Stage Timing Model

5 February 2016

Auckland Transport
An Auckland Council Organisation

Introduction

- The Bus Reference Case (BRC) was developed to provide a ‘single source of truth’ of planned bus services and operations in the City Centre, with evaluation years at 2018, 2026 and 2036
- This piece of work uses the BRC to identify where and when bus capacity issues are expected to arise
- Bus capacity is fundamentally determined by the capacity and configuration of bus stops on each corridor

Stage-Timing Model (STM)

- Predicts when City Centre corridors require interventions
- Based on when service provision exceeds capacity of each stop group across City Centre corridors
  - Service provision based on New Network routes and service levels, plus expected growth and changes over time, as specified by AT Metro in the Bus Reference Case (BRC) review.
  - Capacity determined by planned stop lengths, signal cycles, infrastructure design, plus operational and usability constraints, as established by BRC investigation.
- STM allows alternate routings, capacities and timings to be tested and compared

STM Assumptions

- Maximum 10% stop failure rate (buses queuing back to access stop)
- 2-minute signal cycles
- Stop capacities of:
  - Single stop – 16 vph
  - Double stop – 33 vph
  - Triple stop – 53 vph
- Services grouped into functional and legible stop groupings
- Corridors “break” when one or more stops exceeds capacity
  - Only when all “acceptable” stop reconfiguration options are exhausted
  - Assumes New North Road buses remain in the city centre with CRL

Options investigated

Option 1: Business as usual

- Current programme of works:
  - New Network redesign and efficiency improvements
  - City Rail Link
  - Double Deckers on major corridors
  - New bus terminals at Wynyard and University, Britomart reconfigured
  - New "street busway" corridor on Wellesley Street
  - All “acceptable” stop reconfiguration options

Option 2: Removal of Dominion Road buses

- Business as usual, plus:
  - Dominion Road bus service removed from Symonds and Wellesley Streets

Option 3: Removal of Dominion and Sandringham Road buses

- Business as usual, plus:
  - Dominion Road and Sandringham Road bus service removed from Symonds and Wellesley Streets

Option 1: Business as usual

Corridor	Stop(s)/ group(s) exceeding capacity	Year capacity exceeded	Option to prolong corridor life	Outcome
Wellesley Street	Isthmus to Wynyard Crosstown/Birkenhead	2016 (2023)*	Reconfigure stop groupings	Extends corridor life to 2023
Symonds Street	Isthmus to Wynyard	2016	No options	Vehicles exceed aggregate stop capacity
Albert Street	All routes (one stop group)	2016	No options	Capacity limited by road width and in-line stops
Fanshawe Street (Victoria Park)	North Shore to University Isthmus to Wynyard	2016	Out of scope	Wynyard/Fanshawe Study to address
K Road	All routes (one stop group)	2019	No options	Capacity limited by road width and in-line stops

Note: one stop group on Wellesley Street exceeds capacity by one bus from 2016 to 2022.

Option 2: Removal of Dominion Road buses

Corridor	Stop(s)/ group(s) exceeding capacity	Year capacity exceeded	Option to prolong corridor life	Outcome
Wellesley Street	Crosstown/Birkenhead	2016 (2032)	Reconfigure stop groupings	Extends corridor life to 2032
Symonds Street	Upper Symonds Street	2024	No options	Vehicles exceed stop capacity
Fanshawe Street (Victoria Park)	North Shore to University (Isthmus to Wynyard)	2016	Out of scope	Wynyard/Fanshawe Study to address

Option 3: Removal of Dominion and Sandringham Road buses

Corridor	Stop(s)/ group(s) exceeding capacity	Year capacity exceeded	Option to prolong corridor life	Outcome
Wellesley Street	Crosstown/Birkenhead	2016 (2042)	Reconfigure stop groupings	Extends corridor life to 2042
Symonds Street	None	>2046	None needed	Corridor below capacity beyond 2046
Fanshawe Street (Victoria Park)	North Shore to University	2016	Out of scope	Wynyard/Fanshawe Study to address

Summary

Option 1: Business as Usual

- Symonds St over capacity in 2016
- Wellesley St over capacity in 2016 (North Shore peak & isthmus groups)

…but can be stretched to 2023 with highly compromised stop groupings.

Option 2: Dominion Rd

- Symonds St over capacity in 2024
- Wellesley St over capacity in 2016 (North Shore peak group)

…but can be stretched to 2032 with somewhat compromised stop groupings.

Option 3: Dominion Rd and Sandringham Rd

- Symonds St does not exceed capacity within study period (beyond 2046)
- Wellesley St over capacity in 2016 (North Shore peak group)

…but can be stretched to 2042 with slightly compromised stop groupings.

Caveats

For all options:

- Fanshawe St is over capacity in 2016 (Beaumont St to Halsey St)
  - Being addressed by Wynyard-Fanshawe Project

- Albert St is over capacity in 2016 (Mayoral Dr to Britomart)
  - post CRL-reinstatement design: single stop group with inline stops and limited corridor width limits stop capacity
  - May warrant revisiting planned corridor and/or network design

- K' Road is over capacity in 2019 (overbridge to Pitt St)
  - Corridor and stop design to be confirmed, but current thinking is single stop group with inline stops.

Conclusion

Assuming Fanshawe St, Albert St and K' Rd constraints are addressed through respective studies, these results suggest the following timeframes:

- Dominion Rd buses removed as soon as possible following implementation of New Network circa 2018 (relieving Symonds St and Wellesley St stop congestion)

- Sandringham Rd buses removed by 2024 (further relieving Symonds St stop congestion)

These two interventions, together with less than ideal North Shore stop groupings on Wellesley Street, are predicted to prevent Wellesley St becoming over capacity until 2042, and Symonds St until sometime beyond 2046.