

Appendix V

The background of the page is a complex, abstract composition. It features several overlapping, translucent geometric shapes, primarily triangles and parallelograms, in shades of blue, green, and orange. These shapes are layered to create a sense of depth and movement. In the center, there is a blurred, high-speed photograph of a highway at night, showing light trails from vehicles and streetlights. The overall aesthetic is modern and technical.

Covid 19 Sensitivity
Technical Note

Technical Note

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1 Summary

This Technical Note is intended to provide stakeholders with a clearer understanding of the potential sensitivity of the benefits and key drivers of A2B/20Connect to the social and economic impacts of Covid-19.

The approach we have followed is to use the best available information to establish how the effects of Covid-19 will likely be felt over a timeframe which corresponds with the key decision points and gateways for A2B/20Connect. This provides a context within which an approach to decision making determine can be developed.

From current information, we can be confident of a short-term economic shock of significant magnitude with reductions in output, employment, population growth and transport demand for the next 2 to 3 years. However there is currently insufficient evidence to confidently predict whether the economic and social effects of Covid-19 will persist materially beyond 2-3 years.

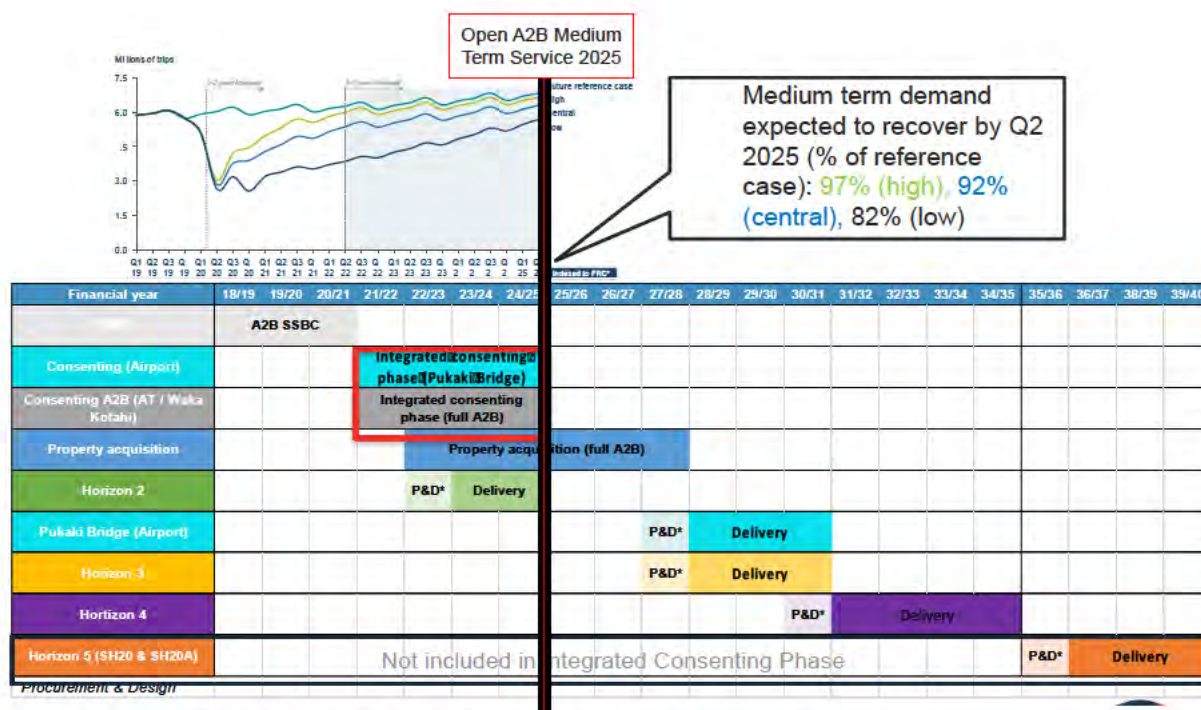


Figure 1-1: Linking the impacts of Covid-19 with the A2B/20Connect Programme

Based on the above programme, it is only the procurement and delivery decisions relating to Horizon2 that are imminently affected by the potential impacts of Covid-19. The staging strategy allows the key investment decision for Horizon 3 to be made around 2026/27, by which time it will be much clearer how Covid-19 has really impacted on long-term economic activity and transport demand in the project area.

The investment gateway/trigger approach which is under development now to support future decision making could be also used to inform the decision making process with respect to the lasting impacts (or not) of Covid-19.

2 Introduction

Given the unfolding social and economic impacts of Covid-19, it is important to understand the potential sensitivity of A2B and 20Connect's assessed benefits to these changes. This Technical Note is intended to provide stakeholders, including funders, with a clearer understanding of these impacts, and to ensure these impacts are reported on as part of closing out the approvals of the Single Stage Business case (SSBC). This Note will be included as an addendum to the current A2B SSBC.

3 Methodology

The overall objective is to provide a clear articulation of the various potential impacts, their scale and longevity before returning to the previously assumed levels. The approach we have adopted follows the four steps set out below:

- Step 1: Set out the timeframes which are relevant to this assessment, including the key decision points and gateways within the A2B/20Connect programme and the timeframe over which the effects or impacts of Covid-19 are expected to be material. This allows us to consider the relationship between the A2B/20C programme and timing of the impacts of Covid-19.
- Step 2: Identify potential timing, scale and longevity of regional impacts. To undertake this step, we examine the potential scale and longevity of impacts on:
 - o Population growth (primarily via changes in immigration)
 - o Economic activity (particularly employment growth)
 - o Changes to general travel demand

We rely heavily on work undertaken by other parties, including Waka Kotahi (and their consultants) to assess these impacts.

- Step 3: Identify potential timing, scale and longevity of local impacts in the project area via impacts on:
 - o Employment levels (and by inference economic activity) by location within the project area (informed by expected changes in economic activity by sector).
 - o International and domestic travellers using AIAL.
 - o The consequent potential to impact on traffic and patronage levels (via an assessment of trip patterns and purposes).
- Step 4: Establish how the effects of Covid-19 will be felt over a timeframe which corresponds with the key decision points/gateways for A2B/20Connect. Link this to investment triggers/gateways

To begin, we clarify the main project drivers, as this is necessary to frame the analysis of impacts.

4 A2B/20C Project Drivers

To understand the impacts of Covid-19 on A2B/20C, it is important to firstly confirm the project drivers (set out in the SSBC).

The project's origins arise from analysis showing deficit in public transport serving the areas of south and east Auckland.¹ The need for improved public transport connections in this area need was recognised and confirmed in ATAP. Consequently, ATAP provides for a RTN service through the A2B corridor that "links together southern and eastern Auckland and will provide an important connection to the rail network at Puhinui".

From this starting point the strategic opportunities were identified for the project including;

- *Filling a gap in the region's rapid transit network linking four of Auckland's existing or proposed radial, city centre focused, transit lines by providing a new orbital RT line. Allows more connected journeys*
- *Improving access and travel choices in south and east Auckland to address a significant existing and future access deficiencies to jobs and opportunities.*
- *Providing better access and travel choices to Auckland International Airport to support airport activities, employment and economic growth*
- *Supporting affordable housing, growth and intensification*

The key observation is that the drivers and opportunities identified for the project are significantly wider than simply providing improved access to the airport.

