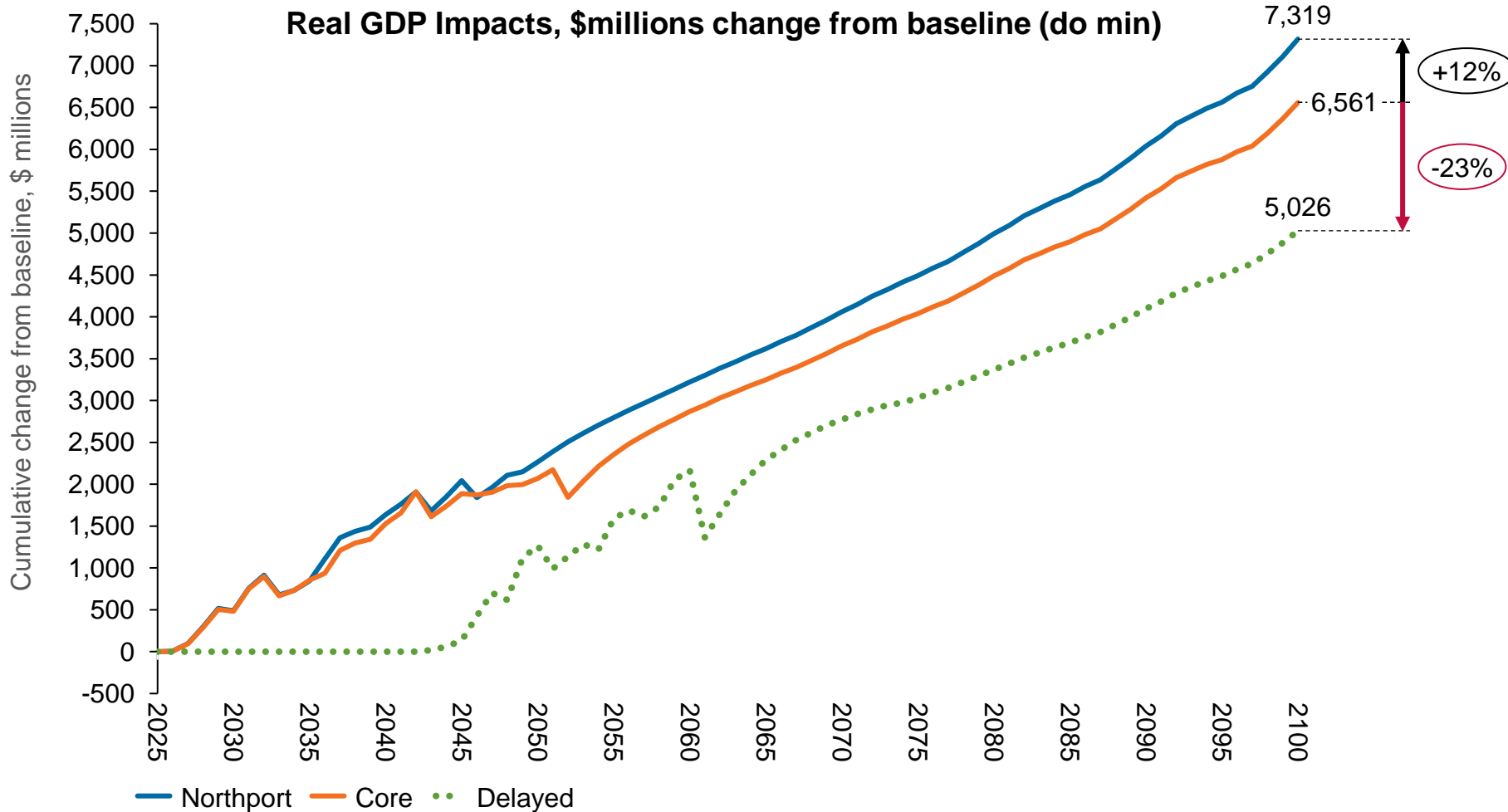
Impacts of Core PBC Programme on average real wages





Programme timing matters

Bringing forward or deferring infrastructure affects overall size of benefits created, not just when they're delivered - the economic benefits of the delayed scenario are 23% lower in 2100 than the core scenario, whilst 'Northport' which brings forward build of the Avondale-Southdown corridor, delivers 12% more



