



Australian Government



mainroads  
WESTERN AUSTRALIA

BUNBURY OUTER RING ROAD | PLANNING AND DEVELOPMENT

**BUILDING OUR FUTURE**

# Bunbury Outer Ring Road Northern & Central Community Reference Group

1 October 2018





# Agenda

<b>4:45</b>	<b>Arrival – light refreshments available from 4:45pm</b>	
5:00	Welcome – meeting purpose and process	Linton Pike
5:10	Project update – Governance of the CRG	Dominic Boyle
5:20	Previous Workshop Summary and actions arising	Linton Pike
5:45	Traffic data	Hannah Ruprecht
6:10	Alignment selection information	Owen McClean
6:30	Alignment definition – BORR north	Padraic Murphy
6:50	Alignment definition – BORR south	
7:00	Noise management – The Process	
7:10	Environmental management – The Process	
7:20	Environmental mapping	
7:30	Consultation and engagement update	Tammy Mitchell
7:40	CRG member comment	CRG members
<b>8.00</b>	<b>Next steps and close</b>	Linton Pike



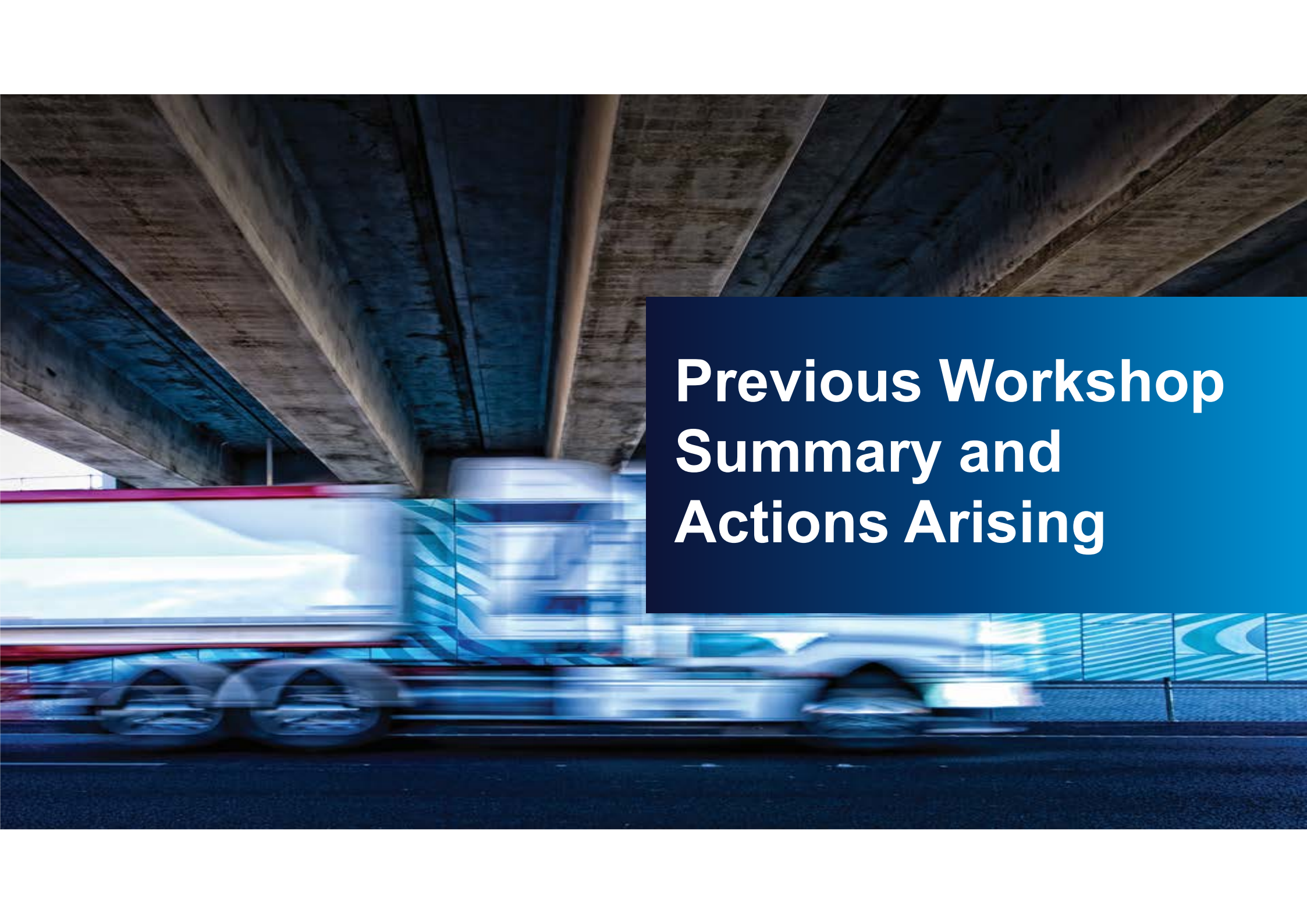


# Project Update

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

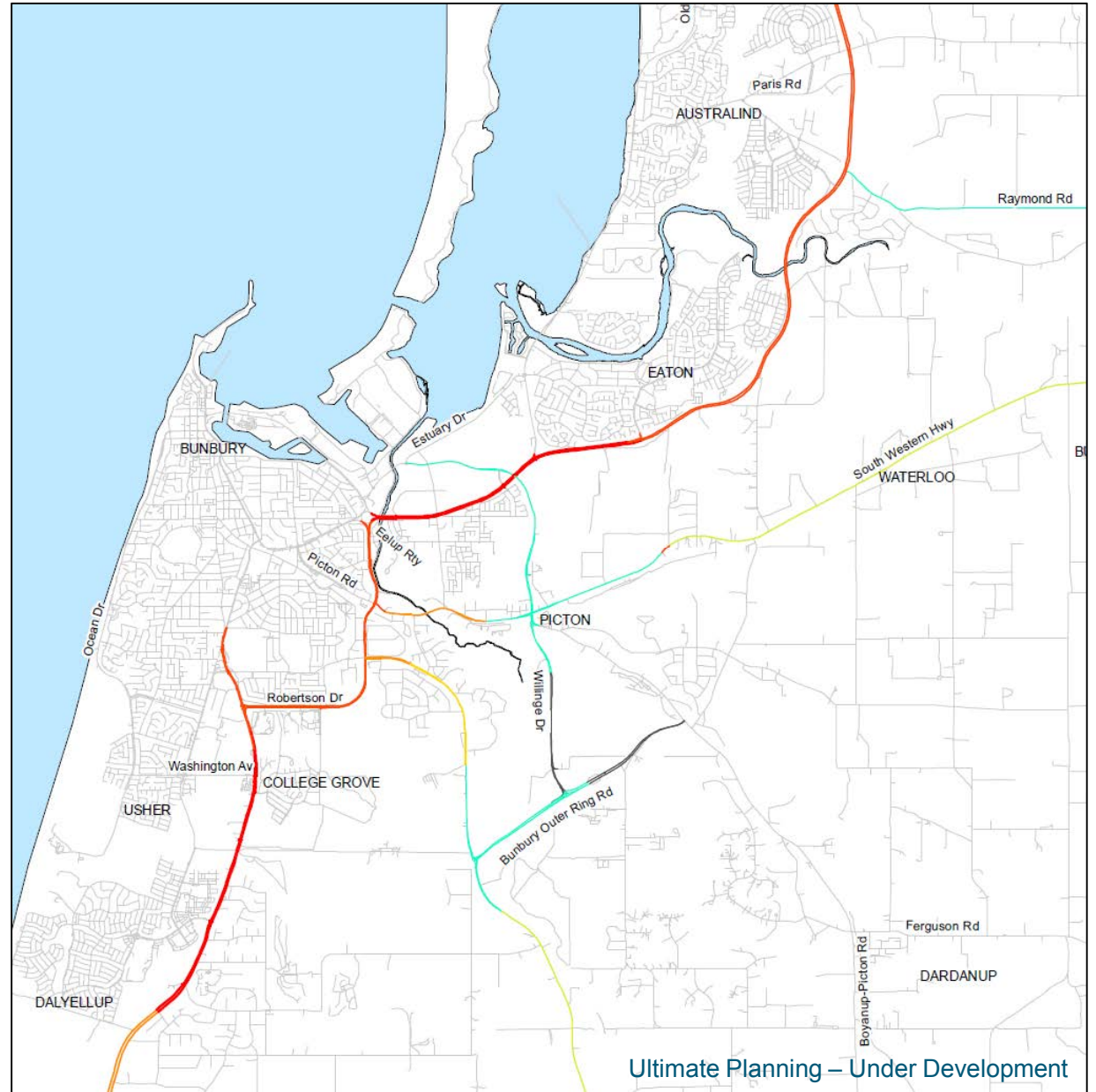
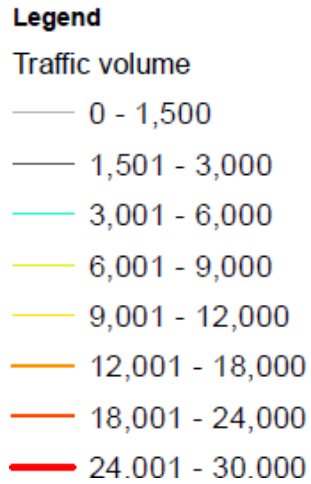


# Traffic Data

Hannah Ruprecht

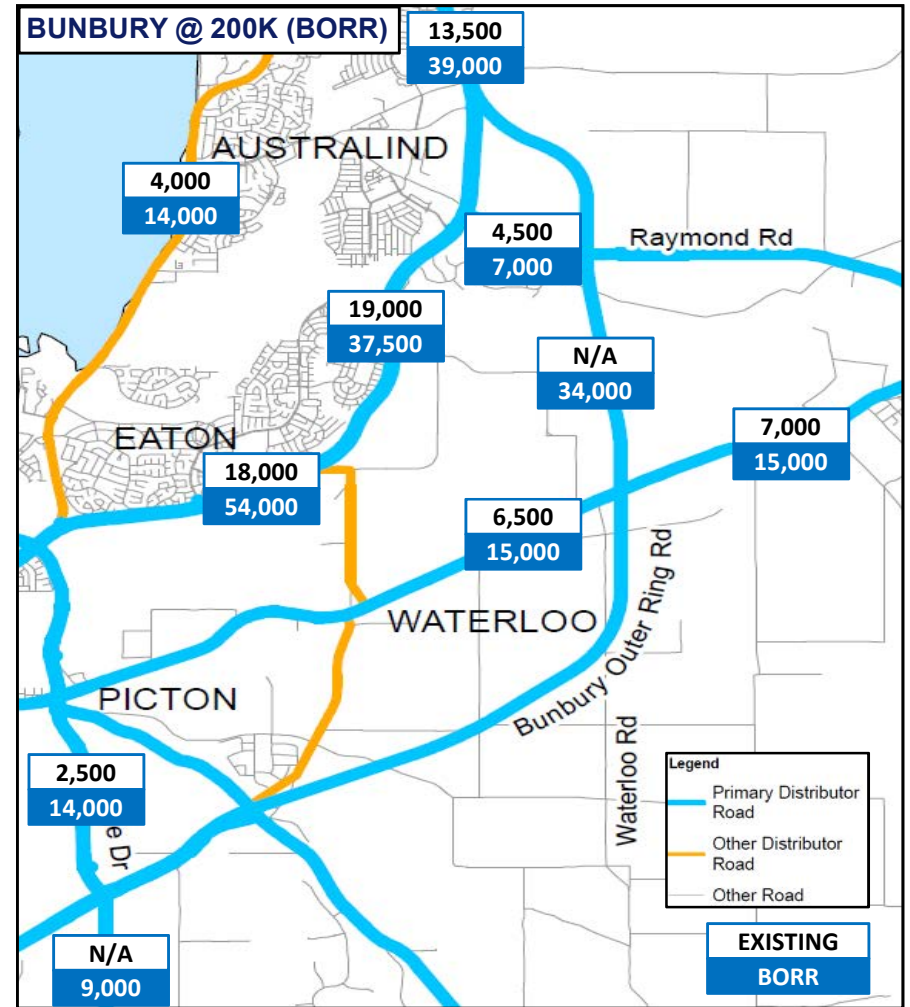
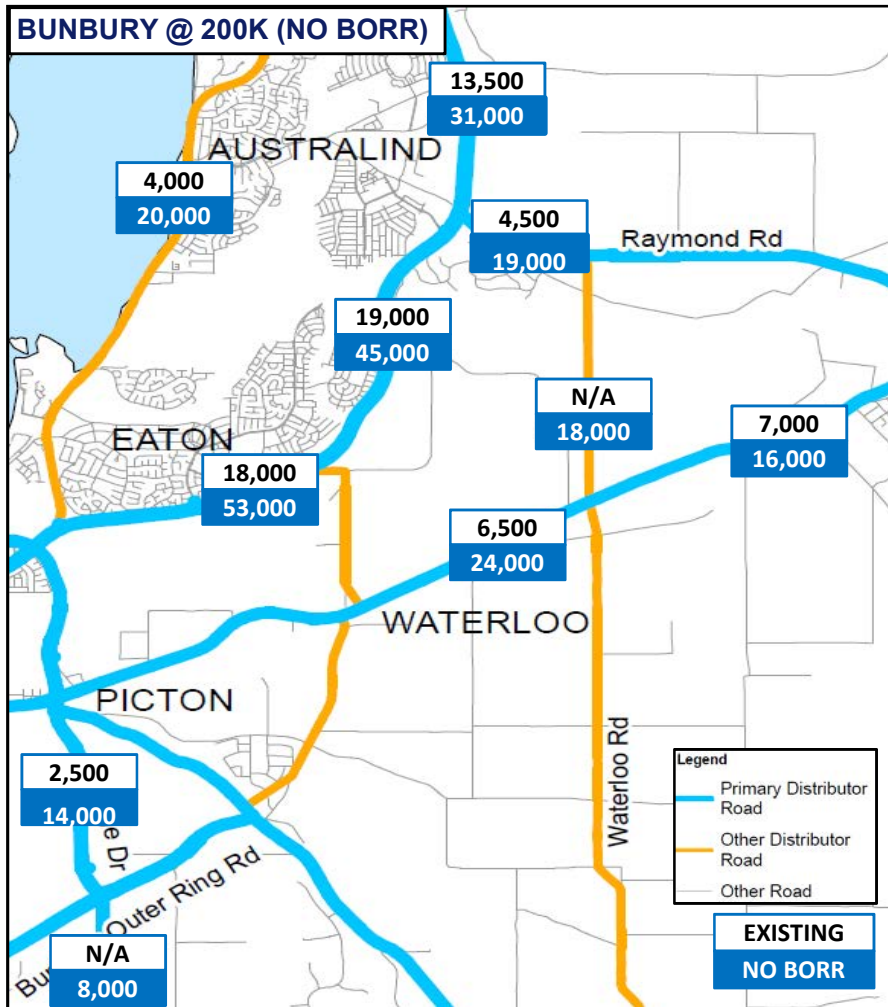


# Existing Traffic Volumes



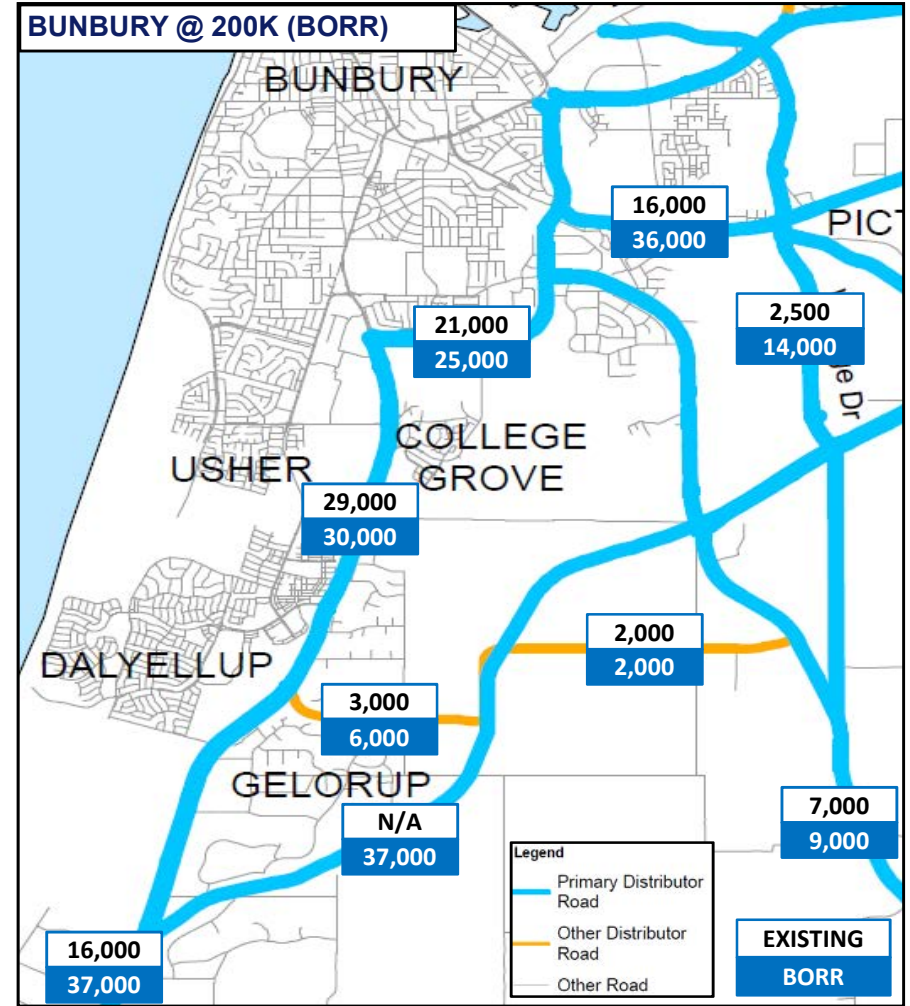
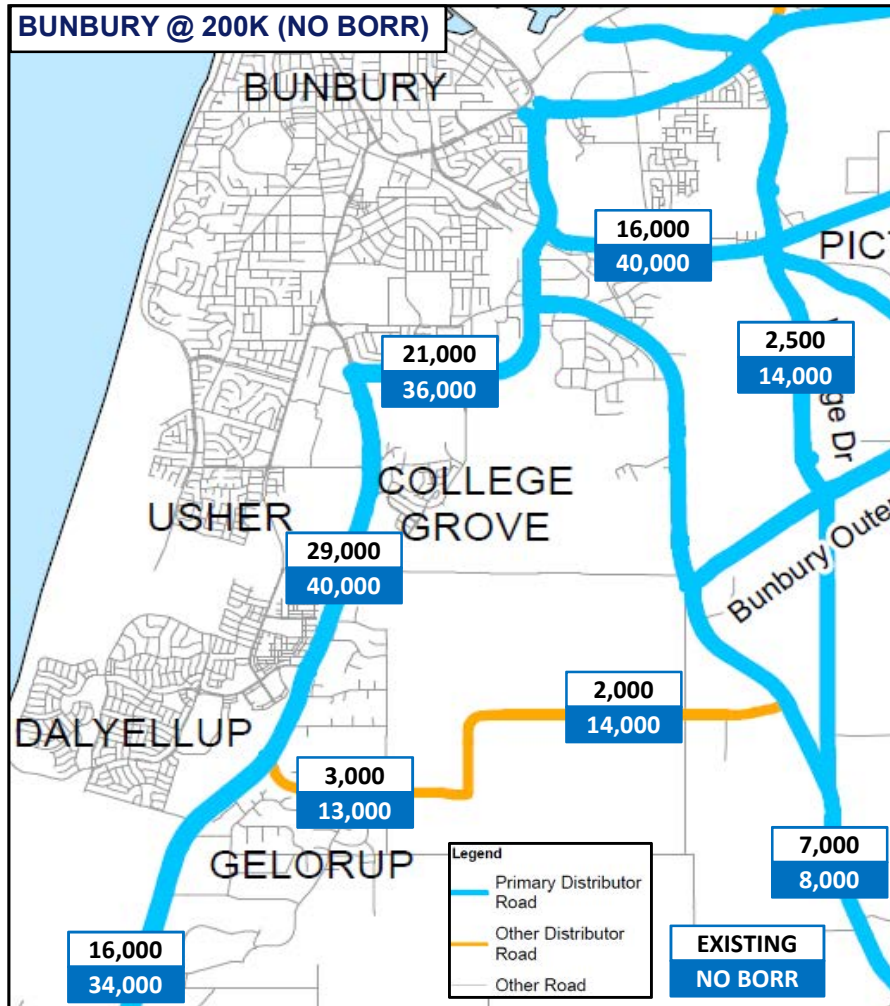


# Approximate daily traffic Volumes - Bunbury regional population 200,000



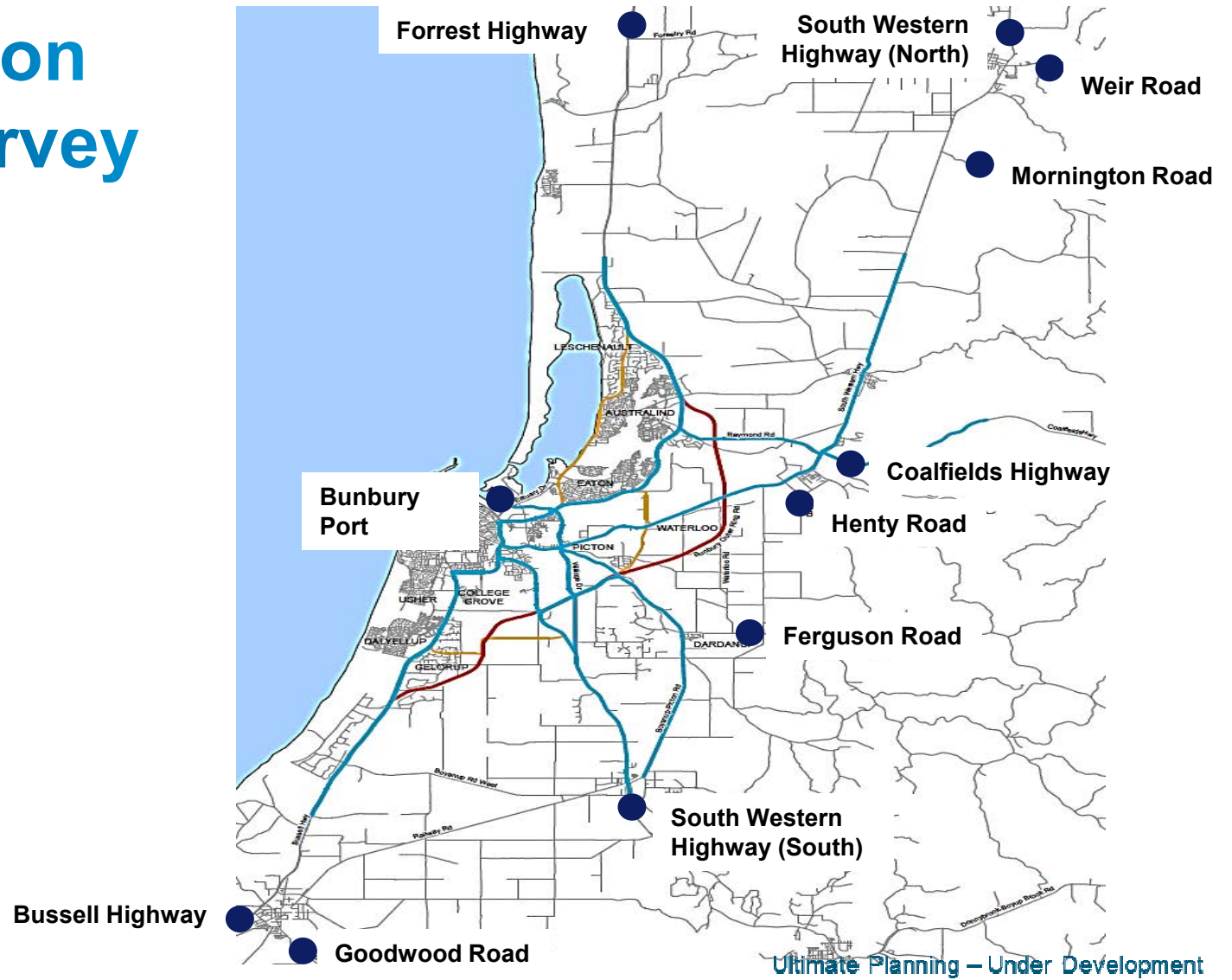
Ultimate Planning – Under Development

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



Ultimate Planning – Under Development

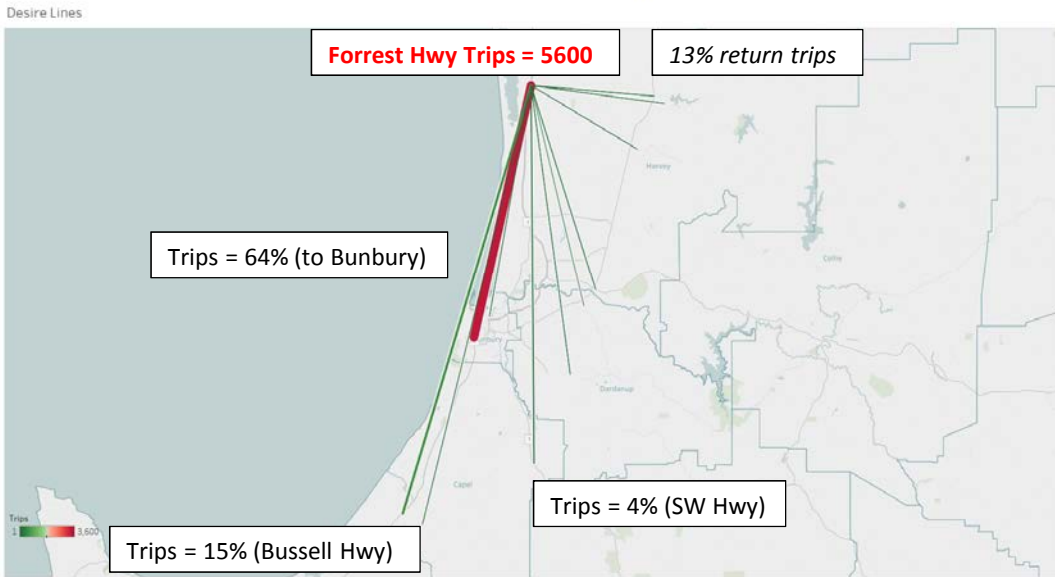
# Network Operation Area and OD Survey Locations



