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Procedia - Social and Behavioral Sciences 125 (2014) 326 – 333

Procedia
Social and Behavioral Sciences

8th International Conference on City Logistics

Understanding Last Kilometre Freight Delivery in Melbourne's Central Business District

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Abstract

It is important to increase understanding of the nature of current last-kilometre freight practices so that City Logistics solutions can be developed for increasing transport efficiency, reducing road congestion and amenity impacts such as emissions and noise pollution as well as enhancing road safety. This paper describes a study undertaken for the City of Melbourne that identified current last kilometre freight delivery practices in Melbourne's Central Business District (CBD) and discusses how the challenges may be successfully addressed and managed. Based on traffic surveys, it was estimated that 13.4% of total vehicles entering the CBD were delivery/service vehicles and most of these were not involved in CBD last kilometre deliveries being either exclusively service vehicles or simply driving through the CBD. Vehicles involved in last kilometre freight activities were estimated to be only 4.4% of all vehicles entering the CBD. A small proportion of vehicles engaged in last kilometre freight deliveries were estimated to be low impact (around 8%)

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Selection and peer-review under responsibility of the Organising Committee of the 8th International Conference on City Logistics.

Keywords: Central city delivery; last kilometre; freight

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1. Introduction

Contemporary urban retail logistics systems often involve receivers wanting products delivered immediately with potential delivery efficiency being sacrificed in favour of speed or convenience. These practices lead to an increased number of freight deliveries and trucks on the streets, which has led to more congestion in cities. It is clear that consumers are not paying the full cost of the inefficiency or impact on the transport system.

Until recently in Melbourne, there has been comparatively little direct attention aimed at last kilometre distribution. However, the current City of Melbourne Transport Strategy identified the need to take a street or precinct approach to identifying efficient approaches to last kilometre freight delivery (City of Melbourne, 2012a). A key direction is to, “foster innovative low-impact freight and delivery in central Melbourne”. The Transport Strategy also acknowledges that there is, “very little information about how the system is operating, if it is efficient, and if and how it may be able to be improved. There is a gap in understanding of the last kilometre task...”. The study described in this paper aims to address this information gap.

The primary motivation for conducting this study was the need to provide an estimate of the low impact freight delivery to the central city as part of the Future Melbourne Monitoring project. This indicator was identified under the, ‘Connected City’ Future Melbourne theme (City of Melbourne, 2008) to measure and report the “Innovative Urban Freight Logistics” objective, “Low impact and efficient central city last kilometre freight deliveries to minimise amenity degrading and inefficient freight traffic in the central city (freight deliveries will take place efficiently while minimising their externalities in both Future Melbourne Community Plan and the City of Melbourne Transport Strategy”. The indicator, ‘lower impact freight delivery to the central city’ was to be estimated as ‘the proportion of last kilometre freight delivered to the CBD by low impact means’.

Data is vital component of the systems approach to City Logistics (Taniguchi, Thompson, Yamada & van Duin, 2001). The primary purpose of the study described in this paper was to quantify and analyse existing freight deliveries within Melbourne’s Central Business District (CBD). Surveys were designed to estimate the number, type and distribution of vehicles performing CBD deliveries providing a baseline for freight activity. The study also aimed to estimate the proportion of last kilometre freight delivered to the CBD by low impact means. By providing a comprehensive baseline of freight activity, this study will help to inform future directions in freight policy and action in Melbourne’s CBD.

2. Last kilometre freight

Traffic survey data was used to estimate the total number of freight vehicle trips used for last kilometre deliveries. To estimate the total number of freight vehicle trips used for kilometre freight it was necessary to take the overall raw traffic survey data and refine it to establish:

- (1) the amount of actual delivery vehicles present in the total volume of light and heavy commercial vehicles, and
- (2) how many of those delivery vehicles are actually carrying last kilometre freight deliveries into the CBD.

To this end, the following 3-step procedure was followed:

- (1) data collection,
- (2) determination of “real” delivery vehicles, and
- (3) estimation of “through” and last kilometre freight delivery vehicles

Each of these 3 steps is discussed in more detail below.

Traffic volume data was collected at 22 locations on the edge of the CBD. The survey was conducted over a full-week (7-days) using automatic tube counters. Automatic counters collected traffic volume data and classified vehicles in accordance with the standard Austroads Vehicle Classification protocol (AUSTROADS, 2006).

The surveys revealed that a total of 225,480 vehicles (across all types) were recorded entering the CBD each weekday, comprising 220,120 light vehicles and 5,360 heavy vehicles.

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