



Australian Government



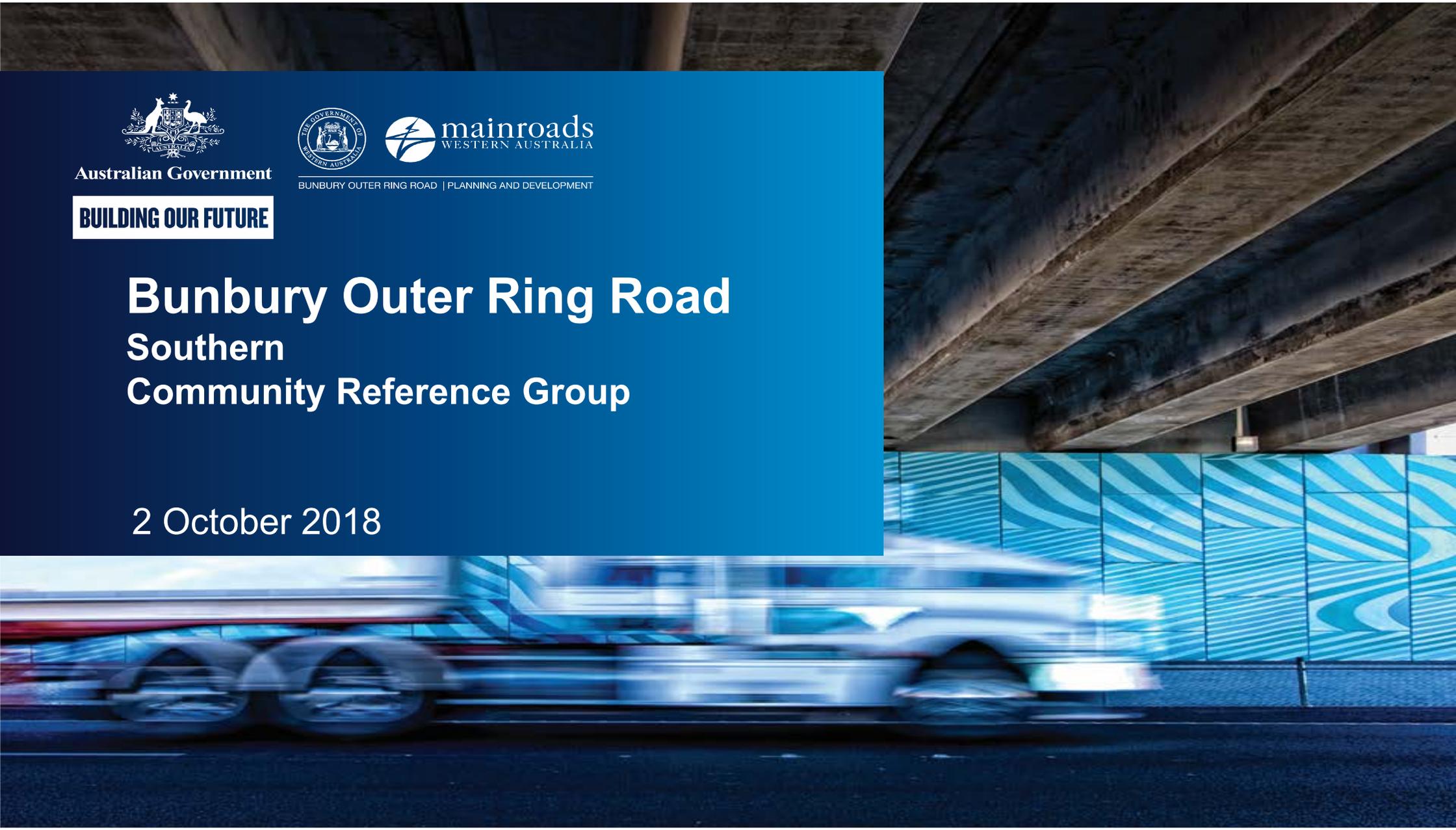
mainroads  
WESTERN AUSTRALIA

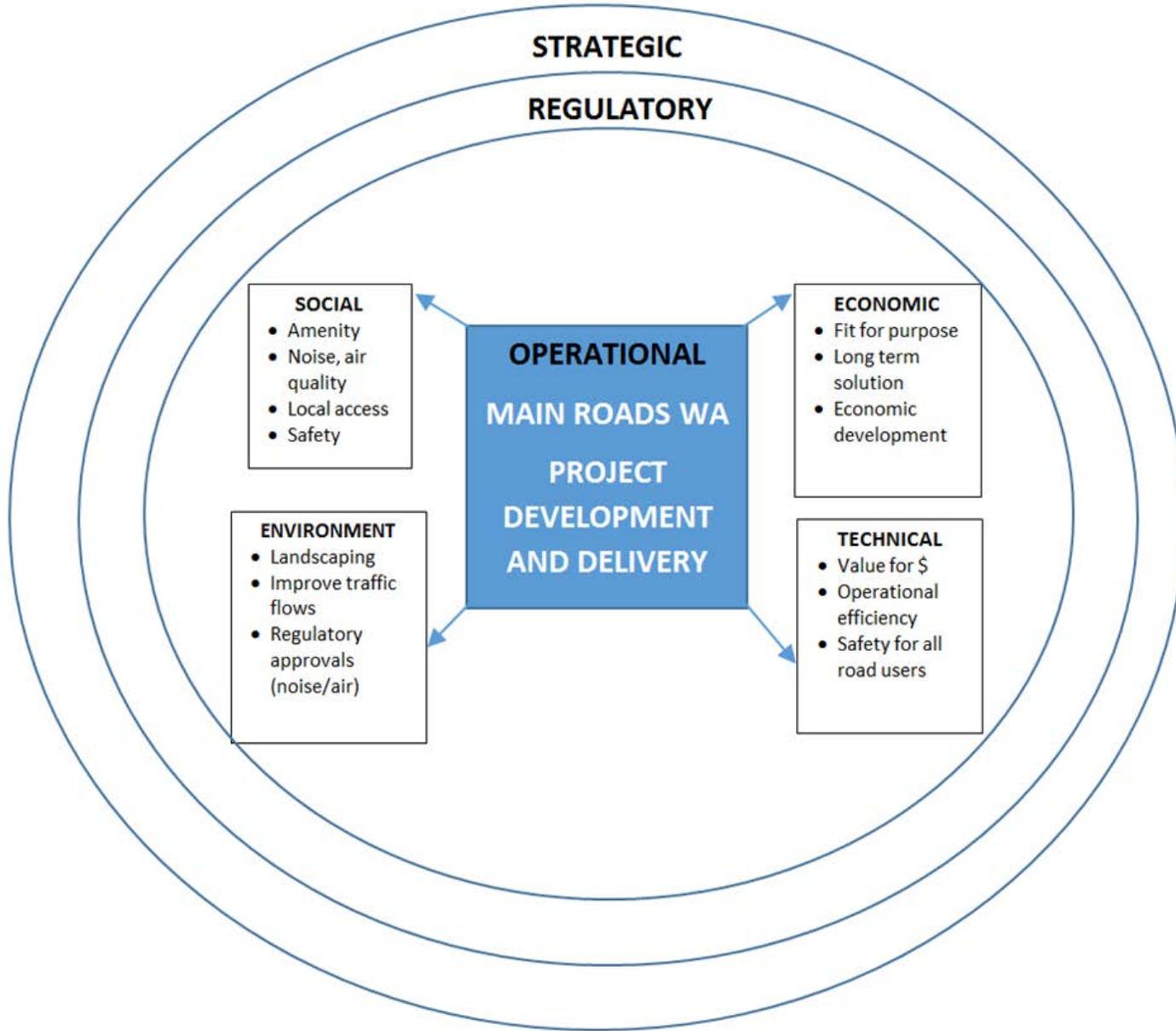
BUNBURY OUTER RING ROAD | PLANNING AND DEVELOPMENT

**BUILDING OUR FUTURE**

# Bunbury Outer Ring Road Southern Community Reference Group

2 October 2018





# Agenda

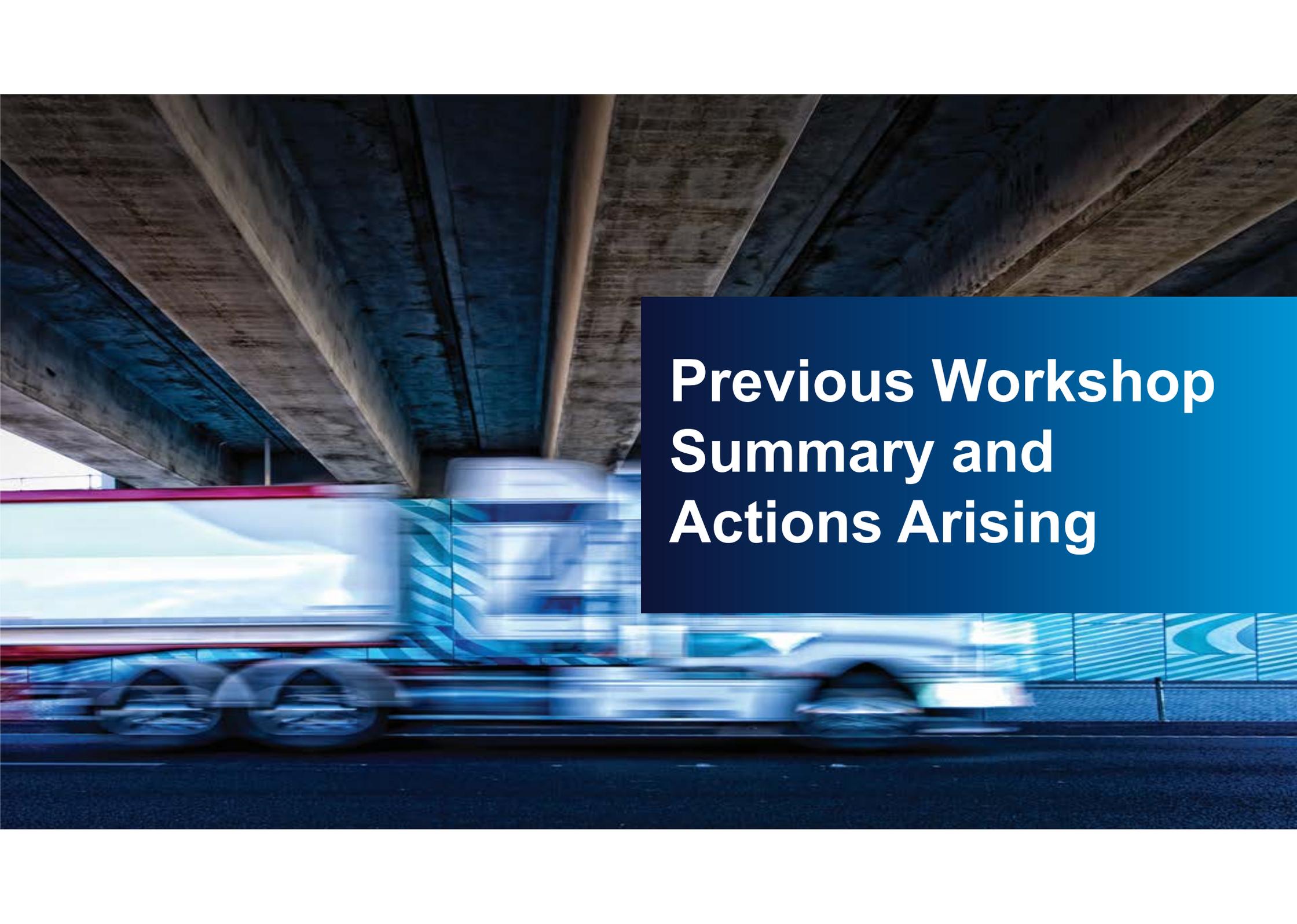
|             |   |                 |
|-------------|---|-----------------|
| <b>5:15</b> | <b>Arrival – light refreshments available from 5:15pm</b> |                 |
| 5:30        | Welcome – meeting purpose and process                     | Linton Pike     |
| 5:40        | Project update – Governance of the CRG                    | Dominic Boyle   |
| 5:50        | Previous Workshop Summary and actions arising             | Linton Pike     |
| 6:10        | Traffic data  | Hannah Ruprecht |
| 6:30        | Alignment definition – BORR south                         | Padraic Murphy  |
| 7:00        | Alignment definition – BORR north                         |                 |
| 7:15        | Noise management – The Process                            |                 |
| 7:25        | Environmental management – The Process                    |                 |
| 7:35        | Environmental mapping                                     |                 |
| 7:50        | Consultation and engagement update                        | Tammy Mitchell  |
| 8:00        | CRG member round table discussion                         | CRG members     |
| <b>8.30</b> | <b>Next steps and close</b>                               |                 |



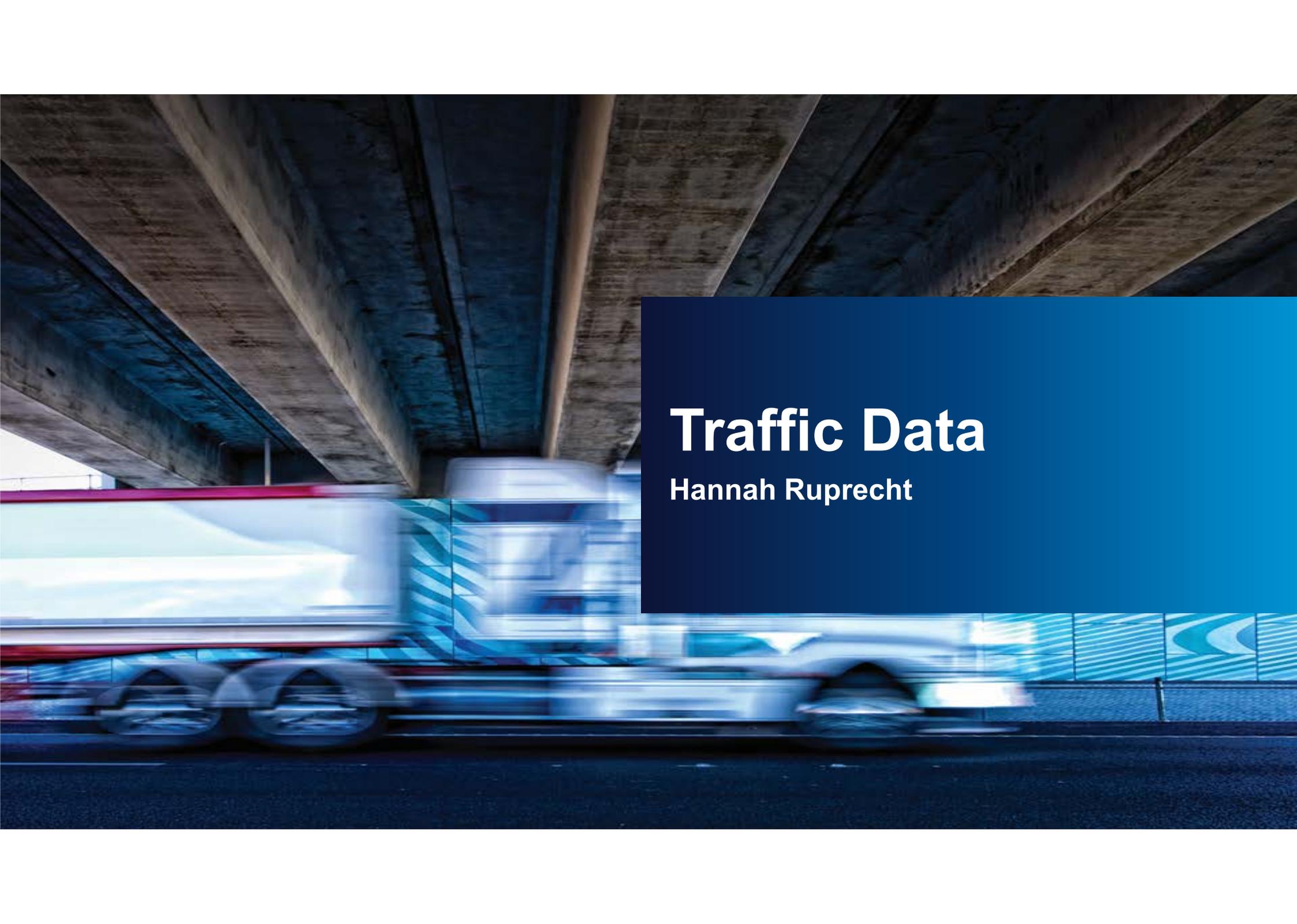
# Project Update

Governance of the CRG

Dominic Boyle

A blurred image of a white truck with blue and red stripes driving under a concrete bridge structure. The truck is moving from left to right, and the background shows the underside of the bridge with concrete beams and supports. The overall scene is dimly lit, suggesting an overcast day or a shaded area.

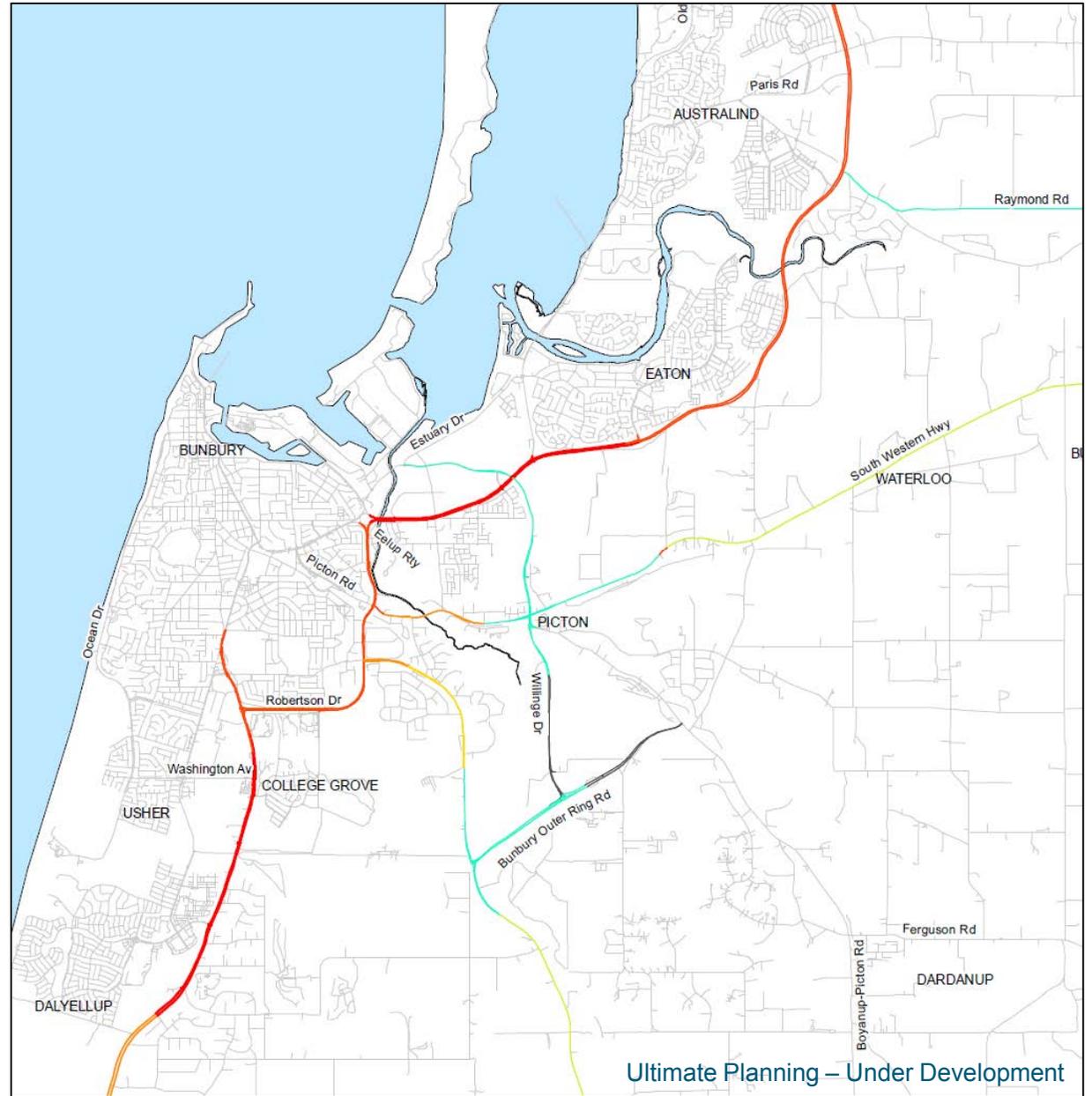
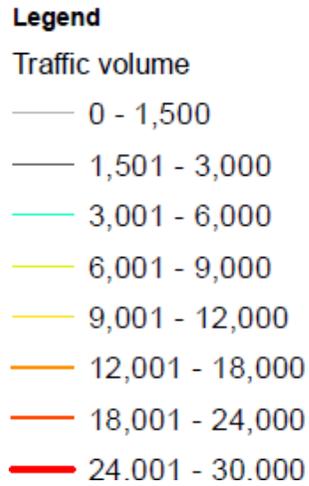
# Previous Workshop Summary and Actions Arising

A photograph of a truck driving under a concrete bridge, captured with a long exposure to create a motion blur effect. The truck is white with blue and red accents. The bridge's concrete structure is visible above. A dark blue semi-transparent box is overlaid on the right side of the image, containing the title and author's name.

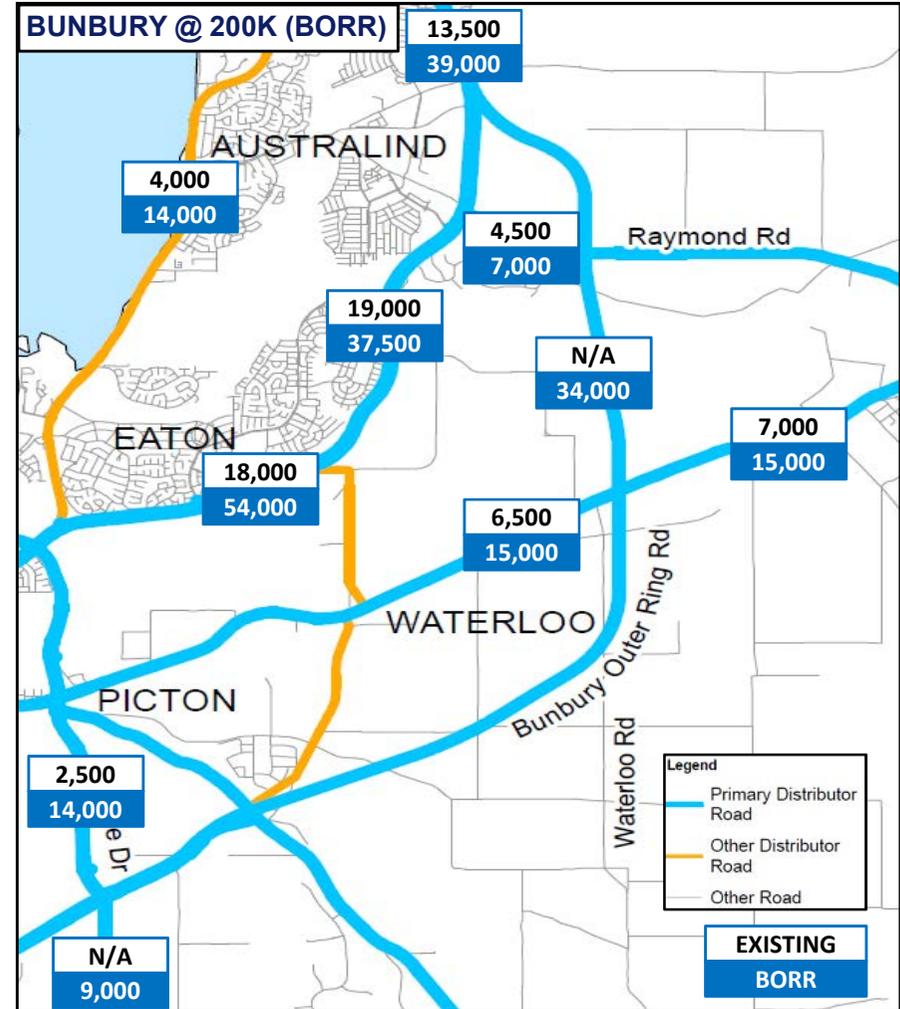
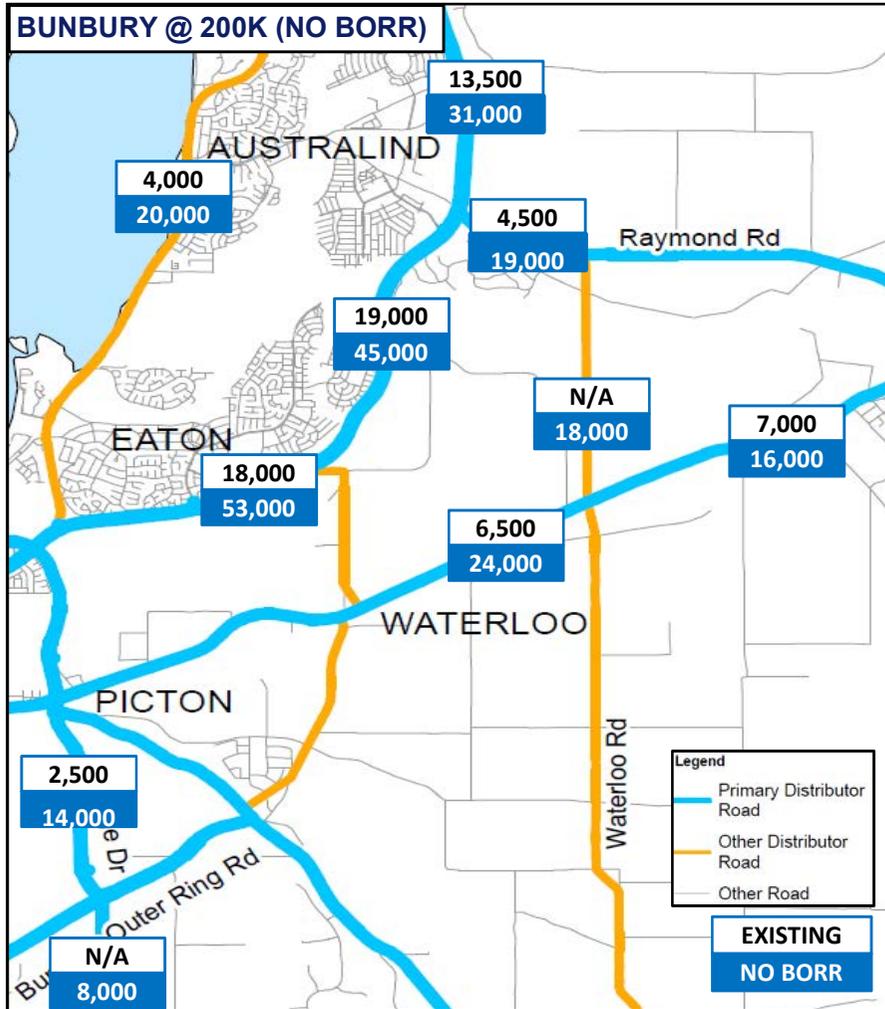
# Traffic Data

