

Bunbury Outer Ring Road Northern Section – Alignment Selection Report (Main Roads 2018) – Part 1 (part 1 of 2)



mainroads
WESTERN AUSTRALIA

Bunbury Outer Ring Road

Northern Section

Alignment Selection Report

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1. Executive Summary

In late 2016 Main Roads commenced a planning review for a future South West Freeway (from Mandurah to Busselton) spanning the Forrest and Bussell Highways. This network forms the primary connection of Perth with Bunbury, Busselton and the broader South West Region including the Ports of Fremantle, Bunbury and the proposed Outer Harbour at Kwinana.

The Bunbury Outer Ring Road (BORR) forms an integral part of the future South West Freeway network. The Greater Bunbury Region Scheme includes provision for the Bunbury Outer Ring Road. The Greater Bunbury Strategy – 2013 (GBS) broadly includes provision for the BORR corridor where BORR North is located on the western edge of the proposed “Wanju” urban and “Waterloo” industrial developments. This GBS provides for increasing population of Greater Bunbury to 150,000 in the short to medium term with consideration of a larger population in the longer term by allowing infill development of existing areas, and expansion of the urban and industrial footprint particularly surrounding the BORR North corridor. As a consequence of increased projected population of Greater Bunbury, resulting traffic generation combined with the increasing regional and freight traffic passing/accessing the area, Main Roads have undertaken a planning review of the Bunbury Outer Ring Road as part of the broader South West Freeway conversation.

It is recognised a broader planning focus for BORR and progressive land use planning surrounding Greater Bunbury provides an opportunity for alternative options to be considered, in particular regarding BORR North. The BORR proposal is broken into three sections as shown in Figure A below including, BORR North, BORR Central and BORR South. The BORR Central section was constructed in 2013 and the land use surrounding the BORR South section remains largely unchanged. As a result the alignment of the South and Central sections of BORR are not under review as part of this study.

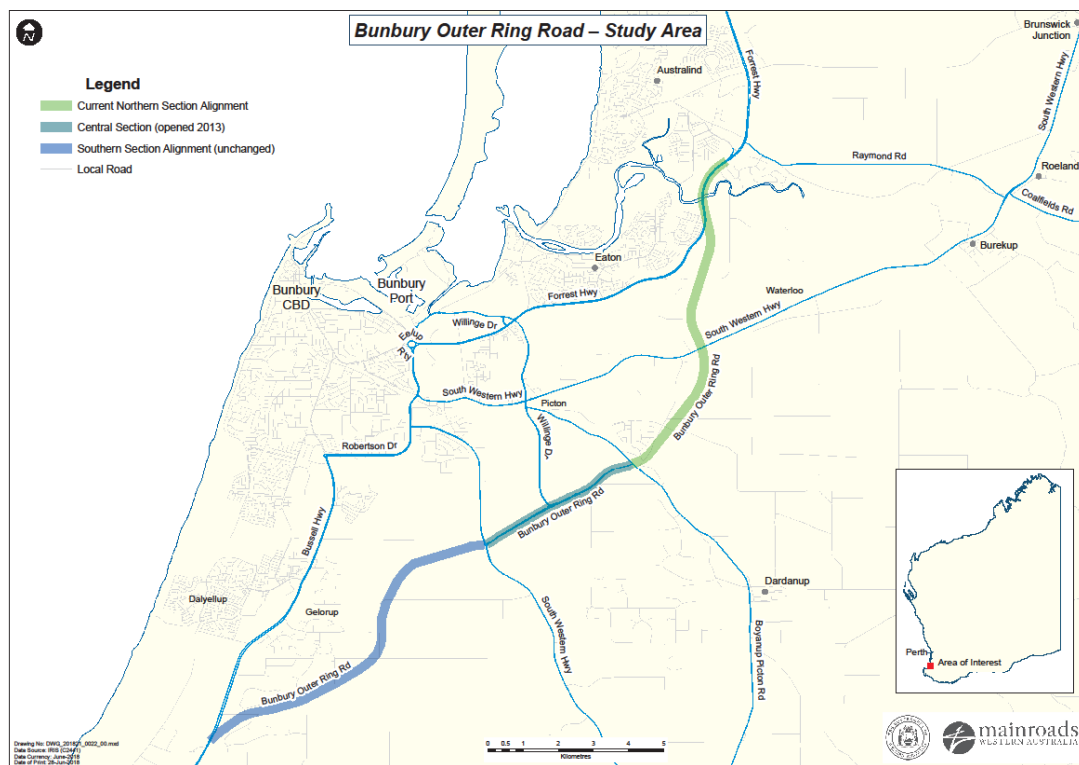


Figure A: BORR South, Central and North Sections

In recognition of the challenges and potential opportunities surrounding BORR North, during 2017 Main Roads undertook constraints mapping and option analysis surrounding the BORR North area. An updated traffic model was established to assist with assessing the effectiveness of a number of network options. The constraints mapping and options analysis identified that in addition to the existing BORR North alignment a second eastern corridor required consideration given it provided a number of potential benefits. These options for BORR North are shown in Figure B below with the existing BORR North alignment shown in light green. An alternative eastern corridor shown in pink is located east of the proposed Wanju development.

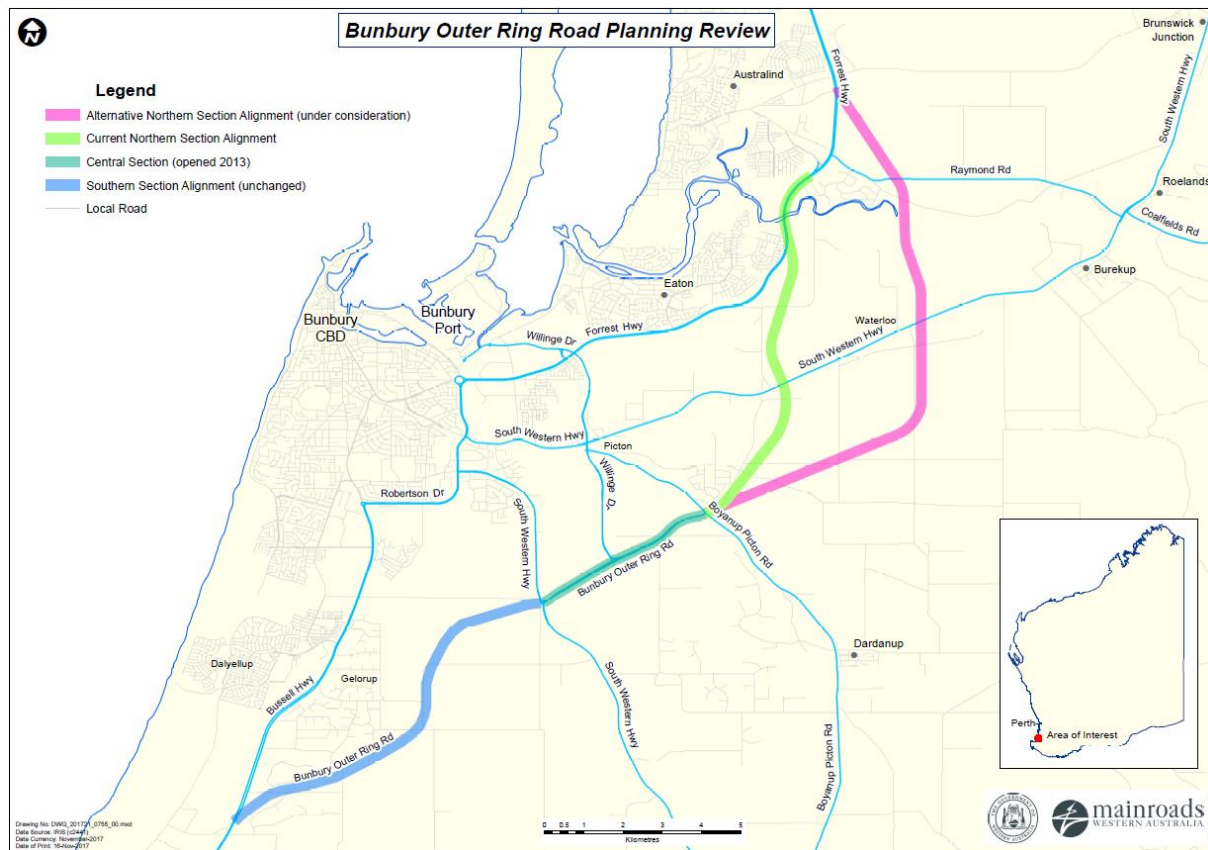


Figure B – BORR North Options

Traffic modelling has been used to test the performance of a the current BORR North alignment and the alternative eastern corridor for a number of time and land use scenarios including for a total updated population of around 200,000 people (land use as agreed with Department of Planning, Lands and Heritage).

The two BORR North options are assessed using a Multicriteria Analysis (MCA) with regard to opportunities, impacts and constraints in **Appendix 1**. Desktop assessments, including the MCA confirm the eastern alternative corridor provides a number of advantages over the existing BORR North alignment including the following key considerations:

- The existing green corridor bisects future urban development's limiting permeability across the BORR corridor;
- An eastern pink corridor provides an integrated planning solution and defines an outer perimeter rather than dividing the urban footprint of Greater Bunbury;
- Traffic modelling confirms the green corridor results in the combination of regional, freight and local traffic placing significant pressure on BORR (requiring six lanes) requiring large expensive interchanges;
- An eastern pink corridor separates regional/freight traffic from local traffic;
- Separation of local and regional traffic improves road safety, efficiency and provides a more effective bypass and improved Port access;
- The existing green corridor is sensitive to increases in population growth (BORR North requires six lanes);
- An eastern pink corridor can cater for population growth for Greater Bunbury in excess of 200,000. Traffic demand can be accommodated with four lanes for the entire extent of BORR;
- The existing green corridor limits access from the future Wanju development to the Forrest Hwy (six lanes single connection in/out);
- An eastern pink corridor provides Wanju improved connectivity to Greater Bunbury through additional access points to Forrest Hwy (strong east-west movements are suggested in the traffic model);

The eastern pink corridor also:

- Ties in further north of the existing green corridor bypassing an additional major intersection on Forrest Highway, improving safety and efficiency;
- Strongly aligns with State, Federal and Infrastructure Australia frameworks, drivers and objectives;

- Is a cost effective solution consistent with broader overall ultimate South West Freeway strategy between Perth and the South West Region
- Does not preclude future rail options, including a future fast rail station within Wanju, a station in Bunbury's CBD and a number of other possible rail scenarios yet to be identified.

It should be noted that with all BORR North options traffic modelling has confirmed the Forrest Highway west of Wanju (accessing central Bunbury) remains a significant spine road requiring six lanes for the ultimate land use. The section of Forrest Highway approaching Eelup Roundabout is currently the busiest road in the state outside the Perth and Peel Regions with weekday traffic volumes averaging 30,000 vehicles per day. Modelling suggests with the BORR in place weekday volumes of Forrest Highway approaching Eelup roundabout are anticipated to be around 60,000 vehicles per day in 2051.

The BORR planning has considered a broad range of desktop assessments and tested a number of traffic modelling scenarios. The resulting alignment assessments present a number of opportunities and challenges however large scale changes to the BORR network will impact several fundamentals within and surrounding Greater Bunbury. Targeted engagement with Government Agencies, key stakeholders and potentially impacted landholders is recognised as a critical aspect of the planning process in order to test the legitimacy of options identified through desktop assessments and obtain critical input to assist with making an informed alignment selection decision.

A two phase consultation process was adopted as part of this planning study consisting of:

1. Ongoing engagement with Government Agencies and key stakeholders during 2017 and 2018 to determine whether options were consistent with State and Federal frameworks, priorities and objectives and whether the options were robust enough to warrant targeted landholder consultation; and
2. Undertake targeted landholder consultation with those potentially directly impacted by either the existing "green" or alternative eastern "pink" corridors. This initial consultation was undertaken between November 2017 and May 2018.

Government agency and stakeholder engagement confirmed broad support for investigations into an eastern alternative corridor. Several organisations raised concern with these investigations, primarily the Shire of Harvey confirming their opposition to consideration of an eastern alternative corridor largely due to impacts to future urban development north of the Collie River and amenity for the existing Meadow Landing community. The City of Bunbury has also raised concerns regarding impacts to business resulting from a bypass.

Concerns and opposition was raised by a significant number of residents of the existing "Meadow Landing" community located north of the Collie River and adjacent to the eastern alternative corridor raising noise, amenity and lifestyle impacts of an eastern corridor. Feedback regarding this area including from a number of landholders broadly included a request to refine the corridor further east away from these areas to minimise impacts to potential future urban expansion (north of the Collie River) and to minimise impacts to the existing Meadow Landing community. These refinements of the investigation area are anticipated to be feasible as they may have a number of other broader benefits and will be further investigated as part of the detailed planning process.

Consultation with potentially impacted landholders has provided a significant level of engagement and input into the planning process. Generally landholders understand the planning assessment however those impacted by either of the two corridors under consideration have generally highlighted their strong desire not to be impacted. There is a level of frustration within the landholder community given the number of amendments to the alignment of BORR North over the preceding years and decades. Impacts such as amenity/lifestyle, noise, impacts to business, agricultural operations, farm residences, financial implications, ongoing uncertainty and compensation have been raised.

It is acknowledged that landholders will be the most impacted group resulting from this proposal and therefore further detailed engagement with them is critical in identifying and managing these impacts as far as possible. Selection of either corridor option will require careful and sensitive ongoing engagement.

Consultation regarding the BORR North Alignment Selection planning study has provided valuable information with a large number of effective and productive interactions informing the planning process. A broad range of views have been provided depending on individual stakeholder interests. The consultation process resulted in the following key outcomes:

- There is broad Government agency and stakeholder support of an eastern alternative BORR North corridor (with the exception of the Shire of Harvey opposing an eastern option);
- Government Agency and stakeholder consultation confirmed the broad findings of desktop assessments support an eastern alternative BORR North corridor;
- Based on initial discussions Traditional Owner representatives consulted have not confirmed a preference for option selection;
- It is acknowledged that with either BORR North alignment option a number of landholders will be directly impacted. Further detailed engagement is critical to avoid, minimise or manage impacts as far as possible for these important stakeholders;
- Refinement of the eastern alternative BORR North corridor north of Collie River is feasible with detailed refinement proposed as part of further detailed planning;

Further broader community consultation is proposed during detailed planning for the overall BORR proposal.

On 1 May 2018 Main Roads presented to the Western Australian Planning Commission (WAPC) detailing the alignment selection planning assessment for BORR North. A formal submission was made to the Commission for consideration at the 30 May 2018 session seeking their support for the preferred alignment selection recommended. In June 2018 the WAPC confirmed their support for selection of the eastern BORR North corridor to allow further detailed planning activities to progress based on this corridor.

2. Introduction

2.1. Purpose of Study

Planning for the Bunbury Outer Ring Road forms an integral part of a broader planning study referred to as the South West Freeway Study. This broader study (currently in progress at the time of writing this report) will identify an overarching ultimate strategy for the Forrest Highway, Bunbury Outer Ring Road and Bussell Highway between Pinjarra Road and Sues Road. The South West Freeway Study objectives are to;

- Review past planning activity by Main Roads WA and to consolidate this information
- Assess the relevance of past planning work in the light of current state government priorities and other influencing factors such as updated land use forecasts and road network changes
- Prepare a cost effective and appropriate ultimate planning concept and identify the required reservation for the 140 km study route that is achievable to implement in the long term
- Prepare a strategic access strategy for use by Main Roads and other government agencies to assist with evaluating adjacent development applications and their access, as well as to guide future road network improvements.
- Prepare an ultimate planning concept that generally provides for control of access and development of the road to freeway style standard.

It is not intended that the Forrest and Bussell Highways will become a freeway in the foreseeable future, however by undertaking this work ultimate concepts, strategic connections and associated access requirements/supporting local networks will be defined. This will ensure progressive development of the road network is undertaken on an “as needs” basis in a consistent manner in order to address the increasing traffic demands, adjacent land use changes and developments. It will also assist to identify staging options to address safety and efficiency considerations in the coming decades.

Compatibility of the BORR with the South West Freeway Study is a key consideration in identifying suitable ultimate connectivity surrounding the built up areas of Bunbury. Recent proposed amendments to land use within the Greater Bunbury area, increasing pressure on parts of the existing network and a requirement to identify a cost effective solution for the BORR proposal has necessitated a review of the planning associated with the Bunbury Outer Ring Road.

The land use changes are predominantly located north of the previously constructed “central” section of BORR. This planning study has therefore focussed on the integration of the northern section of BORR with that land use planning. The planning study considers a number of alignment corridor options for the northern portion of BORR and assesses suitable connections to the existing network. Following identification and endorsement of a preferred alignment, a further planning study will be initiated (2018 and 2019) to define the alignment, connections and associated road network in more detail and prepare an ultimate planning design concept. Plans will be prepared to define the required road reservation, which will then require an amendment to the Greater Bunbury Region Scheme.

2.2. Planning Objectives

As part of the planning review of the South West Freeway (Forrest Highway, Bunbury Outer Ring Road, Bussell Highway, between Mandurah and Busselton) the project objectives for the BORR have been reviewed. Previous objectives were identified around 2010-2012 and were based on a number of factors including a future population of Greater Bunbury around 150,000. More recent advice from the Department of Planning, Lands and Heritage (DoPLH) as well as updated references within the Greater Bunbury Strategy (2013) identify an ultimate population for Greater Bunbury around 200,000. Bunbury, Bunbury Port, the South West of Western Australia and the Forrest and Bussell Highways are increasing in State and National significance. This, combined with the significant number of proposed land use amendments within Bunbury, has prompted further consideration of the role of the BORR and led to the identification of the following revision of BORR planning objectives;

- Provide a bypass to Bussell Highway, Robertson Drive and Forrest Highway, facilitating efficient movement of regional traffic (people and goods) past Bunbury and leading to safety and congestion improvements on these existing roads
- Provide a safe, efficient freight route to/from the Port of Bunbury

- Facilitate sustainable economic growth in residential and industrial developments surrounding Bunbury City
- Facilitate viable pedestrian, cycling, public transport, passenger rail and freight rail solutions in the future
- Provide a controlled access highway to freeway standard that will ultimately connect the Forrest Highway directly to Bussell Highway facilitating improved access between Perth, the Bunbury Port and surrounding regions of Western Australia
- Minimise environmental and social impacts wherever possible.
- Develop a route which represents value for money to the community enabling delivery in the short to medium term.

This planning review was initiated focusing on the alignment of the northern portion of BORR in order to test a number of land use scenarios/time horizons and corridor options to ensure the proposal satisfies these updated objectives.

2.3. Study Area

The study area includes the built up areas of Greater Bunbury including the existing Forrest and Bussell Highways, the South West Highway, Boyanup Picton Road and beyond to Coalfields Highway, which provide radial arterial road access between Bunbury, Perth and the South West and Wheatbelt Regions of Western Australia.

The BORR is broken into sections as described below with discussion included regarding their context to this planning study;

- BORR North – from the southern abutment of the Brunswick River Bridge (Forrest Highway, 79.99 SLK) to the intersection of Boyanup Picton Road and the Bunbury Outer Ring Road (Stage 1 built section).
- BORR Central (Stage 1 built section) – from the intersection of Boyanup Picton Road to the intersection of South Western Highway (adjacent to the Bunbury Speedway). The BORR Central section was constructed and opened to traffic in May 2013 and as a result the alignment is not under review, however its connectivity to the surrounding network will be reviewed in the context of the South West Freeway Study and amended BORR planning objectives.
- BORR South – from the intersection of South Western Highway (adjacent to the Bunbury Speedway) to the access to the Capel Golf Course on the Bussell Highway (13.84 SLK) . The BORR concept was originally developed by Main Roads WA in the early 1970's in consultation with other state government departments and local authorities and formed part of the Bunbury Region Plan (State Planning Commission 1987). The current BORR South corridor is included in the Greater Bunbury Region Scheme (GBRS). The rural residential development of Gelorup developed following identification of the BORR South reservation. Previous alignment assessments for BORR south undertaken in the 1990's confirm the existing corridor remains appropriate. As a result, the existing corridor is not under review, however its connectivity to the surrounding network will be reviewed in the context of the South West Freeway Study and amended BORR planning objectives.

Given the BORR South corridor has previously been reviewed and determined to remain appropriate (given no significant land use amendments proposed) and BORR Central has been constructed, this alignment section study focusses on BORR North. The study area is shown in Figure A below.

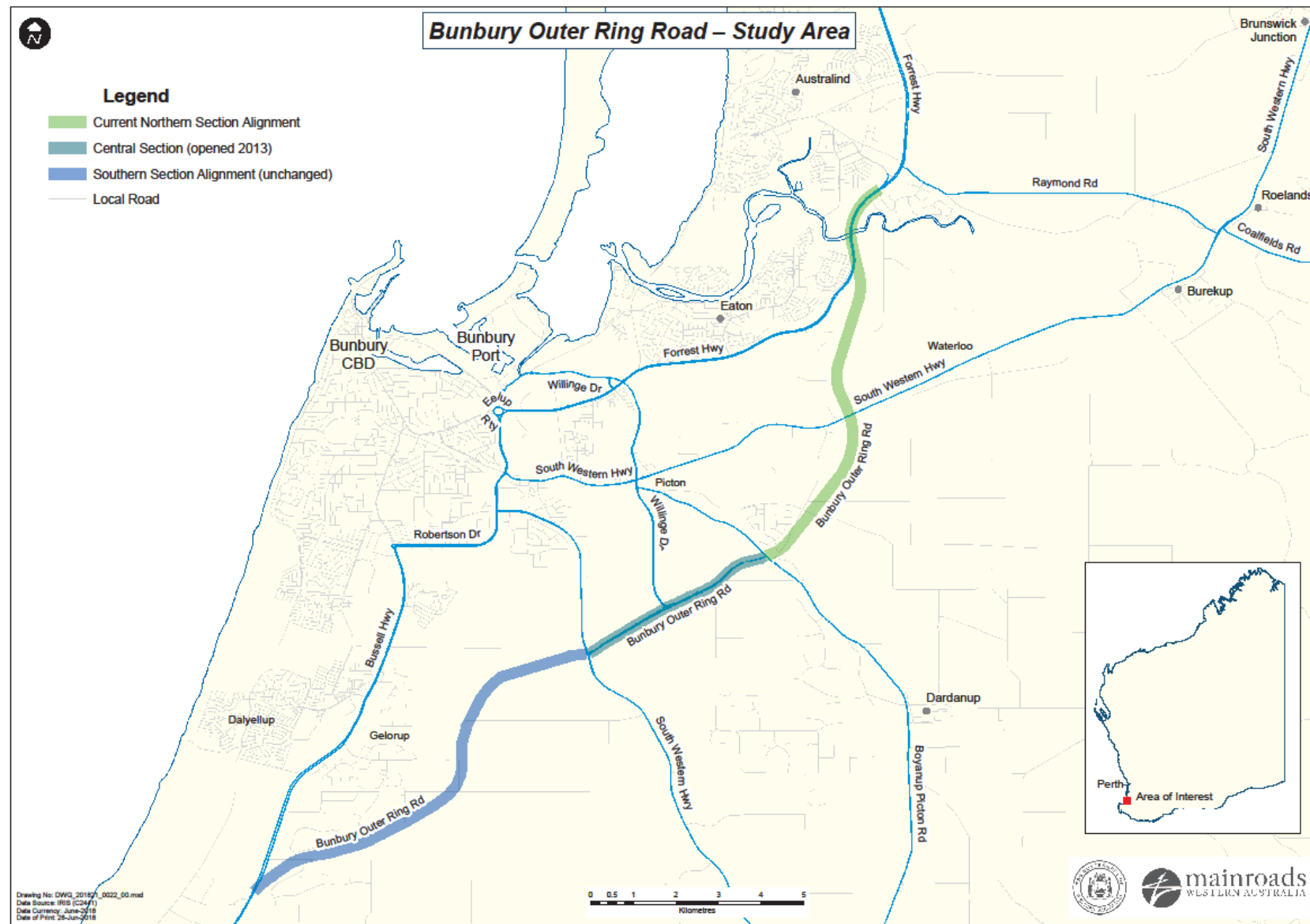


Figure A – Study Area

3. Planning Context

3.1. Background

Bunbury, the third largest city in Western Australia (behind Mandurah and Perth) and is located around 170km south of Perth on the coast. Greater Bunbury is estimated to have a residential population of around 70,000, and up until recently was one of the fastest growing regional cities in Australia. It is the administrative centre of the South West Region (the 'South West'), which stretches from Walpole on the south coast to the northern boundary of the Shire of Harvey as shown in Figure 1 below (SWDC, 2017a¹). The estimated residential population of the South West was 175,904 in 2016, predicted to rise to 206,640 by 2026 (ABS, 2016).

