

AUCKLAND'S STRATEGIC PUBLIC TRANSPORT NETWORK – LESSONS LEARNED FROM THE BUSINESS CASE APPROACH

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ABSTRACT

Auckland Transport (AT) is investigating how best to plan and deliver future improvements to the Strategic Public Transport Network (SPTN) to cater for Auckland's rapidly growing population. The way this work is being undertaken is influenced by NZTA's new Business Case Approach required for all future transport investments.

This paper will outline AT's work to date on the SPTN and how AT is using the recent Auckland Transport Alignment Project (ATAP) to strategically direct this work. The paper will also cover what AT has learned from applying the various processes contained within the Business Case Approach, how this has shaped the future programme and any wider lessons that could be applied to other transport projects.

INTRODUCTION

Auckland Transport (AT) is the road controlling authority responsible for the planning, operation and maintenance of most components of the Auckland transport system, including the public transport network (buses, trains, and ferries).

The core of the public transport system is the Strategic Public Transport Network (SPTN) which consists of the heavy rail network and Northern Busway. To receive transport investment from the New Zealand Transport Agency (NZTA) for developing the SPTN and all other transport infrastructure or services, AT is required undertake a range of business cases defined under the Business Case Approach (BCA).

This paper will outline AT's work to date on the SPTN and how AT is using the recent Auckland Transport Alignment Project (ATAP) to strategically direct this work. The paper will also cover what AT has learned from applying the various processes contained within the Business Case Approach, how this has shaped the future programme and any wider lessons that could be applied to other transport projects.

AUCKLAND CONTEXT

It is well known that not only is Auckland New Zealand's largest city, but also the fastest growing, with projected future growth in the next three decades greater than the total of Christchurch and it's entire growth in the same period (as shown in Figure 1 below).

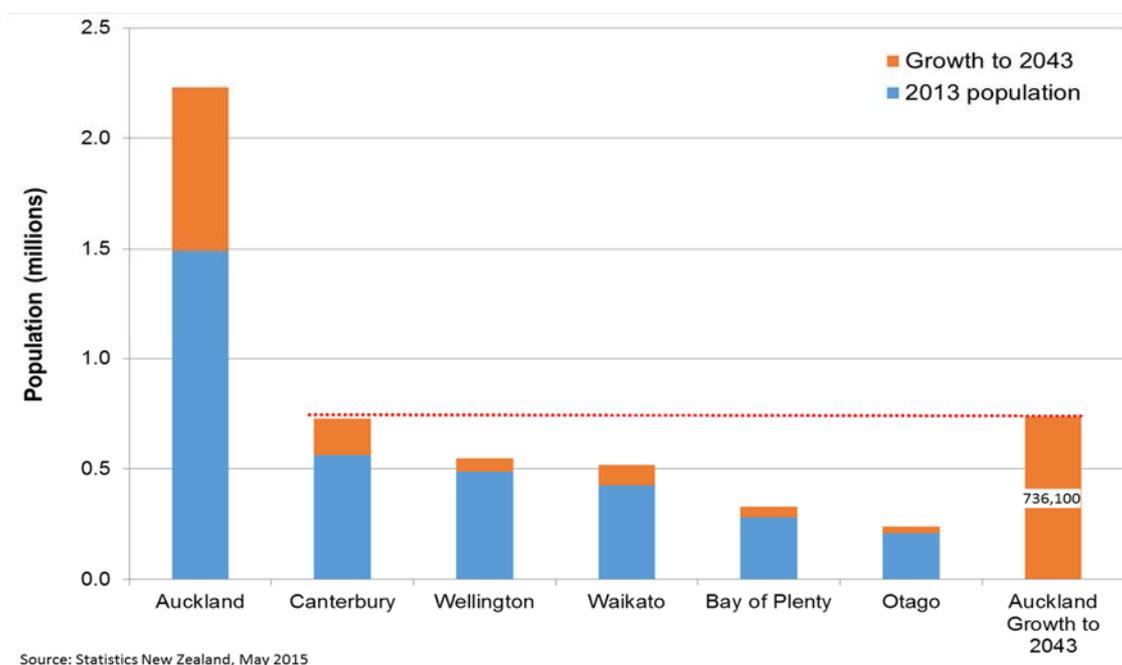


Figure 1: Projected population growth 2013-2043 (Source: Statistics NZ)

This population growth – current and future – is not evenly spread throughout the region. Although a substantial amount, perhaps up to 60% of the growth, is projected to occur within the existing urban area (through intensification of existing housing areas), at least 40% will occur in 'greenfield' areas outside the current urban boundaries. This growth, or rather the travel demands that result from it, will require not only the creation of entirely new transport systems in those areas, but also the expansion of the capacity and breadth of the existing transport networks to cater for additional users joining them from these new areas. A simplified map of the proposed growth areas is shown in Figure 2 below.