Hannah Ruprecht

# Existing Traffic Volumes

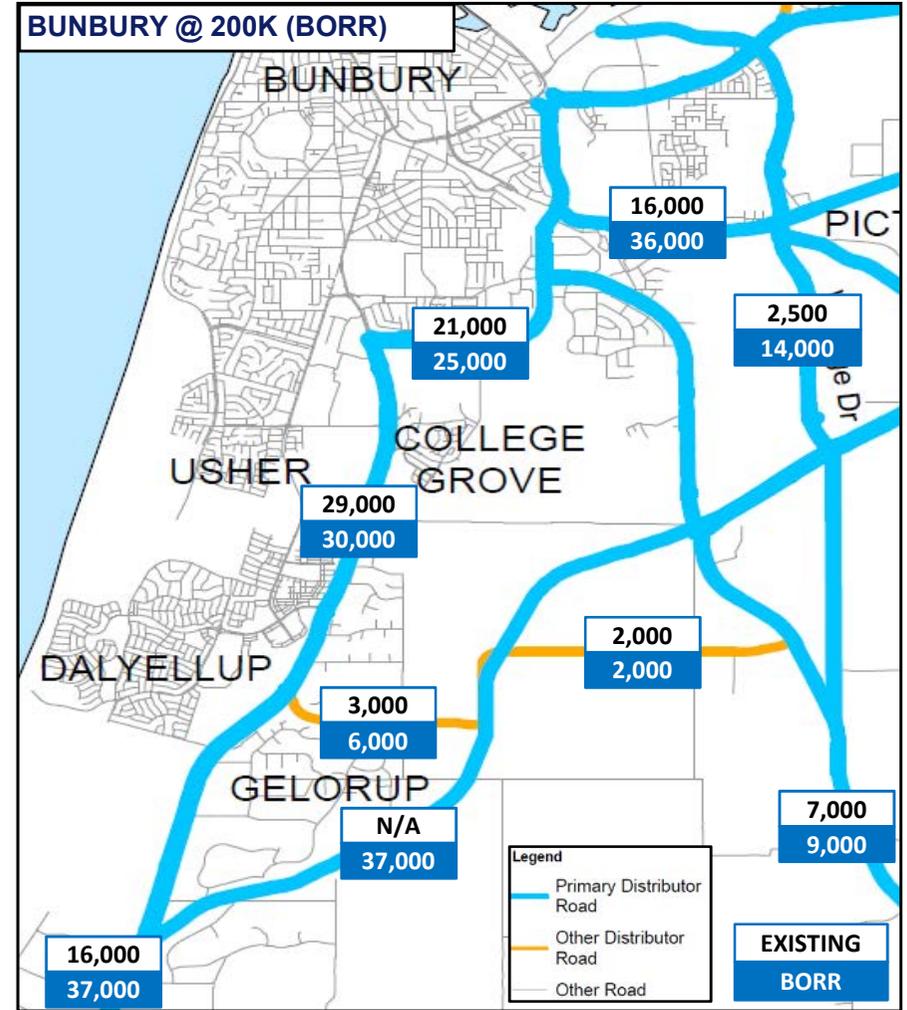
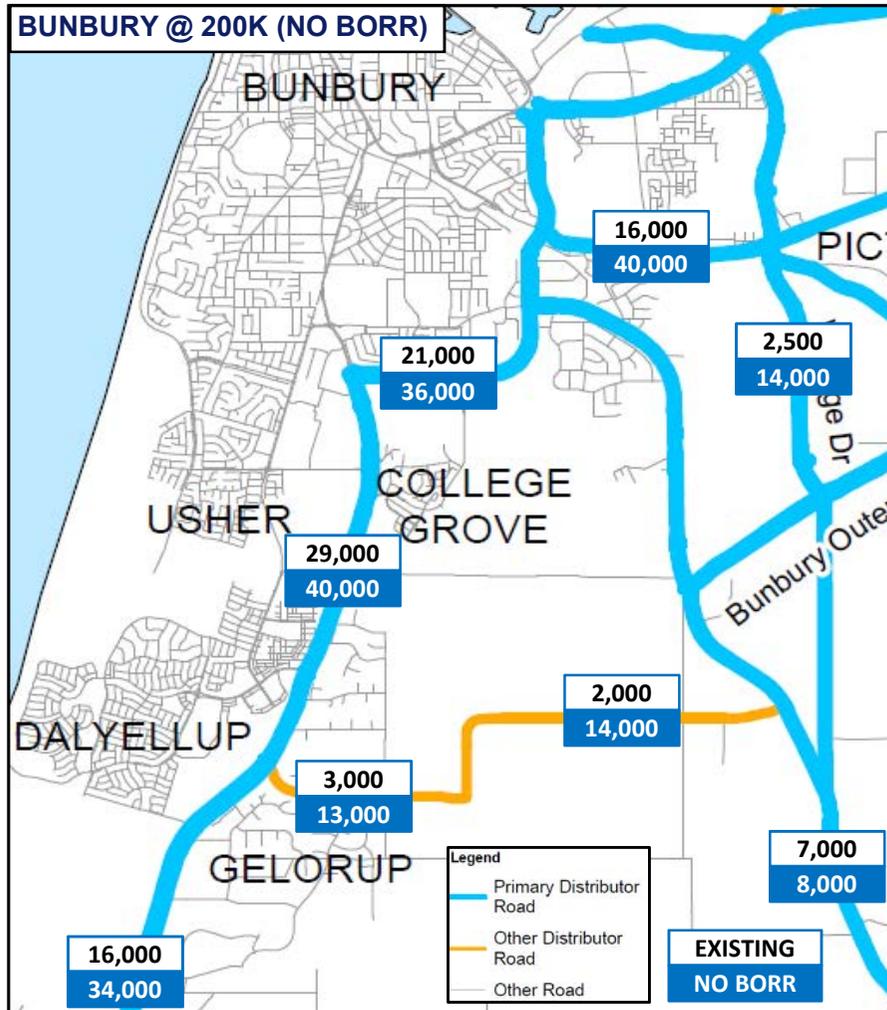


# Approximate daily traffic Volumes - Bunbury regional population 200,000



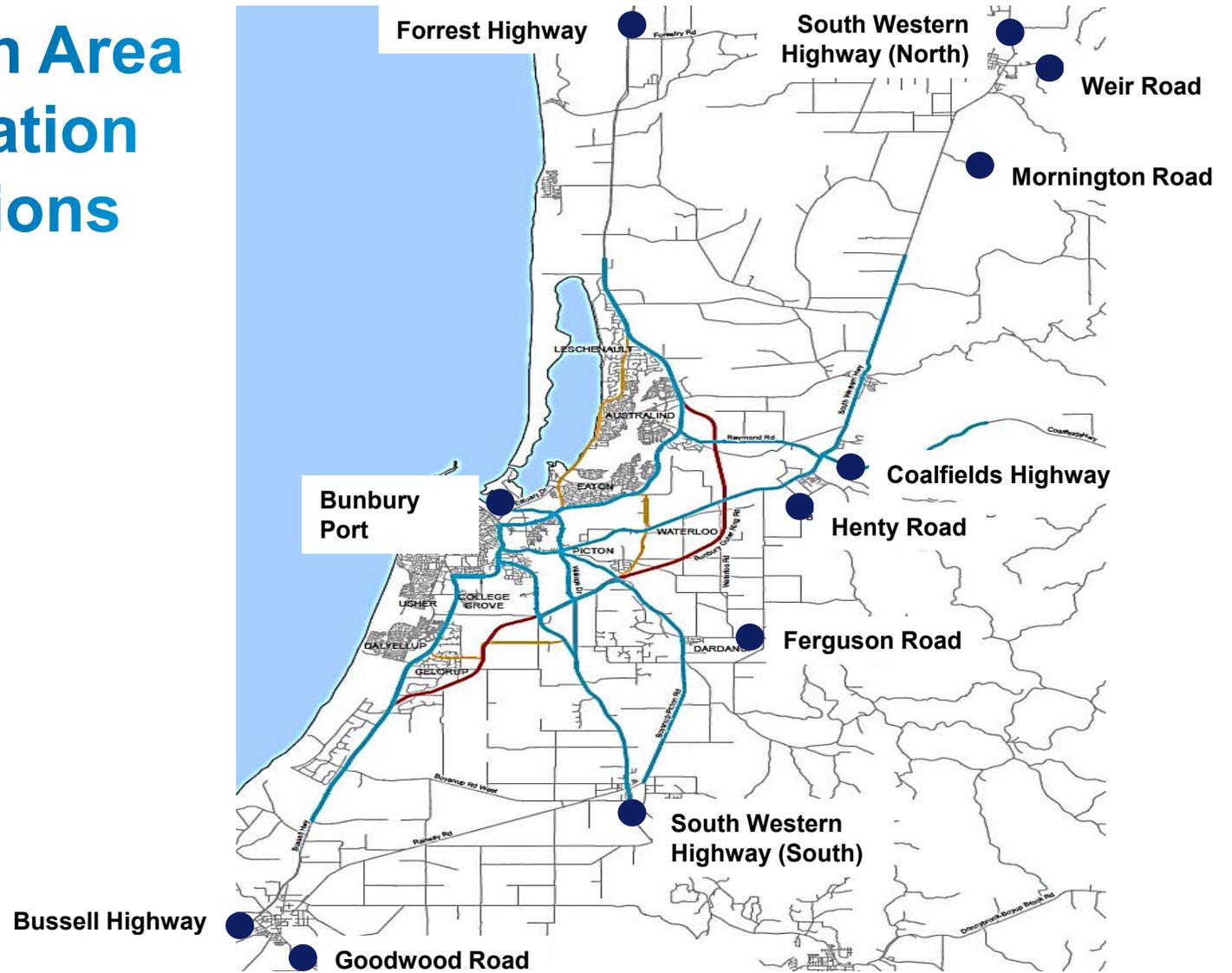
Ultimate Planning – Under Development

# Approximate daily traffic Volumes - Bunbury regional population 200,000



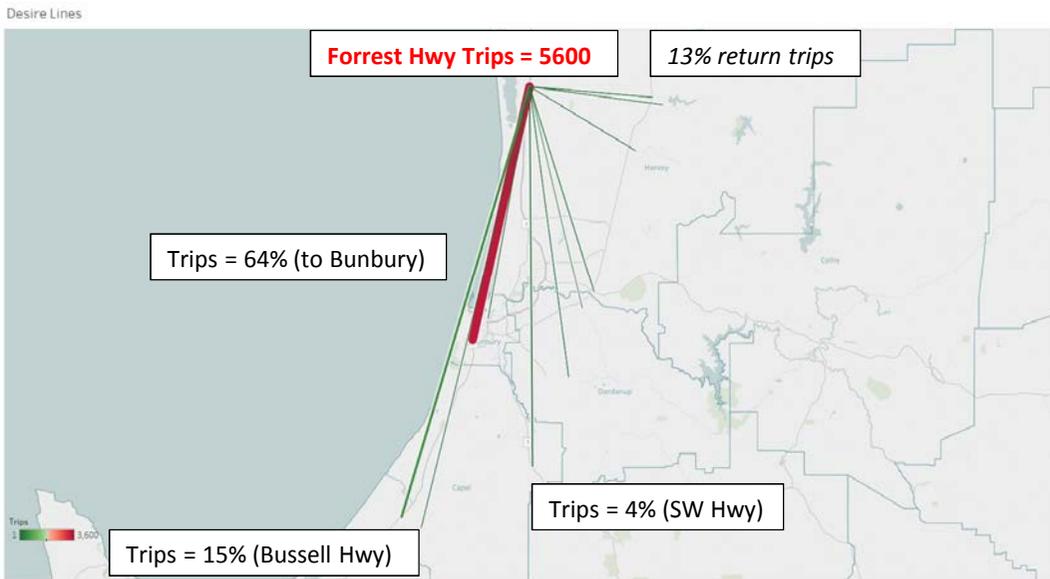
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# Network Operation Area and Origin/Destination (OD) Survey locations

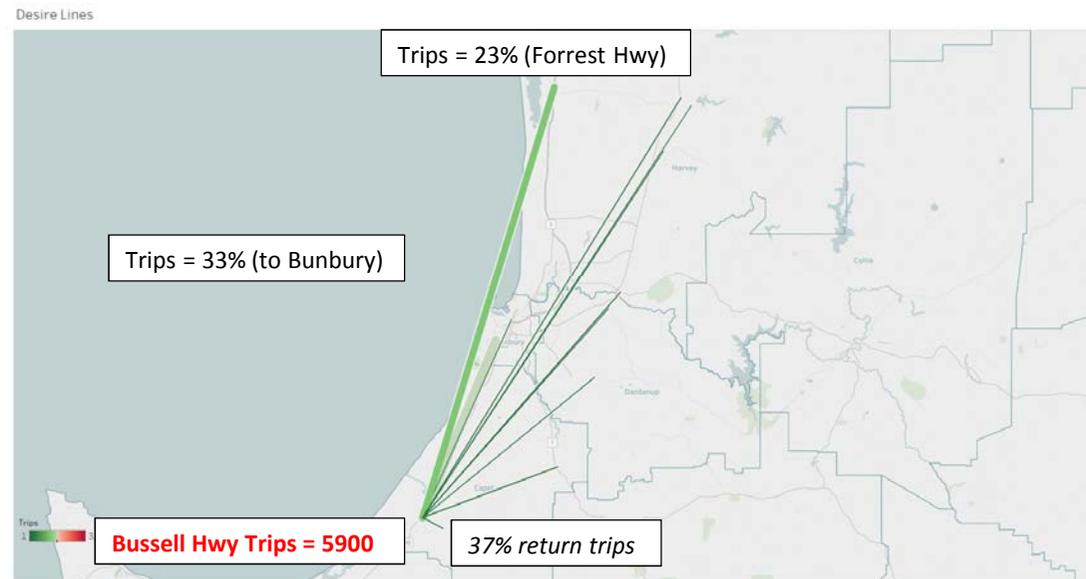


# O-D Survey Results (Thursday)

Bunbury Origin-Destination Survey



Bunbury Origin-Destination Survey

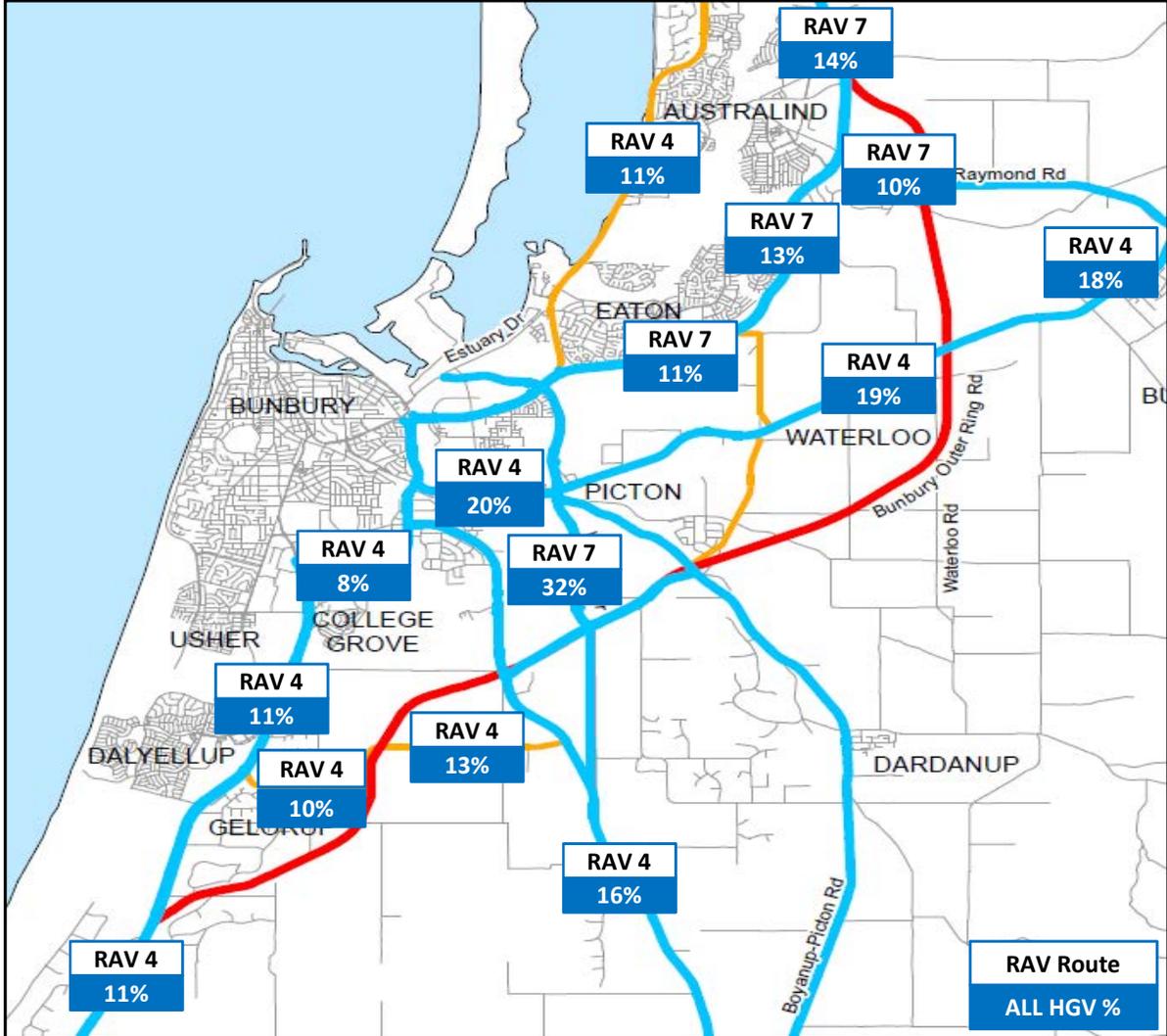


# Heavy Vehicle Classes

## Heavy Vehicle Services

| VEHICLE DESCRIPTION AND CONFIGURATION CHART (RAV) – PRIME MOVER, TRAILER COMBINATIONS EXAMPLES |  |   |  |                        |              |                        | RAV Network |
|--|--|---|--|------------------------|--------------|------------------------|-------------|
| Category   | Vehicle Description and Configuration                                      | Example of Axle Groups                    | Example of Axle Group with an Optional Axle                                | Max Permitted Mass (T) | Length (m)   | Max Permitted Mass (T) | RAV Network |
| Category 1   | (A) PRIME MOVER, SEMI TRAILER TOWING A PIG TRAILER<br>                     | (C) SHORT B-DOUBLE<br>                    | (D) TWINSTEER PRIME MOVER TOWING SEMI TRAILER<br>                          | (A)                    | ≤20          | 50                     | Network 1   |
| Category 2   | (B) PRIME MOVER TOWING AN OVERHEIGHT SEMI TRAILER<br>                      | (C) B-DOUBLE<br>                          | (D) SHORT B TRIPLE<br>   | (A)                    | ≤19          | 42.5                   | Network 2   |
|  | (A) PRIME MOVER, SEMI TRAILER TOWING A PIG TRAILER<br>                     | (B) PRIME MOVER TOWING SEMI TRAILER<br>   | (E) CAR CARRIER SEMI TRAILER<br>   | (A)                    | ≤20          | 50                     |             |
| Category 3   | (A) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER<br>                     | (A)                                       | (A)  | (A)                    | ≤19          | 47.5                   | Network 3   |
|  | (A) PRIME MOVER, SEMI TRAILER TOWING 6 AXLE DOG TRAILER<br>                | (A)                                       | (A)  | (A)                    | ≤27.5        | 65.5                   |             |
| Category 4   | (A) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER<br>                     | (A)                                       | (A)  | (A)                    | ≤27.5        | 84                     | Network 4   |
|  | (B) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER AND CONVERTER DOLLY<br> | (A)                                       | (A)  | (A)                    | ≤27.5        | 87.5                   |             |
| Category 5   | (A) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER<br>                     | (C) B-DOUBLE TOWING A CONVERTER DOLLY<br> | (D) B-TRIPLE<br>   | (A)                    | >27.5, ≤36.5 | 84                     | Network 5   |
|  | (B) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER AND CONVERTER DOLLY<br> | (A)                                       | (A)  | (A)                    | >27.5, ≤36.5 | 84+d                   |             |
| Category 6   | (A) PRIME MOVER, SEMI TRAILER TOWING 6 AXLE DOG TRAILER<br>                | (B) B-TRIPLE<br>                          | (C) PRIME MOVER SEMI TRAILER TOWING A 6 AXLE TRAILER & CONVERTER DOLLY<br> | (A)                    | >27.5, ≤36.5 | 87.5                   | Network 6   |
|  | (B) PRIME MOVER, SEMI TRAILER TOWING 6 AXLE DOG TRAILER<br>                | (A)                                       | (A)  | (A)                    | >27.5, ≤36.5 | 87.5                   |             |
| Category 7   | (A) PRIME MOVER, TOWING SEMI TRAILER AND B DOUBLE<br>                      | (B) B-DOUBLE TOWING A DOG TRAILER<br>     | (A)  | (A)                    | >27.5, ≤36.5 | 107.5                  | Network 7   |
|  | (B) PRIME MOVER, TOWING SEMI TRAILER AND B DOUBLE<br>                      | (A)                                       | (A)  | (A)                    | >27.5, ≤36.5 | 107.5                  |             |

# Percentage Heavy Vehicles



The Restricted Access Vehicle (RAV) route shows the highest class of vehicle that is permitted on the road.

The HGV % represents the percentage of all heavy goods vehicle from single unit trucks / buses up to the largest RAV

## Gelorup – Existing Traffic Volumes

| Road Name    | Location            | Source Type | All-Day both directions Volume (vpd) | All-Day Heavy Vehicle % |
|--------------|---------------------|-------------|--------------------------------------|-------------------------|
| Hasties Rd   | West of Jules Rd    | Tube Count  | 2,000                                | 9.7%                    |
| Yalinda Dr   | South of Gelorup Ri | Tube Count  | 302                                  | 8.3%                    |
| Woods Rd     | East of Yalinda Dr  | Tube Count  | 260                                  | 8.1%                    |
| Lillydale Rd | West of Queelup Rd  | Tube Count  | 2,106                                | 13.3%                   |

*Yalinda Dr and Woods Rd counts undertaken in 2016  
Hasties Rd and Lillydale Rd counts undertaken June 2018*

# Gelorup – Existing Traffic Volumes

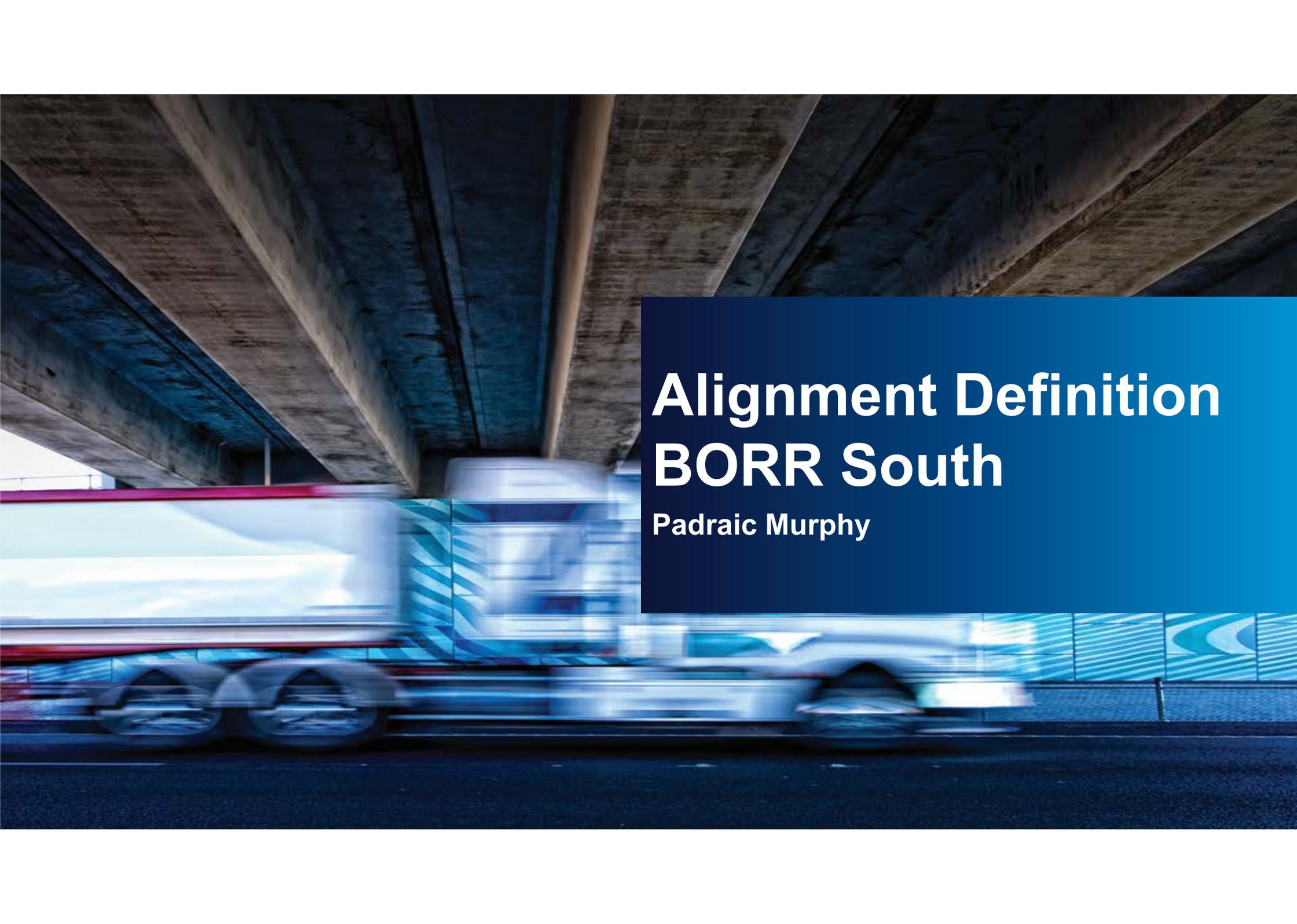
| Road Name  | Location           | Source Type   | AM Peak (7:30 to 8:30) |                 |                        |                 | PM Peak (16:30 to 17:30) |                 |                        |                 |
|------------|--------------------|---------------|------------------------|-----------------|------------------------|-----------------|--------------------------|-----------------|------------------------|-----------------|
|            |                    |               | Eastbound              |                 | Westbound              |                 | Eastbound                |                 | Westbound              |                 |
|            |                    |               | Peak Hour Volume (vph) | Heavy Vehicle % | Peak Hour Volume (vph) | Heavy Vehicle % | Peak Hour Volume (vph)   | Heavy Vehicle % | Peak Hour Volume (vph) | Heavy Vehicle % |
| Hasties Rd | On Bussell/Hasties | Video Survey* | 192                    | 10.9%           | 206                    | 12.1%           | 198                      | 4.0%            | 195                    | 0%              |
| Frances Rd | On Bussell/Frances | Video Survey* | 140                    | 1.4%            | 79                     | 1.3%            | 46                       | 2.1%            | 89                     | 0%              |

Counts undertaken June 2018

\*Peak hour volumes only, daily volumes unavailable.