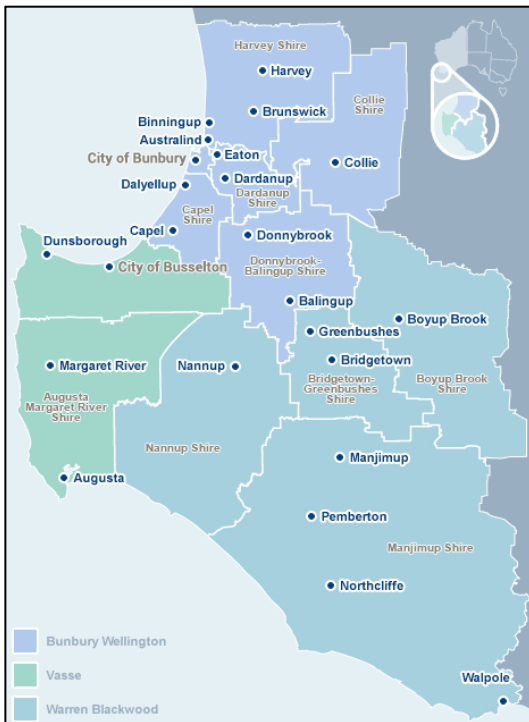


Figure 1: South West Region

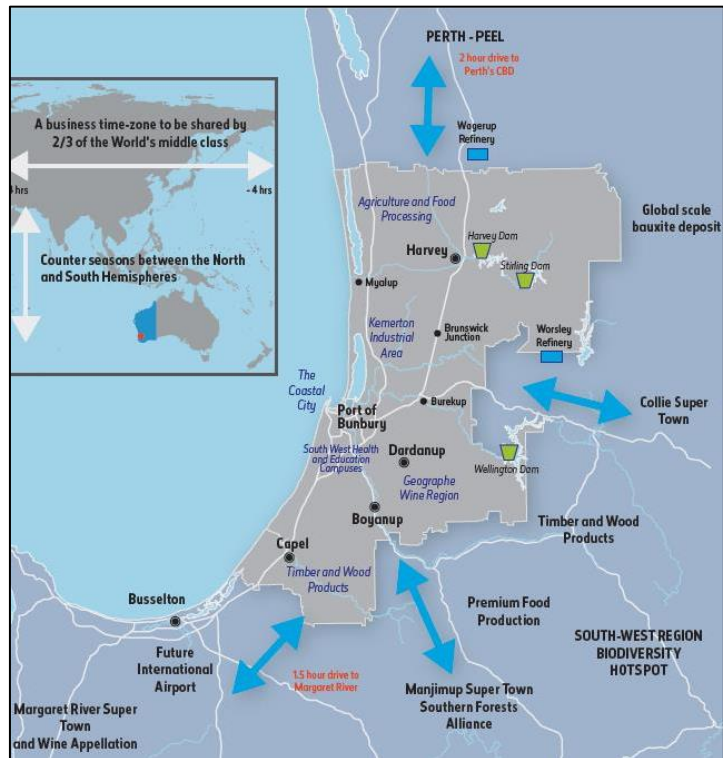


Figure 2: Bunbury area economic drivers

Bunbury is the fifth most productive regional city in Australia (\$151,000 per capita, Regional Australia Institute, 2017). It features a historic average compound annual growth rate of 2.9% (2001-13), predicted to rise to 3% (2013-31). The South West's Gross Regional Product (GRP) was \$15.81 billion in 2015, 6.6% of the Gross State Product (GSP), having grown by more than 35% over the preceding 5 years (SWDC, 2017b & Dept. of Treasury, 2017).

The main economic drivers of the South West are mining and mineral processing, tourism, construction, timber industry and agriculture/viticulture. Figure 2 (Bunbury Geographe Growth Plan Partnership, 2016²) shows some of the key drivers in the Bunbury area.

The South West's mining and mineral processing sector (predominantly alumina, coal and mineral sands) was valued at \$2.391 billion in 2015-16 (an increase of around 10% from the previous year). Bunbury Port is one of the world's major alumina Ports exporting 10.9 million tonnes or 12% of the world's alumina exports. Tourism is also a major contributor to the Regional economy, with 167,000 international visitors and 2.32 million domestic visitors, spending a total of nearly \$1.5 billion (SWDC, 2017c).

The region's transport infrastructure is dominated by road transport. Various initiatives have been articulated in a number of documents including 'Roads to Export, the Greater Bunbury Infrastructure Investment Plan'³ to deliver safer roads, reduced travel times, industry growth and jobs creation for the region. Achieving a safe and efficient network is a key focus for Main Roads and the local community. Public transport potentials are high but are at a low level of participation (inter-regional bus services, local bus services, passenger rail). Patronage remains a key limitation in expanding the level of public transport service within the region.

The BORR concept was originally developed by Main Roads WA in the early 1970's in consultation with other state government departments and local authorities. Following significant growth during the mining boom with associated impacts on traffic flow, efficiency and safety performance on the major networks around Greater Bunbury, Main Roads have undertaken a number of planning assessments to identify an ultimate corridor providing a heavy vehicle and regional traffic bypass of Bunbury, with a high standard link to the Port.

As part of this, the Bunbury Port Access Road Project (BPAR) was completed in 2013, involving the construction of the Bunbury Port Access Road (Willinge Drive) and BORR Central to improve access to the Bunbury Port and alleviate traffic pressures and safety considerations particularly on the South Western Highway, Robertson Drive and Eelup Roundabout. While the partial construction of the BORR has alleviated some issues in the short term, it is only part of the ultimate solution and growth across all traffic streams is expected to continue, necessitating the completion of the BORR.

3.2. Regional Planning – Federal Government

Through the Department of Infrastructure and Regional Development, Infrastructure Australia, and the Transport and Infrastructure Council, the federal government aims to develop policy, plans and deliver national reforms to improve the efficiency and productivity of Australia's nationally significant infrastructure and transport systems. These bodies have released a number of documents setting priorities and identifying the strategic national land transport corridors and freight routes connecting Australia's nationally significant places. These places include the Bunbury Port, Perth, the South West of Western Australia as well as the Wheatbelt and surrounding regions. These documents help to guide and inform planning and investment decisions, particularly those that involve federal funding.

3.2.1. Australian Infrastructure Plan (Infrastructure Australia, 2016)

The Australian Infrastructure Plan⁴ sets out 78 recommendations for infrastructure reform to drive productivity growth, maintain and enhance our standard of living, and ensure our cities remain world class. The BORR proposal is consistent with the plan's Regional strategy of "Maximise opportunities for growth in productive regional economies and support sustainable regional communities." Bunbury is identified as one of the top 4 major regional centres in WA in 2031 with a projected gross regional product of \$13bn. The BORR proposal will improve access to and around Bunbury, and support economic growth through improved freight productivity and efficiency.

3.2.2. National Land Transport Act 2014

The National Land Transport Act 2014 (NLT Act)⁵ provides funding for projects related to land transport matters, and for related purposes. The objective is to assist national and regional economic and social development by the provision of Federal funding aimed at improving the performance of land transport infrastructure. The BORR proposal is consistent with the NLT Act and comprises sections of the National Land Transport Network including:

- Forrest Highway; and
- Willinge Drive (Port Access Road).

3.2.3. National Land Freight Strategy (Standing Council on Transport and Infrastructure, 2012)

The National Land Freight Strategy⁶ is a national strategy to drive efficient and sustainable freight logistics and to improve economic, social and safety outcomes for freight logistics. It identifies National Key Freight Routes associated with the BORR proposal including:

- Forrest Highway;
- South West Highway (to the northeast and southeast of Bunbury);
- Coalfields Highway; and
- Bussell Highway.

3.2.4. National Ports Strategy (Infrastructure Australia / National Transport Commission, 2011)

The National Ports Strategy⁷ presents a national ports strategy for Australia, aiming to improve the efficiency of port related freight movement across infrastructure networks. The BORR proposal is consistent with this and will improve access to the Port of Bunbury through fit-for-purpose long term freight corridors. The state and national strategic significance of the Bunbury Port is under further consideration as part of the Westport Taskforce deliberations (in progress at the time of writing this report). Further detail regarding the Westport Taskforce is provided in section 3.3.8 of this report.

3.2.5. National Infrastructure Priorities (Infrastructure Australia, 2009)

Infrastructure Australia has developed 7 priorities⁸ to ensure an economic, social and environmentally sustainable future. These themes provide a framework for action to meet the gaps, deficiencies and bottlenecks in the nation's infrastructure to improve international competitiveness and boost productivity. Relevant priorities include:

- Transforming our cities;
- National freight network; and
- Competitive international gateways.

In 2018, Infrastructure Australia confirmed the Bunbury Outer Ring Road (BORR) proposal on its “*Infrastructure Priority List*”⁹ addressing “*National Connectivity*”. The proposal will form part of the national freight network, improving the efficiency of movement of freight and commercial vehicles in the State's southwest. It will facilitate growth in international trade through Bunbury Port in mineral and agricultural exports.

3.3. Regional Planning – State Government

3.3.1. The Greater Bunbury Region Scheme (GBRS)

The Greater Bunbury Region Scheme (GBRS) has been in operation since November 2007 and provides the legal basis for land use planning in the Greater Bunbury region. This region stretches from Lake Preston in the north, Peppermint Grove Beach in the south, eastwards to Darling Scarp, and covers the City of Bunbury and the shires of Harvey, Dardanup and Capel. The scheme's purpose is to ensure that there is an adequate supply of commercial, residential and industrial land as well as conserving key environmental features to provide future growth. To plan for changing needs, the Greater Bunbury Region Scheme map is amended from time to time.

Figure 3 shows the current GBRS plan within the Study Area.

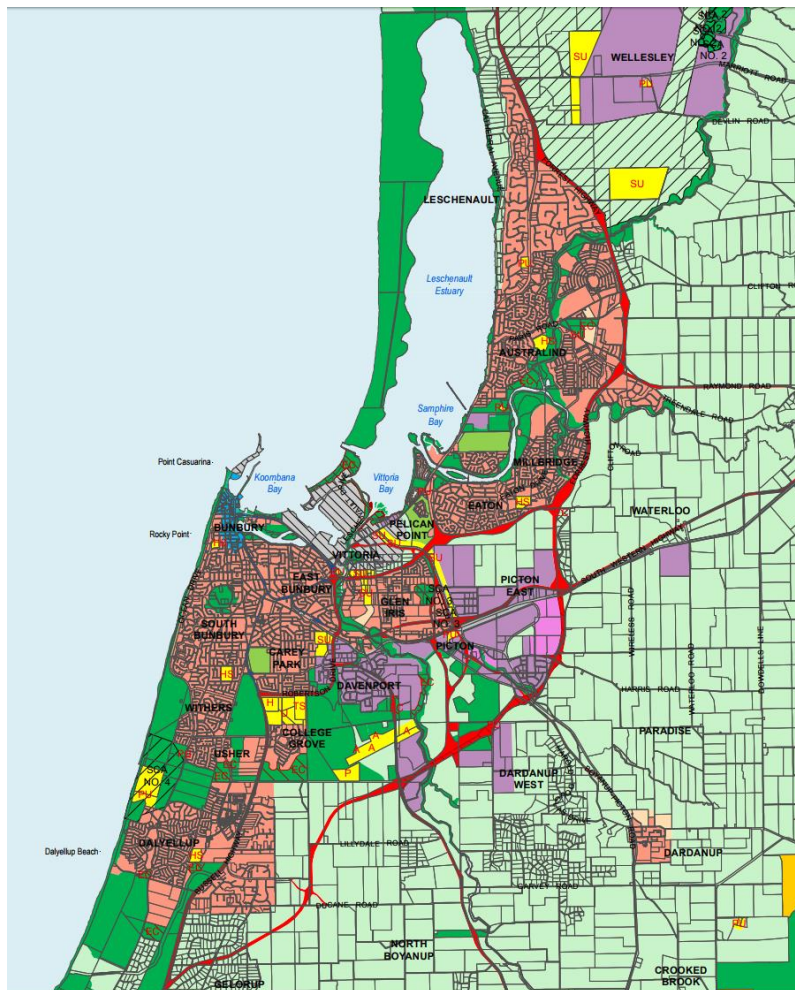


Figure 3 – Greater Bunbury Regional Scheme (GBRS)

The Shire of Dardanup and West Australian Planning Commission are in the process of drafting a number of significant amendments to the GBRs within the Study Area. Draft District Structure Plans released for public comment including:

- Draft Wanju District Structure Plan (April 2016)
- Picton Industrial Park (Southern District), Draft District Structure Plan (Dec 2016)
- Draft Waterloo Industrial Park District Structure Plan (May 2017)

These Draft District Structure Plans are detailed in Figure 4.

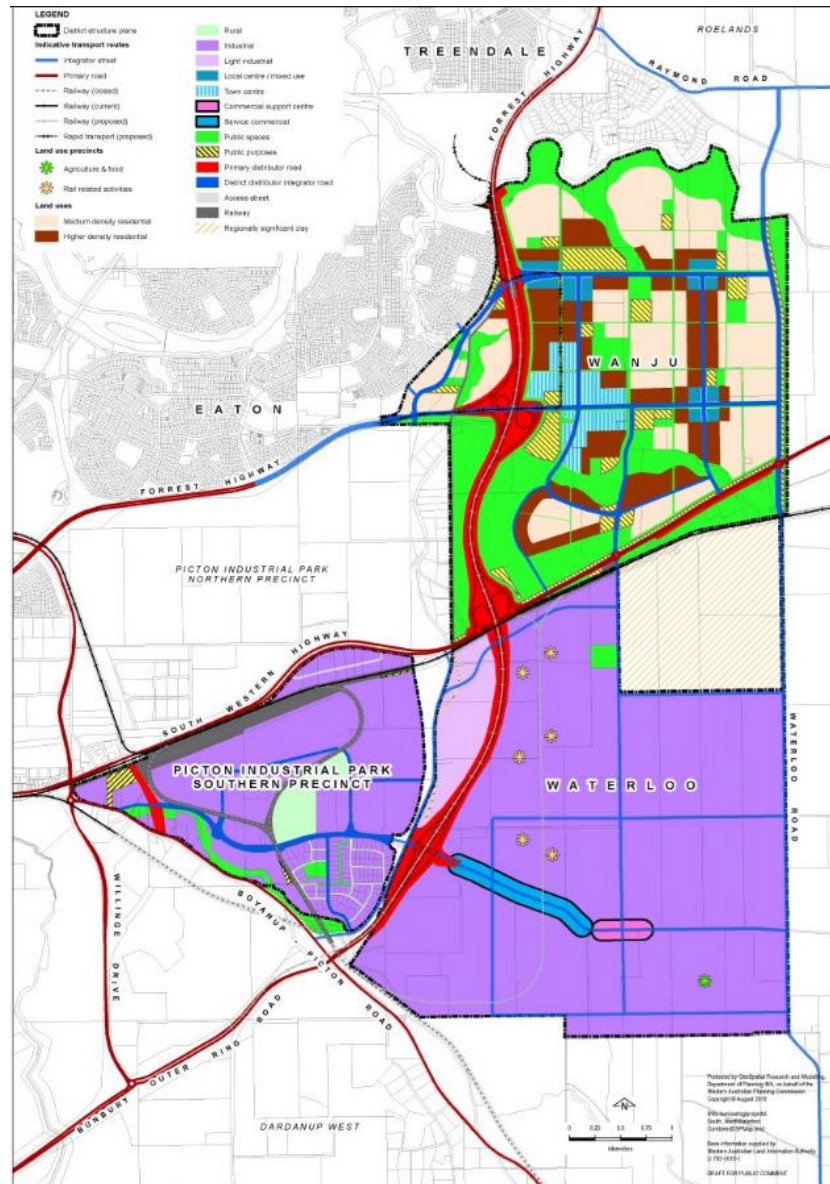


Figure 4 – Draft District Structure Plans (Wanju, Waterloo, Picton South)

Consultation to date with the Department of Planning, Lands and Heritage as well as the West Australia Planning Commission is assisting to inform planning processes associated with the BORR with regard to the states strategic future land use planning within the Greater Bunbury area.

These discussions suggest provision of the BORR as provided in the current draft district structure plans, combined with the amended scale and density of the Greater Bunbury urban and industrial development footprint presents a number of challenges including:

- Connectivity between existing and proposed communities and associated activity centres will be separated by a major highway/freeway;

- Amenity given the alignment bisects the proposed urban expansion footprint;
- The proposed network mixing regional, district, local and freight traffic including through a single intersection;
- The scale of infrastructure required to cater for the traffic mix, connectivity, efficiency and safety requirements; and
- Providing an integrated planning solution in consideration of adjacent land uses and public transport requirements.

These challenges require further analysis as part of the planning associated with the BORR proposal and in particular BORR North. Further discussion of the Wanju and Waterloo Draft District Structure Plans is included in Appendices 2 and 3.

3.3.2. South-West Framework (October 2009)

The South-West Framework¹⁰ is a broad planning strategy to guide the development of the south west from 2009 to 2019. It provides a strategic view of the region's future, focusing on its major challenges and opportunities to ensure growth and development are achieved.

The Framework identifies key infrastructure needs for the region including:

- A high standard of road links and passenger rail services connecting Bunbury to Perth;
- Expansion of the Bunbury Port;
- Expansion and ongoing maintenance of the freight rail services in the region, and between Bunbury and Perth;
- Location of a rail station, major bus station and other major public transport infrastructure in major centres and locations that are accessible by walking and other non-car-based forms of transport; and
- Promote sustainable integration of land use planning and transport planning that minimises the reliance on private motor vehicles and reduces energy use through initiatives to encourage the use of alternative forms of transport, and increase energy and resource efficiency.

Relevant priorities from this framework are summarised in the table below:

Priorities	Reference
Interlinking projects to better connect South West industry to bulk ports at Bunbury and Kwinana, unlock capacity at the port of Bunbury manage the Greater Bunbury Area's increasing freight circulation task, and upgrade east-west transport links to freight growth areas such as Collie [and the Wheatbelt].	SWRPIF page 12
Direction 10: Improve landside access to regional port authority ports. Bunbury Port: Complete the Bunbury Port Access Road.... and.... Bunbury Outer Ring Road	SWRPIF page 54
Direction 11: Alleviate the impact of heavy freight movements on regional centres. Population growth across the South West region, together with strong underlying tourism activity, point to the need to complete the Bunbury Outer Ring Road. The road will be a four-lane dual carriageway with the capacity to be upgraded to freeway status in the long term. Once completed, the project will also provide an effective bypass of Bunbury for inter-regional traffic	SWRPIF page 55
6.9 Transport and infrastructure	SWRPIF Part A

Priorities	Reference
<ol style="list-style-type: none"> 1. The predicted future population and economic growth will place increasing pressure on the regional road network and provision of other capital and social infrastructure. Timely provision of new infrastructure and the maintenance of existing assets are therefore critical to the region's continued growth. 2. Key infrastructure needs for the region include: <ul style="list-style-type: none"> ▪ a high standard of road links and passenger rail services connecting Bunbury to Perth; ▪ provision of adequate public transport options for rural based commuters to be able to access services in larger centres; ▪ a high standard of road links connecting Bunbury to the South West region as a whole; ▪ improved access to the Bunbury Port through completion of the Port Access Road and the Bunbury Outer Ring Road; ▪ expansion of the Bunbury Port; 	page 27
<p>Table 4 – Infrastructure projects</p> <ol style="list-style-type: none"> 3. SW1 – Project - Roads to Export and additional grade separation at Brunswick, Burekup, Picton and Bunbury. <ul style="list-style-type: none"> ▪ Construct Bunbury Outer Ring Road (BORR). ▪ Complete Port Access Road. ▪ Upgrade Coalfields Highway. ▪ [Future] Grade separation as a result of the duplication of the rail line into the port. 	SWRPIF Part B page 7

3.3.3. The Greater Bunbury Strategy 2013

The Greater Bunbury Strategy 2013¹¹ provides guidance on land use planning and infrastructure delivery to support a population growth from 83,600 (2011 census) to over 150,000 people, adequate for the short, medium and long terms. The strategy's vision is for an **'attractive, compact and well connected city'**. Key infrastructure challenges identified in the strategy include:

- Protect and facilitate access to the Bunbury Port for direct access to international markets;
- Identify and facilitate appropriate opportunities for road and rail freight movement;
- Support the development of the Perth-Bunbury Fast Passenger Rail Service, with a station in the Bunbury CBD

Figure 5 presents the "Greater Bunbury Sub-Regional Structure Plan 2013"¹² which identifies a number of elements that are relevant to the BORR planning including:

- Identification of an "Investigation Area" north of the Collie River in the area of Raymond Road and East of the Forrest Highway (as described in Figure 5 below). This is defined in the Great Bunbury Strategy 2013 as *"Rural land to be investigated for potential rezoning in the medium to long term subject to assessment and the statutory rezoning processes."* Recent advice from the DoPLH confirmed that whilst Local Government draft documentation presents urban development in this area, investigations as defined in "The Greater Bunbury Strategy 2013" are yet to be progressed through the planning process including through the WAPC;

- Identification of an “Urban Expansion area - east of Eaton “Urban Deferred” zoning under the Greater Bunbury Region Scheme may be considered in the short term (2013-2021) subject to the area being defined within a District Level Structure Plan, prepared and approved by the local government and endorsed by the Western Australian Planning Commission. The District Level Structure Plan is to provide for regionally important economic and social infrastructure, reserve lands and sites for public purpose.” This expansion area is referred to as the “Wanju” urban development in other sections of this report and is represented in Figure 4 (above) and Appendix 2;
- Identification of “Industrial Expansion Areas – As endorsed in the South West Region Economic and Employment Lands Strategy”. This expansion area is referred to as the “Waterloo” industrial development in other sections of this report and is represented in Figure 4 (above) and Appendix 3.

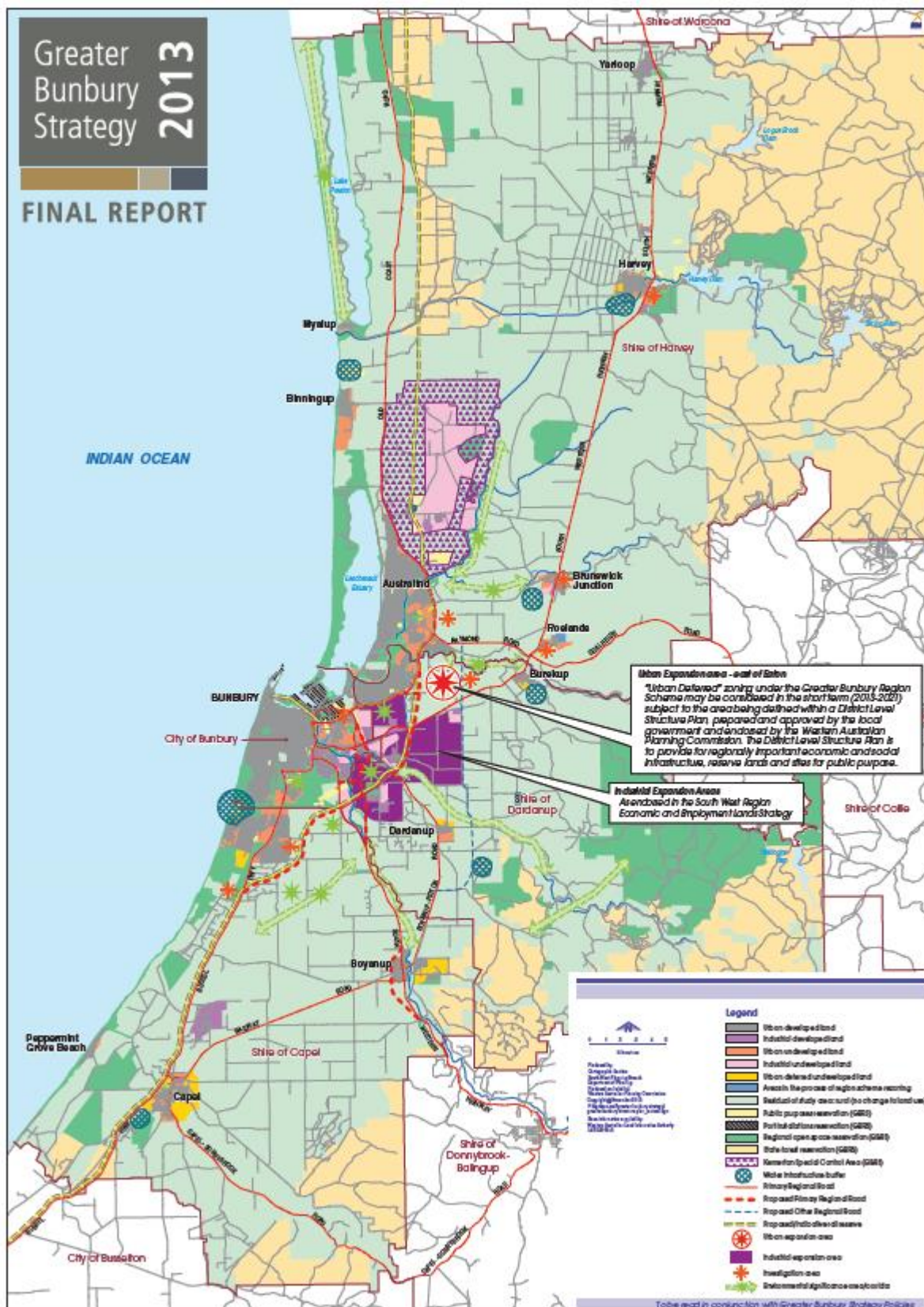
Further to this, below is an extract of “Table 8: Investigation areas and their constraints” (page 22) from Greater Bunbury Strategy 2013 in reference to the area north of the Collie River around Raymond Road (east of the Forrest Highway).