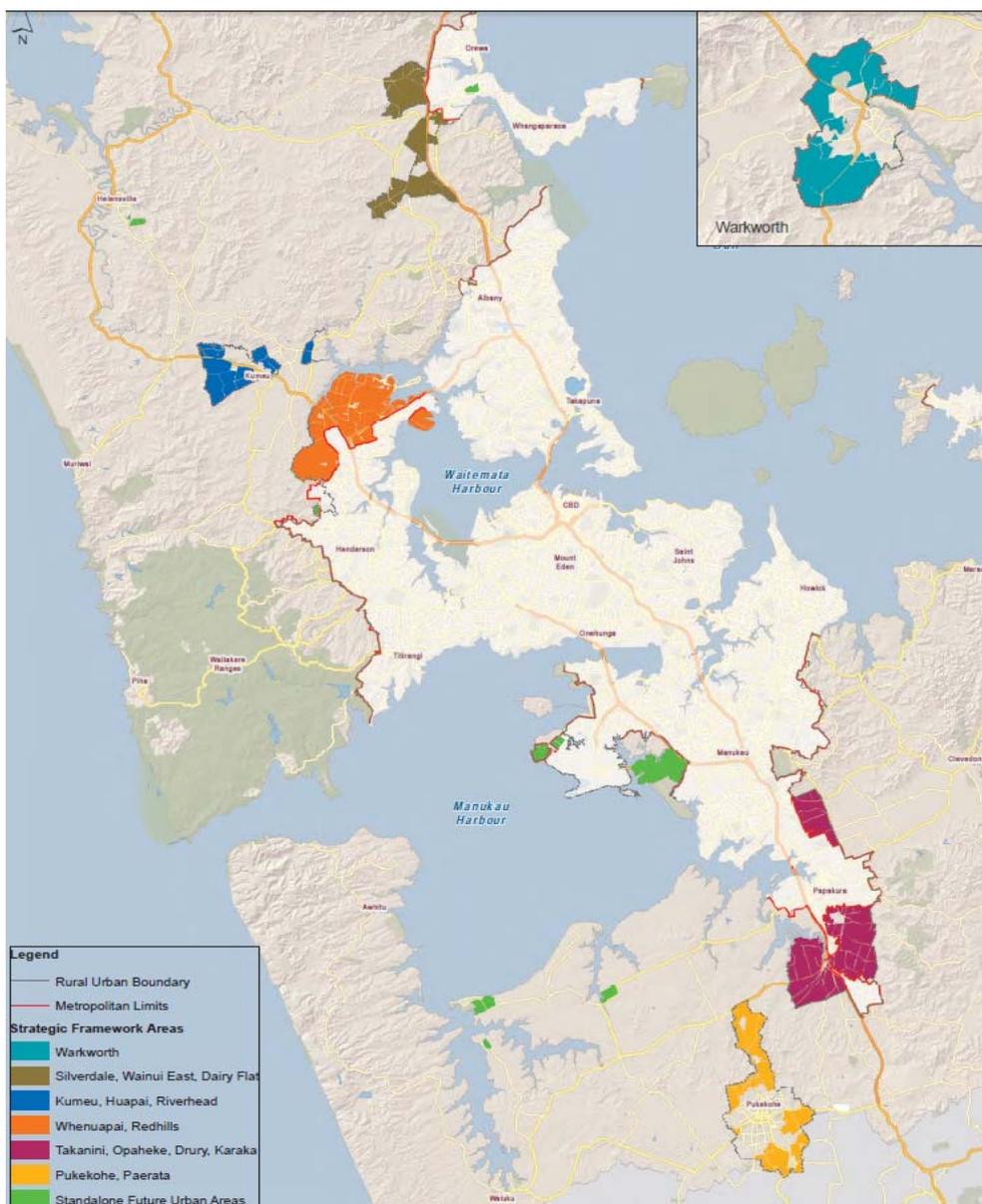


Figure 2: Planned greenfield growth areas on Auckland's urban fringe (Source: Auckland Council)

In terms of scale, Statistics NZ report:

The Auckland region is projected to account for three-fifths of New Zealand's population growth between 2013 and 2043, with an increase of 740,000 from just under 1.5 million to 2.2 million (medium projection). Auckland's population is estimated to have surpassed 1.5 million in the year ended June 2014, and is projected to reach 2 million by 2033. In 2028, Auckland would be home to 37 percent of New Zealand's population, compared with 34 percent in 2013. By 2043, the population of Auckland could make up 40 percent of New Zealand's population. [Source: Statistics NZ, Population projections overview, Feb 2016]

Continuing increases in Auckland's population place significant pressure on the existing transport networks, and this will be compounded by the substantial projected population growth over the next 30 years.

For example, the recent growth in Northern Busway and rail patronage has been substantial, as shown in the below Figures 3 and 4. The growth and usage of these networks is greater (or rather earlier) than envisaged when these systems were developed.

The growth on these core networks is greater than that on the underlying bus networks, indicating the key role the busway and rail networks play in dealing with Auckland's growth.

