# Session D: Smart City

## Michelle Harvey

**Development of BAT (Bus Analysis Tool)**

2012 IPENZ Transportation Conference, Rotorua

NZTA Passenger Transport Research Topic 1

# Development of BAT (Bus Priority Assessment Tool)

**Presenter: Michelle Harvey**

**Q & A Session: Michelle Harvey & Andre Tomecki**



## Overview

- Conference Objective
- Research Team
- NZTA Research Purpose
- Research Objectives
  - Primary Objectives
  - Enabling Objectives
- Methodology
- Demonstration of the BAT
- Benefits of BAT and Toolkit
- Limitations of the Analytic Model
- Potential Model Enhancements

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## Conference Objective

To share and demonstrate the development of the model and the benefits of BAT(Bus Priority Assessment Tool) to users

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## Research Team

Carolyn Teh (Researcher)

Michelle Harvey (Project Manager/Researcher)

Shaun Hubbard (Project Director)

Andre Tomecki (Researcher)

Prof Graham Currie (Peer Reviewer)

Ian Wallis (Peer Reviewer)

*NZTA Advisor Rachel Gibson / Quintin Howard*

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## NZTA Research Purpose

*"The purpose of our research has been the development of a decision making "tool" which aids the user in the selection and identification of potential bus measures, enabling users to determine the likely feasibility of a bus priority intervention in terms of impacts, costs and benefits".*

*(source: AECOM Submission Passenger Transport Topic 1 )*

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## Primary Research Objectives

1. To identify and recommend appropriate bus priority treatments to reduce congestion and improve bus trip reliability
2. To develop a practical, applicable and easy to disseminate procedure for selecting bus priority treatments for any given situation

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## Enabling Research Objectives & Steps are:

- **a literature review** - identifying not only the best overseas and local bus priority practice and techniques but those which have particular relevance to New Zealand
- **develop an analytical model** capable of identification of the appropriate bus priority measure for a given situation, within the prevailing constraints
- **validate the analytical model** by means of a maximum of six pilot case studies selected in Auckland, Wellington and Christchurch
- apply and test the model on real life situations
- develop a tool which is **easily disseminated to a variety of users** (e.g. engineers, planners, academics, funders, etc) for use on their own desktops
- **disseminate the research information and toolkit** - e.g. practitioner workshops in Auckland, Wellington and Christchurch

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# Methodology

1. Literature Review
2. Development of Analytical Model
3. Case Studies and Modelling Testing
4. Toolkit Development and Reporting

# Step 1
# Literature Review



## Literature Objective

To identify the best bus priority practice and techniques allowing us to:

1. determine the range of inputs required to identify the bus priority measures appropriate for a given situation
2. establish the relationships between specific situations and the appropriate bus priority measures

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# Step 2
# Analytic Model Development



## Development of the Model Framework

The model has two modules:

1. **Intersection**

2. **Transport Corridor**
   - Is a combination of intersections and road segments
   - Begins and ends with an intersection


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## Model Framework


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## Development of the Intersection Model Framework


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## Intersection Demonstration

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## Development of the Transport Corridor Model Framework


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Transport Corridor Demonstration

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**Step 3**
Case Studies & Model Testing


## Case Studies

- Auckland
  - Constellation Drive T2 Lane
  - Onewa Road T3 Lane
  - Dominion Road Bus Lane
  - Remuera Road Bus Lane
- Wellington
  - Adelaide Road
  - Kaiwharawhara Road Bus Lane
- Christchurch
  - Papanui Road Bus Lane
  - Main North Road Bus Lane

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# Step 4
# Toolkit Development & Reporting

## Benefits of the Model and Toolkit

- Advancement in bus priority research which is obtainable and easily disseminated to a variety of users
- A  desk top application which offers practical, applicable procedures for selecting appropriate bus priority treatments for any given situation
- An application that provides rough order of costs and benefits of possible treatments for further investigation

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## Limitations of the Analytic Model

The quality of the output depends on a number of factors, these are:

- Site specific inputs
- The default values accessible to the user
- The default values inaccessible to the user
- Representative traffic and operating conditions

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NZTA Passenger Transport Research Development of BAT
(Bus Priority Assessment Tool)

# Thank you

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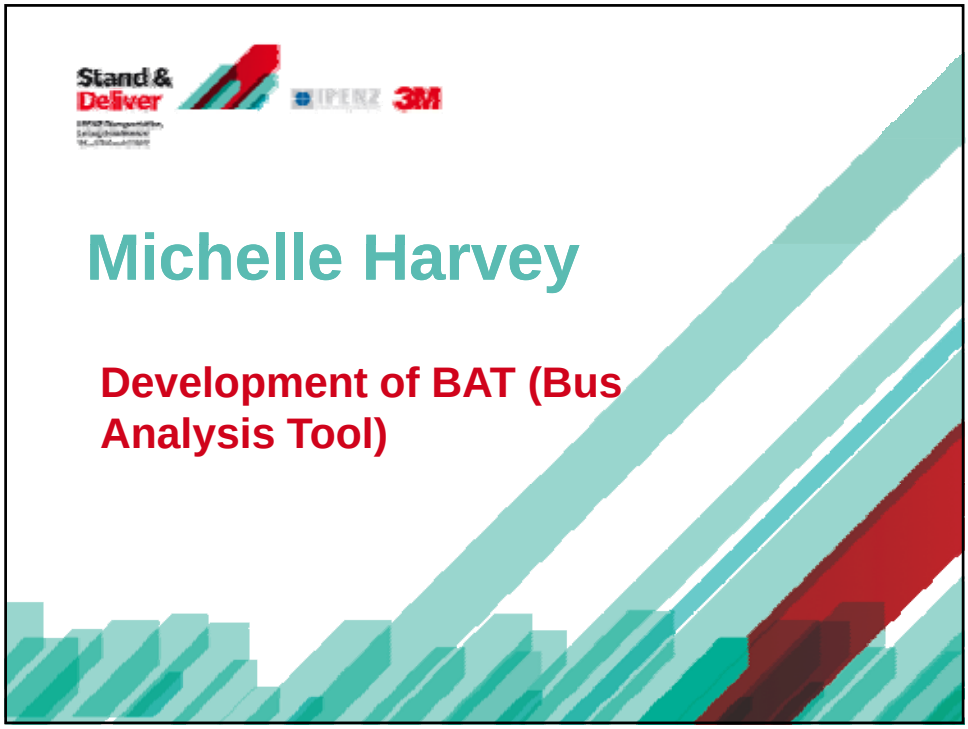
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