This is reinforced by examining some of the transport modelling that has been undertaken for the project. The figure below depicts the demand profiles along the corridor over time. It is clear that these profiles are not significantly weighted towards the Manukau to Airport section of the corridor and are in fact quite balanced.

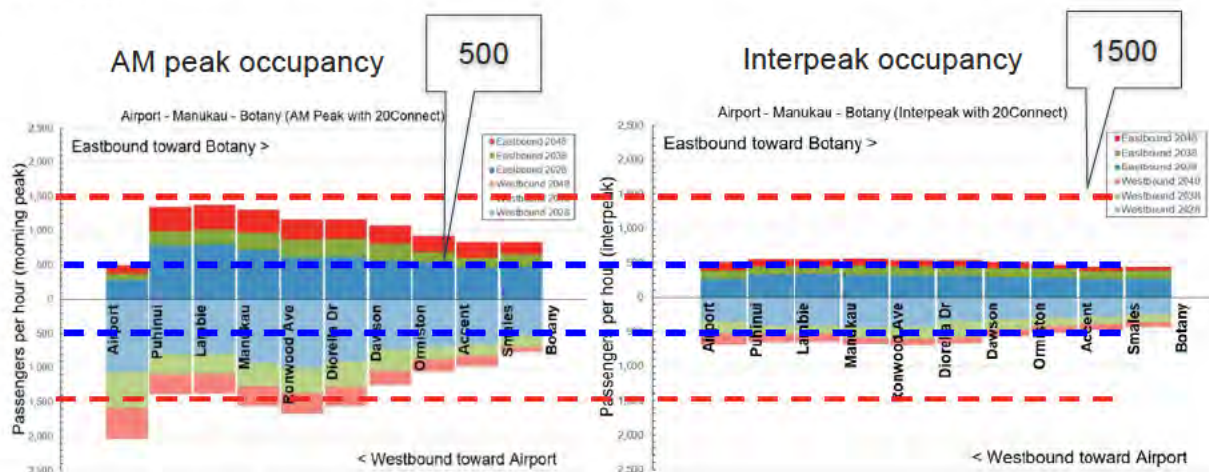


Figure 4-1: Corridor Demand Profiles over Time

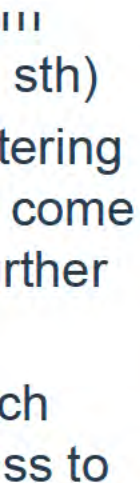
Source Ultimate A2B + 20Connect model

Similarly, when looking at the movements which are expected to take place across key screenlines, the multi-purpose nature of the corridor is clearly evident. For example, looking at the movements across the 'Manukau west of SH1' screenline in 2048:

- Only 33% people on the RTN as it enters Manukau still on system as it enters the airport.

¹ Jacobs, 2016, 'Auckland RTN Review', prepared for AT

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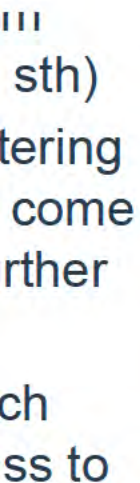
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5 Timeframe

The logical starting point in the assessment is to start to place a timeframe around the potential impacts arising from Covid-19. Like all other impacted countries, New Zealand is currently undergoing an exceptional economic shock due to the pandemic. The short-term effects are reasonably easy to recognise. However, the path to recovery is more open to debate, for example:

“Although current forecasts suggest a deep, V-shaped global recession this year with a sharp rebound in 2021, a longer recession and recovery period, with world GDP not recovering to pre-Covid levels for several years, is likely.

Considerable uncertainty remains about the medium to longer-term economic ramifications... This uncertainty emanates from several factors: a lack of clarity about the size of the global downturn and how quickly the international economy might recover; differing views about the ability of the New Zealand economy to bounce back; and the possibility of a further wave of Covid-19 cases within New Zealand that might necessitate a return to Alert Levels 3 or 4.”²

“The Treasury Budget or Faster Recovery Scenario predicts a fairly quick and strong recovery beginning from the end of 2021, with economic activity back to pre-Covid levels in 2022, and some bank forecasts (e.g. RBNZ baseline scenario and Westpac) suggest a similar trajectory. Others, e.g. Infometrics and BNZ, consider this is optimistic and that the hit will be larger and recovery longer, i.e., that there will be a deeper ‘U’ shaped or even an ‘L’ shaped recovery.”³

What is important for this assessment is to gain an understanding of how the effects of Covid-19 will be felt over a timeframe which corresponds with the key decision points/gateways for A2B/20C.

5.1 A2B/20C Delivery programme

The staging strategy set out in the SSBC has been agreed with stakeholders including NZTA and AIAL as follows:

Table 5-1: A2B and 20C Stages (see appendix 1)

Horizon	Expected Timing	Decisions/Gateways to align with Construction	NPV Capital Cost (\$m)	NPV Total Cost (\$m) inc Opex	Horizon Description
H1	2021	Committed			Short-Term Airport Access Improvements – Base Case (committed and not part of SSBC)
H2	2025-26	2024 Construction 1Yr			A2B service extension Manukau to Botany
H3 (S2A & S2B)	2030-2035	2025 Construction 5yrs A2B sections, 3yrs 20Connect sections			Completion of SH20B corridor (A2B & 20Connect). Premium bus service Botany-Airport. Construction up to 5yrs for A2B sections
H4	2035	2029 Construction 6Yrs			A2B full rapid transit infrastructure
H5	2040	2035 Construction 5Yrs			20Connect Full infrastructure SH 20 & 20A.

Horizon 1 is already committed to and forms the base case for the SSBC. It includes the airport to Manukau section of the A2B alignment, as this area and connection will have the highest demand in the

² Martin-Jenkins and Infometrics, 27 May 2020, Arataki - Potential Impacts of Covid-19. Report prepared for NZTA p11-12.

³ Martin-Jenkins and Infometrics, 27 May 2020, p38.

short term (and therefore potential accessibility and value for money benefit) and allows later horizons to expand from this connection. It has a capital cost of [REDACTED]

The key next key funding decision relates to Horizon 2, expected to be implemented by 2025-2026. Horizon 2 aims to implement a service-led, low-capital investment transport connection through to Botany, including interim stations and an opportunity for some initial upgrades near Manukau. Expected capital cost is [REDACTED]

It is only with Horizon 3 that a significant funding commitment is required, but this decision will not be needed until 2026/27. Therefore, it will be possible to include within any gateway requirements for this decision the requirement to demonstrate that demand and expected benefits remain at a level which supports progressing with Horizon 3. No decision is needed now.

5.2 Covid-19 Impacts over time

Significant work has been undertaken to model the impacts of Covid-19. For example, Treasury have created a range of scenarios depicting a spectrum of recovery trajectories. Infometrics, who have undertaken considerable analysis of the economic impacts of Covid-19 for Waka Kotahi, have formed the view that Treasury's 'slower domestic recovery' scenario is likely to be the more realistic pathway for the economy. This recovery assumes one month at each of Level 3 and Level 4 and 10 months in total across Levels 1 and 2. Borders remain closed to foreign visitors for up to 12 months. World GDP growth is -5.9% in 2020 and -0.7% in 2021 (Treasury describes this as 'Scenario 5').⁴

However, considerable uncertainty remains about the medium to longer-term economic ramifications. This uncertainty emanates from several factors including:

- A lack of clarity about the size of the global downturn and how quickly the international economy might recover.
- Differing views about the ability of the New Zealand economy to bounce back.
- The possibility of a further wave of Covid-19 cases within New Zealand that might necessitate a return to Alert Levels 3 or 4.