5.5 Investigation areas

These areas are considered to have planning merit as they provide a logical extension of existing urban areas, bound by a defining boundary. However, each of the sites has various constraints that need to be overcome or negotiated before development can progress.

Table 8: Investigation areas and their constraints

LOCATION	MAJOR CONSTRAINTS TO BE NEGOTIATED PRIOR TO LOCAL STRUCTURE PLANS BEING APPROVED.
Shire of Harvey – (portions of lots 5, 100, 101, 104 and 131 Treendale) - major Urban Investigation area	<ul style="list-style-type: none"> • Development to be staged so that it is not commenced before significant development has occurred within the urban expansion area east of Eaton (+2021). • Road access. • Regional open space. • Rail infrastructure. • Subject to detailed district level structure planning being approved by the local government and endorsed by the WAPC. • Rezoning of the land under the Greater Bunbury Region Scheme from Rural to Urban Deferred to Urban.



Map: Greater Bunbury Sub-regional Structure Plan 2013

Figure 5

3.3.4. South West Region Economic and Employment Land Strategy (March 2014)

This Strategy's¹³ objective is to ensure optimum supply of suitable industrial land (heavy, special, general and light) that addresses the current and future needs of the South West region and supports economic growth. The strategy

identifies key areas for expansion or new industrial activity, and looks at existing and future infrastructure requirements to support this land development. The BORR proposal is consistent with the strategy, with planning activities coordinated with relevant land use planning, the GBRS, the Greater Bunbury Strategy, provision of suitable access for a number of existing and proposed industrial developments and advice from the DoPLH.

3.3.5. South West Regional Planning and Infrastructure Framework Part A: Regional Infrastructure Planning¹⁴

This Framework identifies the following key infrastructure needs for the region:

- Improved access to the Bunbury Port through completion of the Port Access Road and the Bunbury Outer Ring Road;
- Expansion of the Bunbury Port including the diversion of the Preston River;

It also supports development of strategies and plans that:

- Develop a high standard of road links and planning a high speed passenger rail service between Bunbury and Perth

3.3.6. South West Regional Planning and Infrastructure Framework Part B: Regional Infrastructure Planning¹⁵

This Framework is one of a series prepared by the Department of Planning on behalf of the Western Australian Planning Commission. The Framework aligns generally with a Regional Investment Blueprint¹⁶ prepared by the South West Development Commission and Regional Development Australia and identifies completion of the BORR as an objective of the framework.

3.3.7. WA Regional Freight Transport Network Plan (Department of Transport, 2013)

The Western Australian Regional Freight Transport Network Plan¹⁷ was prepared in approximately 2011 and sets out the WA state government's commitments and priorities for upgrade and expansion of the WA regional freight transport.

This plan was prepared prior to the construction of BORR Central section (completed May 2013) indicating this project as 'funded'.

The plan provided a series of Project Investment Priorities which included the completion of BORR South and North sections over the period beyond 2015.

It also included a series of Directions commentaries associated with Building and Maintaining the Road Network. Direction 11 was identified as being to '*Alleviate the impact of heavy freight movements on Regional Centres*' and includes the Bunbury Outer Ring Road as a priority.

3.3.8. Westport Task Force

The Westport taskforce released the "Westport – What have you told us"¹⁸ document in 2018 outlining feedback obtained through a public consultation process including:

"The Westport Taskforce was established in September 2017 to develop a long-term integrated solution to meet the freight, logistics and trade needs of Perth and the surrounding regions.... The Taskforce will provide guidance to the Western Australian Government on the planning, development and growth of the Port of Fremantle at the Inner and Outer Harbours, the required rail and road networks, supporting industrial land and intermodal terminals and the potential for the Port of Bunbury to contribute to the handling of the growing trade task."

Inclusion of the Bunbury Port as part of these assessments confirm its strategic importance and the requirement for efficient transport links between Bunbury and Fremantle in the short to medium term and the proposed Kwinana Outer Harbour in the long term. It is understood the Taskforce will report their findings in 2019.

3.4. Previous Planning for the BORR and South West Freeway

The BORR concept was originally developed by Main Roads WA in the early 1970's in consultation with other state government departments and local authorities. The original concept linked the Australind Bypass (now known as Forrest Highway) to the north of Bunbury with Bussell Highway to the south of Bunbury over a distance of approximately 19km. It was planned as a controlled access four-lane divided rural highway. This body of work

formed part of the Bunbury Region Plan (State Planning Commission 1987). The BORR North alignment was identified to the west of the existing Hynes Road and has largely informed the corridor included in the Greater Bunbury Region Scheme (GBRS) as detailed in Figure 3.

Further planning and project development work followed over many years resulting in the construction of the BORR Central section as part of the Bunbury Port Access Road, Stage 2 project. This section of the BORR was opened to traffic in May 2013. Refer Figure A for BORR Sections.

The rural residential development of Gelorup developed following identification of the BORR South reservation. Previous alignment assessments for BORR south undertaken in the 1990's confirm the existing corridor remains appropriate. As a result, the existing corridor is not under review, however its connectivity to the surrounding network will be reviewed in the context of the South West Freeway Study and amended BORR planning objectives. These assessments will be undertaken as part of more detailed planning processes.

Around 2010, the Department of Planning Lands and Heritage (DPLH) approached Main Roads WA seeking to modify the BORR alignment to accommodate an expansion of the Greater Bunbury urban and industrial footprint including the newly identified Wanju urban and Waterloo Industrial Area (refer Figure 4). This planning review was informed by a number of factors including a future population of Greater Bunbury around 150,000 and Main Roads understanding of the initially planned population of the proposed Wanju development (to the east of the corridor) of around 16,500.

This resulted in Main Roads reviewing the road corridor for BORR including its intersection with Forrest Highway and in 2012 finalising a concept for a corridor located slightly east of that shown in the GBRS. This slight shift of the corridor is broadly represented in the Greater Bunbury Strategy (2013) as included in Figure 5. The shift was made for a number of reasons including additional complexity at the BORR/Forrest Highway tie-in to provide an additional connection for the Wanju development, land impacts to established residential development to the north of this intersection, the provision of a future train station (fast rail) within the Forrest Highway corridor and impacts to remnant vegetation (*Report Bunbury Outer Ring Road Northern Section Alignment Selection Report November 2013*¹⁹, *Bunbury Outer Ring Road Northern Section Alignment Multi Criteria Analysis of Alignment Options Revision 0 Feb 2013*²⁰, *Bunbury Outer Ring Road Northern Section Constraints Assessment 2012*²¹). Draft District Structure Plans were advertised between 2016 and 2017 based on the refined BORR North concept as detailed in Figure 4.

In late 2016 Main Roads WA commenced a planning review for a future South West Freeway (from Mandurah to Busselton) spanning the Forrest and Bussell Highways and including the BORR proposal (also refer Section 2.1). This study remains in progress at the time of writing this report. The Forrest and Bussell Highway networks forms the primary connection of Perth with Bunbury, Busselton and the broader South West Region including the Ports of Fremantle, Bunbury and the proposed Outer Harbour at Kwinana. The long term relationship between these ports will be informed by the Westport taskforce considerations currently in progress (refer Section 3.3.8).

In 2017, Main Roads updated the Department of Planning, Lands and Heritage (DPLH) regarding the South West Freeway planning as well as for the BORR given the recently advertised Draft District Structure Plans. As part of these interactions updated advice was sought regarding future land use planning details that confirmed Greater Bunbury's ultimate population is planned in the order of 200,000 and the proposed Wanju urban development population is proposed to be in excess of 50,000 people in the medium to long term. Given the proposed increase in land use intensity surrounding the BORR north, increasing Greater Bunbury ultimate population, resulting complexities in catering for additional traffic pressures and the overarching review as part of the South West Freeway Planning Study, reconsideration of the BORR North alignment was determined to be justified.

Further detail regarding the BORR north planning review drivers are discussed in section 5.

3.5. Existing Road Network

Figure 6 shows the existing road hierarchy in the BORR study area. The five Primary Distributor routes (light blue) from Bunbury town centre include Forrest Highway, South Western Highway (north), Boyanup Picton Road, South Western Highway (south) and Bussell Highway. Other routes that form part of the Primary Distributor network include BORR Central, Willinge Drive, which connects to Bunbury Port, and Raymond Road (also referred to as Australind-Roelands Link, which connects to Coalfields Highway). Robertson Drive, which connects the southern end of Forrest Highway to the northern end of Bussell Highway, and forms the main through-route for traffic bypassing Bunbury, is also part of the Primary Distributor Network. All Primary Distributor roads are also part of the State Road network under the care, control and management of Main Roads WA.



Figure 6 – Existing Road Hierarchy

The Primary Distributor Network, together with the rail in the area, form part of the National Key Freight Network (Department of Infrastructure and Regional Development, 2017), recognising their importance as links contributing to local and national economic success.

The state road network carries a mix of freight, regional, local and tourist traffic with no separation of traffic streams. Freight movements vary widely given the broad range of industries and user groups accessing both the Bunbury Port, various industrial and commercial areas, agricultural areas and locations further afield. These movements broadly originate from the local area, greater South West Region, Wheatbelt Region as well as other parts of Western Australia. These freight routes also incorporate a number of at grade rail crossings, and intersections where speed limits have been reduced (largely for safety reasons) impacting on the overall network efficiency. A combination of these factors result in increased costs for local and global operators and industry as well as a detrimental impact on the local community.

The speed limit in the study area varies significantly, as shown in Figure 7. Generally the Primary Distributor roads in the project peripheries have a speed limit of 110km/h, through rural areas. Through the built up areas the speed limits progressively drop to 80km/hr, and two short segments of 60km/h along Robertson Drive near the Eelup Rotary and at the roundabout with Bussell Highway. Roads through the built-up area of Bunbury with short sections of speed change generally correspond with signalised intersections of rail crossings. It is envisaged that with increasing urban and industrial development pressures surrounding Greater Bunbury as well as increasing freight demands, safety and efficiency pressures on the road network will continue to increase.

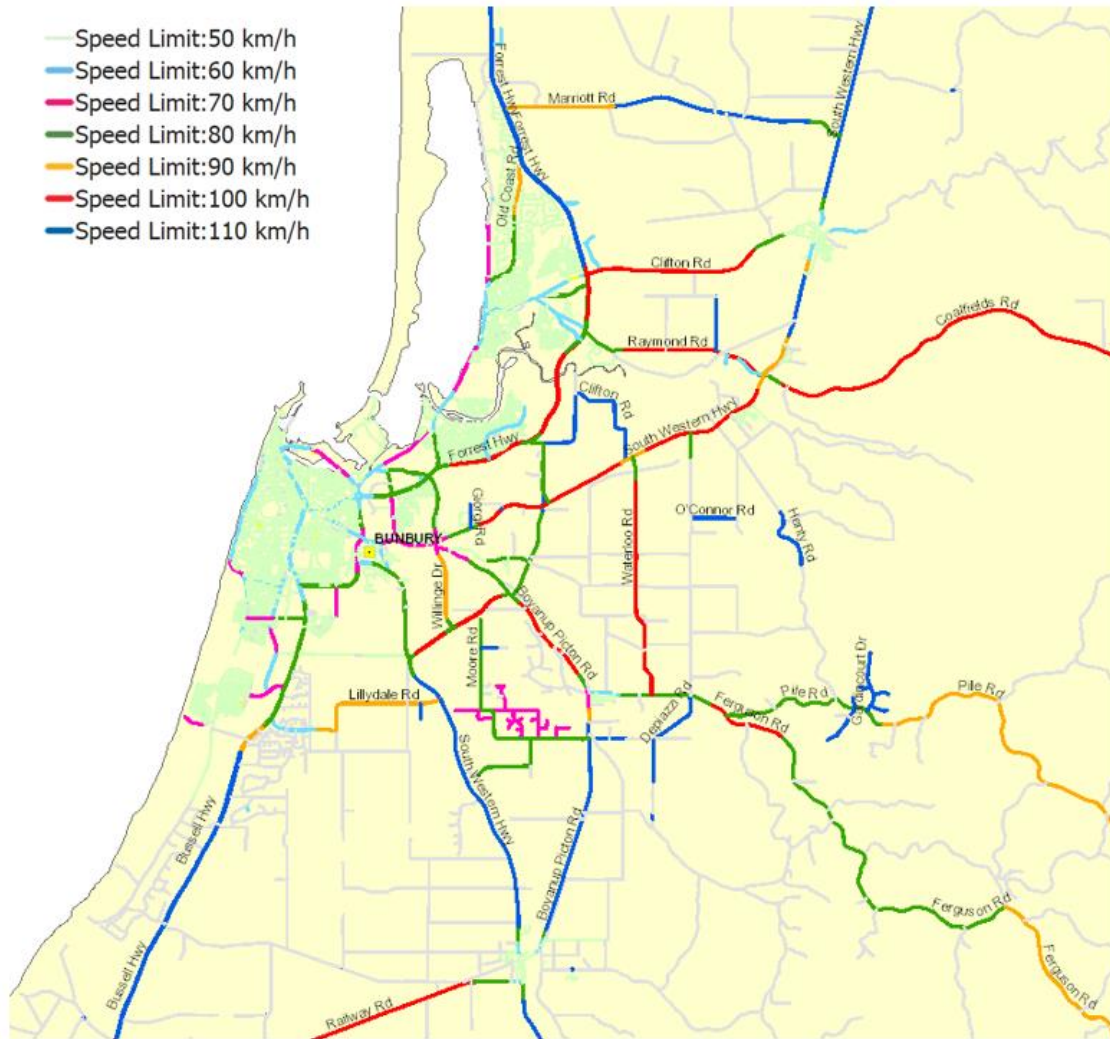


Figure 7 – Existing Speed Limits

3.6. Planned Road Network

A number of key changes to the road network have been identified over many years in and around Bunbury given increases in traffic, urban and industrial development, agriculture and mining as well as a number of other aspects. Planned significant changes to the road network include the following:

- Extension of Eaton Drive north to Treendale including a bridge over the Collie River. Complete and opened to traffic in 2018;
- Grade separation of the Port Access Road at the rail/South Western Highway intersection (including realignment through Picton). Long term planning (unfunded);
- Grade separation of the South Western Highway with the rail to the Bunbury Port (including realignment through Picton referred to as the “Picton Deviation”). Long term planning (unfunded);
- The establishment of Wanju urban and Waterloo Industrial developments and the traffic generated in the medium-long term will have a significant impact on the Bunbury road network. Inter-agency coordination of the associated local network, considerations and options for the Primary Distributor network and overall land use and transport planning will continue. Short to medium term planning while these developments are established (long term for the ultimate land use scenario); and
- Planning for a future “South West Freeway” providing an overarching strategy for future grade separation on the Forrest and Bussell Highways to the north and south of the BORR tie in locations (refer section 3.4). Long term planning (unfunded).

Significant planned changes to the road network require consideration during the planning review for BORR.

3.7. Restricted Access Vehicle (RAV) Network

Figure 8 shows the existing restricted access vehicle (RAV) network in the study area. Forrest Highway, Willinge Drive, Leschenault Drive, Moore Road and the northern section of Robertson Drive are part of the RAV 7 network, which allows for vehicles up to 36.5m length (B-Triples).

All the other radial Primary Distributor roads form part of the RAV 4 network, allowing vehicles up to a 27.5m (B-Double) to use these routes. Other major arterial roads on the RAV 4 network include Marriott Road, Old Coast Road, Raymond Road, Harris Road, Lilydale Road and Hasties Road. Clifton Road, Paris Road, Ditichingham Place and Waterloo Road form part of the RAV 3 network, while Rosamel Road forms part of the RAV 2 network. Both networks allow for vehicles up to 5 axle and 27.5m long trucks, however have greater mass restrictions compared to the RAV 4 network.

Planning for the BORR will seek to accommodate the larger combinations on BORR to enable access to planned industrial precincts as well as the port.

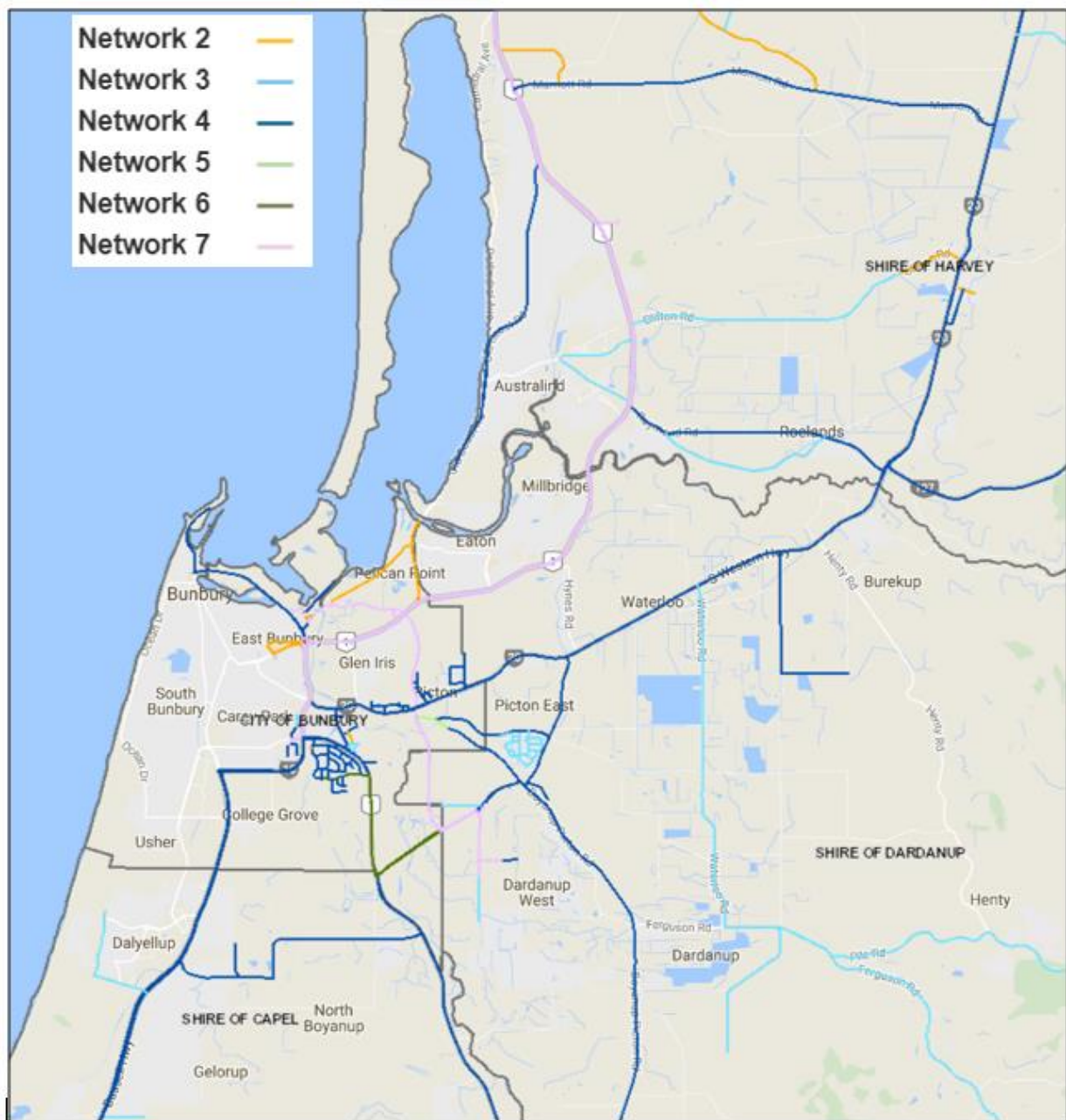


Figure 8 – Existing RAV Network

3.8. Public Transport Network

3.8.1. General

The South-West Framework²² (Department of Planning, Lands and Heritage, 2009) has identified key infrastructure needs for the South West, highlighting a desire to improve public transport outcomes which have been typically low for the regional community and currently dependant on road vehicular transport. Initiatives to encourage public transport use include:

- Locate rail station, major bus station and other major public transport infrastructure in major centres and locations that are accessible by walking and other non-car-based forms of transport;
- Promote sustainable integration of land use planning and transport planning that minimises the reliance on private motor vehicles and reduces energy use through initiatives to encourage the use of alternative forms of transport, and increase energy and resource efficiency; and
- Provision of adequate public transport options for rural based commuters to be able to access services in larger centres.

3.8.2. Bunbury Bus Service

Limited public transport services currently operate in the Bunbury built up area, reflecting a city, and more broadly a region, with significant car dependency. While the existing bus services provide coverage to most of the urban dwelling areas of Bunbury, the frequency of services is typically 30 minutes, reflecting the relatively low density of urban land use (dwellings and commercial) which restricts the implementation of extensive public transport services. The proposed development of a high density population centre proposed through a number of Draft District Structure Plan amendments to the GBRs (refer section 3.1.1 and Appendix 2 and 3 of this report) is seen as a means of generating concentrated long term demand from which sustainable public transport and non-motorised transport modes will develop. An increase in density of existing urban areas such as Eaton and within the City of Bunbury will also promote demand for public transport.

A number of school bus services use the Greater Bunbury road network with a number travelling to adjoining areas including Harvey, Brunswick Junction, Boyanup, Donnybrook (and further afield), Busselton and other locations within the South West Region. These services link communities to a broad range of schools in the Bunbury area and typically utilise various routes including the South Western Highway (north and south), Forrest Highway, Bussell Highway, various other regional and local roads as well as the Bunbury road network.

3.8.3. Regional Bus Service

The current PTA / TransBunbury bus network within the greater Bunbury Area primarily uses local roads and arterial roads, thus maximising the walking catchment for neighbouring properties. These services require access to Bunbury enroute to other regional areas.

There are also private bus services within the Study Area including a private bus service utilising Raymond Road to pick up employees at a large carpark located on the southeast corner of Raymond Road and Forrest Highway.

Figure 9 details the bus and train services surrounding Greater Bunbury.