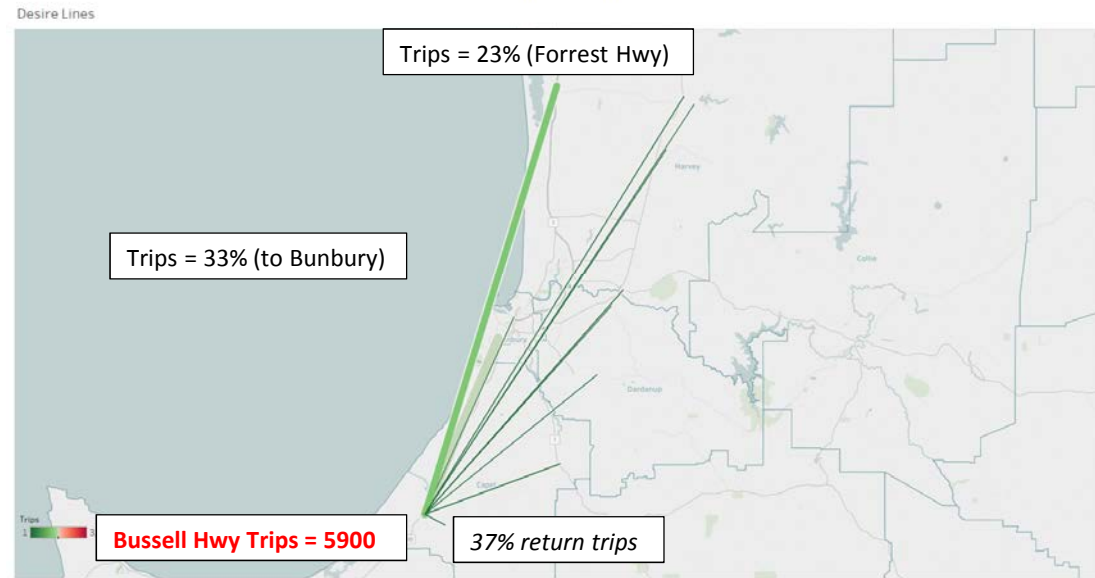


# O-D Survey Results (Thursday)

Bunbury Origin-Destination Survey



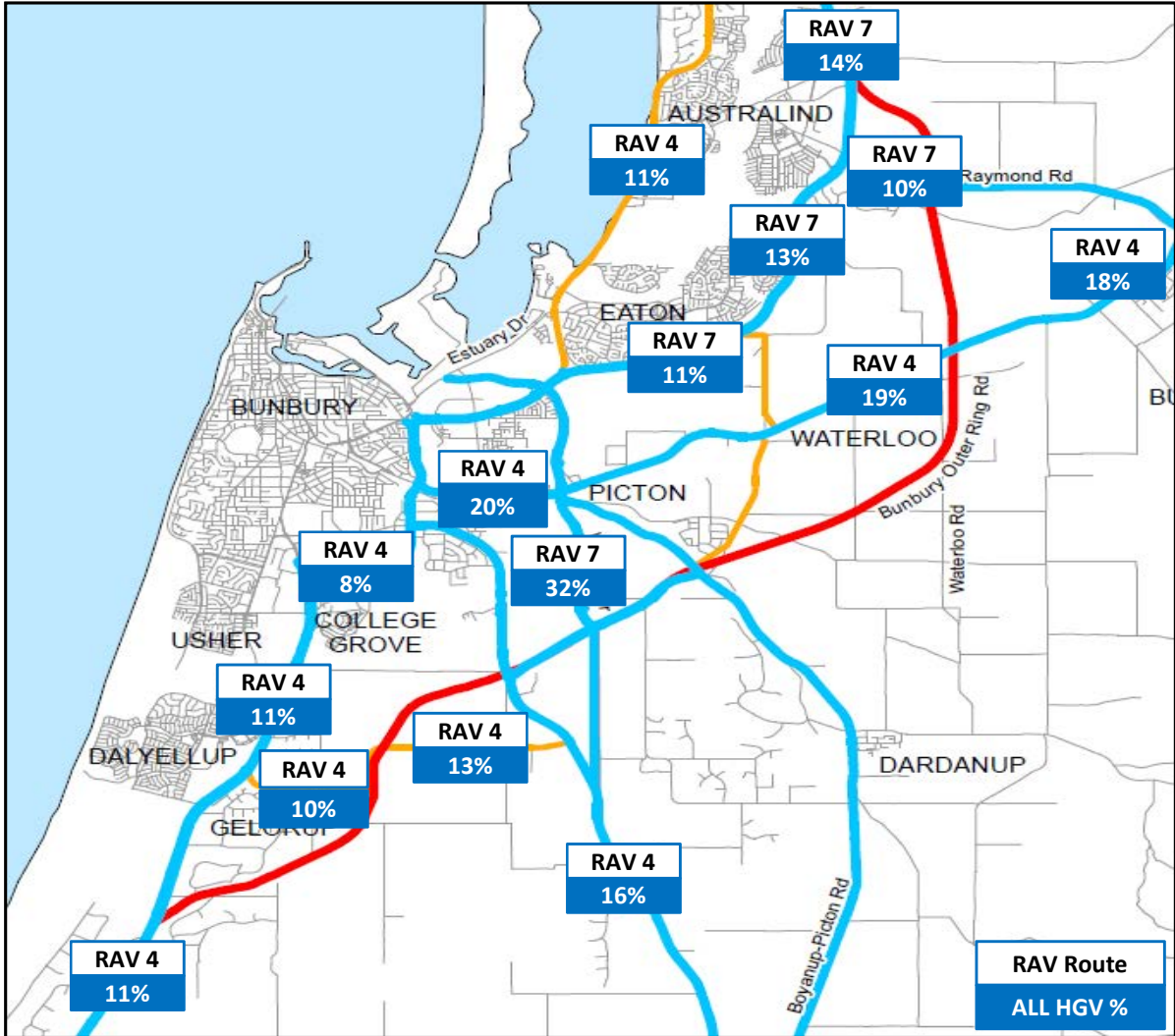
Bunbury Origin-Destination Survey



## Heavy Vehicle Services

VEHICLE DESCRIPTION AND CONFIGURATION CHART (RAV) – PRIME MOVER, TRAILER COMBINATIONS EXAMPLES				Axle Spacing Table	Length (m)	Mass (T) Maximum Permitted Mass	RAV Network		
Category 1	(A) PRIME MOVER, SEMI TRAILER TOWING A PIG TRAILER 	(B) PRIME MOVER TOWING AN OVERHEIGHT SEMI TRAILER 	(C) SHORT B-DOUBLE 	(D) TWINSTEER PRIME MOVER TOWING SEMI TRAILER 	(A) (B) (C) (D)	≤20 ≤19 ≤20 ≤19	50 42.5 50 47.5	Network 1	
Category 2	(A) PRIME MOVER, SEMI TRAILER TOWING A PIG TRAILER 	(B) PRIME MOVER TOWING SEMI TRAILER 	(C) B-DOUBLE 	(D) SHORT B TRIPLE 	(E) CAR CARRIER SEMI TRAILER 	(A) (B) (C) (D) (E)	≤27.5 ≤20 ≤27.5 ≤27.5 ≤25	65.5 47.5 67.5 67.5 42.5	Network 2
Category 3	(A) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER 	<div style="border: 1px solid black; padding: 5px;"> <p>Example of Axle Groups</p> <p>Example of Axle Group with An Optional Axle</p> </div>			(A)	≤27.5	84	Network 3	
Category 4	(A) PRIME MOVER, SEMI TRAILER TOWING 6 AXLE DOG TRAILER 				(A)	≤27.5	87.5	Network 4	
Category 5	(A) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER 	(B) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER AND CONVERTER DOLLY 	(C) B-DOUBLE TOWING A CONVERTER DOLLY 	(D) B-TRIPLE 	(A) (B) (C) (D)	>27.5, ≤36.5 >27.5, ≤36.5 >27.5, ≤36.5 >27.5, ≤36.5	84 84+d 67.5+d 84	Network 5	
Category 6	(A) PRIME MOVER, SEMI TRAILER TOWING 6 AXLE DOG TRAILER 	(B) B-TRIPLE 	(C) PRIME MOVER SEMI TRAILER TOWING A 6 AXLE TRAILER & CONVERTER DOLLY 		(A) (B) (C)	>27.5, ≤36.5 >27.5, ≤36.5 >27.5, ≤36.5	87.5 87.5 87.5+d	Network 6	
Category 7	(A) PRIME MOVER, TOWING SEMI TRAILER AND B DOUBLE 	(B) B-DOUBLE TOWING A DOG TRAILER 		(A) (B)	>27.5, ≤36.5 >27.5, ≤36.5	107.5 107.5	Network 7		

# 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%

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

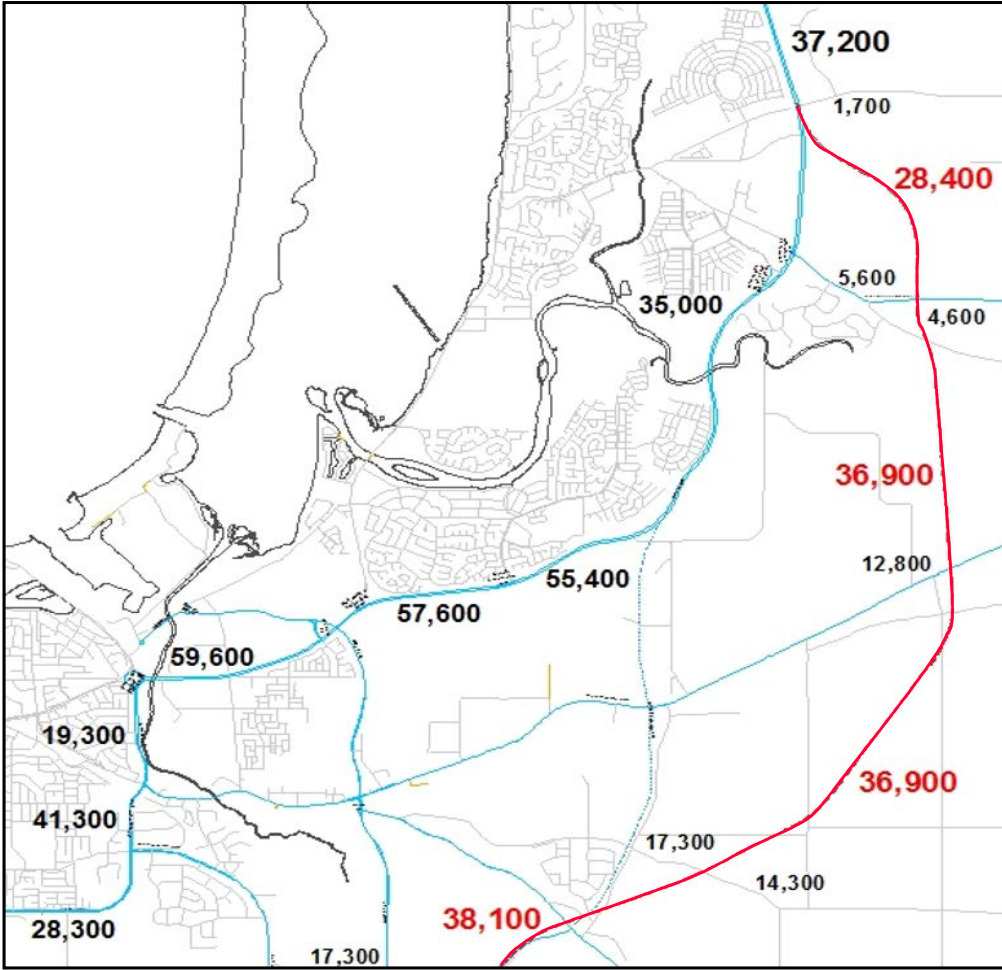
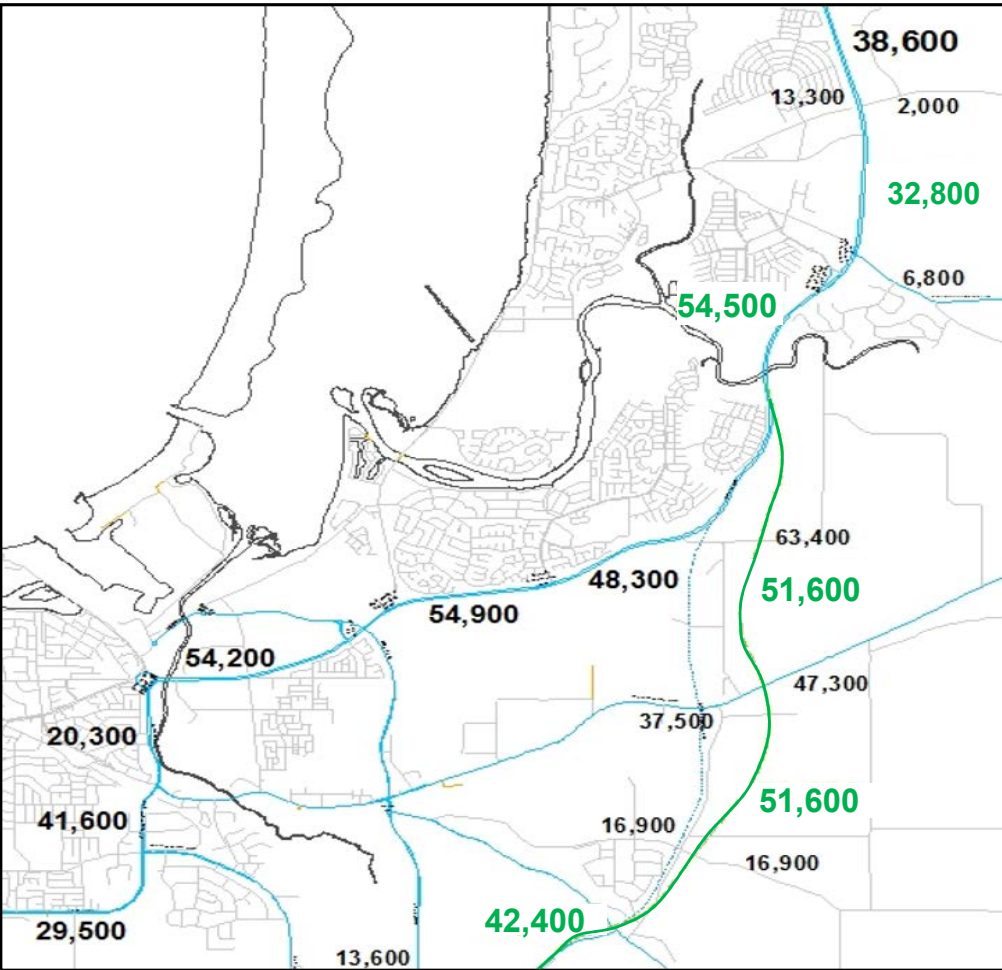


A blurred high-speed train, possibly a Shinkansen, is captured in motion, passing under a concrete bridge structure. The train is white with blue and red accents, and its wheels are blurred due to the long exposure. The bridge structure consists of large concrete beams and supports, creating a sense of depth and perspective. The overall scene is dimly lit, with a blueish tint, suggesting an indoor or tunnel environment.

# Alignment Selection Information

Owen McLean

# Traffic Analysis utilised to select Eastern Alignment



# Option Comparison Summary



- The green (inner) corridor:
  - bisects future urban footprint limiting permeability across BORR
  - combines regional and freight traffic with local traffic
  - needs 6 lanes and complex closely spaced interchanges
- The red/yellow (eastern) corridor:
  - separates regional and freight traffic from local traffic providing safety and efficiency improvements
  - provides a defined outer perimeter for Greater Bunbury
  - better coordinates transport and land use planning
  - caters for a Bunbury population in excess of 200k with 4 lanes