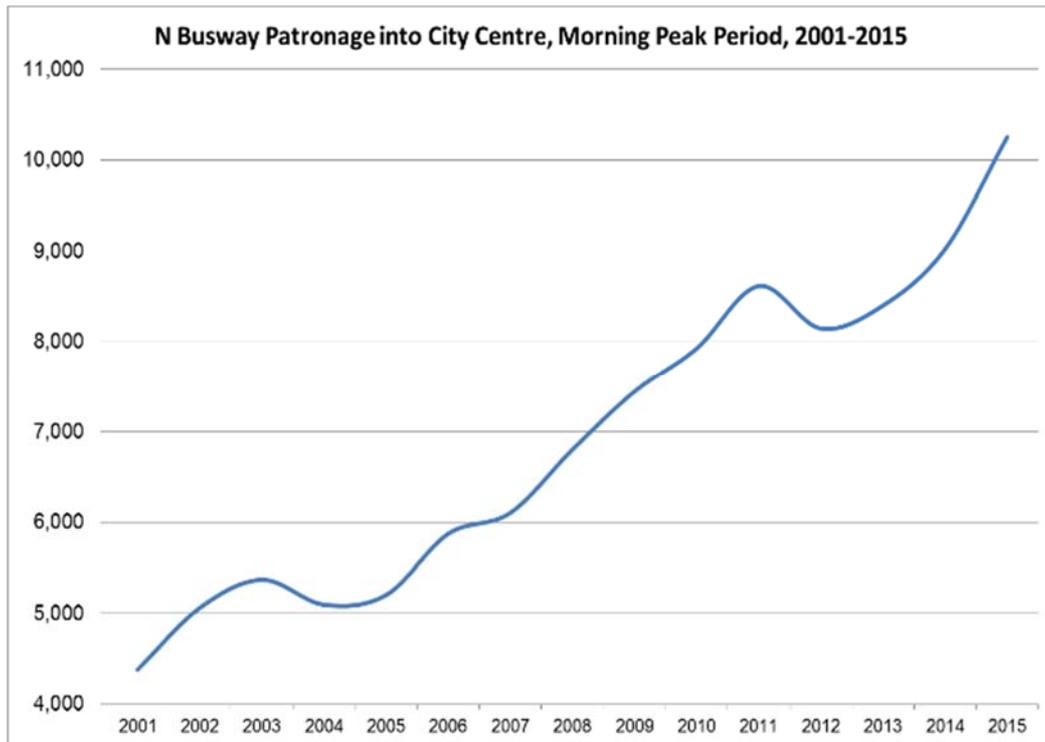


Figure 3: Northern Busway patronage growth 2001-2015 (Source: Auckland Transport)

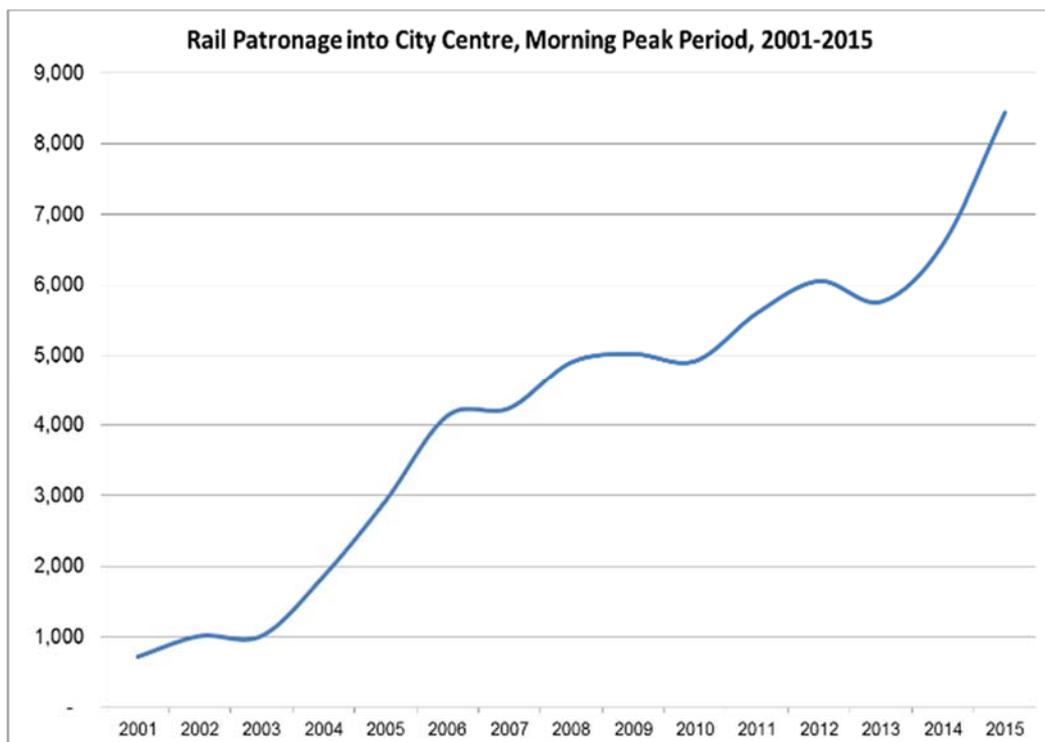


Figure 4: Rail patronage growth 2001-2015 (Source: Auckland Transport)

Although this population and travel growth is clearly underway, there has been debate within transport agencies and their funders about the scale, timing and location of this growth, and the best way to deal with it. Recently a way forward was found around this obstacle – ATAP.

AUCKLAND TRANSPORT ALIGNMENT PROJECT

The Auckland Transport Alignment Project (ATAP) is a joint project involving Auckland Council, the Ministry of Transport, AT, NZTA, the Treasury and the State Services Commission. ATAP was set up to seek consensus on a long-term strategic approach to the growth challenges that Auckland is facing, and the need for some big transport decisions to deal with them. The final report, released in September 2016, recommended an aligned strategic approach, with an indicative package of transport investment for the next 30 years, including key public transport projects.

