

Unit 1: Introduction to Traffic Management

Module 1-1

# Introduction to the Learning Modules and Objectives and Principles of Traffic Management



Traffic Management Training Module



# Today's Presenter

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# Outline of this Module

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- Introduction to the Learning Modules
- Objectives and Principles of Traffic Management
  - Definition of Traffic Management
  - Elements of the Traffic System
  - Traffic Management Objectives and Principles
  - Improving Levels of Service
  - Triple Bottom Line Objectives and Competing Objectives
  - Safe Mobility and the Safe System Approach
  - Functional Road Hierarchy
  - Movement and Place

See GTM Part 1 Section 3,  
Austroads (2020a)

AND

See Traffic Management 101  
Online Series – Week 1,  
ARRB (2016)



# Introduction to the Learning Modules



- Series of 22 pre-recorded webinars covering a broad range of topics in traffic management.
- Modules presented within 8 units of traffic management:
  1. Introduction to Traffic Management
  2. Traffic Behaviour and Traffic Theory Fundamentals
  3. Transport Study, Traffic Data and Analysis Methods
  4. Transport Operations Control Strategies and Systems
  5. Network Operations Planning
  6. Network Performance Monitoring and Management
  7. Safe System Approach to Traffic Management
  8. Intelligent Transport Systems



Series developed by the  
Australian Road Research Board (ARRB)  
and the University of Sydney



# Introduction to the Learning Modules

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- Primarily targeted towards practitioners new to traffic management who are self-motivated to learn and upskill.
- Overview of topics at the fundamental level, with references to other sources where more detailed information can be found.
- Designed for flexible individual learning, they allow users to fill their knowledge gaps as needed.

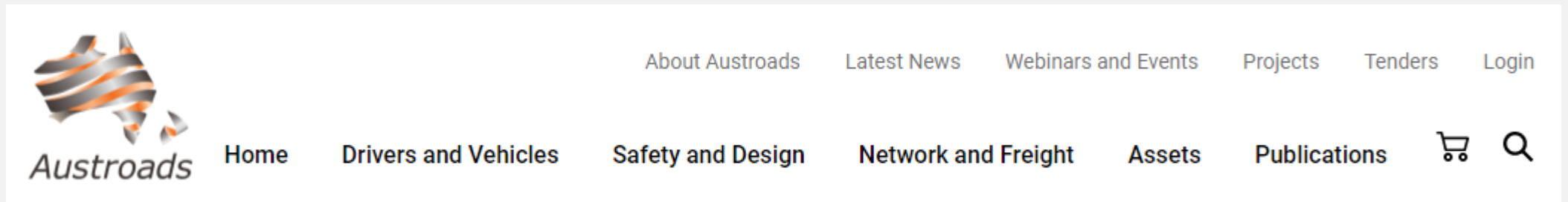
Call out boxes like this provide references for more detailed information

# Introduction to the Learning Modules



- All modules are easily accessible from the Austroads website, as are supplementary learning materials.

[austroads.com.au](http://austroads.com.au)



Source: Austroads 2020c

- Quiz questions and tutorial exercises are not assessed, and no certification is provided for completing the learning modules.



# Introduction to the Learning Modules

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- The learning module webinars vary in their run-time durations with the average run-time approximately 14 minutes.
- All learning module webinars include multiple choice quiz questions to help reinforce learning.
- Some of the learning modules also include tutorials. These tutorial questions and solutions sheets can also be downloaded from the Austroads website.

## Module 3-2 tutorial

Questions



Traffic analysis concepts

## Module 3-2 tutorial

Solutions



Traffic analysis concepts



# Objectives and Principles of Traffic Management



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# Traffic Management

## Definition

- The **organisation**, **arrangement**, **guidance** and **control** of traffic (moving and stationary) by influencing human behaviour through the use of traffic control devices.
- ‘Traffic’ includes all **vehicles** that use the road network (cars, trucks, buses, trams, motorbikes, cyclists, etc.) as well as all **pedestrian** traffic that interacts with the road traffic.