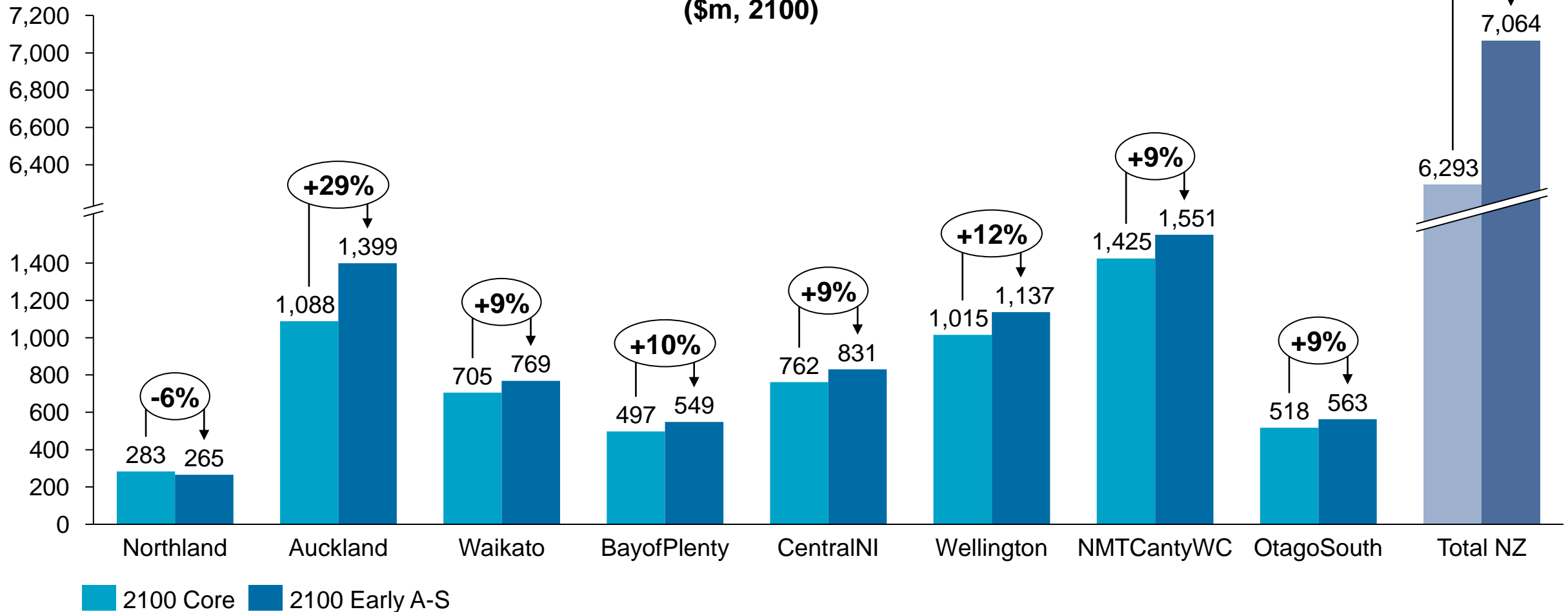
Scenario	High level indication
Core	Per PBC baseline programme, includes both 4 tracking and Avondale-Southdown
Northport growth	Brings forward Avondale-Southdown corridor by 6 years and removes some additional southern corridor investment no longer required
Delayed	4 tracking delayed, Avondale-Southdown not built

Note: In all cases, associated investments (e.g. in trains, maintenance, etc) are aligned in each scenario, as are operating costs.



Delivering Avondale-Southdown earlier benefits everyone, Auckland most of all

Impacts of earlier delivery of Avondale-Southdown corridor on regional real GDP growth (\$m, 2100)