6 Regional Impacts

This section examines the potential regional impacts (i.e. impacts likely to be experienced broadly across the region and assumed to impact the project area in equal proportion) in a little more detail.

This includes articulation of the potential impacts on different markets in the Airport precinct and surrounds, their scale and how long they may last for before returning to the previously assumed levels, including a view of impacts over the Medium term.

These impacts are likely to be reflected in changes to:

- Population growth (immigration)
- Employment growth (economic activity).
- General travel demand (e.g. as a consequence of different working/study/shopping practices becoming long-lasting).

⁴ Infometrics, April 2020, COVID-19's Effect on Industry and Regional Economic Outcomes, report prepared for NZ Transport Agency, p6.

6.1 Population

6.1.1 Current Situation

Auckland accounts for just over 33% of the national population and has maintained a persistently high growth rate for many decades. For example, Auckland's population increased by 11% (or more than 150,000 residents) between 2013 and 2018. Pre-Covid Auckland's population was expected to grow by an extra 300,000 people in the next decade (over 50% of total population growth) and by up to one million people over the next 30 years.

The economic importance of Auckland's growth is emphasised by the projection that 80% of growth in the country's total working age population (15-64 years) over the next 10 years is expected to be attributable to Auckland.

6.1.2 Implications for Auckland relating to Covid-19

In the short-term border closures and other travel restrictions over the next 9-12 months have been identified by commentators as a clear impediment to population growth. The prospect of net migration flows remaining below normal for the following 2-3 years will then be expected by these commentators to impact negatively on medium-term growth.

For Auckland, its reliance on tourism, its gateway role, plus the large number of international students and high volume of migrant workers means it may potentially face a large short- medium term impact on population growth. However, although they are predicting that growth may be impacted, Infometrics are indicating that Auckland's population may not be significantly reduced post-Covid either, for example due to the higher proportion of growth attributable to natural increase in recent years. As opposed to New Zealand as a whole, net migration⁵ has been a less significant driver of Auckland's population growth recently.⁶

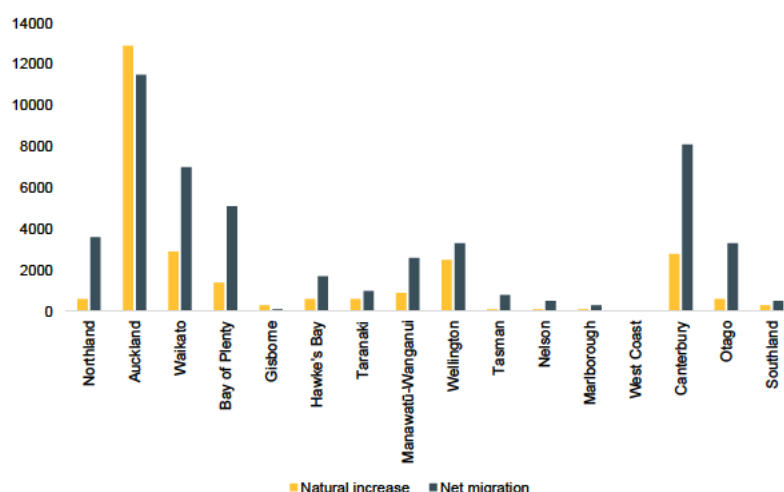


Figure 6-1: Components of Population Growth

Source: Infometrics, Statistics NZ, Subnational population estimates 2019

⁵ Net migration accounted for approximately 63% of national population growth (50,000) in 2019 and natural increase 37% (29,000) (Martin-Jenkins and Infometrics, May-2020, p63). For Auckland, natural increase accounted more than 50% of population growth.

⁶ Infometrics, April 2020, COVID-19's Effect on Industry and Regional Economic Outcomes, report prepared for NZ Transport Agency, p11.

Infometrics also consider that there may be an increase in internal migration to Auckland, as residents in other regions seek to relocate to find employment opportunities as well as a reduction in outward migration from Auckland to other regions, as for example, housing affordability in Auckland improves.⁷ The general synopsis amongst commentators appears to be that Auckland's population growth is likely to be curtailed for a period of 1 to 3 years. After that, there is no compelling evidence to suggest that a pattern of growth will not return.

However, a recent article examining why property prices have so far remained more resilient to the impact of Covid-19 notes that *"Statistics NZ originally told us that in the year to November 2019 the net migration gain was 42,000. So, at the start of this year we analysts figured maybe a 40,000 gain would optimistically occur this year, giving a full two calendar year gain of about 80,000 people. The net estimated flow for the 12 months to November is now 64,000, and the net gain since then has been another 41,000 over the six months to May. If the net gain for the rest of the year is zero, the two-year gain will be 105,000. Covid-19 has so far boosted our net migration gain and housing demand, not reduced it."*⁸

In summary, the general view from forecasters is that Auckland's population growth likely to be curtailed for 1 to 3 years. Primarily due to a reduction in new migration. After that, there is no compelling evidence to suggest that a pattern of growth will not return. Set against this, it appears that immigration for the 2019-20 period is currently running above expectations.

It is generally accepted that over the past 3 decades public infrastructure provision in Auckland has not kept pace with population growth. One way of viewing the current situation would be as a short-term window of opportunity to reduce this infrastructure gap, before Auckland reverts to a pattern of strong population growth. Another may be that this pattern of growth will simply continue in reflection of New Zealand's relative attractiveness as a safe place to live.

6.2 Economic Activity

At the regional level, based on information provided to NZTA⁹, it would appear that the short-term employment impacts of Covid-19 will be quite serious under all three recovery scenarios modelled.

⁷ Martin-Jenkins and Infometrics, 27 May 2020, p61.

⁸ Tony Alexander, The Covid conundrum: Four reasons why house prices haven't collapsed, OneRoof 26/07/20.

