

# Matching trucks to local roads

Damien Hense - ARRB Group

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### NEWS

**THANKS FOR YOUR FEEDBACK**  
A big thank you to all of our users who took the time to complete the questionnaires. Your feedback will be invaluable for planning the next stages of the PBS RAT.

### PBS ROUTE ASSESSMENT TOOL

The PBS Route Assessment Tool is an expert system developed by ARRB Group Ltd in collaboration with the Municipal Association of Victoria (MAV), for use by Local Government practitioners to assist in the classification of heavy vehicle routes according to Performance Based Standards (PBS) guidelines.

The PBS RAT tool has been designed to guide local government practitioners through a consistent route assessment process, focused specifically upon the road infrastructure assessment criterion that is most relevant to the local roads environment.

The tool allows users to enter data on a specific route of interest, and assess the infrastructure's ability to facilitate the safe and efficient operation of PBS heavy vehicles. The tool provides a detailed PBS classification for each logical segment of the route.

By conducting the assessment in this manner, Local Governments can clearly identify the most restrictive elements of the route according to the guidelines.

This site is solely for the classification of roads, and not vehicles which are handled through separate processes and legislation.

It should be noted that access to the tool is not open to the general public, only Australian Local governments and their representatives.

To request access to the site please use the form on the Contact page.

### LOGIN

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[OVERVIEW](#)

[SETUP](#)
[PBS EXPERT](#)
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### OVERVIEW

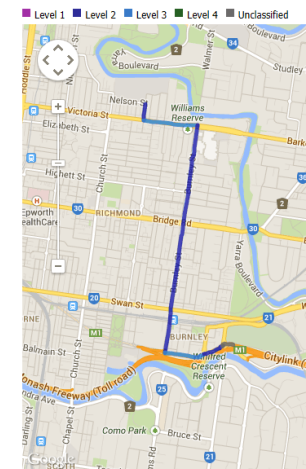
HOME > MY ROUTES > OVERVIEW

#### ROUTE DETAILS: Depot to M1

|             |                                                              |
|-------------|--------------------------------------------------------------|
| Route ID    | #1: 0001<br>#2: 123-456-789-0                                |
| Route Name  | Depot to M1                                                  |
| Description | Request to operate PBS L2B Vehicles between the depot and M1 |
| Length      | 3.7km                                                        |

#### CLASSIFICATION

|                          |                              |
|--------------------------|------------------------------|
| Route Classification     | 1 2A 3 4                     |
| Reliability              |                              |
| User Classification      | 1 2A 3 4                     |
| User Notes               | Route classified as Level 2A |
| Published Classification | 1 2 3 4A                     |
| Last Published           | 12-Oct-2012 2:52:23 PM       |





# Two sides of the debate

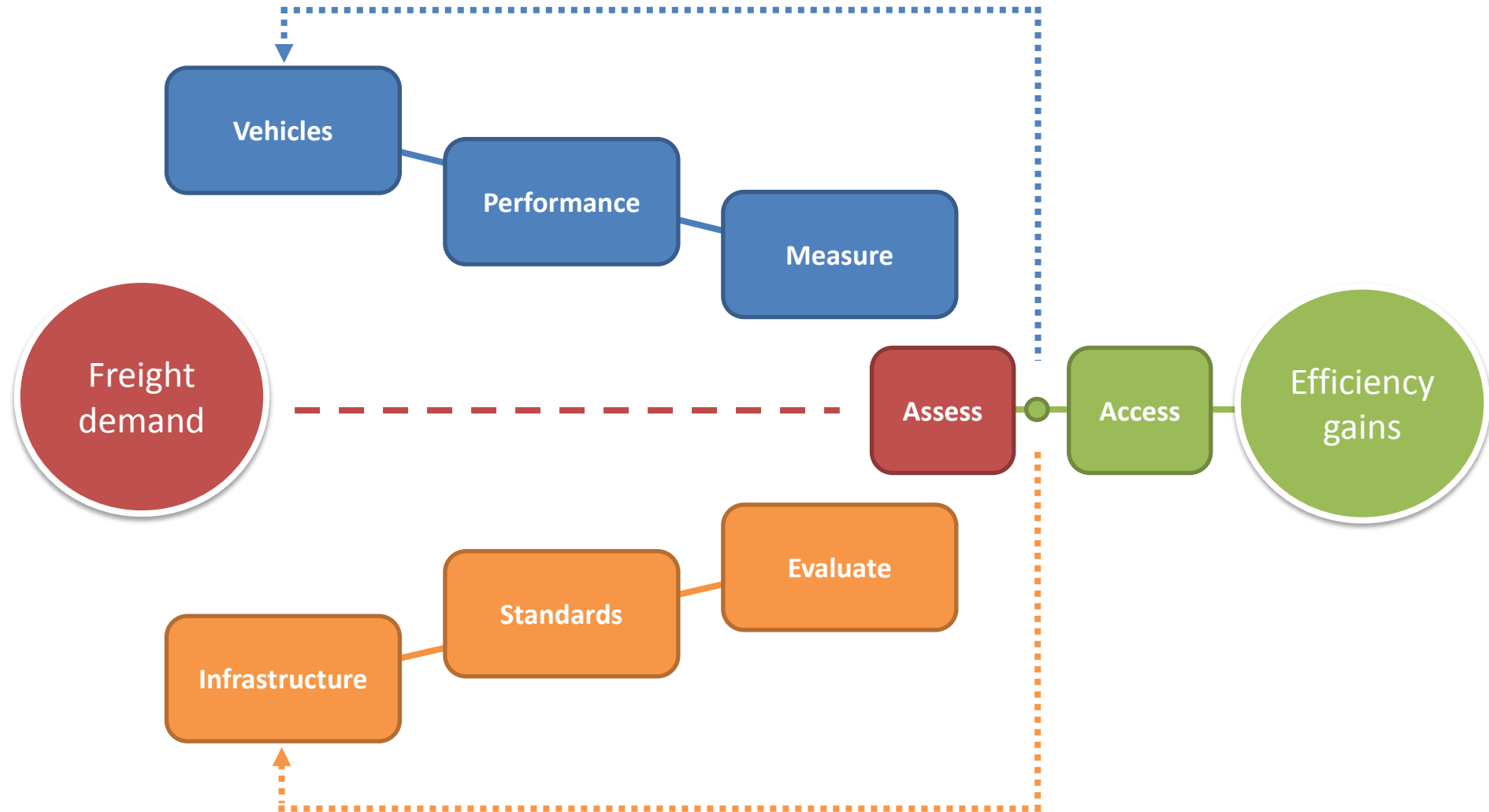
## Asset owners

- Ability of local networks to cope with larger vehicles
- Possible accelerated deterioration of pavements
- Possible safety issues
- Community concerns
- Location and intensity of freight operations
- Capacity to conduct complex assessments