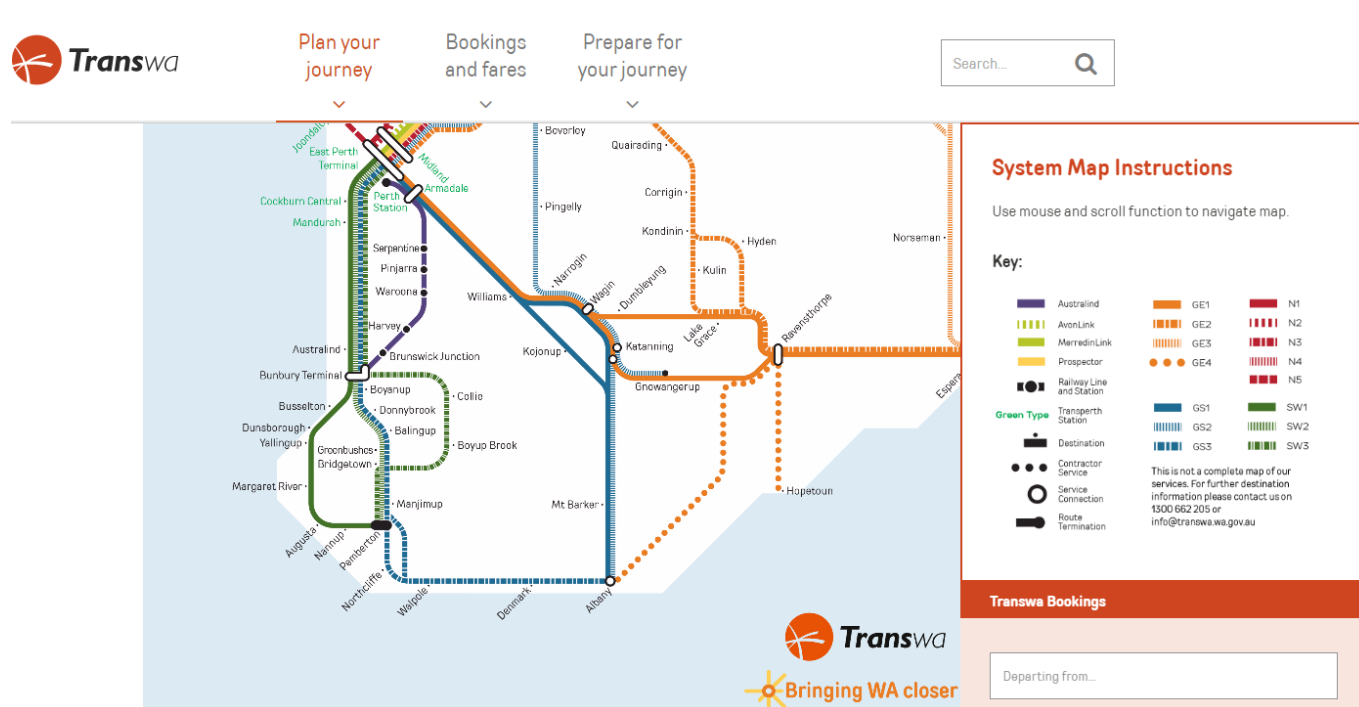


Figure 9 – TransWA Bus and Train Services – South West Region of WA

3.8.4. Australind Train Service

Transwa runs the Australind service between Bunbury and Perth. The route largely runs parallel to the South Western Highway arriving at the Bunbury Passenger Terminal adjacent to Picton Road within Bunbury. The service shares a single train line with a number of other private freight users largely accessing the Bunbury Port. As a result advice from PTA and the Bunbury Port confirm that the passenger/freight rail line accessing Bunbury from the north is at or near capacity.

In recent years the Australind consistently carried more than 150,000 people annually. Australind train service patronage is in decline from an annual peak of approximately 154,040 passengers in 2003/04. (Source PTA Annual report 2004 & 2016/17) to 89,984 passengers in 2016/17 as highlighted in Table 1 below.

Transwa train patronage

	2014-15	2015-16	2016-17
Australind	105,295	96,548	89,984

Table 1: Australind train service patronage

The Australind runs two return services a day during the week. It covers the journey in around two and a half hours, compared to approximately 2 hours travel time by car (off peak). Return ticket prices start at \$32.50 (April 2018). The train runs between Perth station and the Bunbury terminal, with intermediate stops at Serpentine, Pinjarra, Waroona, Harvey and a number of other regional centres. At the time of writing this report, the State Government have recently allocated \$32m for a “Rail Future Fund” which includes replacement of the Australind passenger rolling stock, upgrade of several regional stations on the line and will carry out a service review of existing Australind run times for the service to see if journey times can be improved.

Figure 9 details the bus and train services surrounding Greater Bunbury.

3.8.5. Future Perth to Bunbury Fast Rail

The West Australian government has undertaken planning for a future fast rail concept between Perth and Bunbury, with the Public Transport Authority (PTA) having undertaken a route selection and engineering feasibility study for this service.

Based on a PTA commissioned study undertaken by GHD in 2009, “*Perth to Bunbury Fast Train Feasibility Study*”²³, the preferred route for the fast rail follows the existing Mandurah railway to Anketell, then via the Kwinana Freeway and Forrest Highway to Lake Clifton. It then follows state forest before re-joining Forrest Highway south of Kemerton where it is proposed to site between the two carriageways of the Forrest Highway to access Bunbury.

There are several concepts being considered for the termination of this service including a Station just north of the intersection of Hynes Road and Forrest Highway (between the Forrest Highway carriageways) and an option to continue the service past the Bunbury Port and into the Bunbury CBD. The latter option presents a number of engineering, social and economic challenges and as a result any planning for the BORR requires flexibility for a number of rail planning options that are yet to be confirmed.

3.8.6. Future Bunbury to Busselton Rail

Whilst no formal planning has been undertaken for a future passenger rail service south of Bunbury, planning for the BORR should not preclude its possible provision at some point in the future. Initial consultation with the PTA suggested planning for this future rail route is not a current priority. Given a number of constraints it appears most likely that a future southern connection would utilise the existing freight rail corridor, which runs south from South Western Highway, following Boyanup Picton Road, and then turns southwest at Boyanup town site, following Railway Avenue to Capel town site. South of Capel the rail corridor could then follow Bussell Highway or utilise an existing rail reservation located just to the north of the Bussell Highway corridor. It is not clear whether this rail would extend from the proposed “fast rail” corridor or from the existing “Australind” line running parallel to the South Western Highway.

Future work on coordinating rail with surrounding land uses may also consider the *Greater Bunbury Public Transport Plan*²⁴ (prepared by Parsons Brinckerhoff in February 2011) which proposes potential Light Rail Transit (LRT) and Bus Rapid Transit (BRT) routes connecting Bunbury to the outer suburbs within the Greater Bunbury. The proposed routes have minimal interface with the Study Area but a connection to Wanju is considered a foreseeable and desirable outcome.

3.9. Freight Rail

The South West Region is generally dominated by road vehicular transport. The coverage of freight rail has contracted over the past 30 years and has been concentrated into high volume activities largely related to mining and/or processing. Freight rail to the south of Bunbury has remained dormant for in excess of 15 years. At the time of preparing this report, it is unclear whether this rail network will be utilised again given the potential cost of upgrade and commissioning. The existing freight network to the north consists of a single track with connections to the north (Perth) and east to Collie departing at the Brunswick Junction town site. The rail reservation is owned by the State Government (administered through PTA) with a lease of the rail reservation by ARC Infrastructure (formerly Brookfield Rail). The single line network to the north of the Bunbury Port is operating at or near capacity and carries a significant portion of import/export commodities associated with the Bunbury Port. The single line network to the north of Bunbury is shared with the Australind passenger rail service. It is understood this single freight rail line is planned to be duplicated in the future to enable greater volumes of product to be transported to/from the Bunbury port. There is currently no timeframes available for such a rail duplication.

3.10. Bunbury Port

The Bunbury Port is a pivot point for world-wide distribution of products from the South West of Australia to a number of international destinations. Freight rail and road links including the Port Access Road enable the Port to capitalise on cargo throughput including mining, manufacturing, agricultural and pastoral products. The major commodities that the Port caters for are alumina, mineral sands, woodchips, caustic soda and silica sand. The main produces transported through the Bunbury Port are included in Figure 10 and Table 2 below (obtained from the Trade Statistics and Port Information, Bunbury Port Authority).

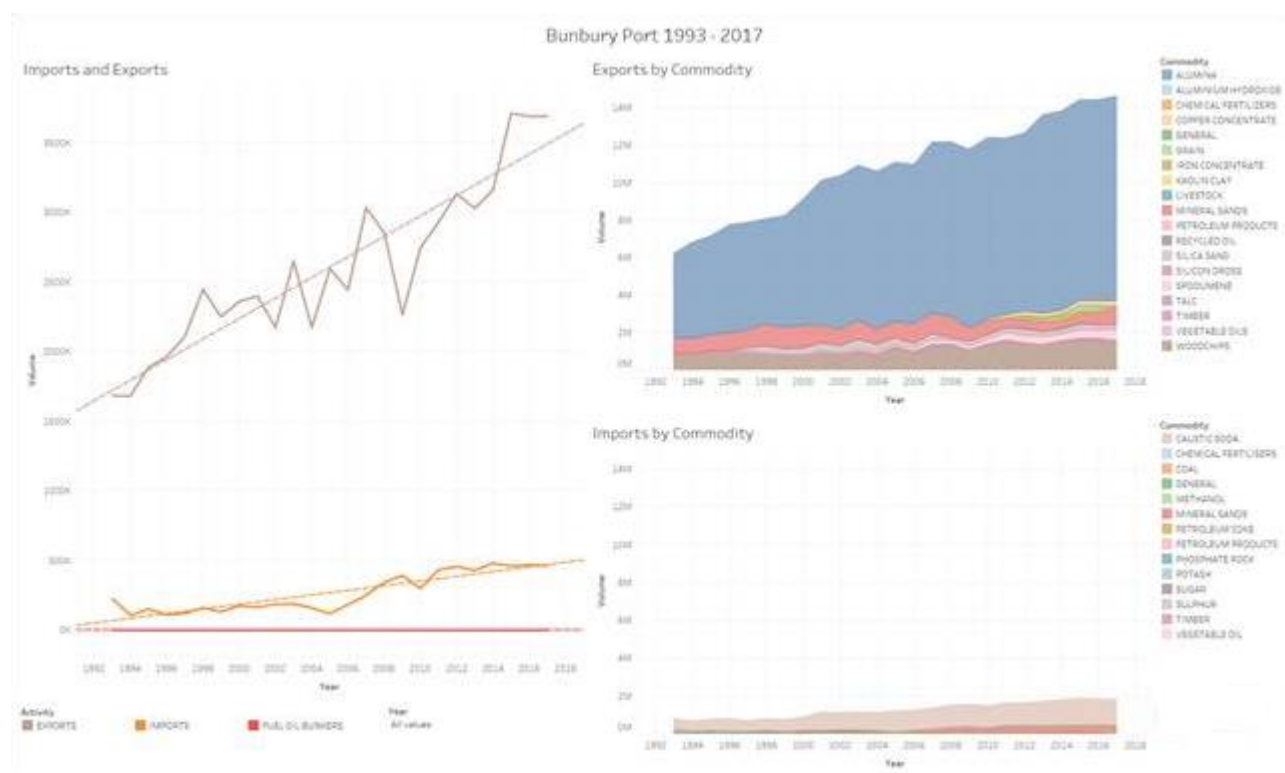


Figure 10

Total exports breakdown (tonnes)

	2012	2013	2014	2015	2016	2017
Alumina	9,496,531	10,589,364	10,658,408	10,696,295	10,721,303	10,933,102
Minerals Sands	486,812	461,353	423,246	515,705	592,175	960,885
Woodchips	1,389,988	1,370,648	1,506,607	1,606,760	1,602,058	1,543,783
Silica Sand	350,220	235,657	255,864	303,389	273,586	273,474
Spodumene	396,928	420,925	344,200	482,755	449,299	579,531
General	33,972	20,051	27,821	26,122	27,927	29,036
Copper Concentrate	215,846	228,362	189,236	256,430	245,755	263,225
Timber	42,567	8,597	67,154	64,558	67,675	26,088
Recycled Oil	19,365	23,670	27,388	26,718	25,601	12,789
Iron Oxide	193,654	254,168	318,550	182,110	248,722	-
Petroleum Products	3,921	2,794	-	-	-	-
Grain	-	-	-	244,889	154,640	273,849
TOTAL TONNAGE	12,629,804	13,615,859	13,818,474	14,405,711	14,408,831	14,895,762

Table 2

Bunbury Port is one of the world's major alumina Ports exporting around 10.9 million tonnes or 12% of the world's alumina exports. There is increasing interest in Lithium with the world's largest and highest grade resource mined by Talison at Greenbushes. This produce (Spodumene) is exported through the Bunbury Port with further interest in this resource highlighted by Albemarle looking to establish processing facilities in the Bunbury area (Kemerton Strategic Industrial Area just north of Bunbury). Establishment of these processing facilities has the potential to significantly increase spodumene exports through the Bunbury Port. Bunge (in competition with CBH) has in recent years commenced exporting grain through the Bunbury Port with a potential for exports to increase (season dependant). Much of this produce originates in the Wheatbelt and is transported by truck to the Port (via Coalfields Highway as well as several other east-west linkages surrounding Greater Bunbury).

Southern Ports have confirmed that the port currently contains eight main berths, has five bulk mineral ship-loaders and can handle a range of bulk liquids and includes fuel bunkering facilities. A number of plans have been developed for the Port to undergo an expansion. Port expansion may be dependant on a number of key aspects including the duplication of the rail line to the north of Bunbury, realignment of the Preston River and it has been suggested an expansion may require the closure of Estuary Drive (which will result in significant traffic impacts to Forrest Highway). Southern Ports are in the process of reviewing and updating these port expansion plans and associated works required to facilitate this.

The Westport taskforce is currently undertaking a strategic review of the Ports of Fremantle, Bunbury and ultimately the Outer Harbour at Kwinana with further discussion included in section 3.3.8.

4. Traffic and Safety Assessment

4.1. Safety Assessment / Crash Report

2012 to 2016 Crash statistics for the major intersections along Forrest Highway, Robertson Drive and Bussell Highway are summarised in the table below, from the Main Roads WA Intersection Crash Ranking Report. This shows all intersections ranked in the top 1000 in the State for crash cost for the last 5 years of crash history (2012 to 2016). In addition to the significant personal and community toll paid from severe accidents, generally all crashes have a cost to the State of over \$1m each over the 5 year period. The construction of BORR will significantly improve all the intersections listed below either through grade-separation and improved safety treatments, or through a reduction in traffic demand, as traffic is diverted to the bypass.

Rank	Int. ID	Street 1	Street 2	Authority	Frequency	Cost
64	10135	FORREST HWY	PARIS RD	HARVEY	29	\$4,782,360
134	11239	BUSSELL HWY	HAREWOODS RD	CAPEL	14	\$3,469,468
135	10138	FORREST HWY	HYNES RD	DARDANUP	18	\$3,466,446
327	13718	FORREST HWY	OLD COAST RD	BUNBURY (C)	21	\$2,222,230
434	1188	ROBERTSON DR	BUSSELL HWY	BUNBURY (C)	70	\$1,849,458
481	11235	BUSSELL HWY	WASHINGTON AVE	BUNBURY (C)	31	\$1,769,246
500	10136	FORREST HWY	AUSTRALIND -BYPASS	HARVEY	24	\$1,737,501
533	1189	ROBERTSON DR	SOUTH WESTERN HWY (PICTON RD)	BUNBURY (C)	55	\$1,667,084
627	10153	FORREST HWY	VITTORIA RD	BUNBURY (C)	35	\$1,481,472
731	118893	FORREST HWY	ALYXIA DR (THOMSON RD)	BUNBURY (C)	31	\$1,333,957
733	70110	BUSSELL HWY	DETTMAN DR	BUNBURY (C)	10	\$1,329,297
770	13726	FORREST HWY	CLIFTON RD	HARVEY	17	\$1,263,644
789	76376	FORREST HWY	OLD COAST RD	HARVEY	10	\$1,231,516
827	1449	SOUTH WESTERN HWY	BUSSELL HWY (BRITTAIN RD)	BUNBURY (C)	37	\$1,183,068
840	76926	FORREST HWY	STANLEY RD	HARVEY	5	\$1,168,221
844	78778	FORREST HWY	EATON DR	DARDANUP	31	\$1,163,831
927	116561	BUSSELL HWY	NORTON PROM	CAPEL	29	\$1,069,211
960	1327	BUSSELL HWY	HASTIE RD	CAPEL	8	\$1,036,399
996	148335	EELUP RTY	SANDRIDGE RD	BUNBURY (C)	39	\$998,483

Table 3: 2012 to 2016 Crash Ranking for Intersections along Forrest Highway, Robertson Road, Bussell Highway and BORR Central

Key arterial roads including Forrest Highway, Robertson Drive and Bussell Highway have been actively managed for road safety performance by Main Roads WA since the opening of the BORR Central section in May 2013. Crash costs on these arterials has been summarised in the following table, indicating that countermeasures progressively being deployed are effective in managing the safety performance of these important roads and intersections.

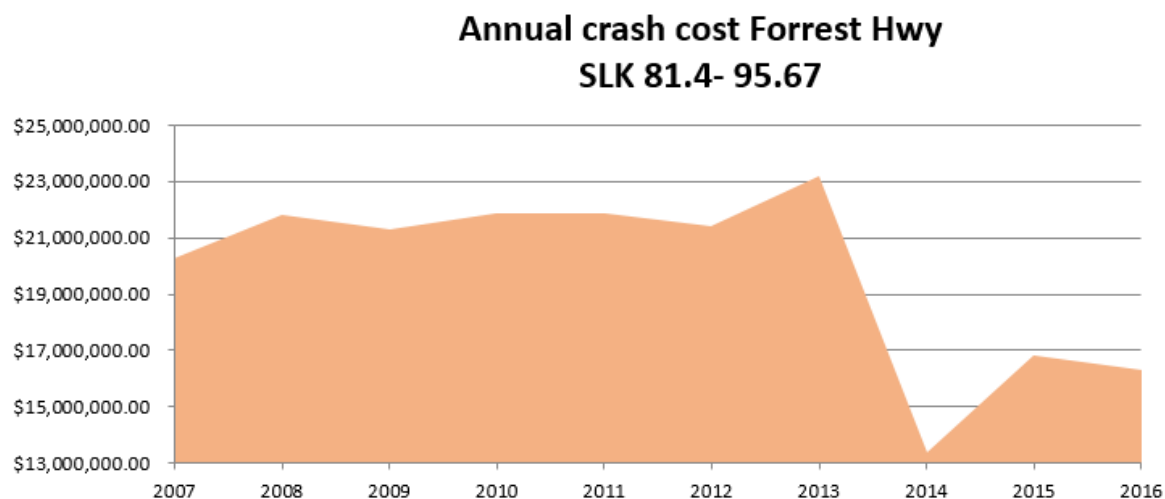


Figure 11

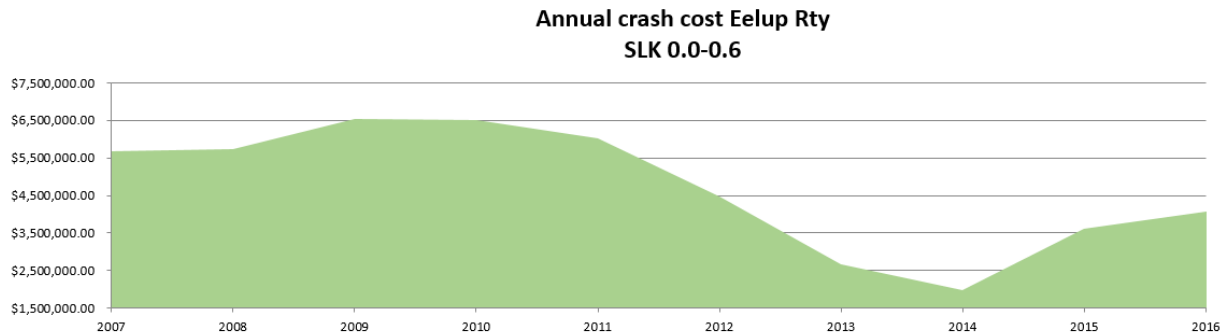


Figure 12

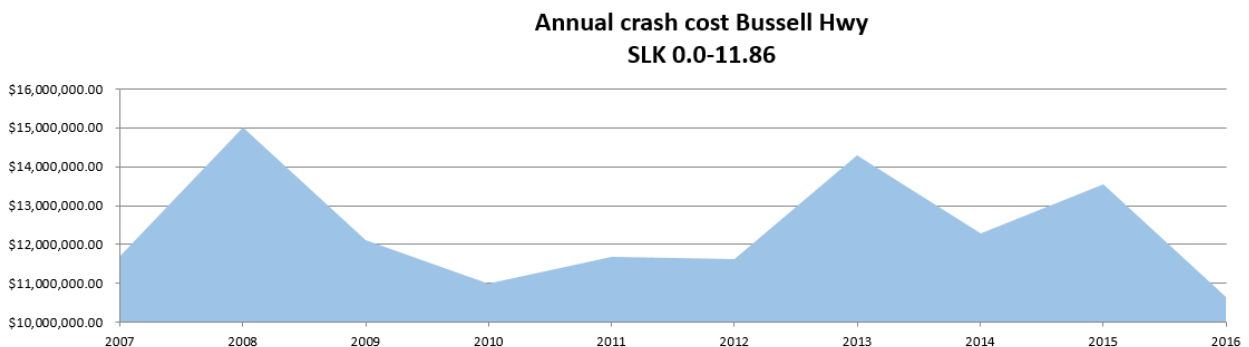


Figure 13

The consequence of this active management approach is to improve safety, however often can reduce the level of service of the road. This can be caused as a result of the countermeasures being applied falling into one of two categories;

- Regulatory controls applied at higher risk intersections negatively affect network efficiency (through increased travel times), or
- Speed limit reductions on midblock sections and intersections which similarly negatively affect network efficiency (travel times).

Section 3.5 of this report discusses the Existing Road Network and Existing Speed Limits on the network.

The section of Forrest Highway between Hynes Road and Marriot Road, the crash performance is recognised as requiring improvement due to the significant number of crashes including killed or serious injury crashes throughout this section.

South Western Highway through Picton to Coalfields Highway is recognised as a key arterial road under increasing development stress and with limited affordable options for capacity increases to maintain a suitable level of service over time. Volumes of this section are around 5000 – 6000 vehicles per day (vpd) with around 16% heavy vehicles (equating to around 800 – 1,000 heavy vpd). Active management by Main Roads has maintained road safety performance, however it is acknowledged that over time this will be increasingly difficult to maintain as both urban and industrial development progresses adjacent to this key network in the Picton, Wanju and Waterloo areas. As a result, long term planning options should consider how to relieve pressure on this network by encouraging “through” or “regional traffic” (light and heavy) to utilise a more suitable route.

Annual crash cost South Western HWY SLK 153.14-154.07

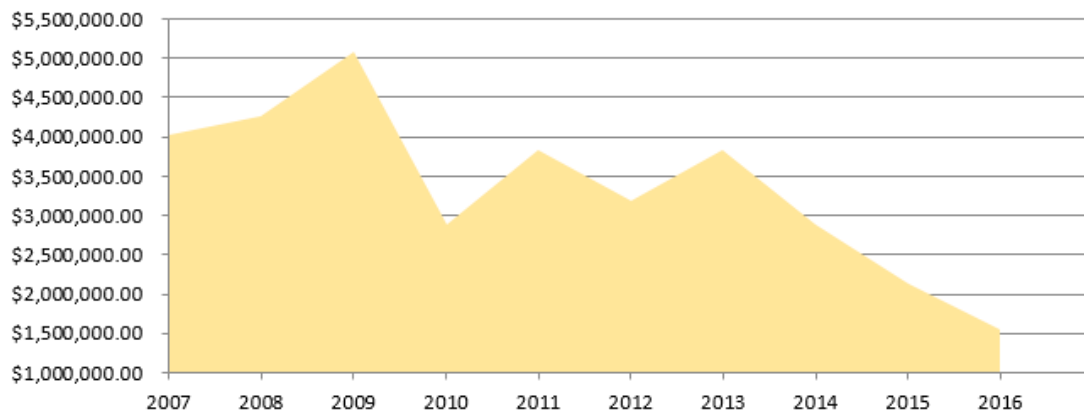


Figure 14

4.2. Current Traffic

General traffic volumes (Figure 15) on the Primary Distributer roads surrounding Greater Bunbury grew significantly in the period leading up to 2012 (the peak of the mining boom), however have, in general terms not experienced the same level of significant growth since that time. Traffic delay and restrictions in efficiency has increased through a combination of gradually expanding urban development and road network changes that generally include traffic controls at intersection that reduce travel speed. These network configuration changes can be triggered by either urban development or road network safety performance issues, resulting in a reduction in the level of service. Road users are typically experiencing increased delays in travel time through the Bunbury built up area.