# QUESTIONS AND ANSWERS



# Alignment Definition BORR South

Padraic Murphy



# CONNECTIVITY – Gelorup, Dalyellup, South Bunbury



| LEGEND |                             |
|--------|-----------------------------|
|        | DESIGN OPTION               |
|        | DALYELLUP SIGNIFICANT ROADS |
|        | UPGRADE REQUIRED            |
|        | BUSSELL HWY INTERSECTION    |
|        | CUL-DE-SAC                  |
|        | TRAVEL DIRECTION            |

| ADVANTAGES   |
|--|
| <ul style="list-style-type: none"> <li>• UTILISE EXISTING INFRASTRUCTURE WITH UPGRADE (HASTIES RD)</li> <li>• NO ADDITIONAL STERILISATION OF STRATEGIC RESOURCE</li> <li>• LIMITED SEVERANCE AND COST IMPACTS</li> <li>• CONSISTENT WITH HISTORICAL PLANNING</li> <li>• QUARRY TRAFFIC DOES NOT HAVE TO TRAVEL THROUGH RESIDENTIAL AREA</li> </ul> |

| DISADVANTAGES  |
|--|
| <ul style="list-style-type: none"> <li>• HASTIES ROAD TRAFFIC VOLUMES ARE HIGHER THAN OPTION 2</li> <li>• INTERFACE WITH DRIVEWAYS AND LOCAL ROADS ALONG HASTIES ROAD</li> </ul> |

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LEGEND

- DESIGN OPTION
- DALYELLUP SIGNIFICANT ROADS
- UPGRADE REQUIRED
- BUSSELL HWY INTERSECTION
- CUL-DE-SAC
- TRAVEL DIRECTION

ADVANTAGES

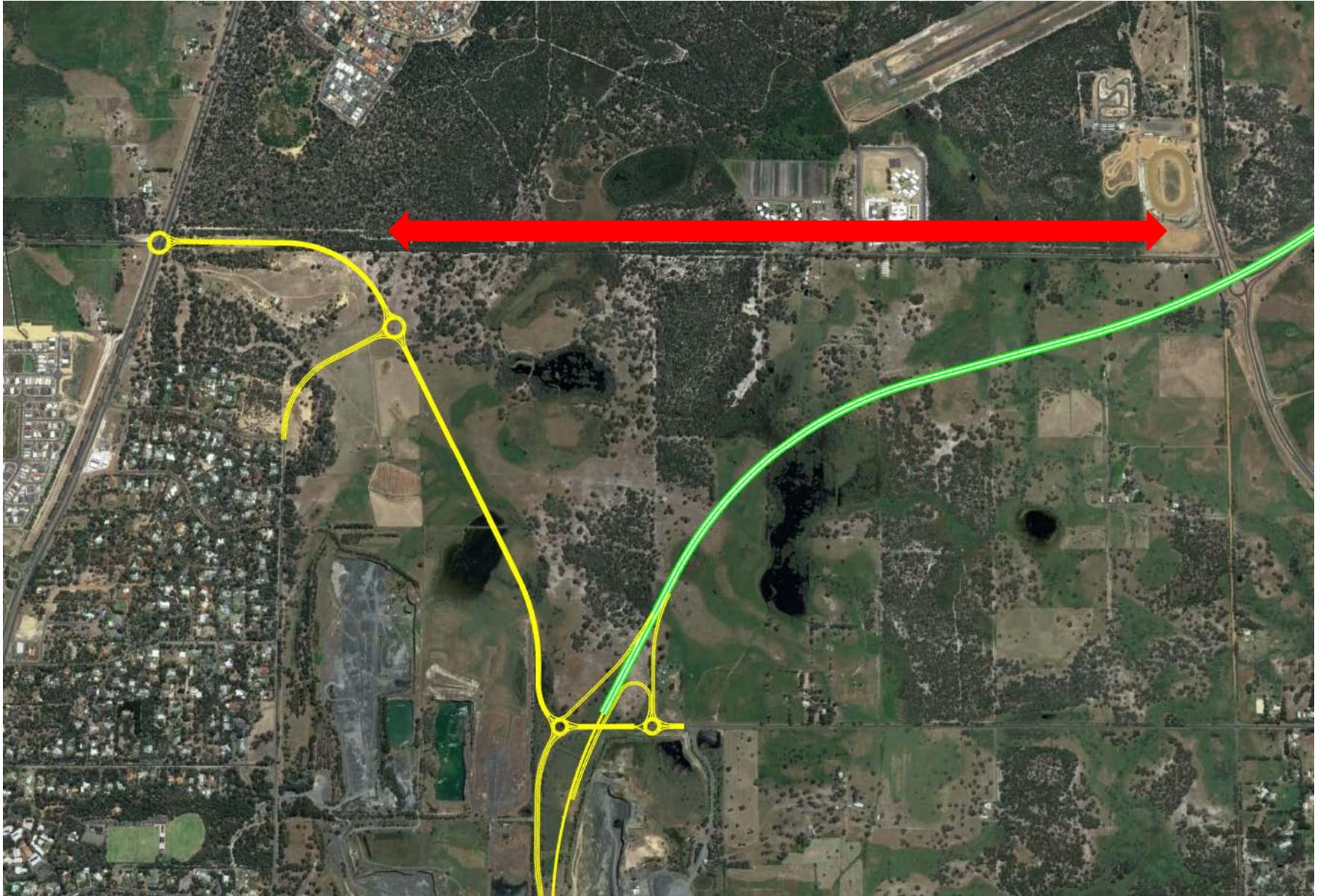
- TRAFFIC VOLUMES ON HASTIES ROAD LOWER THAN OPTION 1
- PROVIDES FOR IMPROVED CONNECTIVITY FROM BORR TO / FROM SOUTH BUNBURY
- CENTENARY RD IS A NEW CONNECTION WITH NO DRIVEWAY ACCESSES

DISADVANTAGES

- LIKELY RAT RUNNING ON SLEAFORD ROAD
- INCREASED TRAFFIC ON JULES ROAD
- HASTIES ROAD COULD STILL BE USED AS RAT RUN TO GET THROUGH TO JULES ROAD
- SIGNIFICANT NEW ROAD CONSTRUCTION WITH ASSOCIATED COST AND SEVERANCE
- WILL STERILISE SOME OF THE STATE RECOGNISED RESOURCE (BASALT)



# Discussion Slide



# BORR & Bussell Highway Option



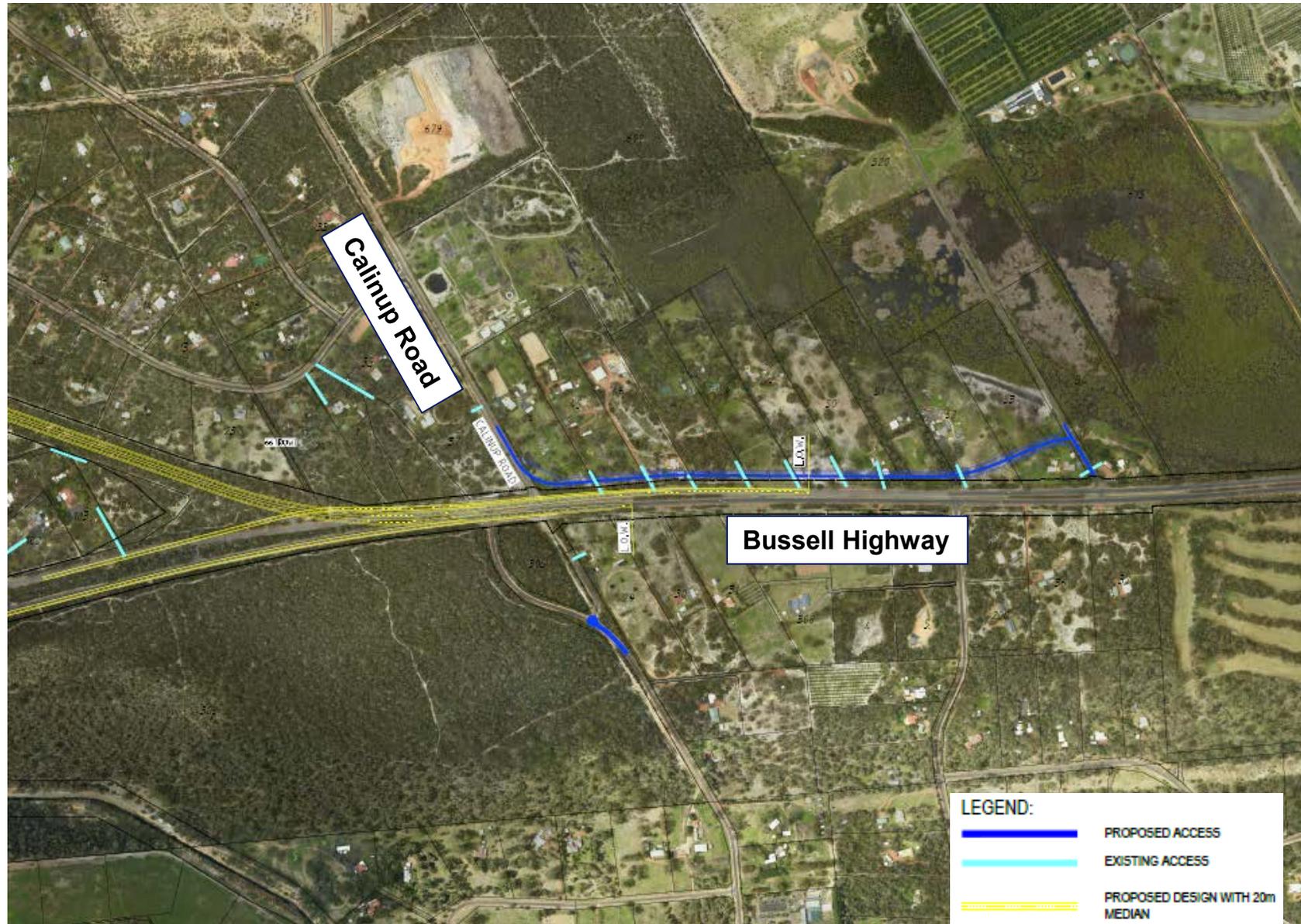
23

# Southern Access Strategy

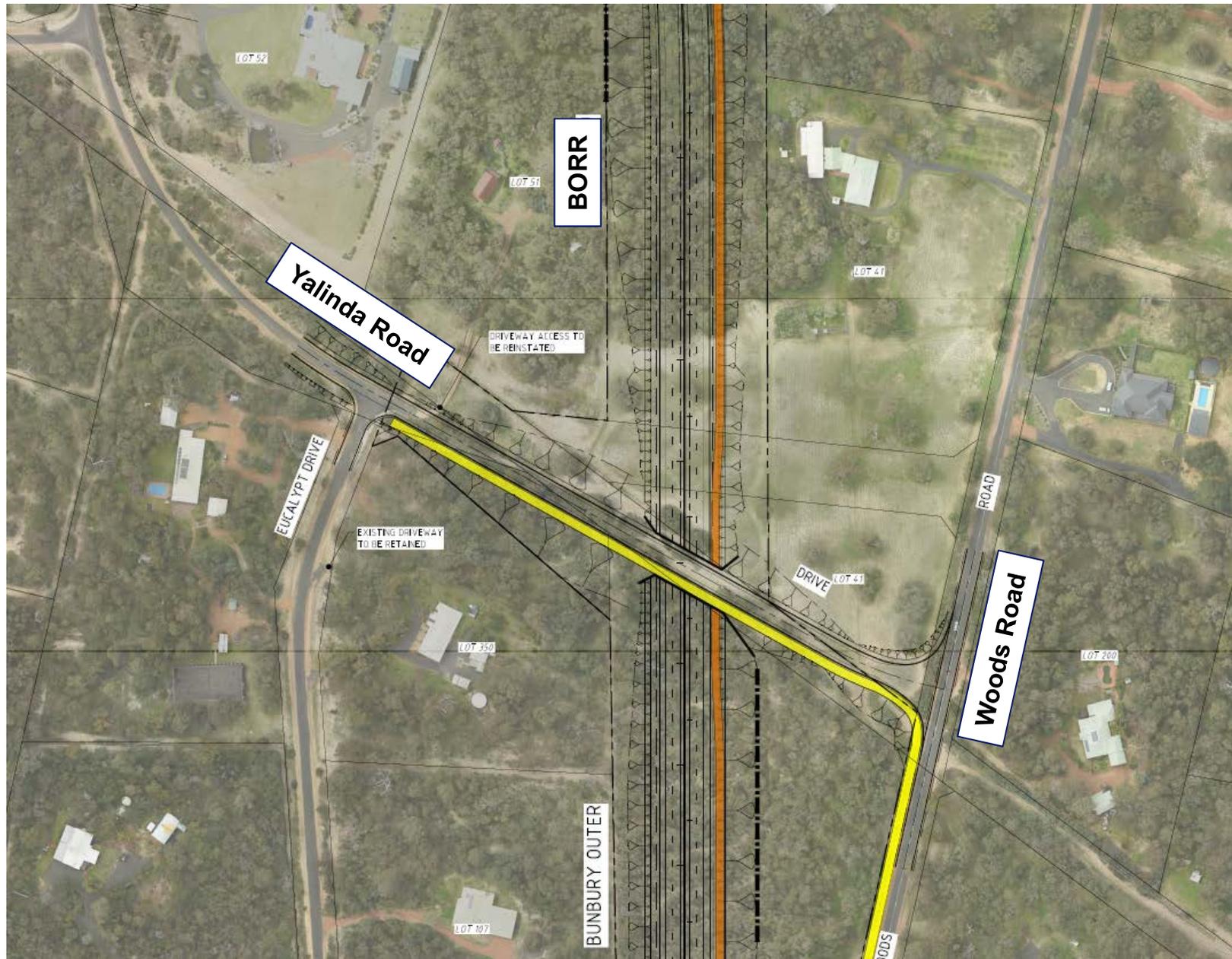


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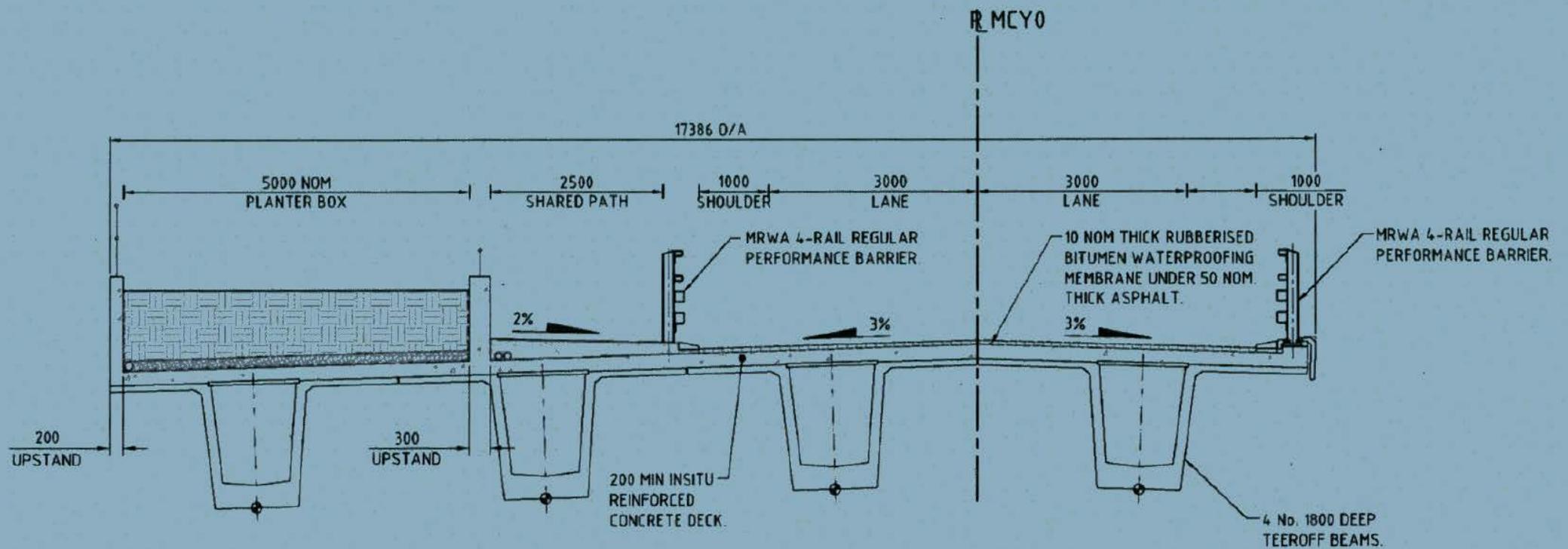
# Bussell Highway Access



# Yalinda Drive Bridge



# Yalinda Drive Bridge



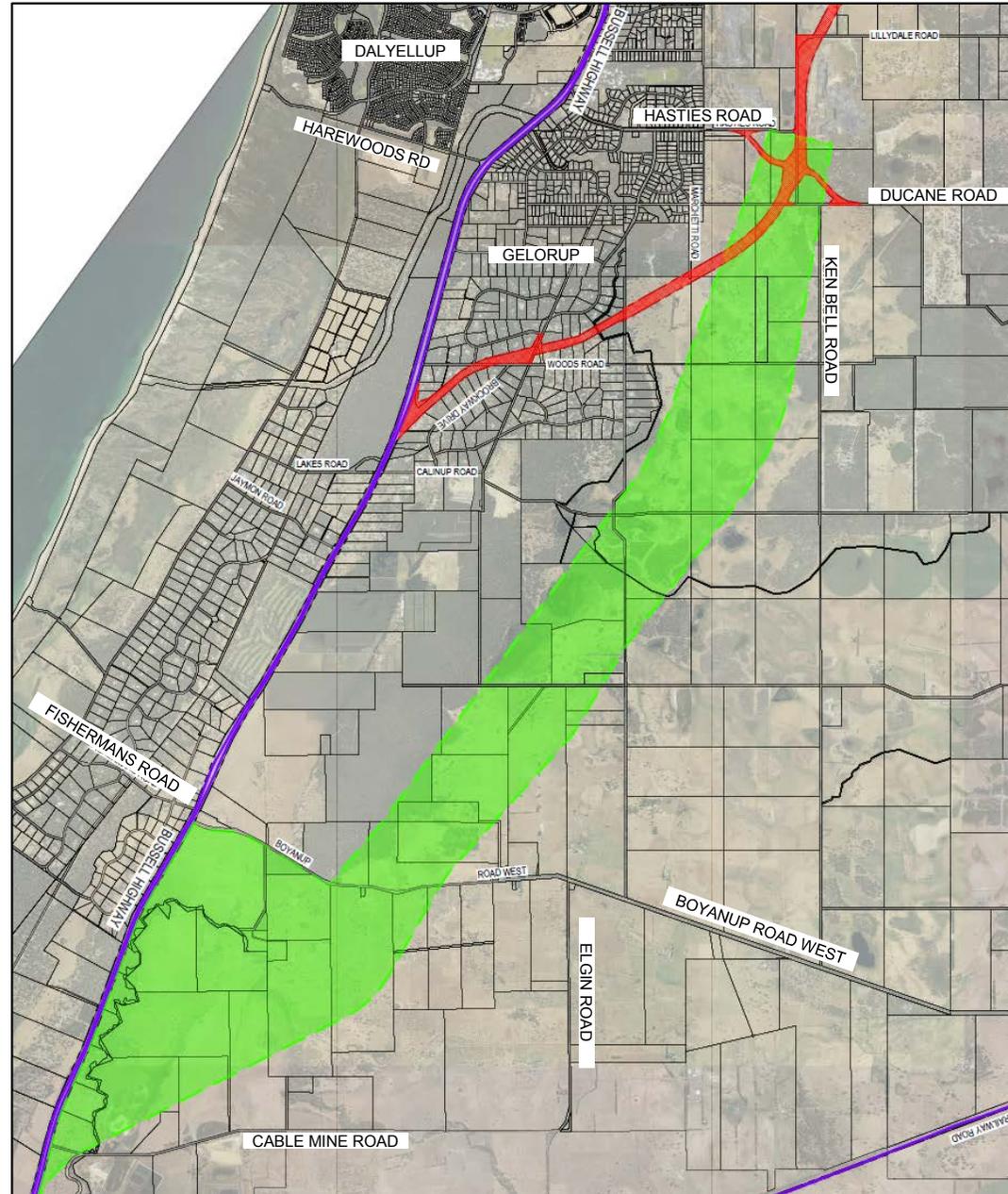


# QUESTIONS AND ANSWERS



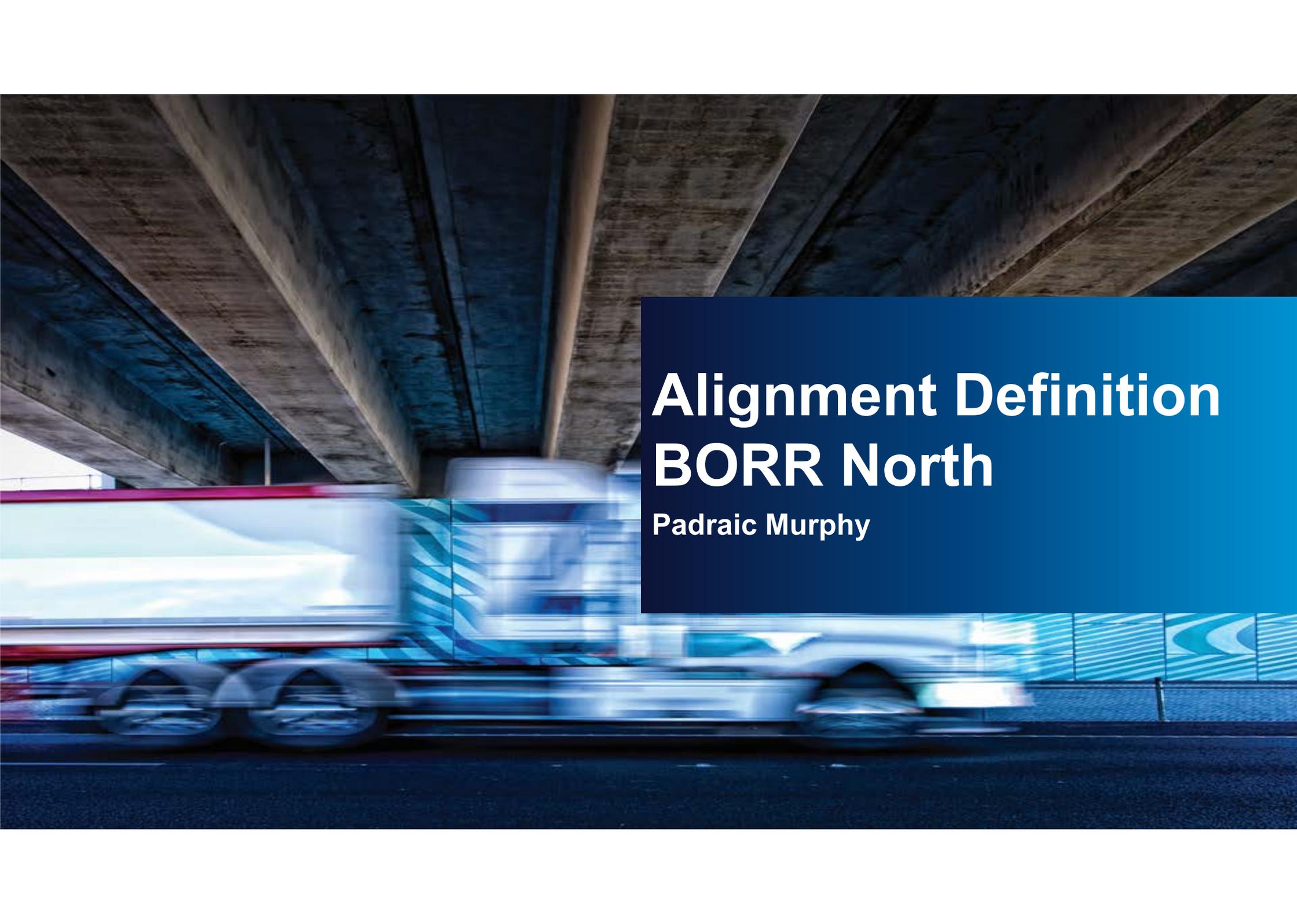
# **ALIGNMENT – BORR Southern Alternative Investigation Corridor**

# BORR South Alternative Corridor





# QUESTIONS AND ANSWERS

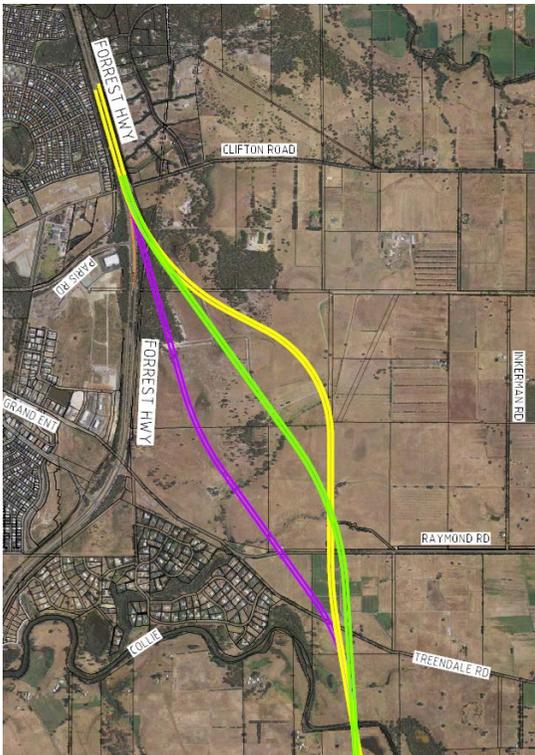
A blurred high-speed train, possibly a Shinkansen, is captured in motion, passing under a concrete bridge structure. The train is white with blue and red accents. The bridge has several large concrete pillars. The background is a bright blue sky. The overall image has a motion blur effect, suggesting speed.