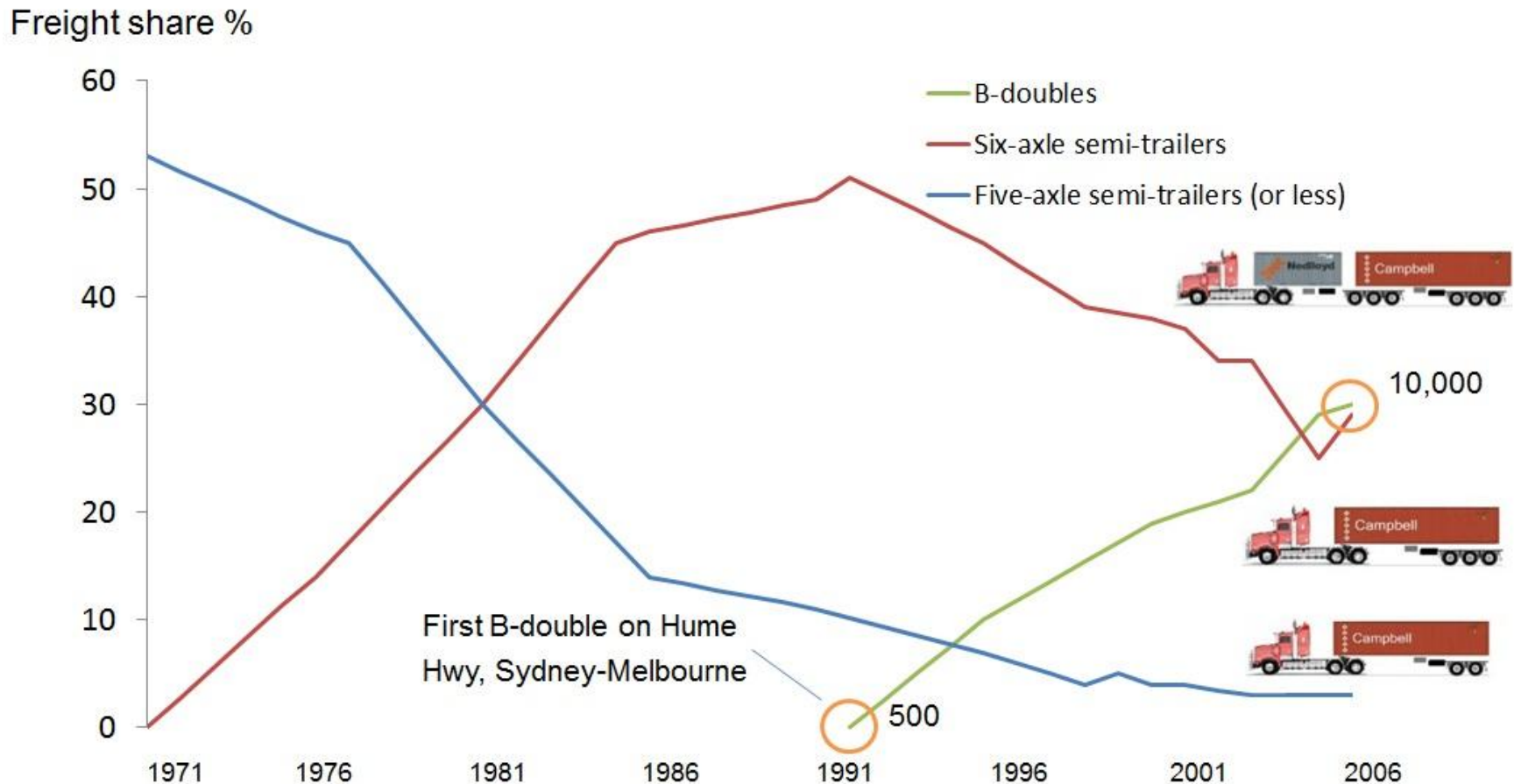
## Freight industry

- Urban planning and development often ignores the need for freight access
- Asset owners adopt conservative approaches
- Little incentive for regulators to accept heavy vehicles
- Public perception of longer and heavier vehicles

# Path to meeting the freight demand



# Historical freight trends



Source: Adapted from Dept. of Transport (Victoria)

# Next generation of innovative vehicles



**Truck and trailer**

**Length:** 19.0 m

**Gross mass:** 45 tonnes

50 tonnes in all states  
except for Vic and SA  
(45 tonnes)

