

**Date: 26 July 2021**

**From:** s7(2)(a) Privacy

**To:** Auckland Transport

**Re:** Broadway / Teed Street Signalised Crossing Review

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## Introduction

Auckland Transport have completed a review of the proposed signalised pedestrian crossing on Broadway south of Teed Street following feedback from the Newmarket Business Association. The review considered two new options: combining the proposed signalised crossing with the existing signalised intersection at Broadway/Remuera Road to create a single intersection and the full signalisation of the Broadway/Teed Street intersection.

## Options

**Do nothing:** Existing layout with signalised intersection at Remuera Road/Broadway combined with pedestrian refuge island/solid median at Teed Street.

**Option 1:** New midblock pedestrian crossing with pedestrian phase linked to the pedestrian phase at the existing Remuera Road/Broadway signalised intersection.

**Option 2:** Combination of the proposed pedestrian crossing with the existing Remuera Road/Broadway intersection to form a single intersection with dedicated pedestrian phase. The operation would involve:

- No change in cycle time
- Additional inter-green times required for vehicles to clear the intersection between signal phases taken from the Broadway through movements.
- Pedestrian crossing green time remaining the same as the existing Remuera Road/Broadway intersection. This arrangement would not operate as a Barnes Dance as the green time required to allow for crossing diagonally would be excessive.

**Option 3:** Signalising the Broadway/Teed Street Intersection and linking it to the Remuera Road/Broadway signalised intersection.

## Modelling

An Aimsun microsimulation model was used to compare the existing layout with options 1 and 2 over the 2 hour PM peak between 4-6pm which was considered the critical period. It is considered option 3 would operate similar to option 1.

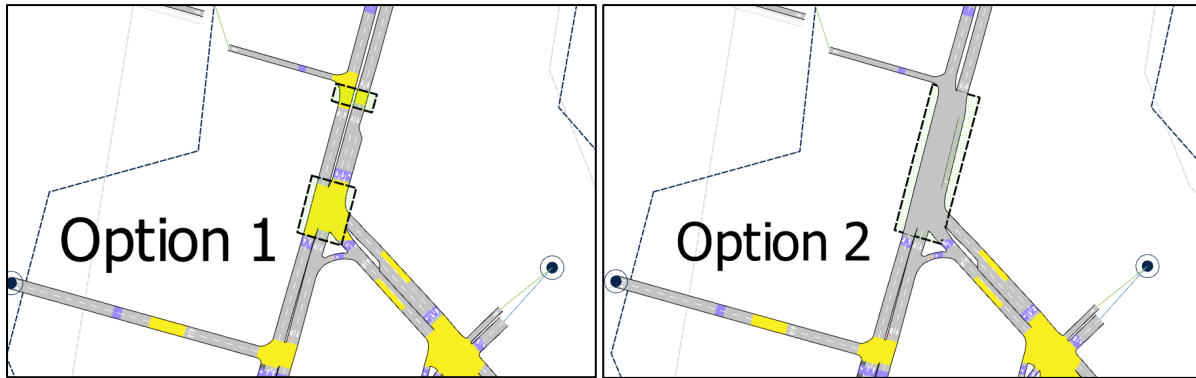


Figure 1. Microsimulation models for option analysis

## Analysis

### Travel time:

The base model and Option 1 resulted in similar total travel time for vehicles over the 2-hour modelled period (4-6pm) indicating no significant change to existing operation.

Option 2 resulted in an increase in the total travel time of around 24 vehicle-hours (12 seconds / vehicle). This is as a result of the increased inter-green time between phases A and C and then B and A which is required due to the increased distance vehicles need to travel to clear the intersection.

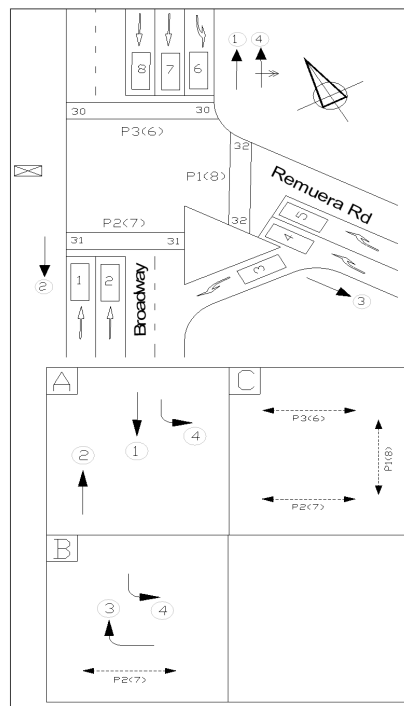


Figure 2. Broadway/Remuera Road signal phase diagram

### Operation:

Analysis of the model showed the pedestrian crossing operating well for Option 1. Vehicles would be held between the new signalised crossing and the Broadway/Remuera Road intersection on the pedestrian crossing phase (phase C) which is illustrated in figure 3 below.

The model of Option 2 showed vehicles being regularly 'trapped' in the intersection area resulting from queuing back from the Remuera Road/Nuffield Street intersection which can be seen in figure 4 below. Drivers will be unable to determine if they can clear the intersection due to the lack of visibility of queues between Broadway (north) and Remuera Road.