# Alignment Definition BORR North

Padraic Murphy

# BORR North Alignment – Study Sections

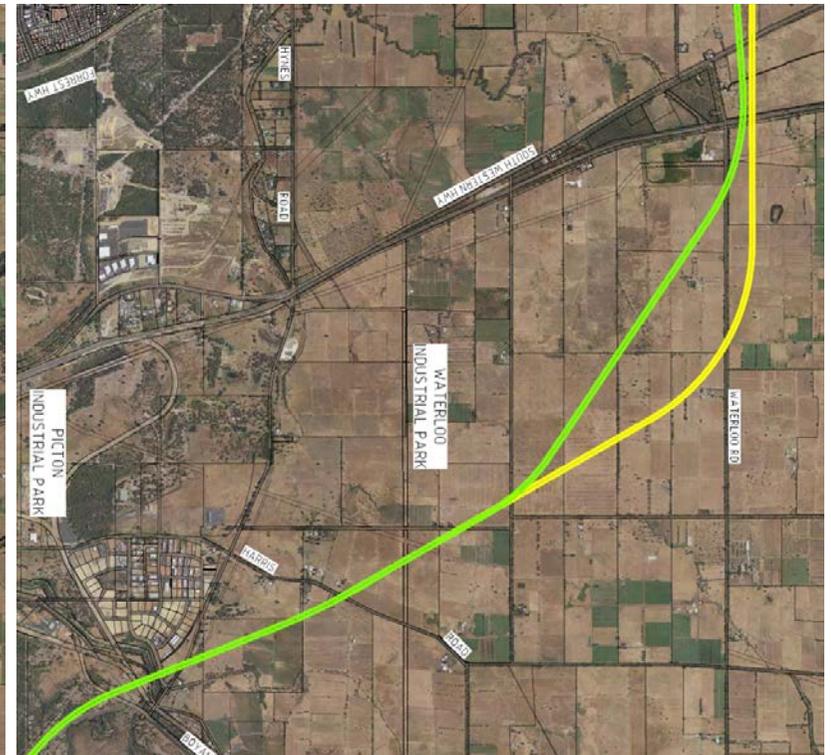
Section 1: Forrest Hwy to Collie River Crossing



Section 2: Collie River Crossing to Rail Crossing (south of South Western Hwy)



Section 3: Rail Crossing (south of South Western Hwy) to BORR Central

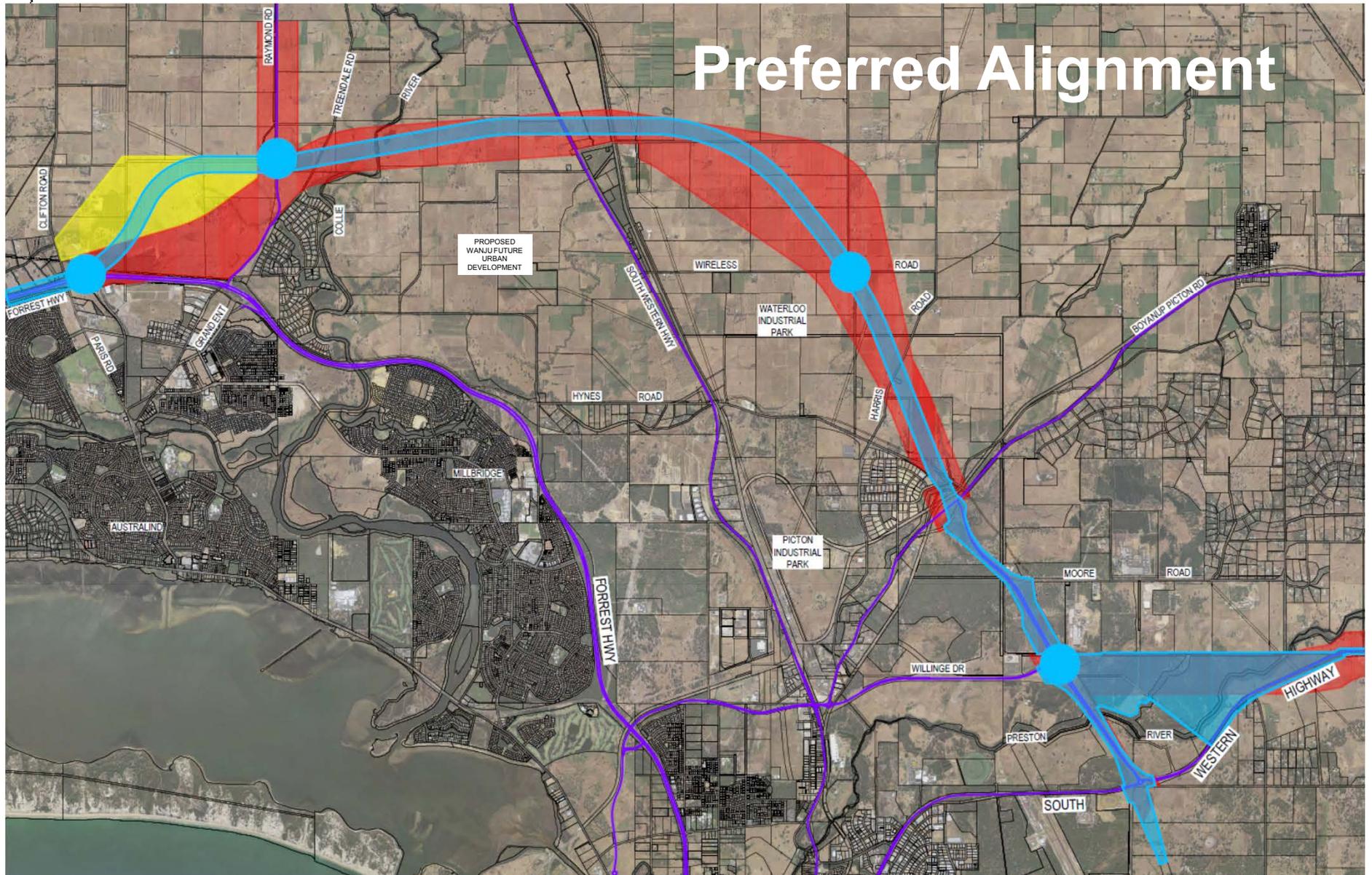


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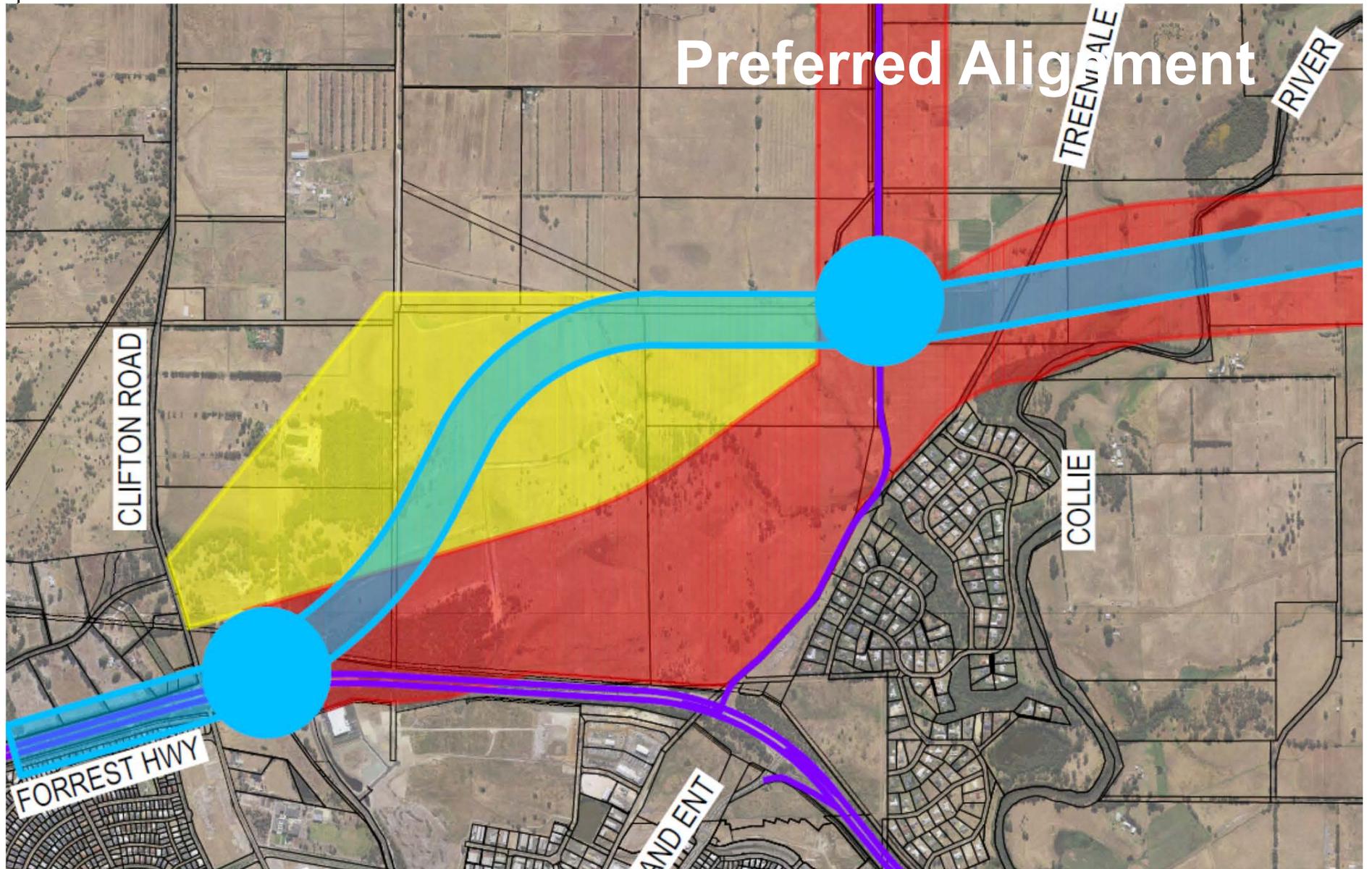
# Selection Criteria

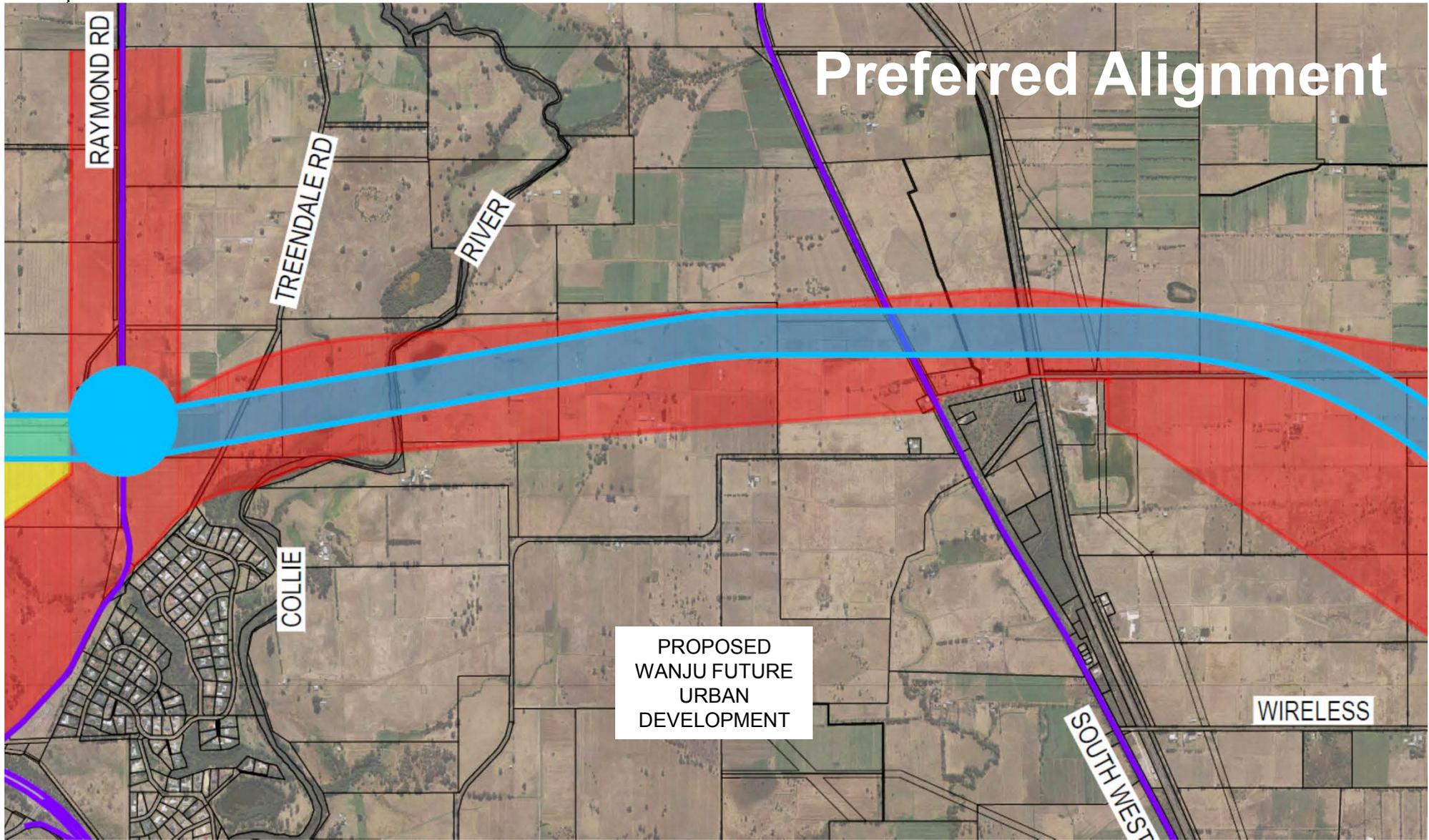
| Environmental & Ecology                    | Community & Social                 | Local Economy                   | Network Efficiency & Safety                                    | Engineering/ Project Cost                               |
|--|------------------------------------|---------------------------------|--|---|
| Native vegetation (area and fragmentation) | Land Acquisition (area)            | Property access/ connectivity   | Road length (vehicle operating costs and vehicle travel times) | Water Infrastructure (irrigation and drainage)          |
| Rare Flora Sites                           | Property severance (fragmentation) | Resource Use (mining tenements) | Road capacity & LOS  | Utilities   |
| Fauna habitat and TECs                     | Noise and Visual Amenity           | Facilities development          | Road Safety (construction and operation)                       | Constructability (incl. connectivity to other sections) |
| Rare Fauna                                 | Aboriginal Heritage                |                                 |  | Whole of Life Cost                                      |
| Wetlands (area)                            | Non-indigenous Heritage            |                                 |  |   |
| Waterways (crossing impact)                |                                    |                                 |  |   |

# Preferred Alignment



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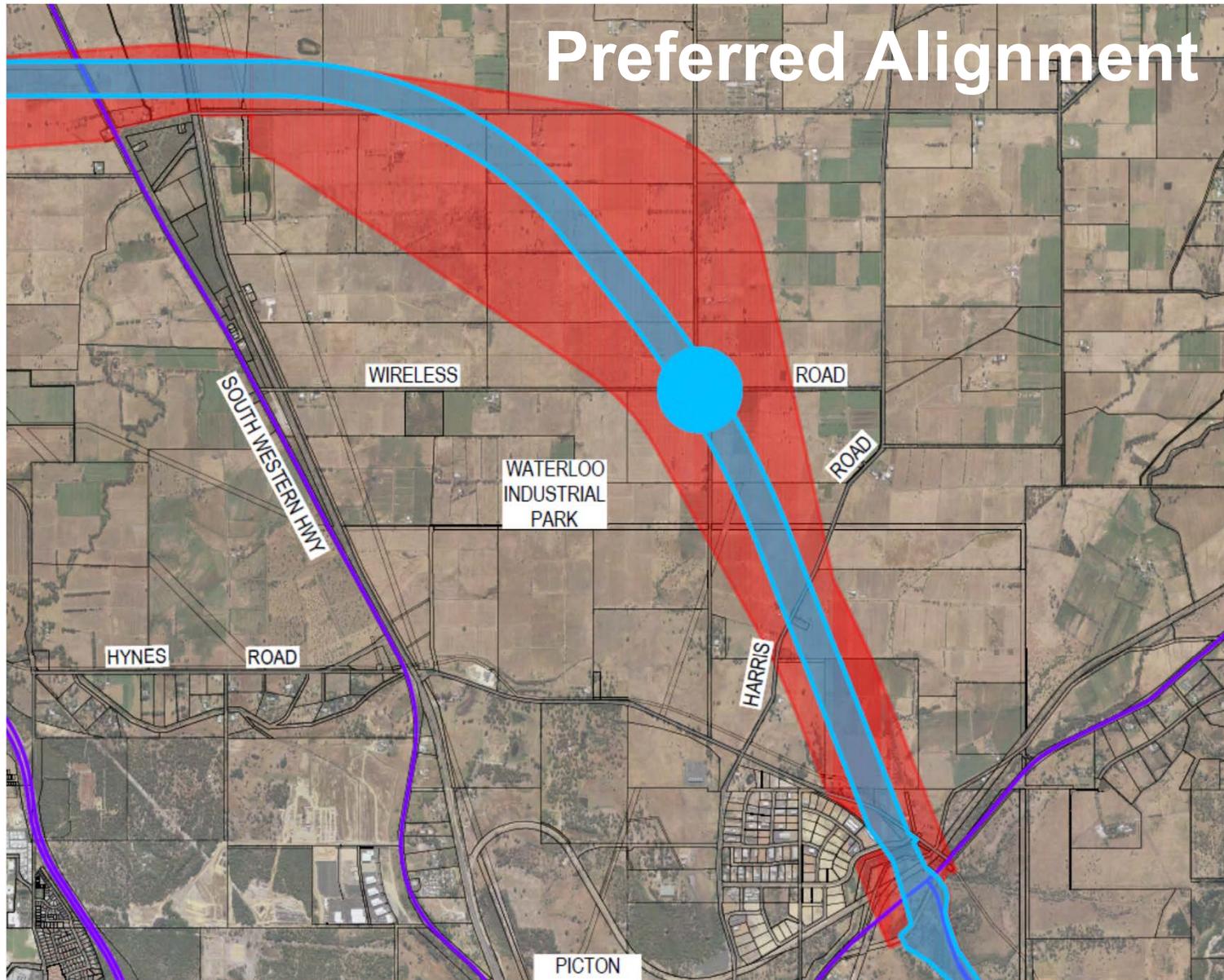




# Preferred Alignment

PROPOSED  
WANJU FUTURE  
URBAN  
DEVELOPMENT

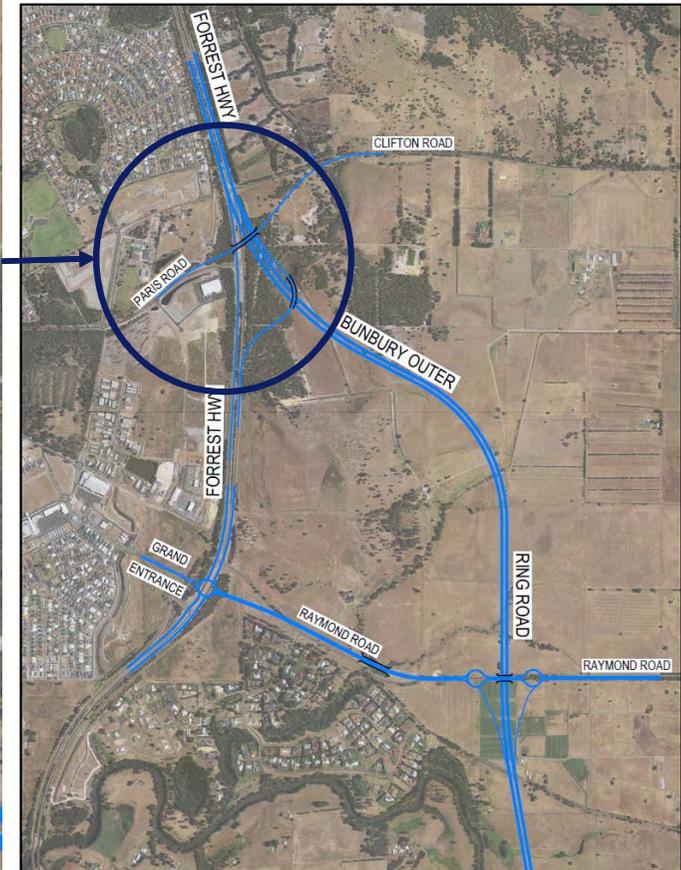
# Preferred Alignment



Ultimate Planning – Under Development

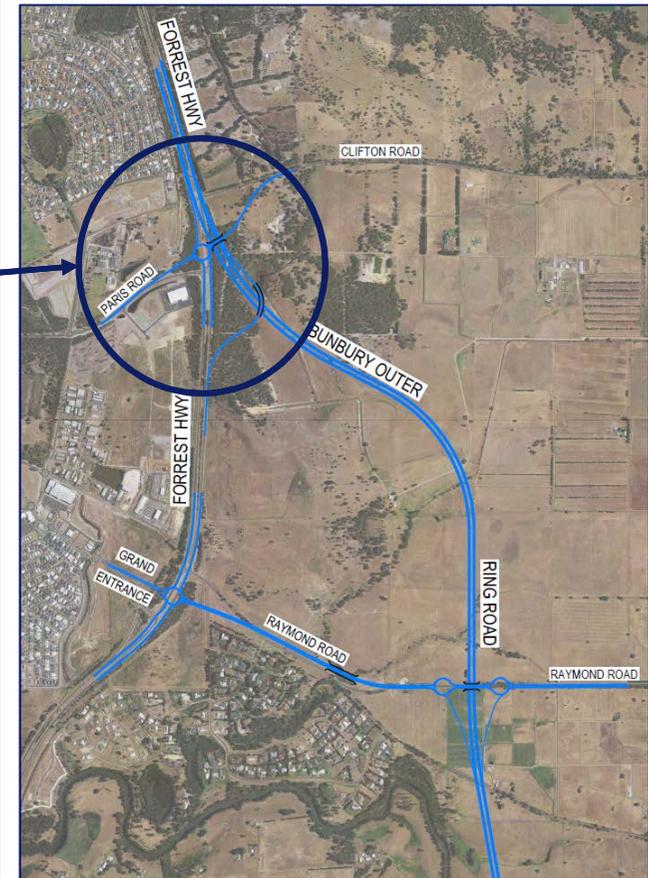
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# Option 1