# Next generation of innovative vehicles

**Truck and trailer**

**Length:** 23 m

**Gross mass:** 64 tonnes

**PBS vehicle – 64  
tonnes in WA**



# Next generation of innovative vehicles



**Truck and trailer**

**Length: 26 m**

**Gross mass: 67.5 tonnes**

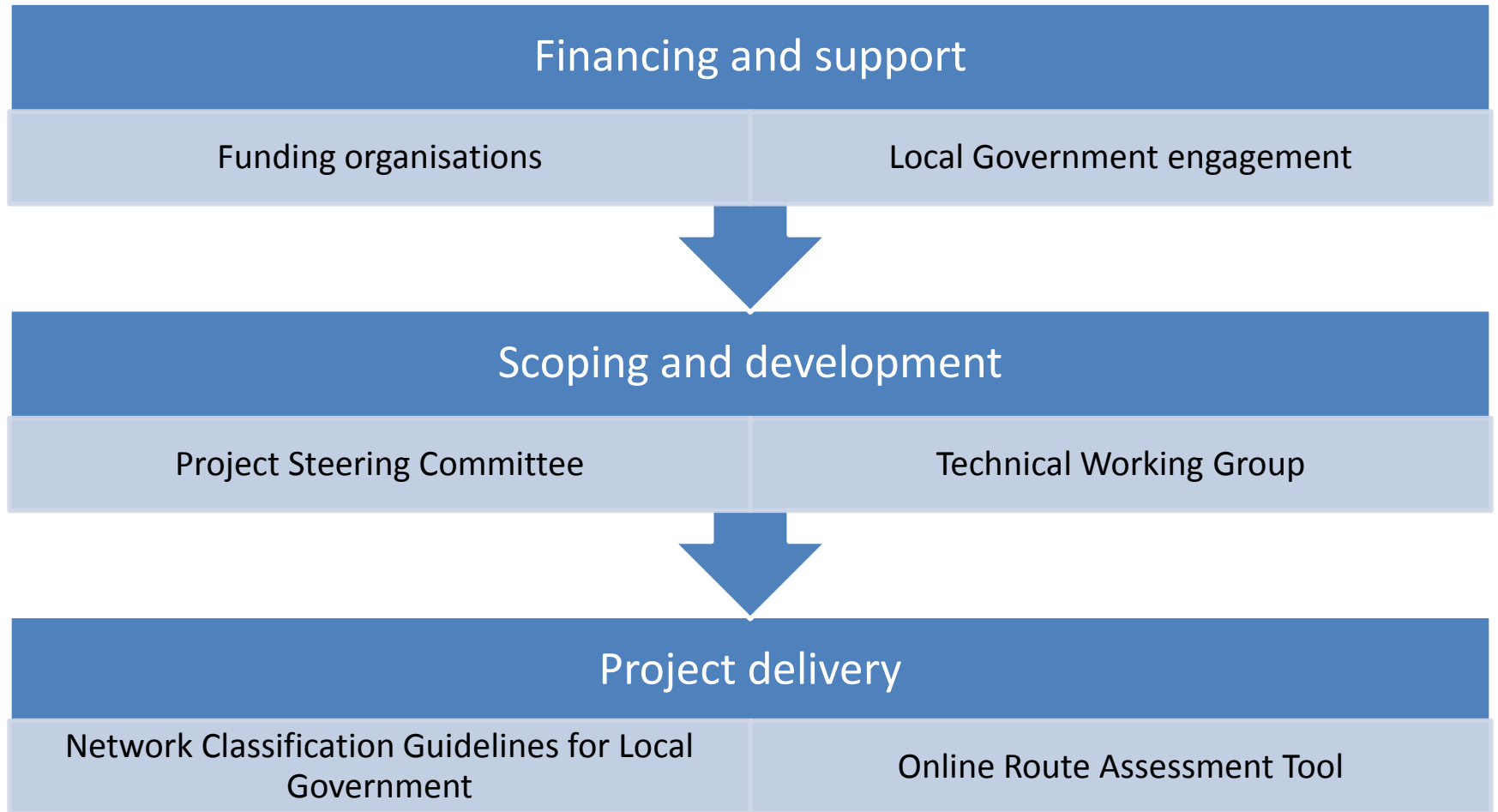
# What is PBS RAT?

Development process

Project goals

System features

# Development process



# Project Structure



## Funding organisations



Department of Infrastructure and Transport



Victorian Department of Transport



VicRoads



Port of Melbourne Corporation



National Transport Commission



## Project Management



Municipal Association of Victoria



Project Steering Group



Technical Working Group

# Project goals



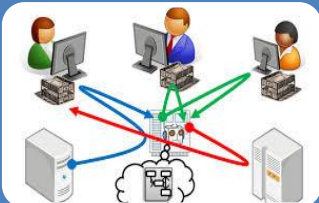
## Consistency in approach

- Fit for purpose
- Variation in available resources / capability



## Certainty of operations

- For industry
- For road managers & the community



## Workflow synergies

- Compliment existing practices / workflows
- Data retention, analysis and management

# Where does the project fit in?

NTC PBS Scheme Classification  
Guidelines (2007)

- Gold Standard

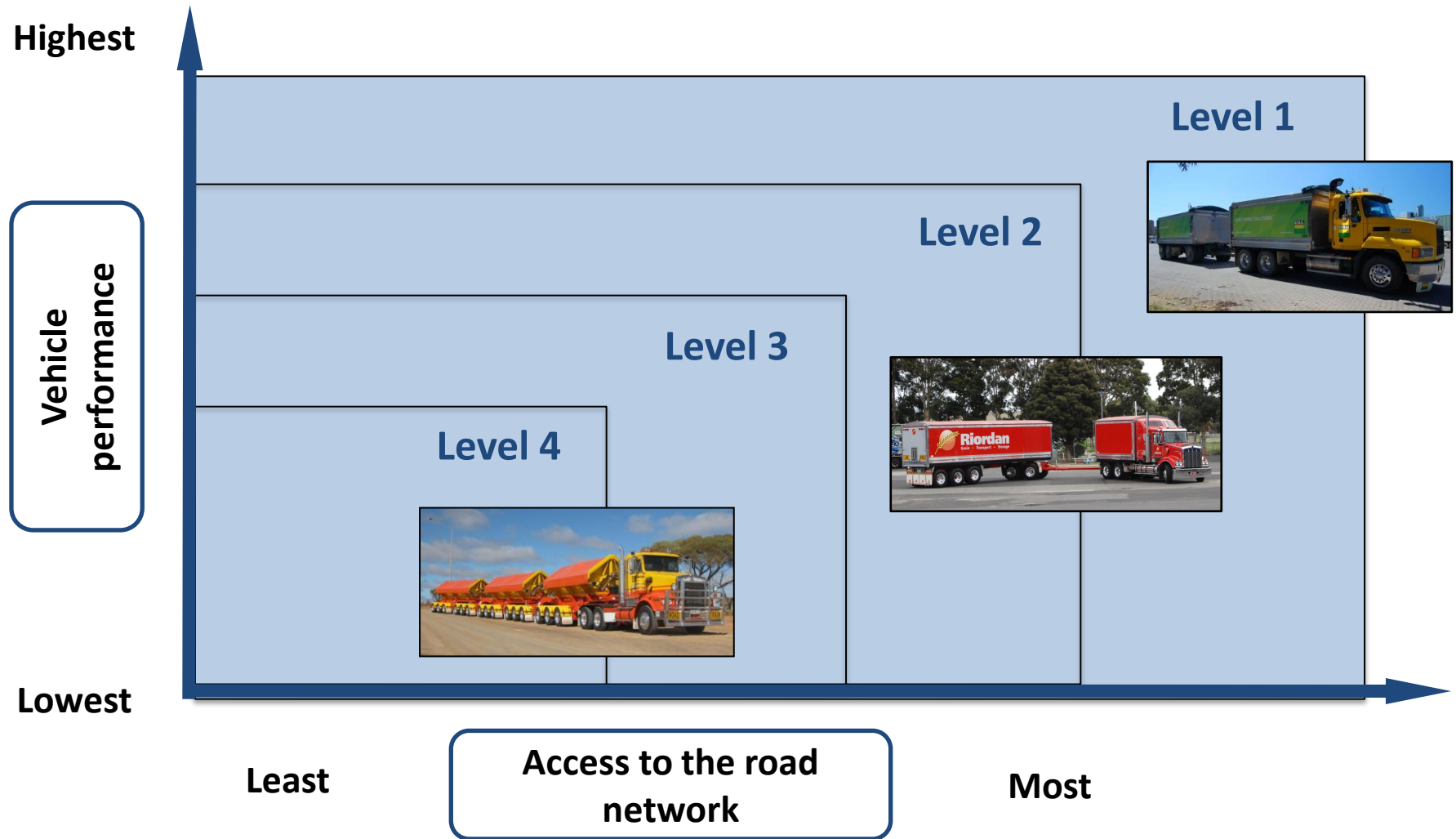
Victorian Local Government  
Network Classification Guidelines