# 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 scene is dynamic and modern.

# Alignment Definition BORR North

Padraic Murphy

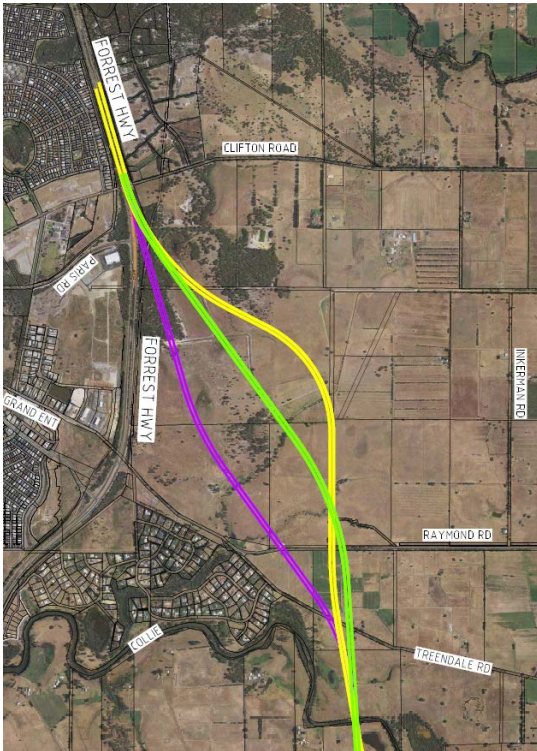


# BORR North Alignment – Study Sections

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



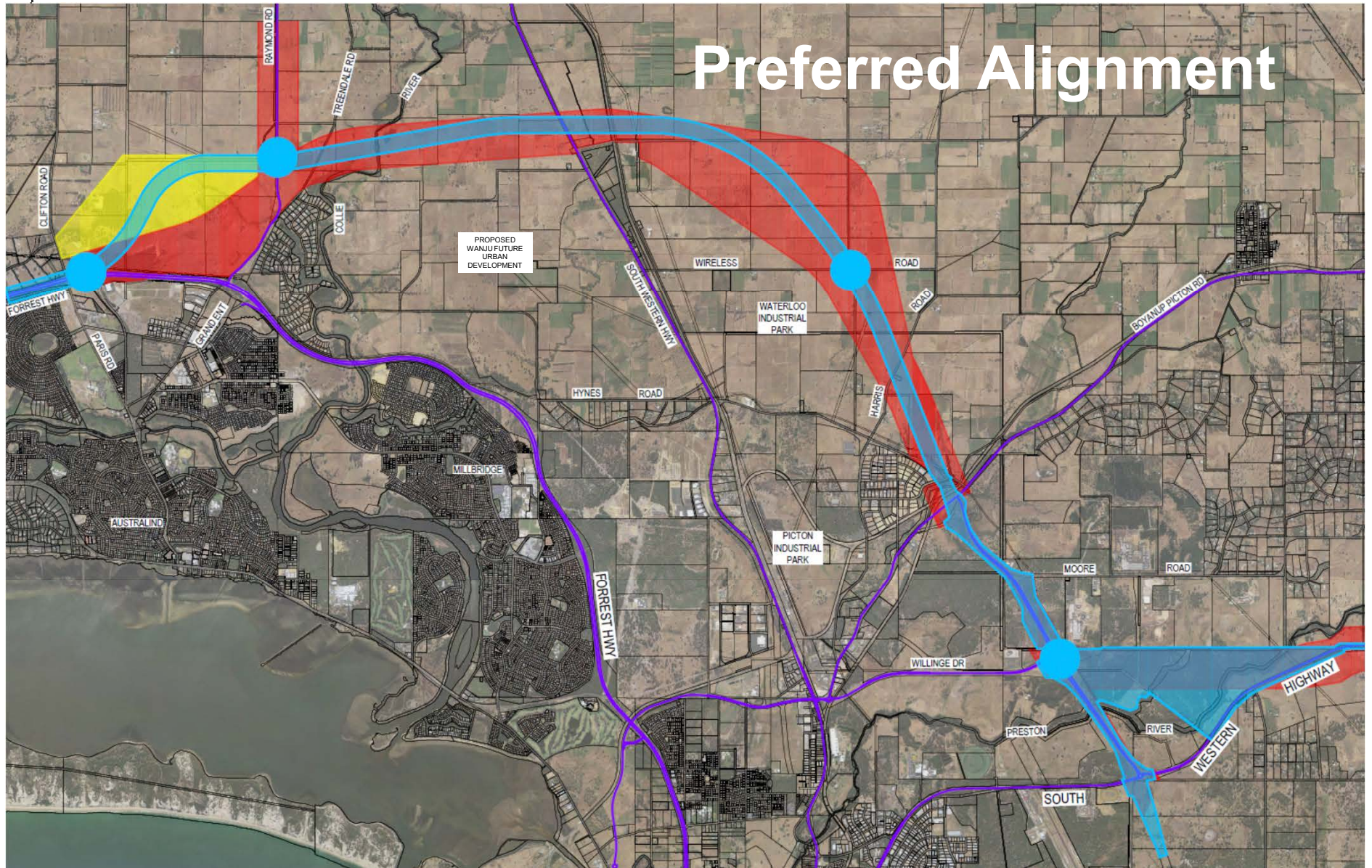
Ultimate Planning – Under Development

# 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)				

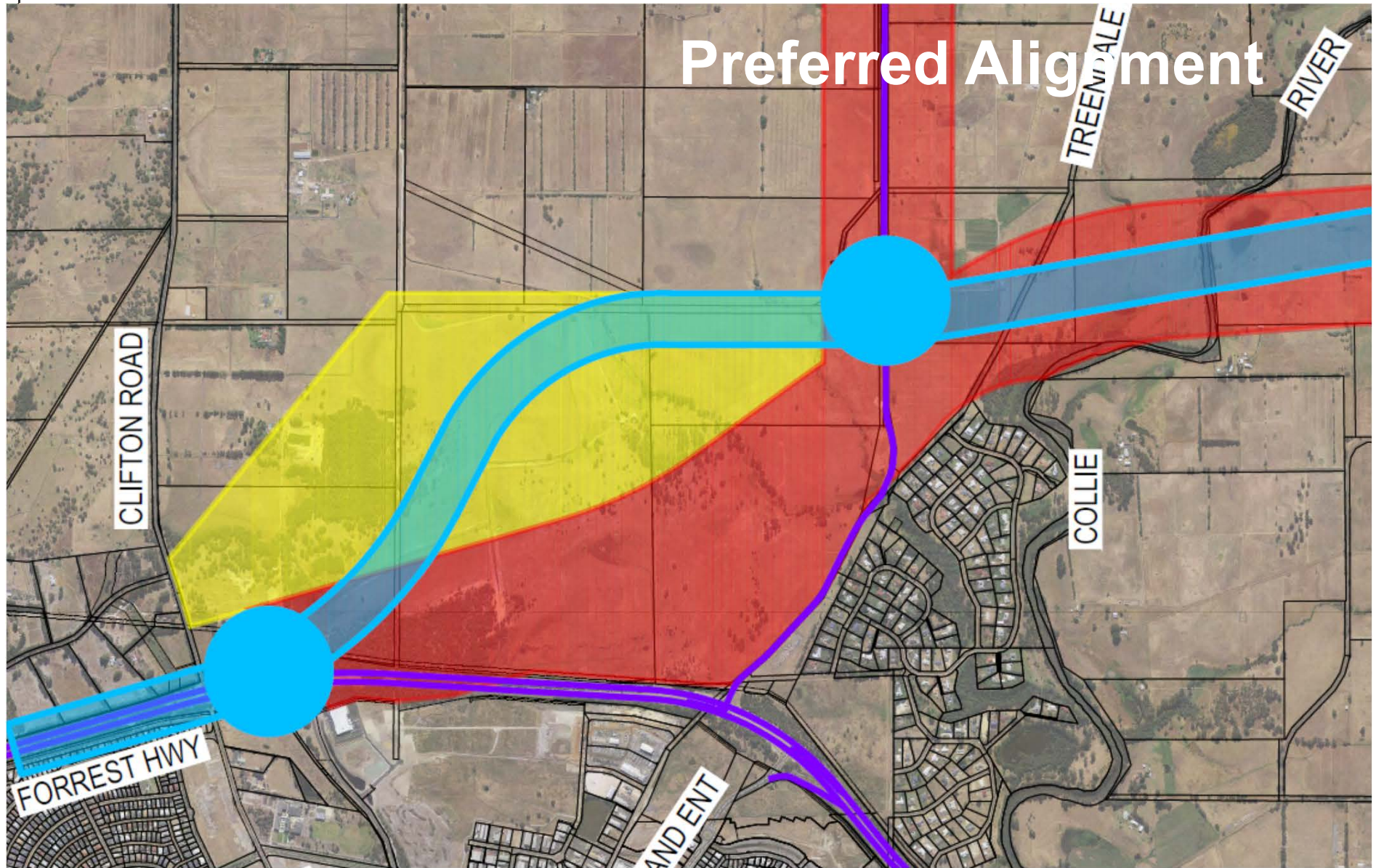


# Preferred Alignment

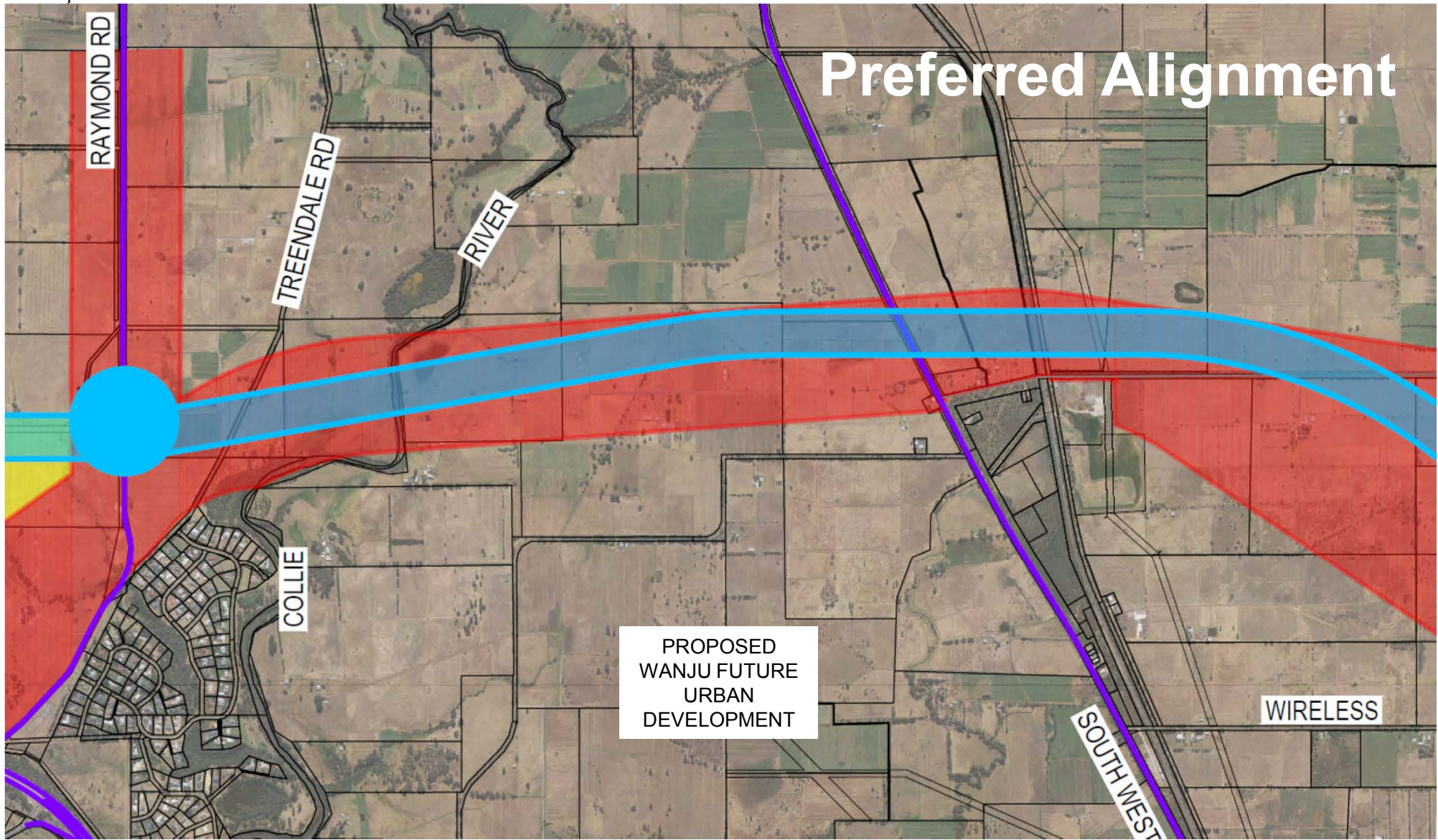


Ultimate Planning – Under Development







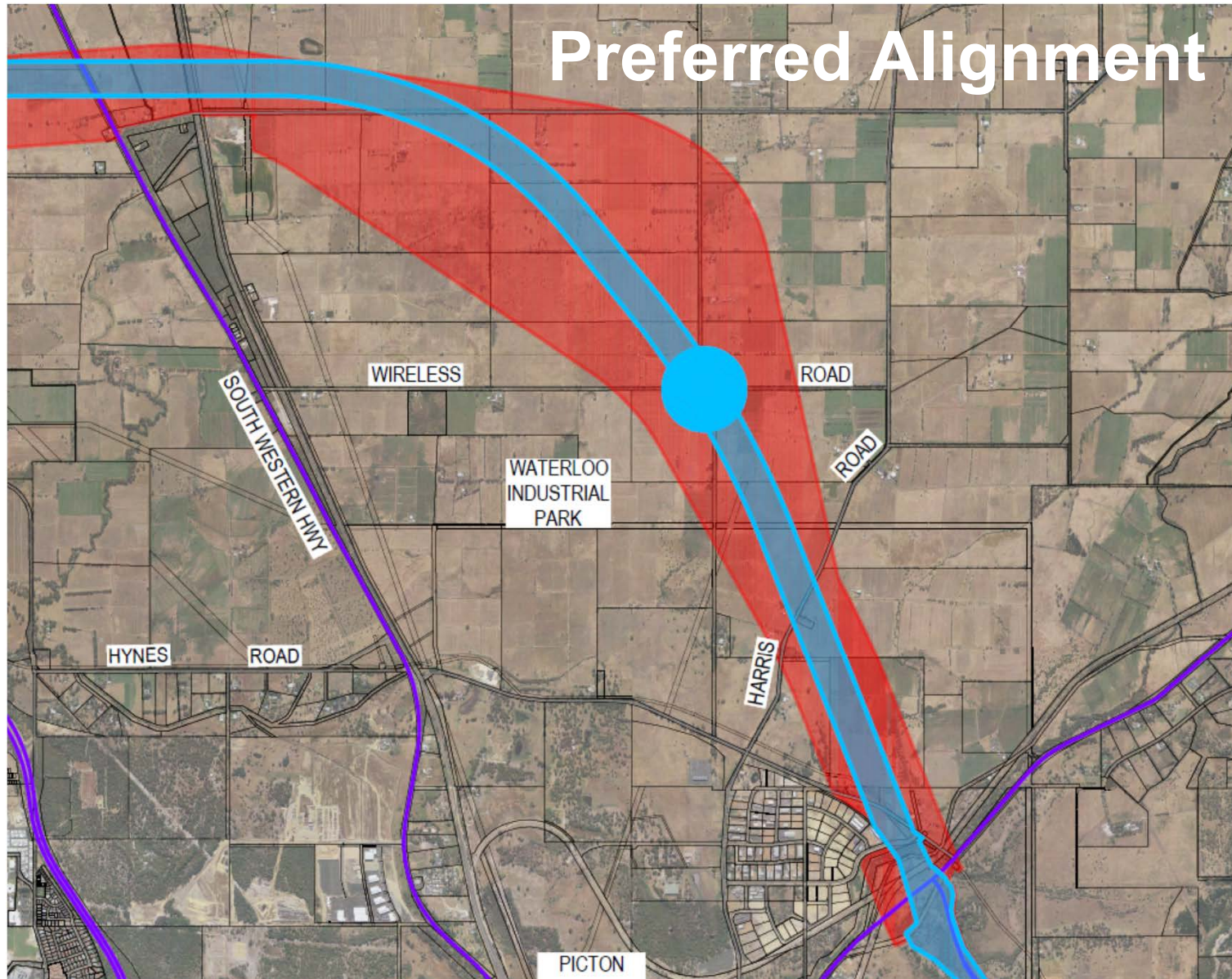


# Preferred Alignment

PROPOSED  
WANJU FUTURE  
URBAN  
DEVELOPMENT



# Preferred Alignment

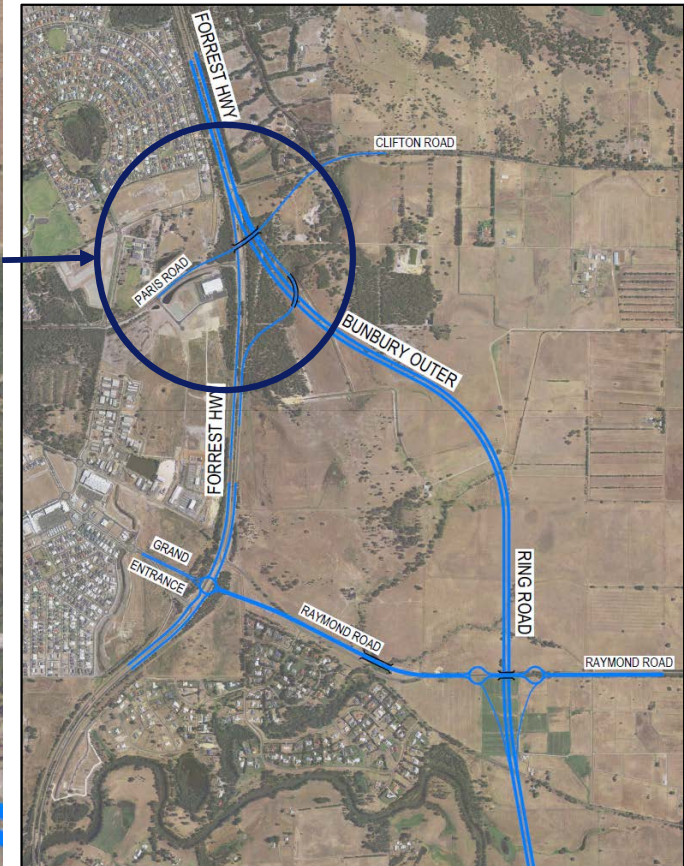


Ultimate Planning – Under Development



Ultimate Planning – Under Development

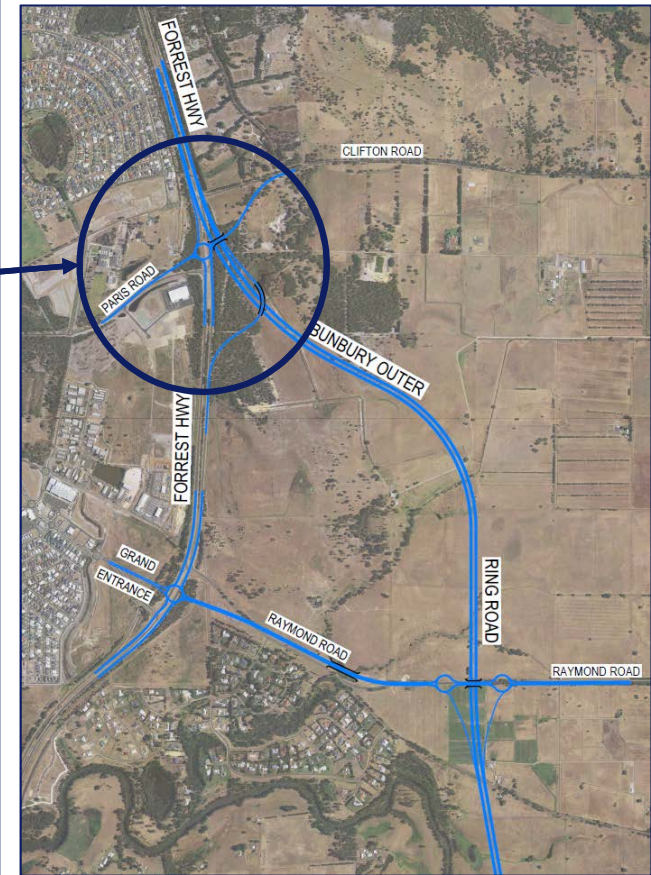
# Option 1





Ultimate Planning – Under Development

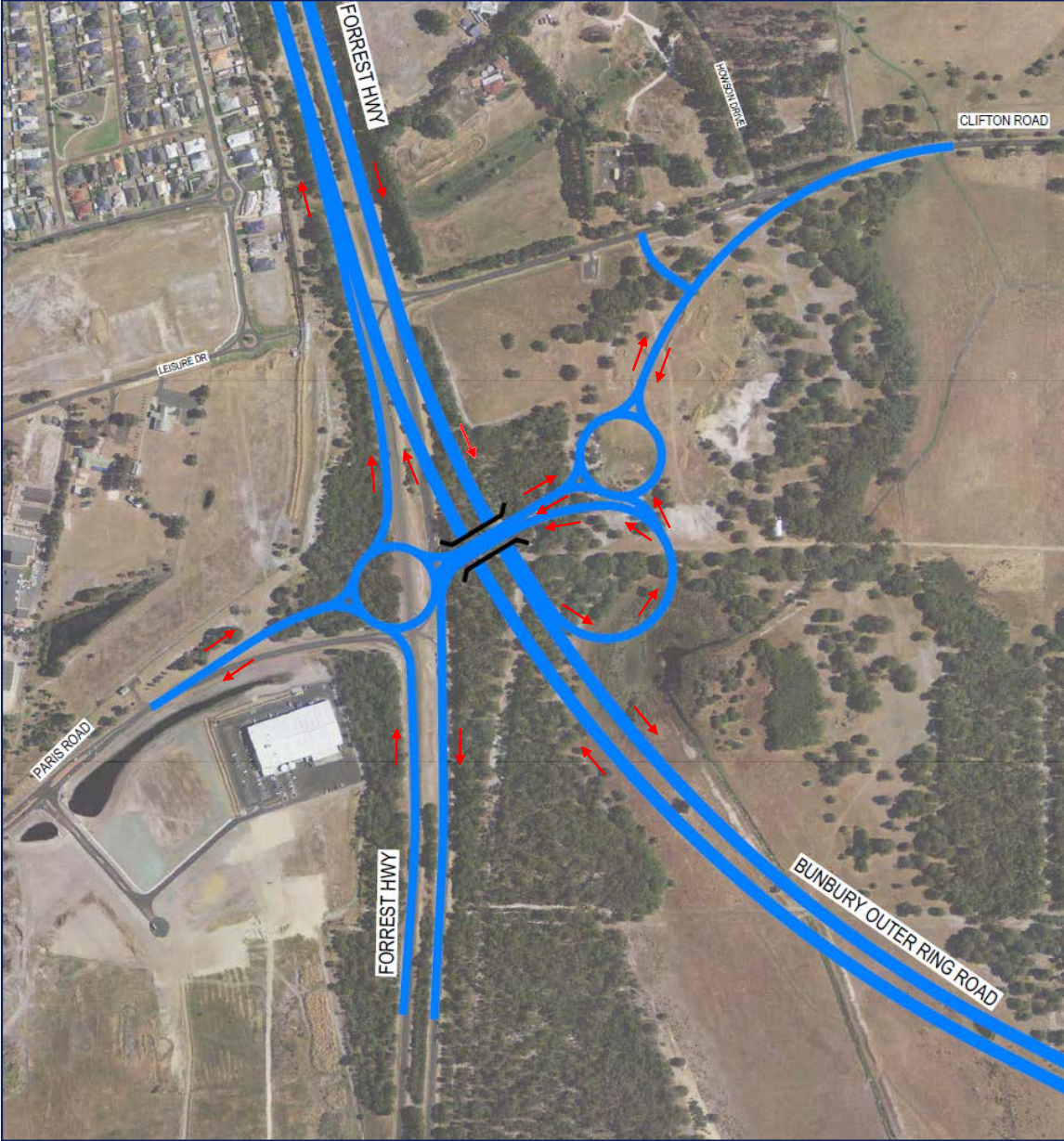
## Option 2





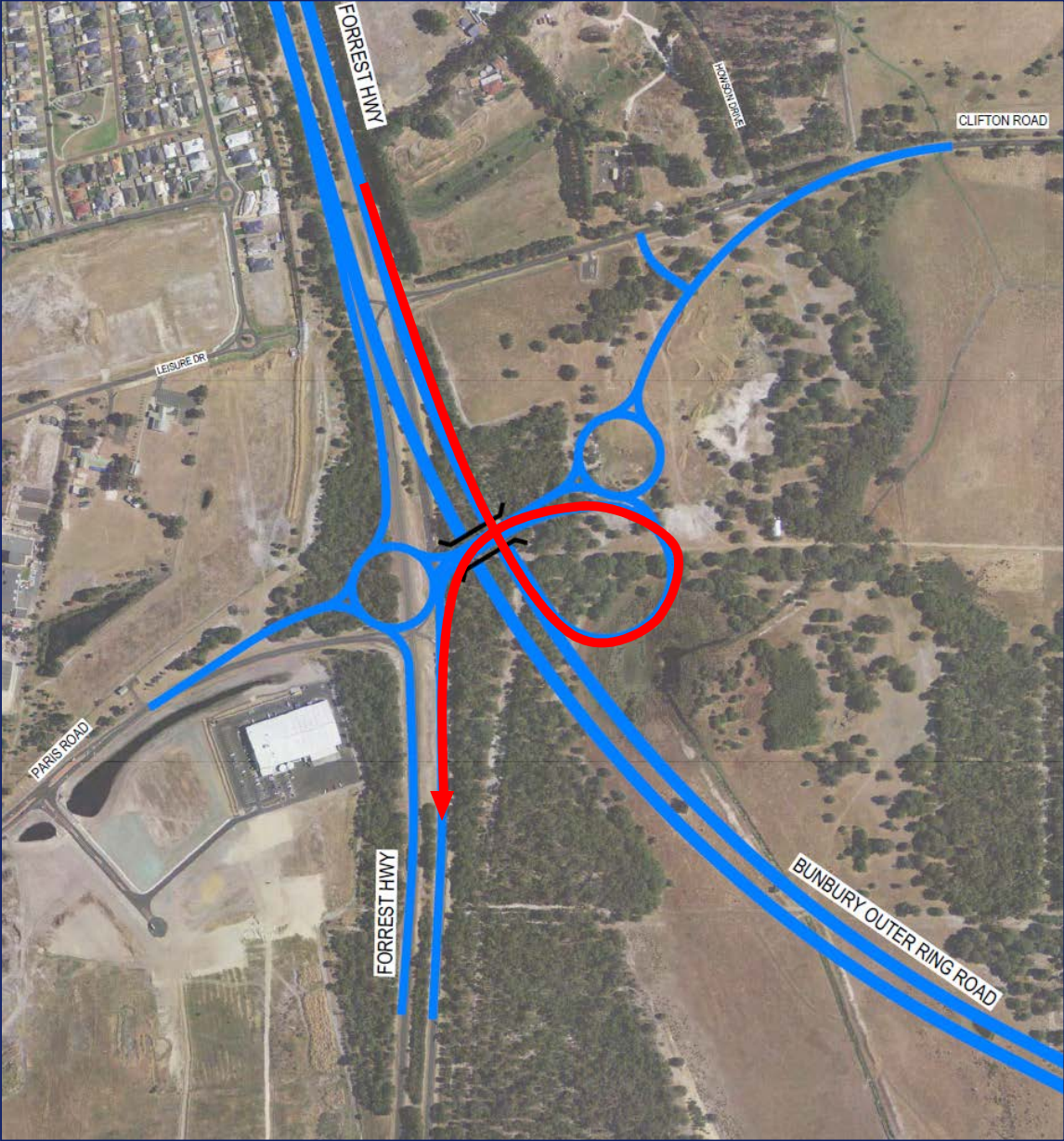