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## Option 2

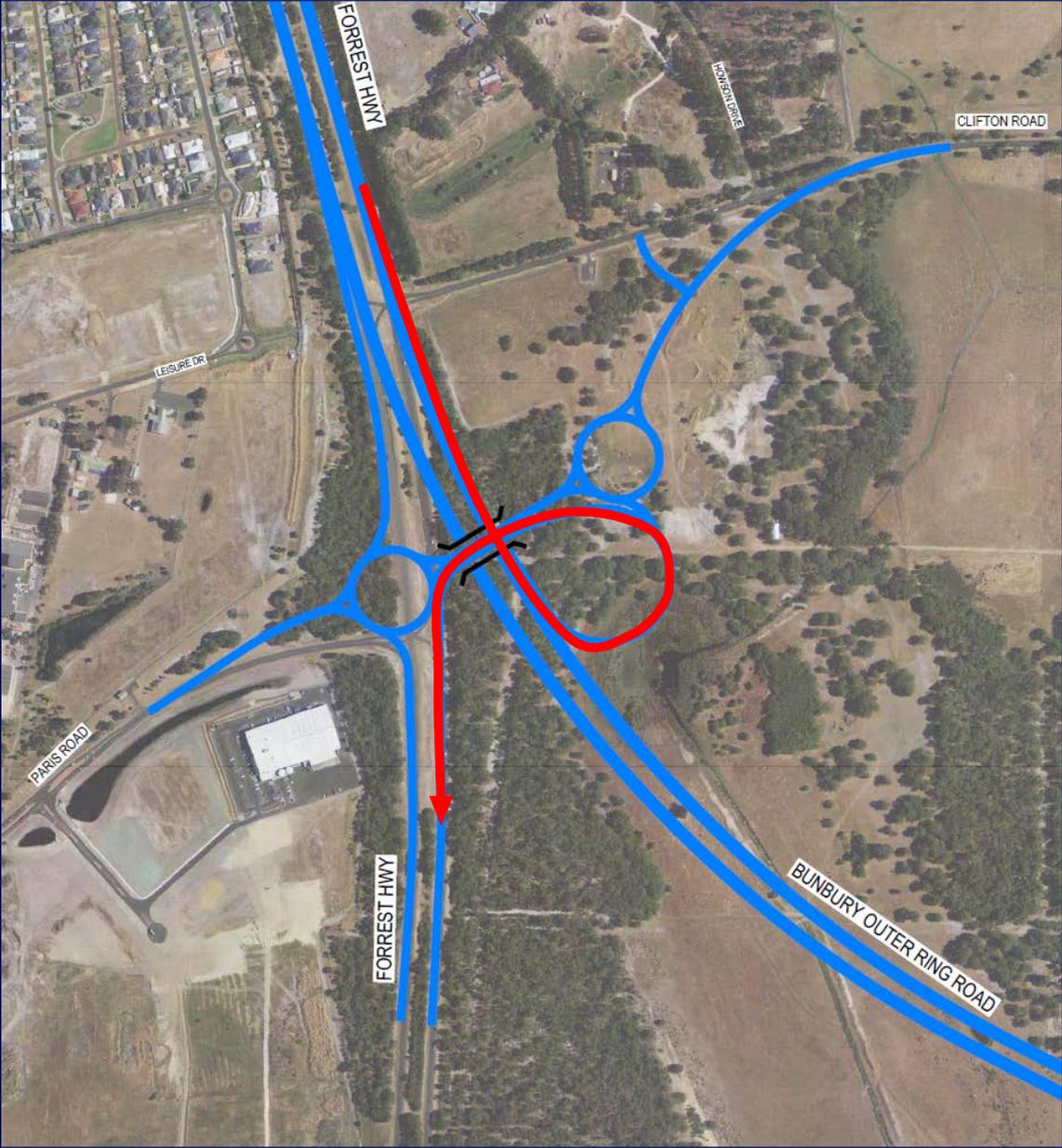


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# Option 3



### Option 3 – Vehicle Movement





# QUESTIONS AND ANSWERS



# Raymond Road Ramp Options



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Ultimate Planning - Under Development

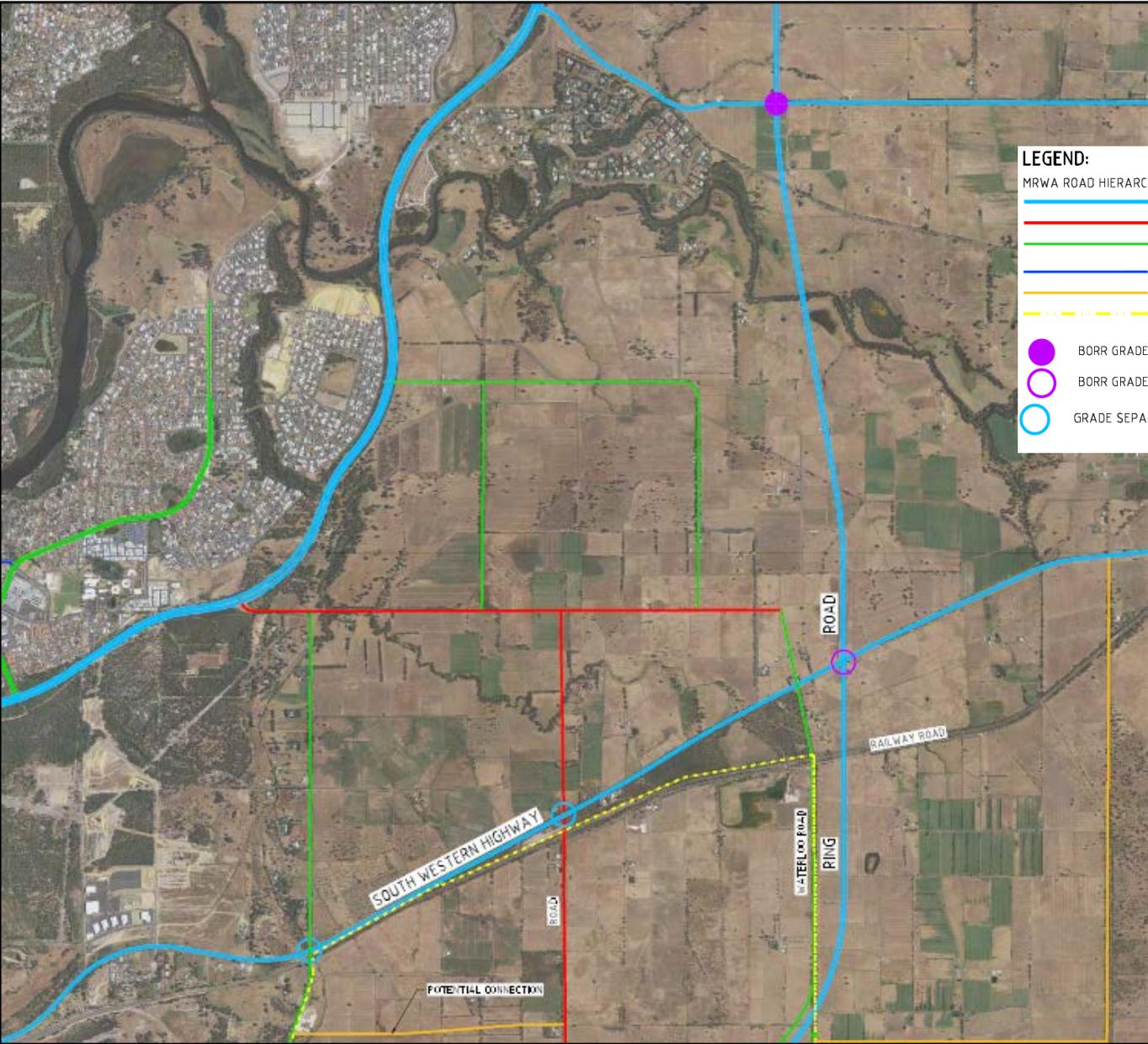


# QUESTIONS AND ANSWERS



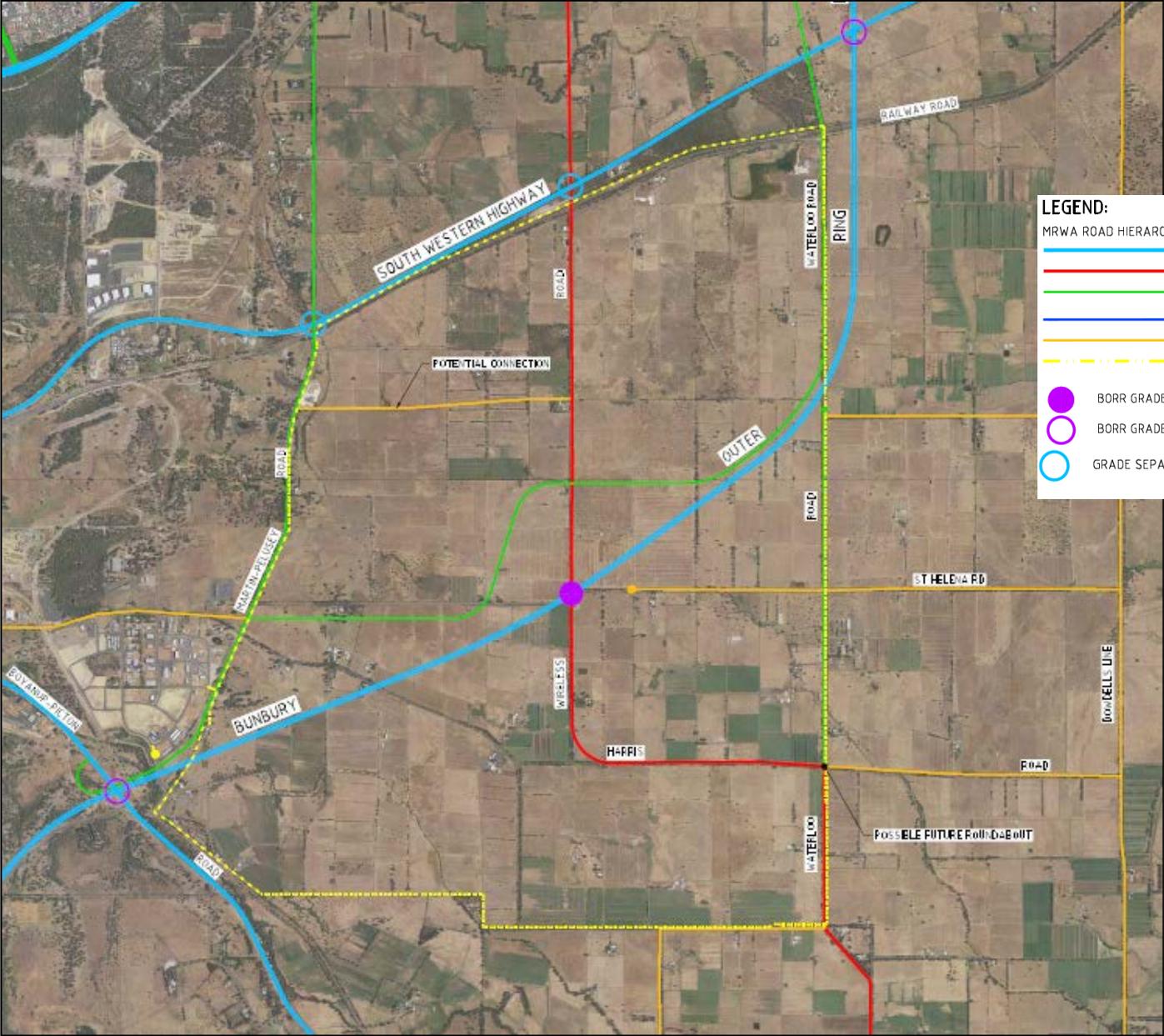
# Wanju & Waterloo Ultimate Road Network

# Wanju Ultimate Network



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# Waterloo Industrial Ultimate Network



Ultimate Planning – Under Development

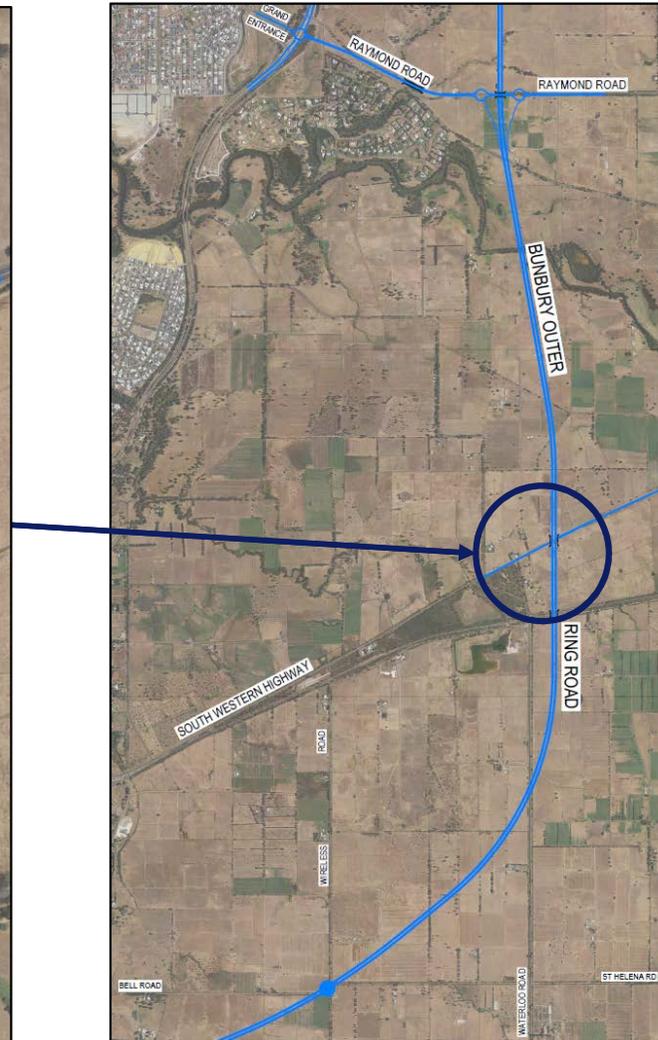


# QUESTIONS AND ANSWERS

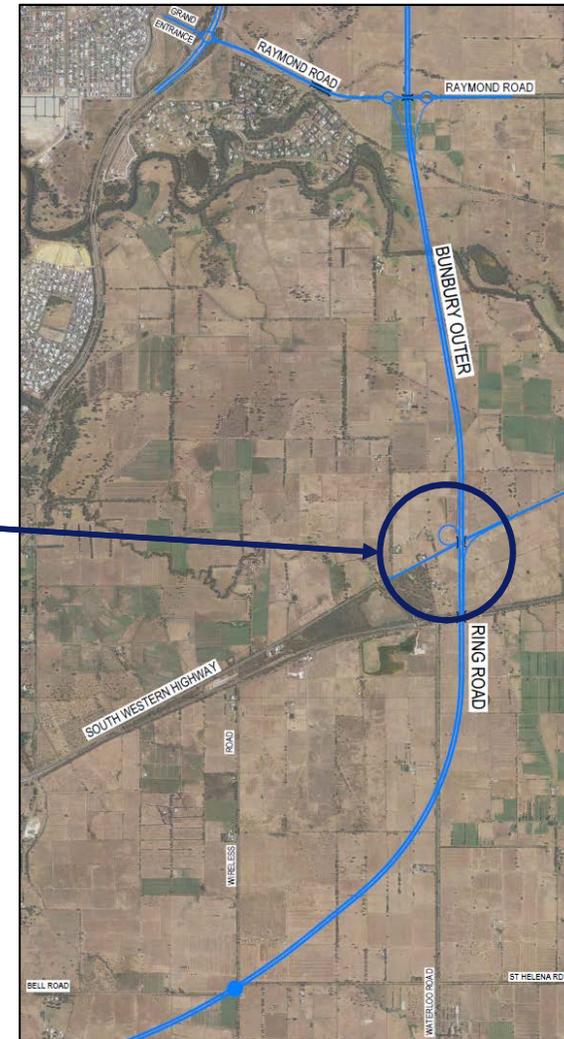


# CONNECTIVITY – South Western Hwy (North)

# Option 1 – no connection



# Option 2 – with connection



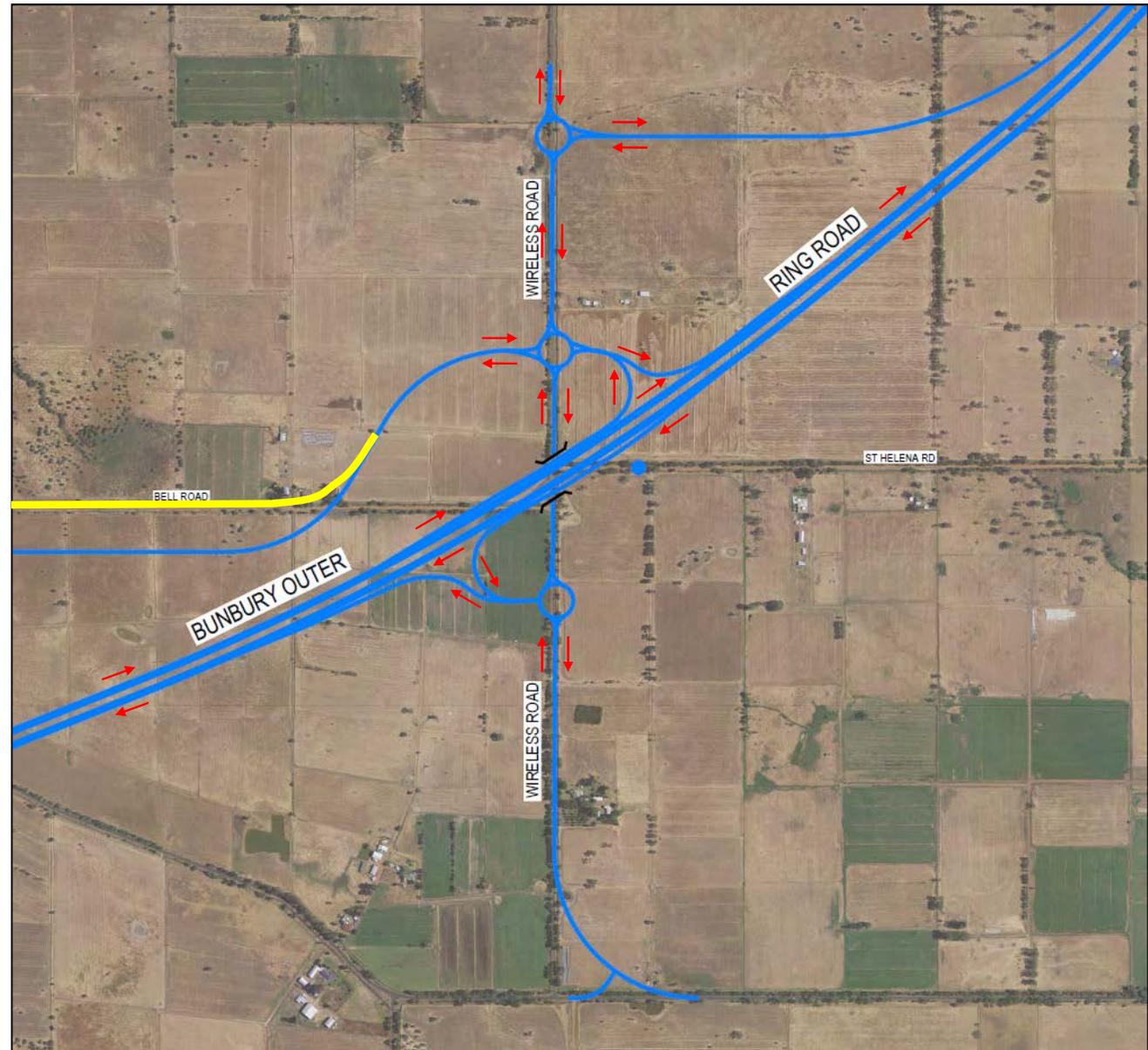


# QUESTIONS AND ANSWERS



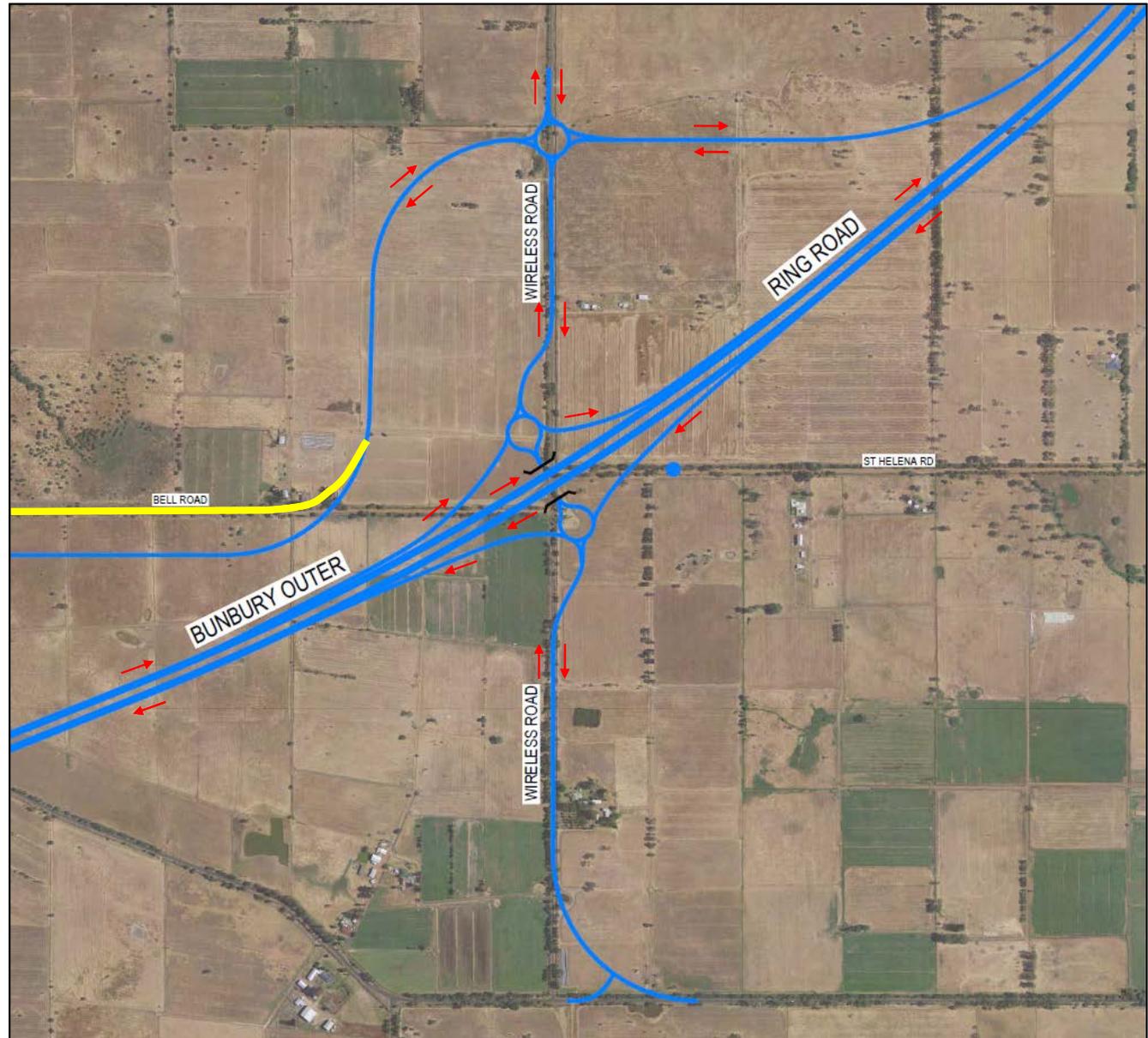
# Waterloo Interchange Options

# Waterloo Interchange Option 1



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# Waterloo Interchange Option 2



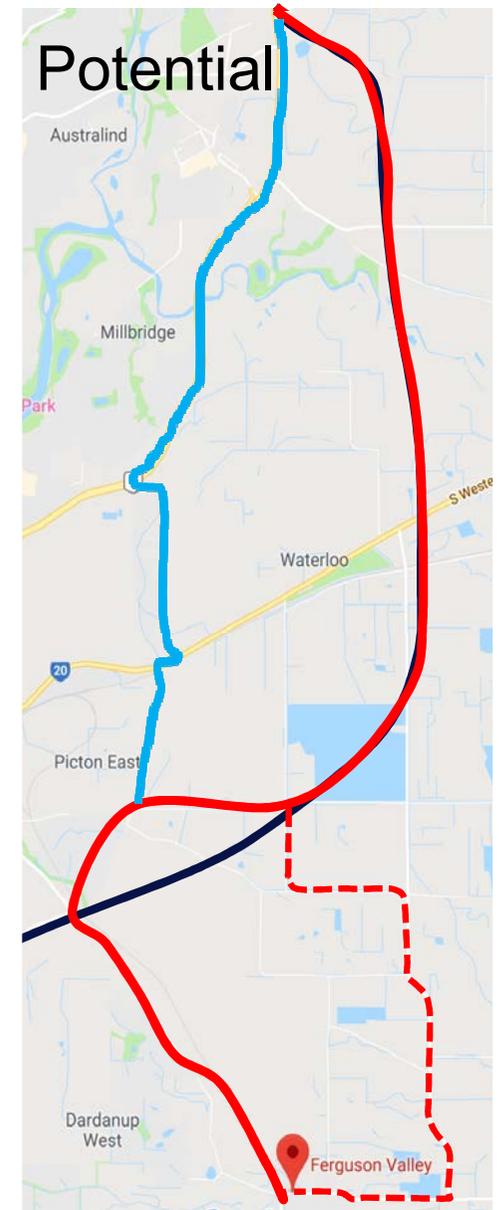
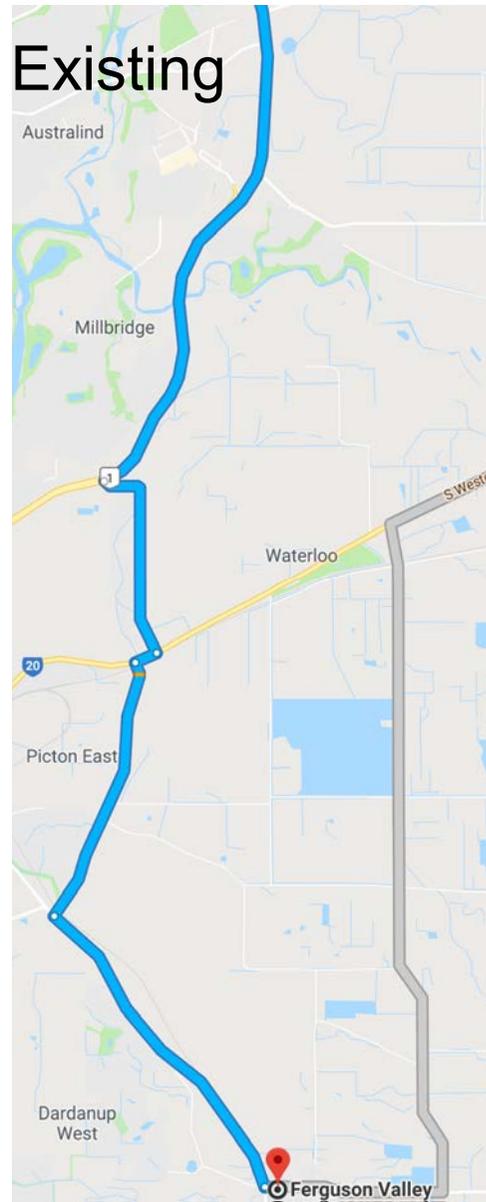
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# Waterloo Interchange Option 3



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# Ferguson Valley - Access from the north.