The completion of ATAP means there is a common understanding of how and where Auckland is likely to grow, what the transport priorities are and when they need to be addressed. The way forward was focused on four key objectives, to:

- Improve access to employment/labour relative to current levels
- Improve congestion results, relative to predicted levels
- Improve public transport's mode share, relative to predicted results
- Deliver net benefits to users from any increases in financial costs of using the system

As well as being a core ATAP objective (the third, noted above), the successful delivery of an effective and efficient public transport system assists in the achievement of the other three. Hence, there has been a substantial focus on how, when and where to deliver key component of the public transport system.

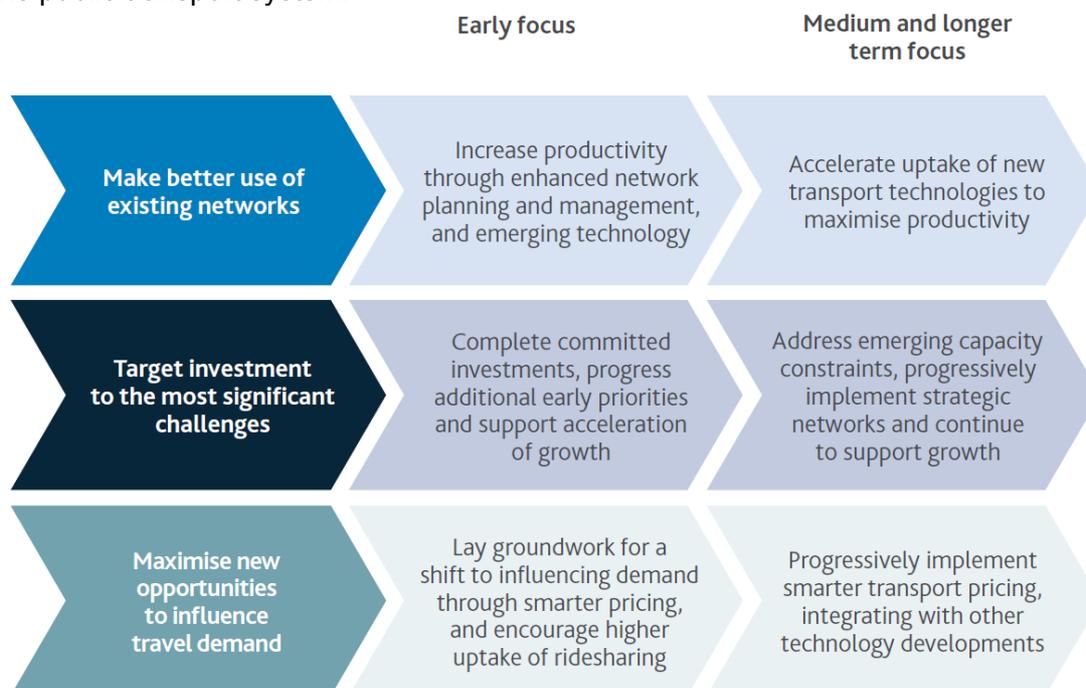


Figure 5: ATAP focus areas over time (Source: ATAP Final Report)

ATAP has identified priorities for funding over the next decade, including these key public transport projects:

- The first phase of the Northwestern Busway from Westgate to Te Atatu to provide for growth, increased access into the city centre and help tackle congestion on the Northwestern Motorway
- Upgraded access to Auckland Airport from the east to address congestion and improve journey reliability of bus services
- Ongoing investment to improve Auckland's rail network for both passengers and freight, including more electric trains and extending electrification to Pukekohe.

STRATEGIC PUBLIC TRANSPORT NETWORK

As noted earlier, the greatest passenger growth within Auckland's public transport system has been on the core network – the Strategic Public Transport Network (SPTN). This network, which prior to ATAP was known as the Rapid Transit Network (RTN), consists of grade-separated (or mostly grade-separated) public transport corridors of high capacity, connecting major sectors of the region. Figure 6 below shows both current and planned future SPTN links.