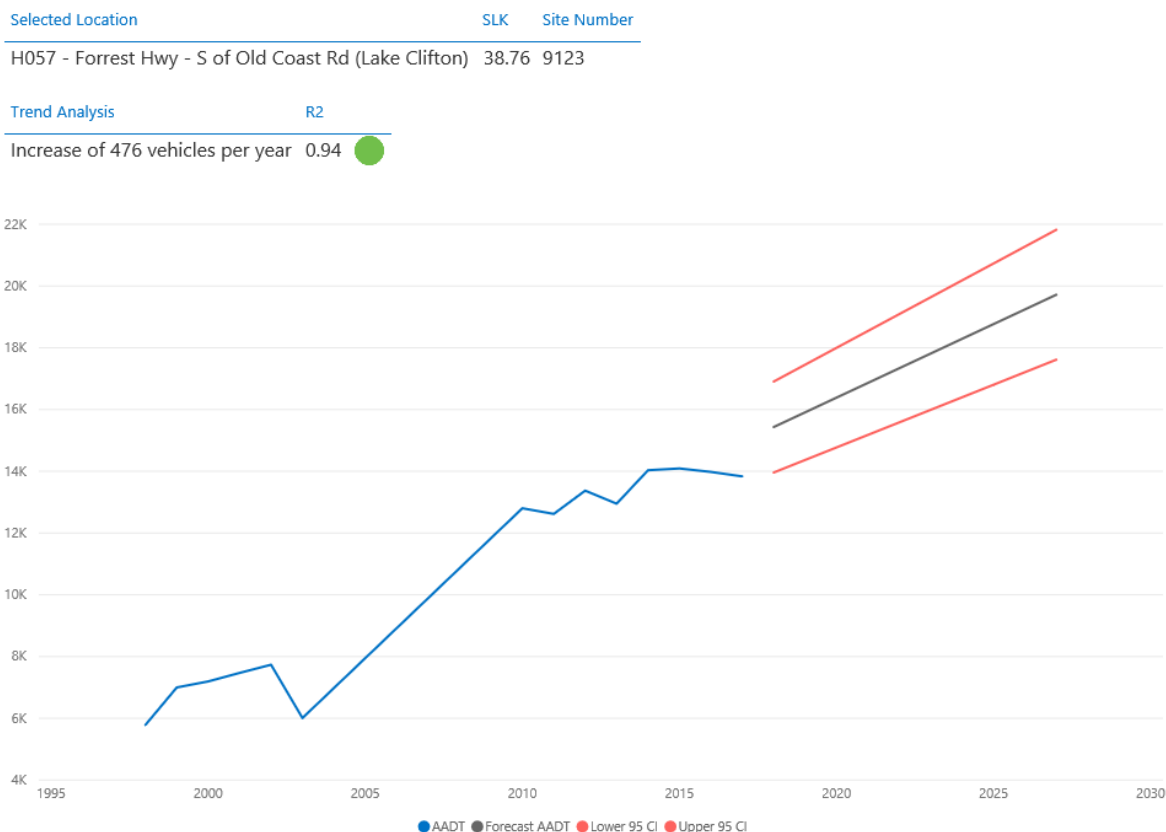


Figure 15 - General regional traffic growth on Forrest Highway (North of Greater Bunbury 1998 - 2017)

Existing traffic volumes and heavy vehicle composition in the project study area are shown in Figure 16 below. The existing north south through route along Forrest Highway, Robertson Drive and Bussell Highway currently services a demand of up to 30,000 vehicles per day (vpd) through the centre of Bunbury, with heavy vehicle composition ranging from 7 to 10%. At the northern and southern extents of the BORR, Forrest Highway services around 20,000 vpd, and Bussell Highway services around 15,000 vpd. The existing section of BORR Central currently services up to 2,350 vpd, with 18 to 24% heavy vehicles equating to around 500 – 600 heavy vehicle movements each day. Willinge Drive services 1,880 vpd, with a 31% heavy vehicle composition which equates to around 600 heavy vehicle movements each day.

There are a number of alternative routes through and around Bunbury which may influence some of the traffic volume observations within Bunbury, particularly following completion of the BORR central section in 2013. Discussion with Local Governments and a number of observations confirm links such as Railway Road (Capel to Boyanup), Hasties and Lilydale Roads (Bussell Highway to South Western Highway (South)), Martin-Pelusey and Hynes Road (Boyanup-Picton Road to South Western Highway (North) and Forrest Highway) have been observed to carry local, heavy freight and a component of regional traffic. As a result these parts of the network require consideration in assessing planning option assessment and subsequent detailed planning processes.

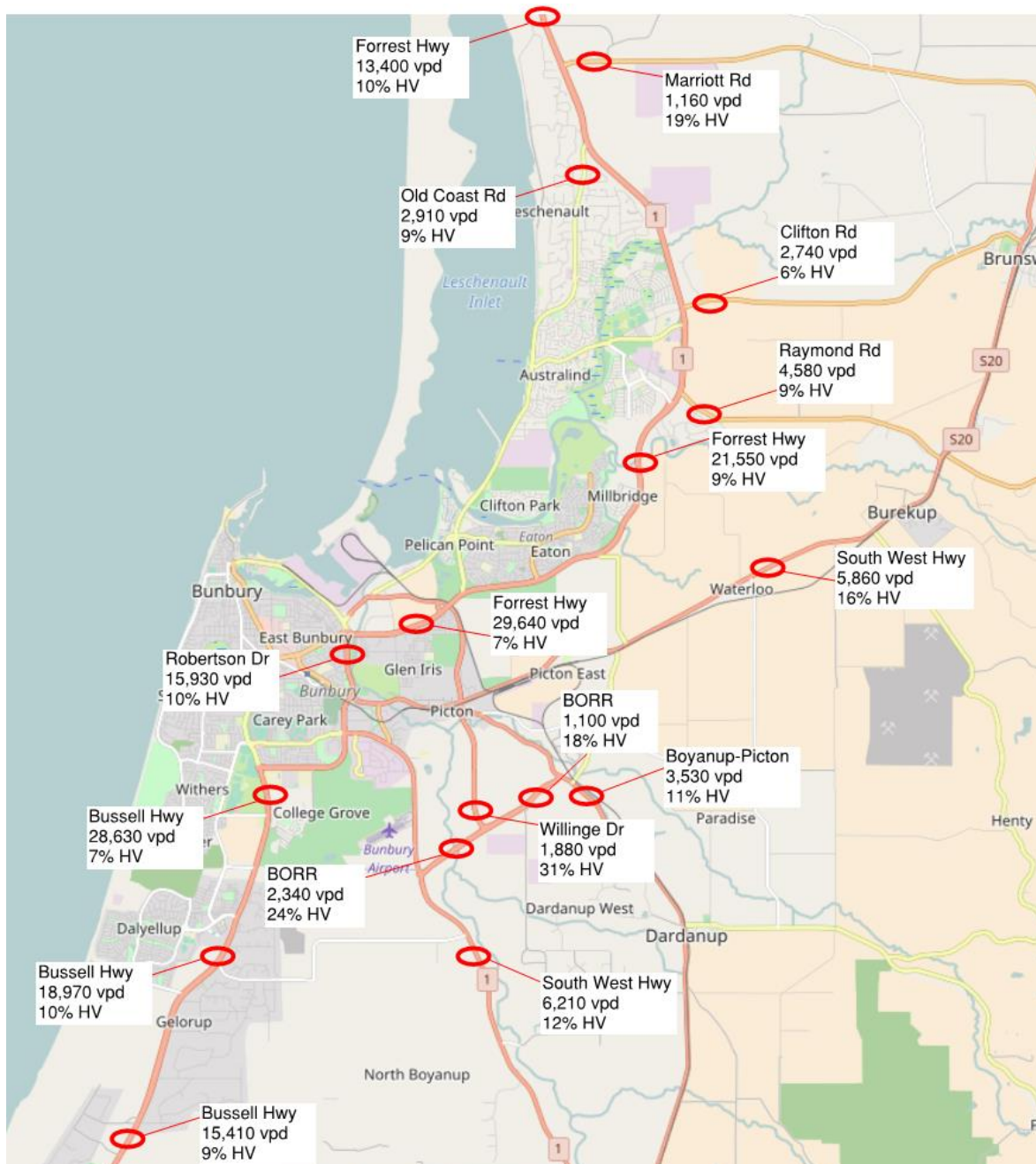


Figure 16 – Existing Traffic Volumes (typically from 2013 / 2014)

5. Road and Infrastructure Corridor Options

5.1. Bypass Considerations

The BORR is considered necessary to provide a safe, efficient and appropriate bypass of Bunbury as well as to improve access to the Bunbury Port. It is considered enabling infrastructure for industry, agriculture, mining, the service industry, tourism and other business related activities to expand and meet the growing needs of Bunbury, the South West as well as state, national and international markets. Upgrades to the existing road network of Forrest Highway, Robertson Drive, Bussell Highway and South Western Highway (north and south) to provide a suitable long term road freight transport solution is not considered appropriate, with key considerations summarised as follows:

- Existing and proposed land use and development surrounding the existing network is not consistent or desirable with a long term efficient high speed freight route;
- Combining local, regional and freight traffic through Greater Bunbury encourages heavy/light vehicle interactions resulting in ongoing safety, efficiency and road design/layout challenges;
- Options to address the combination of traffic through a built up area as well as providing safe and efficient “grade separated” (bridged) intersections are cost prohibitive given the current and future traffic demand and number and spacing of connections (side roads, businesses, etc.). At grade intersection treatments (lower cost options) catering for local, regional and freight traffic result in deteriorating safety and efficiency as Greater Bunbury develops;
- Social impacts within Greater Bunbury including amenity, safety, pedestrian access, noise, emissions and general liveability are not acceptable or desirable for the community, tourism and business; and
- Provision of a long term safe and efficient freight route through Greater Bunbury would have significant impacts to permeability and connectivity of the Bunbury community impacting public transport opportunities, community identity and overall desirability of the area.

It is expected that provision of the BORR will extend the service life of the existing internal road network largely as a result of the bypassing of built up areas. Even where “local” traffic won’t have access to the BORR for local trips, removal of regional and freight traffic will have beneficial impacts to the safety, efficiency and to some degree amenity of the existing road network. This includes the flexibility to design suitable intersections that are safer and more effective for local traffic given the removal of the majority of oversized vehicles or high speed heavy vehicles travelling long distances that require an efficient “free flow” network.

Provision of the BORR is consistent with a number of state and federal planning frameworks, strategies and priorities as outlined in section 3 of this report.

5.2. Geometric Design Standards

The geometric design criteria for the Bunbury Outer Ring Road is outlined in Table below. This criteria will be further reviewed during subsequent detailed planning and project development assessments.

Parameter	BORR
General	
Design Speed	110km/h
Posted Speed	110km/h
Lane Width	3.5m
Number of lanes in each direction	2 (subject to modelling)
Nominal crossfall	3%
Maximum superelevation	6%
Sight Distance	
Reaction Time (desirable)	2.5 seconds
Reaction Time (minimum)	2.0 seconds
Stopping Sight Distance	209m / 193m
Vertical Geometry	

Parameter	BORR
Min Vertical Grade (kerbed)	0.5% (Des) / 0.3% (Abs)
Max Vertical Grade (with median)	2% / 1% at stations
Max Vertical Grade (no median)	3% (Des) / 5% (Max)
Min vertical curve length	110m
Min tangent (between reverse VC) = 0.2V	22m
Min tangent (between compound VC) = 0.4V	44m
Horizontal Geometry	
Design Vehicle	RAV Network 7 (36.5m)
Intersecting Roads – Various	RAV Network 7 (36.5m)
Other Related/Intersecting Roads	RAV Network 4 (27.5m)
Clearance envelope (for High-Wide Loads)	10m x 10m
Minimum horizontal radius (with median rail)	1500m
Desirable minimum radius (no median rail)	800m
Absolute minimum radius	600m
Min horizontal curve length	336m

Table 4: Geometric Design Criteria – BORR Mainline

5.3. BORR Planning Review

The BORR is planned for full ultimate grade separation (bridging of all side roads, intersections and rail crossings) and as a controlled access facility (no provision for direct property access). There is the potential to stage delivery of the proposal with “at grade” intersections, however this significantly impacts freight efficiency (introducing delays to through traffic) and safety considerations (introducing turn movements across fast flowing regional traffic).

The BORR is planned to tie into the Forrest Highway to the north given the strategic significance of this network (BORR stages are identified in Figure A in section 2). The broader planning context in the area surrounding BORR North (including future land use planning and associated traffic demands) is proposed to change significantly increasing in development density and overall population over the medium to long term. As a result and consistent with the broader South West Freeway planning study the existing corridor and concept identified forms the key focus of this alignment planning review.

The central section of BORR was constructed and opened to traffic in May 2013 in order to provide an alternative route for freight vehicles to access the Bunbury Port, whilst avoiding the Eelup Roundabout and other areas of central Bunbury. This portion of the BORR largely caters for freight on the South Western Highway (SWH) approaching/departing Bunbury from the south and from the Bussell Highway (accessing SWH via Railway Road via Capel). Freight accessing the port on other highways and Main Roads surrounding Bunbury require freight to remain on other existing routes through built up areas of Greater Bunbury including the South Western Highway (north) and Forrest Highway. All traffic travelling past Bunbury are required to either travel through the Greater Bunbury primary road network or weave through a number of local roads not intended for use by regional and heavy freight traffic. Any BORR planning review will assume the utilisation of the existing BORR Central asset.

The BORR is planned to tie into the Bussell Highway to the south given the strategic significance of this network. The broader planning context in the area surrounding BORR South (including current and future land use planning and associated traffic demands) remain unchanged since a previous review of the alignment in this section (undertaken in the 1990's). As a result, the existing BORR South corridor included in the Greater Bunbury Region Scheme is not part of this alignment assessment review.

Further detailed planning assessments will follow to consider suitable connections over the full BORR extent consistent with the South West Freeway planning study. This includes consolidation of connections, strategic review in order to prolong the service life of key networks/existing links and development of an access strategy to facilitate property access and local road access and permeability.

5.4. BORR North Planning Review

The South West Freeway planning study commenced in September 2016 and initially comprised a literature review to allow the opportunity to provide context to the planning activities that had occurred over the past 30 years including for the unconstructed sections of BORR (BORR North and BORR South). During 2017, planning prioritisation was given to the BORR given a number of State and Federal commitments and as a result the South West Freeway planning study remains in progress with the planning review associated with BORR given priority. Details of the existing BORR North concept are included in Figure 17 below.

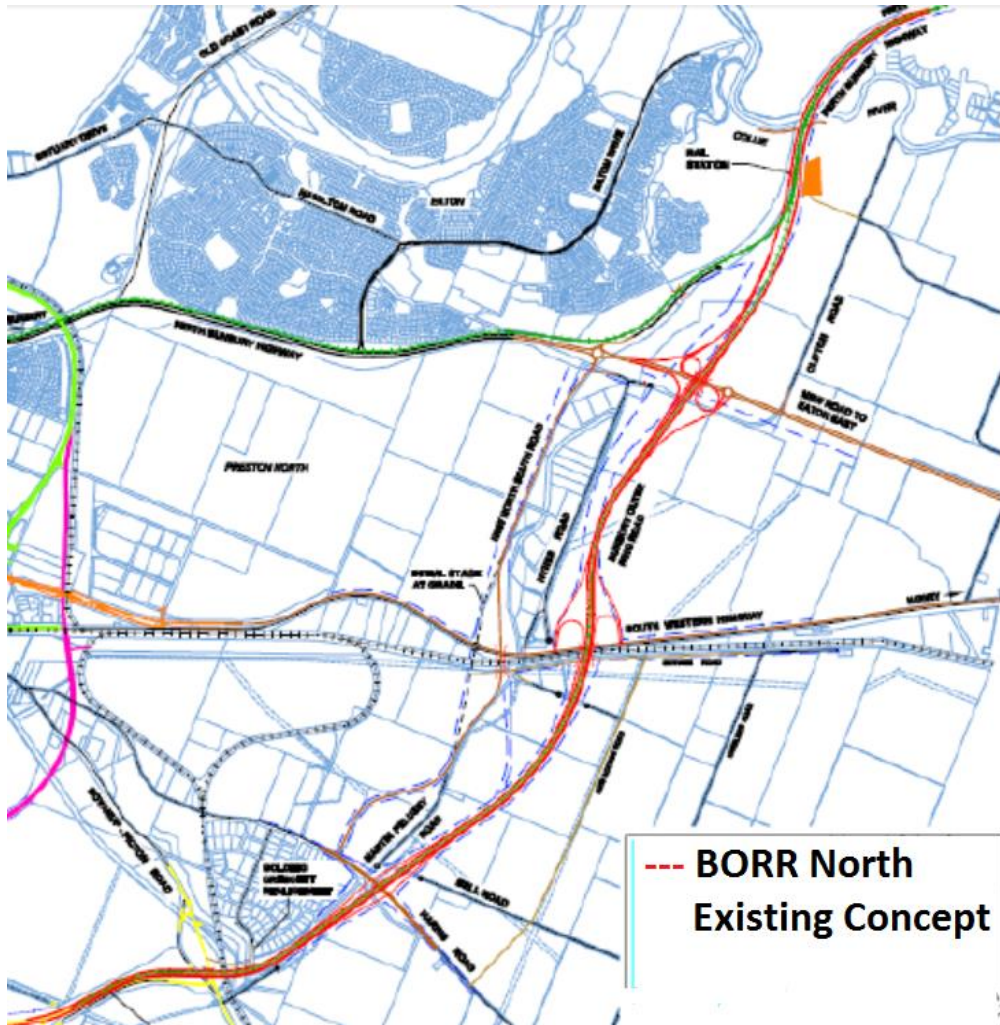


Figure 17 – Existing BORR North Concept

Initial planning assessments in relation to the assumed surrounding land use, previous BORR objectives and the current BORR North concept identified the following considerations:

- Three large grade separated intersections have been provided over a short distance connecting a future Wanju development, South Western Highway and Harris Road to the BORR. In addition a grade separated “Y” junction with Forrest Highway (at the northern tie-in) is proposed as well as a “fly over” bridge at the Ferguson River/Boyanup-Picton Road at the southern end of BORR North. Provision of a rail station is made between the BORR North carriageways which is likely to be a significant attractor of traffic to the area. Utilisation of this corridor combines local, freight and regional traffic through a single intersection and over parts of BORR North. Location of the fast rail station will also attract rail passengers through this area accessing these services for business, tourism and other purposes. As a result the intersections for BORR North are very large in order to cater for the combination of traffic and access. Traffic modelling detailed in section 7.2 suggests provision of these connections in close proximity and traffic demands placed on these sections by the surrounding land use necessitate 6 lanes for BORR in the medium to long term;
- Provision of multiple closely spaced connections to BORR and the future location of a “fast rail” train station is anticipated to attract local traffic mixing with freight and high speed regional traffic resulting in a number of complexities, safety considerations and challenges;

- Population and dwelling densities assumed for the surrounding land use within Wanju (and used to generate traffic demand in the current 2013 concept) were found to be lower than currently proposed by the Department of Planning, Lands and Heritage as confirmed in 2017. This has the effect of under-estimating crossflow traffic for the BORR at the Wanju interchange. The interchange adjacent to the proposed Wanju urban development included in the current concept is likely to reach capacity prior to the adjacent land development in Wanju reaching maturity (refer section 7.2 – traffic modelling);
- The abovementioned infrastructure including closely spaced major interchanges is anticipated to result in a high capital cost for BORR North. Consideration of alternative options that may offer improved cost effectiveness will assist in attracting funding in the short to medium term;
- The current alignment bisects the urban development in Greater Bunbury and the proposed developments in Waterloo and Wanju. The BORR does not define an outer perimeter for the proposed future urban footprint. This has the effect of reducing permeability between the built up areas (existing and proposed), concentrating access and reducing amenity and liveability;
- By connecting the BORR with South Western Highway further traffic pressure would be applied to this link. With the future combination of local traffic generated by the expansion of the urban footprint (primarily the Wanju urban development) and surrounding industrial land use within the Picton area as well as existing rail networks adjacent to this link pressure from the addition of regional freight traffic passing through this area is likely to result in significant pressure points, safety considerations and transport inefficiencies. Land restrictions along this section provide limited opportunities to cost effectively relieve these pressures. Through consideration of not connecting the South Western Highway, removal of “through” traffic is considered an effective means of reducing the additional pressure on South Western Highway thereby extending the service life of the existing road.

As a result of a number of key considerations, it is deemed necessary that other corridors and options be assessed in comparison to the existing concept to ensure the most appropriate solution is adopted in the BORR North area with a long term view that is consistent with adjacent land use planning, future fast rail and the South West Freeway study.

5.5. Alignment Selection Process

The alignment selection process detailed in this report refers to the high level analysis of a number of broad corridor options typically separated by several kilometres that are assessed on a relative basis. Typically these corridors are identified involving a “corridor for investigation” of around 500-1,000m in width and a broad identification of likely connection locations (without detail). These broad corridors are assessed against each other based on desktop assessments in order to identify a preferred “alignment”. A critical aspect of this desktop approach involves a two phase targeted consultation process prior to a preferred option being identified as summarised below:

1. Key stakeholder consultation including Government Agencies (State and Federal) and Local Governments

This ensures options under consideration are consistent with Local, State and Federal policies, priorities and objectives and tests the robustness of options prior to targeted landholder consultation.

2. Targeted landholder consultation

This provides the opportunity for potentially impacted landholders to provide input and comment into the alignment selection process prior to a decision being made on a preferred alignment. A broad number of aspects are sought including personal, business and amenity impacts, current and future land use and any other personal considerations identified. By seeking this information at an early stage this ensures any further alignment selection decisions are made in an informed way. Obtaining landholder input also tests a number of desktop assessments and assumptions made and assists in providing further detailed site specific information not otherwise available. It also provides an awareness of the planning work in progress that may impact these key stakeholders. Landholder consultation is typically undertaken with a broad and non-detailed “corridor for investigation” allowing for input and comments at a very early stage of the process and prior to any decisions being made. The main drawback of this approach is that many landholders reflect their frustration that insufficient detail is available to assist with their input and understanding of the options. Delaying landholder consultation until further detail is available would likely result in missing the opportunity for their input prior to important decisions being made. Delaying landholder engagement is not considered a desirable outcome.

Following desktop assessments, targeted consultation and identification of a preferred option, support is sought from the Western Australian Planning Commission (WAPC) as the peak state planning body to allow for further detailed planning, definition and consultation to progress in order to identify a suitable ultimate planning concept, access strategy and reservation (land requirement).

5.6. Road corridor alignment options

5.6.1. Lines of Investigation / Options Considered

A number of alignment options have been identified for BORR North between the Brunswick River crossing of the Forrest Highway (northern extent) and the intersection of BORR with Boyanup-Picton Road (southern extent and tie-in with BORR Central). Options considered include those shown in Figure 18 below.

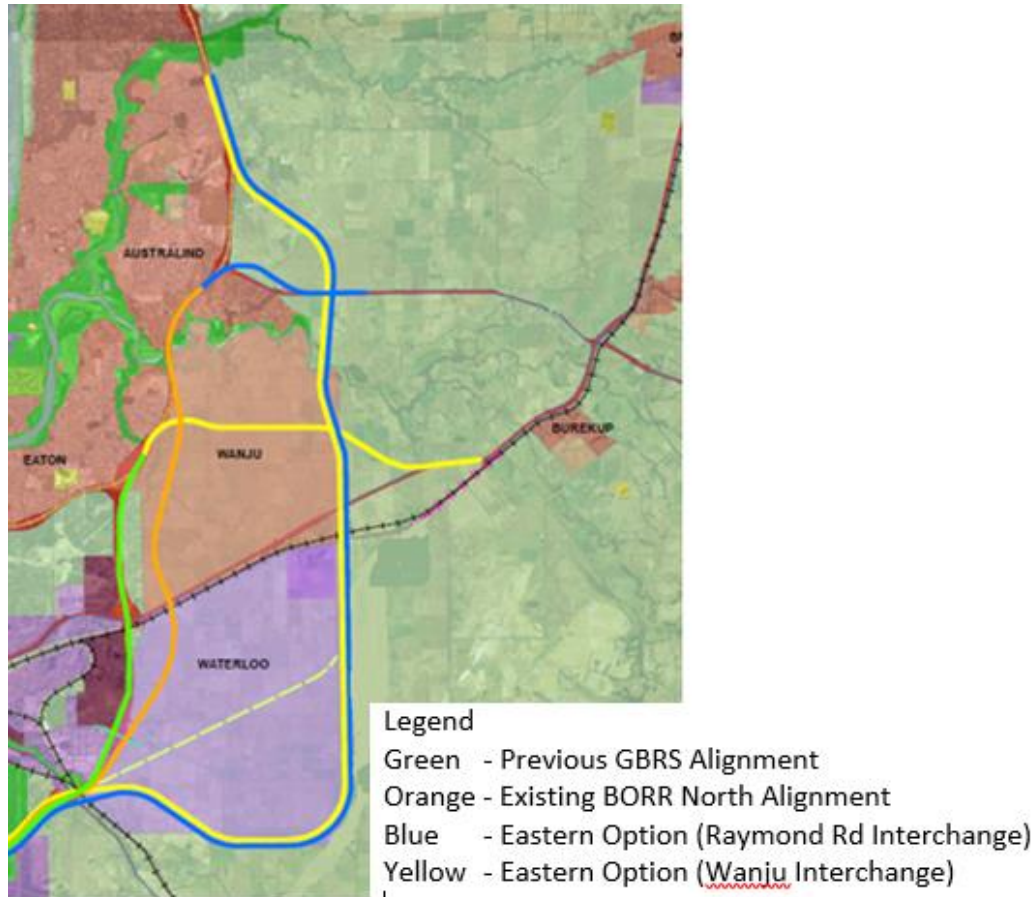


Figure 18 – BORR North Options Considered

These and a number of additional options considered are summarised as follows:

1. Existing corridor within the Greater Bunbury Region Scheme (Green)

Previously discounted through a planning review undertaken around 2012/13 due to complexities with the BORR/Forrest Highway interchange (4-way interchange including provision of access to the proposed Wanju urban development), impacts to the existing urban footprint (to the north of the BORR/Forrest Hwy interchange) and environmental considerations. Further details regarding previous assessments and considerations discounting this option are included in the *"Bunbury Outer Ring Road Northern Section, Alignment Selection Report, November 2013"*¹⁹.