Ultimate Planning – Under Development

# Option 3





### Option 3 – Vehicle Movement





# QUESTIONS AND ANSWERS



# Raymond Road Ramp Options





Ultimate Planning – Under Development





Ultimate Planning – Under Development



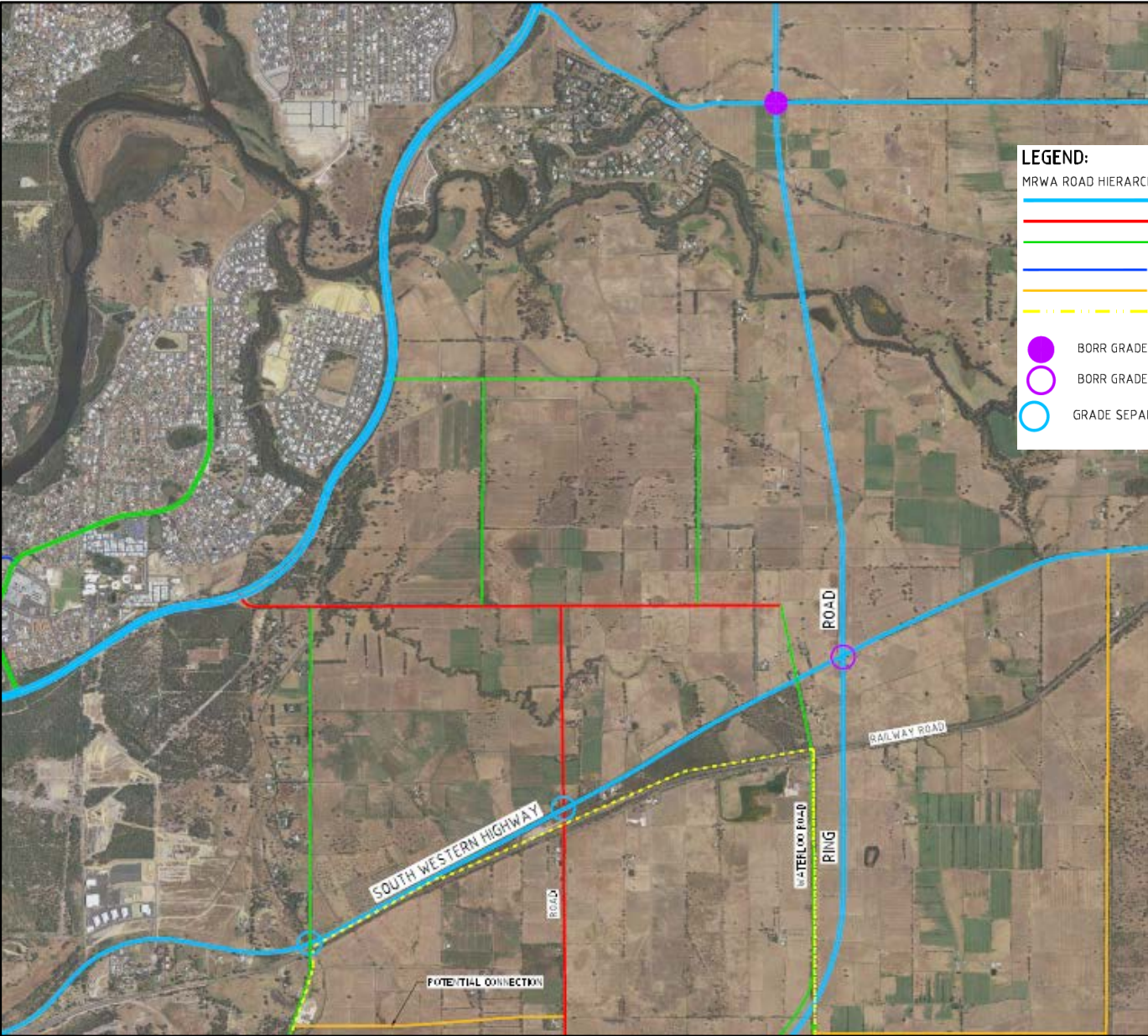
# QUESTIONS AND ANSWERS



# Wanju & Waterloo Ultimate Road Network



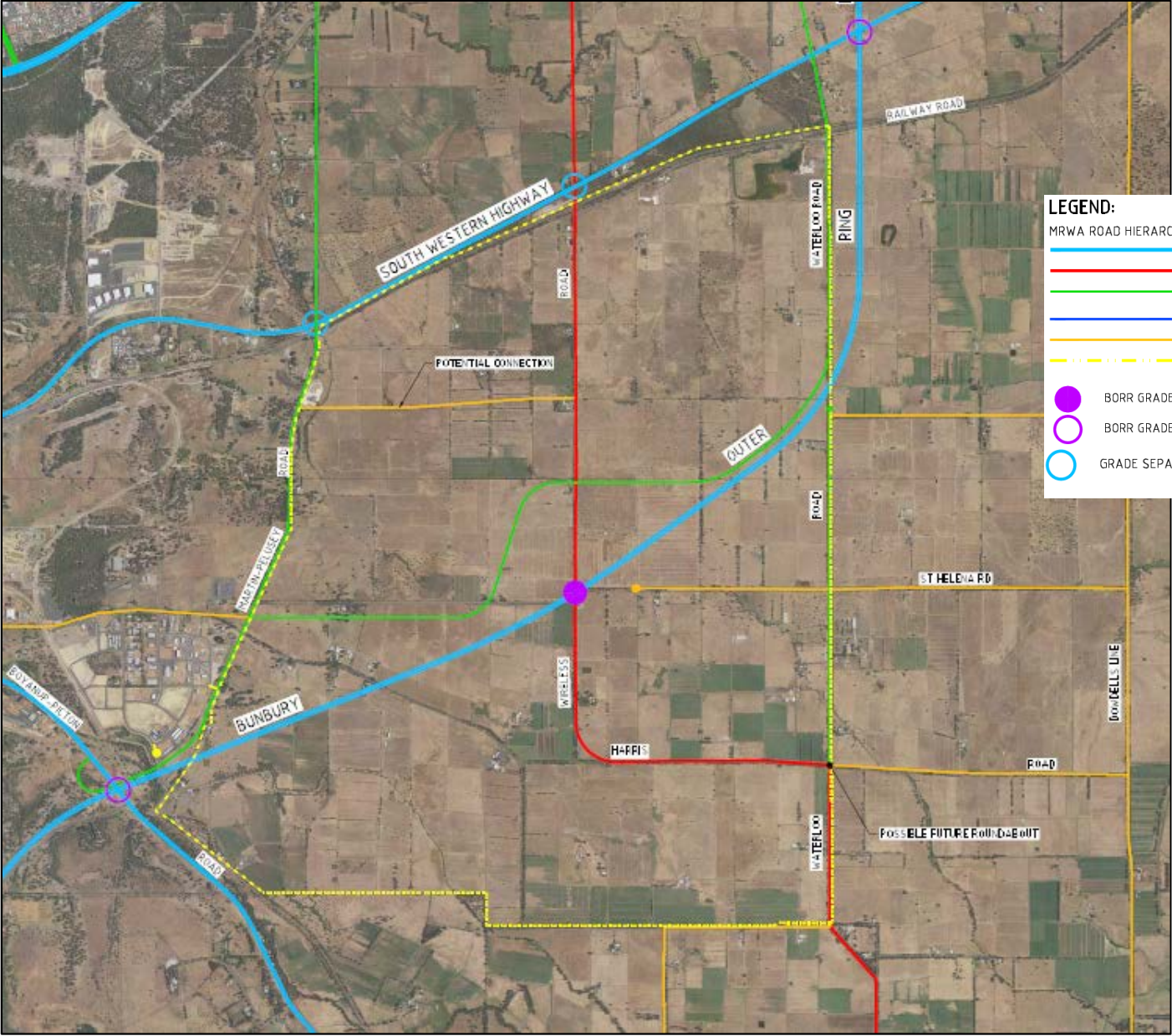
# Wanju Ultimate Network



Ultimate Planning – Under Development



# Waterloo Industrial Ultimate Network



Ultimate Planning – Under Development

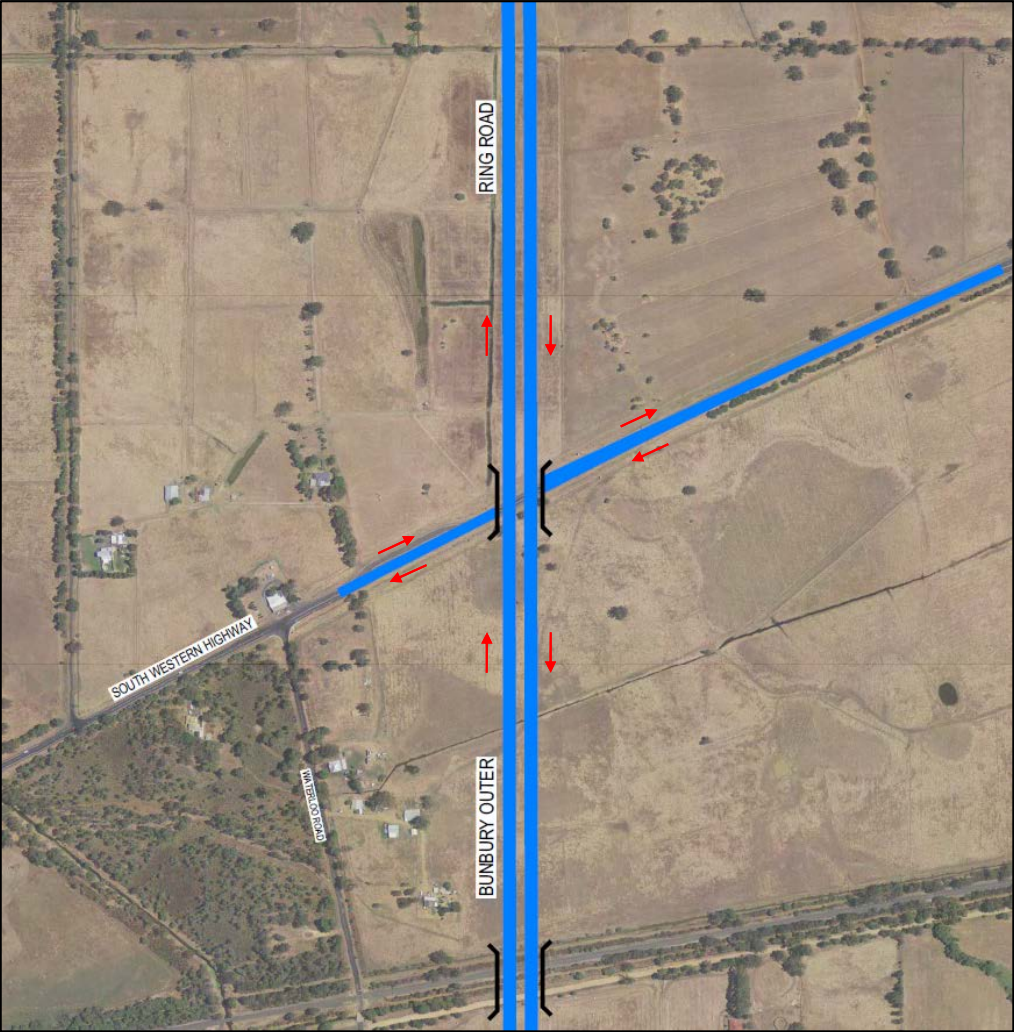


# QUESTIONS AND ANSWERS

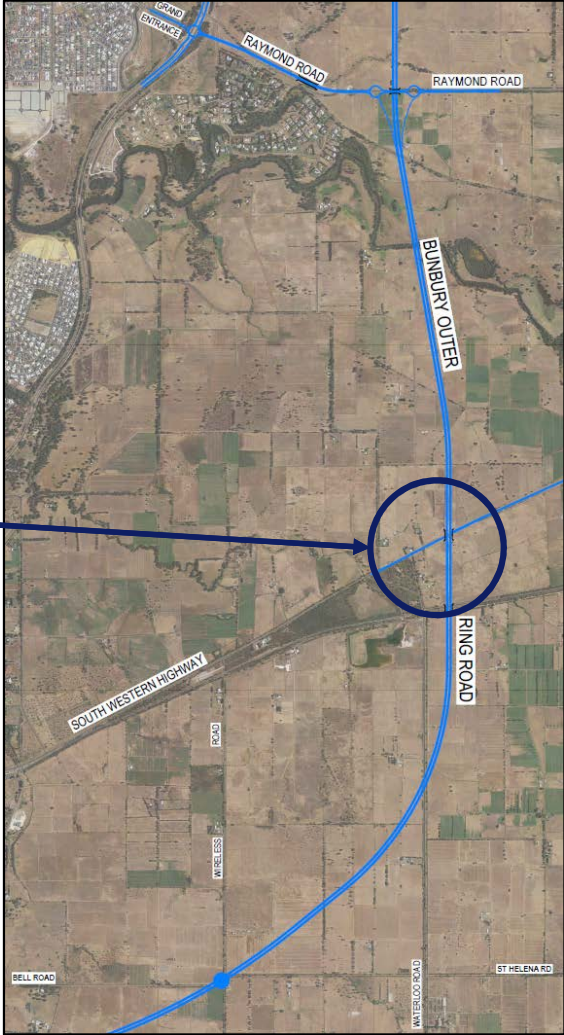
# CONNECTIVITY – South Western Hwy (North)



# Option 1 – no connection

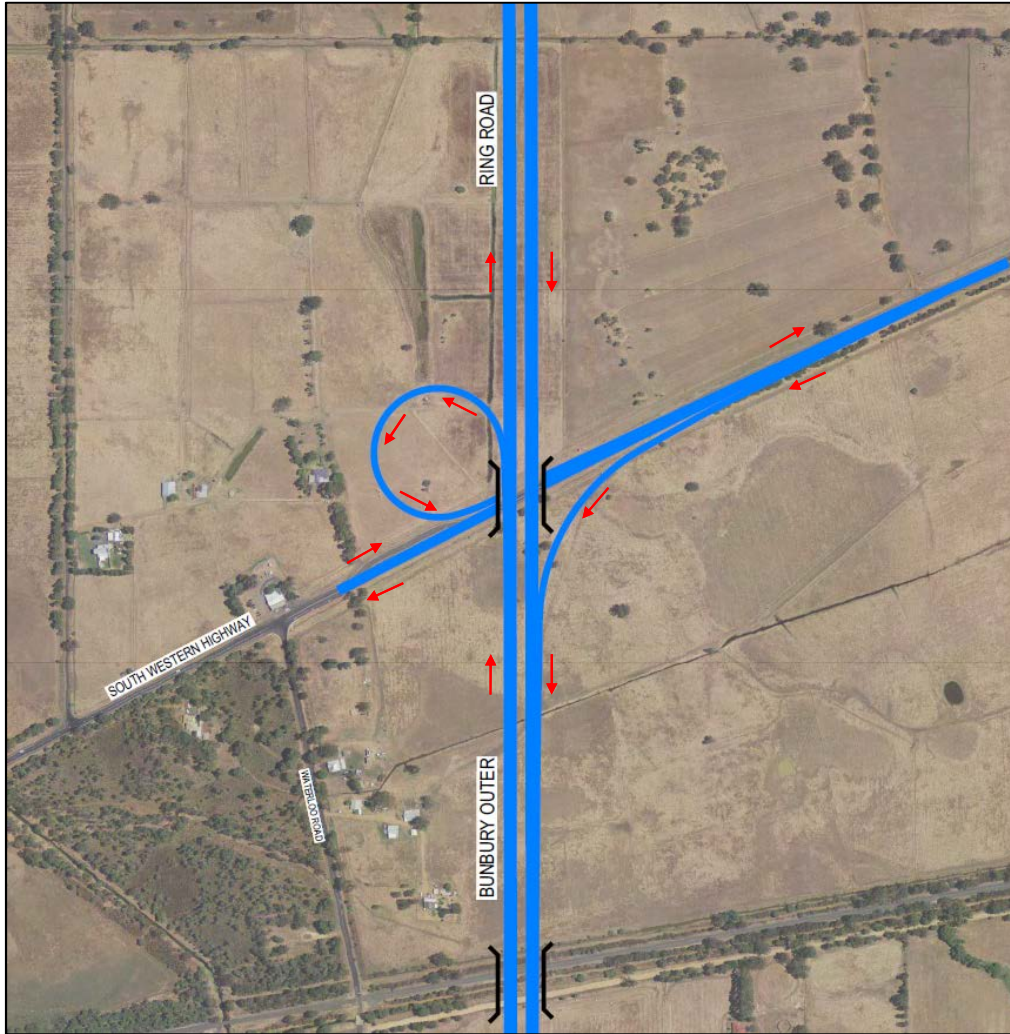


Ultimate Planning – Under Development

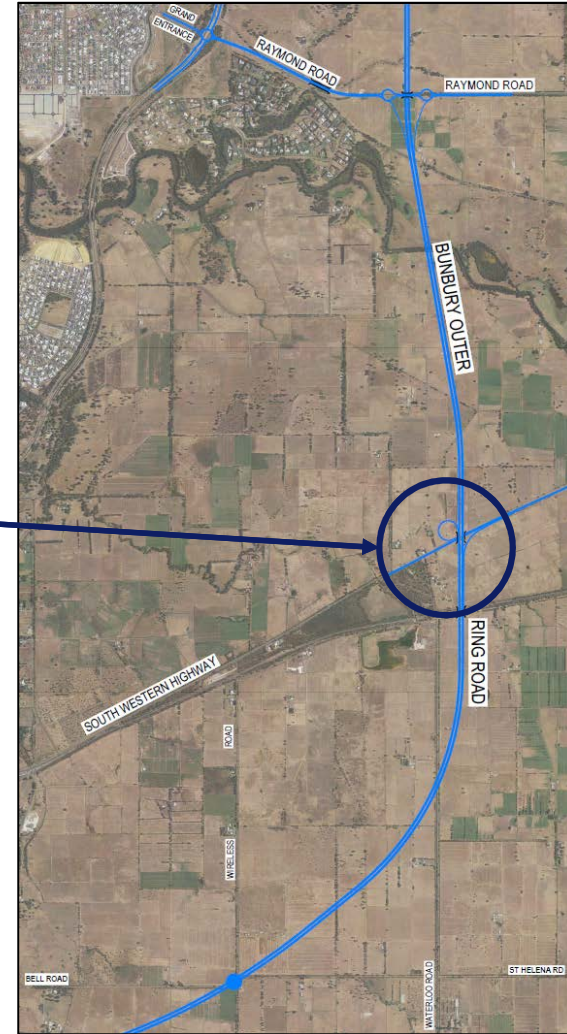




# Option 2 – with connection



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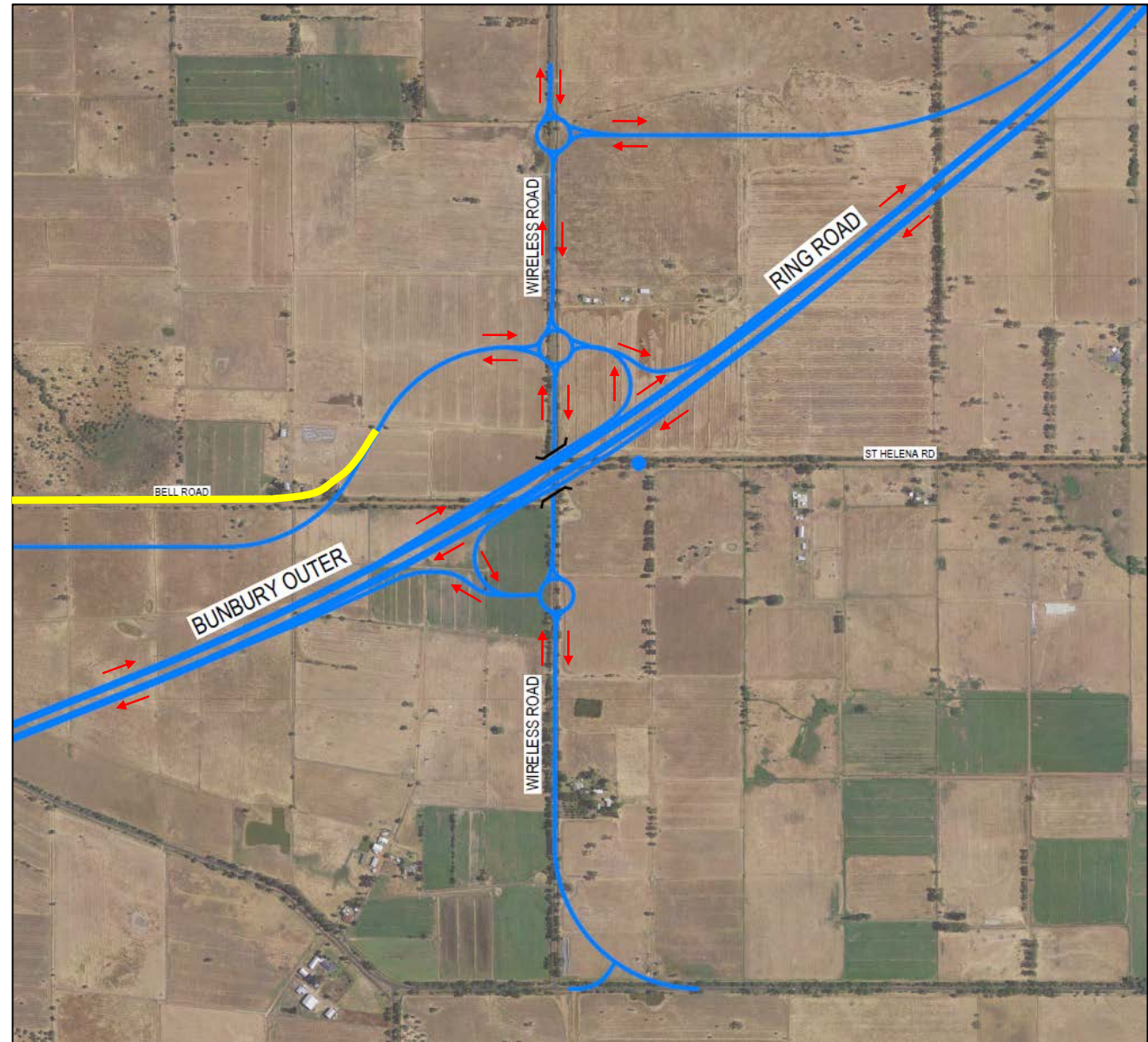
# QUESTIONS AND ANSWERS