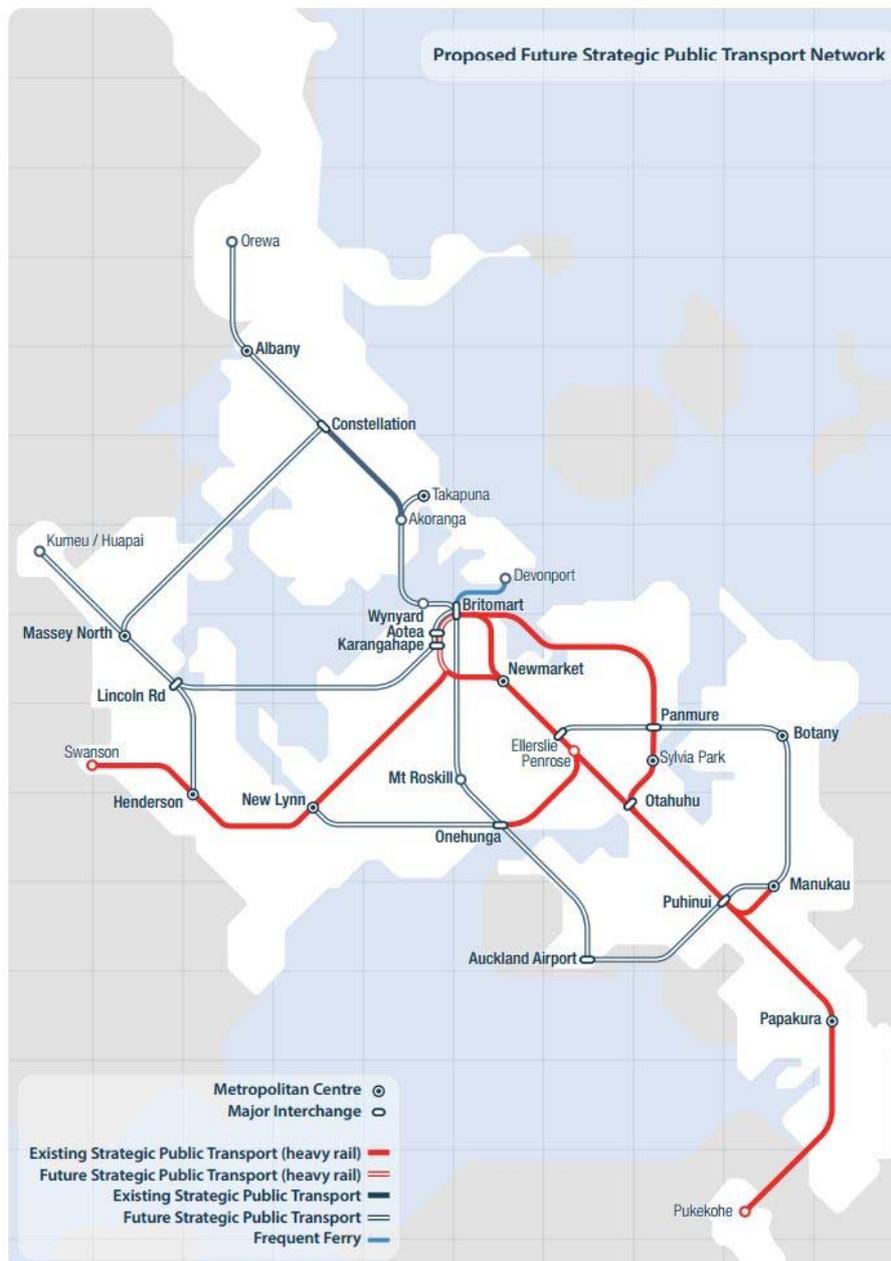


Figure 6: Strategic Public Transport Network (Source: ATAP Final Report)

ATAP has given a direction as to which components of the SPTN should be delivered within the first decade, or for which route protection processes should commence (if they are within the second or third decades).

AT is investigating how best to plan and deliver future improvements to the SPTN as set out by ATAP and also cater for emerging trends and challenges of Auckland's rapidly growing population. The way this work is being undertaken is influenced by NZTA's new Business Case Approach required for all future transport investments.

BUSINESS CASE APPROACH

The Business Case Approach (BCA) was introduced by NZTA recently to guide the planning, investment and project development processes of transport projects. It is designed as a principles-based approach that aims to link strategy to outcomes, and defines problems and their consequences thoroughly before solutions are considered. The BCA aims to ensure a shared view of problems and benefits early in the transport planning process, without requiring that the work has to be done in a particular way (i.e. predetermining the solution).

The BCA builds progressively, with decision points along the way that reconfirm the problem, the need to invest and the direction of the investigations. The initial document – the Strategic Case – sets the strategic context and identifies of the scale and significance of the problems, the outcomes sought and the benefits desired. This uses investment logic mapping (ILM) to shape and explain the situation.

The next phase – the Programme Business Case (PBC) – assesses a mix of alternatives and options, but doesn't look at detailed solutions. The preferred programme, which may include a broad mix of activities over a period of time, is then put forward for more detailed assessment. The Indicative Business Case (IBC) – takes a long list of options to short list and recommends a preferred way forward. The subsequent Detailed Business Case (DBC) undertakes more detailed analysis of the preferred project, which then goes forward for implementation.

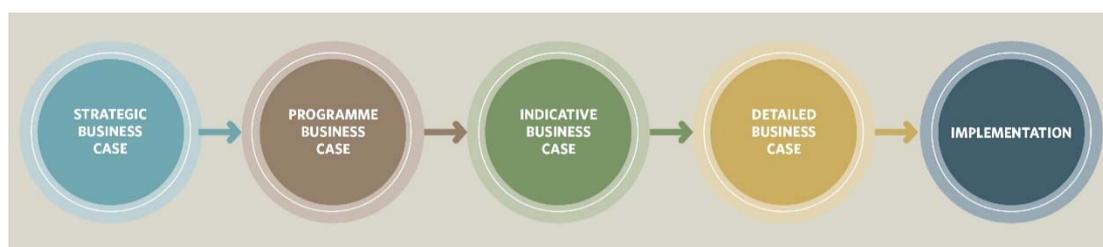


Figure 7: Business Case Approach phases (Source: NZTA)

The BCA is a relatively new process, and no significant project has yet been through the entire approach from end to end (many have started partway through). AT, as with other road controlling authorities, is learning how best to apply the BCA to current projects and how to commence new projects from the Strategic Case phase.