- Vic Local Govt Suitable

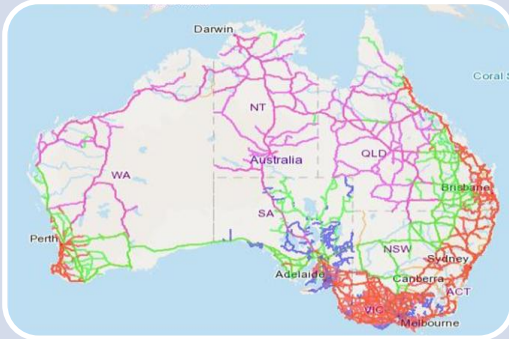
PBS RAT System Logic

- Highly Useable

# Matching vehicles to the roads

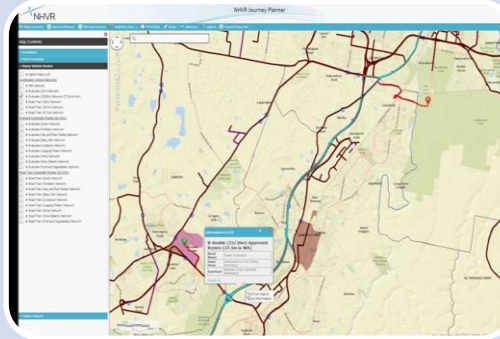


# Recent activity



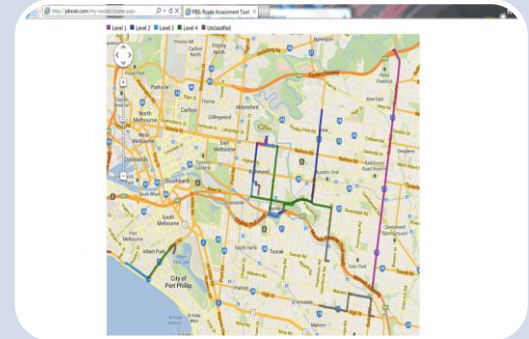
## NTC

National PBS maps  
Published 2007



## NHVR

Journey planner  
Industry focus  
Paper based system for  
road managers



## RAT outputs

Email / paper based  
system  
Software improvements  
Integration issues

# Process benefits



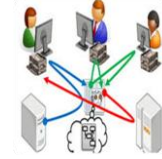
## Consistency

- In approach
- Of knowledge applications
- Of data
  - Acquisition
  - Usage
  - Analysis



## Certainty

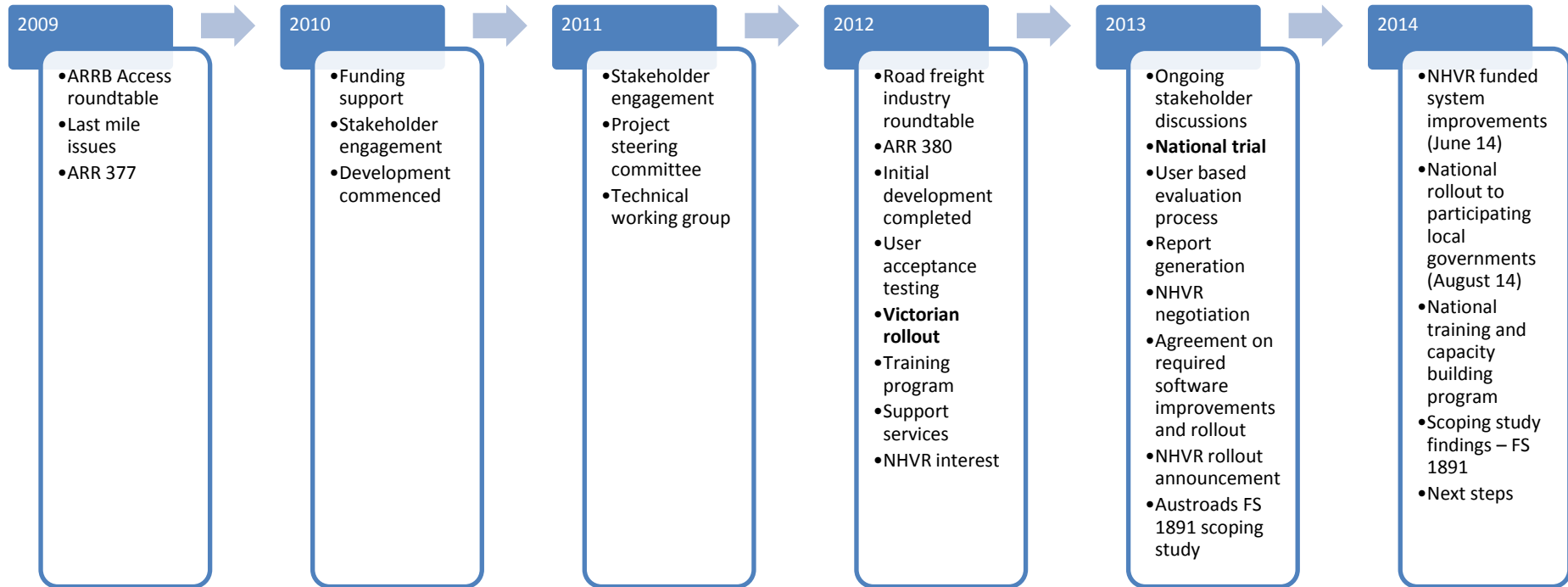
- Provides a technical classification
- Assessment of the quality of data inputs (reliability)
- Repeatable and traceable process
- Control over data
- Ability to influence outcomes
- More detailed assessments possible



## Workflow

- Compliments current approaches
- Facilitates analysis of non technical issues
- Develops capability (staff)
- Potential for paperless process
- Scope for integration with NHVR AMS

# Project timeline



# Design features

## Web based tool

- No special software required
- Flexible platform facilitates mobile assessments

## Capability Development

- Supports and educates local government practitioners
- Simplifies process

## Practical Outcomes

- Designed specifically for local government
- Provides technical classification & indication of reliability

