

Date: 7 November 2018

Project: St Asaph Street Safety and Functionality Review **Subject:** Summary of Speed Limit Recommendation

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Detail:

This Technical Note presents a summary of items considered in evaluating and recommending that the posted speed limit on St Asaph Street (between Madras Street and Hagley Avenue) be reduced from 50km/h to 30km/h. It draws on information presented in previous Road Safety Audits along St Asaph Street and the St Asaph Street Safety and Functionality Review, currently being prepared by Beca and Stantec, that Council will be considering.

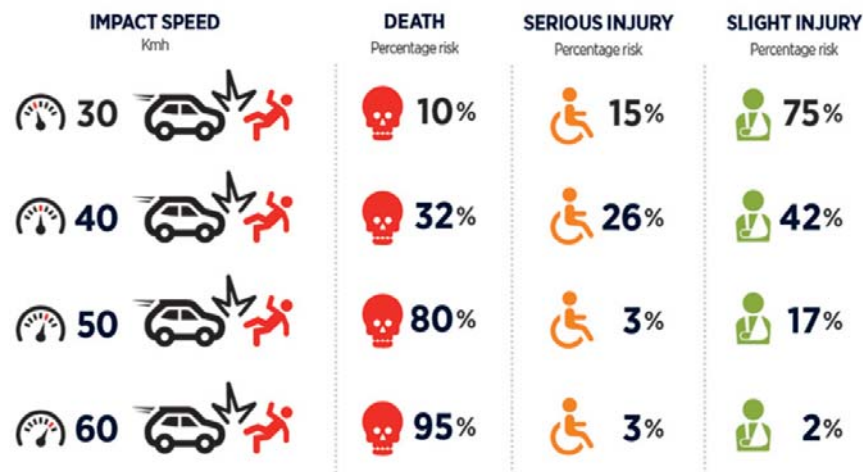
The character of St Asaph Street is dynamic with the surrounding environment continually changing with redevelopment of empty sites and changing activities on existing sites. The environment change is notable compared to the Post Construction Road Safety Audit in March 2017 and the later Design Road Safety Audit in August 2017 with the implementation of laneways, relocation of Christchurch Mitsubishi and the Christchurch Central Police Station and completion of the Justice Precinct. Other significant land use changes have occurred or are proposed, including construction of the 670 student Discovery School at the Colombo Street intersection and recent opening of Hoyts EntX on Colombo Street.

While many drivers do travel the route at lower speeds (30 to 40km/h) due to the narrow width and traffic signal progression (green wave) being around 30km/h, there are also a large number of drivers who travel faster, given the current 50km/h speed limit, especially when traffic volumes are lower, at least for short stretches of the route. Bringing down these top end speeds (45km/h plus) will reduce the risk of serious injury or fatal crashes for all road users as discussed below.

Key considerations for recommendation of the 30km/h posted speed limit include:

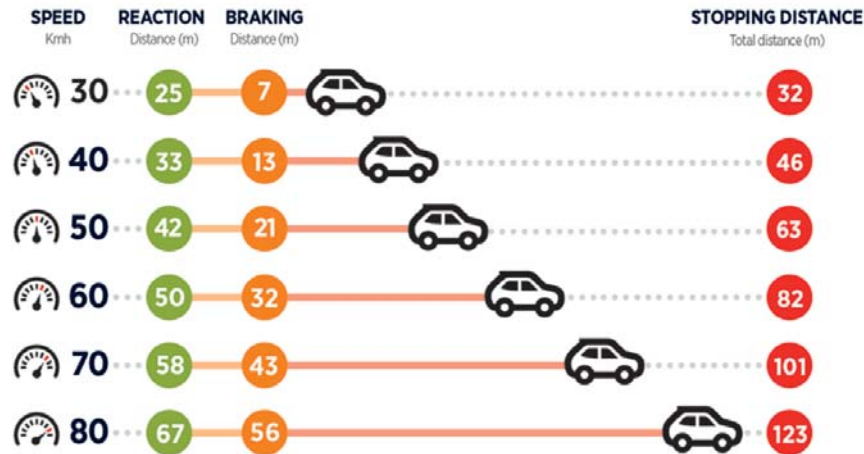
- The safety of vulnerable road users, especially pedestrians, crossing the street and travelling along it (and crossing driveways). The higher risk in terms of death and serious injury is with pedestrians crossing the street, due to higher vehicle speeds. The influence of collision speed on the probability of pedestrian death is well documented¹, with a speed increase in pedestrian versus vehicle collision from 30km/h to 50km/h increasing the probability of death from 10% to 80%. At lower speeds it is also easier for drivers to stop and avoid collision when faced with pedestrians crossing in front of them. The two diagrams below are obtained from the Auckland Transport website² that pictorially demonstrates the increased risk of death (and serious injury) with increasing impact speeds and vehicle stopping distances from various speeds.