INITIAL LEARNINGS FROM THE BUSINESS CASE APPROACH – NORTHWESTERN BUSWAY

Some initial learnings are emerging from applying the BCA to the development of the Northwestern busway.

The busway has been identified within strategic transport documents for at least two decades and the most recent Regional Land Transport Programme (RLTP) lists the busway as a project for delivery in the 2020s.

As the project is still some time away from delivery, little detailed work has been undertaken on it. Due to recent significant (and continuing) growth in the Northwest area, and the inability of other transport projects to deal with the additional demands, ATAP has recommended that the busway (from Westgate to Te Atatu, which is only part of the entire route) be delivered within the first (coming) decade.

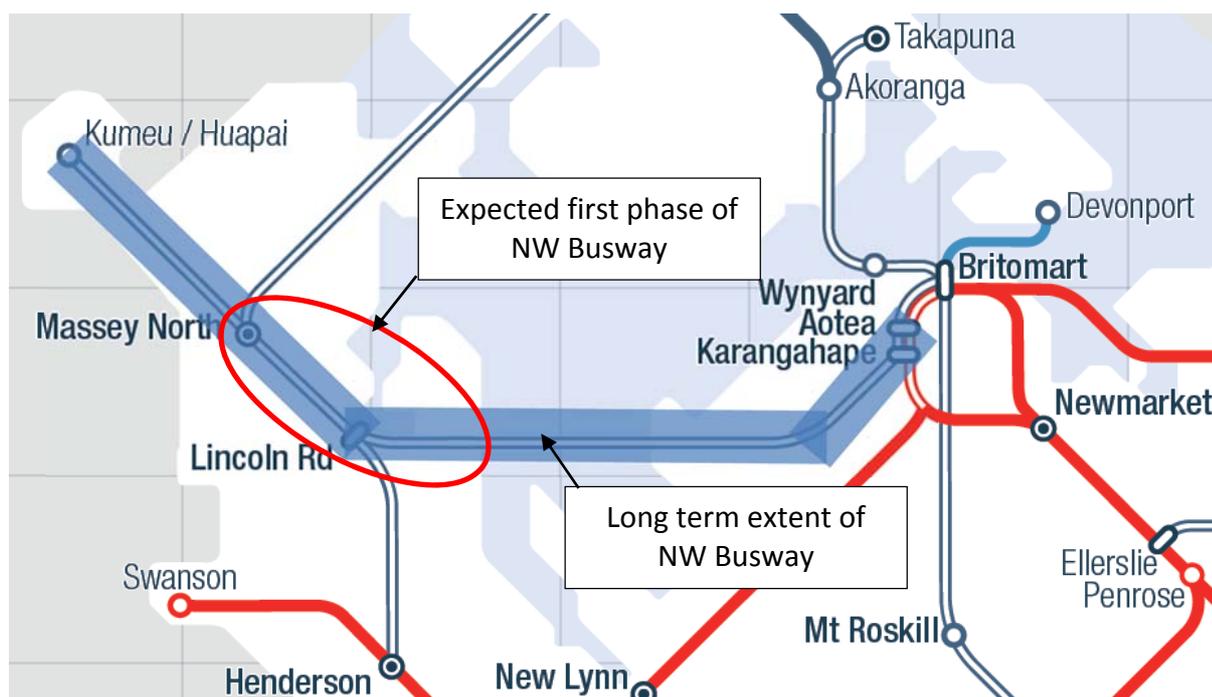


Figure 8: Northwestern Busway (Source: ATAP Final Report)

Previous high level investigations over many years have analysed parts of the route and determined that a busway is the most optimal solution (assessing and discounting heavy rail, light rail and street-running buses as viable alternatives). However, these were not undertaken under the BCA and had older (and therefore out-of-date) land use projections. As such, in order to bring the existing work into the BCA world, AT created a Strategic Case as a starting point, using previous material and including updated land use and transport modelling.

This contained similar material (though developed in a different way) to a PBC, in that it assessed a range of high level interventions and recommended a busway on the southern edge of State Highway 16 as the preferred way forward. Ordinarily a Strategic Case would not have contained material on possible interventions but simply confirmed the problem and imperative to address it.

NZTA accepted the Strategic Case and approved funding for undertaking an Indicative Business Case (IBC), however AT is in the awkward situation of having to re-identify route and mode options for the corridor and re-assess them for viability (which is what an IBC should indeed do), despite the fact that the RLTP, Auckland Plan and ATAP all contain references to the Northwestern Busway as a busway.

Whilst some of this effort can be seen as reconfirming that a busway is indeed the appropriate solution, to a layperson unaware of the BCA process, this may seem like an unnecessary and wasteful step, given the longstanding identification of the project as a busway. Particularly as some options are far from the State Highway 16 corridor or are a vastly different solution, such as an enhanced ferry option.

Another interesting element of this project is the overlap with greenfield growth planning at the far Western end. There are separate business cases underway in that area, however the busway passes through the greenfield area, will affect the planning and delivery of transport solutions in that area, and the urgency of the busway will to a large degree be driven by the passengers originating in that area.