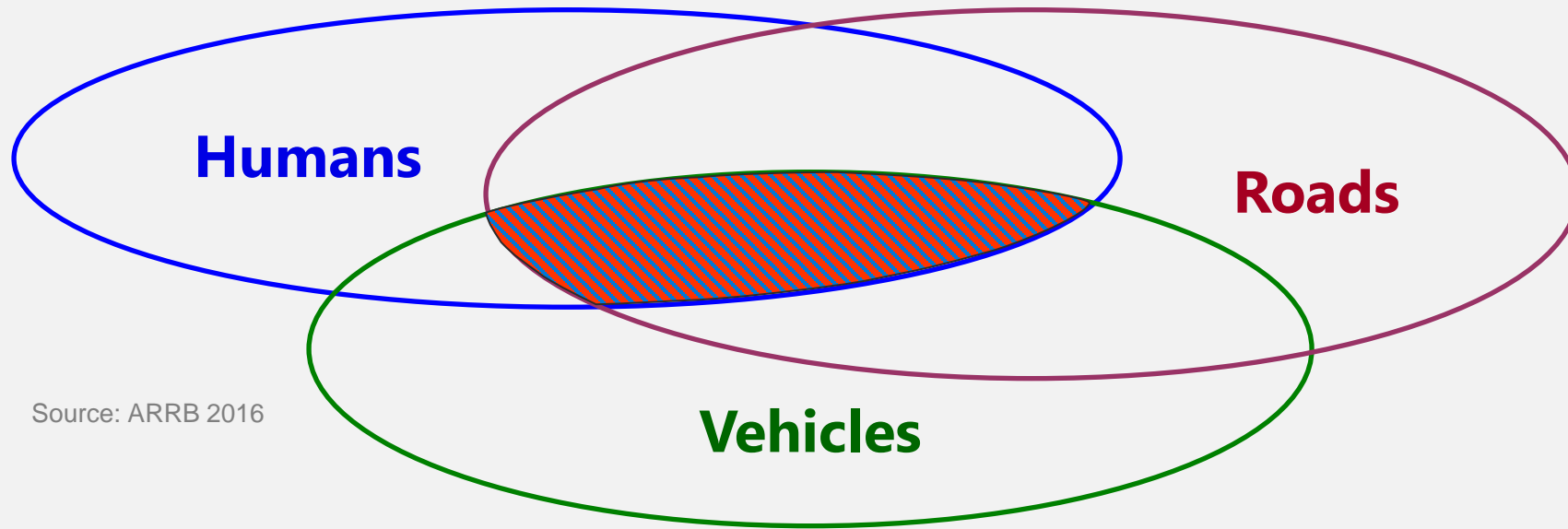
Source: ARRB 2016



Source: ARRB 2016



# Elements of the Traffic System



Source: ARRB 2016

Traffic engineering deals with all three elements, and especially how they interact.

# Traffic Management Objectives and Principles

- The **objectives** of any traffic management strategy are primarily influenced by the **volume**, **composition** and **speed** of the traffic.
- Applying the **principles** requires decisions on where traffic should be **directed**, and where it should be **discouraged**.
- Apply **treatments** to achieve the desired **distribution** and **flow** characteristics.
- A **road hierarchy** for the study area defines each road in terms of their **function** and appropriate **traffic levels** to achieve the stated objectives.



Source: ARRB 2016

# Improving Levels of Service

**Broad objective:** facilitate the efficient operation of traffic on roads.

Provide desirable levels of **safety**, **accessibility**, **mobility**, **information**, **amenity** and **environmental quality**.



# Triple Bottom Line Objectives

Traffic management strategies should aim to achieve positive **economic**, **social** and **environmental** outcomes for the wider community.