2. Existing BORR North Concept (Orange)

The current BORR North concept requiring further assessment. Connections assumed to be as per existing concept.

3. Eastern option – Raymond Road Interchange (Blue)

Given the proposed expansion of the Greater Bunbury footprint (including Wanju and Waterloo), a perimeter corridor avoiding these areas was identified as a feasible option. It was noted at the time (2017) the Wanju Draft District Structure Plan advertised by DPLH in 2017 included a road bridge of the Collie River around the north-east corner of this proposed development (refer Figure 19 below). This arrangement is further detailed in Appendix 2.

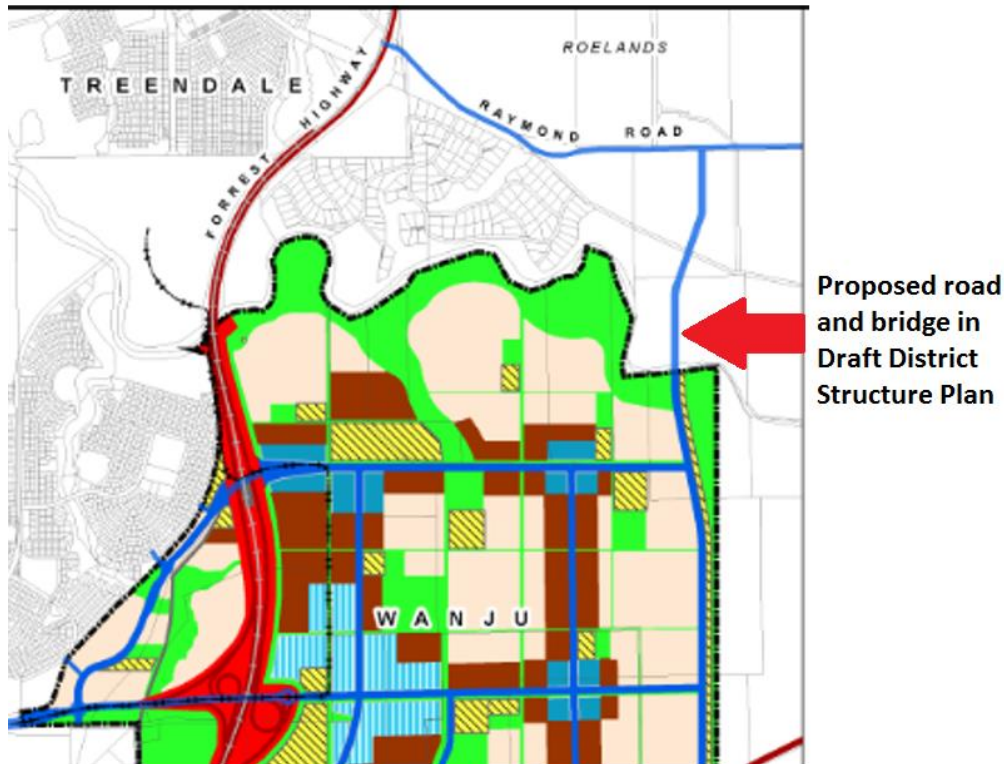


Figure 19 – Advertised Wanju Draft District Structure Plan (2017)

It is possible that a BORR corridor could utilise this bridge crossing location (instead of a local road forming this connection) as it appears to be a logical river crossing location. Consultation with DPLH confirmed an outer perimeter road would also enclose the proposed Wanju development, separate future urban development from rural land and separate local, regional, and heavy freight traffic. This option would include a connection around Raymond Road providing linkages to the Forreest Highway (providing east-west access to/from developed areas of Bunbury) and key freight areas to the BORR to the east including the Collie area, surrounding mining and agricultural areas as well as the Wheatbelt. The corridor was initially shown to avoid the proposed Waterloo industrial area, however a “dashed” line was shown through Waterloo given it would provide a shorter more efficient road, however it would bisect Waterloo. Subsequent discussion with DPLH confirmed a number of benefits to bisecting this area. This could provide a potential buffer (between land use suited to being adjacent to urban areas to the north and land use such as meat processing or feed lots requiring separation from urban areas) and provides the opportunity for a connection of this area to the BORR. This connection would ensure this strategic industrial area has appropriate transport access and provides the opportunity for an “intermodal hub” in the future (accessible to the port) where goods can be efficiently transferred between road, rail and sea via the port. As a result transport and future land use planning confirmed that an eastern alternative corridor would be better suited to bisect the proposed Waterloo industrial development and avoid the Wanju urban development. Refer section 5.6 for further discussion regarding coordination of transport and land use planning.

4. Eastern option – Wanju Interchange (Yellow)

A further refinement of the “Eastern Option – Raymond Road Interchange (blue)” was identified involving the same corridor as that described above, however provision of an interchange with Wanju was contemplated in a similar way to the connection provided for in the existing BORR North planning concept (described in section 5.3 above). This option was quickly discounted given the east-west linkage would bisect the proposed Wanju undermining the principal of an eastern corridor avoiding the future urban footprint of Greater Bunbury. Provision of this connection may also encourage a greater extent of local traffic to use the BORR also

undermining the principal of heavy/light traffic separation for freight efficiency and safety reasons. These principals were confirmed through discussions with the DPLH and as a result this sub-option of the eastern corridor was not considered further. Refer section 5.6 for further discussion regarding coordination of transport and land use planning.

5. Eastern option – Refined east of the Greater Bunbury urban footprint (Wanju eastern edge)

Refinements of the blue or yellow corridors detailed above including a Collie River crossing further east were considered originally and further reviewed during the public consultation period (May 2018) at the request of a number of landholders within the Meadow Landing area. Options further east were determined to be undesirable for a number of reasons including those summarised below:

- Initial desktop assessments suggest the Collie River widens and become less defined east of the proposed Wanju eastern edge. River crossing options are likely to be more complex, cross a wider flow path (or multiple channels) and (depending on location) may also result in a skewed crossing of the river;
- The northern tie-in point is difficult to extend north of Paris/Clifton Road given existing rural residential properties located north of Clifton Road that would be directly impacted, the location of the Brunswick River (consisting of multiple channels and low lying waterlogged areas around the existing Forrest Highway crossing point) and surrounding native vegetation and environmentally sensitive areas surrounding this river. Extension of the BORR corridor north of Clifton Road to around the Brunswick River does not result in any transport planning benefits given this section of Forrest Highway has not intersections or local access and is currently sign posted at 110/km/h. As a result the tie-in point for BORR is limited to around the Paris/Clifton Road intersection. As a result refinements of the corridor further east around Raymond Road result in a “bulging” of the corridor leading to a less direct route.
- Road length increases as a refined option moves further east increasing construction costs;
- Network efficiency deteriorates as an eastern option is refined further east (due to increases in road length and increasing travel times);
- Provision of a bypass and port access needs to strike a balance between minimising impacts to existing and proposed land use/built up areas (intense land use areas), avoiding interactions with local traffic and keeping the road length as short and efficient as possible. In achieving this balance, the BORR remains accessible and attractive for port bound traffic and therefore relieves pressure in the long term on existing road networks (accessing the port). Refined options that move east from the proposed Greater Bunbury urban footprint progressively erode the attractiveness of this route for port bound traffic as separation increases with traffic potentially attracted to existing routes through the built up areas of Greater Bunbury;
- Moving the corridor away from the eastern edge of Wanju would either sandwich rural land between the BORR and the Greater Bunbury footprint or require the Wanju area to expand further east than proposed. DPLH have confirmed there are no plans to expand the proposed Wanju urban area east of that currently provided for. Isolated areas of rural land may not be viable. Coordination of transport and land use planning is considered a key objective of this planning study. Both outcomes described above are considered undesirable and undermine the coordination of transport and land use planning.
- Planning for new road alignments requires careful consideration in balancing a large number of competing issues. One such issue is minimising land severance/impact. The most effective way of achieving this is to, where possible follow cadastral boundaries. The eastern edge of the proposed Wanju development area provides an opportunity to broadly align with existing boundaries south of the Collie River. Refinements of this corridor further east don't allow cadastral boundaries to be followed and are likely to result in greater land severance and property impact;
- Refinements away from the Greater Bunbury footprint would effectively relocate land, noise and amenity impacts further east onto other land holders. All landholder's views and concerns are important to consider throughout the planning process. As a result relocating impacts from one landholder group onto another without a compelling case (e.g. significant improvement in planning benefits) is not considered feasible.

If an option further east of the proposed Wanju area was considered, it would be difficult to justify to those landholders located further east why such a corridor should be relocated into their properties given it results in generally poorer land use and transport planning outcomes including progressive erosion of the objectives of

the BORR. As a result, alignments within a corridor adjacent to the eastern edge of the future Greater Bunbury urban footprint are preferred over options further east and separated from this development edge.

6. Options further east including use of Dowdells Line or South Western Highway

The objectives of the BORR primarily involve providing a safe and efficient bypass of the built up areas of Greater Bunbury and providing improved access to the Bunbury Port, particularly for freight and heavy vehicles. As a result, corridor options further east than those detailed above have been considered however have not been defined as they are too far separated to Greater Bunbury and the Bunbury Port to be viable. Bunbury and its port is a significant destination and therefore options need to balance the requirement of being a bypass, however not be too far removed in order to provide reasonable access to Greater Bunbury and to ensure port bound freight can access these facilities whilst utilising the BORR as a safe and efficient route (separated as far as possible from local traffic movements). Options considered and discounted further afield include the use of Dowdells Line (North-South road approximately 1.5 km east of the Wanju eastern boundary - which would sandwich an area of rural land between the BORR and future industrial) linking back into the existing Boyanup-Picton Road and then Railway Road linking with the Bussell Hwy. This forms a vast and extensive bypass significantly separated from Greater Bunbury and the port considered to be un-viable.

7. Upgrade of the existing Bussell Hwy, Robertson Drive and Forrest Highway network

Involves upgrading the existing road to provide full grade separation and free flow of “through” traffic. Given surrounding land use, number of existing intersections and access points, impacts to amenity and liveability within Greater Bunbury, the combination of local, heavy and regional traffic, separation of communities, incompatibility with the existing built BORR Central section and significant cost this options is deemed highly undesirable and therefore has not been considered further. Also refer section 5.1.

5.6.2. Options for Further Assessment

Given the summary of options considered and discussed above two options have been identified for further assessment as follows:

1. Current BORR North Option. There is general awareness and acceptance of the current BORR North option however given a number of considerations identified (refer Section 5.3), this option will form the base case for comparison of alternative solutions under consideration. This option bisects the proposed Wanju urban development broadly following the western edge of the proposed development footprint.
2. Eastern BORR North Option. An eastern alternative BORR North corridor has been identified as a feasible alternative to the current concept. Further assessment will focus on the option described in Section 5.5.1 (Option 3) including a Raymond Road Interchange with the alignment bisecting the proposed Waterloo industrial area and broadly following the eastern edge of the proposed Wanju urban development. This corridor is located approximately 2-3 km east of the current BORR North option and alignments with a proposed local road and bridge crossing of the Collie River included in the Wanju Draft District Structure Plan as described in Appendix 2.

The two options for further assessment are detailed in Figure 20 below with the Current BORR North Option shown in green and the Eastern BORR North Option shown in pink.

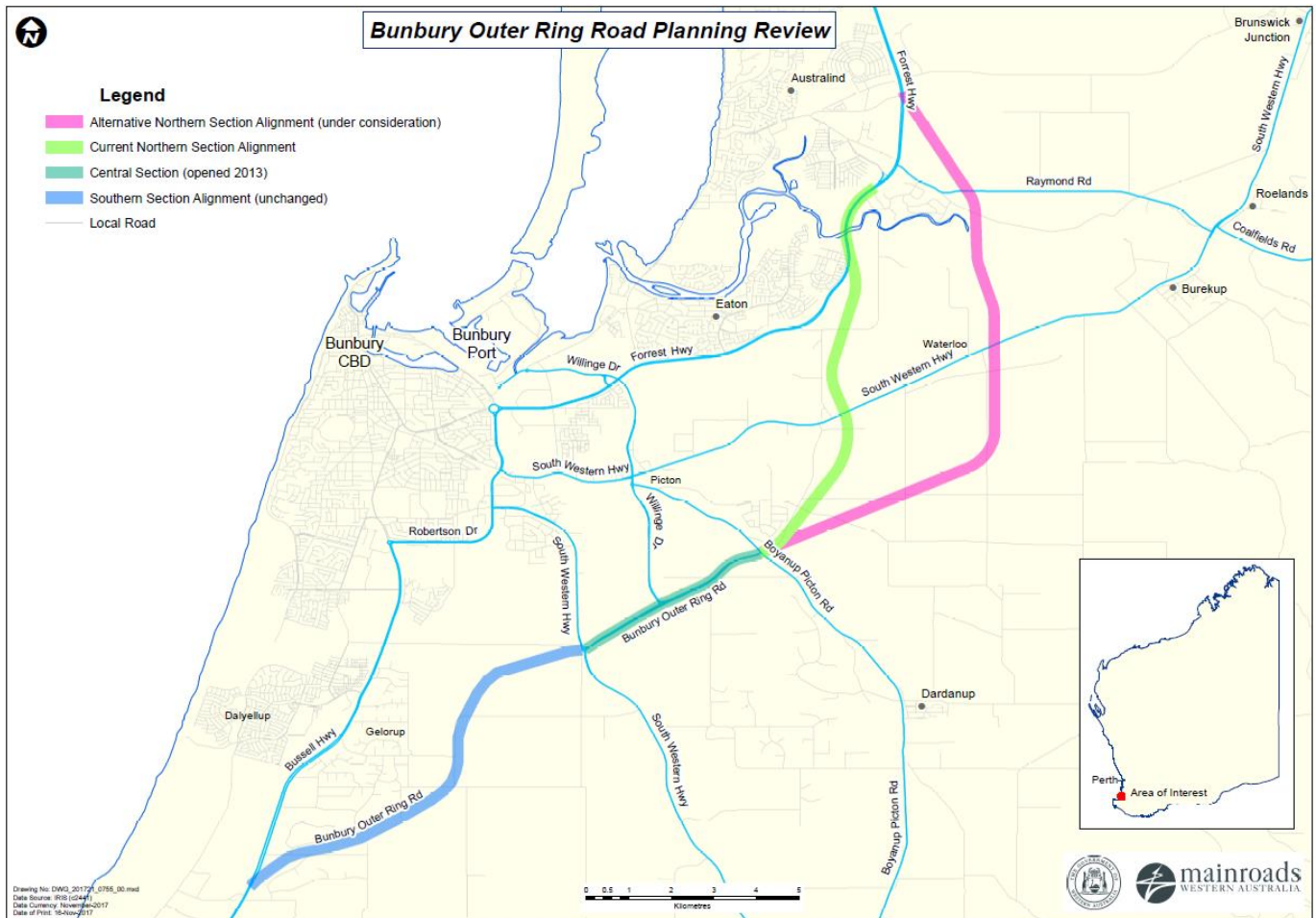


Figure 20 – Options for further assessment

5.7. Coordination of Land Use and Transport Planning

During 2017 ongoing consultation and discussions between Main Roads and the Department of Planning, Lands and Heritage (DPLH) confirmed that a coordinated approach to the BORR planning review and land use planning associated with the Wanju urban and Waterloo Industrial Draft District Structure Plans is highly desirable. The proposed Wanju development is intended to ultimately house around 50,000 residents and is identified by the State Government as the future strategic urban expansion area for Greater Bunbury. The Wanju urban development is intended to cater for a large, long term population increase, provides greater development density opportunity and will therefore promote greater opportunity for use of public transport rather than the traditional private vehicle dependence. A significant long term increase in population of Greater Bunbury to around 200,000 (as confirmed by DPLH in 2017) will place very significant pressure on the road network if car dependency is maintained into the future. Promotion of public transport opportunities is seen as critical to the future success of a Greater Bunbury with 200,000 people. The increase in population is planned through expansion of the urban footprint as well as by infill of existing urban areas within Greater Bunbury.

Through coordination between Main Roads and DPLH, it was acknowledged the existing BORR concept bisects the western edge of the future planned Wanju urban development and forms a barrier between this area and the remainder of Greater Bunbury, its services, facilities, attractions and the broader community. This alignment will also limit the permeability for traffic to access Greater Bunbury and public transport options as well as impact the amenity of significant parts of the future Greater Bunbury. As a result in 2017, in principal agreement was reached between DPLH and Main Roads that alternative options should be considered for BORR North which investigates the minimisation or avoidance these aspects of the existing corridor.

In 2017, an option that skirts the perimeter of Wanju was discussed in principal requiring further consideration. Forming an outer edge of urban development and separation of urban and rural land use provides a number of benefits. Provision of a direct connection of Wanju to BORR was discussed where this provision was determined not be desirable for a number of reasons, This includes 1) it would encourage the use of BORR for local traffic mixing with high speed heavy vehicles, 2) there is the opportunity for Wanju residents to obtain access to regional

highways via other key networks including the existing Forrest highway, and 3) it is anticipated the Wanju community would have a stronger relationship with the existing activity centres and facilities within the existing Greater Bunbury area. These areas include the CBD, Eaton and Treendale/Australind. As a result, improved accessibility and connectivity to these areas is highly desirable for the future success and integration of the Wanju community with Greater Bunbury and is preferred over access to a high speed regional network (BORR).

Discussion of potential eastern corridor options through Waterloo suggested that avoiding this area may not be the most appropriate solution and that bisecting the proposed industrial development may offer a number of transport and land use benefits. These include provision of a more direct BORR alignment through Waterloo (rather than skirting the perimeter), offering the potential for a natural buffer between industries suited to being adjacent to Wanju and those requiring separation from urban areas (eg meat processing facilities) and offering the opportunity for a strategic connection of this strategic industrial area to the BORR. Provision of a connection would ensure suitable access for road transport, access to the port and potentially transfer of goods from road to/from rail with the potential for a rail spur/loop within Waterloo (providing an opportunity for an effective intermodal hub).

Ongoing discussion and consultation with the DPLH regarding coordinated land use and transport planning confirmed the importance of progressing current and future detailed planning activities in close consultation given the Draft District Structure Plans for the Wanju urban and Waterloo industrial areas under review that both overlap with the BORR North corridor assessments.

5.8. Bunbury Traffic Model

5.8.1. Strategic Transport Model

Work on a Bunbury Traffic Model has been in progress for a number of years. Early work around 2006 established a broad traffic model road network focussed on the key strategic transport links within and surrounding Greater Bunbury including the Main Roads and Highway network as well as significant local road linkages. A land use model was established by Maunsell - AECOM around 2006 using 2001 census information as the basis of this work which was summarised in the report titled “Land use data update report – Mandurah – Dunsborough Transport Model (July 2006)”²⁵.

The Strategic Bunbury Traffic Model was created by Main Roads WA as a subset of the Mandurah Dunsborough model. Many updates to the model were made by Main Roads WA over the period 2006 to 2015 in consultation with Bunbury office of the Department of Planning, Lands and Heritage with a particular focus on land use. In August 2016, work commenced to undertake further enhancement to the model which included;

- Updating the Bunbury Traffic Model to a 3-step model;
- Updating land use assumptions in the model (given overall Greater Bunbury population assumptions have been reviewed and refined in recent years);
- Including intersection delay in the model;
- Include peak period functionality into the model (to understand effects of peak traffic periods); and
- Including a heavy vehicle module in the model.

In addition recent reviews have included;

- Calibration and validation of the Bunbury Traffic Model against 2011 census information (average week day traffic - AWDT); and
- Road network configurations for 2011 were updated and an ultimate road network layout was addressed in close collaborative consultation with Department of Planning, Lands and Heritage. This work has involved a significant review of the land use as a key input into the model.

Strategic traffic models work through establishing a “base case” road network, assuming a “base case” population (where average weekday (Monday to Thursday) traffic is allocated to the road network), calibrating the base case to known traffic volumes (to ensure the model represents current traffic movements and scale), assuming land use at certain population horizons (in this case a population of 200,000 people for alignment selection), and running the BORR North alignment options as separate modelling exercises for comparison. By testing the BORR North options (with no other model amendments), a comparison can be made between these options with regard to the scale of traffic using BORR and other significant parts of the network. Connections to BORR are assumed to

provide initial guidance on suitable connections (intersections), however further detailed testing and modelling of these connections will be undertaken during further detailed planning activities. Strategic traffic models are not meant to provide discreet predictions of traffic numbers on specific roads, however will assist to understand the distribution and scale of traffic on the network for those options tested, with a key focus on alignment selection.

Average weekday traffic is used for all modelling assessments (as is standard practice for strategic traffic modelling) however it should be noted that given the significance of the Forrest and Bussell Highway networks and their provision of access for significant tourist traffic to the greater South West, Busselton and world renowned Margaret River areas, traffic volumes at peak periods such Fridays and Sundays as well as long weekends and holiday periods can be significantly higher (between 50-100% higher) than the average weekday traffic modelled in the Bunbury area. Peak traffic demands will therefore require assessment as part of further detailed planning activities to test for and avoid failure scenarios on any proposed network (including traffic flow breakdown).

Given the complexity of the existing Bunbury road network, an updated Bunbury Traffic Model (BTM) forms a key aspect of alignment selection. Future land use intensification and expansion within Greater Bunbury is to a large extent focused surrounding the BORR North corridor with expansion of the urban footprint proposed within Wanju (50,000 – 60,000 people), a large area of strategic industrial land identified within Waterloo (adjacent to existing industrial areas within and around Picton) and population infill within existing urbanised centres around Eaton, Australind and Leschenault. The BTM will assist to understand the scale and desire lines of traffic on the existing and future network, improve the understanding of local traffic movements generated from intensification and expansion of land use, understand regional and freight traffic movements, test a number of possible connection scenarios and improve our understanding of how changes to the network and land use will interact for current and future timeframes.

For the purpose of alignment selection, the shortlisted “west” and “east” BORR North options (refer section 5.5.2) will be tested with land use assumed to be 200,000 people (as agreed with DPLH). This includes a full build out of the proposed Wanju urban area, Waterloo industrial area and infill of urban areas throughout the existing Greater Bunbury area. Testing of these options with a population of 200,000 people will ensure that a suitable alignment is selected based on the long term land use and resulting traffic generated. Assessing options with a long term focus is considered critical given the cost of a bypass is likely to be many hundreds of millions of dollars. Considering options within shorter term horizons are likely to result the bypass requirement needing reconsideration in the future further disrupting communities, land use and may lead to premature traffic congestion within Greater Bunbury which could otherwise either be avoided or minimised.

The BTM network, land use has been updated and calibrated with testing of the BORR North shortlisted options in mind. As a result, use of the BTM for other purposes (in addition to BORR North alignment selection) requires caution and great care given other internal workings of the Bunbury road network (not critical to BORR North alignment section process) may not be adequately refined depending on the intended use of the model. As a result, further detailed review of the BTM will be required for purposes other than BORR North alignment selection.

