

Tightening the Belt – Techniques and Tools to Improve Multi-Modal Transport Interchanges in Less Space

A Case Study in Christchurch New Zealand

BRIAN SMITH

Principal Public Transport

Parsons Brinckerhoff Australia Pty Limited

bsmith@pb.com.au

NEIL PROSSER

Senior Transport Consultant

Parsons Brinckerhoff Australia Pty Limited

ABSTRACT

There is increasing competition for space for public transport facilities – particularly bus terminals and interchanges – in city centres. At the same time, the expectations of bus users in terms of level of service and comfort and quality of facilities are increasing. City managers are asking bus operators and regulators to do more in less space. Intelligent transport systems are now providing tools that enhance traditional public transport planning techniques in substantially reducing the amount of space needed for bus terminals and interchanges in city centres and increasing priority for transit. This approach leads to interchange designs characterised by more intensive, and sometimes dynamic, use of available capacity and more complex operations that can require investment in transit priority measures beyond the terminal or interchange site.

These factors can mean that traditional ways of assessing interchange operations are not adequate or are less convincing in demonstrating the feasibility of a proposed design and the impacts of transit priority measures. Micro-simulation modelling offers an alternative method for the analysis of complex, multi-modal interchanges and surrounding road networks, that also enables graphic demonstration of scenarios.

This paper focuses on the strengths and limitations of the various hi-tech and lo-tech techniques that can be used to make more intensive use of bus terminal and interchange facilities, and presents a case study - the Christchurch Bus Xchange in New Zealand - where a best practice public transport facility that was developed in a fraction of the space required by its predecessor, is now

the flagship for public transport in that city, and a driver for consideration of transit priority measures in that city.

The paper also describes the application of micro-simulation techniques to interchange analysis using the recently developed TranScope package. TranScope allows these more intensive interchange and terminal designs to be tested under a range of operational scenarios and provides a visual animation output that is proving valuable in gaining the support of bus operators, managers and other stakeholders for substantial changes in bus operations and management.