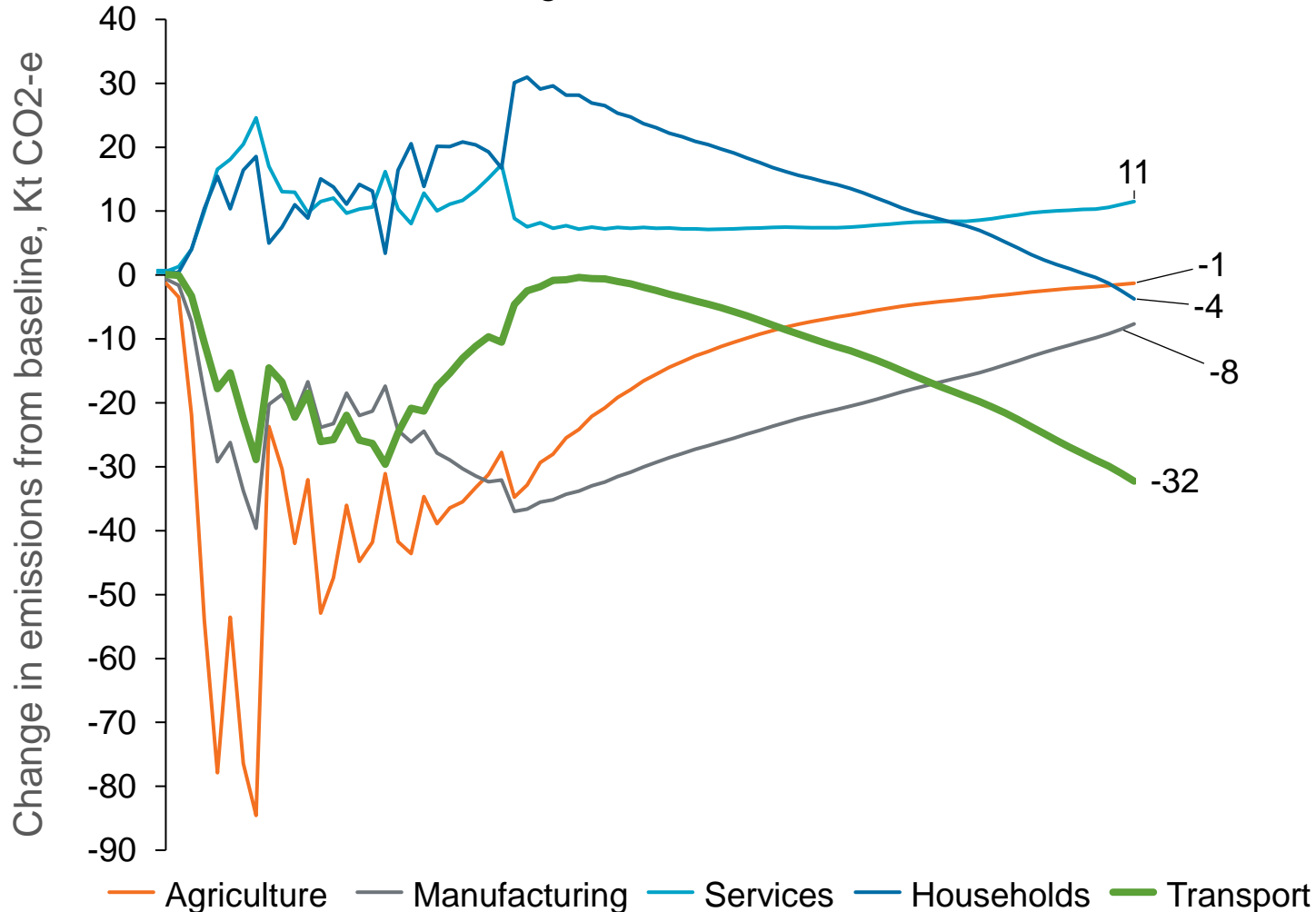


Note Economy-wide benefits totals are \$6.6bn and \$7.3bn respectively, variation in this chart is due to repeated rounding



The programme would create more emissions-efficiency as transport reductions mean allowances are used more productively

Broad sector change in emissions, 2025-2100, Kt CO₂-e



- The agriculture and manufacturing sectors, both of which are heavy users of rail freight, see their emissions fall below baseline, despite their output growing faster.
- Services emissions rise primarily because construction activity is included in this sector.
- Household emissions grow above baseline for most of the projection period as real wages and employment grow
- Over time, the transport sector becomes more emissions-efficient with the shift from road to rail.
- By 2100, **transport emissions are c. 32Kt lower** than they would have been had the freight and passenger demand been met by road transport instead



Summary economic impacts from the Auckland rail programme investment

The analysis finds that the benefits from the collective rail investment include:

- Significant national and regional economic growth. By 2100, real GDP between **\$6.6 billion - \$7.3 billion per annum** greater than it otherwise would have been.
- An estimated additional **22,800-23,700 additional FTE jobs**.
- The higher GDP and employment figures arise if the Avondale-Southdown cross-isthmus corridor is delivered earlier.
- Emissions reductions equating to a transport **emissions 'saving' of 32.3Kt CO2-e** by 2100. These reductions account for both construction emissions and increased travel (due to increased economic growth). The ETS means that economy-wide emissions are held constant but as the programme also increases GDP, this represents an improvement in the emissions-intensity of GDP