⁹ NZTA, June 2020, Regional Summary 2 Auckland Potential Impacts of Covid19

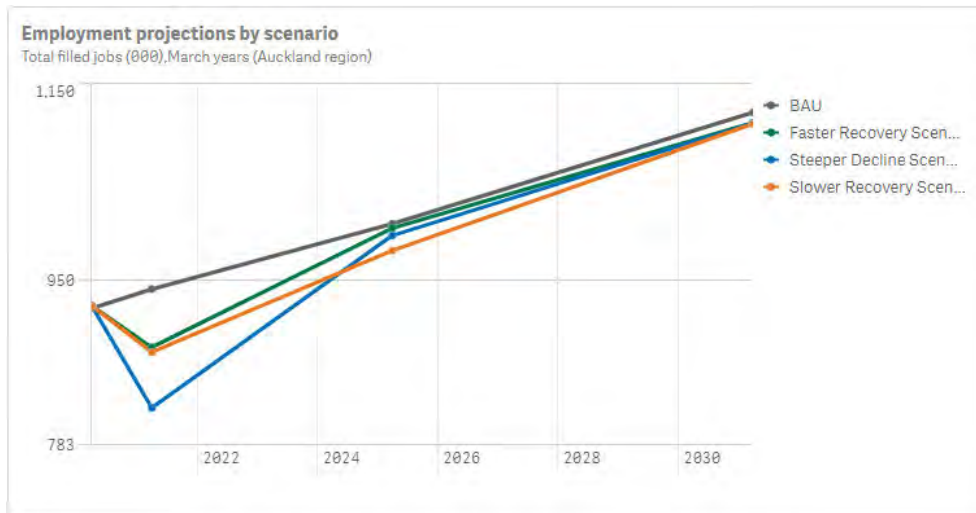


Figure 6-2: Employment Projections 2021-2030

Source: NZTA

Under the slower recovery scenario, Auckland's employment is projected to fall by around 6.8%, is very slightly worse than the national average of a 6.7% decline. Under this scenario Auckland's employment is forecast to return to pre-COVID levels by around 2023 and reach BAU levels by 2031. Under the faster recovery scenario Auckland's employment is forecast to return to pre-COVID levels by around 2022 and reach BAU levels by 2025.

For Auckland, the relative importance of tourism and international gateway role, plus large number of international students and high volume of migrant workers supports the view that the short-medium term economic impact will be significant.

At a sectoral level, the greatest negative impacts are predicted to be felt in media, retail, accommodation and transport related activities. Conversely, manufacturing and construction are expected to perform better than expected (assuming the slower recovery scenario).

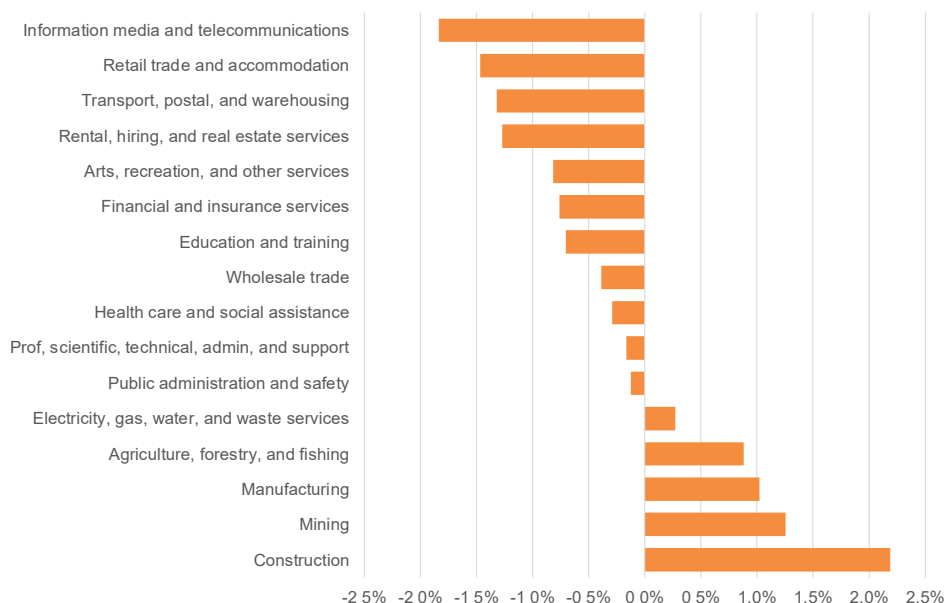


Figure 6-3: Sectoral Employment Impacts – Slower recovery Scenario vs BAU to 2031

Source: Infometrics

In summary, although the short-term employment impacts of Covid-19 will be serious, significant recovery is expected by 2025.

6.3 Regional Travel Demand

To begin with, looking at current travel demand, it is clear that this has been significantly disrupted by Covid-19. What is also clear is that the recovery is different across modes. The current position for movements of light vehicles and freight within the main centres are shown in the graphs below.¹⁰ Auckland freight volumes have already returned to July 2019 levels but light vehicle movements, although trending quickly back towards previous levels currently sit at around 95% of July 2019 movements. PT recovery is notably slower, reaching around 50% of pre-Covid levels in early June and rising to 70% by July.

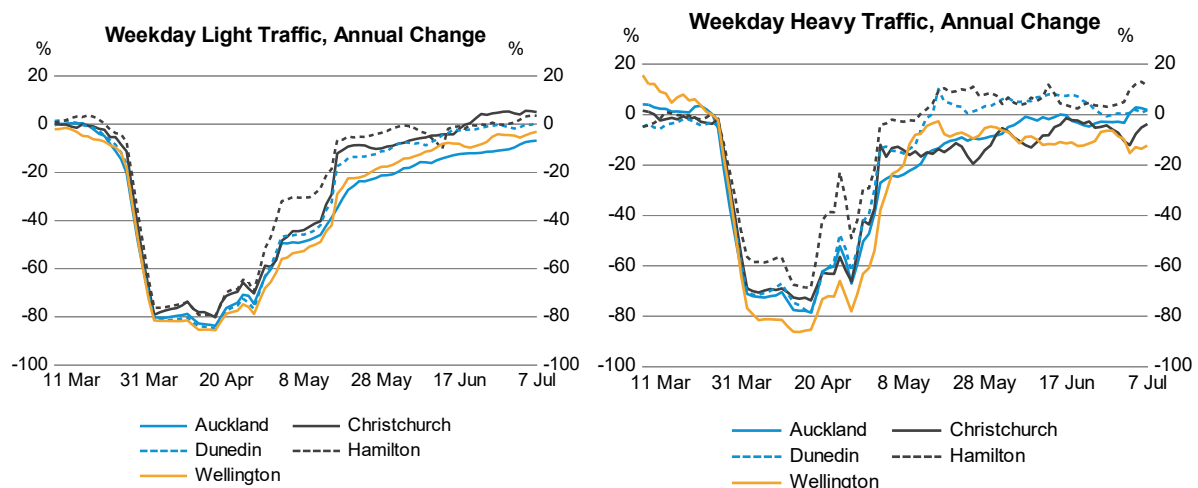


Figure 6-4: Traffic Levels (Annual change)

Source: Treasury, 10 July 2020, Weekly Economic Update

The most comprehensive source of information on the potential short to medium term impact of Covid-19 on regional transport demand is the work undertaken for NZTA by LEK and PwC. This assessment is based on three Recovery Scenarios summarised in the figure below:¹¹ NZ is currently functioning between the central and high cases.

¹⁰ NZ Treasury, 10 July 2020, Weekly Economic Updated, data sourced from NZTA.
<https://treasury.govt.nz/system/files/2020-07/weu-10jul20.pdf>

¹¹ PwC and LEK, May 2020, Rapid Transport COVID-19 Recovery Scenarios, prepared for NZTA.