- **Economic:**
  - Efficient transport of people and goods
  - Reduce travel costs
- **Social:**
  - Maximise road safety
  - Improve local amenity
  - Meet community expectations
- **Environmental:**
  - Manage travel demands
  - Minimise carbon emissions
  - Minimise traffic noise



Source: Austroads 2020b

# Safe Mobility and the Safe System Approach



- **Safe Mobility** is the concept of *mobility within the limits of safe operation*.
- Establish a **safe operating environment first** and then find ways of providing an acceptable level of mobility.
- The **Safe System Approach** demands a holistic approach, with the aim of **no person being killed or seriously injured** on the road network.
- Incorporates all elements of the road system: **safe roads, safe vehicles, safe road use** and **safe speeds**.



For more on the Safe System Approach, refer to Module 7-1

Source: Austroroads 2020a

# Balancing Objectives

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- Balance competing demands
- Holistic approach
- Balance safety and mobility objectives to achieve 'safe mobility'

**Question:** Give an example of where we must balance the objectives of safety and mobility.

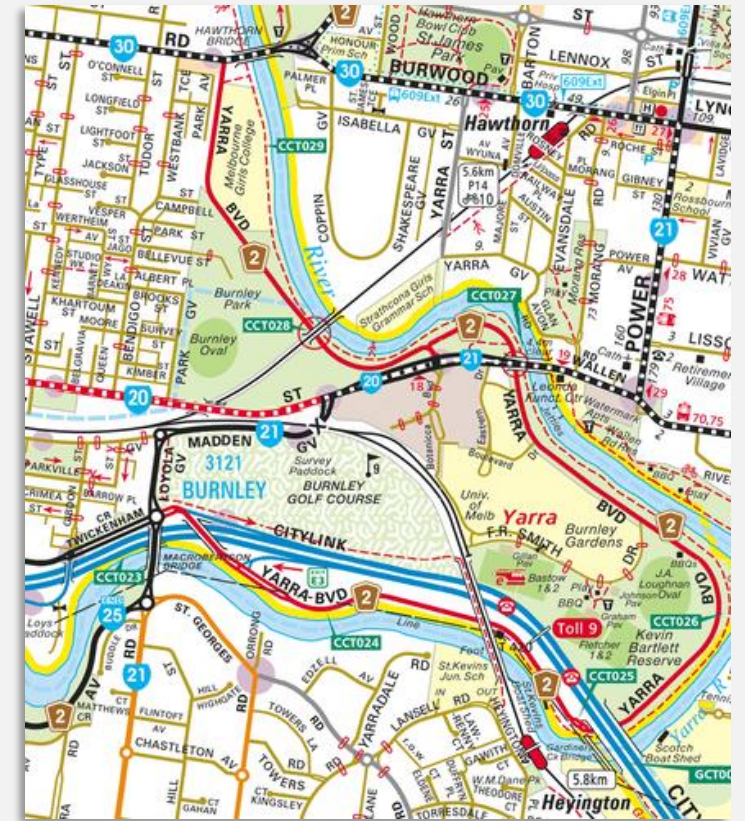
# Functional Road Hierarchy

Two essential **road functions** which must be met:

1. the **mobility function** – providing the means by which people and goods can move from one place to another
2. the **access function** – providing access to properties and land uses adjacent to the road.

Roads **designed and operated** to provide varying degrees of **mobility** and **access** for **general traffic, public transport, cycling and walking.**

**Traffic management** of roads must also be in accordance with their relative **function** in providing **mobility** and **access.**