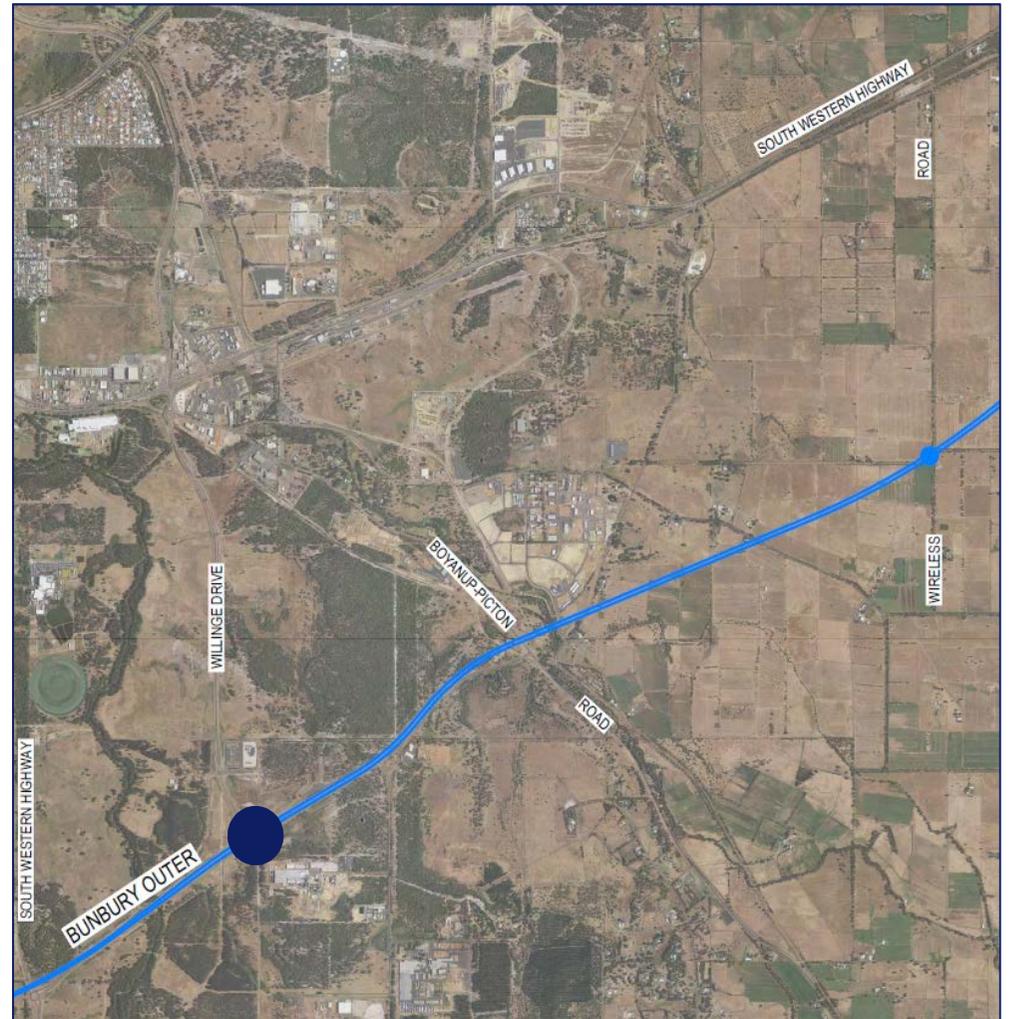
# QUESTIONS AND ANSWERS



# CONNECTIVITY – Willinge Drive Interchange

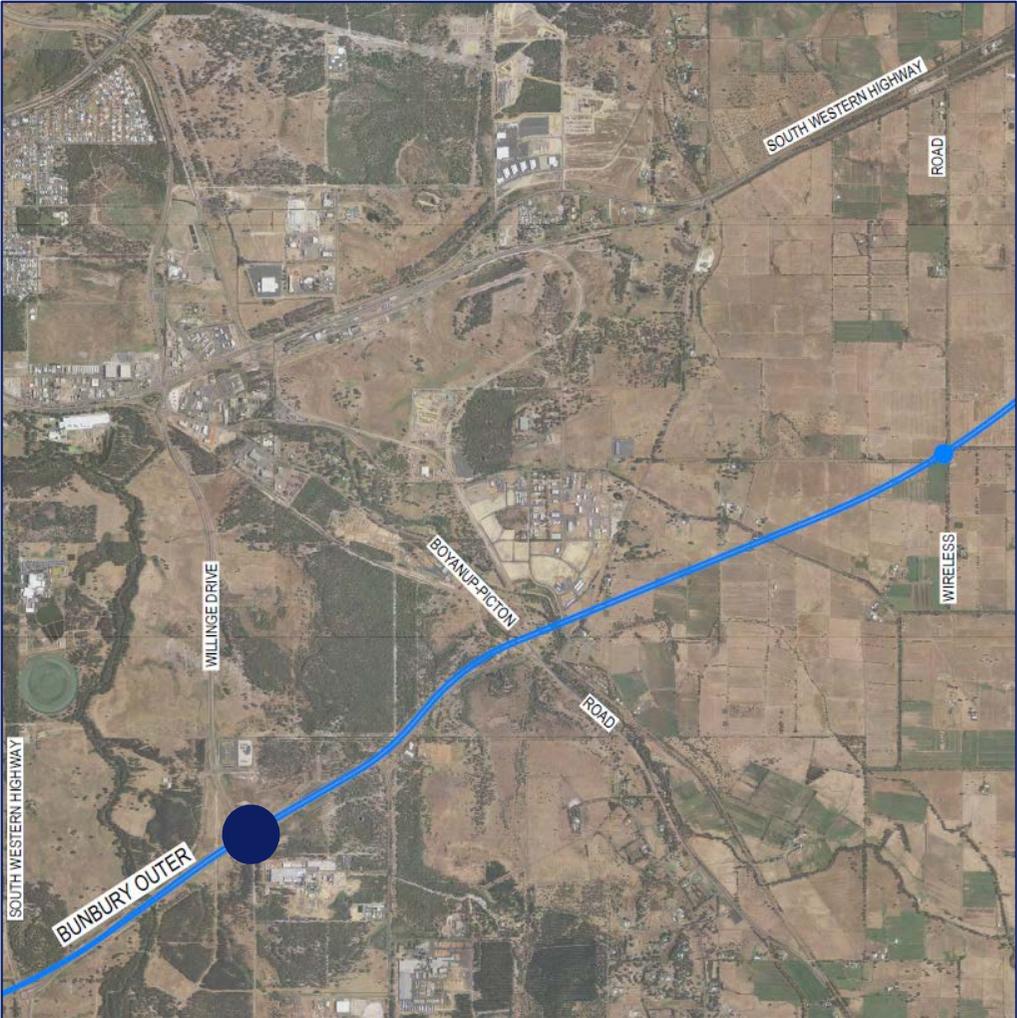
# Willinge Option 1

Ultimate Planning – Under Development

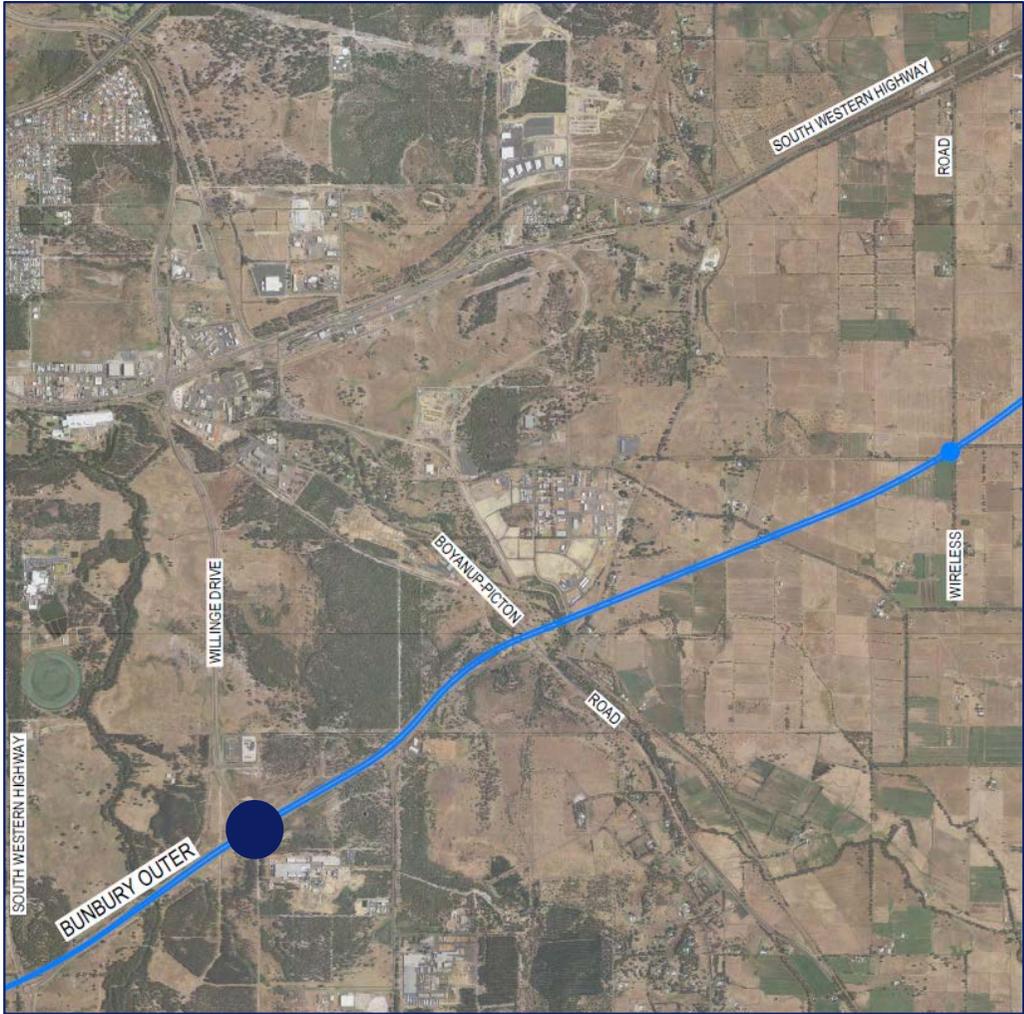


# Willinge Option 2

Ultimate Planning – Under Development



# Willinge Option 3



# Willinge Drive Extension Options



Ultimate Planning – Under Development



# QUESTIONS AND ANSWERS



# CONNECTIVITY – South Western Hwy (South)

# Option 1

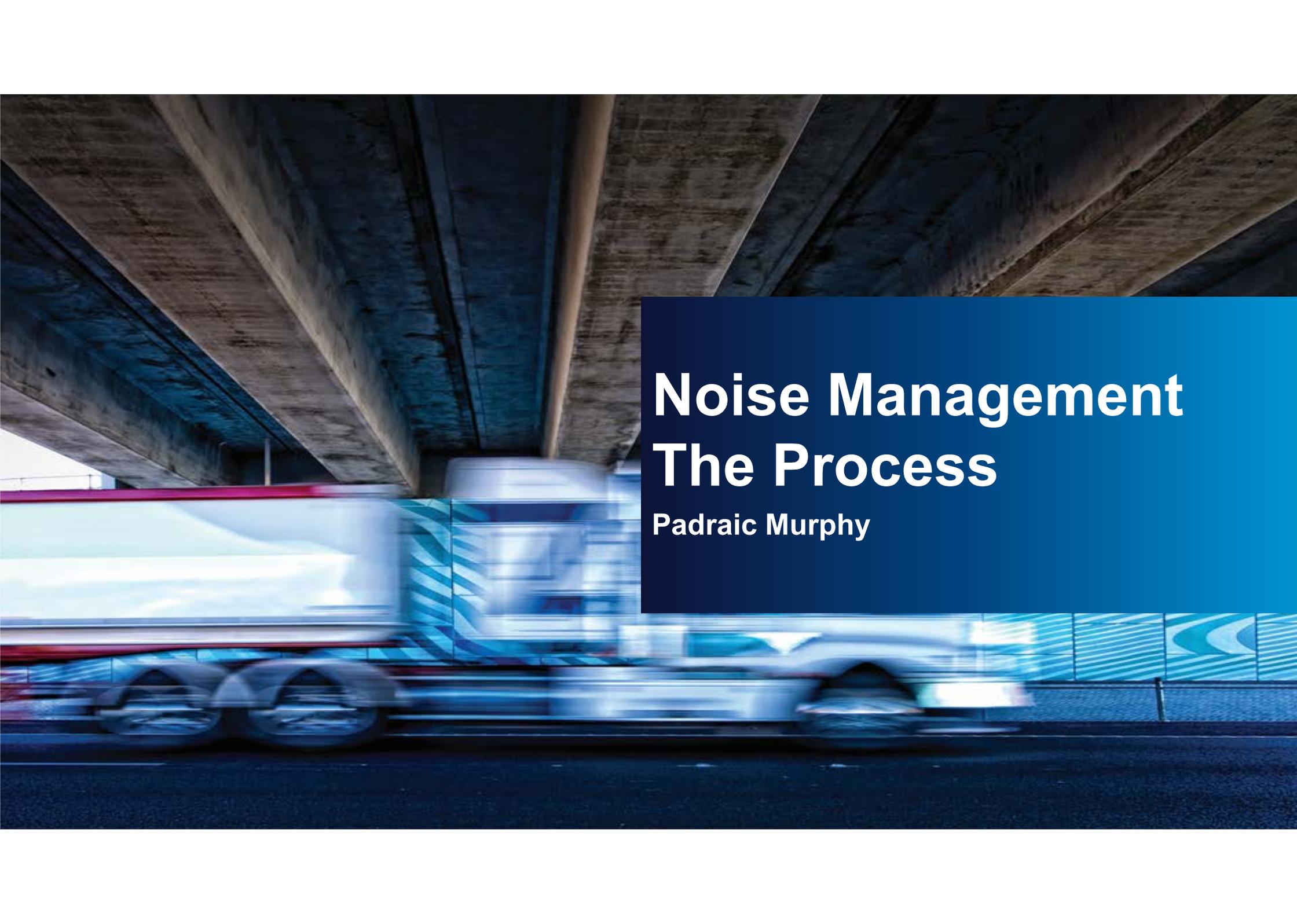


# Option 2





# QUESTIONS AND ANSWERS

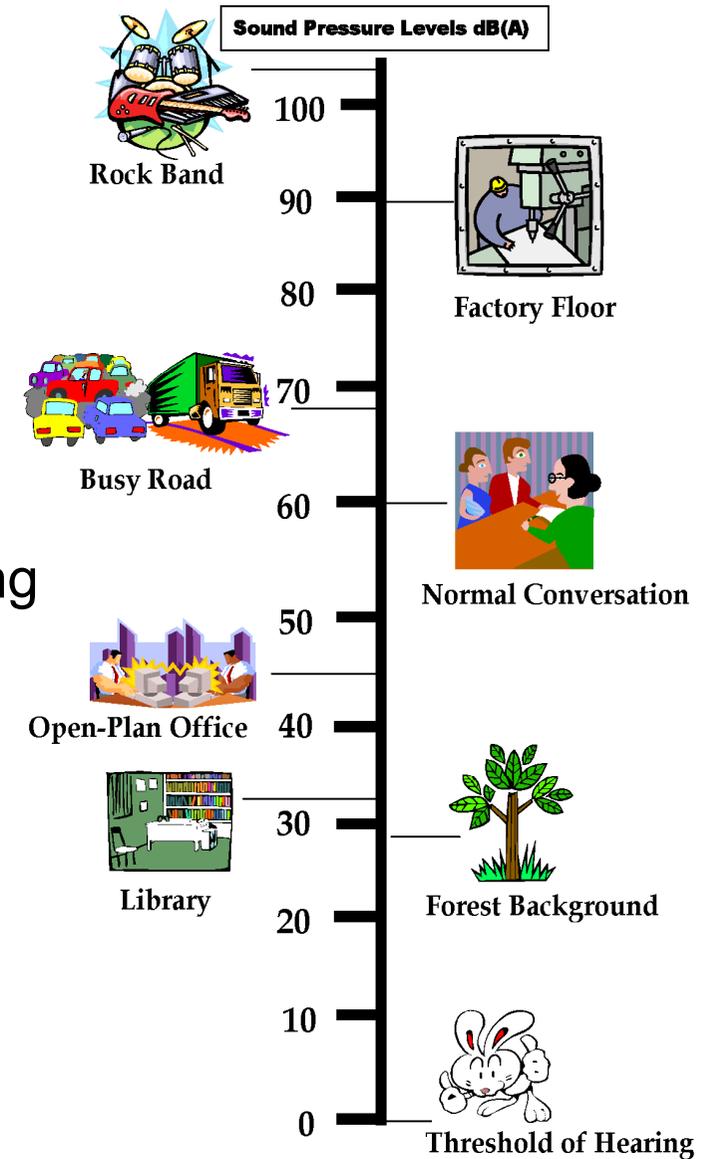


# Noise Management The Process

Padraic Murphy

# Noise Management

- State Planning Policy 5.4 – road and Rail Transport Noise and Freight Considerations in Land Use Planning
- Forecast traffic volumes (2040)



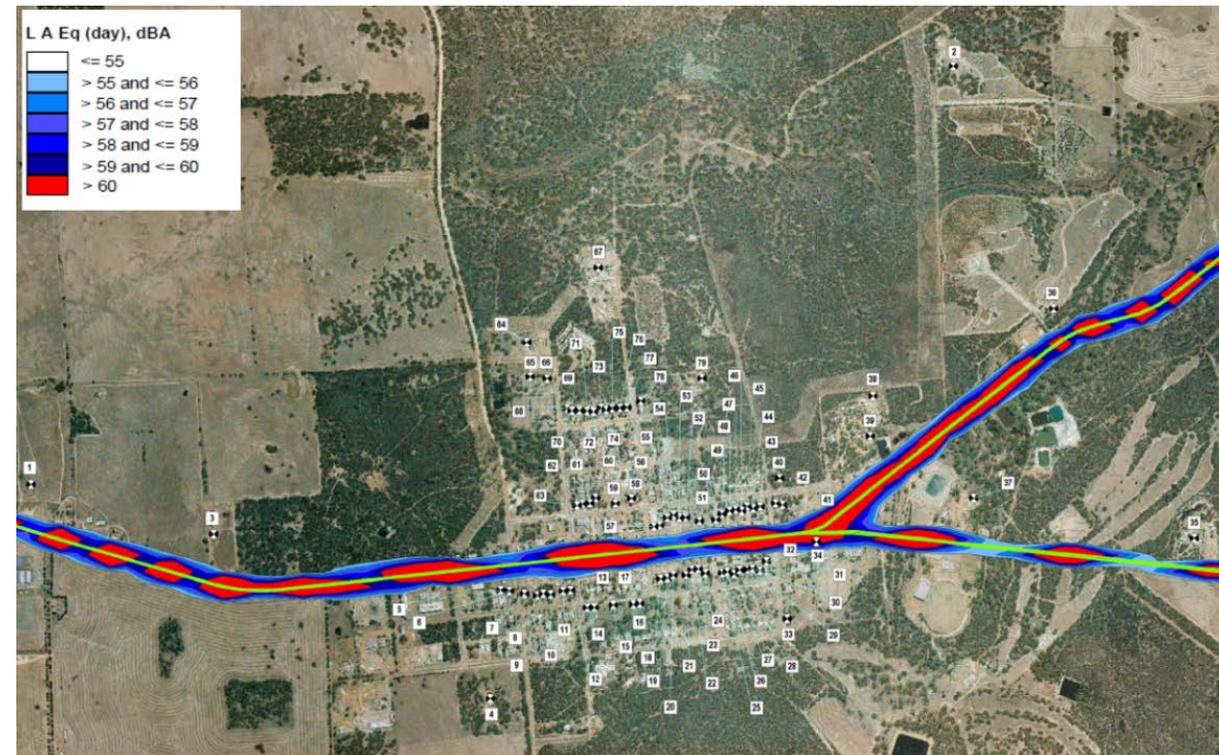
# Extract from SPP 5.4 User Guide

Table A.1: Estimated outdoor noise level for road and rail screening assessments

| Road   | Characteristics                              | Vehicles per day | Distance from edge of carriageway (metres) |    |    |    |    |     |     |     |
|--|--|------------------|--|----|----|----|----|-----|-----|-----|
|  |  |                  | 10   | 20 | 30 | 40 | 50 | 100 | 200 | 300 |
| Primary road / distributor<br>( $L_{Aeq,Day}$ ), dB <sup>10</sup>            | (Urban) 80-100 km/hr and 7.5% heavy vehicles | 20,000           | 70   | 67 | 64 | 63 | 62 | 58  | 52  | 50  |
|  |  | 35,000           | 71   | 68 | 66 | 64 | 63 | 59  | 53  | 51  |
|  |  | 50,000           | 73   | 70 | 67 | 65 | 65 | 61  | 55  | 52  |
|  |  | 65,000           | 74   | 71 | 68 | 67 | 66 | 62  | 56  | 53  |
|  |  | 80,000           | 75   | 72 | 69 | 68 | 67 | 63  | 57  | 54  |
|  |  | 100,000          | 76   | 73 | 70 | 69 | 68 | 64  | 58  | 55  |
|  |  | 120,000          | 77   | 74 | 71 | 70 | 69 | 65  | 59  | 56  |
|  | (Rural) 90-110 km/hr and 10% heavy vehicles  | 5,000            | 69   | 66 | 63 | 62 | 61 | 57  | 51  | 49  |
|  |  | 10,000           | 72   | 69 | 66 | 65 | 64 | 60  | 54  | 52  |
|  |  | 15,000           | 74   | 71 | 68 | 67 | 66 | 62  | 56  | 53  |
| Secondary road / district distributor<br>( $L_{Aeq,Day}$ ), dB <sup>10</sup> | 60-80 km/hr and 2.5% heavy vehicles          | 20,000           | 67   | 64 | 61 | 60 | 58 | 54  | 48  | 46  |
|  |  | 25,000           | 68   | 65 | 62 | 61 | 59 | 55  | 49  | 47  |
|  |  | 30,000           | 69   | 66 | 63 | 61 | 60 | 56  | 50  | 48  |
|  |  | 40,000           | 70   | 67 | 64 | 62 | 61 | 57  | 51  | 49  |
|  |  | 50,000           | 71   | 68 | 65 | 63 | 61 | 58  | 52  | 50  |
|  |  | 60,000           | 72   | 69 | 66 | 64 | 62 | 59  | 53  | 51  |

## What Goes Into a Noise Model

- House Ground Levels
- Property Fences (where solid)
- Design Road Levels
- Vehicle Heights
- Future Traffic Volumes
- Heavy Vehicle Numbers
- Road Surface Types
- Road Gradients



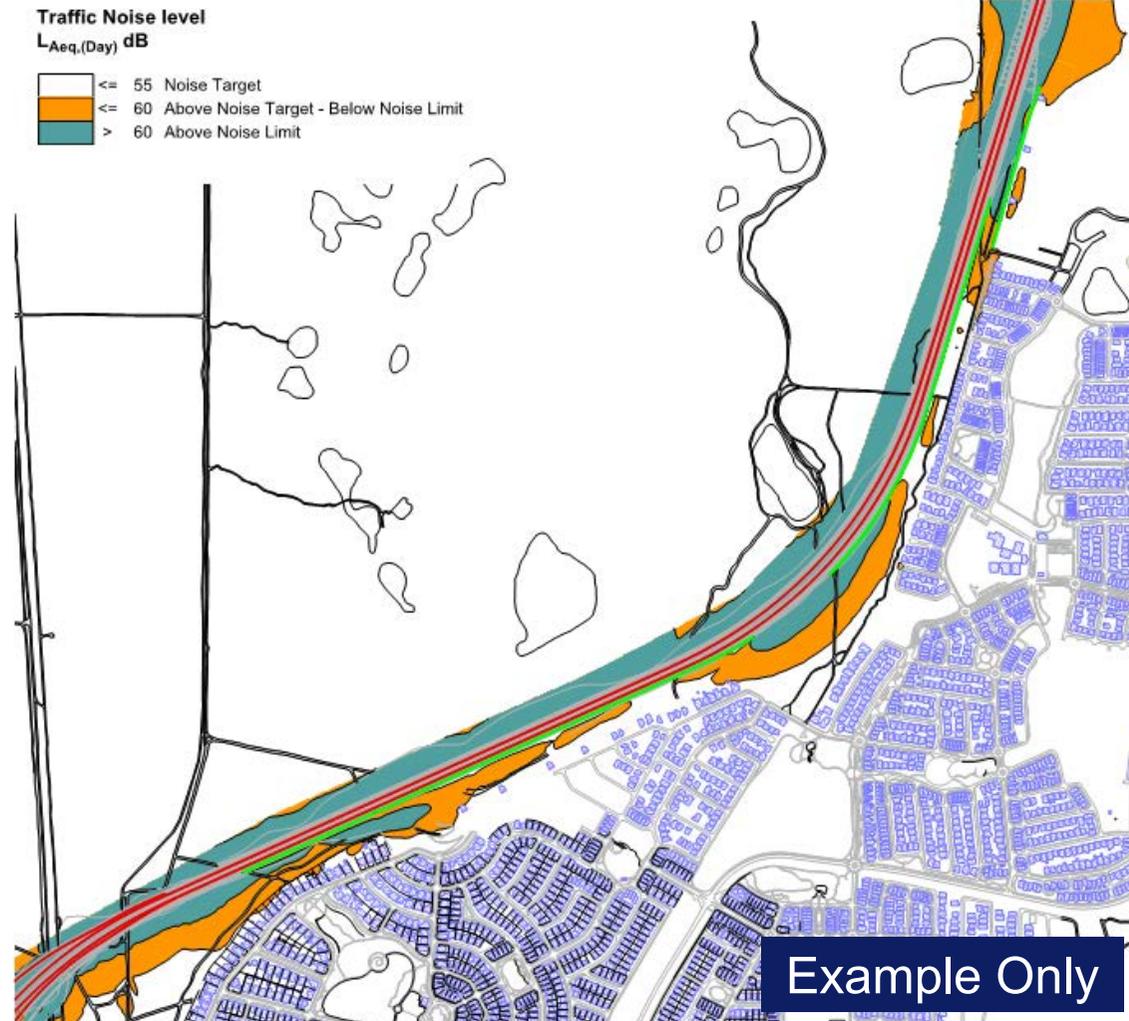
Example Only

# Possible noise outcomes

- Potential Noise Walls
- Architectural mitigation
- Quiet Pavement

Accepted corrections for various road surfaces are:

|                        |        |
|------------------------|--------|
| - 14mm chip seal       | +3.5dB |
| - 10mm chip seal       | +2.5dB |
| - 5mm chip seal        | +1.5dB |
| - Dense graded asphalt | 0.0dB  |
| - Novachip             | -0.2dB |
| - Stone mastic asphalt | -1.5dB |
| - Open graded asphalt  | -2.5dB |