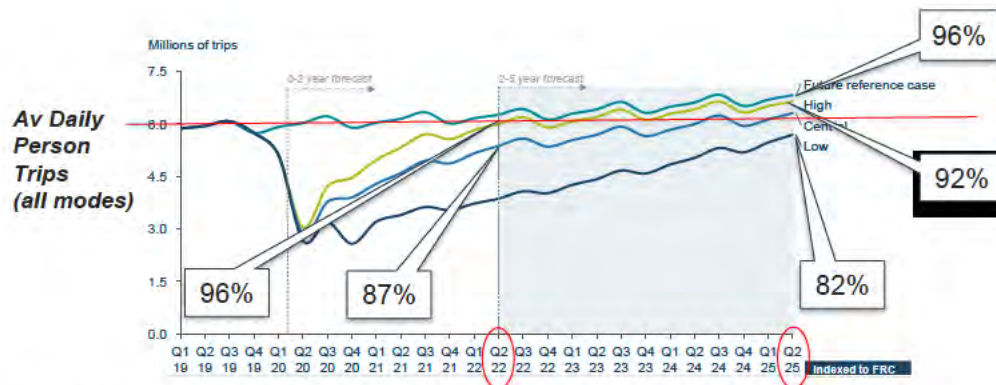


Figure 6-5: Average Daily Person Trips (all modes)

Source: LEK and PwC

The assessment finds that for three potential recovery scenarios, by Q2 2025 demand is expected to recover to 82% for the low case, 92% for the central case and 97% for the high case. Based on current circumstances it would appear that NZ is functioning between the central and high cases. Notably, under the high scenario, demand recovers to around 97% by Q4 2022.

Based on this information, the stated position of Waka Kotahi (Regional Summary 2 Auckland Potential Impacts of Covid19, June 2020) is that:

- There will be a short-term easing of growth in PT demand.
- No significant changes are expected in transport demand medium-long term.
- However, changes to nature of work for professional services (more people working remotely) may see a reduction in peak trips to city centre.
- The 10-year outlook largely unchanged.
- Effectively integrating land-use and transport remains critical to ensure growth areas are serviced with active mode and PT infrastructure and services.

The trend that will require ongoing monitoring in Auckland is the potential for increased working remotely and from home to continue and become normalised for some workers who previously commuted on a regular weekday basis.

7 Local Impacts

At the local level, we consider the potential timing, scale and longevity of impacts of Covid-19 on:

- Employment levels (and by inference economic activity) within the project area (informed by expected changes in economic activity by sector).
- International and domestic travellers using AIAL.
- The consequent potential impact on traffic and patronage levels (via an assessment of trip patterns and purposes).

7.1 Local Area Definition

Firstly, it is useful to define the 'local area' we are interested in. We have focused on two definitions, the wider Airport area and Airport precinct itself (broadly the land owned by AIAL). On the maps below the

wider airport area is shown as Zone 147900 on the left-hand map and the Airport precinct is shown as Zone 7007859 on the right-hand map:

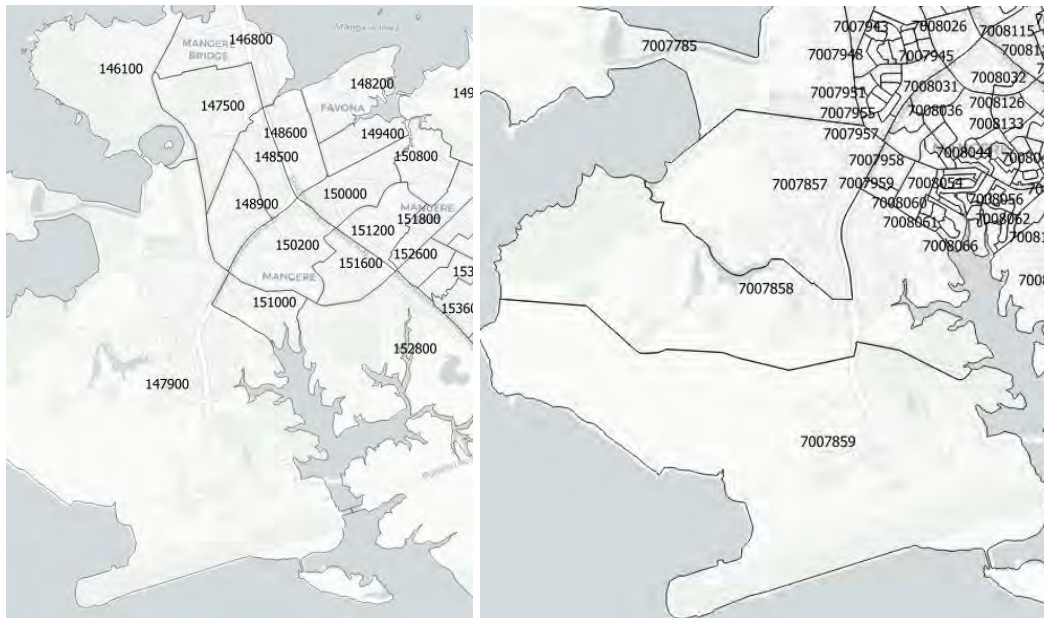


Figure 7-1: Wider Airport Area and Airport Precinct

7.2 Local Economic Impacts (Employment)

The wider Airport area is a significant employment area for Auckland. In 2019 it accommodated almost 29,000 jobs, or around 3.6% of total jobs in Auckland. Just over 12,000 of these jobs were located within the Airport precinct itself.

The major employment sectors in wider Airport area are transport (inc postal and warehousing) manufacturing and wholesale trade, and the area is over represented in 7 sectors (shown in Table 7-4):

Table 7-1: Employment by Key Sectors – Airport Area & Wider Precinct (2019)

2019 Employment	Manuf	Wh/sle	Retail	Accomm & Food	Transport & Warehousing	Rental & Real Estate	Public Admin & Safety	Other Sectors	Total
Airport Wider Area	4,800	2,300	1,650	2,400	12,800	950	1,600	2,260	28,760
% age of Akl	6.0%	3.9%	2.2%	4.1%	32.2%	6.5%	4.7%	0.5%	3.6%
Airport Precinct	831	90	780	1,236	6,639	252	861	1,317	12,006
% age of Akl	1.0%	0.2%	1.0%	2.1%	16.7%	1.7%	2.5%	0.3%	1.5%

The high level of transport related employment reflects the local concentration of logistics firms, due to a combination of air freight activity and land availability in proximity to the motorway network. Many of the firms which have located near the airport have done so due to the availability of cost-effective greenfield land which provides the large sites necessary for modern logistics operations. Proximity to the airport is not the primary driver of location for many of these firms. This also partly explains why manufacturing is also a key activity in wider Airport Area. Figure 7-2 below illustrates the variety of economic activities provided for within the Airport precinct:



Figure 7-2: Land uses within the Airport Precinct

Source: AIAL

As demonstrated in Figure 6-3, the impacts of Covid are likely to be felt unevenly across the different sectors of the economy. Taking these sectoral impacts into account, we have estimated the potential effect on employment in the wider Airport area, compared to business as usual expectations, with the results shown in Figure 7-3.