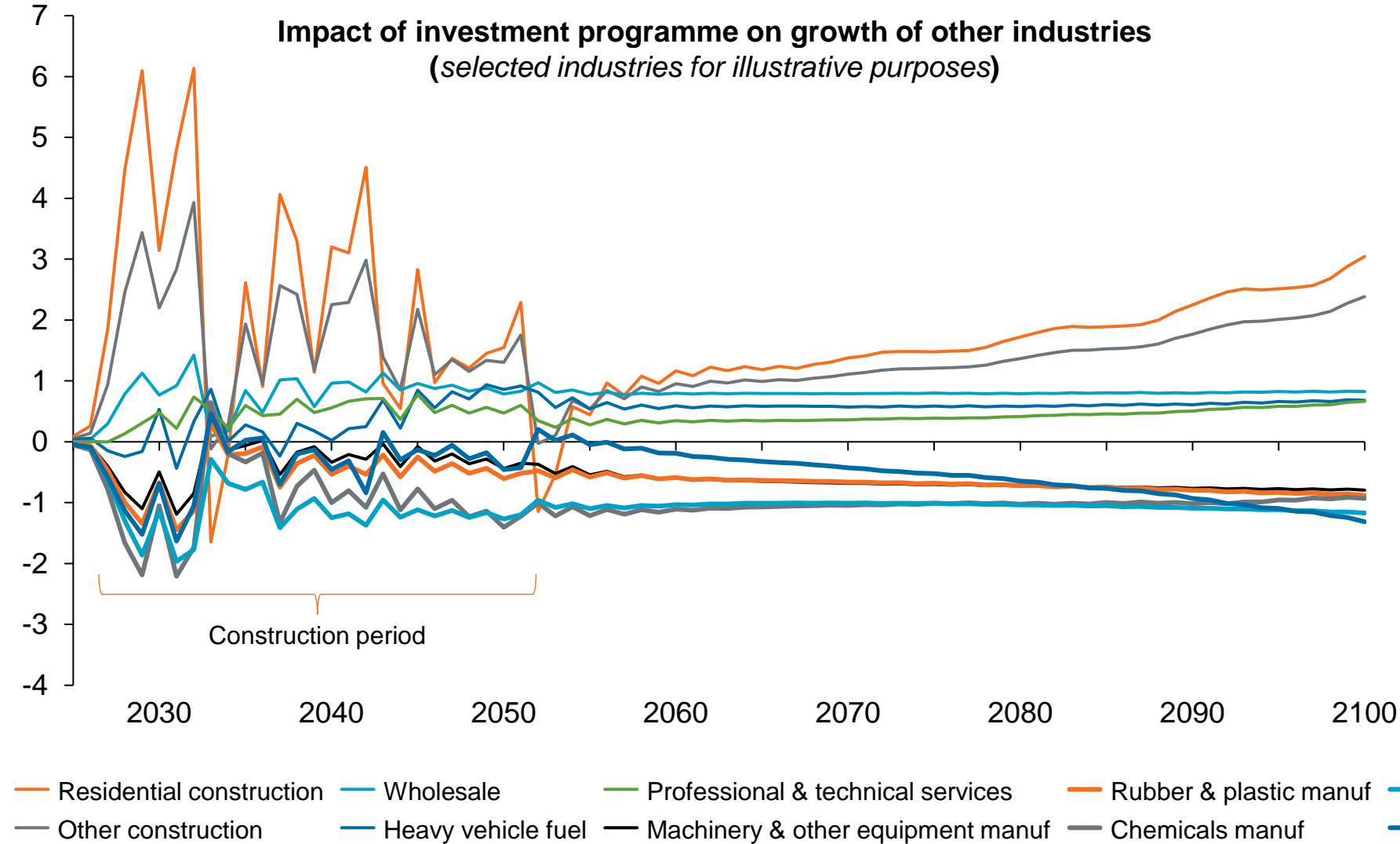
Thank you





CGE modelling reveals the net impacts of the investment – as well as the component positives and negatives

% change



- Rail passenger transport and rail freight (**not shown**) each enjoy huge growth – more than doubling in size
- Industries that make the investment happen, such as construction, grow strongly including beyond the construction period.
- Construction-supplying industries and professional services also benefit as the construction sector grows.
- Other sectors decline slightly as costs rise and the exchange rate appreciates, or they compete with the construction sector for resources.
- Road passenger transport drops relative to baseline as more commuters use the improved rail services in Auckland.