

Appendix J – PTAL Analysis Brief

Brief for Development Public Transport Accessibility Levels (PTALs)

Introduction

The City of Ryde has developed a clear policy objective of reducing car use within the LGA and the wider metropolitan area through the Ryde Integrated Transport Strategy. Council is pursuing a number of projects and initiatives aimed at achieving this policy objective, including the development of Public Transport Accessibility Levels (PTALs) for the Ryde LGA. PTAL analysis will be used as a basis for the development of car parking provision rates and recommending development densities for the Ryde LGA.

Background

The PTAL calculation was originally developed by the London Borough of Hammersmith and Fulham (UK), and was later adopted by Transport for London as the standard method for calculation of public transport access in London.

A PTAL is a measure of public transport accessibility¹, reflecting:

- Access time (by walking) from the point of interest to public transport service access points (SAP), such as bus stops, rail station within a catchment area;
- The number of different services operating at the SAP; and,
- Level of service (average waiting time) with an adjustment for the relative reliability of the mode.

These components are used to calculate a public transport accessibility index that is then allocated into bands (in the London Borough of Hammersmith and Fulham study) from 1 to 6, where 1 indicates very poor accessibility and 6 indicates excellent levels of accessibility.

Within London (UK) the PTAL is used as a development planning tool to determine permitted parking standards and development densities. Parramatta City Council has also developed PTALs for their LGA and has based their emerging Residential Development Strategy on PTALs.

Objectives

- To develop Public Transport Accessibility Levels (PTALs) for every major transport node in Ryde including train stations, ferry wharves and selected bus stops; and
- To map developed PTALs and overlay them on a base map of Ryde LGA.

Project Outcomes

It is anticipated that a future land use and parking strategy based on PTALs would be developed and would result in:

- An ability to direct future residential and commercial development to the most accessible locations within Ryde, resulting in increased density in these locations.
- A basis for reducing parking required at new developments where public transport accessibility is high and thereby encouraging mode shift through targeted demand management.
- An opportunity to reflect the relative accessibility of centres through on street parking management, including the introduction of paid parking at locations most accessible by public transport.

¹ Definition from, London Travel Report, TfL (2005)

Methodology

The methodology used to develop PTALs for the Ryde LGA should be based on the system developed by the London Borough of Hammersmith and Fulham.

As PTAL development is a relatively new concept in Australia any proposed changes or additions to the methodology will be welcome and will be discussed and decided on. An outline methodology is suggested below.

Calculation of Accessibility Indices

The PTALs will be calculated for all major public transport nodes in the Ryde LGA including all rail stations, ferry wharves and a selection of bus stops. PTALs should be developed for the AM peak period and take into account services that have major employment destinations such as CBD, Macquarie Park and Parramatta.

The PTAL will measure accessibility based on both the access distance to public transport services and the level of service provided. The following formula should be used to derive an accessibility index for any given location which takes into account these two factors:

$$\text{Accessibility index (EDF)} = 30 \div \text{access time}$$

Access time = walking time to the station or stop + average waiting time for the next service
Average waiting time = $(K \div 2) \times (60 \div \text{scheduled frequency})$

K refers to the reliability factor. The following values of K were used in the Hammersmith and Fulham example:

- rail – 1
- bus – 2

The application of this equation results in the Equivalent Doorstep Frequency (EDF) for a particular service. The EDF for individual services are then added together to yield the aggregate EDF for all services. This aggregate EDF is then used as the accessibility index for a particular point of origin or transport node.

Simplified Example:

A transport node which consists of a train station providing one service which stops 3 times in the hour has the following calculations:

$$\begin{aligned} \text{Average waiting time} &= (1 \div 2) \times (60 \text{ mins} \div 3) && K = 1, \text{ Scheduled frequency} = 3 \\ &= 10 \text{ mins} \end{aligned}$$

$$\begin{aligned} \text{Access time} &= 10 + 10 && \text{Walk time} = 10 \text{ mins} \\ &= 20 \text{ mins} \end{aligned}$$

$$\begin{aligned} \text{EDF} &= 30 \div 20 \\ &= 1.5 \end{aligned}$$

The relevant accessibility index at this transport node is therefore 1.5. In the case that there is more than one service stopping at this node, the multiple EDFs would be added together to give the aggregate EDF.

Calculation of Accessibility Levels

The accessibility indices calculated for each transport node must be converted to accessibility levels to enable them to be mapped in a meaningful way. In the London Borough of Hammersmith and Fulham example accessibility levels from 1 – 6 have been calculated where as in the Parramatta example accessibility levels of 1 – 4 were used. Depending on the accessibility indices calculated for the Ryde LGA a meaningful group of accessibility levels should be developed in consultation with the City of Ryde.

Mapping of Accessibility Levels

The calculated accessibility levels should be overlaid onto a map of the LGA. A colour code for each accessibility level should be used. It is expected that some overlap of accessibility levels will occur. A darker colour could be used to represent higher transport accessibility levels in order to show priority on the mapping.

Project Deliverables

- Accessibility indices for all transport nodes in the Ryde LGA including train stations, ferry wharves and selected bus stops;
- Development and definition of a range of accessibility levels for the Ryde LGA;
- Accessibility levels for all transport nodes in the Ryde LGA including train stations, ferry wharves and selected bus stops;
- Mapping of colour coded accessibility levels on Ryde LGA mapping.

References

The following resources may be helpful in the PTAL development.

London Borough of Hammersmith and Fulham, 1994. *Unitary Development Plan 2003 – London Borough of Hammersmith and Fulham*.

London Planning Advisory Committee, 1998. *1997 Parking Advice: Background Papers*.

Hampshire County Council. *Hampshire Parking Technical Data Page*.
<http://www.hants.gov.au/carparking/maps/technical.html>

The Department of Urban Affairs and Planning (now Department of Planning), 2001. *Draft State Environmental Planning Policy (Integrated Land Use and Transport) Explanatory Note – Urban Development Program Accessibility Criteria*.

Parramatta City Council. *Working Paper No. 1: Public Transport Analysis*.