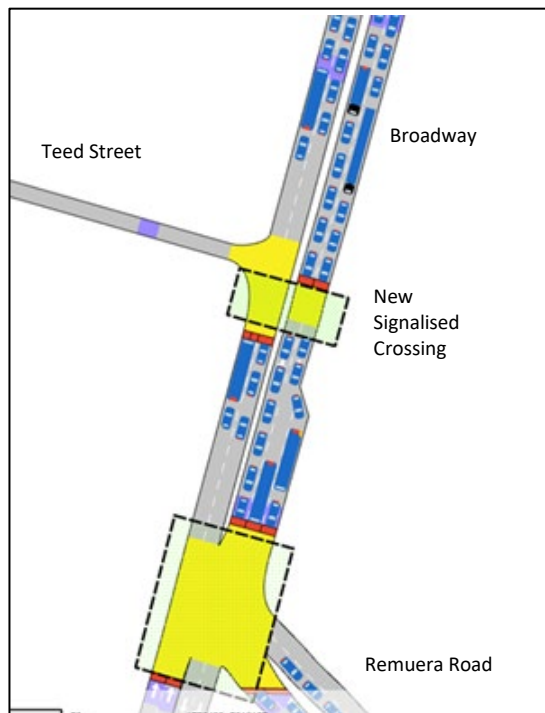


Figure 3: Option 1 during pedestrian phase (5:00pm)

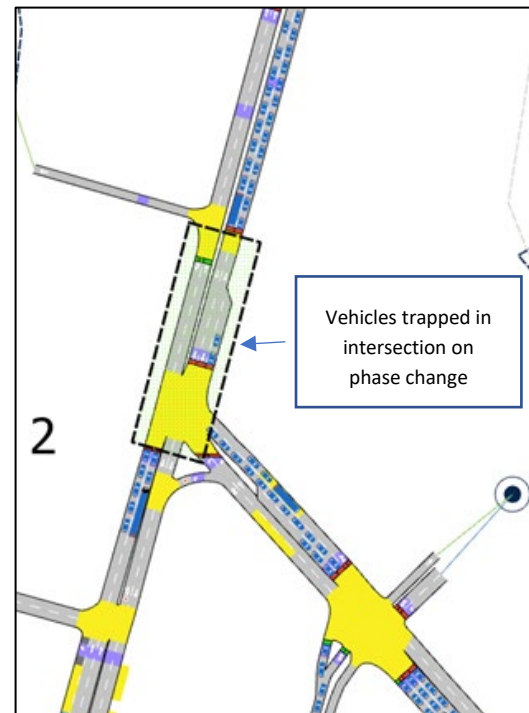


Figure 4: Option 2 during pedestrian phase (5:00pm)

### Safety:

Option 1 would result in a significant improvement for pedestrian safety and amenity by providing a dedicated pedestrian phase across Broadway which is a busy 4 lane road.

Option 2 will benefit pedestrians by providing a dedicated pedestrian crossing phase, however it will likely cause some conflicts between pedestrians and vehicles as drivers trapped within the intersection are likely to attempt to find gaps in pedestrians crossing to clear the intersection. The size of the intersection may also promote red light running as drivers consider they can make up time due to the significant inter-green period.

Option 3 would result in a significant improvement for pedestrians crossing Broadway however would reduce pedestrian amenity for through pedestrians on the western Broadway footpath. The current

zebra crossing at Teed Street allows pedestrian priority and the raised table ensures left turning vehicles turn at very low speeds. Signalising Teed Street would introduce delays for pedestrians and due to the one-way operation and narrow width of Teed Street pedestrians are likely to cross at any time resulting in potential conflicts.

## Conclusions

It is considered that Option 1 consisting of a new signalised mid-block crossing is the preferred option as it provides a high level of pedestrian amenity, increases pedestrian safety and minimises impact on the operation of the surrounding network.

## Design Considerations

As a result of recent changes in best practice regarding pedestrian safety, consideration has also been given to including a raised speed table at the proposed mid-block signals. Speed survey data taken in May 2018 on Broadway between Khyber Pass Road and Teed Street showed: 7 day average 85<sup>th</sup> percentile speed of 38.3km/hr southbound and 41.6km/hr northbound. Several one hour intervals during the early morning were recorded with 85<sup>th</sup> percentile speeds of approximately 50km/hr and in one hour period reached 56km/hr.

Due to the crossing being located in the town centre with high numbers of pedestrian movements and operating speeds significantly above 30km/hr it is considered that installation of a raised table should also be provided in conjunction with the new crossing.

It should be noted that Broadway is a level 2 Lifeline route indicating its importance to emergency services which would require construction of a table with shallow ramps of between 1:15 to 1:20. Raising the crossing with shallow ramps should reduce the high-end traffic speeds while also minimising disruption for emergency services.

Broadway is also being considered for tranche 3 of the speed limit review with the assessment due for completion by the end of September 2021. To reduce the speed limit to the likely target of 30km/hr it is likely a route treatment will be required consisting of a series of speed devices. Installation of traffic calming at the proposed Teed Street Crossing would likely be an optimal location for the route treatment combined with a raised crossing at the mid-block crossing to the north, resulting in 90m separation.

## Programme of works

The below details the preliminary programme of works to progress the crossing:

- August 2021: Finalise project details
- September – October 2021: Update detailed design
- November – December 2021: Consultation
- January – March 2022: Construction