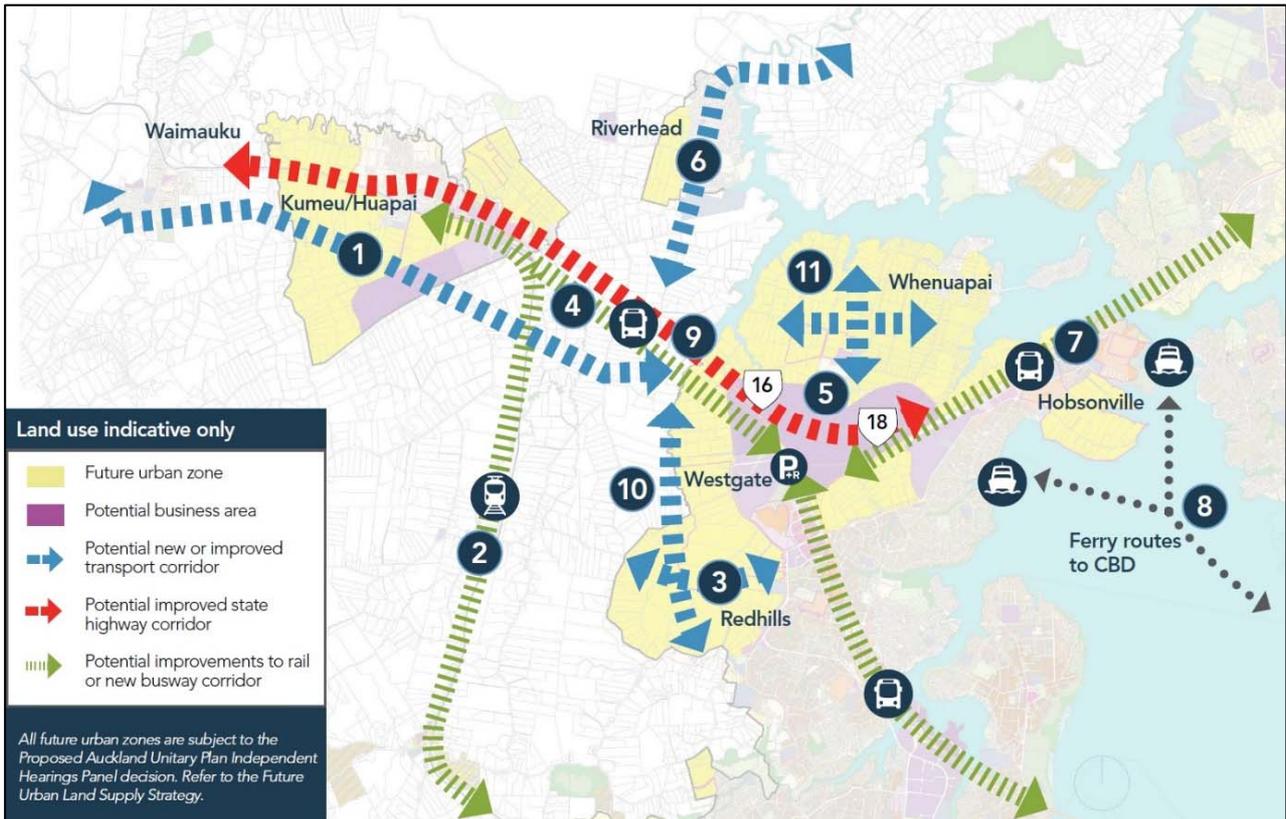


Figure 9: Northwestern future urban growth area (Source: Auckland Transport)

This is an issue of timing, interdependency and assumptions. If the greenfield growth occurs earlier, this affects the need for (and potentially the form of) the busway, whereas if the busway is built as planned but for some reason the population growth doesn't occur, the investment may be underutilised.

The fact that the business cases are underway simultaneously means it is difficult for AT (and the other parties involved, including NZTA itself) to determine exactly how the various infrastructure elements contribute to solving the agreed problems. The implications of this is explored later in this paper.

INITIAL LEARNINGS FROM THE BUSINESS CASE APPROACH – ATAP DIRECTION

Another emerging issue for AT is how to use ATAP as a strategic direction. The purpose of ATAP was to come up with an agreed way forward and set of projects that address the agreed challenges. The projects are identified decade by decade, and the mode and extent are usually described (see Figure 10 below).

Early priorities (completion in decade 1)	Medium term priorities (completion in decade 2)	Longer term priorities (completion in decade 3)
<ul style="list-style-type: none"> • Northwestern Busway (Westgate to Te Atatu section). • Address bottlenecks on Western Ring Route (SH20 Dominion Rd to Queenstown Rd) and Southern Motorway (Papakura to Drury). • New or upgraded arterial roads to enable greenfield growth in priority areas. • Protect routes and acquire land for greenfield networks. • Complete SH16 to SH18 connection. • Early Rail Development Plan priorities (see paragraph 81). • Upgraded eastern Airport access (SH20B). • Investments to enable smarter pricing. • Increased investment in Intelligent Network Management. • Progress advance works on medium-term priorities. 	<ul style="list-style-type: none"> • Continued investment to enable greenfield growth. • New strategic roads to Kumeu and Pukekohe. • Implementation of mass transit on isthmus and then to the Airport. • Bus improvements Airport – Manukau – Botany. • Improved access to Port/ Grafton Gully. • Northwestern Busway extensions. • Improve connection between East-West link and East Tamaki. • Penlink. • Medium-term Rail Development Plan priorities. 	<ul style="list-style-type: none"> • Continued investment to enable greenfield growth. • Southern Motorway improvements south of Manukau. • Southwest Motorway (SH20) improvements and improved northern Airport access. • Northern Motorway widening. • Waitematā Harbour crossing improvements, including mass transit upgrade of Northern Busway. • Longer term Rail Development Plan priorities.