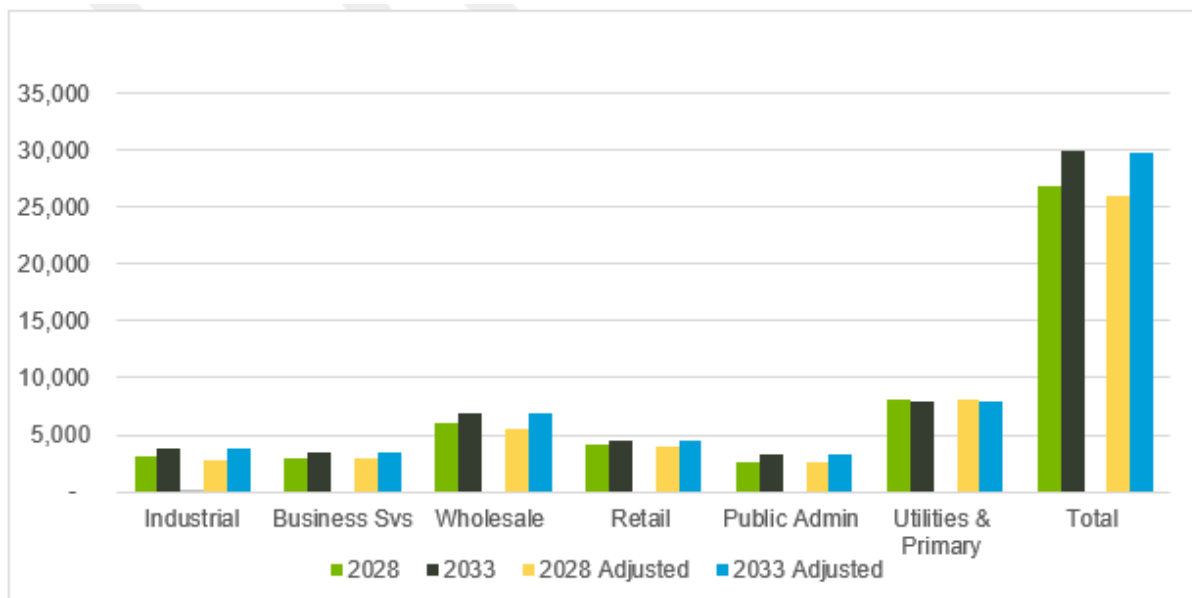


Figure 7-3: Employment Impacts Wider Airport Area 2028 and 2033

Based on the assumptions set out in Figure 6-3, the likely effect is a 3% reduction in employment in 2028 (around 900 less jobs) and a 1% reduction by 2033 (around 200 less jobs). Given the projected

level of employment of almost 30,000 jobs by 2033, the impact on employment in the wider airport area appears to be relatively small.

7.3 Impacts on Air Travel/Passengers

A key area of interest is the impact of Covid-19 on domestic and international air travel. The SSBC identifies the pattern and pace of growth at AIAL, including passenger numbers, as an issue/uncertainty affecting demand and acknowledges that this requires careful monitoring of planning and construction timeframes to ensure the projected demand on the transport network is met by sufficient capacity (SSBC, Table 5.2, p67)

Table 7-2: SSBC – Uncertainty/Risk associated with Pace of Growth

Factor	Timing	Uncertainty	Impact	Comments
Factors affecting demand				
Pace and pattern of growth at Auckland Airport and the surrounding areas	Ongoing	More than likely	Significant	The pace of activity at the airport and the surrounding area, including increasing passenger numbers and new commercial and residential developments is uncertain. This requires careful monitoring of planning and construction timeframes to ensure the projected demand on the transport network is met by sufficient capacity.

The effects of Covid-19 will impact on the volume of both International and domestic travellers using AIAL for some time. Before Covid-19, 29 airlines were operating at AIAL but that has dropped to 11, with the number of daily flights falling from 500 to 80.

Currently, most available information is focused on the potential impact of Covid-19 on international traveller numbers, rather than domestic trips. For example, according to Infometrics projection, the most severe ongoing impacts of Covid-19 will be on tourism-related industries due to the extended closure of New Zealand's borders, which they believe is likely to continue into 2021 (notwithstanding the possibility of a Trans-Tasman bubble).¹²

Information provided Air NZ¹³ provides a useful insight into a potential path to recovery for AIAL as an international gateway over the next 2 years, the key points noted include:

- Air NZ are not factoring a return to long haul flying of any note until next year. They believe that until there is a vaccine, effective treatment or elimination of the disease in key markets, the New Zealand Government will not fully open the border for growth in long haul air travel.
- By August 2022 Air NZ may be around 70% of its pre- COVID-19 size, flying about 13 million customers annually versus almost 18 million pre-COVID-19. However, Air NZ are returning to providing 70% of domestic capacity by August 2020.
- This is consistent with Treasury's 'slower domestic recovery' scenario, which suggests that tourism and support industries will remain significantly affected for two years or more.

Infometrics also point out that considerable uncertainty remains about the impact on tourism including lack of clarity about the size of the global downturn, how quickly the international economy might recover and the possibility of a further wave of COVID-19 cases within New Zealand that might necessitate a return to Alert Levels 3 or 4.

¹² Infometrics, May 2020, COVID-19's effect on industry and regional economic outcomes, p3.

¹³ Air New Zealand Update to Investor May 2020 <https://p-airnz.com/cms/assets/PDFs/Investor-Update-Op-Stats-MAY-2020.pdf>

From the limited information available, the impact on domestic travellers appears to be less severe with a stronger recovery evident. For example, Air New Zealand actually provided more capacity between Auckland and Queenstown for the 2020 July school holidays than was available in 2019, possibly reflecting the reality that overseas holidays are not currently tenable for most people.

At this stage, it is clear that the short-term impacts on air-travel have been significant, but for the medium term onwards there remains significant uncertainty.

For the purpose of approximating the potential impact on A2B patronage we have made an estimate of the potential upper and lower bounds as follows:

Table 7-3: Aire Travel Upper and Lower Bound Estimates for 2028

	High Impact	Low Impact
Domestic Travel	-20%	0% (BAU)
International Travel	-30%	0% (BAU)

The Low Impact scenario assumes a return to business as usual passenger volumes (in line with pre-Covid growth projections) has occurred by 2028. The High Impact scenario assumes that international passenger volumes remain at the 70% level which Air NZ are predicting for 2022 through to 2028, with domestic travel less affected, and a 20% reduction assumed.

7.4 Local Area Transport Effects

From the information above we can provide an indication of the potential impact on trip demand to and from the Wider Airport area relating to changes in the level of air travel and local employment.

The Airport Precinct (including the Airport Terminal and The Quad) account for 7% of boardings and 42% of total alightings for A2B in the AM peak (2028). The Quad is the dominant destination with around 90% of alightings in the Airport Precinct taking place here, whilst 57% of boardings are made from the Terminal area.

Table 7-4: Proportion of trips to Airport (AM pk, 2028)

	Boardings	Alightings
Airport Terminal	4%	4%
The Quad	3%	38%
Combined Total	7%	42%

7.4.1 Employment Effects

As Table 7.3 implies, most trips to/from Airport area are related to economic activity, rather than air travel. As employment in the Airport area may be around 3% less than BAU by 2028, it can be assumed that commuting trips may be equally affected.

7.4.2 Air Travel Effects

The impact arising from fewer international and domestic travellers can be estimated as follows:

For Trips to/from the Airport Terminal

- Around 40% of trips to the Airport terminal are linked to international travellers (travellers & meeters) (see Appendix 3).
- Around 20% of trips to the Airport terminal are linked to domestic travellers.

- Around 30% are linked to employees.
- High Impact Scenario (2028): international travel occurs at around 70% of projected levels (30% reduction) and domestic travel occurs at around 80% of projected levels (20% reduction).
- Low Impact Scenario (2028): international travel and domestic travel expected to occur at around 100% of projected levels (0% reduction).