Source: Melway 2020



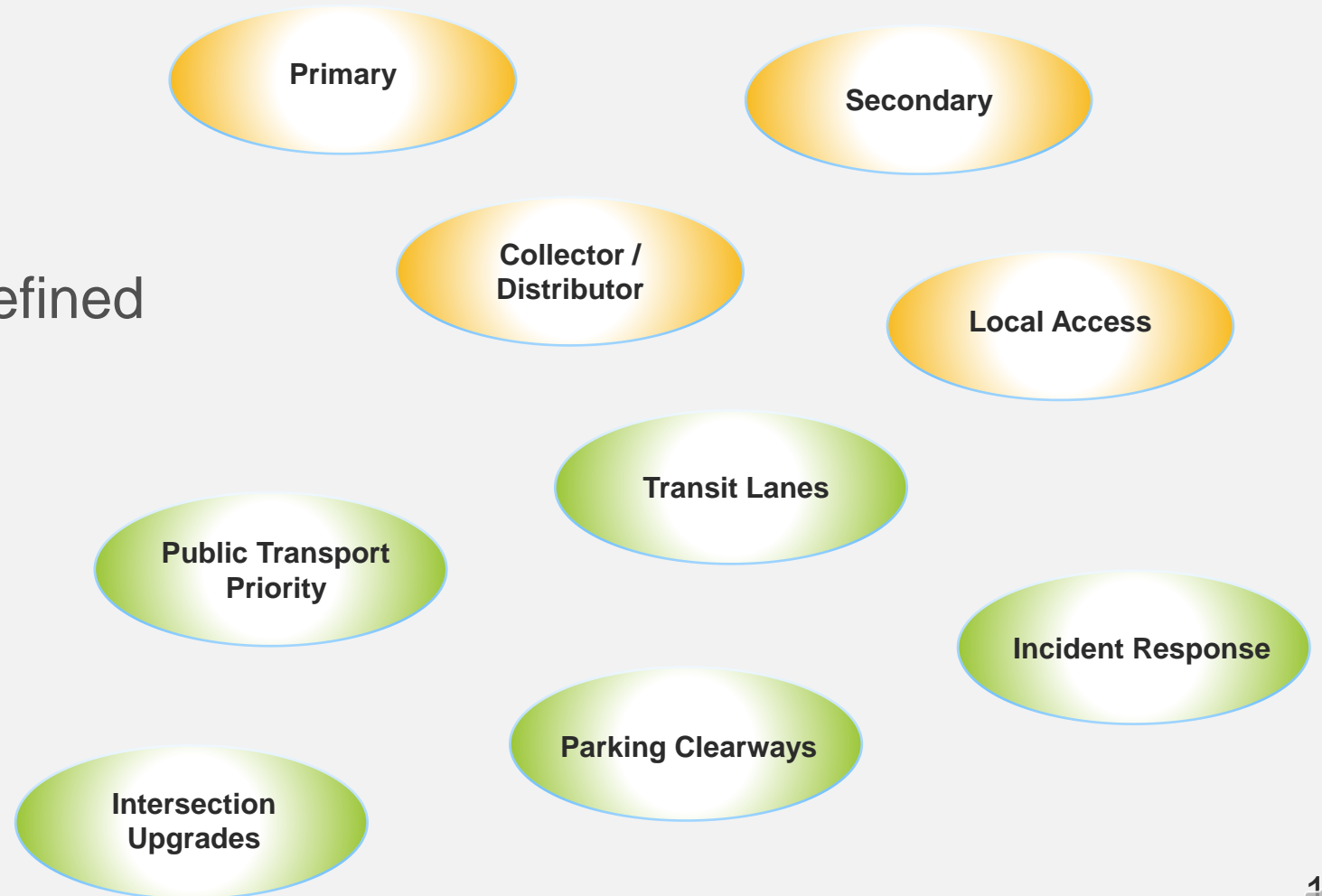
# Effective Traffic Management

- **Road hierarchy**

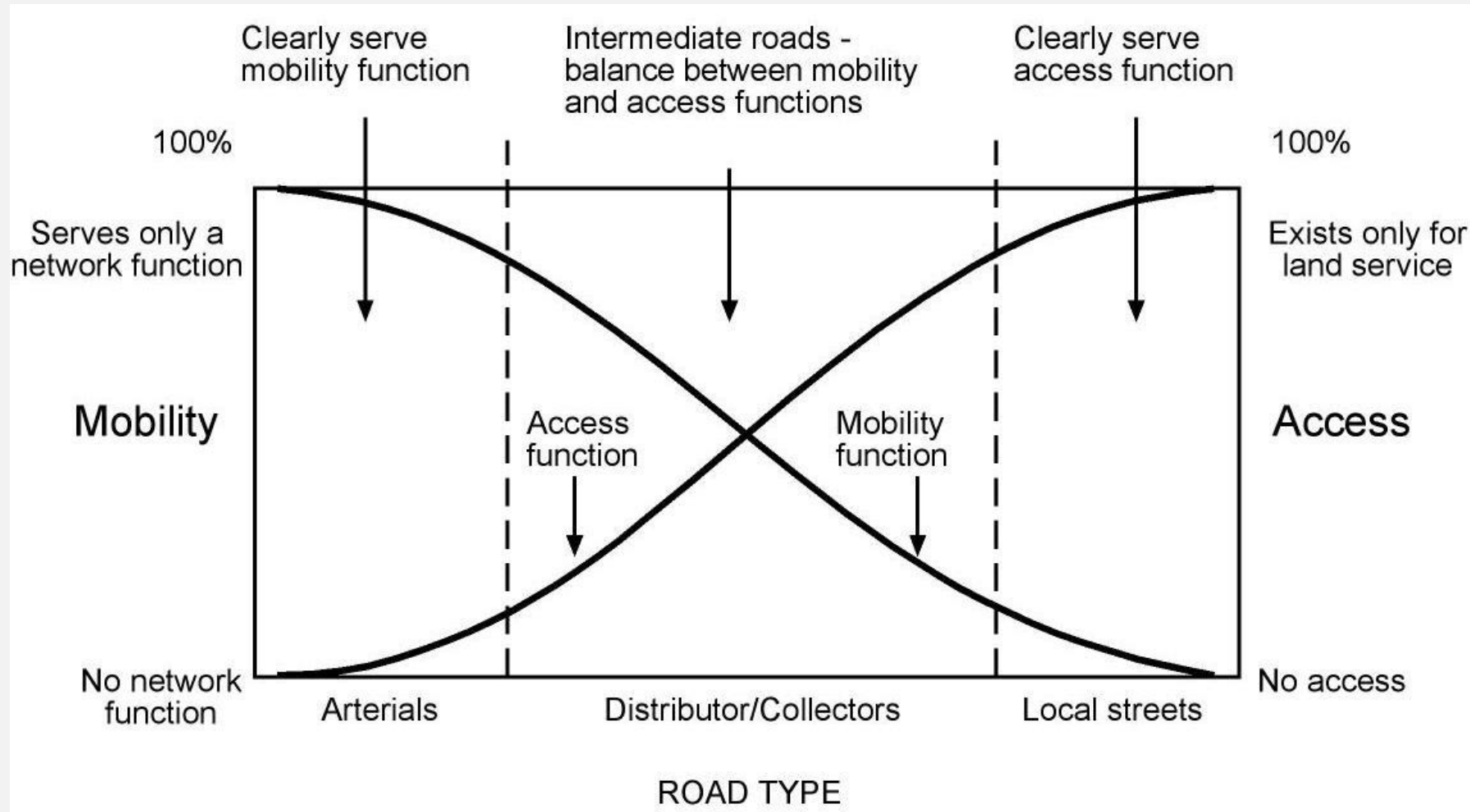
- functional classification
- purpose of each road defined

- **Strategies**

- for the network
- for corridors and roads



# Road Function



# Movement and Place

- **Movement and Place** is a framework for identifying which roads serve what purpose, recognising that some transport facilities are more about the **movement** function, and others about the **place** (land access) function. Streets act as places and serve multiple modes.
- The **movement and place framework** balances the accessibility needs of different types of road users across the network.

For more on Movement and Place, refer to Module 5-4



# Quiz Questions



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# Time to Reflect

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**Q1. The three major elements of a traffic system are:**

- A. Vehicles, Pedestrians, Control Devices
- B. Mobility, Safety, Access
- C. Humans, Vehicles, Roads

**Answer C** is correct!

**Explanation:** Traffic engineering deals with all three elements of **humans**, **vehicles** and **roads** and especially how they interact.



# Time to Reflect

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**Q2. The objectives of any traffic management strategy are influenced primarily by:**

- A. economic, social and environmental outcomes
- B. the volume, composition and speed of the traffic
- C. The need for accessibility, information and amenity

**Answer B** is correct!

**Explanation:** The **volume**, **composition** and **speed** of the traffic determines where it should be directed and from where it should be discouraged within the hierarchical road network to achieve desired distribution and flow characteristics.