# Waterloo Interchange Options

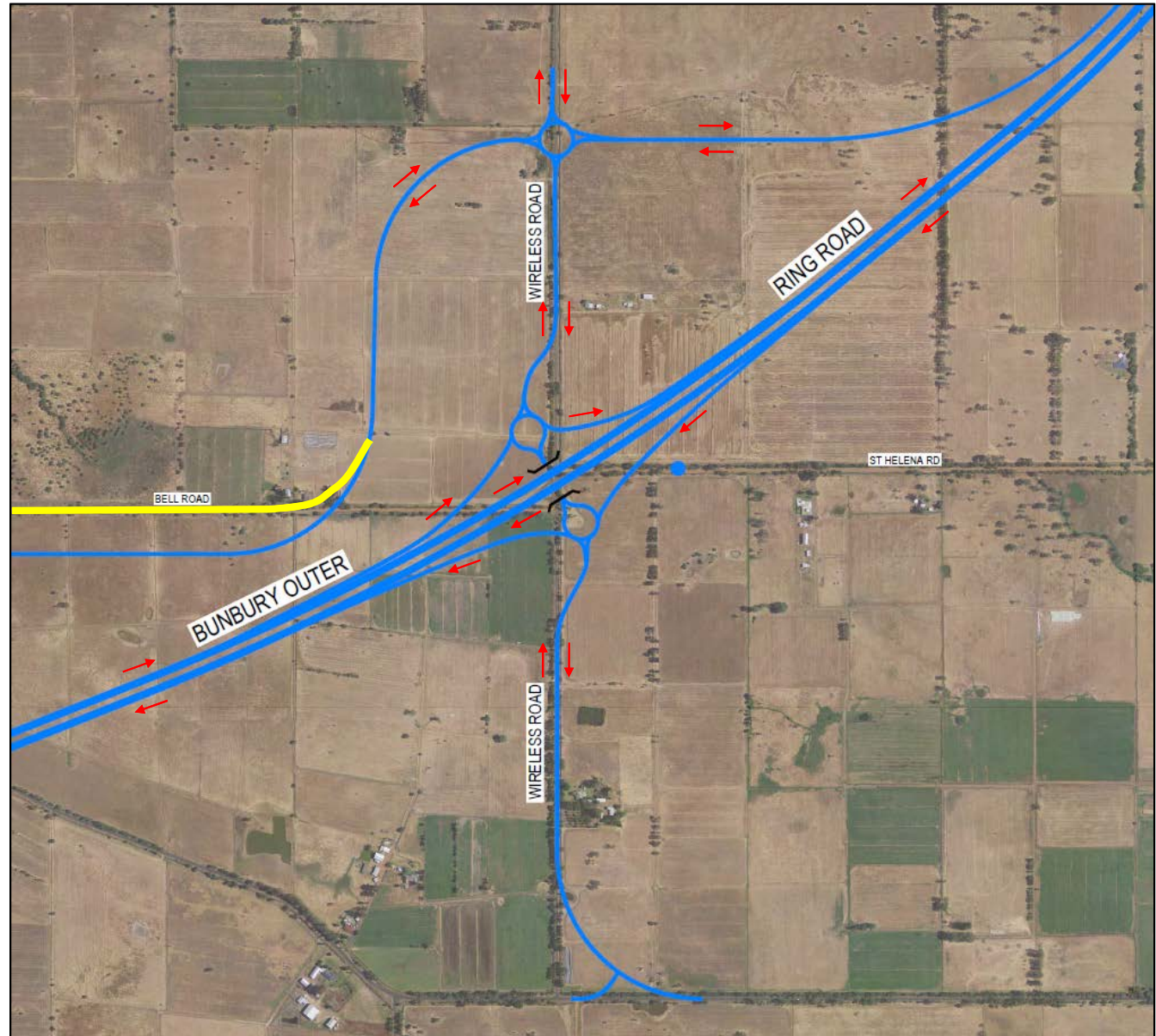


# Waterloo Interchange Option 1



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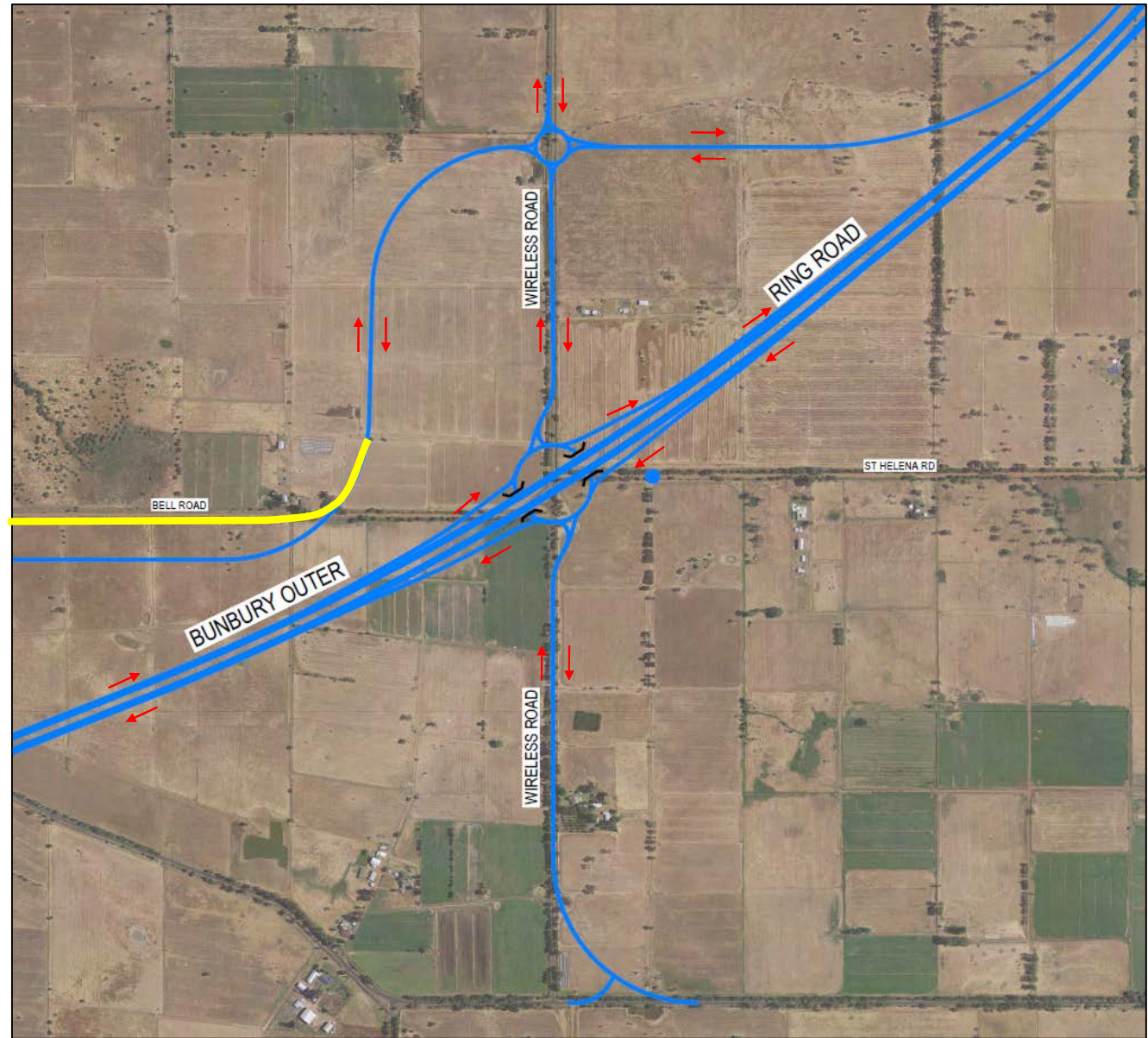
# Waterloo Interchange Option 2



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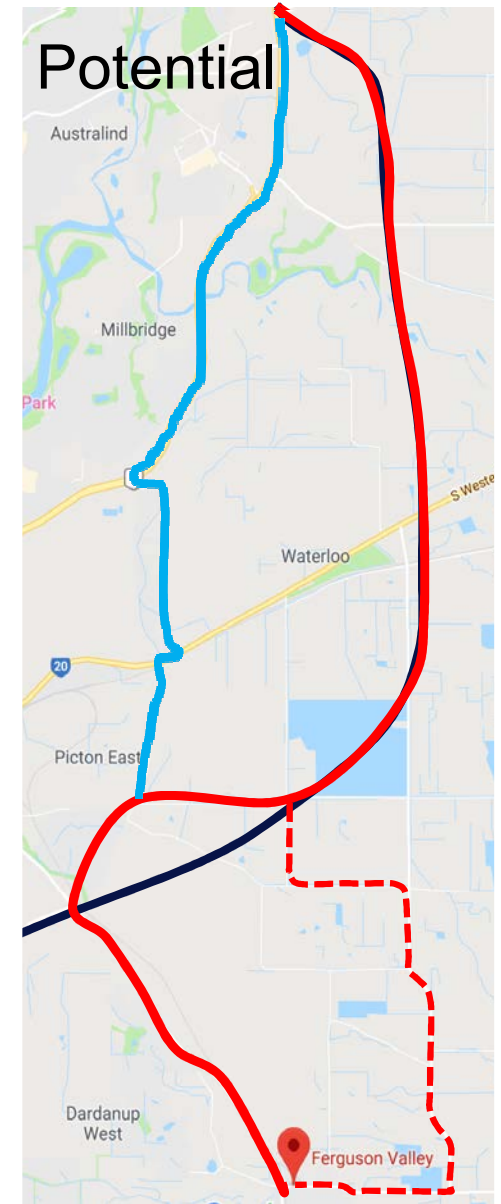
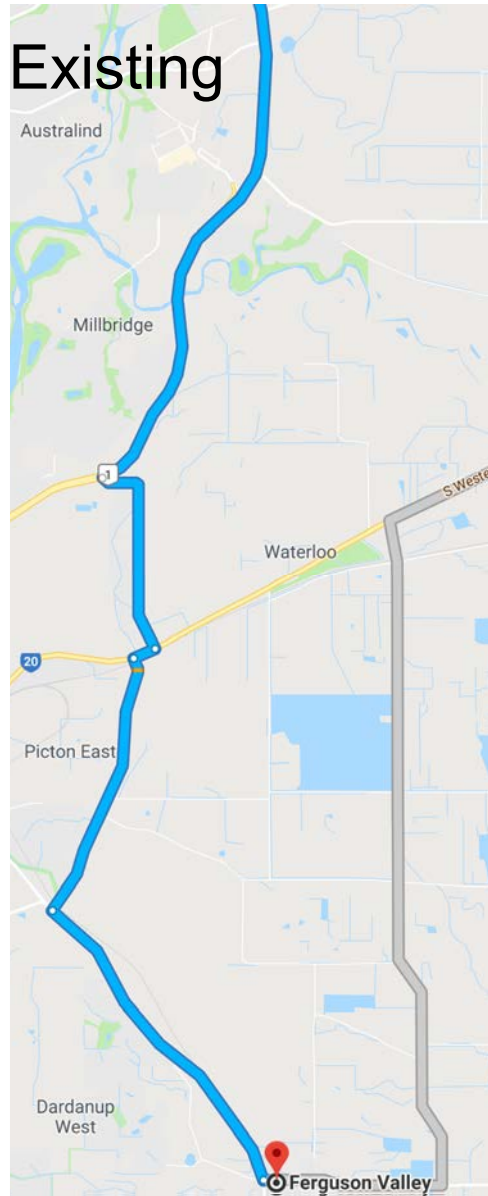


# Waterloo Interchange Option 3



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# Ferguson Valley - Access from the north.







# QUESTIONS AND ANSWERS

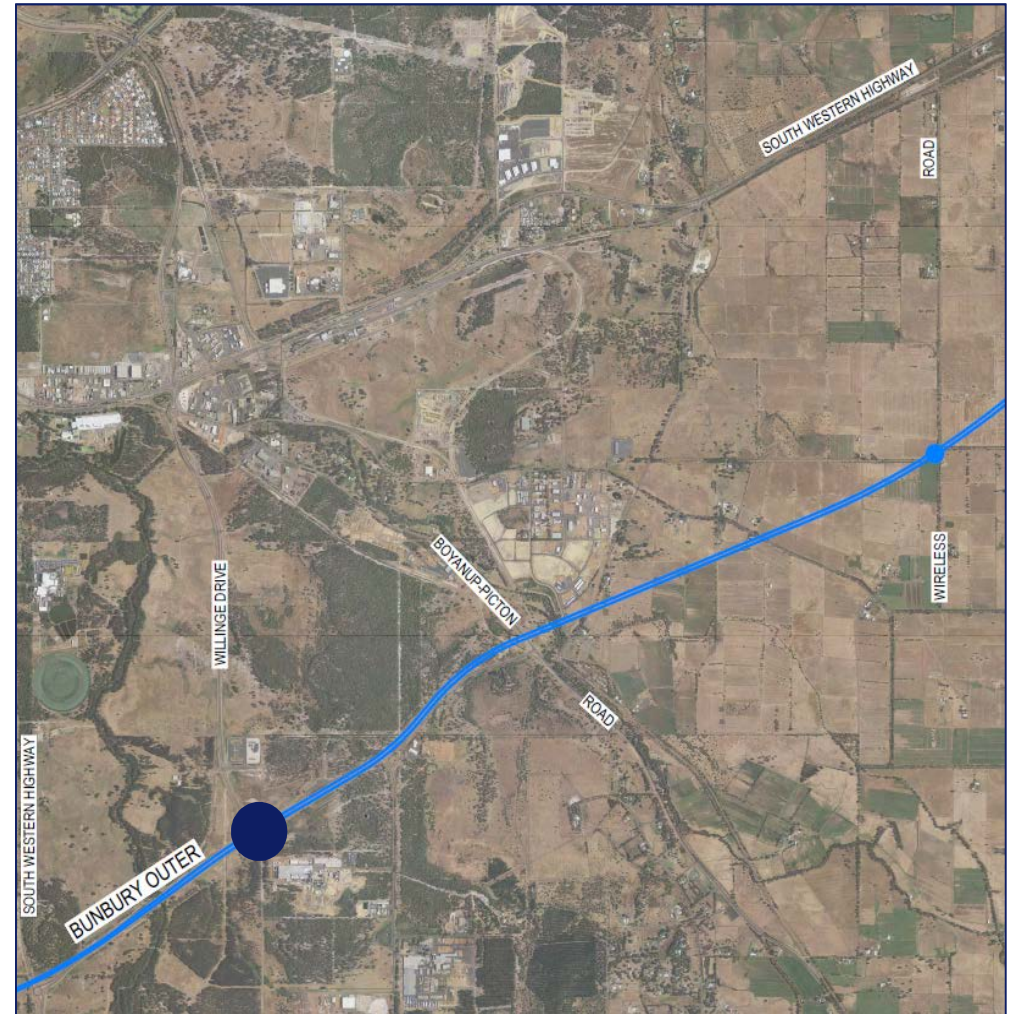
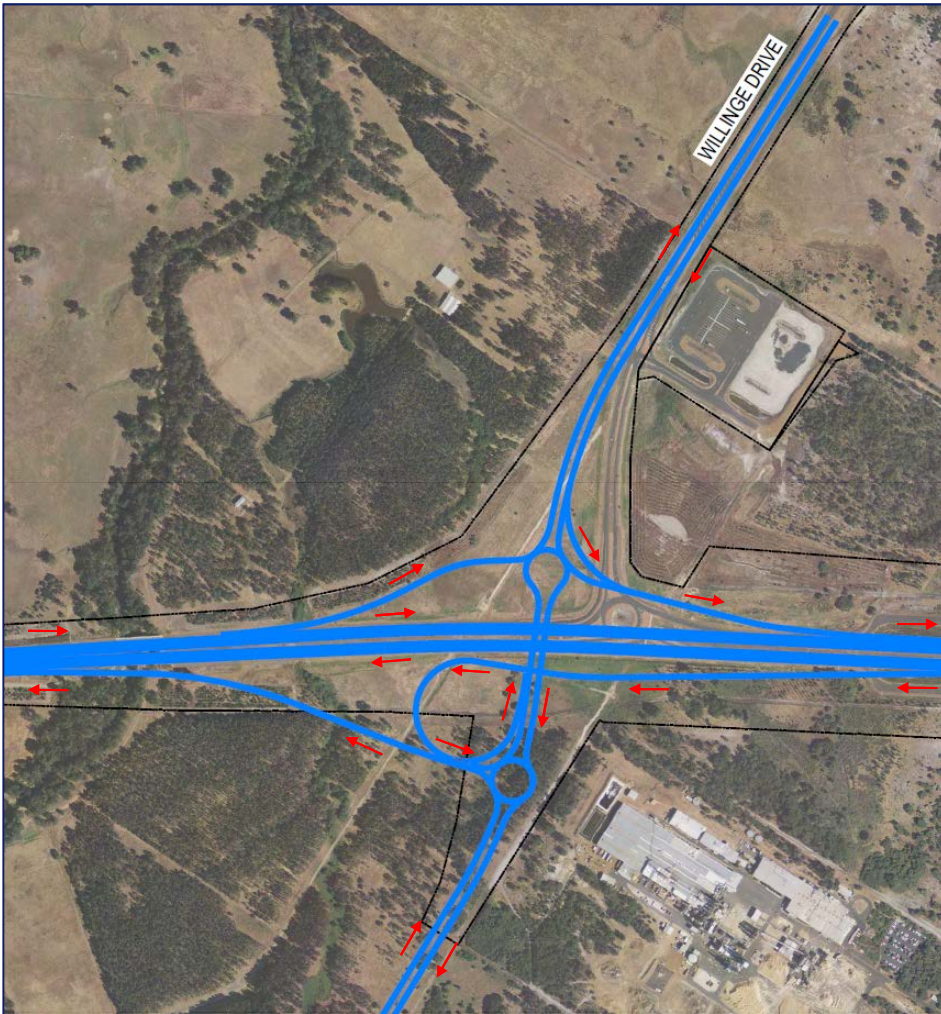