# Reliability

OVERVIEW

SETUP

PBS EXPERT

Lane Width

Stopping Distance

Signal Timing

Stacking Distance

Road Grade

Vertical Clearance

Bridges & Overpasses

Swept Path

Railway Crossings

Other

PUBLISH

REPORTING

RESOURCES

HOME > MY ROUTES > PBS EXPERT

PBS EXPERT

Start

STH AUDLEY ST

RHT - VICTORIA ST

VICTORIA ST

RHT - BURNLEY ST

BURNLEY ST SOUTH

BURNLEY / SWAN ST

BURNLEY RAIL BRIDGE

BURNLEY EXTENSION SOUTH

LHT - BARKLEY / TWICKENHAM

TWICKENHAM CRES

ROUTE DETAILS: DEPOT TO M1

Lane Width

Stopping Distance

Signal timing

Stacking distance

Road Grade

Vertical Clearance

Bridges & Overpasses

Swept Path

Other

1

2B

3

4

1

2B

3

4

1

2B

3

4

1

2

3

4B

1

2

3B

4

1

2

3

4B

1

2B

3

4

1

2A

3

4

1

2B

3

4

ELEMENT DETAILS

No element currently selected.

CLASSIFICATION

Route Classification

1

2A

3

4

Reliability

User Classification

Level 2A

User Notes

**B**

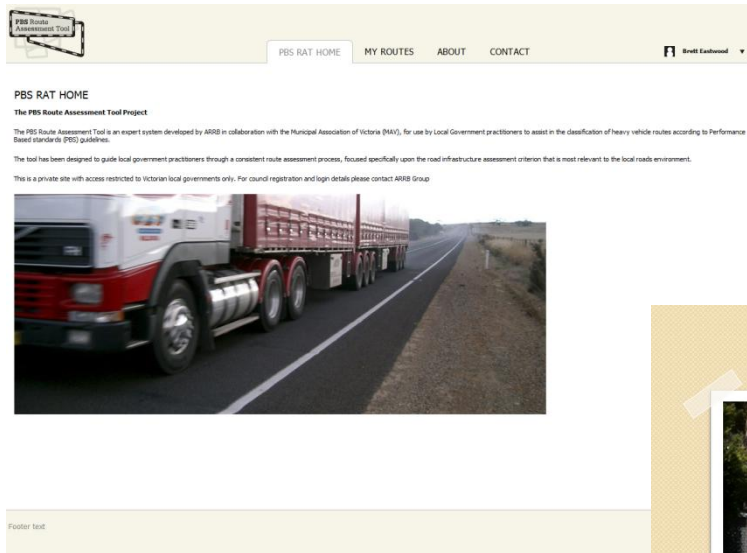
*I*

U

Route classified as Level 2A

- Assumes highest level of access but lowest reliability
- Considers routes in terms of restrictive limitations
- Allows for progressive classification of routes
- Actual route classification reflects the most restrictive elements of a route

# A Look at the site – Example only



# Front Page

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Damien Hense



## PBS ROUTE ASSESSMENT TOOL

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## NEWS

### NEWS ITEM 1

This is an example news item. The first 3 items under 'Content' -> 'Homepage News' will be listed here.

### BUILD 0.0.10

Today saw build 0.0.10 deployed. It includes a new homepage template, user details management, password reset, footer logos and several fixes / improvements.

### TESTING UPDATE

The dev3.pbsrat.com site is currently being tested in Build 0.0.10.

BE - 25/5/12

## LOGIN

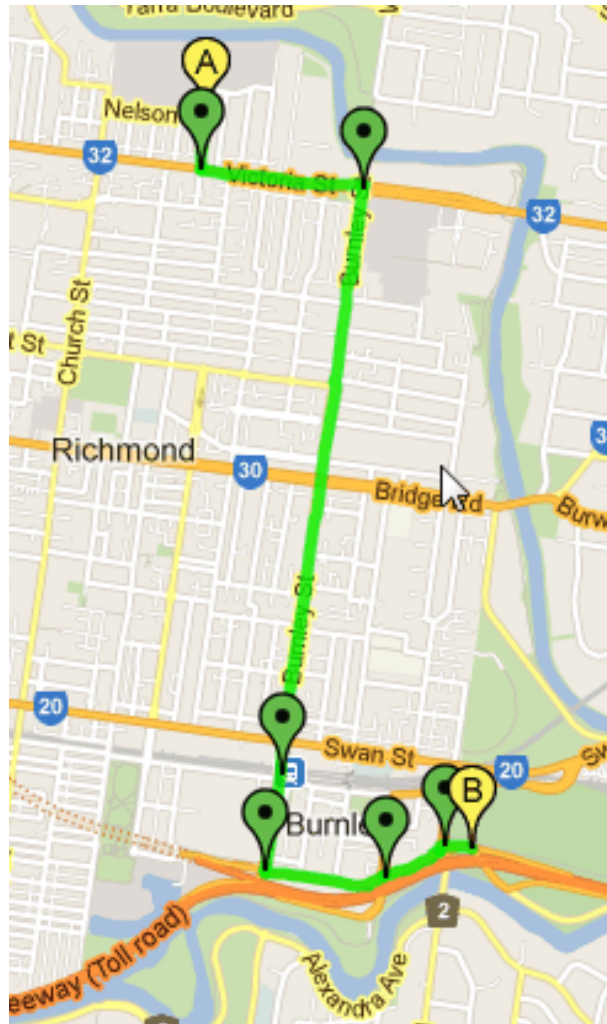
You are currently logged in.

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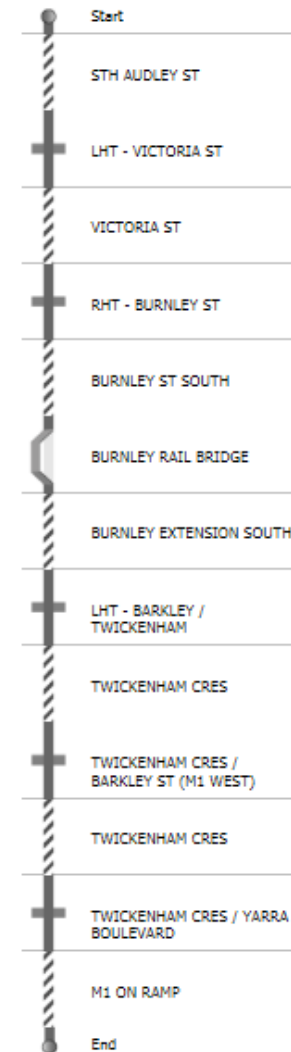
# Case Study Procedure

- This is a 'proposed' B-Double route in local area.
- Initial route setup (desk) with *PBS RAT* using Google Maps.
- Drive route to determine obvious issues
- Use *PBS Expert* to do initial classification and highlight areas of interest.
- Do subsequent detailed measurements or investigation to improve classification reliability.