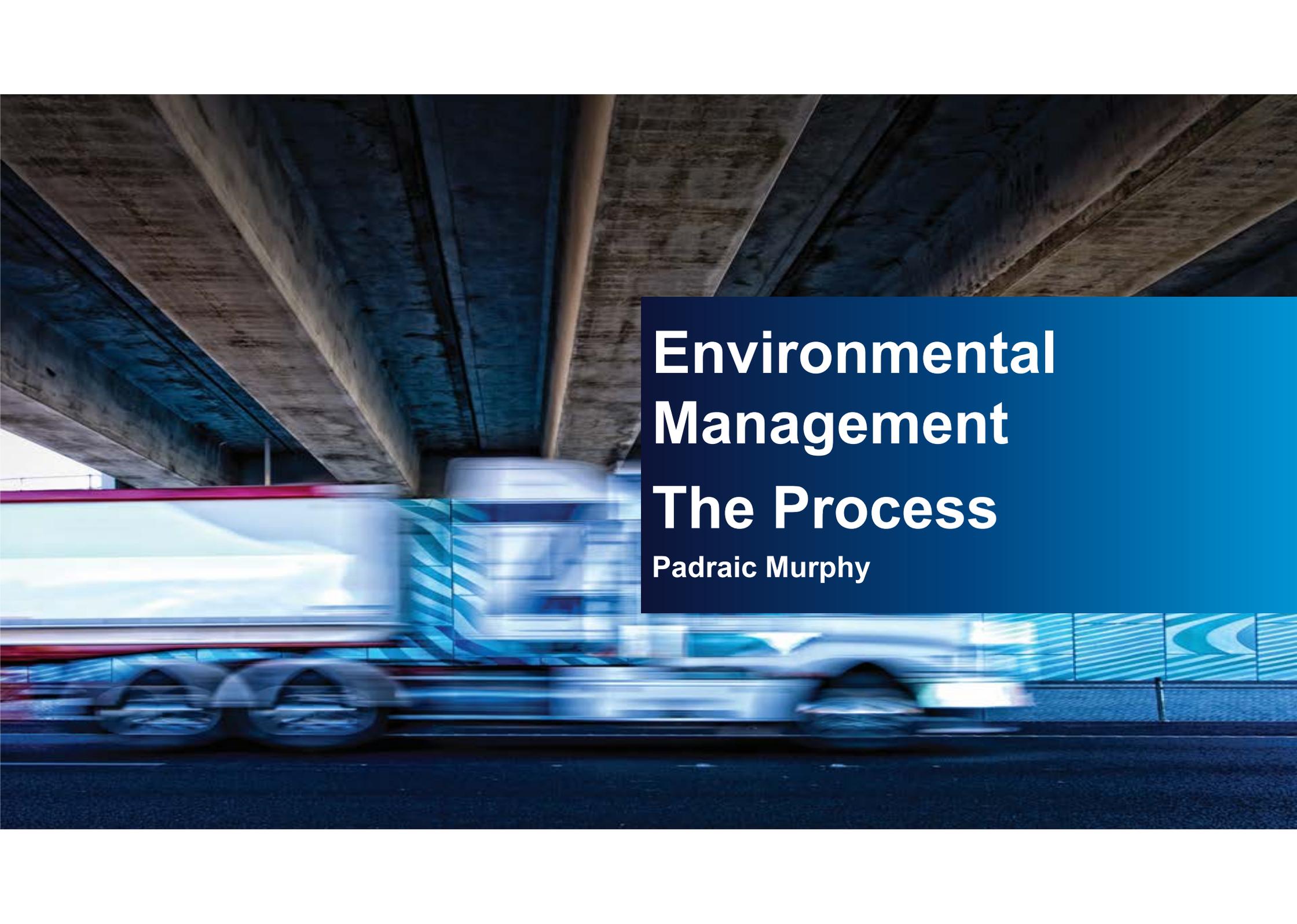
Noise loggers along the alignment provide information that is used to calibrate/refine the model. This detail enables our modellers to forecast daytime and night time noise contours.

## Next Steps

- Noise Monitoring is complete
- Prepare Noise Modelling Report
- Complete peer review
- Present to CRG and communities of interest
- Discuss possible treatment solutions with CRG



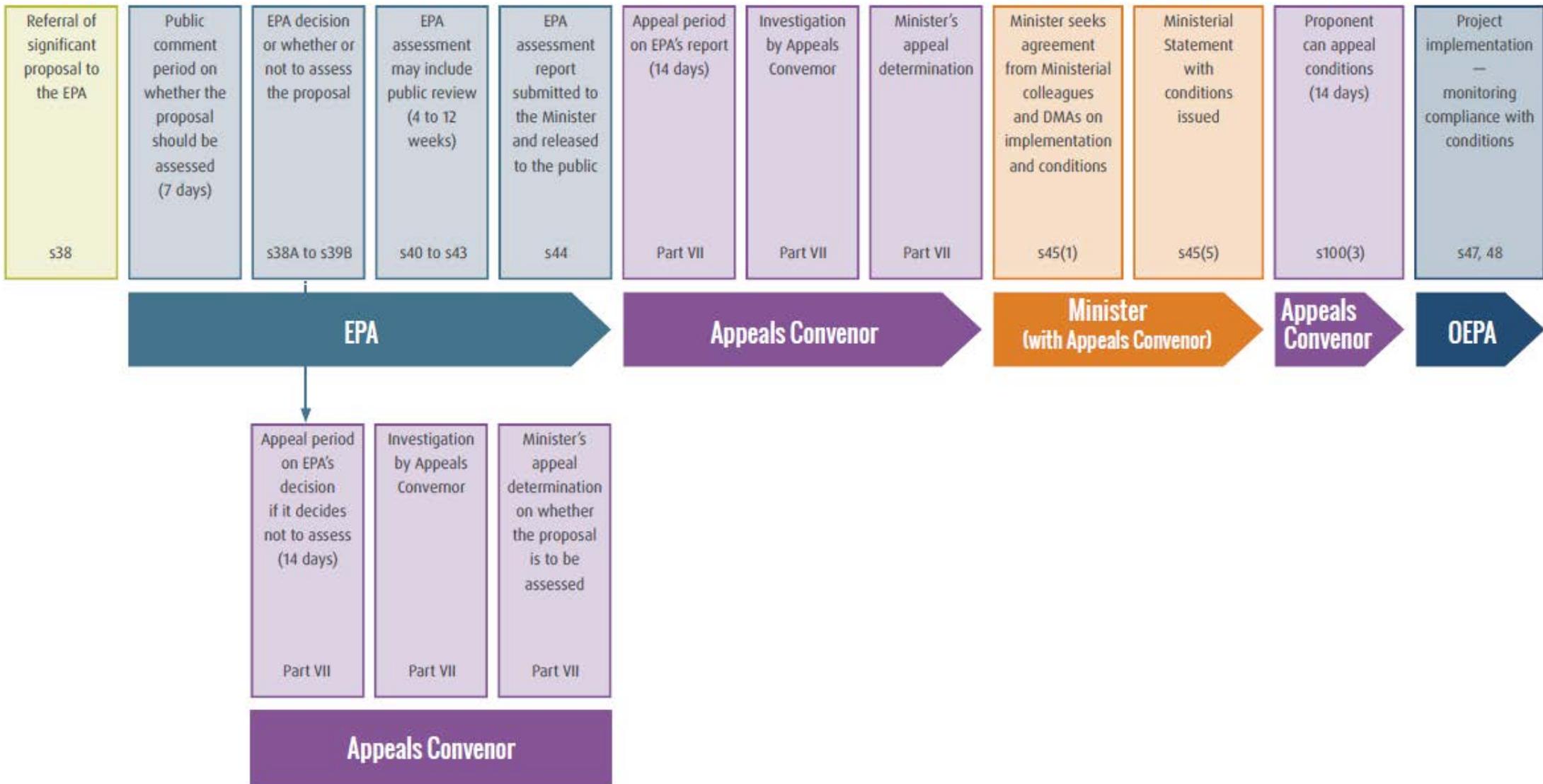
# QUESTIONS AND ANSWERS



# Environmental Management The Process

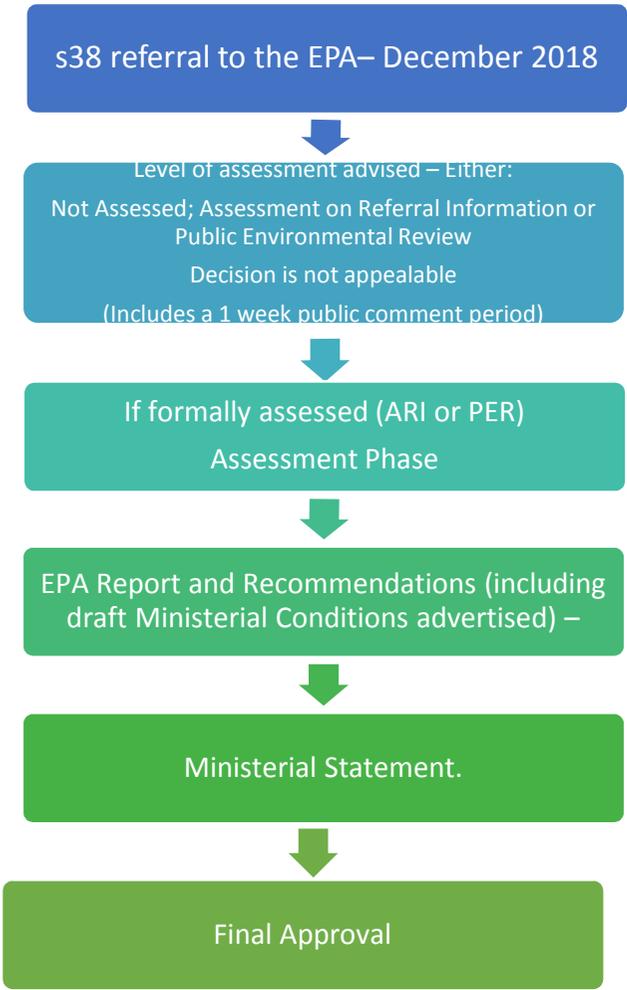
Padraic Murphy

# Environmental Impact Assessment Process

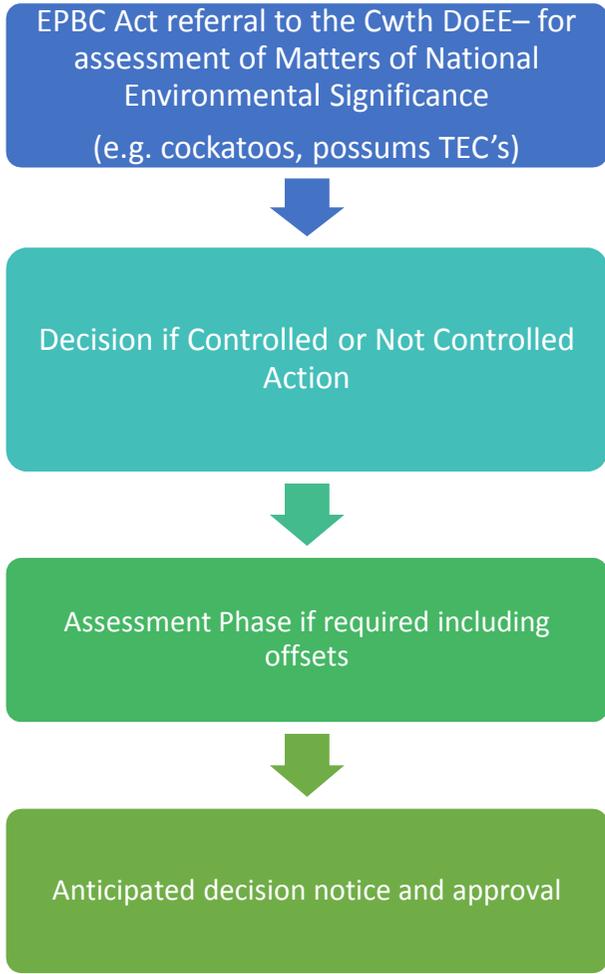


# Proposed Approvals pathway

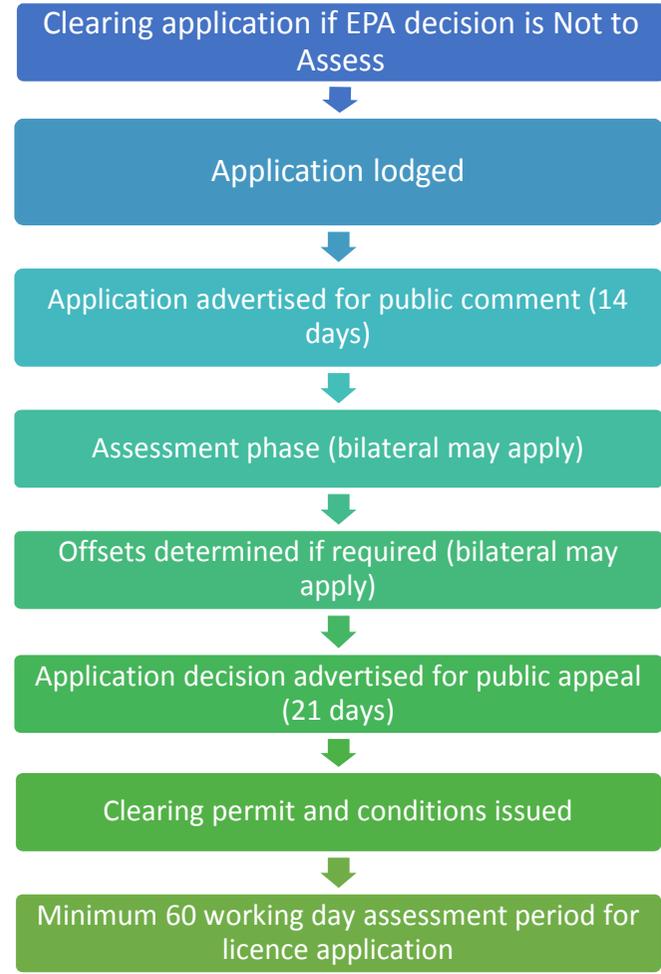
## Part IV EP Act (WA)



## EPBC Act (Commonwealth)



## Part V EP Act (WA) Native Vegetation Regulations



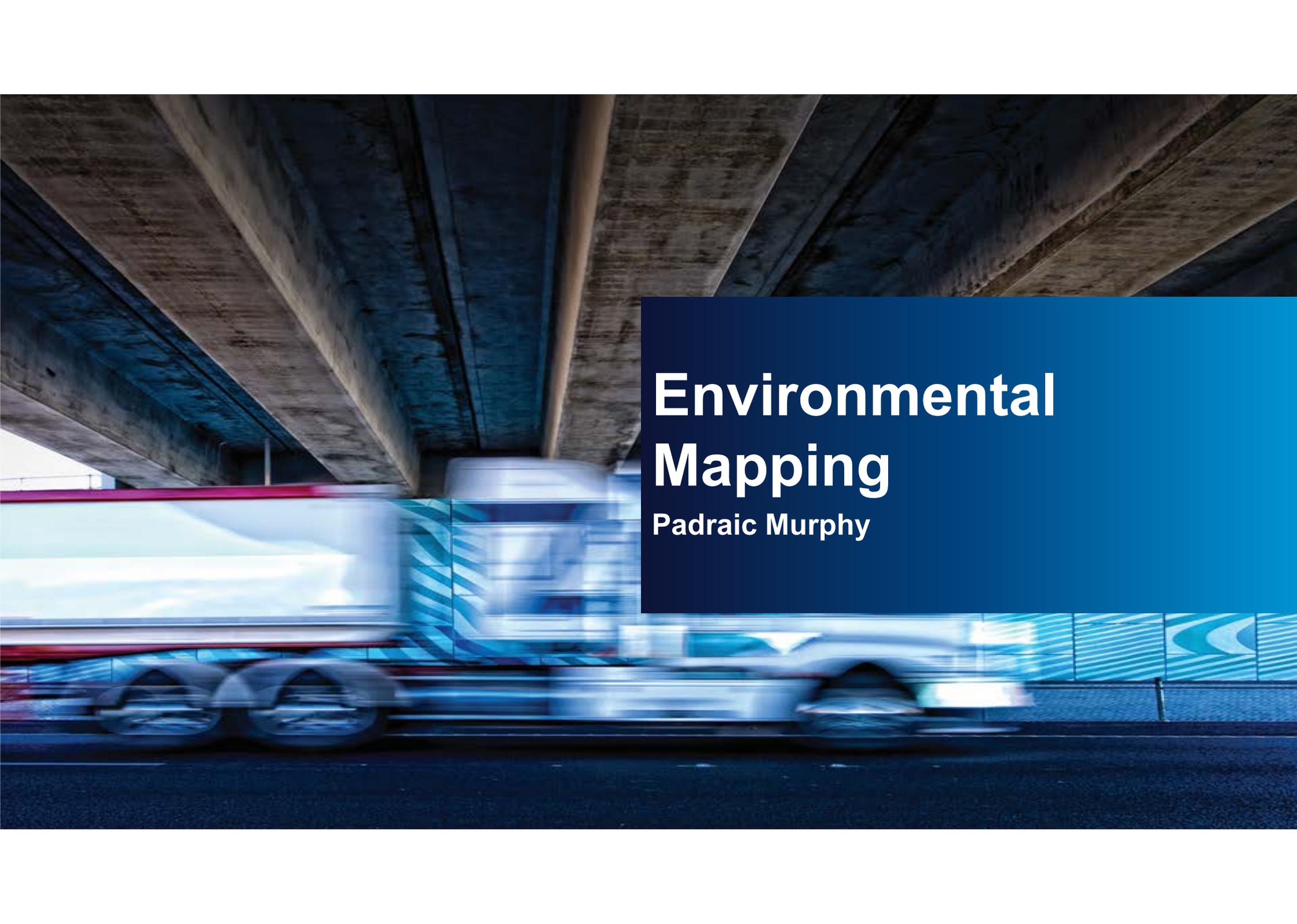
# Regulatory Compliance Framework

## Regulatory Compliance Framework

| <u>Ministerial Statement (if assessed)</u>  | <u>DoEE Approval</u>  | <u>Clearing Conditions</u>    | <u>Aboriginal s18 if required</u> | <u>If not assessed by EPA</u> |
|---|---|-------------------------------|-----------------------------------|-------------------------------|
| Conditions<br>Compliance Assessment Plan<br>Annual Compliance Assessment Report (public availability) | Conditions<br>Annual compliance report (public availability) and auditing (if directed) | Conditions<br>Offset Strategy | Conditions                        | Noise regulations will apply  |



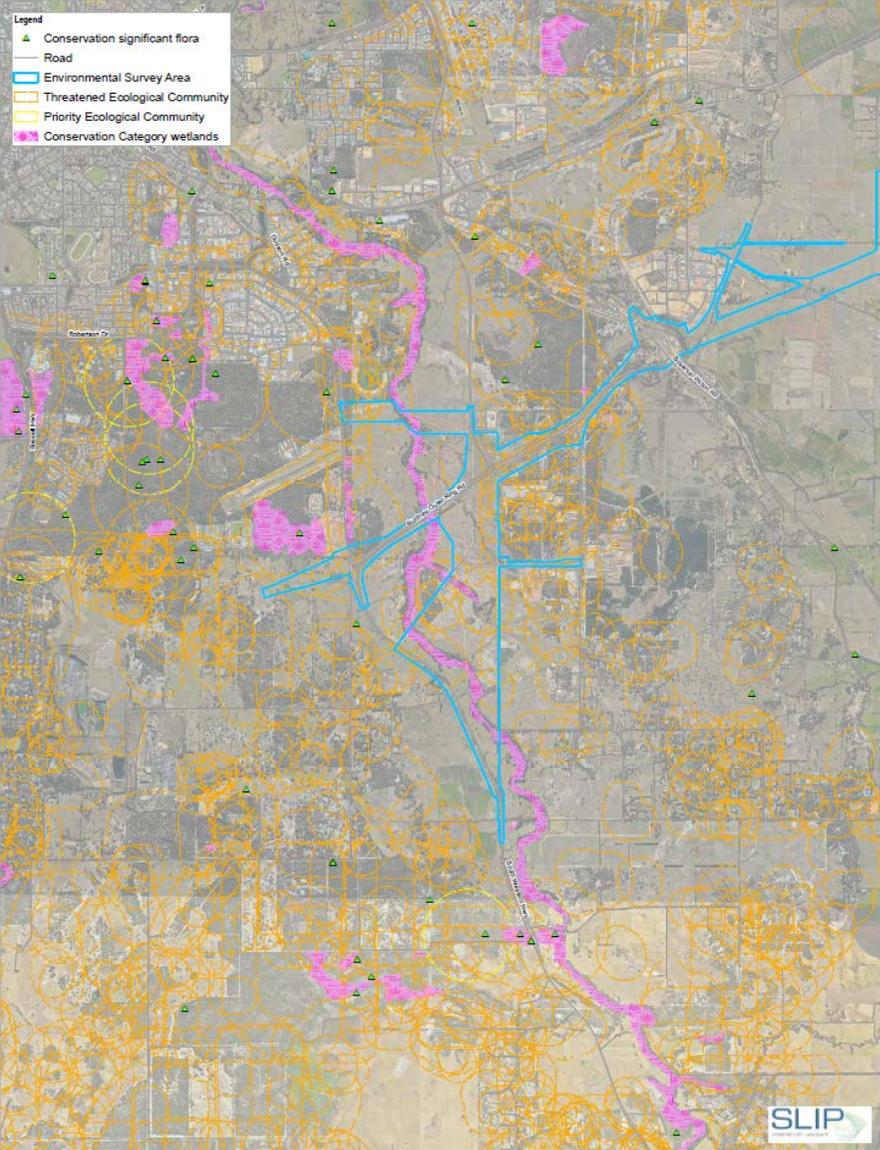
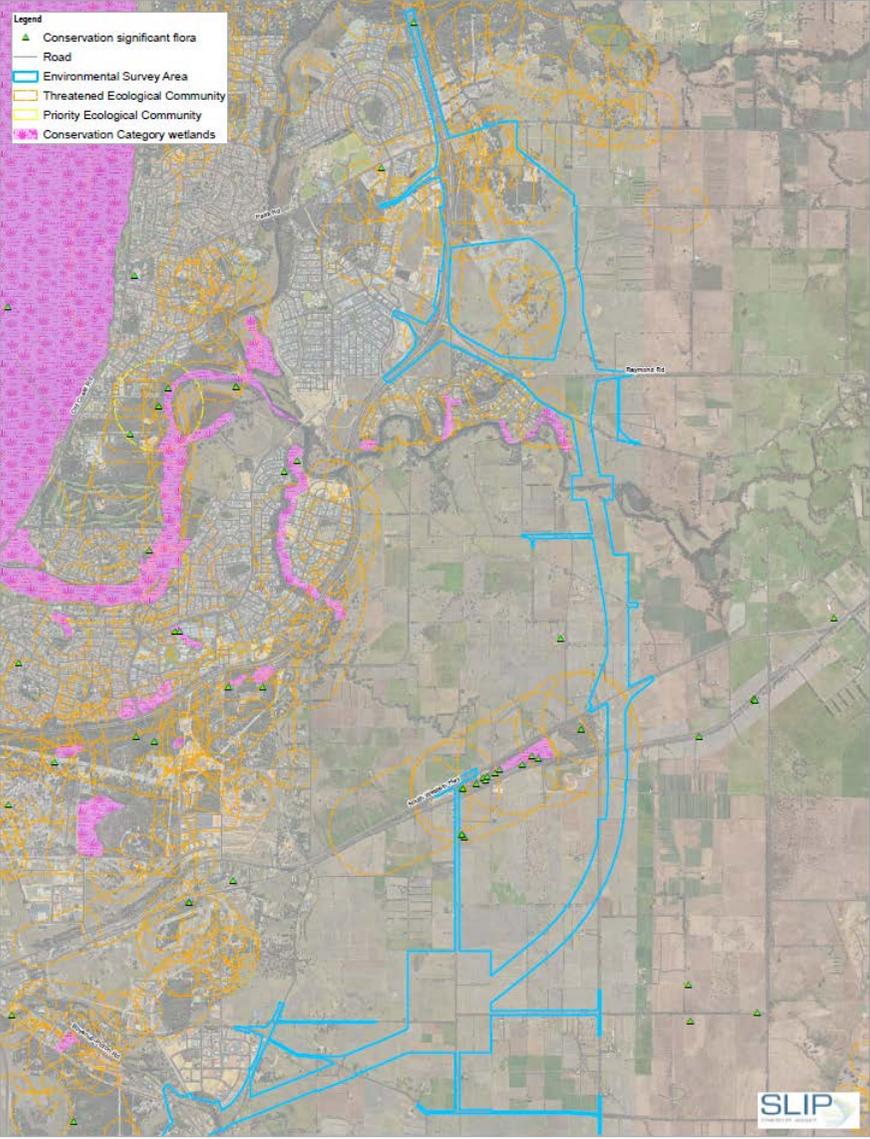
# QUESTIONS AND ANSWERS