# CONNECTIVITY – Willinge Drive Interchange



# Willinge Option 1

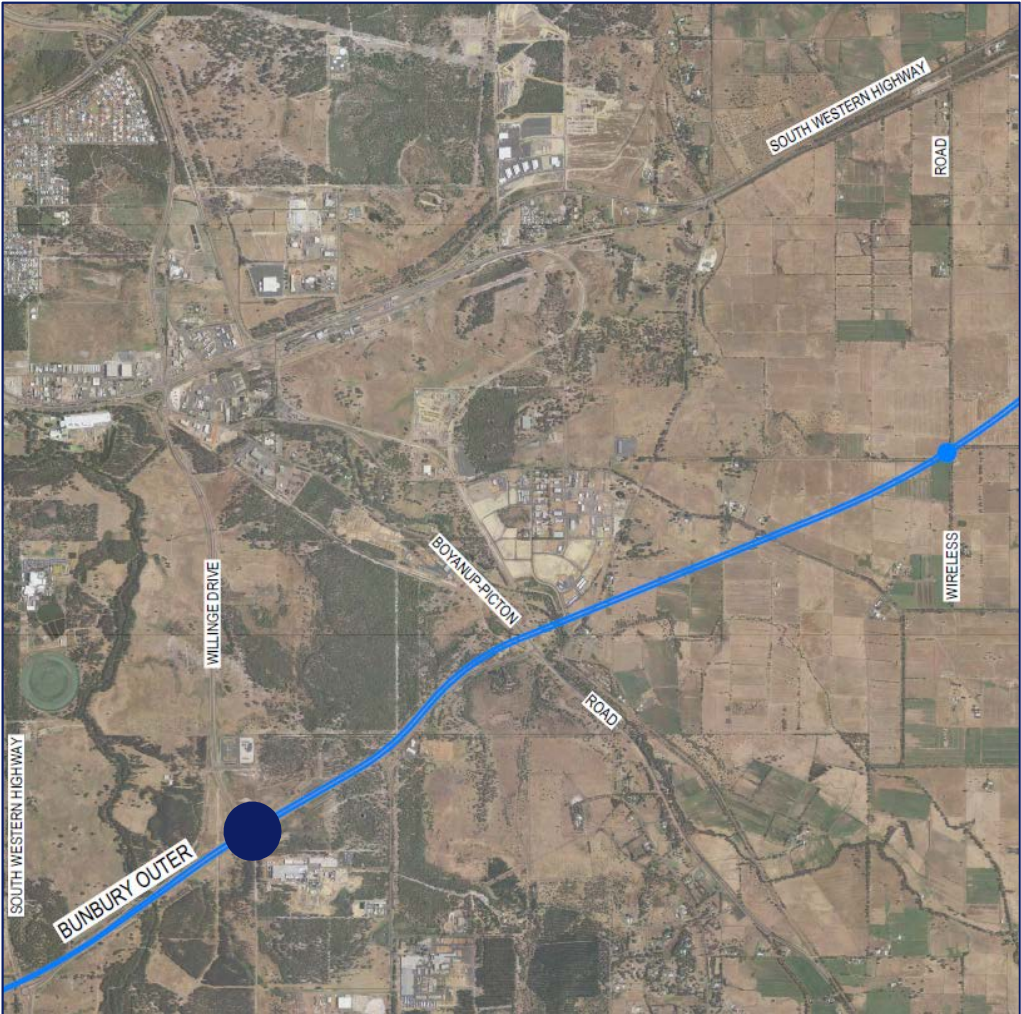
Ultimate Planning – Under Development





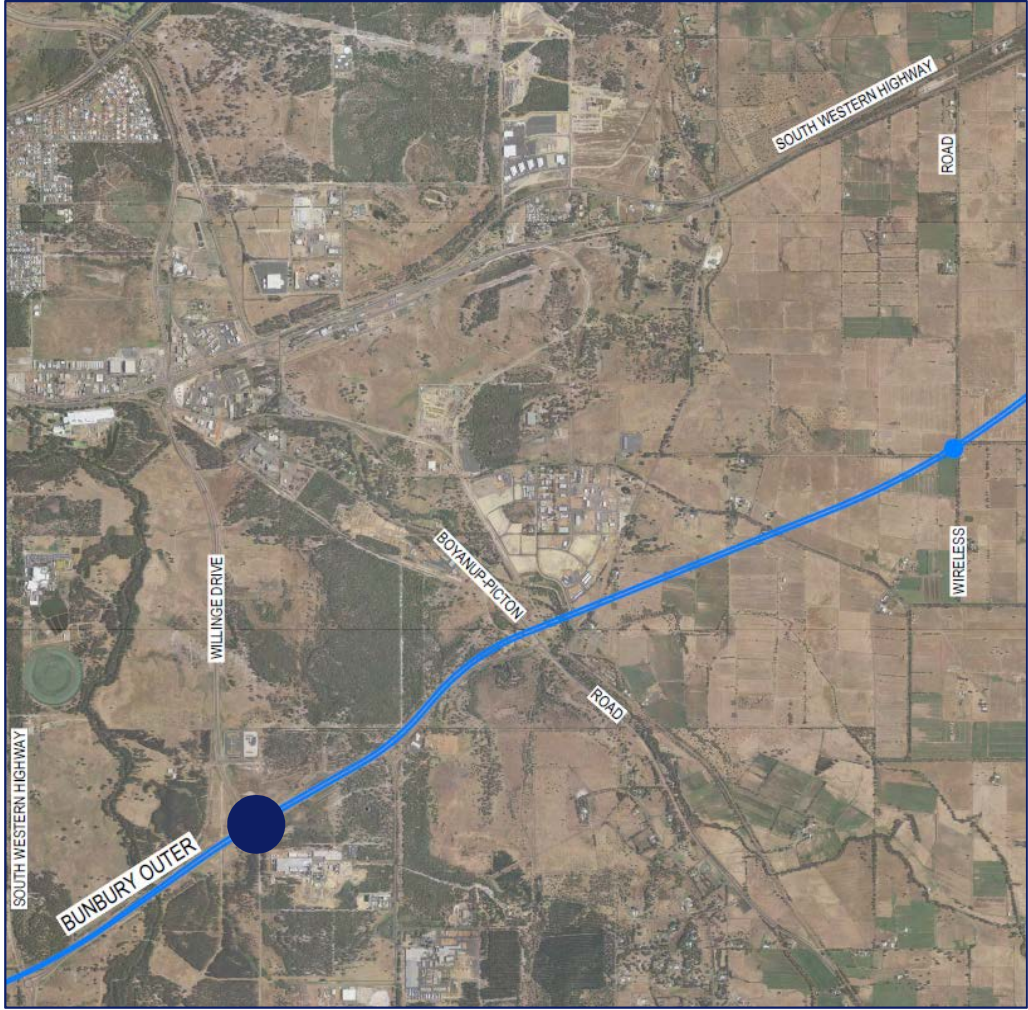
# Willinge Option 2

Ultimate Planning – Under Development



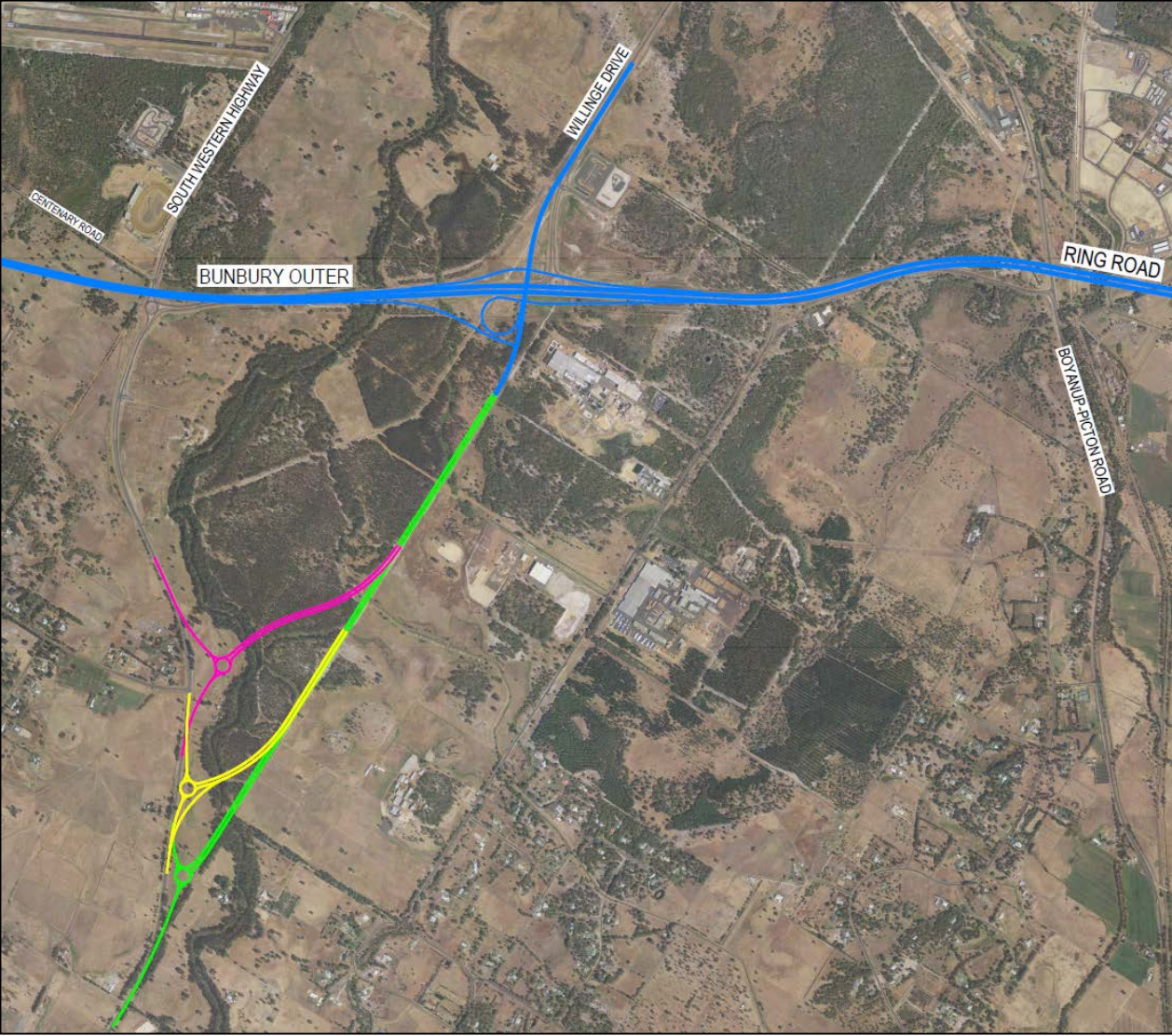


# Willinge Option 3





# Willinge Drive Extension Options



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BUNBURY OUTER RING ROAD | PLANNING AND DEVELOPMENT

# QUESTIONS AND ANSWERS



# CONNECTIVITY – South Western Hwy (South)

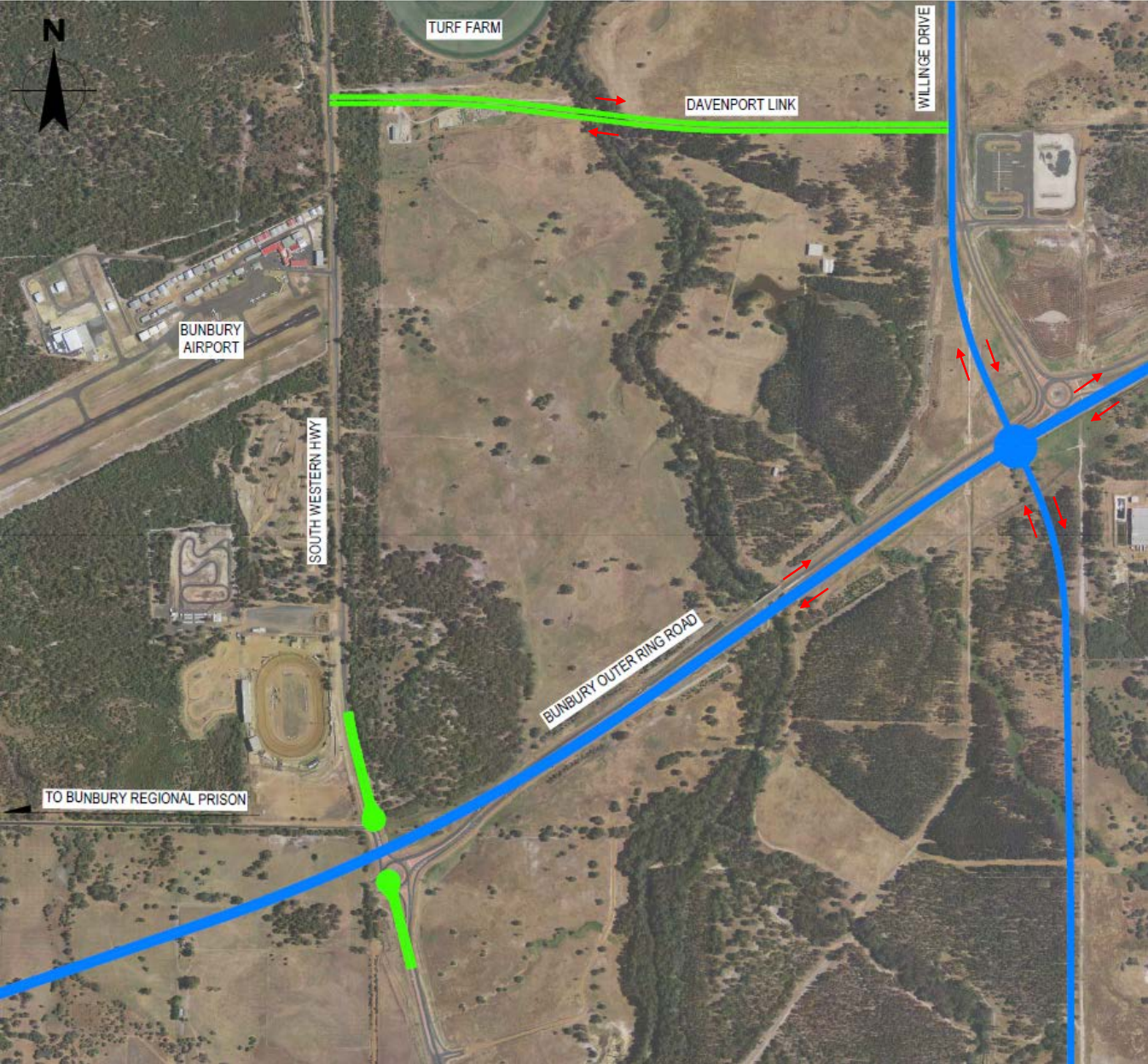


# Option 1





# Option 2













# QUESTIONS AND ANSWERS



# 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

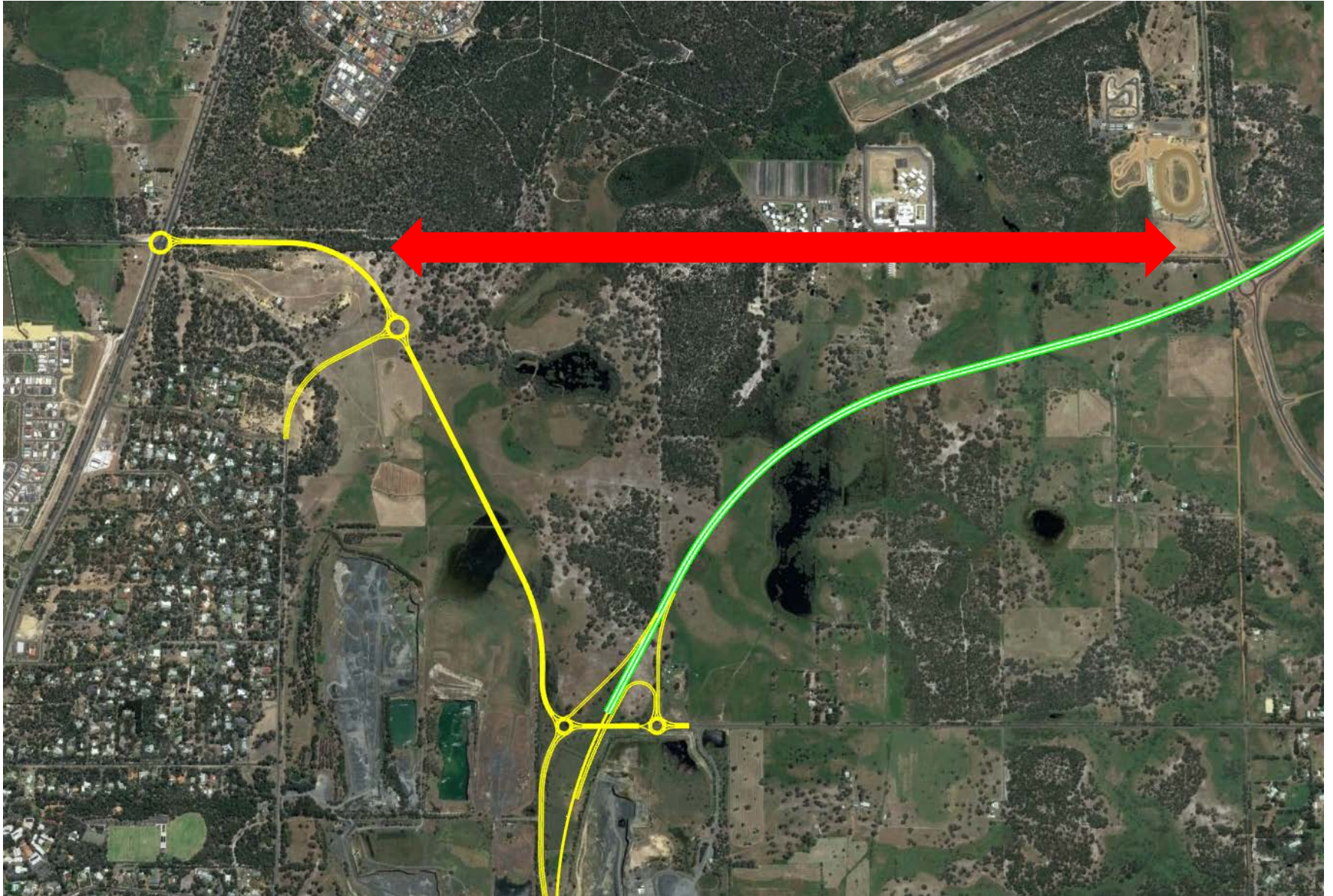
ADVANTAGES
<ul style="list-style-type: none"> <li>• TRAFFIC VOLUMES ON HASTIES ROAD LOWER THAN OPTION 1</li> <li>• PROVIDES FOR IMPROVED CONNECTIVITY FROM BORR TO / FROM SOUTH BUNBURY</li> <li>• CENTENARY RD IS A NEW CONNECTION WITH NO DRIVEWAY ACCESSSES</li> </ul>

DISADVANTAGES
<ul style="list-style-type: none"> <li>• LIKELY RAT RUNNING ON SLEAFORD ROAD</li> <li>• INCREASED TRAFFIC ON JULES ROAD</li> <li>• HASTIES ROAD COULD STILL BE USED AS RAT RUN TO GET THROUGH TO JULES ROAD</li> <li>• SIGNIFICANT NEW ROAD CONSTRUCTION WITH ASSOCIATED COST AND SEVERANCE</li> <li>• WILL STERILISE SOME OF THE STATE RECOGNISED RESOURCE (BASALT)</li> </ul>

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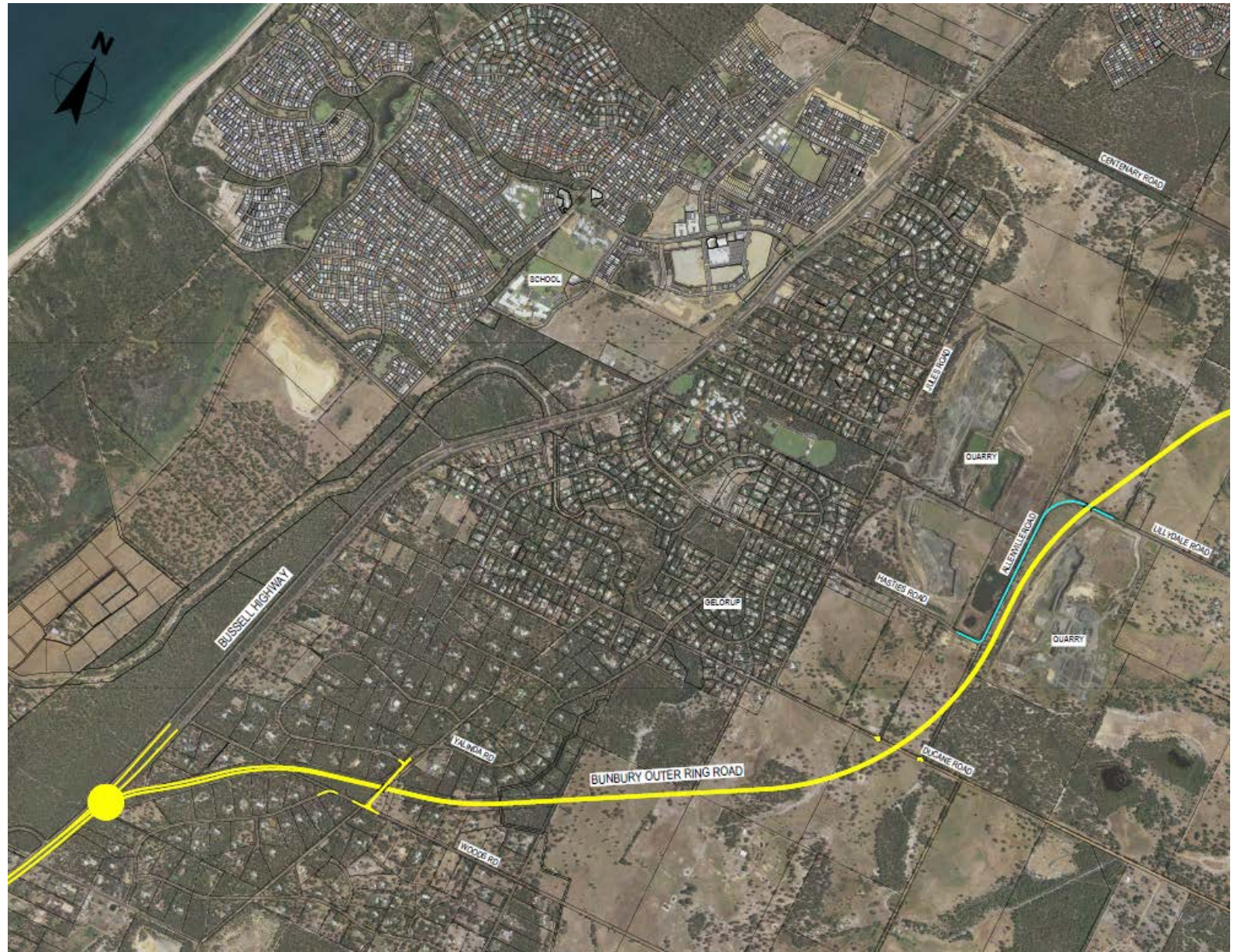
# Discussion Slide



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# BORR & Bussell Highway Option





# Southern Access Strategy



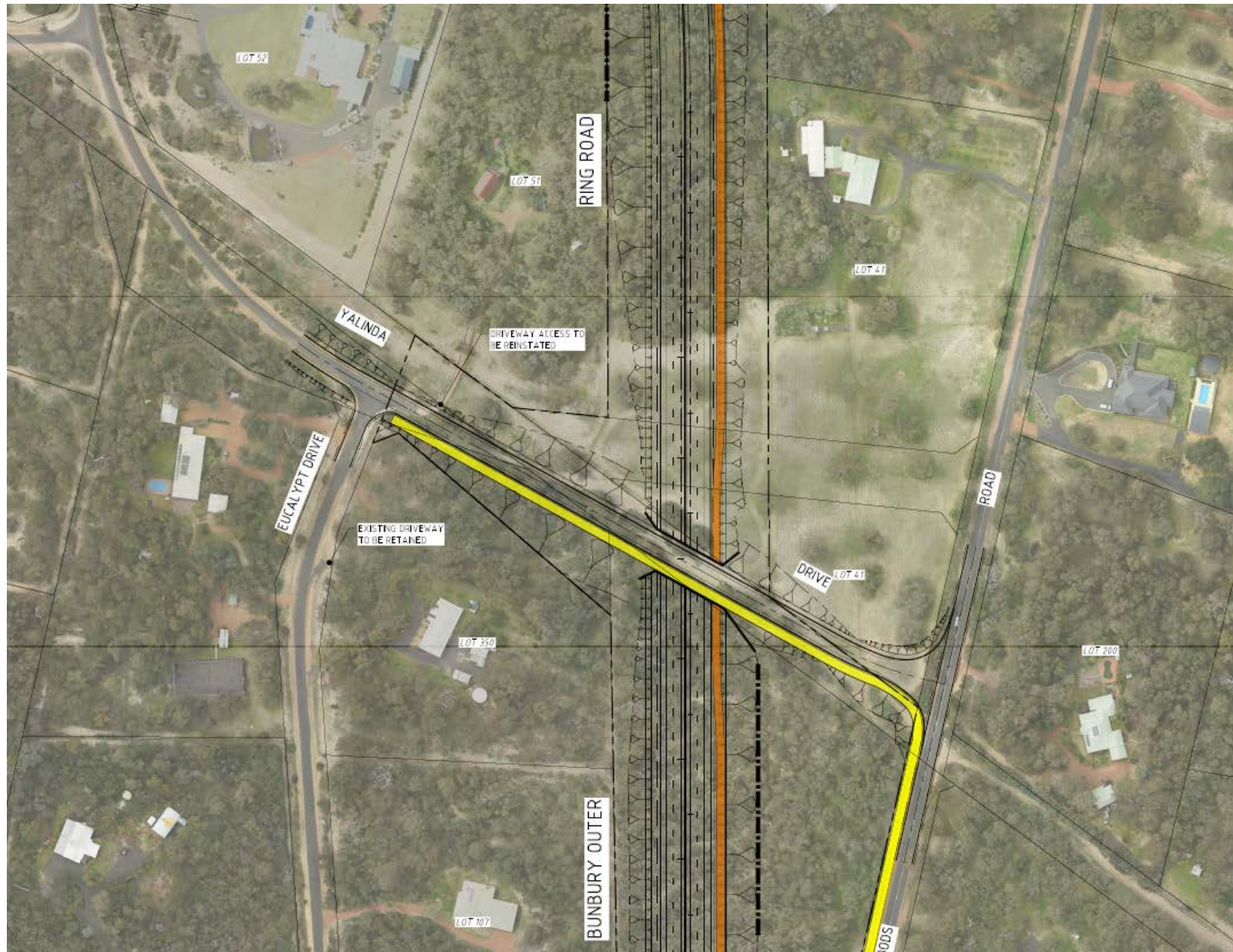


# Bussell Highway Access

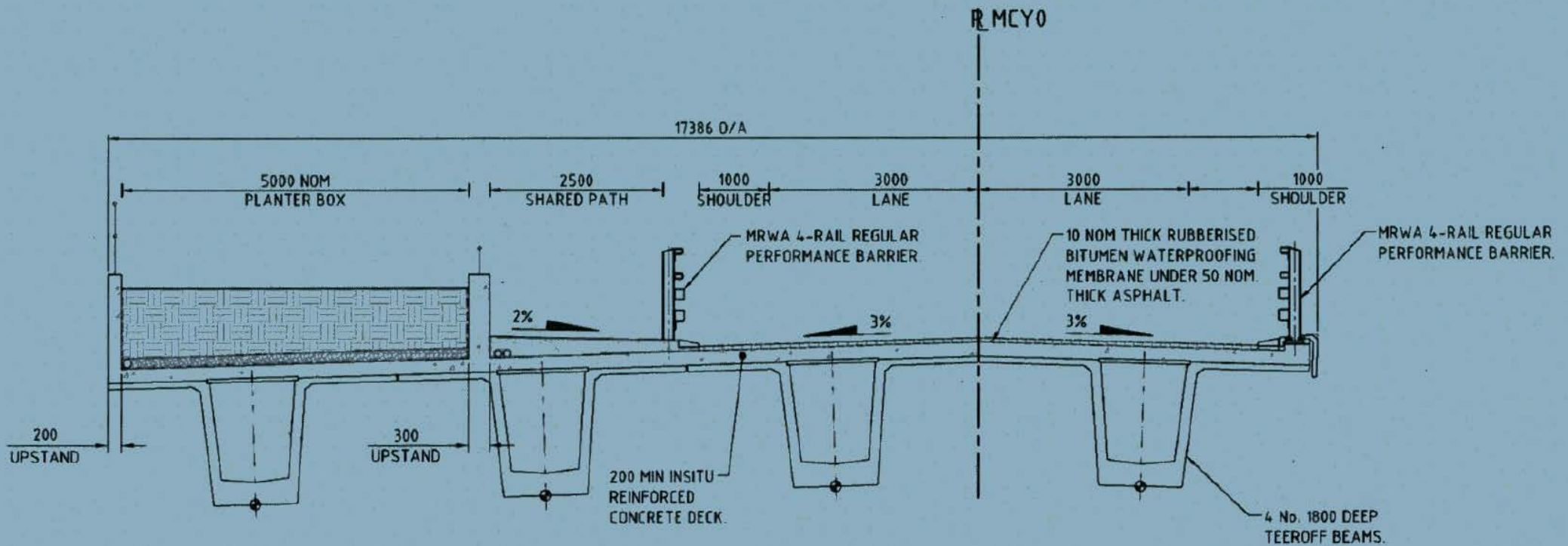




# Yalinda Drive Bridge



# Yalinda Drive Bridge





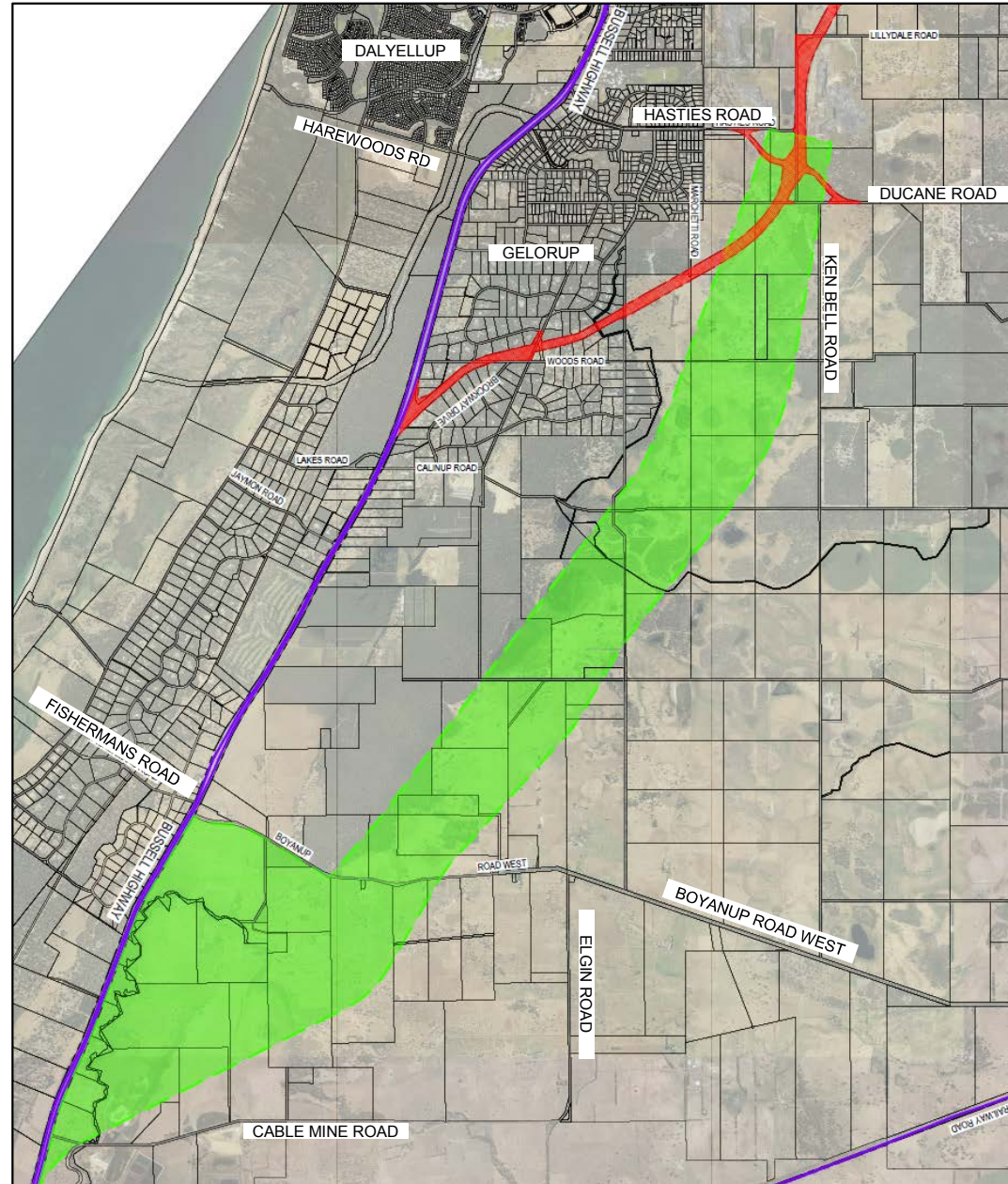


# QUESTIONS AND ANSWERS

# ALIGNMENT – BORR Southern Alternative Investigation Corridor



# BORR South Alternative Corridor





# QUESTIONS AND ANSWERS



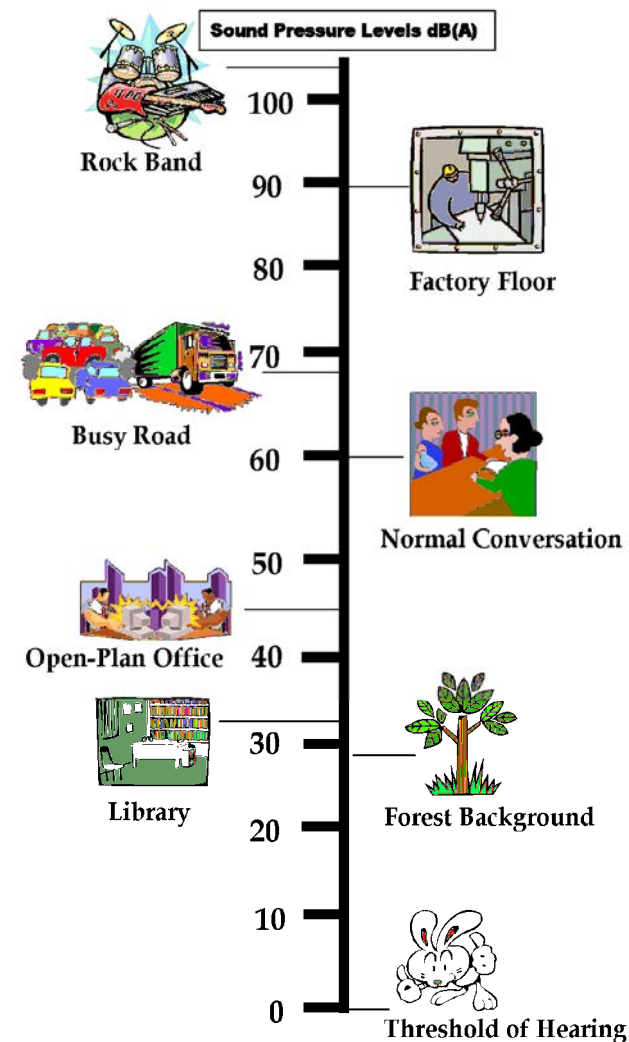


# Noise Management The Process

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)