6. Constraints Assessment

6.1. General

Constraints have been assessed based on desktop assessments for the two BORR North options identified in section 5 above (specifically Section 5.5.2) including the Current BORR North Option (Western) and Eastern BORR North Option (Eastern). Appendix 4 and 5 includes key details of the constraints figures used within this section. Further and more detailed assessments of constraints for the corridor options under consideration are included in the associated reports titled “Bunbury Outer Ring Road, Northern Section – Western Alignment, Environmental Constraints Assessment (May 2018)”²⁶ and “Bunbury Outer Ring Road, Northern Section – Eastern Alignment, Environmental Constraints Assessment (May 2018)”²⁷. A summary of the details included in these reports is included below.

6.2. Environmental Constraints

6.2.1. Reserves, Conservation Areas and Regional Parks

There are no reserves, conservation areas or regional parks likely to be impacted by either alignment option. There is a Nature Reserve associated with TEC sites adjacent to South Western Hwy, positioned between the two alignment options.

6.2.2. Wetlands

The majority of both alignment options is covered by Multiple Use Wetlands.

The current alignment is expected to impact approximately 248.8ha of wetlands, 1ha Conservation Category Wetlands (UFI 1534, 14323), 247.8ha Multiple Use Wetlands (UFI 14329, 15223, 1550, 1751, 1389, 1406).

The eastern alignment investigation corridor is expected to impact approximately 250.4ha of wetlands, 250ha Multiple Use Wetlands (UFI 1710, 1711, 1756, 14329, 15223, 1720, 1721, 1719, 1752, 1736, 1389), and 0.4ha Not Assessed Wetland (UFI 1729).

6.2.3. Waterways

Both alignment options cross two major waterways, the Collie River and the Ferguson River. The eastern alignment investigation corridor would require a new river crossing of the Collie River. The current alignment has potential to retain existing bridge over Collie River at Forrest Hwy, which has an 11m kerb to kerb width on each bridge.

6.2.4. Bush Forever Areas

There are no listed Bush Forever sites within the project area for either alignment option.

6.2.5. Threatened Ecological Communities (TECs)

Current alignment has potential to impact 31 Priority 3 (State) / Endangered (Commonwealth) Ecological Communities (Banksia Woodland) near Hynes Rd and along Forrest Hwy. Potential to impact 1 Critically Endangered (State) / Endangered (Commonwealth) Ecological Community (Eucalyptus woodlands and shrublands) near SWH.

Eastern alignment investigation corridor has potential to impact 17 Priority 3 (State) / Endangered (Commonwealth) Ecological Communities (Banksia Woodland) between Forrest Hwy and Raymond Rd. Potential to impact 2 Vulnerable (State) / Critically Endangered (Commonwealth) Ecological Community (Shrubland in Clay) near SWH.

6.2.6. Vegetation and Flora

The current alignment is expected to impact approximately 33.3 hectares of native remnant vegetation. The eastern alignment investigation corridor is expected to impact approximately 15.2 hectares of native remnant vegetation.

There are no rare flora recorded sites within 100m of either corridor option.

There are 42 conservation significant flora sites within 5km of the eastern alignment.

6.2.7. Fauna

There are 3 rare flora recorded sites within 100m of the current alignment corridor ID 24166, Western Ringtail Possum. There are 3 rare for a recorded sites within 100m of the eastern alignment corridor ID 24734 and 34045, Carnaby's Cockatoo and South Western Brush-tailed Possum.

Fauna habitat is likely to occur along both alignment options.

6.2.8. Acid Sulphate Soils (ASS)

Both alignment options are predominately located within areas mapped as moderate to low risk of ASS occurring within 3m of natural soil surface.

6.2.9. Contaminated Areas

There are no listed contaminated sites within the project area for either alignment option.

6.3. Social Constraints

6.3.1. Indigenous Heritage

The current alignment has potential impact on approx. 81.3ha and 7 Aboriginal Heritage Sites, 2 of which are mythological associated with Collie River and Ferguson River. The 7 Aboriginal Sites include 16713 (Collie River Waugal), 19796 (Ferguson River), 4865, 5168, 18885, 18886 and 18889.

The eastern alignment investigation corridor has potential impact on approx. 19.1ha and 5 Aboriginal Heritage Sites, 2 of which are mythological associated with Collie River and Ferguson River. The 5 Aboriginal Sites include 16713 (Collie River Waugal), 19796 (Ferguson River), 5168, 18885 and 18886.

A summary of consultation with Traditional Owner representatives is included in section 8.1.7.

6.3.2. European Heritage

There are no Heritage WA sites expected to be impacted by the current western alignment option. There is 1 Australian Heritage site expected to be impacted, 17887 Lower Brunswick, Collie and Wellesley Rivers.

There are no Heritage WA sites expected to be impacted by the eastern alignment investigation corridor. There is 1 Australian Heritage site expected to be impacted, 9509 South West Irrigation Area.

6.3.3. Existing and Future Land Use, Facilities and Tenements

The current zoning for both alignments in the Greater Bunbury Region Scheme is Rural. The Department of Planning, Lands and Heritage are progressing in parallel Draft District Structure Plans for the Wanju urban and Waterloo industrial future developments. Both alignments intersect these developments with further detail regarding the interactions of BORR with these proposed developments included in section 5.6.

The eastern alignment intersects a strategic clay resource identified in the Greater Bunbury Region Scheme. The eastern alignment also intersects an area identified in the Greater Bunbury Strategy (2013) as an "Investigation Area" identified for investigation for potential future urban expansion. This area is currently zoned "Rural" in the GBRS.

6.3.4. Property Impact – Severance and Access

The total footprint of the current alignment is estimated at 281ha. Approx. 193.7ha impacted across 94 properties. Approx. 24.1ha state owned across 28 properties. Land impact known since 2012. Similar severance to eastern alignment.

The total footprint of the eastern alignment investigation corridor is estimated at 273ha. Approx. 229.7ha impacted across 84 properties. Land cost estimated to be approximately 40% higher than the current alignment. Approx. 7.9ha state owned across 20 properties. New alignment therefore land impacted previously not known. Similar severance to current alignment.

6.3.5. Noise and Visual Amenity

Similar overall noise and visual amenity impacts, location of impact different.

Current alignment has greater impact for sensitive land use west of Forrest Hwy. Sensitive land use east of Forrest Hwy is Meadow Landings. Impact to western side of Meadow Landings greatest, less than 100m away. Remaining surrounding land use is rural in GBRS.

Eastern alignment investigation corridor has lower impact for sensitive land use west of Forrest Hwy. Only sensitive land use east of Forrest Hwy is Meadow Landings. Impact to eastern side of Meadow Landings greatest approximately 200-700m away, previously minimal impact. Remaining surrounding land use is rural in GBRS.

6.3.6. Air Quality

Similar overall vehicle emissions likely.

Current alignment bisects the future urban expansion footprint. The combination of local, regional and freight traffic movements and inclusion of additional interchanges may result in lower transport efficiency and the potential for increases in vehicle emissions.

Eastern alignment is proposed to run parallel to the outer edge of the future urban expansion footprint, includes fewer interchanges and will largely separate local traffic from regional and freight movements. This should result in better transport efficiency and the potential for lower vehicle emissions however the eastern route is approximately 2km longer than the current alignment.

6.4. Engineering Constraints

6.4.1. Topography and Hydrology

The topography and hydrology are similar for both alignment options. The ground is low lying with a shallow watertable along both alignments.

Both alignments cross two major waterways being the Collie and Ferguson Rivers.

6.4.2. Drainage

Both alignment options are predominately located within areas of low lying river flood plane with detailed drainage assessments yet to be determined. Drainage will be a critical considerations for both options.

6.4.3. Geology and Soil Conditions

Both alignment options are predominately located within areas of low lying river flood plane with heavy clay soils present.

6.4.4. Public Drinking Water

There are no public drinking water areas likely to be impact by either alignment option.

6.4.5. Services

The two alignment options are likely to have similar impact on Utilities.

The current alignment crosses 4 x 132kV powerlines and 1 x 66kV poweline. The eastern alignment investigation corridor crosses 5 x 132kV powerlines and 1 x 66kV poweline.

The current alignment crosses 6 x high pressure gas pipelines. The eastern alignment investigation corridor crosses 5 x high pressure gas pipelines.

6.4.6. Infrastructure

Both alignment options may impact a number of existing agricultural buildings, farm residences, dairy facilities, sheds and irrigation channels (Harvey Water). Exact impacts will depending on final coridor refinements, however where possible infrastructure will be avoided in consultatiin with impacted landholders.

6.4.7. Constructability

Similar constructability issues are expected for both alignment options. Significant volumes of embankment fill material are expected to be required for both alignment options given the low lying topography including heavy clay soils over significant extents of both options.

6.4.8. Staging

Staged construction using alternative route and/or existing roads is not recommended for either alignment option. Staged construction will likely require investment of capital expenditure into road infrastructure that would ultimately be downgraded and is not intended for regional and heavy freight traffic. Alternatively, if capital investment is not made this would introduce safety issues for regional traffic using local roads, for example Martin Pelusey Rd and Hynes Rd.

6.4.9. Access

Both alignment options are planned as Control of Access. Similar access arrangements, with the adoption of service roads expected for both alignment options.

An access strategy will be developed as part of the Alignment Definition Study (following Alignment Selection).

6.4.10. Road Network Performance

Road network performance benefits are offset between length, number of connections, number of lanes and intersection size/complexity.

The current alignment has a slightly shorter length of 12.5km (Boyanup Picton Rd to Clifton Rd). However is less efficient due to 4 interchanges and combines local, regional and freight traffic. Modelling suggests 6 lanes are required with very large and complex interchanges. The number of interchanges will be the subject of further assessments during detailed planning processes.

The eastern alignment investigation corridor has a longer length by almost 2km, of 14.3km (Boyanup Picton Rd to Clifton Rd). However is more efficient due to only 2 interchanges and separates local traffic movements from regional and freight traffic. Modelling suggests 4 lanes are required with standard sized and relatively simple interchanges. The number of interchanges will be the subject of further assessments during detailed planning processes.

6.4.11. Road Safety

The current alignment provides some relief on the internal Greater Bunbury road network (less than the eastern option). Does not entirely byass congested and high crash density sections of Forrest Hwy. Does not separate local and regional traffic on Forrest Hwy and BORR. Greater number of interchanges and complexity contribute to lower overall safety benefits. The number of interchanges will be the subject of further assessments during detailed planning processes. Raymond Rd west of Treendale Rd remains important frieght route.

The eastern alignment investigation corridor provides greater relief on the internal Greater Bunbury road network. Bypasses a greater extent of congested and high crash density sections of Forrest Hwy. Separates local traffic on Forrest Hwy from regional and freight traffic on BORR by moving tie in to north of Raymond Rd. Lower number of interchanges and simplified layouts contribute to greater overall safety benefits. The number of interchanges will be the subject of further assessments during detailed planning processes. Raymond Rd west of Treendale Rd no longer plays important freight route, freight traffic diverted to BORR.

6.4.12. Rail

Both alignment options provide for future flexibility to provide a Bunbury Fast Rail. Other than planning for the Fast Rail into Wanju (or Bunbury CBD) and potential future duplication of the rail adjacent to the South Western Highway (accessing the Bunbury Port), rail planning remains largely unresolved.

6.5. Economic Assessment

6.5.1. Construction Cost Considerations

The current alignment is expected to have a greater construction cost due to a greater number and more complex interchanges as well as the requirement for 6 lanes (ultimate).

The eastern alignment is expected to have a lower construction cost due to a lower number and less complex interchanges as well as the requirement for 4 lanes (ultimate).

6.5.2. Whole of Life Costs

The current alignment is likely to have greater infrastructure requirements on BORR and Forrest Hwy therefore higher whole of life costs. Requirement for 6 lanes on BORR and Forrest Hwy. Greater number of interchanges with more complexity and infrastructure required on BORR and Forrest Hwy.

The eastern alignment investigation corridor is likely to have lower infrastructure requirements on BORR and Forrest Hwy therefore lower whole of life costs. Forrest Hwy 6 lanes ultimately, BORR 4 lanes ultimately. Lower number of interchanges on BORR and Forrest Hwy with less complexity and infrastructure required however BORR is approximately 2km longer.

6.5.3. Strategic Agricultural Resources

Both alignment options run through the Strategic Agricultural Resource Policy Area.

6.5.4. Basic Raw Materials

There are no basic raw material supplies identified in proximiy of either alignment option.

There is a Live Exploration Licence E7003005 held by Doral Mineral Sands covering both alignment options. There is a Live Mining Lease M7000720 held by Doral Mineral Sands adjacent to the eastern alignment investigation corridor.

6.5.5. Land Cost Considerations

Land cost of the eastern alignment investigation corridor estimated to be approximately 40% higher than the current alignment (193.7ha versus 229.7ha).

6.5.6. Network Benefits

Traffic modelling suggests the current alignment results in increased pressure on South Western Highway and combines local, regional and freight traffic through provision of additional connections. Therefore accessibility on the network is greater however this results in increased light/heavy vehicle interactions likely to result in a less efficient overall road network.

Traffic modelling suggests the eastern alignment eases pressure on South Western Highway and separates local traffic from regional and freight traffic through provision of fewer connections and separation from the Greater Bunbury urban footprint. This results in fewer light/heavy vehicle interactions likely to result in improved overall road network efficiency.

6.6. Constraints Plans

Constraints plans for each option are included in Appendix 4 and 5.

7. Options Assessment

7.1. IA Objectives of National Significance

An assessment of the Current BORR North and the Eastern BORR North options has been undertaken against the major principals, priorities and objectives identified by Infrastructure Australia (IA) as being relevant for major infrastructure of National significance. These requirements have been provided in recent years and were not available when the Current BORR North option was established around 2013. Both options were measured against key/relevant aspects identified by IA and colour coded as to their relevance and alignment with these requirements. A copy of the summary is included in Appendix 6.

This assessment confirms that the Eastern BORR North option is well aligned with these latest IA requirements and priorities with the Current BORR North option showing less alignment. As a result the eastern option is more likely to attract IA support and therefore Federal Government interest and construction funding. It is also more aligned with Federally strategic infrastructure requirements relevant for the Forrest Highway forming a key link in the National Freight Network.

The assessment in Appendix 6 is colour coded as follows:

- Red – No alignment with IA/Nationally significant requirements
- Yellow – Some alignment with IA/Nationally significant requirements
- Green – Strong alignment with IA/Nationally significant requirements

7.2. Bunbury Traffic Model Options Assessment

For the purpose of alignment selection, two key scenarios were tested in the Bunbury Transport Model (BTM), the current alignment adjacent to Hynes Rd and the eastern alignment investigation corridor (using average weekday traffic demands - detailed in section 5.5.2). Key outcomes regarding comparison of these two assessments are detailed below. Further to section 5.7.1, peak regional traffic demands through the Bunbury area accessing the South West, Busselton and world renowned Margaret River wine region requires further assessment during detailed planning activities. Option assessment is relative and as a result consideration of these peaks is not critical to the alignment selection process however will be critical during subsequent detailed planning.

Ongoing coordination with DPLH and Local Governments is in progress regarding likely road networks within the proposed Wanju urban and Waterloo Industrial areas as well as requirements for the broader Greater Bunbury area. Requirements for both alignment options have been progressed to ensure suitable options are available depending on the alignment selection decision for BORR North.

The BTM road network and land use has been updated and calibrated with testing of the BORR North shortlisted options in mind. As a result, use of the BTM for other purposes (in addition to BORR North alignment selection) requires caution and great care given other internal workings of the Bunbury road network (not critical to BORR North alignment section process) may not be adequately refined depending on the intended use of the model. As a result, further detailed review of the BTM will be required for purposes other than BORR North alignment selection. This is further discussed in section 5.7.1.

7.2.1. Existing BORR Alignment (bisecting Wanju on the western edge)

For the purposes of the modelling for alignment selection the current western alignment assumed the following connectivity for BORR North:

- Diamond interchange at Paris Clifton
- Diamond interchange at Raymond Rd
- Y Junction north of Hynes Rd
- Free-flow interchange at Hynes Rd (entry to Wanju)
- Parclo interchange at South Western Hwy
- Diamond interchange at Harris Rd
- Overpass at Boyanup Picton
- Diamond interchange at Willinge Dr (Port Access Road)

A summary of the traffic volumes estimated by the Bunbury Transport Model are shown in Appendix 7. These modelled volumes are a guide only and provides an indication of the spread of traffic anticipated based on the network and land use modelled and the scale of traffic on key links within the network. Land use was assumed as 200,000 population for Greater Bunbury.

General

Modelling suggests strong east-west desire lines between urban centres either side of the BORR corridor. These movements combined with the resulting mix of local and high speed regional and freight traffic on the BORR are expected to result in large and busy intersections with strong north-south and east-west movements interacting. The future planned fast rail station is located adjacent to Wanju within the median of BORR (likely to be a strong attractor of traffic) further complicating this area. Given the location of BORR and the proposed fast rail station, there are very limited opportunities to provide suitable access to the proposed Wanju urban development other than through a single interchange linking with Forrest Highway. In the order of 3-4 Wanju access points are also anticipated from South Western Highway, however with strong linkages to existing urban development and the coast/estuary, access to/from Forrest Highway is likely to attract strong traffic demands. This is reflected in the model suggesting in excess of 60,000 vehicles per day (vpd) accessing Wanju from Forrest Highway (across BORR).

BORR Alignment

The model suggests demands on the BORR alignment broadly peak adjacent to the proposed Wanju urban development and proposed fast rail station (between 50,000 and 55,000 vpd) and progressively drops as we move south towards the intersection with the Port Access Road (35,000 – 40,000 vpd – average weekday traffic (AWDT)). Further to above, urban development either side of BORR is expected to result in a mix of local and high speed regional and freight traffic over the section of BORR where the volumes peak. High speed merging and diverging of a mix of traffic is likely to require a complex arrangement of ramps adjacent to large interchanges. Typically four lanes of traffic can cater for volumes approaching 60,000 vpd (where grade separation is provided) however given the complex nature and mix of high speed traffic on BORR North it is expected 6 lanes will be required where traffic volumes are at their highest, generally between the Forrest Hwy tie-in and the Waterloo Industrial area connection. Peak period traffic (in the order of 50% higher than AWDT) on long weekend and holiday periods is expected to place the BORR network and associated intersections under considerable pressure with the combination of local, regional and freight traffic.

Forrest Highway

The model suggests demands on Forrest Highway in the order of 50,000 to 55,000 vpd (AWDT). Strong desire lines between existing and proposed urban and employment/recreation areas suggest even with the BORR in place, the Forrest Highway will remain a very important access road forming the main spine road accessing central Bunbury. Access along the Forrest Highway (particularly within Greater Bunbury) is currently limited for efficiency and safety reasons and the modelling suggests maintaining this approach will be required in the future. Typically four lanes of traffic can cater for volumes approaching 60,000 vpd (where grade separation is provided) however given the number of “at grade” existing intersections and the spacing of existing intersections as we approach Eelup Roundabout it is expected 6 lanes will be required in the future. Grade separation of these key connections is likely to be required in the medium to long term to cater for expected traffic demands. It should be noted the section of Forrest Highway between Alyxia Drive, Vittoria Road and Eelup Roundabout is currently the busiest part of the road network in the state outside of the Perth and Peel areas.

South Western Highway

The model suggests demands on South Western Highway (SWH) either side of the BORR corridor in the order of 38,000 – 47,000 vpd (AWDT). Local traffic demands placed on SWH as a result of the Wanju urban development are anticipated to mix with heavy vehicles potentially exiting BORR and accessing the Port via SWH where volumes peak around the intersection with BORR. A number of other network requirements along SWH west of the BORR corridor complicate modelling in this area and as a result further modelling is required as part of subsequent detailed planning processed to better understand the key issues and complexities regarding SWH and BORR.

Port Access Road

The model suggests traffic demands on the Port Access Road in the order of 12,000 to 14,000 vpd (AWDT). The function of this link is primarily to provide access to the Bunbury port. Demands of this order can typically be accommodated with a 2 lanes road (one lane in each direction). Modelling suggests with this BORR scenario heavy vehicles may use other parts of the network rather than the PAR to access to port placing heavy vehicle pressures elsewhere. Ideally heavy vehicles should be attracted to the port via the PAR and BORR to ease pressure on other parts of the network likely to experience significant adjacent development and traffic growth in the medium to long term.

7.2.2. Eastern BORR Alignment (Eastern perimeter of Wanju - Pink)

For the purposes of the modelling for alignment selection the eastern alignment assumed the following connectivity for BORR North:

- Overpass at Paris/Clifton
- Trumpet interchange at Forrest Hwy
- Half diamond interchange at Raymond Rd
- Overpass at South Western Hwy
- Diamond interchange at Harris Rd
- Overpass at Boyanup Picton
- Diamond interchange at Willinge Dr (Port Access Road)

A summary of the traffic volumes estimated by the Bunbury Transport Model are shown below in Appendix 7. These modelled volumes are a guide only and provides an indication of the spread of traffic anticipated based on the network and land use modelled and the scale of traffic on key links within the network. Land use was assumed as 200,000 population for Greater Bunbury.

General

Modelling suggests strong east-west desire lines between urban centres located to the west of the BORR corridor. This arrangement largely separates slower local traffic movements from crossing and interacting with higher speed north-south regional and heavy freight traffic demands. The future planned fast rail station is located adjacent to Wanju within the median of Forrest Highway (likely to be a strong attractor of traffic). Modelling suggests separation of the BORR corridor from these areas allows greater flexibility and opportunity to deal with resulting traffic demands within Bunbury. By positioning BORR further east on the perimeter of the proposed Greater Bunbury urban footprint additional access points to Wanju from Forrest Highway are available. By providing two access points north and south traffic demands can be split, the majority of “through” regional and freight can be removed and as a result modelling suggests more cost effective “at grade” intersections could accommodate the traffic demands. Greater flexibility to access the proposed fast rail station may also be available in the median of the existing Forrest Highway. In the order of 3-4 Wanju access points are also anticipated from South Western Highway, however with strong linkages to existing urban development and the coast/estuary, access to/from Forrest Highway is likely to attract strong traffic demands.

BORR Alignment

The model suggests demands on the BORR alignment broadly peak adjacent to the proposed Waterloo industrial development (38,000 vpd – average weekday traffic (AWDT)) and drops around the intersection with the Port Access Road (32,000 vpd west of this intersection). Separation of high speed regional and freight traffic from local traffic movements allows greater flexibility and the ability to consider smaller, simpler and more cost effective interchange options (with lower cross traffic movements). Typically four lanes of traffic can cater for volumes approaching 60,000 vpd (where grade separation is provided). Modelling suggested that the BORR can comfortably accommodate traffic demands generated by a Greater Bunbury population of in excess of 200,000 people with 4 lanes. Peak period traffic (in the order of 50% higher than AWDT) on long weekend and holiday periods is expected to place the BORR network and associated intersections under considerable pressure however with the separation of local traffic from high speed regional and freight traffic this scenario provides a significant improvement in the ability of the network to cater for these peak movements.

Forrest Highway

The model suggests demands on Forrest Highway in the order of 55,000 to 60,000 vpd. Strong desire lines between existing and proposed urban and employment/recreation areas suggest even with the BORR in place, the Forrest Highway will remain a very important access road forming the main spine road accessing central Bunbury. Access along the Forrest Highway (particularly within Greater Bunbury) is currently limited for efficiency and safety reasons and the modelling suggests maintaining this approach will be required in the future. Typically four lanes of traffic can cater for volumes approaching 60,000 vpd (where grade separation is provided) however given the number of “at grade” existing intersections and the spacing of existing intersections as we approach Eelup Roundabout it is expected 6 lanes will be required in the future. Grade separation of these key connections is likely to be required in the medium to long term to cater for expected traffic demands. It should be noted the existing section of Forrest Highway between Alyxia Drive, Vittoria Road and Eelup Roundabout is the busiest part of the road network in the state outside of the Perth and Peel areas.

South Western Highway

The model suggests demands on South Western Highway (SWH) either side of the BORR corridor in the order of 13,000 – 40,000 vpd (AWDT). Demands jump to the west of the BORR corridor largely due to the Wanjau urban and Waterloo industrial developments surrounding this part of the network. Local traffic demands placed on SWH as a result of these developments are anticipated to grow in time and as a result the function of SWH is likely to change with time with more local intersections and speed limits anticipated to drop given greater local connectivity and traffic movements. Discouraging “through” heavy vehicle movements along this link is seen as desirable over the medium to long term. That said it is acknowledged there are a significant number of existing commercial and industrial developments accessed via SWH and as a result heavy vehicle movements to these areas will need to be maintained. A number of other network requirements along SWH west of the BORR corridor complicate modelling in this area and as a result further modelling is required as part of subsequent detailed planning processed to better understand the key issues and complexities regarding SWH and BORR.