Table 7-5: Impact on Trips to/from the Airport Terminal

	Proportion of Trips	High Impact Trip Reduction	Trips % of Projected	Low Impact Trip Reduction	Trips % of Projected
International Travel	40%	30%		0%	
Trip Reduction		12%	28%	0%	40%
Domestic Travel	20%	20%		0%	
Trip Reduction		4%	16%	0%	20%
Employment	30%	3%		3%	
Trip Reduction		0.9%	29.1%	0.9%	29.9%
Freight	10%	0%		0%	
Trip Reduction		0%	10%	0%	10%
Total Impact			83.1%		99.9%

7.4.3 Impact on Trip Demand

The combined impact on trip demand to/from the airport can then be estimated as follows:

- Firstly, for trips to the wider airport area excluding the airport terminal, only employment effects will impact trip demand. Assuming the reduction in trips corresponds with the reduction in employment, then the effect will be 3% fewer trips.

Table 7-6: Impact on Trips to/from the wider Airport area 2028

	Proportion of Trips	High Impact Trip Reduction	Trips % of Projected
Employment	100%	3%	
Trip Reduction		3%	97%
Total Impact			97%

- Secondly, to estimate the impact trip on demand to/from the Airport Terminal, we have combined the effects of changes in employment and air travel. Overall, under the High Impact scenario trips to/from the Airport Terminal could reduce by around 17%, however, if air travel returns to previously projected levels by 2028 the impact on trips from reduced employment within the Terminal area is less than 0.5%.

Table 7-7: Changes in trips to/from the Airport in 2028

	High Impact		Low Impact	
	Boardings	Alightings	Boardings	Alightings
Airport Terminal	83%	83%	100%	100%
The Quad	97%	97%	97%	97%

Applying this approach to the projected 2028 patronage to the Airport Terminal and The Quad employment area within the Airport precinct yields the following results:

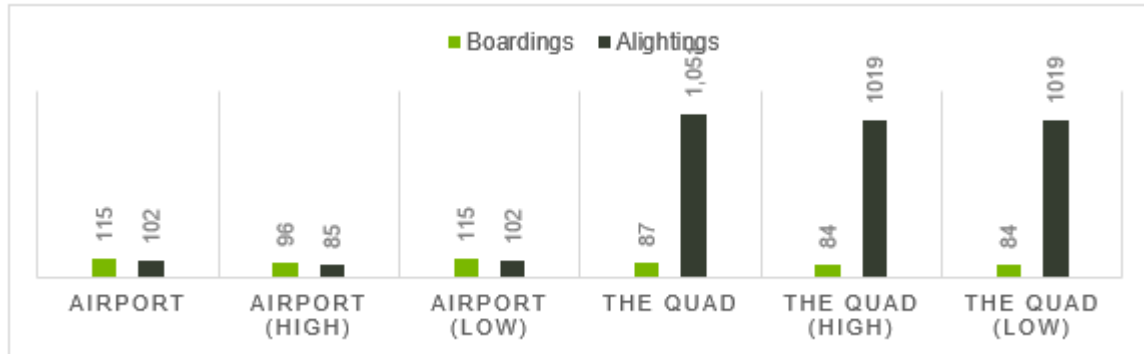


Figure 7-4: Changes in Trip Demand 2028

By 2028, the overall impact on trips arising from Covid-19 is likely to be marginal. Currently, for the Airport Terminal and Quad combined there are 1,355 boardings and alightings forecast for the am 2 hr peak in 2028. This reduces to 1,284 under the High Impact Scenario (a reduction of 71 trips) and 1,321 under the Low Impact Scenario (a reduction of 34 trips).

The indication is that although trip demand to the Airport may be reduced marginally due to the employment and travel related impacts of Covid-19, even under the 'High Impact' scenario this may only be equivalent to 1 to 2 years of projected trip growth (e.g. by 2028 trip volumes are at the level currently projected for 2026).

8 Timing and Programme

8.1 Timing of the Impacts of Covid-19

Based on the information gathered it is clear that Covid-19 has precipitated a major economic and social shock to New Zealand (as is the case worldwide). However, such shocks, even of this magnitude, are a temporary phenomenon, and to a large extent that is what the information gathered so far indicates. NZTA's assessment¹⁴ of the potential impacts of Covid-19 on Auckland's land transport system over the coming decade support this view. They are:

- That it is expected that there will be an easing of growth in passenger transport demand over the short-term due to slower population growth, and reduced employment and discretionary trips.
- But no significant changes are expected in the nature, scale and location of transport demand over the medium to long term. The 10-year outlook remains largely unchanged

8.2 Implications for A2B/20C Programme

So, although we can be very confident of a short-term economic shock of significant magnitude, at this point there would appear to be insufficient evidence to confidently predict whether the macro level economic and social effects of Covid-19 will persist long enough to materially impact on the timing of key programme decisions. This is demonstrated in Figure 8.1 below:

¹⁴ NZTA COVID-19 implications for land transport. March 2020, Regional impacts – Auckland Slides <https://www.nzta.govt.nz/assets/planning-and-investment/docs/arataki/regional-summary-2-auckland-potential-impacts-of-covid-19.pdf>