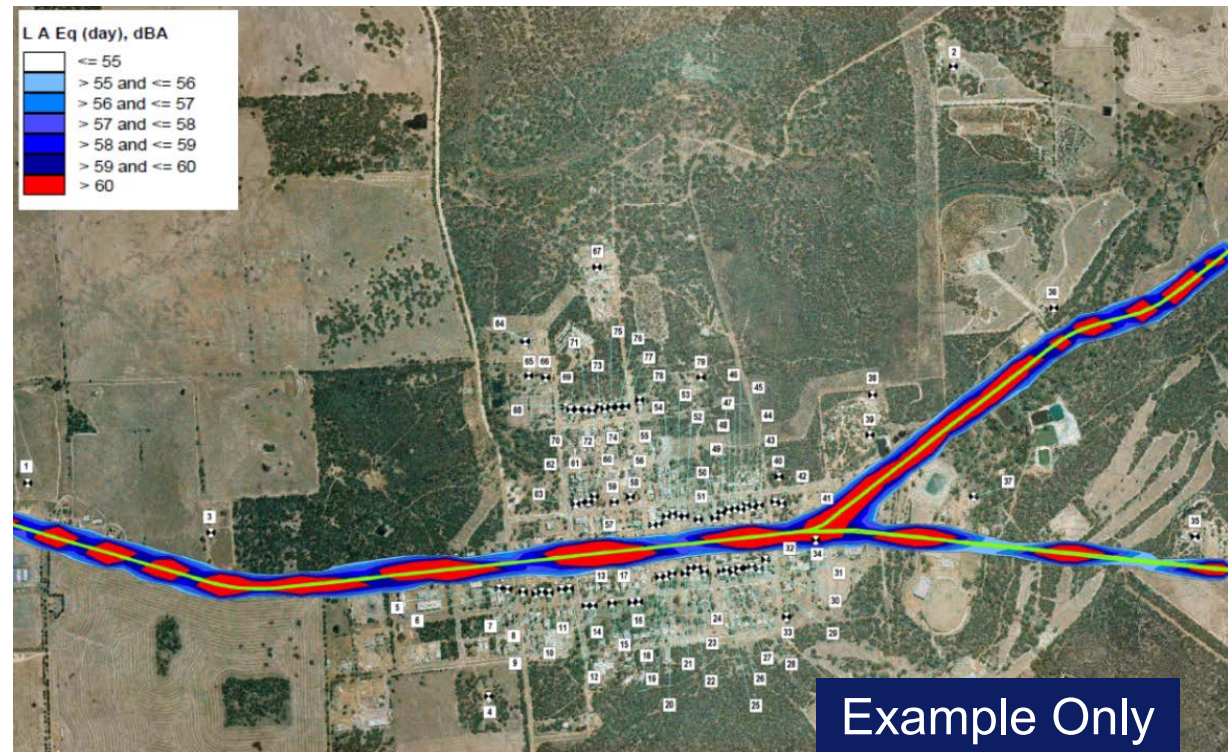
# Extract from SPP 5.4 User Guide

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 ( $L_{Aeq,Day}$ ), 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
		20,000	75	72	69	68	67	63	57	55
		25,000	76	73	70	69	68	64	58	55
		30,000	77	74	71	70	69	65	59	56
		35,000	78	75	72	71	70	66	60	57
Secondary road / district distributor ( $L_{Aeq,Day}$ ), 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)
- Designed Road Ground Levels
- Vehicle Heights
- Future Traffic Volumes
- Heavy Vehicle Numbers
- Road Surface Types
- Road Gradients



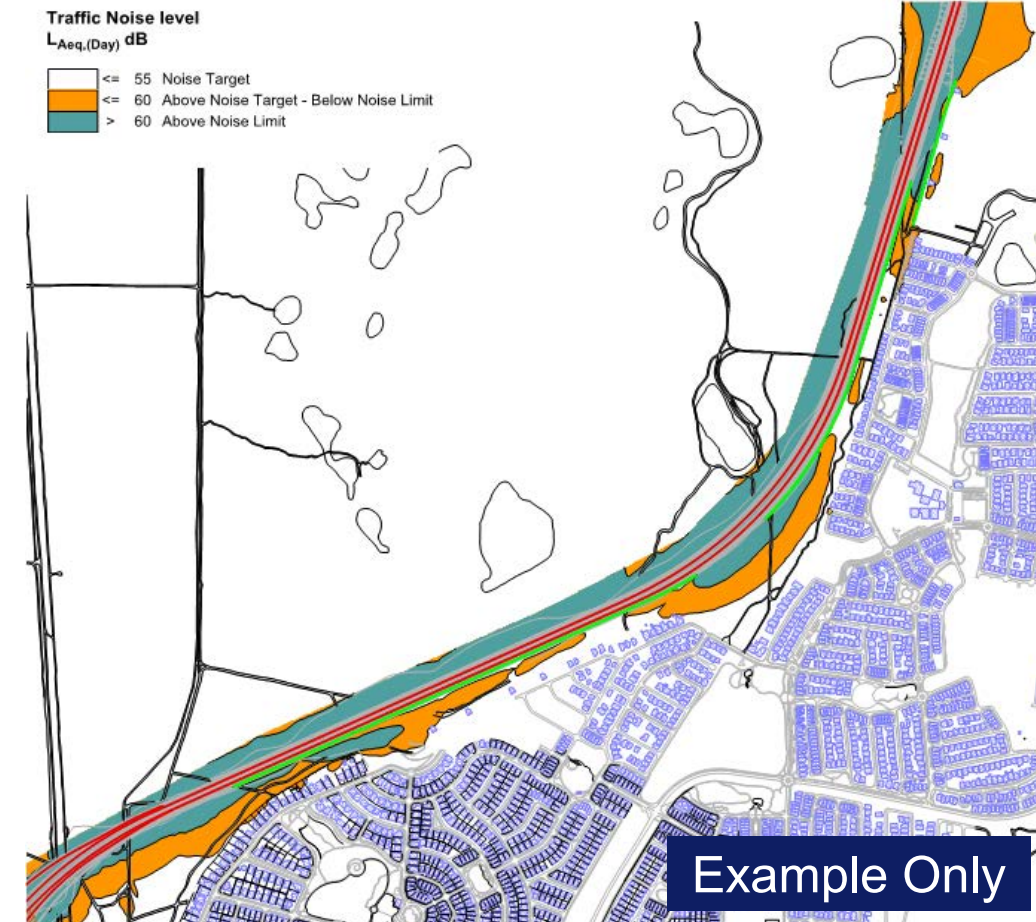


## Possible noise outcomes

- 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



- The Noise loggers along the alignment provide information that is used to calibrate/refine the model. This details enables our modellers to determine 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
- Agree form of treatment with CRG.





# QUESTIONS AND ANSWERS

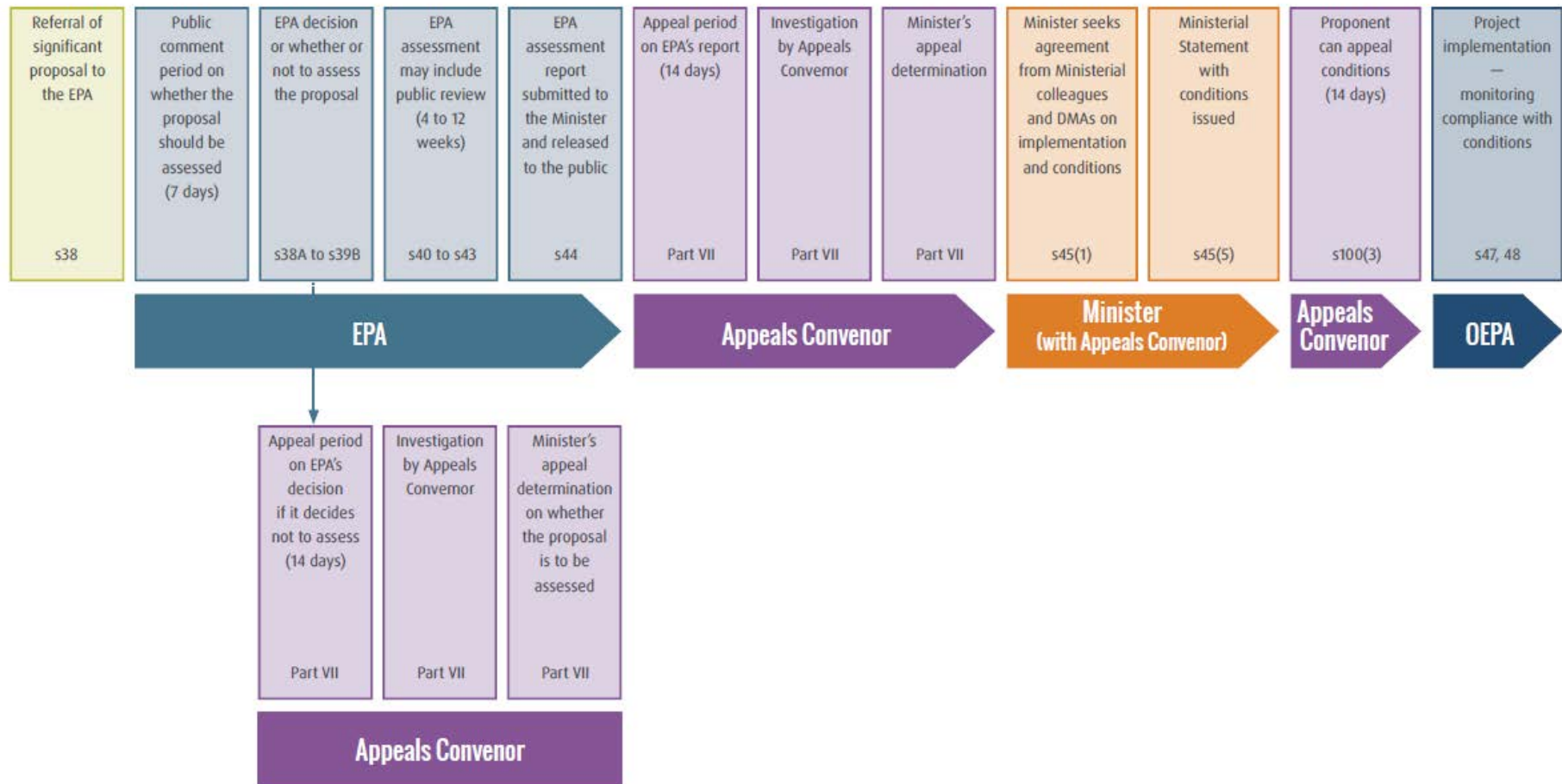


# Environmental Management The Process

Padraic Murphy



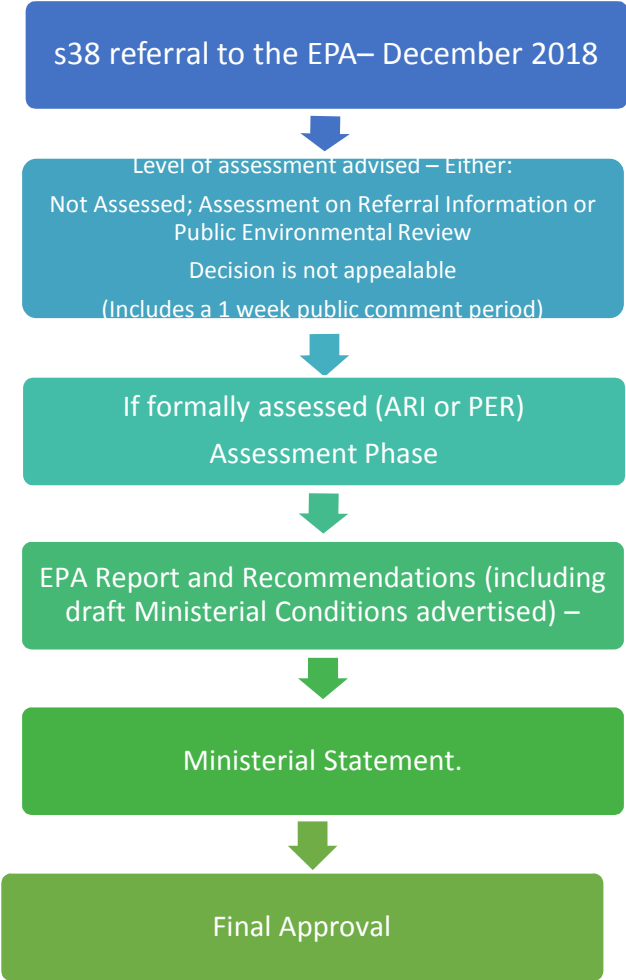
# Environmental Impact Assessment Process



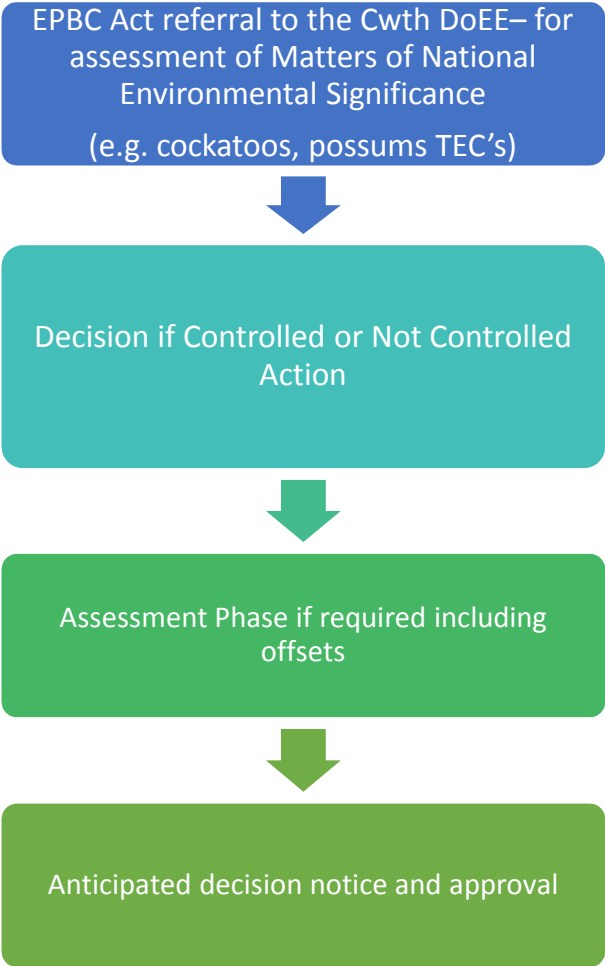
# Proposed Approvals pathway

## Northern & Central section

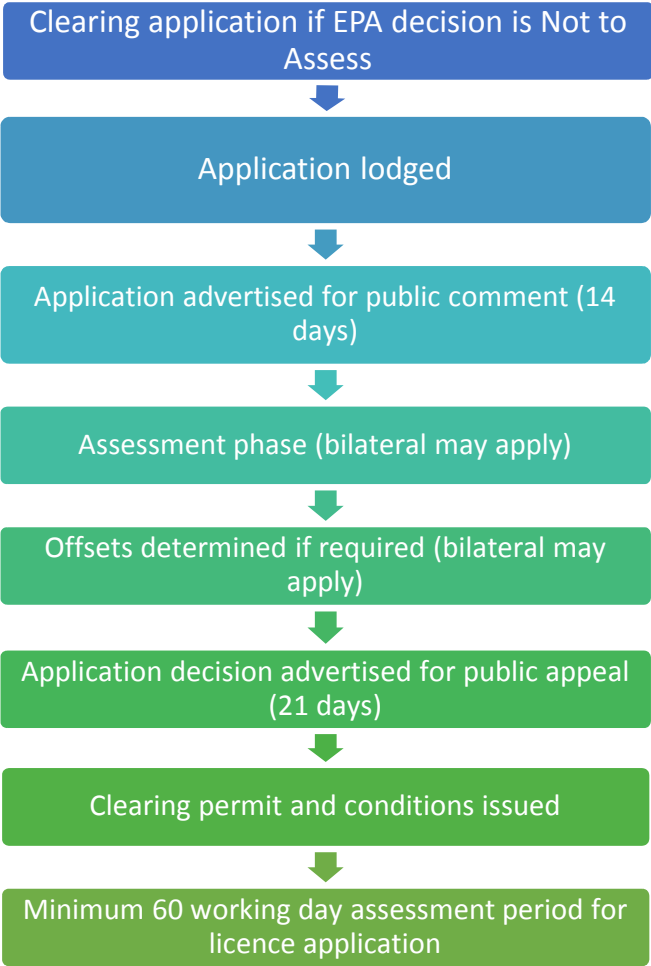
### Part IV EP Act (WA)



### 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 Compliance Assessment Plan Annual Compliance Assessment Report (public availability)	Conditions Annual compliance report (public availability) and auditing (if directed)	Conditions Offset Strategy	Conditions	Noise regulations will apply



# QUESTIONS AND ANSWERS



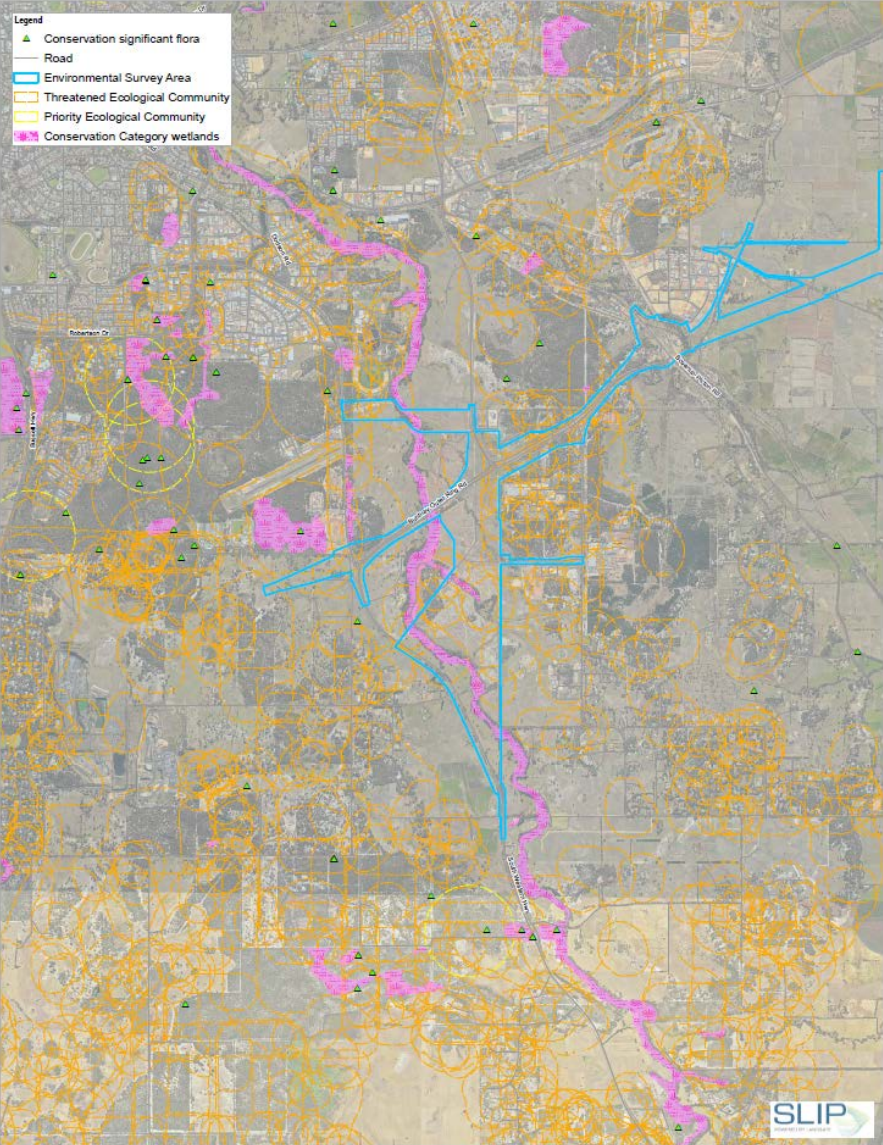
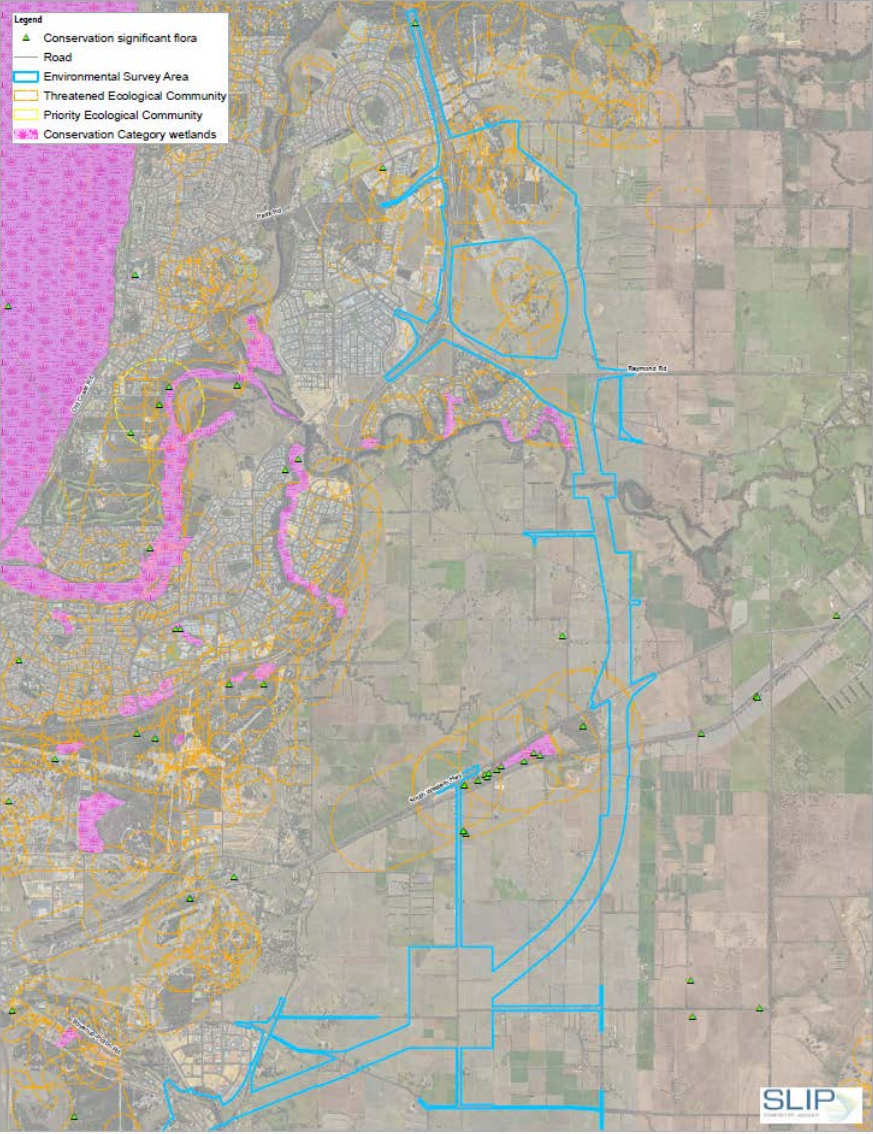