# Depot to M1 southbound



## PBS EXPERT



# System Outputs

OVERVIEW

SETUP

PBS EXPERT

Lane Width

Stopping Distance

Signal Timing

Stacking Distance

Road Grade

Vertical Clearance

Bridges & Overpasses

Swept Path

Railway Crossings

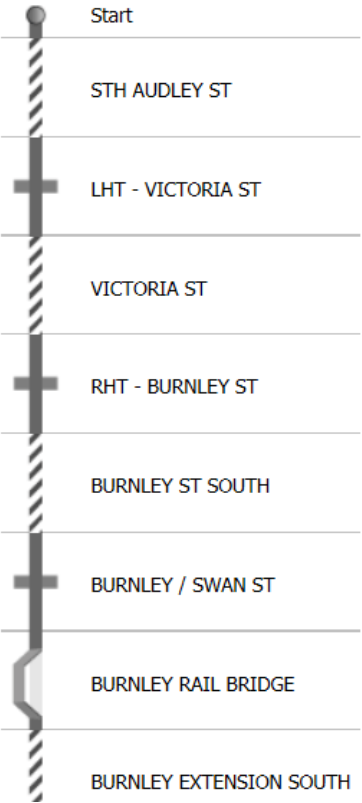
Other

PUBLISH

REPORTING

HOME > MY ROUTES > PBS EXPERT

## PBS EXPERT



### ROUTE DETAILS: DEPOT TO M1

|                      |   |    |    |    |
|----------------------|---|----|----|----|
| Lane Width           | 1 | 2B | 3  | 4  |
| Stopping Distance    | 1 | 2  | 3  | 4B |
| Signal timing        | 1 | 2B | 3  | 4  |
| Stacking distance    | 1 | 2  | 3  | 4B |
| Road Grade           | 1 | 2  | 3B | 4  |
| Vertical Clearance   | 1 | 2  | 3  | 4B |
| Bridges & Overpasses | 1 | 2A | 3  | 4  |
| Swept Path           | 1 | 2A | 3  | 4  |
| Other                | 1 | 2A | 3  | 4  |

### CLASSIFICATION

|                      |                            |    |   |   |
|----------------------|----------------------------|----|---|---|
| Route Classification | 1                          | 2A | 3 | 4 |
| Reliability          | <div></div>                |    |   |   |
| User Classification  | Level 1 <span></span>      |    |   |   |
| User Notes           | <b>B</b> <i>I</i> <u>U</u> |    |   |   |

## Private property entrance Safety treatment example



Additional signage and automatic warning signal for trucks crossing local road. Site provides considerable turning capability for entry /exit.



## Depot Exit/Entry

Note: Small traffic island. Some delineation



## **Audley St South**

Audley St, note: No lane markings

Parking on left hand side and reduced lane width

# System Outputs

SETUP

PBS EXPERT

Lane Width

Stopping Distance

Signal Timing

Stacking Distance

Road Grade

Vertical Clearance

Bridges & Overpasses

Swept Path

Railway Crossings

Other

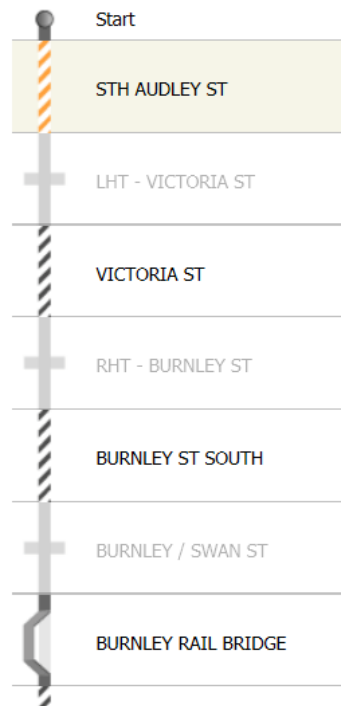
PUBLISH

REPORTING

RESOURCES

## LANE WIDTH

Longer vehicles experience higher amounts of lateral off-tracking, especially with increased speed. There needs to be sufficient lane width to allow a reasonable amount of tracking to occur safely.



Element: **Sth Audley St**

Question 1 ▶

Question 2 ▶

Question 3 ▶

Question 4 ▶

Question 5 ▶

Results ▼

The PBS Classification for Lane Width in this route element is:

1 2 **3B** 4

< Previous

ROUTE CLASSIFICATION

1 **2A** 3 4

ROUTE RELIABILITY

Assessment ▼

Status Site inspection needed ▼

Notes

**B** *I* U |  

Pedestrian considerations good

On street parking may be an issue

Measure lane width in Audley St 20 m north of intersection

Save

Item Help ▼

Lane and shoulder widths are considered to ensure there is sufficient carriageway for a heavy vehicle to travel safely along the road at the speed limit. Lateral movement of a heavy vehicle as it travels is known as off-tracking and is generally greater in magnitude as the speed and length of a vehicle increases.

Minor width deficiencies alone should not



Conduct a swept path  
measurement of intersection  
turn.



## Audley St - Victoria St intersection

Note Intersection set-back to allow for turning manoeuvre  
Conduct swept path analysis for new vehicle type

# System Outputs

OVERVIEW

SETUP

PBS EXPERT

Lane Width

Stopping Distance

Signal Timing

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Road Grade

Vertical Clearance

Bridges & Overpasses

Swept Path

Railway Crossings

Other

PUBLISH

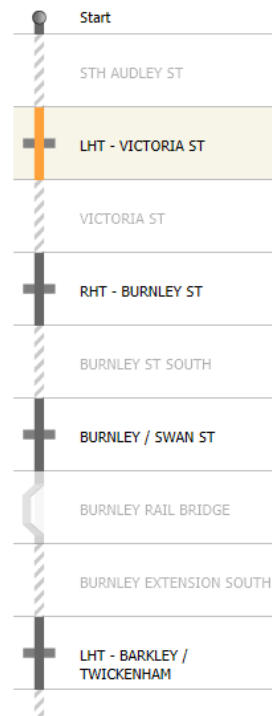
REPORTING

RESOURCES

HOME > MY ROUTES > PBS EXPERT > SWEEP PATH

## SWEEP PATH

Longer vehicles sweep through a larger area as the vehicle turns, with the trailers tracking inwards. This means a long vehicle requires more room to manoeuvre and some infrastructure cannot accommodate this.



Element: LHT - Victoria St

Question 1 ▶

Question 2 ▶

Question 3 ▼

Please select the highest Level vehicles that have safely made the manoeuvre to date since latest modifications to relevant intersection infrastructure.