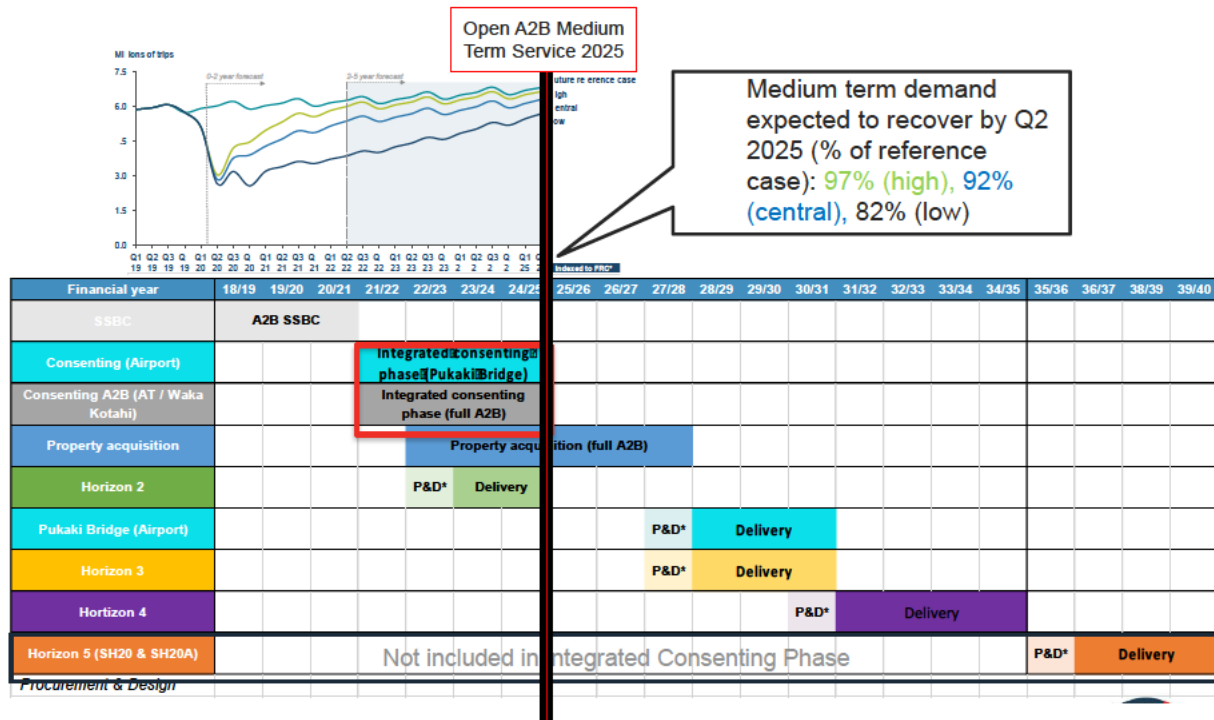


Figure 8-1: Linking the impacts of Covid-19 with the A2B/20Connect Programme

Based on the above programme, it is only the procurement and delivery decisions relating to Horizon 2 that are imminently affected by the potential impacts of Covid-19. The staging strategy allows the key investment decision for Horizon 3 to be made around 2026/27, by which time it will be much clearer how Covid-19 has really impacted on long-term economic activity and transport demand in the project area. The investment gateway/trigger approach which is under development now to support future decision making could be also used to inform the decision-making process with respect to the lasting impacts (or not) of Covid-19.

Overall, infrastructure investment tends to be a long-term proposition, both in their economic and social impact, but also in planning and delivery. Given the timeframe available to make future decisions, the opportunity offered by the staged delivery programme and the evidence to date which indicates that although severe, this is predominantly a short-run event, it may be wise to proceed as planned with A2B and 20Connect in the short-term. To provide greater certainty, an investment gateway or trigger could be developed to support the decision to progress to full delivery of Horizon 2.

The alternative risk is that delivery of A2B is delayed but travel conditions return to normal relatively quickly, leading to the situation where people have limited travel choices and some people who would have preferred to travel by alternative modes are forced to drive.

9 Key Findings

It is important to establish how effects of Covid-19 will be felt over a timeframe which corresponds with the key decision points/gateways for A2B/20Connect. Based on current information we can be very confident of a short-term economic shock of significant magnitude and the short-term (2-3 year) effects will be reflected in output, employment, population growth and transport demand.

However, at this point there is insufficient evidence to confidently predict whether the economic and social effects of Covid-19 will persist materially beyond 2-3 years, but based on the information that is available it would appear that if the effects of Covid-19 do persist and impact on transport demand, this

is likely to lead to only a relatively small reduction in volumes for A2B/20 Connect, equivalent to around 1 to 2 years growth, by around 2025.

Only decisions relating to Horizon 2 are imminently affected by the potential impacts of Covid-19. To provide greater certainty, an investment gateway or trigger could be developed to support the decision to progress to full delivery of Horizon 2. The staging strategy allows the key investment decision for Horizon 3 to be made around 2026/27, by which time it will be much clearer how Covid-19 has really impacted on long-term economic activity and transport demand in the project area.

Appendix 1: A2B and 20C Scope /Horizons for Modelling

Feature		Stage 0	Stage 1	Stage 2a	Stage 2b	Stage 3	Stage 4
Description		Base Case	Airport to Botany service extension	Airport to Botany service + SH20B BRT	Airport to Botany service + full SH20B	Full Airport to Botany (BRT) + full SH20B	Full Airport to Botany + 20Connect
Relevant horizon		Horizon 1	Horizon 2	Horizon 3 (A2B components)	Horizon 3 (20Connect components)	Horizon 4	Horizon 5
A2B infrastructure	Airport to SH20B/SH20 interchange	Bus lanes	Bus lanes	Busway	Busway	Busway	Busway
	... to Manukau Station	Bus lanes	Bus lanes	Bus lanes	Bus lanes	Busway	Busway
	... to Ronwood Avenue/Great South Road intersection	None	Bus lanes	Bus lanes	Bus lanes	Busway	Busway
	... to Botany	None	On street	On street	On street	Busway	Busway
20Connect elements	SH20B widening	No	No	No	Yes	Yes	Yes
	SH20B-SH20 southbound ramps	No	No	No	Yes	Yes	Yes
	SH20 southbound widening south of SH20B	No	No	No	Yes	Yes	Yes
	SH20 remaining widening	No	No	No	No	No	Yes
	SH20A-SH20 southbound ramps	No	No	No	No	No	Yes

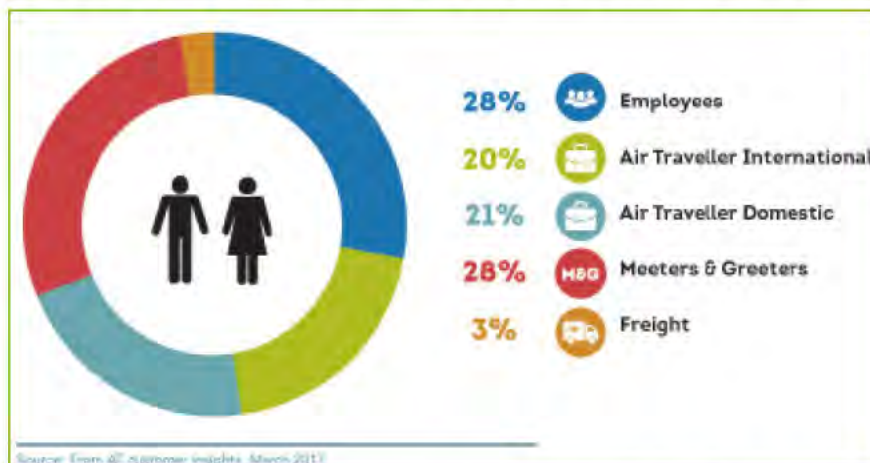
Appendix 2: Horizons: Performance, Patronage and Investment.

INFRASTRUCTURE & OPERATIONS		HORIZON 1	HORIZON 2	HORIZON 3	HORIZON 4	HORIZON 5
		2021	2025	2030	2035	2040
A2B Vehicle						
A2B Operation		4.30am — 1.30am	4.30am — 1.30am	4.30am — 1.30am	4.30am — 1.30am	4.30am — 1.30am
A2B Frequency		10 — 15 — 10	5 — 10 — 5	5 — 10 — 5	4 — 10 — 4	4 — 10 — 4
SWG Infrastructure	20Connect / State Highway Improvements Bus Priority — BRT Infrastructure					
PT PERFORMANCE						
Patronage (AM Peak / Direction / Hour)						
Airport – Botany Travel Time (Travel Time in minutes – AM Peak)						
Airport – Botany Reliability (Compared to base case)						

Appendix 3: Trip Purpose to AIAL

There is a relatively even split between the four main users groups accessing Auckland Airport (employees, international travellers, domestic travellers, meeters & greeters). Freight users are a small proportion.

Figure A3.1: Trip purpose for State Highway Users Accessing AIAL



The predominant mode of travel for those accessing the Airport is the private vehicle. Passenger transport usage sits at between 9% and 15% for airport users but only around 4% for workers employed in the Airport area.

Approvals:

	Author	Reviewer
Name		
Signature		
Designation	Director, Ascari Partners	Technical Director, Aurecon