# Time to Reflect

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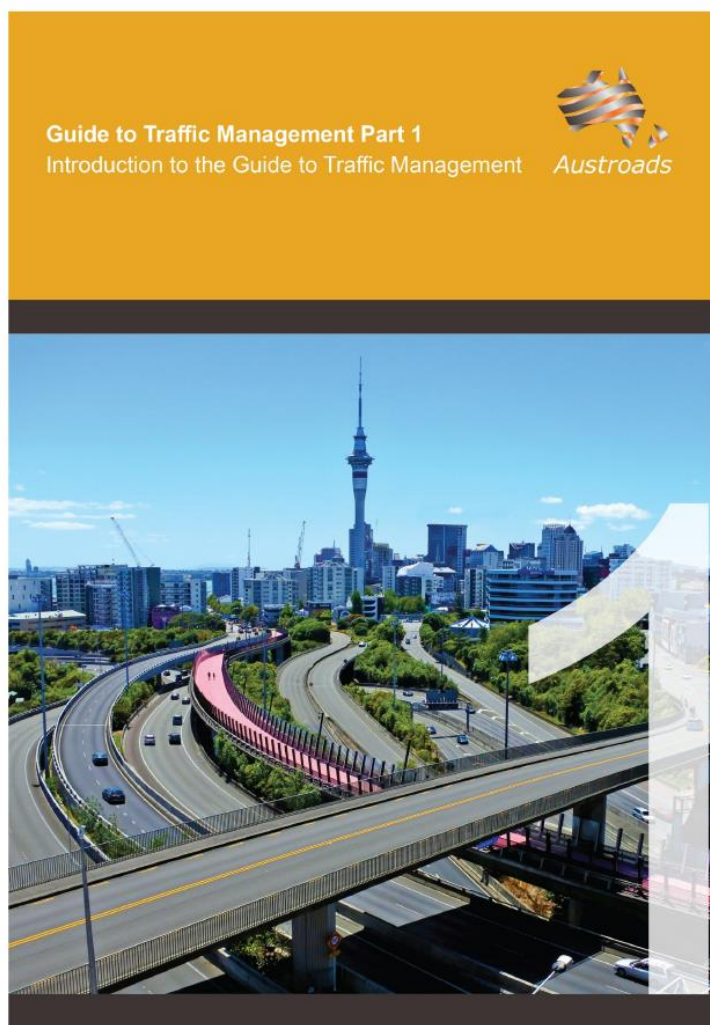


## Q3. Balancing Objectives:

**Question:** Give an example of where we must balance the objectives of safety and mobility.

- **Example:** Adding a bike lane to a road improves **safety** for cyclists. While this may reduce available road space for motor vehicles, it may not necessarily reduce their **mobility**.
- **Holistic approach to achieve Safe Mobility**
  - Safety benefits should be considered greater than any loss of mobility to motor vehicles.
  - Clear separation of bikes from motor vehicles can improve traffic flows
  - Bike lanes can encourage **mode shift** to cycling, thereby reducing motor vehicle congestion and moving people more efficiently as bikes take up less road space.

# References



ARRB (2016), *Traffic Management 101 Online Series – Week 1*, Australian Roads Research Board, Port Melbourne, Vic.

Austroads (2020a), *Guide to Traffic Management Part 1: Introduction to The Guide to Traffic Management*, AGTM01-20, Austroads, Sydney, NSW.

Austroads (2020b), *Guide to Traffic Management Part 5: Link Management*, AGTM05-20, Austroads, Sydney, NSW.

Austroads (2020c), website page, *Webinars and Events*, <https://austroads.com.au/webinars-and-events>, Austroads, Sydney, NSW.

DoT Vic (2019), *Movement and Place in Victoria*, Department of Transport Victoria, Melbourne, VIC.

Melway (2020), Melway online map, <https://online.melway.com.au/melway/>, Melway, Clayton, Vic.



Thank you for participating



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