Figure 10: Recommended priority projects by decade (Source: ATAP Final Report)

However, a fundamental element of the BCA is that the outcome (mode, alignment, timing) should not be predetermined. It is therefore difficult for AT to take forward any element of ATAP's SPTN (Figure 6) through the BCA, whilst not being led by that direction. This results in issues like the Northwestern Busway described above – which is going through the BCA as the 'Northwestern Rapid Transit Corridor'.

This issue also is challenging in terms of how AT treats the decade by decade recommendations of ATAP, and how to integrate with other ATAP-identified projects. Whilst put forward as being required in a particular decade, and ahead of behind other projects, with the BCA process each project needs to justify its own timing and cannot necessarily presume other projects will happen in the ATAP-suggested timeline.

Whilst sensitivity-testing against the presence or otherwise of other projects (and determining the ideal delivery timeframe) is a standard component of project development, the purpose of ATAP was to stop re-litigation of which projects are needed and by when.

So AT must use the BCA process to take projects forward, but not undermine the consensus gained via the ATAP process. It is also not clear whether ATAP should be considered as a strategic document to be given effect to, or as a recommended programme of projects which can be revised as required.

In particular, it is not clear what would happen if a key ATAP-identified project did not progress successfully or was identified to be delivered in a substantially different time or manner (e.g. deferred to a later decade or if a different mode or alignment was chosen). Whilst it may be acceptable to use the BCA process to prudently determine the appropriate project timing, form, etc., the basis of ATAP is a set of specific projects delivered in an identified order. To alter this, project-by-project, starts to unpick the robustness and, more importantly, consensus behind ATAP.

As such, AT is in a challenging position, to both fulfil BCA obligations and uphold ATAP agreements. AT's current approach is to incrementally work through the IBC steps with NZTA's Planning and Investment team to discuss the relevance and use of ATAP information.

This approach allows the necessary evidence to be recorded to support the problem statements and option analysis, and – with the expectation that ATAP has correctly assessed the evidence – that the process will arrive at the same outcome.

More importantly, AT will undertake this process with a view to 'value for money' and avoid costly repeating of recently completed assessments. Hence, appropriate effort will be given to options that differ significantly from the ATAP-recommended option, such that these are sufficiently assessed to be discounted, but no more. In this way, AT can retain the integrity of the BCA process whilst assuring ratepayers that funding has not been 'wasted' on redundant analysis.

Another approach is to consider the delivery or non-delivery of various other SPTN components as sensitivity tests for the context within which the Northwestern busway project is assessed. That way, the ATAP-recommended roll out of SPTN items may be considered the 'base' way forward but the IBC can show that the busway remains viable and worthwhile even if a different roll out occurs.

It is also expected that the completion of the IBC phase will include reference to alignment with ATAP direction, something not required by the BCA process but something the project PCG will want to ensure.

One of AT's aims is to use experience from other projects – public transport and others – to inform the efficiency and robustness of future projects. This may take the form of identifying the best way to use strategic documents (ATAP or other documents) in setting out problem statements or analysis processes. Future projects may then repeat this and move forward more quickly and confidently. It is important not to 'reinvent the wheel' for each new project.

The intended outcome from AT's point of view is the advancement of transport projects which appropriately address the challenges faced, with an appropriate level of investment and type of intervention. The BCA process certainly is based on the principle of fit-for-purpose analysis and action, it is AT's role to apply this process in the complex and complicated real world.

CONCLUSIONS

AT is facing a significant challenge from the substantial population and travel growth underway within the region.

The SPTN forms the backbone of the region's public transport system and must be developed in a targeted and robust manner, given the scale of likely investment required and implications of 'getting it wrong'.

Helpfully, ATAP, a joint project with other planners or investors in transport, has set the strategic context and direction for Auckland, to reduce debate about the region's problems and solutions. The presence of ATAP gives a comprehensive strategic direction – and some specific project delivery details – which both helps and hinders the implementation of BCA processes.

Through the Northwestern Busway IBC, AT has shown a way of taking quite specific strategic direction, without predetermining the outcome, and transparently reinforcing the robustness of IBC's outputs.

This includes a fit-for-purpose approach to re-assessing recent work and undertaking appropriate sensitivity tests to check whether the proposed roll out of SPTN components is robust. Regular engagement with NZTA's Planning and Investment team is also undertaken, to confirm the process is on track.

AT continues to learn from the application of the BCA and seeks to improve the efficiency by which it is used to advance SPTN projects. The contents of this paper record some of these learnings and may be useful to those undertaking other projects within the BCA world.

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