# Environmental Mapping

Padraic Murphy

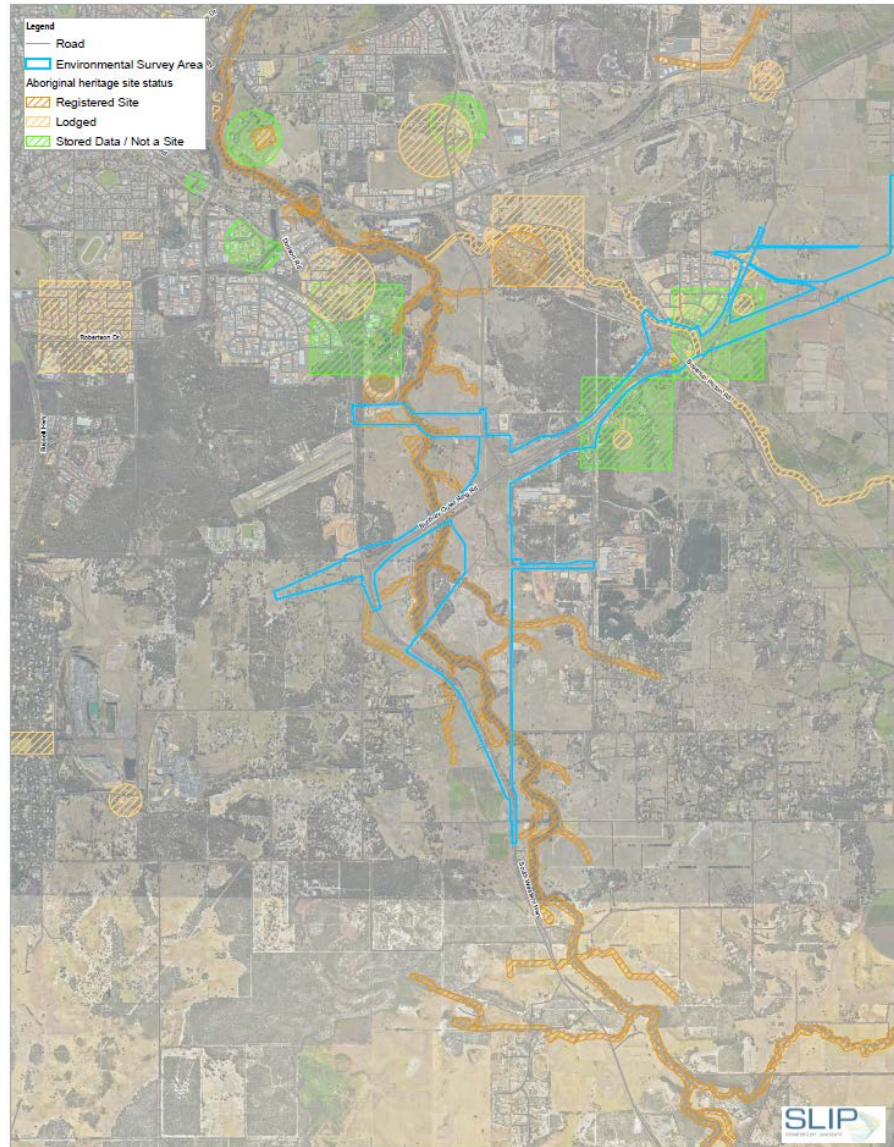
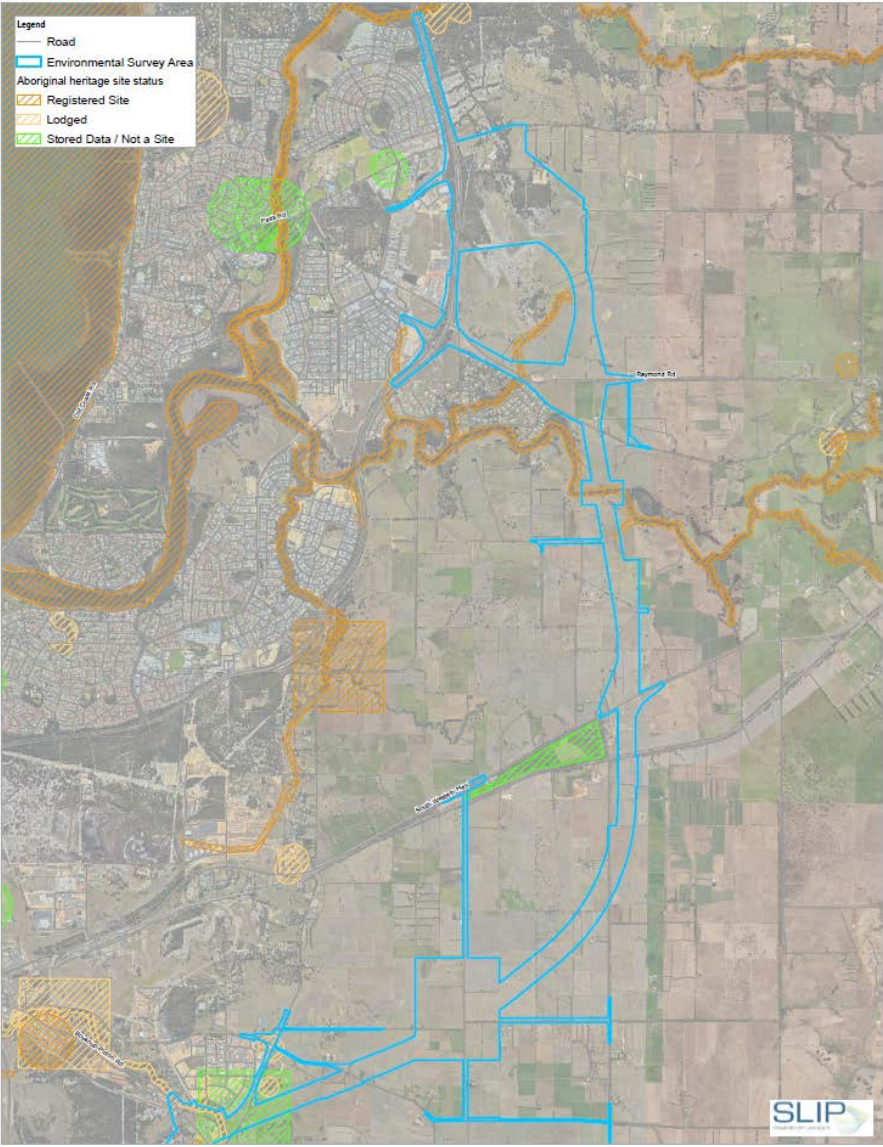


# BORR North and Central – Environmental Values



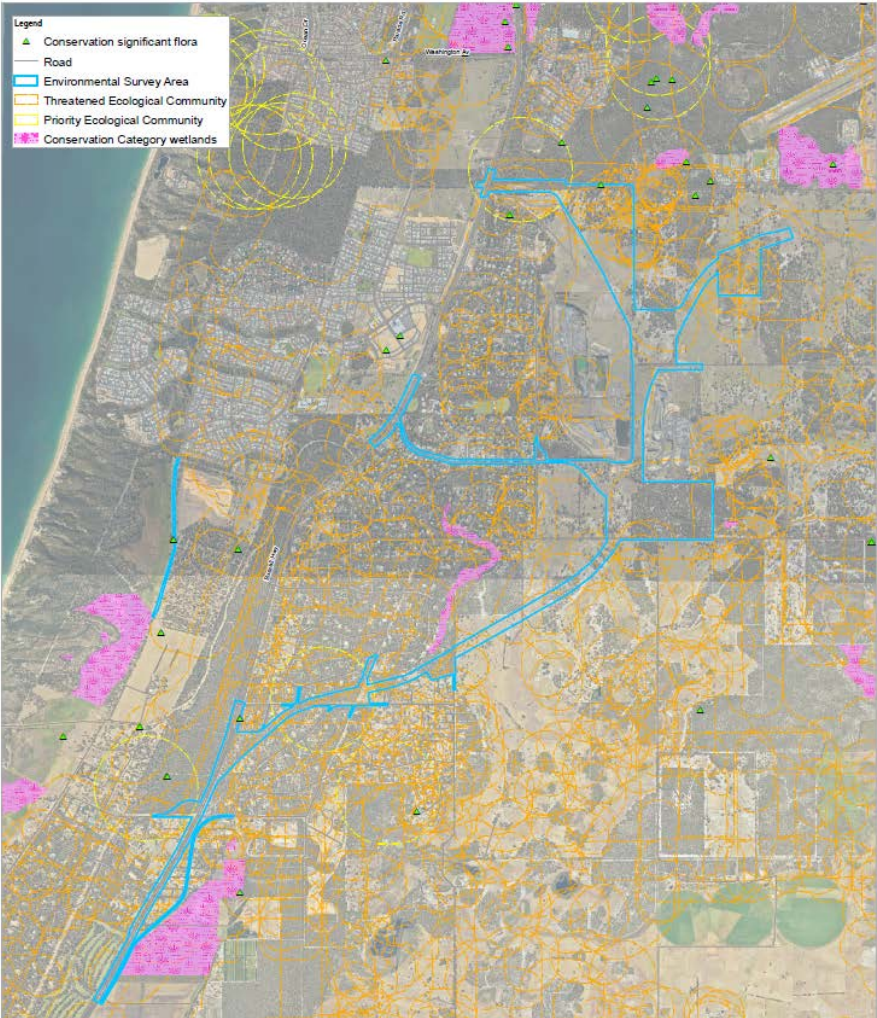


# BORR North and Central – Heritage Values

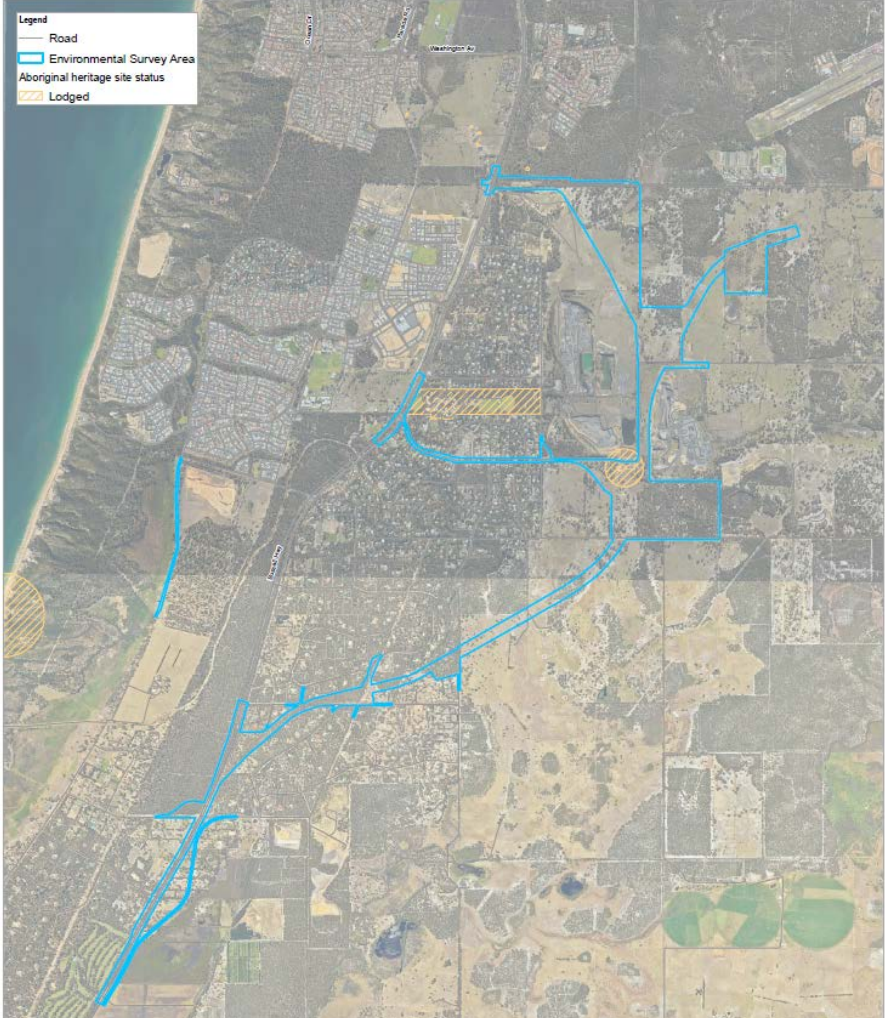




# BORR South GBRs



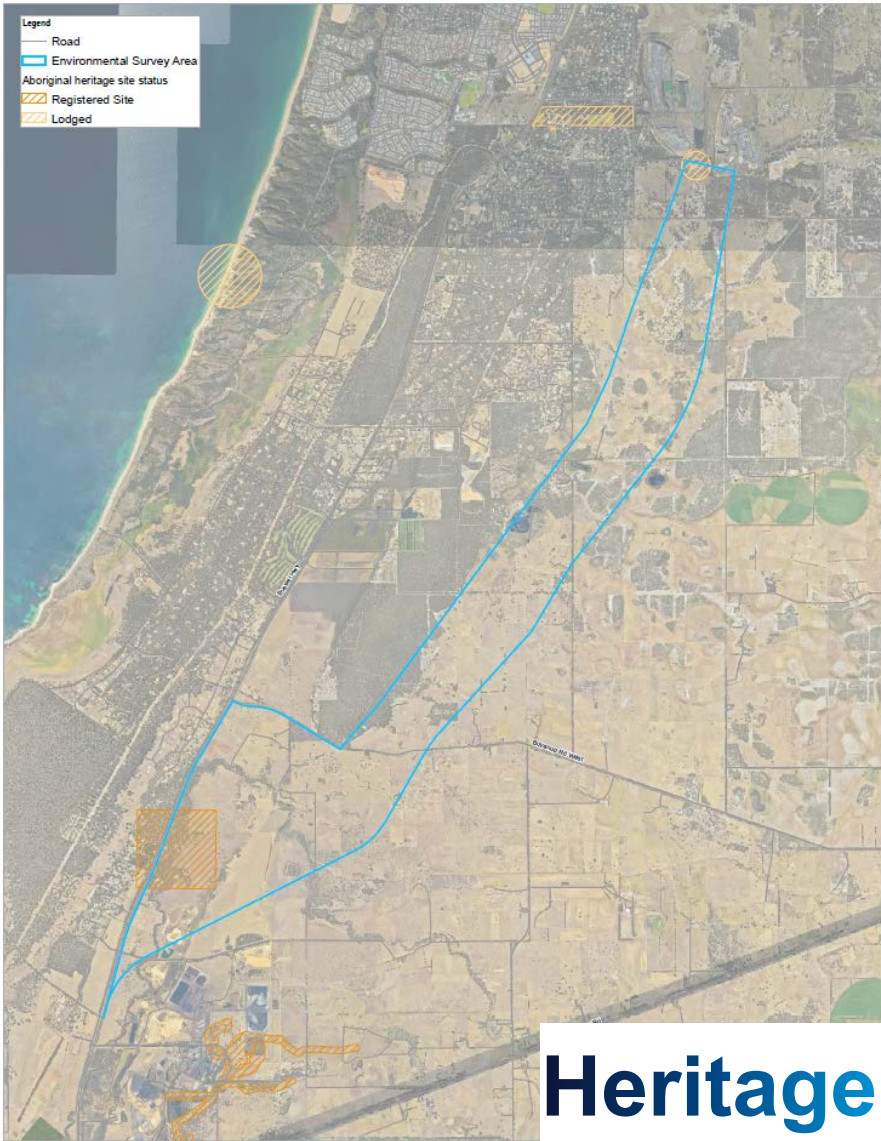
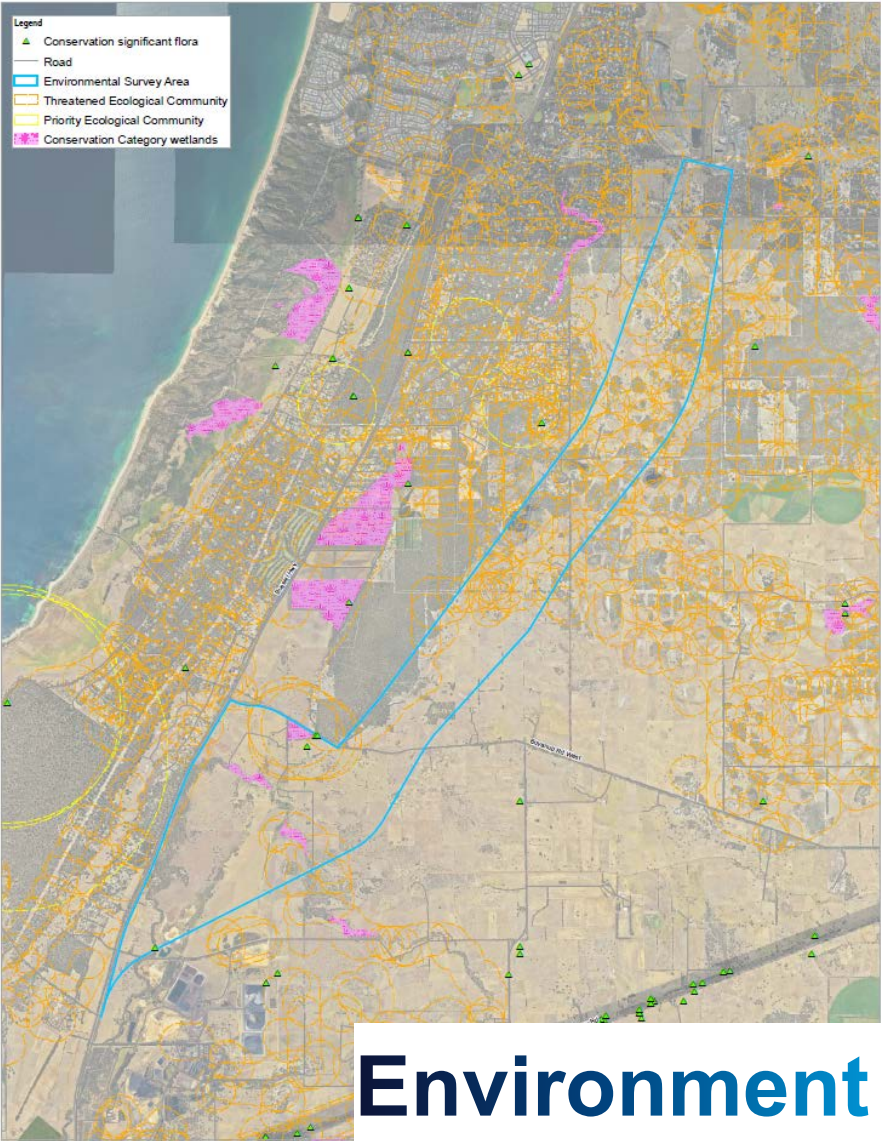
## Environment



## Heritage



# BORR South Investigation Corridor





# QUESTIONS AND ANSWERS

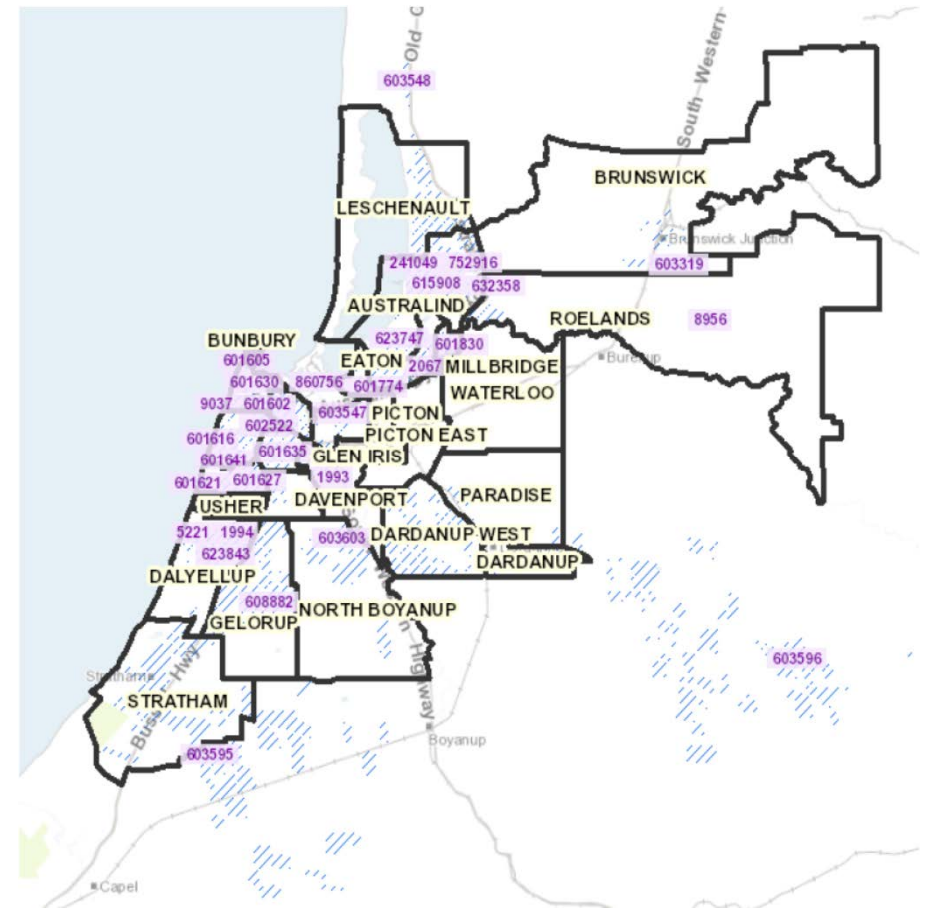




# Consultation and Engagement Update

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 a series of vertical supports.

# CRG Member Round table



# QUESTIONS AND ANSWERS





# Next Steps