- ☐ Level 1
- ☒ Level 2A

How did you ascertain the answer to the question above?

Real world result ▼

- ☐ Level 2B
- ☐ Level 3A
- ☐ Level 3B
- ☐ Level 4A
- ☐ Level 4B

Results ▼

ROUTE CLASSIFICATION

1 2A 3 4

ROUTE RELIABILITY

Assessment ▼

Status Site inspection needed ▼

Notes

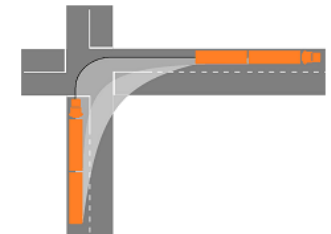
**B** *I* U | 🔗 🔄

Swept path assessment scheduled for 17 August 2011.  
Used real world results as temporary assessment - L2A

Save

Item Help ▼

Determination of swept path for a vehicle is a critical assessment that should be undertaken by a qualified engineer.





## **Burnley St – Bike lane**

Presence of a bike lane on route

Lane width may be an issue  
here

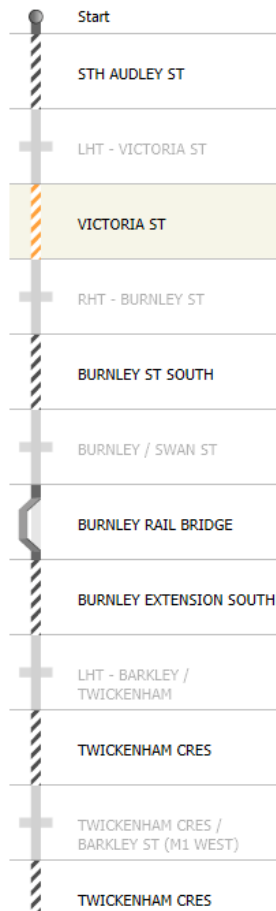
# System Outputs

| Lane Width           |
|----------------------|
| Stopping Distance    |
| Signal Timing        |
| Stacking Distance    |
| Road Grade           |
| Vertical Clearance   |
| Bridges & Overpasses |
| Swept Path           |
| Railway Crossings    |
| Other                |

PUBLISH

REPORTING

RESOURCES



Element: **Victoria St**

Question 1 ▶

Question 2 ▶

Question 3 ▶

Question 4 ▶

Question 5 ▼

Please select the narrowest width of the lane from the following ranges, and the source of the data.

- ☐ Less than 3.3m
- ☒ 3.3m to 3.5m

How did you ascertain the answer to the question above?

Expert judgement ▼

- ☐ 3.5m to 3.7m
- ☐ Greater than 3.7m
- ☐ The lanes are wide enough for any vehicle.

**i** Where lane width varies, use the narrowest point of the road section.

Results ▼

The PBS Classification for Lane Width in this route element is:

1 **2B** 3 4

Assessment ▼

Status Site inspection needed ▼

Notes

**B** *I* U |

Check lanewidth/bike lane opposite sidestreet A.

Expert judgement used

Save

Item Help ▼

Lane and shoulder widths are considered to ensure there is sufficient carriageway for a heavy vehicle to travel safely along the road at the speed limit. Lateral movement of a heavy vehicle as it travels is known as off-tracking and is generally greater in magnitude as the speed and length of a vehicle increases.

Minor width deficiencies alone should not necessarily preclude a road segment or route from a road classification level, particularly if the deficiencies only apply to a small proportion of the length. In such cases, local knowledge of the road, traffic volumes, and its characteristics should be used and a risk assessment undertaken to consider all factors that would contribute to the safe operation of Scheme vehicles.



## **Burnley St Southbound**

Presence of a school crossing on route – Site inspection required

- Amenity issue?
- Safety team assessment

Well signed, not directly adjacent to school.

# System Outputs

## SETUP

### PBS EXPERT

Lane Width

Stopping Distance

Signal Timing

Stacking Distance

Road Grade

Vertical Clearance

Bridges & Overpasses

Swept Path

Railway Crossings

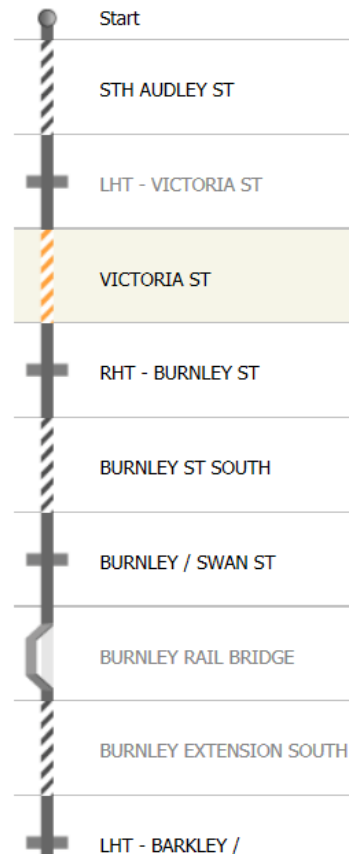
Other

## PUBLISH

## REPORTING

## RESOURCES

## OTHER



Element: **Victoria St**

Question 1 ▶

Question 2 ▶

Question 3 ▼

Please select the most restrictive level out of all the other items described.

- ☐ Level 1
- ☒ Level 2A
- ☐ Level 2B
- ☐ Level 3A
- ☐ Level 3B
- ☐ Level 4A
- ☐ Level 4B

Results ▼

The PBS Classification for Other in this route element is:

1 2A 3 4

1 2A 3 4

ROUTE RELIABILITY

Assessment ▼

Status Site inspection needed ▼

Notes

**B** *I* U |

Crossing to be assessed

Conduct volume analysis of cyclists using Victoria St prior to Safety team meeting.

2A temporary assessment

Save

Item Help ▼

Use this section to identify "other" issues for a particular element that may limit access.