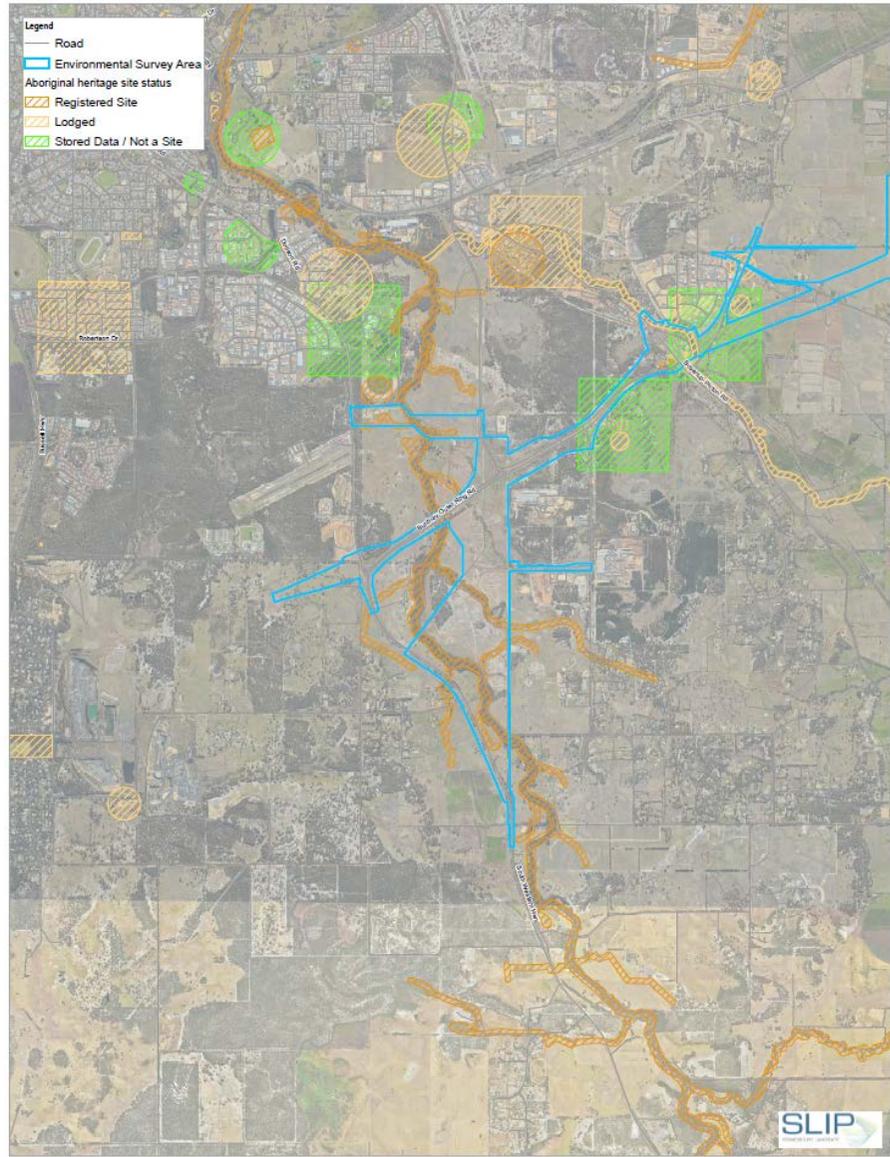
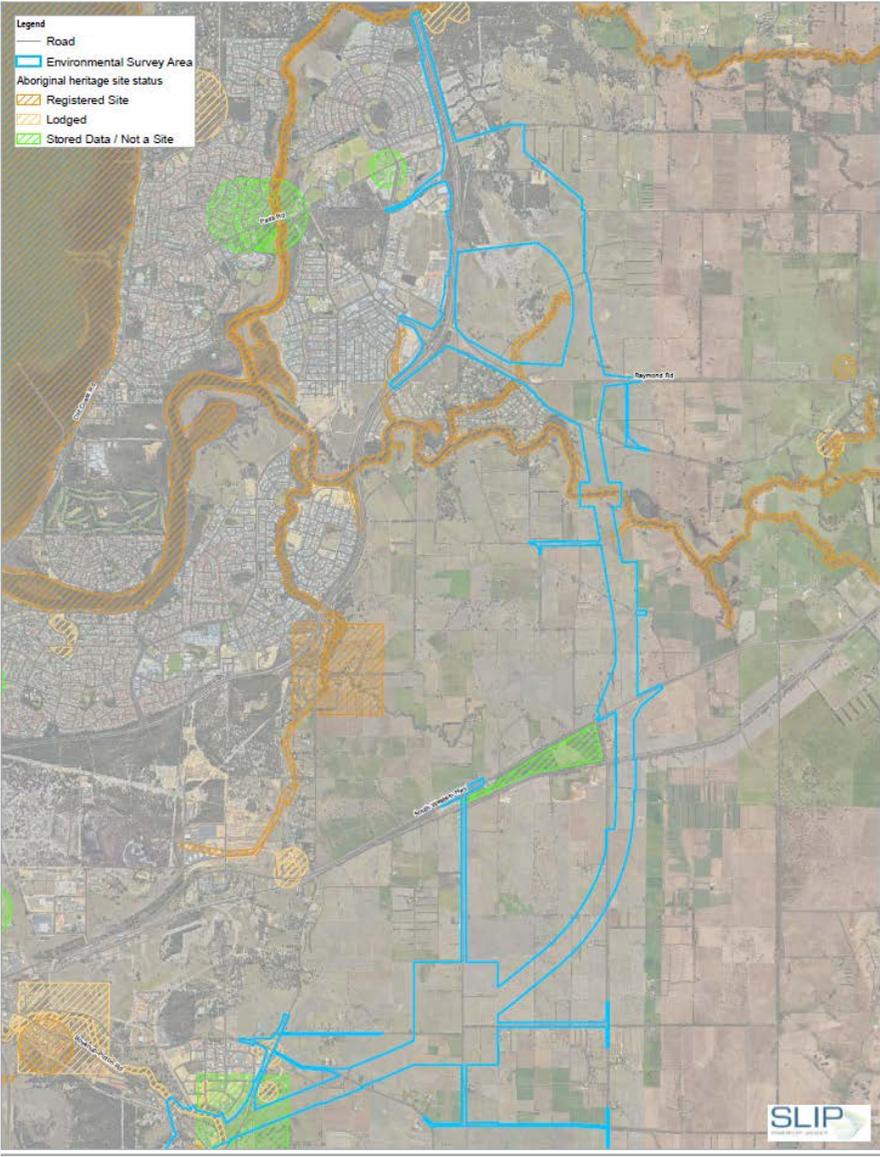
# Environmental Mapping

Padraic Murphy

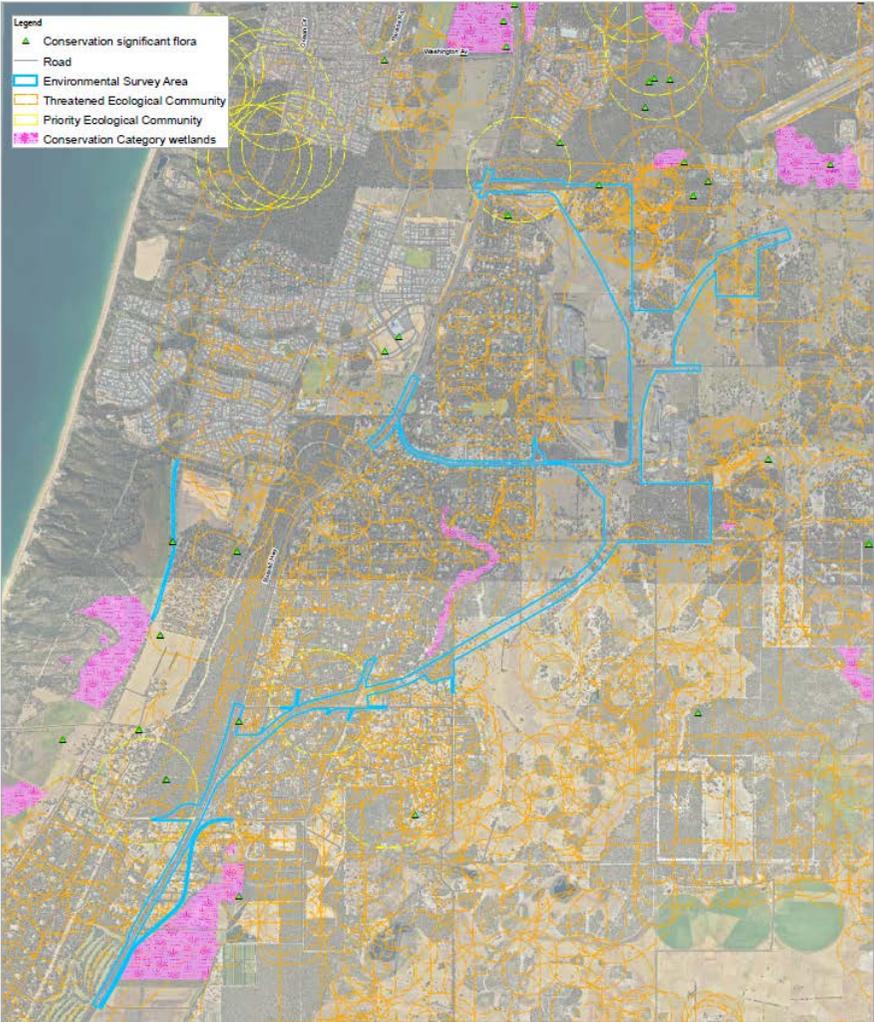
# BORR North and Central – Environmental Values



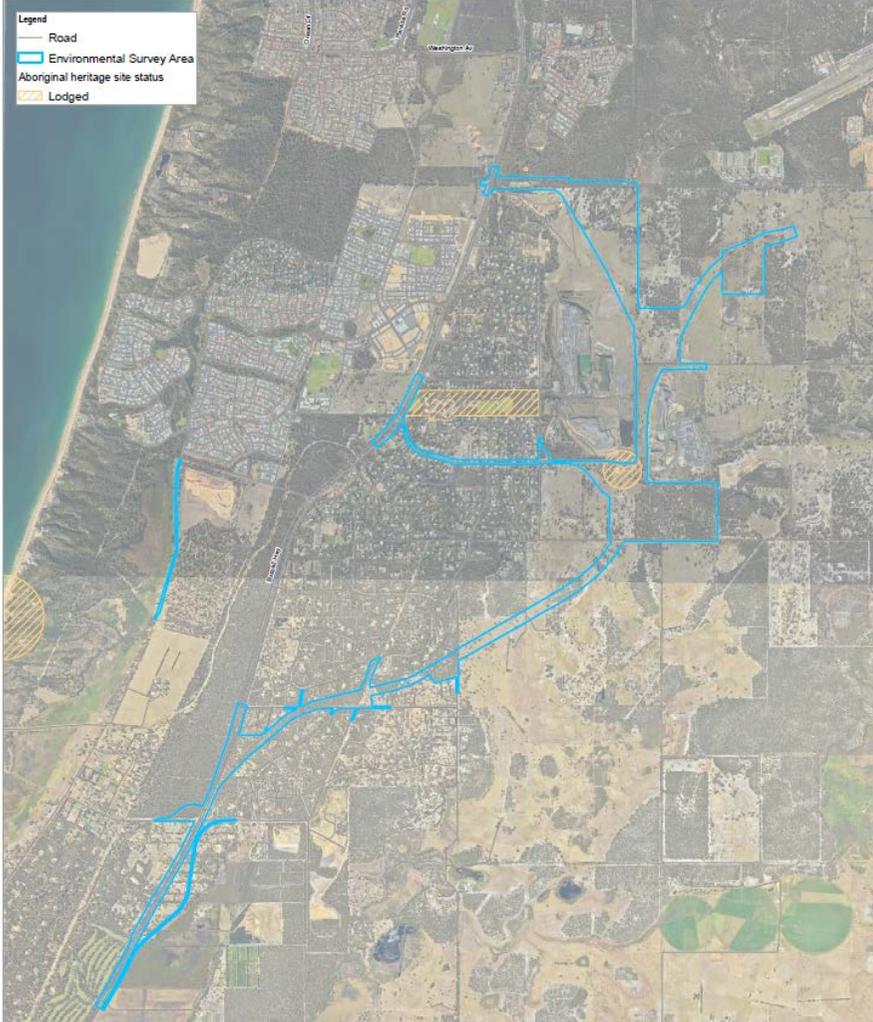
# BORR North and Central – Heritage Values



# BORR South GBR

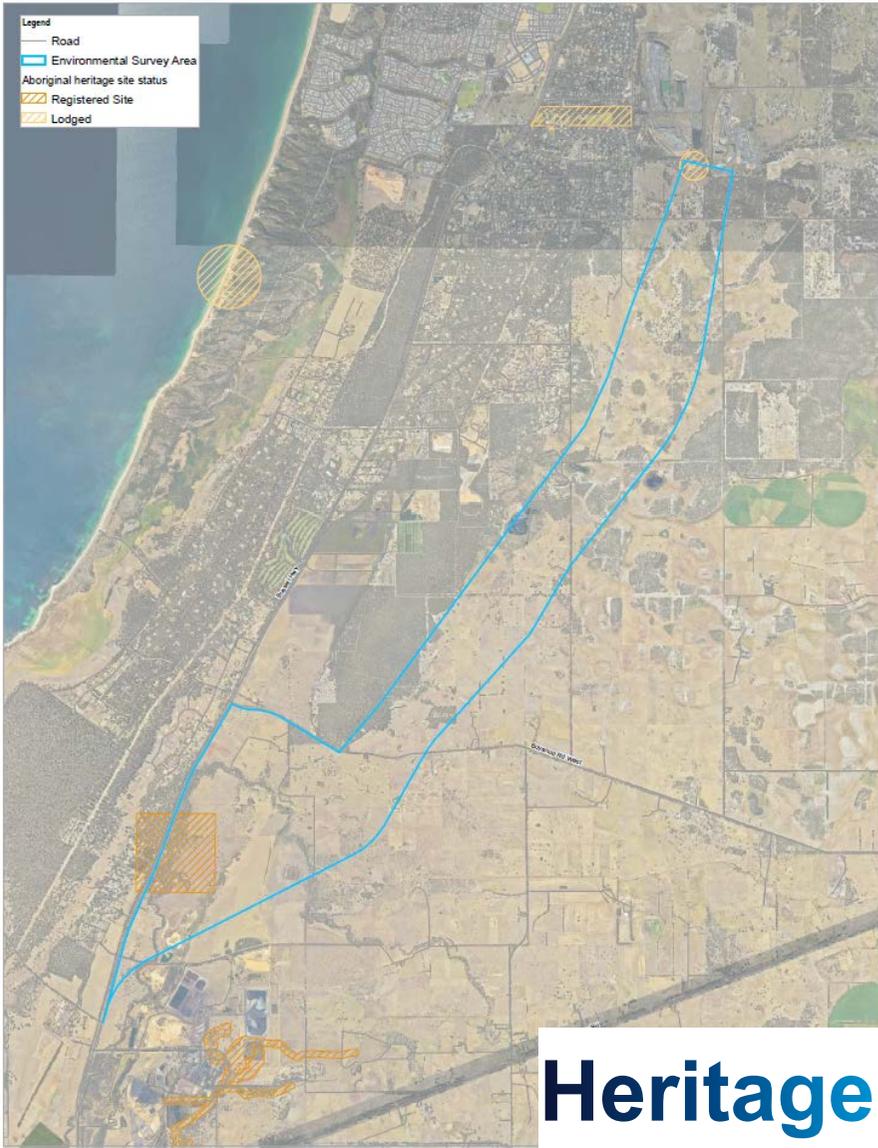
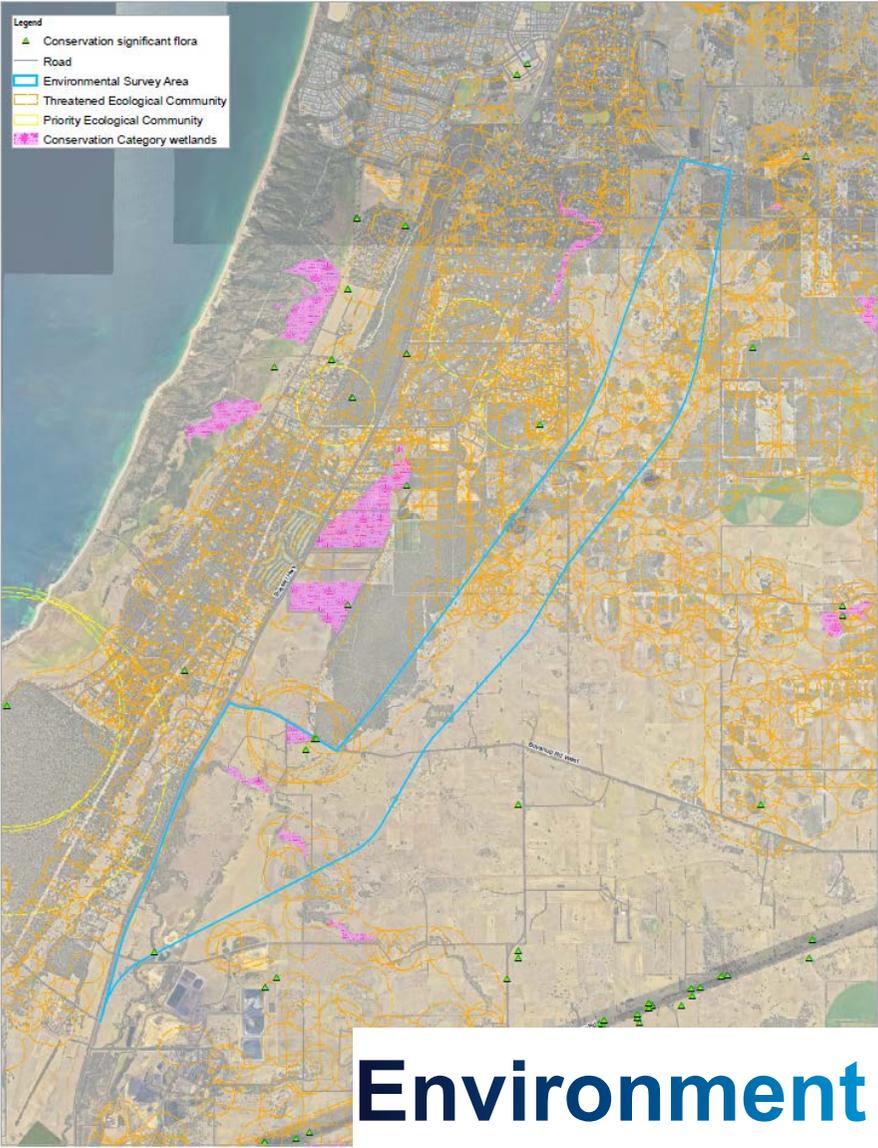


**Environment**



**Heritage**

# BORR South Investigation Corridor





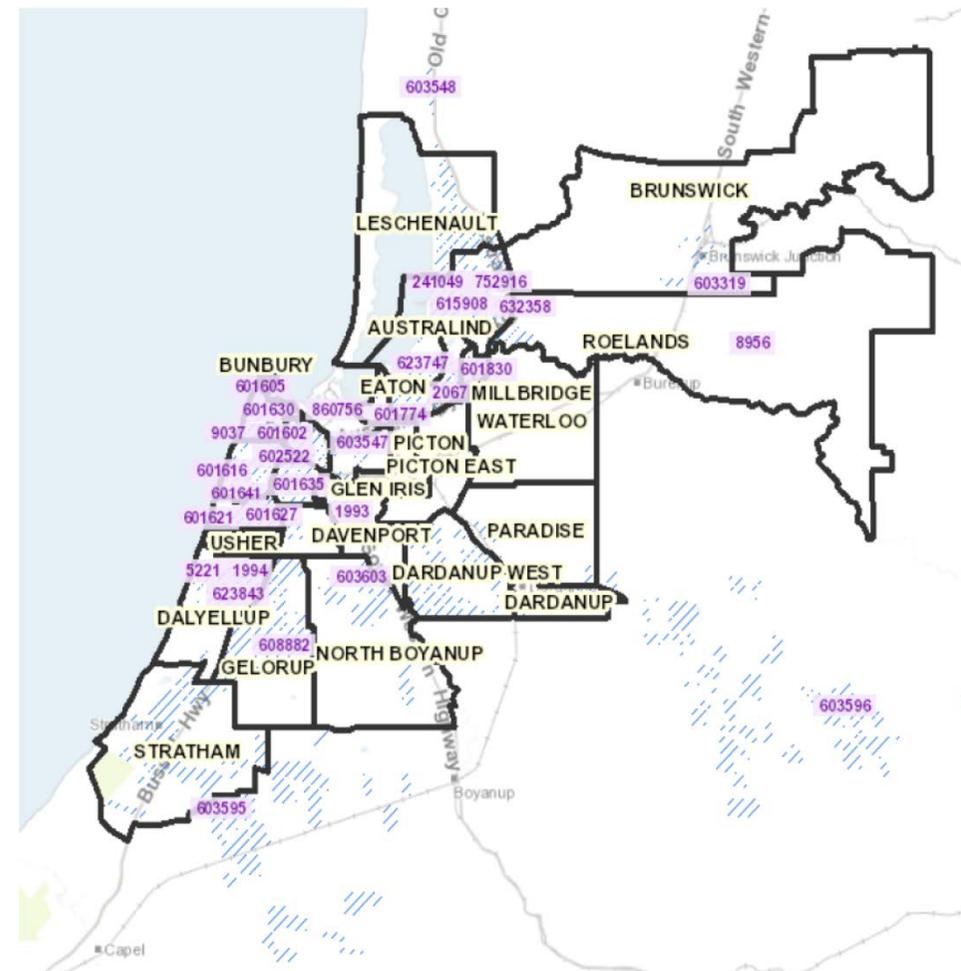
# QUESTIONS AND ANSWERS



# Consultation and Engagement Update

Tammy Mitchell – BORR Team  
Community & Stakeholder Engagement  
Manager

- Website update – new maps
- Project newsletter will be circulated in October
- The area shown on the map represents almost 38,000 homes / businesses
- Copies will also be provided to the Local Government authorities



- Community information sessions will be held between 4.30 – 7.30pm:

Eaton:            Wednesday 24 October

Eaton Sports Club

Australind:    Thursday 25 October

Leschenault Leisure Centre

Bunbury:        Tuesday 30 October

Bunbury RSL

Gelorup:        Wednesday 31 October

Gelorup Community Hall



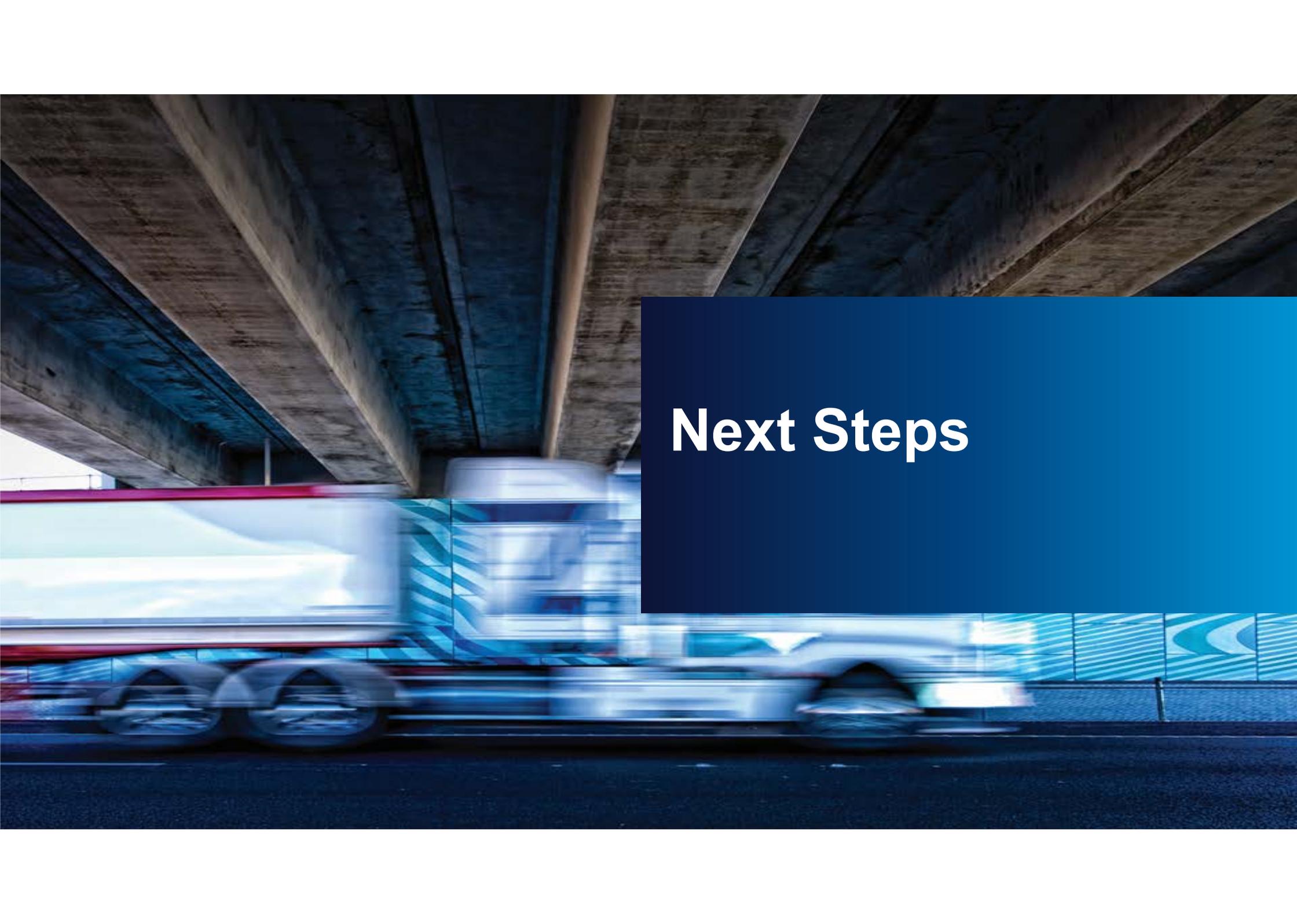
# QUESTIONS AND ANSWERS

A blurred image of a white truck with blue and red stripes driving under a concrete bridge structure. The truck is moving from left to right, and the background is a dark blue gradient. The bridge structure is made of concrete and has several large pillars supporting it.

# CRG Member Round table



# COMMENTS, QUESTIONS AND ANSWERS



# Next Steps