

The Inveresk Intersection Project - Roundabouts v Traffic Signals

Abstract

Inveresk is Launceston's cultural precinct, currently home to the City's museum and main sports stadium but soon to also house the University of Tasmania's northern campus. The intersection of Invermay Road and Lindsay Street will serve as an important gateway to this precinct and needs to provide an appropriate level of service for an increasing motor vehicle demand as well as pedestrian and bicycle traffic. The intersection is currently a roundabout which operates reasonably well for the main corridor but often with significant delays for the minor legs. Traffic signals are proposed, to better balance demand and also to improve amenity for non motorised traffic, with associated urban design that will enhance this significant place. It has been necessary to address concerns about the safety and capacity of traffic signal controlled intersections compared to roundabouts and seek an understanding of the sometimes conflicting benefits of each. Coordination of the proposed signals with adjacent intersections will be essential and assisted by the joint City of Launceston/State Government smart signals project. The history and development of this project will be described with how it now fits into Launceston's City Deal and Smart City initiatives.

KEYWORDS: roundabout, traffic signals, safe system.

1 Introduction

This presentation will compare the benefits of roundabouts and traffic signals, based on both facts and perceptions. It will briefly review the national guidance that is available when selecting a form of traffic control for intersections including the latest 'safe system' ideology. The history of the intersection at Inveresk will be described with the factors that are driving the current review. This will include reference to the Launceston City Deal and Smart Cities Project. The background to the design of the new intersection will be detailed, including the factors that are being considered to deliver the best safety and amenity outcome.

2 Intersection control selection

Austroads provides comprehensive guidance on many aspects of road design and traffic management and this includes selection of intersection control. A new edition of Austroads Guide to Traffic Management Part 6: Intersections, Interchanges & Crossings was published in April 2019 with inclusion of Safe System considerations.

Roundabouts in their simplest form can be defined as intersections where the priority is to vehicles already in the intersection, however their design will vary significantly depending on the site and circumstances. In summary Austroads recommends roundabouts where traffic flow on all legs is similar, there is a high right turn flow, traffic speeds are high (providing approaches can be appropriately slowed), there are only short periods of congestion or to improve traffic circulation.

Traffic signals can also vary significantly in complexity, from a simple isolated two phase cross roads to a complex, linked, multi intersection network. Traffic signals are the preferred option where it is necessary to better manage the balance in flows between different approaches, there are competing traffic needs (particularly pedestrians and cyclists) and where there is an interaction between adjacent intersections.

Safe System principles aim to reduce the potential for conflicts to a level that can be tolerated by the human body, focussing in particular on eliminating serious or fatal injuries. There are particular common crash types to be addressed, and this includes intersections. The safe system generally favours roundabouts because of their potential to reduce vehicles speeds and avoid right angle crashes.

3 Intersection Control Perceptions - Roundabouts v Traffic Signals

When working in the public realm it is necessary to address long held perceptions about traffic management, some of which are at least partly based on reality but often they are from a limited, narrow viewpoint. Roundabouts are seen as safer and better at managing traffic flow. They often result in continuous, albeit slower progress compared to the stop/start character of traffic signals. A driver who takes a particular route through an intersection every day will not appreciate the delays that might be experienced

from other directions or negotiating the intersection as a pedestrian. Road user interaction at roundabouts also suffers from varying confidence and understanding (or misunderstanding) of the Road Rules.

4 The Inveresk Roundabout

The roundabout at the intersection of Invermay Road and Lindsay Street was introduced in 2001, correspondence on file suggests there were issues with this from the start. Throughout the 2000's there was a project developing to upgrade the section of Invermay Road to the north of this intersection and this included replacement of the roundabout with traffic signals. The roundabout potentially had a very short life, was it the wrong solution? The road upgrade works were completed in 2009 except for replacement of the roundabout. A comprehensive multi criteria assessment of the roundabout was carried out by the Launceston Traffic Committee including access, safety, management of traffic, economics, environmental and amenity factors. Mainly for economic reasons, the cost of replacement, retaining the roundabout scored around 6% higher than replacing it with traffic signals. It was recommended to Council that the roundabout should remain.

The ongoing issue at this intersection, that the roundabout does not adequately manage, is the delay to traffic on the eastbound and westbound approaches. Queuing through the roundabout due to the traffic lights on the southern side of Victoria Bridge at Boland Street blocks traffic trying to exit the Inveresk precinct. There are also safety concerns because of the two lane southbound approach, although fortunately no serious injury crashes in the last five years.

5 So why change now?

Launceston's City Deal is Tasmania's first City Deal, and the second for Australia. City Deals are the main way of putting Australia's Smart Cities Plan into action. The Smart Cities Plan is about all three levels of government working together with local communities and business to identify what we need to do today to ensure our cities succeed into the future. The City Deal includes the plan relocate and redevelop the University of Tasmania's main Launceston Campus to Inveresk.

Greater Launceston Transformation – Creating Our Digital Future is a transformative regional smart cities project that will install a traffic management system across the city that collects real time data enabling road network demands to be managed in real time and provide priority to buses, freight and emergency vehicles.

The Inveresk Precinct currently includes a museum, a major sports stadium, two university departments, university accommodation, a conference centre, a cricket oval and bowling green. There is potential for additional development and this has prompted the development of a masterplan which resulted in early exploration of signals at the entrance to the precinct.

6 2019/20 Traffic Signal Project

Modelling both at an intersection and network level has informed the development of the operational design of the signals, lane configuration and timing splits. The signals at the southern end of Victoria Bridge, at Boland Street will also be included in the project to ensure efficient coordination. The possibility of introducing a scramble crossing and also of providing a raised intersection have been explored. The aim is to ensure that motorised traffic is accommodated to a reasonable level of service while opportunities will be taken to provide the best possible links for pedestrians and cyclists. The design of the intersection will be coordinated, both functionally and aesthetically with the surrounding road network and development in the Inveresk Precinct incorporating consistent landscaping and urban design.