# System Outputs

## OVERVIEW

SETUP

PBS EXPERT

PUBLISH

REPORTING

RESOURCES

HOME > MY ROUTES > OVERVIEW

## OVERVIEW

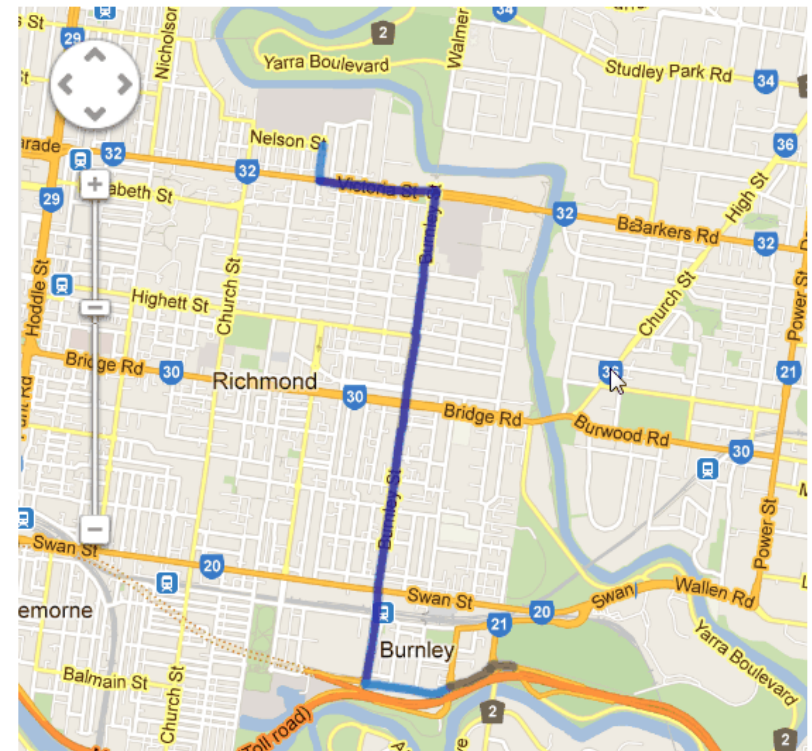
### ROUTE DETAILS: Depot to M1

|             |                                                         |
|-------------|---------------------------------------------------------|
| Route ID    | #1: 0001                                                |
| Route Name  | Depot to M1                                             |
| Description | Request to operate B Doubles along Burnley St to the M1 |
| Length      | 3.7km                                                   |

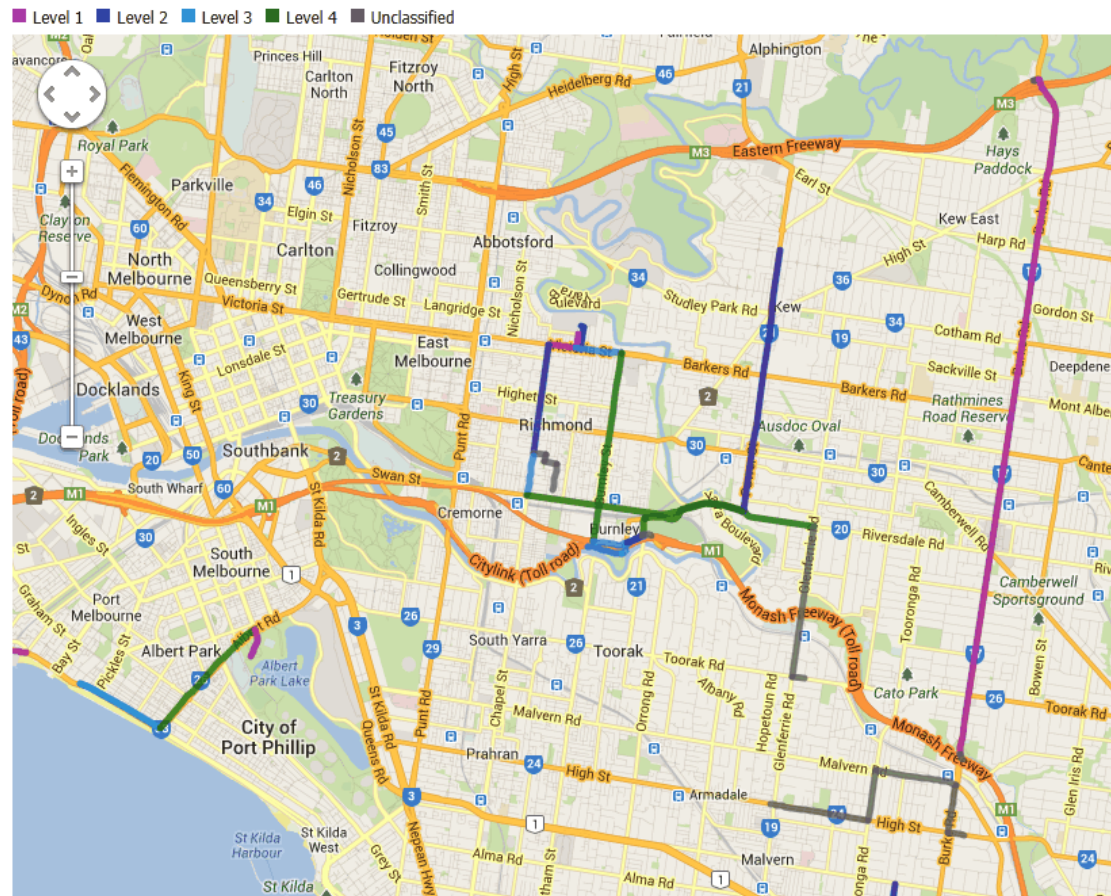
### CLASSIFICATION

|                          |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| Route Classification     | 1 2A 3 4                                                                    |
| Reliability              |                                                                             |
| User Classification      | 1 2 3 4                                                                     |
| User Notes               | Route classified as Level 1 pending results of engineering site inspections |
| Published Classification |                                                                             |
| Last Published           | N/A                                                                         |

■ Level 1 ■ Level 2 ■ Level 3 ■ Level 4 ■ Unclassified

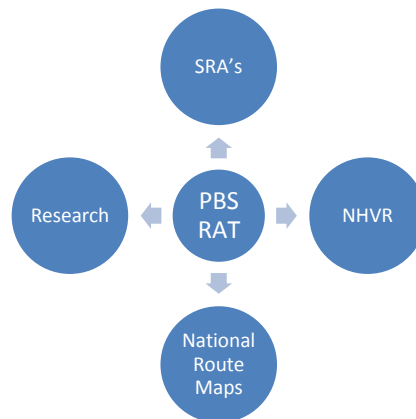


# Network summary



# System Outputs

- PBS Classification Score (PBS level 1-4 a/b)
- Detailed classification reports, including pinch point(s)
- Consolidated “published” route reporting area
- Mapping outputs - route and location
- Data export linkages through road ID’s etc
- Additional linkages to be considered in national context



# Next steps

- NHVR funded improvements to be completed and June 2014
- Training and education program to be rolled out nationally August 2014
- FS 1891 – Draft report delivered end June 2014
- Additional topics include
  - Bridges
  - Non PBS Vehicles
  - HML
  - Road safety
  - Pavements
  - OSOM
  - Swept path
  - Amenity

# Thank you