Death and injury risk percentages



¹ Down with Speed, ACC and LTSA

² <https://at.govt.nz/projects-roadworks/reducing-speed-limits/>

Vehicle stopping distances³


*Assumes average driver attention, in good weather conditions and car has no brake or tyre defects

- A high number of pedestrian desire lines cross St Asaph Street at mid-block locations to use Laneways. They have come from businesses, restaurants and bars along the street and travelling further, such as from the South City area to central city area. This is projected to increase, with opening of Discovery School in early 2019 (on St Asaph Street), opening of the Atlas Quarter (apartments on Welles Street), recent opening of Hoyts EntX (Colombo/Tuam intersection) and returning of businesses to the wider central city area. A higher vehicle speed in conjunction with more crossing pedestrians has a direct correlation on the likelihood of pedestrian death or serious injury.
- The location of restaurants and bars along St Asaph Street creates a night time demand to other establishments within the central city. This occurs when traffic volumes are low, and therefore mid-block vehicle speeds higher, with an increased likelihood that patrons decision making abilities are impaired, often by a combination of alcohol and group activity. Crash analysis research on the Melbourne CBD, Australia, identified higher incident rates for people crossing roads where alcohol is served³. There are numerous research studies in Australia and further afield that look at the locations and risk associated with impaired (or intoxicated) pedestrians⁴.
- Many drivers experience difficulty using on-street parks and accessways. Higher vehicle operating speeds increase the difficulty for drivers accessing on-street car parks, due to people who are attempting to park feeling pressured to quickly enter / exit a parking space, and thereby increasing crash potential. This also applies at accessways, where left turn in drivers appear concerned with the speed / proximity of following traffic and attempt to enter at higher speeds and may not observe footpath users (pedestrians, scooters) and cyclists using the separated cycleways. This can result in side impact crashes (user into side of vehicle, or vehicle into side of user), which is of particular concern for cyclists and scooter users who have reduced ability to stop or avoid a vehicle and will collide with the vehicle at higher speed than a pedestrian. A reduction in the speed limit from 50km/h to 30km/h (and resulting change in vehicle operating speeds) reduces the pressure on drivers so they are more likely to scan and observe pedestrians, cyclists and scooter riders on the footpath and cycleway and the turning movement will often be done at lower speed.

³ Alavi, H 2013 Assessing Pedestrian Crash Risk and Injury Severity in Concentrated Urban Environments, PhD Thesis, Monash University, Melbourne, Australia

⁴ Corben, B and Diamantopoulou, 1996, K Pedestrians safety issues for Victoria, Report No 80 Monash University Accident Research Centre

- It was observed that under normal operating conditions, the posted speed limit of 50km/h could not be achieved for any significant length of time along the corridor due to the sequencing of the traffic signals, the general nature of vehicle movements and interactions at on-street parks and accessways. Discussions with the Christchurch Transport Operations Centre Real Time Operations Team reveal that the normal progression of traffic along St Asaph Street is around 30 km/h (taken from their real-time monitoring of traffic signals). A 50 km/h speed could be achieved between each intersection block (a distance of approximately 220 m), which results in a stop at each intersecting cross roads intersection for the red phase. The wide range in vehicle speeds increases peoples difficulty in evaluating speed and therefore appropriate gaps in the traffic to cross the road, exit a park or accessway. A 30km/h speed limit encourages a smaller range in vehicle speeds creating consistency with user expectations resulting in lower crash rates, less severe injuries if crashes occur, more consistent flow of traffic and greater comfort for all users.
- A 30km/h speed limit is consistent with the route design speed and speed environment. The lower limit assists to mitigate operational concerns related to narrow offsets to parking, difficulty experienced by some parking on-street and use of accessways. Posting of a lower speed limit also applies to the cycleway.

With evaluation of the above items it was considered fundamental to the safe operation of St Asaph Street, for all users, that lower vehicle operating speeds (particularly mid-block) are encouraged and that this is most effectively achieved with a posted speed limit of 30km/h.