# Multi-modal Traffic Dynamics of Christchurch CBD

|  |
| --- |
| The urban traffic networks of cities are complex with many transport modes that share and compete for limited road space in the urban landscape. Several studies have been carried out to investigate the connection between the performance of the transport systems and general land allocation. However, space allocations for interacting transport modes are an open research question. The Manchester Street upgrade project in Christchurch has been recently completed in 2018. It is part of the city-wide transportation strategy to improve accessibility into the central parts of Christchurch across a range of transport modes. New road layout and space allocation have been introduced in the network including Bus Priority System (BPS) along the route.  In collaboration with Christchurch Transport Operations Centre (CTOC), this research paper studies the performance of the network and multi-modal traffic dynamics of Christchurch Central Business District (CBD) using Aimsun, a microscopic traffic simulation program. The urban network of Christchurch CBD, bounded by the four avenues, was modelled in Aimsun using the latest GIS map from Environment Canterbury. The traffic demand of the CBD during the peak morning period (7-9 AM) was generated using the latest Origin-Destination (O-D) matrix from the 2018 Christchurch Assignment and Simulation Traffic (CAST) model in SATURN program. More than 117 signalised intersections in the CBD were implemented in the Aimsun model using fixed signal phases that are based on the average green time generated in Sydney Coordinated Adaptive Traffic System (SCATS) of Christchurch. All existing bus routes and bus stops within the CBD area have been implemented into the Aimsun simulation with the latest bus information from Metro. Two scenarios have been explored in Aimsun to investigate the effects of BPS in the entire CBD network. To this end, the Network Fundamental Diagram (NFD) has been applied. |