

AMETI - Rapid Transport Network (RTN) Scope Increase

Purpose

The purpose of this paper is to seek the approval of the Auckland Transport Board to modify the scope of the AMETI project as currently defined in the LTP as comprising a Quality Transport Network (QTN) to a higher quality Rapid Transport Network (RTN) public transport solution.

Executive Summary

The AMETI project seeks to develop an integrated multi-modal transport system that supports population growth and economic development in the south-east of Auckland.

The public transport (PT) component of the AMETI project was initially scoped under a QTN concept which generally features bus lanes with buses and traffic mixing at intersections. Work undertaken by ARTA prior to the formation of Auckland Transport identified that the public transport demand along the routes was such that for the PT solution to operate effectively (and thus attract the maximum benefit) should be constructed at a higher quality RTN status. Under the RTN model buses generally have their own right of way free from normal traffic congestion.

The scope increase from the QTN to RTN solution naturally has cost implications and for this project this is in the order of \$250m (P50). Notwithstanding this the incremental benefits of moving to RTN are estimated to be greater than \$250m such that the scope increase has an incremental BCR of greater than 1.

This report therefore recommends the scope change be adopted on the grounds that the RTN model will provide the optimal PT solution.

Background

Studies undertaken to determine demand for PT

A key feature of AMETI is the provision of bus priority between Panmure, Pakuranga and Botany. In 2008 this corridor was planned to be a lower category QTN scheme, which generally involved kerbside bus lanes and bus priority at intersections.

To examine the appropriateness of the QTN solution in 2008 ARTA commissioned McCormick Rankin Cagney (MRC) to undertake a study into demand for high quality PT infrastructure and services in the south eastern part of the city. It built on earlier work undertaken by Beca and Parsons Brinkerhoff (2006) and sought to integrate dedicated bus facilities into a comprehensive package of PT improvements. The studies considered the corridors from Manukau, through Botany to Panmure.

The report describes the passenger per hour (pph) capacity for different bus lane configurations and the thresholds at which increasing provisions are required to be effective.

In summary these are:

Up to 1500 pph	Buses mixed with traffic
Up to 2000 pph	Buses mixed with traffic with increased space for buses at stops
2000 to 5000 pph	Exclusive bus lanes
Up to 13000pph	Busway

The report comments that the threshold to move to RTN standard (where buses generally have their own right of way free from normal traffic congestion) is 3000pph.

Patronage Demand

The study showed that to accommodate the patronage in the Pakuranga to Panmure section of the corridor RTN will be required if the PT solution is to operate effectively immediately. For the Botany to Pakuranga corridor it was determined that at a minimum, exclusive bus lane are required now to meet the patronage demand (at the high end of QTN) however by 2016 RTN will be required if the PT solution is to operate effectively.

The infrastructure to deliver an RTN capability is different to that required for QTN such that there would be considerable wasted effort and expense should QTN be constructed then replaced with RTN in 5 years' time. For this reason it makes more sense to construct the whole corridor to RTN standard at this time.

RTN Busway Proposal

The only bus based RTN in Auckland is the Northern Busway. This generally runs alongside the Northern Motorway and features complete segregation from other modes including grade separated interchanges between Constellation Drive and Esmonde Road, however buses are still subject to congestion at each end of this section. The Northern Busway has been hugely successful at increasing bus patronage across the Auckland Harbour Bridge and consequently reducing congestion. The success is down to not only providing uncongested conditions for buses with reduced travel times, but also because the public perception of the Busway as a high quality transport system has attracted users that would not be persuaded by travel times alone.

This high quality design is a key element of the AMETI RTN proposal. The proposed RTN between Panmure and Botany would, however, not be able to replicate the high level of segregation enjoyed by (most of) the Northern Busway, due to the highly constrained environment which it must pass through. Some of the corridor is of high environmental value (such as Lagoon Drive) while most of the remainder passes through residential areas sensitive to the potential impact of a fully segregated solution. The social and environmental cost of additional widening and flyovers would be considerable, potentially not consentable, with benefits in terms of bus travel times being relatively small. The Northern Busway runs alongside the motorway utilising much of the motorway's designation. It also passes alongside a wide mix of land uses including commercial, residential, recreation and schools, with considerable distances between stations, Feeder bus services play a large part of the operation of the network.

The proposed solution for the AMETI RTN provides a segregated Busway, either on one side of the existing road corridor or in the centre of the road, generally at the same level as the existing road and subject to delays at signalised intersections along the route. However the buses will not have to share with any other traffic, and thus delays at signals would be minimal. Bus stations will be provided at closer intervals than on the Northern Busway to maximise the catchment within walking distance of the stations.

A key area of work yet to be completed is to develop a strategy for Park & Ride opportunities along the RTN corridor. Currently there is a very well used Park & Ride at Panmure station, but capturing car journeys further afield would have a greater benefit in reducing vehicle use and increasing bus passenger kilometres. Park & Ride has been a successful element of the Northern Busway scheme, with the Park & Ride stations at Albany and Constellation being used to capacity shortly after opening.

Benefits of RTN Busway

Considerable growth is anticipated in the areas that feed into the AMETI corridor, and this will lead to an increase in the movement of people and goods within the corridor. Currently the level of PT services is not providing an attractive or convenient alternative to private car use, resulting in severe congestion which impacts economically on the region.

At this stage it has not been possible to run the modelling to quantify the full incremental benefits that would accrue from implementing an RTN solution over a QTN solution, although this work is now underway for the imminent Panmure works now that preliminary design is completed and detailed design is commencing. An initial estimate based on the concepts that are being considered indicate that the benefits will exceed the costs, i.e. there will be a B/C ratio greater than 1 for the total project. We expect to keep the Board updated as these results come to hand in more details.

Benefits will derive from a number of sources:

A mode shift stimulator

- An RTN Busway will provide an attractive alternative to vehicle use, providing PT rapid journeys, reliability, amenity, and convenience. Evidence from the North Shore Busway indicates that an attractive PT alternative is an incentive to mode shift behaviour

Reduction in infrastructure costs

- Currently, between Panmure and Pakuranga nearly 3000 people per hour use that route, and the modelling shows that by 2041 this will increase to 6700 people per hour. This growth could be accommodated within a Busway lane, but for vehicles would require at least two more traffic lanes. Without an effective PT option Ti Rakau Drive would need to be a 6 lane expressway to accommodate 2041 traffic volumes.

Stimulate economic development

- Providing an alternative and efficient transport option that bypasses road congestion will attract people to live and work in the area and in adjacent areas, and will encourage more businesses to establish knowing that freight and commercial journeys will be less congested.

Cost Estimates

General

The difference between estimates and actual final costs for infrastructure projects can vary for many reasons as they relate to risks associated with delays, fluctuations in labour and material costs, land acquisitions, and consenting processes etc. For this reason estimated costs are often stated in statistical terms, such as a 50% or P50 where there is a calculated 50:50 chance that the outturn will be higher or lower than the stated estimate or a 95% or P95 where there is a 95% probability that the outturn will be lower and a 5% chance the outturn will be higher than the estimate. What that says is that statistically one can be reasonably sure that the final project cost will be around the 50% probability value (P50), but very sure it won't exceed the 95% probability value (P95).

The difference between the P50 value and the larger P95 value also provides an indication of the risk quantum within the project and therefore the certainty of the estimate. The larger the difference the riskier the project. This is why as projects progress through their lifecycle from feasibility through investigation, design and construction, risks are progressively mitigated, in theory the difference between the P50 and P95 should decrease.

AMETI

In 2010 dollars the estimate for the project as initially defined as QTN in the LTP was \$1.3b (P50) and \$1.65b (P95).

The estimate to upgrade the project to incorporate an RTN standard PT solution is \$1.55b (P50) an increase of \$250m. (The P95 value to deliver RTN is \$1.95b)

The immediate impact of this scope increase will be the phase 1 of package 1 which is scheduled for construction tender later in 2011. The cost of Phase 1 will increase by \$62 million, up from \$103 million (P 50) to \$165 million (P 50), due to the following scope changes:

- Inclusion of Rapid Transit Network (RTN) segregated Busway along Ellerslie-Panmure highway requiring additional widening and separate bridge;
- Raising of Ellerslie-Panmure Highway bridge and approaches to provide desirable clearance over new AMETI road and rail corridors, including future-proofing for third rail;
- Inclusion of new local road on top of the covered box and pedestrian plaza at Mountain Road;
- Extension of new AMETI road southwards from William Harvey Place to Triangle Road.

Recommendation

That the Auckland Transport Board:

- Receives this paper
- Approves the project scope change to incorporate an RTN standard PT solution

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