Port Access Road

The model suggests traffic demands on the Port Access Road in the order of 15,000 to 17,000 vpd which are higher than the alternative option assessed. The function of this link is primarily to provide access to the Bunbury port. Demands of this order are approaching the requirement for 4 lanes (two lanes in each direction) particularly with the anticipated high number of heavy vehicles using this link. Modelling suggests with this scenario heavy vehicles are more likely to use the PAR and BORR to access the port, in part relieving heavy vehicle pressures elsewhere on the network. Ideally heavy vehicles should be attracted to the port via the PAR to ease pressure on other parts of the network likely to experience significant adjacent development and traffic growth in the medium to long term.

7.3. Multi-Criteria Analysis

A Multi-Criteria Assessment (MCA) was prepared to assess the two BORR North options under consideration. The MCA is included in Appendix 1, with key aspects assessed using discrete data wherever possible (to minimise subjectivity). The MCA makes provision for a number of critical aspects relevant to major infrastructure projects including the following:

1. Environmental Considerations
 - Rare flora and native vegetation
 - Rare fauna, fauna habitat and TEC's
 - Waterways and wetlands
2. Social Considerations
 - Land acquisition and severance
 - Heritage
 - Noise and visual amenity
3. Economic Considerations
 - Whole of life costs
 - Facilities development
 - Utilities
4. Engineering Considerations
 - Road network performance
 - Road safety
 - Rail

Use of a consistent number of criteria for each aspect ensures skewing of results is avoided as far as possible (eg each main heading has three sub headings). Assessments were based on desktop assessments including constraints mapping and analysis as well as other relevant factors. Relevance of the aspects above were

documented in the MCA and rated with a score measuring each options performance against the scoring criteria. A high score rating of up to 3 indicates a poor outcome (Major impact, major constraint, very difficult to mitigate) and a low score down to 0 indicates a very good outcome (Minor or no impact/constraint).

The total MCA rating provided the following outcome:

Total Scores	Current BORR North Alignment	Eastern BORR North Alternative Alignment
Environmental	3	4
Social	5	4
Economic	6	3
Engineering	5	2
Total Scores	19	13

The MCA has been completed with measurable criteria as far as possible, however a certain level of subjectivity is always present in any MCA process. The scoring area which is often scrutinised most heavily relates to social considerations as these can be dependent on the circumstances of the reader and their location to the options under consideration. In the case of this MCA process included in Appendix 1, the Social criteria has been broken up into 3 aspects including; 1) Land acquisition and severance, 2) Aboriginal Heritage, and 3) Noise and Visual Amenity. The first two criteria have been scored using discrete measures as far as possible, however the Noise and Visual Amenity assessment could be more open to scrutiny. It is an accepted fact that proximity to a major highway has a significant bearing on noise and amenity impacts that can be experienced by the adjacent community. This aspect of the MCA has broadly been scored based on relative proximity to existing community zones and built up areas.

The Eastern BORR North option provides a lower overall score and therefore is generally shown to balance the benefits and impacts assessed in the MCA more effectively than the Current BORR North option.

7.4. Preferred Option

Desktop planning assessments as well as targeted consultation have confirmed a number of factors when comparing the Current BORR North option (shown below in green) to an alternative Eastern BORR North option (shown below in pink), east of the proposed Wanju development and future Greater Bunbury urban footprint.

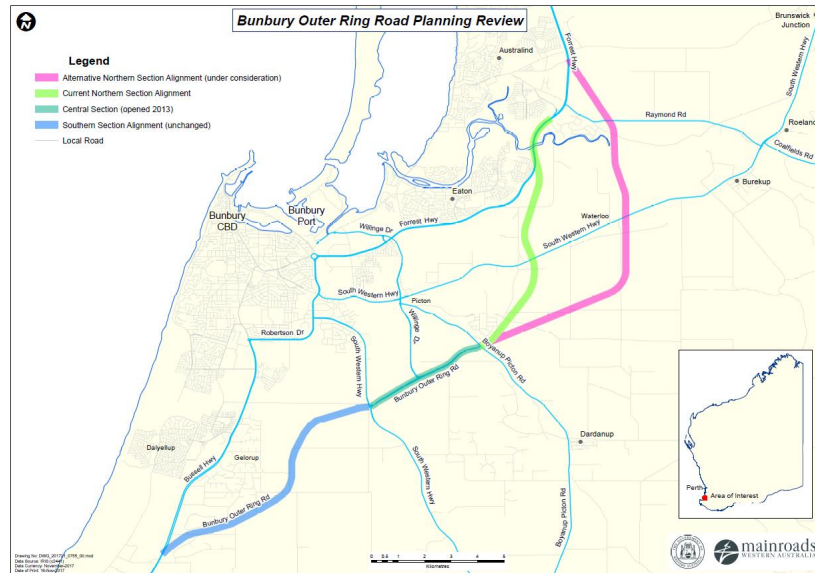


Figure 20 – BORR North Options

The Eastern BORR North option has been identified as the preferred route for the following summarised reasons:

- The current green corridor bisects future urban development's (Wanju) limiting permeability across the BORR corridor;
- An eastern pink corridor provides an integrated planning solution and defines an outer perimeter rather than dividing the urban footprint of Greater Bunbury;
- The current green corridor limits access from Wanju to the Forrester Hwy (six lanes single connection in/out of Wanju);
- An eastern pink corridor provides Wanju improved connectivity to Greater Bunbury through additional access points to Forrester Hwy (strong east-west movement demands are suggested in the traffic model);
- Traffic modelling confirms the green corridor results in the combination of high speed regional, freight and slower moving local traffic placing significant pressure on BORR (requiring six lanes) with large expensive interchanges required;
- Traffic modelling confirms an eastern pink corridor separates high speed regional/freight traffic from local traffic;
- Separation of local and high speed regional and freight traffic improves road safety, efficiency and provides a more effective bypass and improved Port access;
- The current green corridor is sensitive to increases in population growth (BORR North requires six lanes) and long weekend regional traffic peaks;
- An eastern pink corridor is capable of catering for population growth in excess of 200,000 where traffic demand can be accommodated with four lanes for the entire extent of BORR and more effectively caters for long weekend regional traffic peaks;

The eastern pink corridor also:

- Ties in further north of the existing green corridor bypassing an additional major intersection on Forrester Highway, improving safety and efficiency;
- Strongly aligns with State, Federal and Infrastructure Australia frameworks, drivers and objectives;
- Is a cost effective solution consistent with broader overall ultimate South West Freeway strategy between Perth and the South West Region
- Does not preclude future rail options, including a future fast rail station within Wanju, a station in Bunbury's CBD and a number of other possible rail scenarios yet to be identified.

Identification of the Eastern BORR North option as the preferred option is supported through the MCA process detailed above in section 7.3.

8. Consultation and Endorsements

8.1. Consultation

8.1.1. General

A stakeholder engagement plan was developed and implemented during 2017 and 2018 to ensure stakeholders were consulted for the planning associated with the BORR. Consultation has been progressed throughout this time in order to provide an update on the planning work associated with the entire BORR proposal and to obtain input into assessments between the Current BORR North option and the Eastern BORR North option under consideration. Stakeholders included Federal and State agencies, local government authorities, other key stakeholders and importantly, potentially impacted landowners intersected by either BORR North option.

Further broader and more detailed consultation processes are proposed following the alignment selection process. This will include with the wider Bunbury community, surrounding areas and a number of other key stakeholders and landholders.

8.1.2. Consultation Process

Planning assessments have considered a broad range of desktop assessments and tested a number of traffic modelling scenarios. The resulting alignment assessments present a number of opportunities and challenges however large scale changes to the BORR network will impact several fundamentals within and surrounding Bunbury. Targeted engagement with Government Agencies, key stakeholders and potentially impacted landholders is recognised as a critical aspect of the planning study in order to test the legitimacy of options identified through desktop assessments and obtain critical input to assist with making an informed alignment selection decision.

A two phase consultation process was adopted as part of this planning study consisting of:

1. Up front and ongoing engagement with Government Agencies and key stakeholders during 2017 and 2018 to determine whether options were consistent with State and Federal frameworks, priorities and objectives and whether the options were robust enough to warrant targeted landholder consultation; and
2. Undertake targeted landholder consultation with those intersected with either the Current BORR North option or the alternative Eastern BORR North option. This consultation was undertaken between November 2017 and May 2018.

Targeted consultation with landholders has been undertaken through provision of mailed correspondence offering the opportunity for individual meetings and discussion regarding the planning assessments in progress. Individual meetings have been found to be very effective as discussions can focus on individual situations and circumstances and all discussions are kept confidential. Mailing addresses are typically obtained through local government rates addresses. In this case the Shire of Dardanup provided the majority of mailing addresses covering the BORR North extent, however the Shire of Harvey declined to assist with providing mailing addresses for the areas north of the Collie River. As a result Main Roads was required to find other less timely and effective means of contacting landholders within the Shire of Harvey. As a final step Main Roads delivered correspondence to all properties in Meadow Landing and wider adjacent area (north of the Collie River) by hand to ensure as wide a net was cast to offer the opportunity for input and engagement regarding the BORR North alignment selection process. Complications associated with this less than desirable approach has resulted in some land owners not receiving communications and consequently having limited or late engagement with Main Roads contributing to a number being frustrated and agitated at the consultation process.

Landholder engagement is undertaken as early as possible based on a “corridor for investigation” with general commentary around intersection locations. Waiting to undertake consultation with additional detail would likely result in landholders missing the opportunity to provide input into the planning assessments prior to an alignment selection decision being made. Given the potential impacts to landholders and the importance of providing them an opportunity to participate in the planning process, delaying consultation with them is seen as not appropriate. A draw back of early consultation is the lack of detail available which typically leads to feedback around uncertainty and frustration in having difficulty understanding potential layouts, locations, heights and associated impacts. Unfortunately with early engagement, these criticisms are difficult to avoid.

Some landholders choose not to seek engagement with Main Roads regarding planning studies such as these. Main Roads respects the landholders right to not meet with them and as a result there are landholders that do not

seek out engagements. There are also cases where landholders do not receive Main Roads correspondence for a number of reasons. In order to minimise this wherever a landholder is met we request that the opportunity to meet is communicated to their neighbours in order not to miss anyone and in some cases contact details have been confirmed (if appropriate). By undertaking this additional work there is less likelihood of a landholder not being engaged.

8.1.3. Government and Key Stakeholders

Government Agency engagements was undertaken as early as possible and in parallel to a number of planning assessments including detailed and ongoing collaboration with officers of DPLH regarding the proposed Wanju and Waterloo developments, Greater Bunbury land use, population estimates and predicted timeframes to assist with traffic modelling scenarios.

A summary of the key Government Agencies and Key Stakeholders consulted includes:

- Department of Planning, Lands and Heritage (detailed and ongoing collaboration regarding land use and transport planning);
- Western Australian Planning Commission, Chairman and Director General Planning, Lands and Heritage;
- Western Australia members of Parliament: Transport and Planning Minister Rita Saffioti; Bunbury MLA Don Punch; Murray Wellington MLA Robyn Clarke; Collie MLA Mick Murray;
- Local Government Authorities including the City of Bunbury, the Shire of Capel, the Shire of Dardanup, the Shire of Harvey (October/November 2017);
- Department of Biodiversity, Conservation and Attractions (DBCA – update, presentation and initial discussion with local Bunbury office);
- Regional Development Australia (RDA) (a number of updates and ongoing discussion);
- Bunbury Wellington Economic Alliance (BWEA);
- South West Development Commission (SWDC) (a number of updates, presentations and ongoing discussion);
- A number of presentations, updates and discussions with Wanju and Waterloo Working Group (including representatives from Department of Planning, Lands and Heritage, Department of Water and Environmental Regulation, South West Development Commission, LandCorp and the Shire of Dardanup);
- Kemerton Industrial Park Coordinating Committee (update, presentation and discussion);
- Qube Transport (initial discussion and workshop involvement);
- Harvey Water (update, presentation and discussion);

Government agency and stakeholder engagement confirmed broad support for investigations into an eastern alternative corridor. The Shire of Harvey raised concern with these investigations with further detail provided in section 8.1.4 below.

A summary of key outcomes from consultation from these organisations is summarised in Appendix 9.

Further detailed engagement with Government and key stakeholders is proposed subsequent to the alignment selection process.

8.1.4. Local Government

A number of officer meetings and at least one Council presentation was arranged during the second half of 2017 for all Local Governments with a direct interest in the full extent of the BORR including the Shire of Harvey, Shire of Dardanup, City of Bunbury and Shire of Capel prior to initiation of targeted landholder consultation commencing. These sessions were aimed at providing a general update regarding the BORR, details regarding the planning review including alignment assessments for BORR North, proposed targeted consultation (including with their constituents) and in order to obtain feedback from these organisations on the planning work, broader network, land use and any other considerations. This is considered standard protocol so that elected members are provided with an initial briefing and opportunity to engage in conversation regarding the planning. Elected members are also then informed should constituents seek consultation with elected members following their own briefing.

A brief summary of Local Government input during 2017 included the following:

- The Shire of Capel were largely focussed on the BORR South Section and agreed in principal with the Bunbury Outer Ring Road bypass concept;
- The Shire of Dardanup provided strong support for consideration of the Eastern BORR North option given it aligns with a number of proposed land use and zoning amendments including the Wanju and Waterloo developments. Further discussion focussed on potential interchange locations within Waterloo and possible future access to the Dardanup area;
- The City of Bunbury agree with a Bunbury Outer Ring Road bypass concept in principal however raised concerns around the separation of the Eastern BORR North option from the CBD and potential impacts to business; and
- The Shire of Harvey confirmed their opposition to consideration of an Eastern BORR North option. This was seen by Council as jeopardising future urban development north of the Collie River (and east of the Forrest Highway) with the area identified in the Greater Bunbury Strategy as an “Investigation Area”. The Shire of Harvey have draft local planning frameworks that identify the area north of the Collie River as future urban and were frustrated with consideration of an eastern option. Amenity, noise and lifestyle impacts were also raised for the existing Meadow Landing community in this area.

Further discussion was undertaken with the Shire of Harvey regarding minimising potential future urban land impacts north of the Collie River including correspondence from the Shire seeking that should an Eastern BORR North option be considered, the alignment be moved further east (north of the Collie River). Further consideration of this is detailed in subsequent sections of this report.

Further discussion with a number of stakeholders including several representatives from the City of Bunbury has progressed in general regarding the impact of bypasses on towns. Reference material and a number of studies from the eastern states and from American confirm that bypasses typically offer opportunity and risk. Ultimate impacts of a bypass are typically dependent on a number of factors including the size of the town (the larger the town normally the lower the overall impact), if risks and opportunities are assessed and recognised early the community is better placed to manage the risks and maximise the opportunities and whether the community, local government and key stakeholders are organised early at implementing actions to address opportunities and risks. Further discussion and engagement is proposed regarding this issue during further detailed planning and engagement activities.

8.1.5. Landholders

A landholder consultation plan was prepared providing a layout of the 2 BORR North options under consideration. The plan also included lot numbers, cadastral boundaries and key roads to assist property holders identify areas of interest and ownership. The Current BORR North option was shown in green on the plan and the Eastern BORR North option was shown in red. A copy of this plan is provided in Figure 21 below. This plan was prepared to identify properties that may be impacted by either of the 2 BORR North options under consideration to ensure the property owners were identified and have the opportunity to be involved in the planning process.

The Current BORR North option included the known concept details and land requirements previously communicated to landholders (around 2012-13) and a “corridor for investigation” was included providing some indication of where an Eastern BORR North option may be positioned in relation to local features. The corridor shown for the eastern option included a corridor much wider than would ultimately be required for a road reservation, however given the early stage of the planning process it's width was kept generous to ensure a possible final corridor could reside within it. The red eastern corridor shown is around 500m wide, however a typical 4 lane road of the proposed scale requires around 100-150m width.

Discussion with DPLH suggested through the proposed Waterloo industrial area there was some uncertainty regarding future land use (type and size of lots) and as a result the corridor was widened through this area to provide flexibility at this early stage. This also ensured a wider group of landholders was engaged in an area where a future interchange was being considered.

A corridor along Raymond Road was also included east of the Eastern BORR North option given the proposed location of an interchange in this area. This ensured additional land holders were engaged in case this interchange required changes to Raymond Road in this area resulting in land impacts that are not yet defined as part of the alignment selection process.

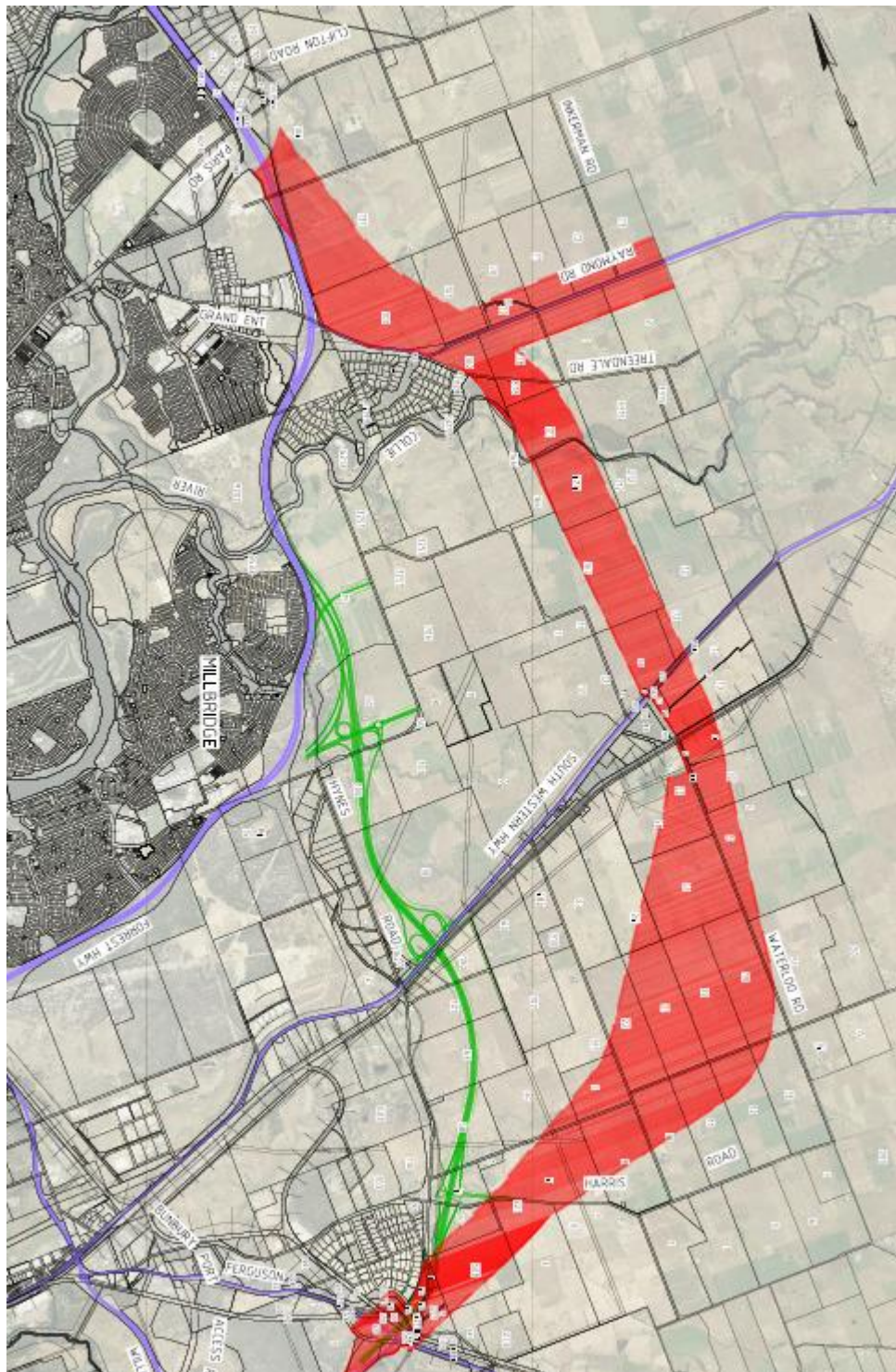


Figure 21 - BORR North – Options Consultation Plan

- Green - Current BORR North Corridor
- Red - Alternative Eastern Corridor

Letters and a copy of the options plan detailed above were sent to landowners potentially intersected by the eastern or current BORR North options in November 2017 offering an opportunity to comment on the alignment and meet with the planning team. It should be noted that there was previously a high level of awareness about the Current BORR North green option. Many of the landowners intersected by the green corridor either did not wish to meet or contribute a submission. Some of the landowners along the Eastern BORR North red option had purchased property based on the understanding that the BORR would be constructed on the green route. As a result there was a level of frustration given the multiple BORR North options that had been considered over the preceding years and decades (3 options considered).

The consultation period was extended for various reasons to maximise feedback opportunity for landowners and nearby residents, and by May 2018, the following outcomes resulted (targeted consultation remains ongoing as part of the planning process):

- 17 meetings with either individual or groups of landowners (including in several cases representatives of multiple lots);
- 11 formal submissions received from landowners and a submission each from the Shire of Harvey and Shire of Dardanup;
- Some form of response (submission, meeting, email, phone contact, or feedback) with around 45 out of 63 potentially impacted lots on both alignments; and
- Personal meetings were sought from around 90% of property owners intersected by the newly considered red Eastern BORR North option.

There were a range of individual property issues recorded in stakeholder meetings and submissions. However, general issues and concerns focussed on:

- Impact on/ loss of lifestyle and amenity in rural area;
- Impact on property use, business operations/viability and infrastructure;
- Impact on property values;
- Impact on future developable land;
- Impact on and loss of viable agricultural land that contributes to the State's productivity;
- Impact on the environment and drainage; and
- Social impact given uncertainty, disruption and the compensation process.

Both BORR North options traverse through a well established agricultural area with a number of families owning land in this area since the mid-late 1800's (some for 5 generations). As a result many families have a strong connection to their properties, the area and the families and community surrounding them. Consultation with landowners has shown the area hosts a diverse range of high to low intensity agricultural activities, as well as contracting and other businesses. It is acknowledged that either alignment will impact landowners and their operations however the eastern corridor extends over a longer length and will impact a greater number of property owners. In meeting with landowners and sharing information, it has been discussed that the intention is to avoid properties where possible, or minimise and mitigate impacts. It has also been confirmed that the road needs to go somewhere and as a result a project of this scale will impact land.

Consultation with potentially impacted landholders has provided a significant level of engagement and input into this work prior to an alignment selection decision being made. Generally landholders are understanding of the planning assessment however those impacted by either of the two corridors under consideration have highlighted their strong desire not to be impacted. There is a level of frustration within the landholder community given the number of amendments to the alignment of BORR North over the preceding years and decades. Additional detail was also regularly requested, however in order to engage early, consultation was undertaken on a corridor only with general commentary around intersection locations. It was confirmed with landholders that consultation with additional detail would likely result in them missing the opportunity to provide input prior to an alignment selection decision being made. Given the potential impacts to them, this is seen as not appropriate.

Selection of either option will require careful and sensitive ongoing engagement with impacted landholders in order to avoid, minimise or manage a range of potential impacts to their land, businesses and way of life. The majority of significant impacts raised by landholders are typical of projects of this scale, however undertaking consultation is critical in order for Main Roads to understand each individual's situation, needs and wishes. It is acknowledged that landholders will be the most impacted group from such a large scale infrastructure project and as a result ongoing sensitivity and understanding is required to ensure impacts are understood, minimised wherever possible and if not avoidable all options and other ways of satisfying landholders are explored and considered in an honest and timely manner.

8.1.6. Meadow Landing

In February 2018 residents of Meadow Landing were provided letters and a copy of the landholder consultation plan in order to provide the opportunity for input into the planning process prior to an alignment selection decision being made. This largely established rural/residential community is located north of the Collie River and east of the existing Forrest Hwy. The Eastern BORR North option would be positioned east of the community. Whilst this community is not intersected by the eastern option, it is shown adjacent and in close proximity to this community on

the consultation plan and therefore it was felt targeted consultation should be extended to this community prior to an alignment selection decision being made. Mailing addresses for this community were not available from the Shire of Harvey and as a result feedback was received that the initial mailout only reached part of the community leading to frustration and damage to Main Roads reputation. As a result hand delivery to every property was arranged with a follow up letter.

Concerns and opposition was raised by a significant number of residents of Meadow Landing about the consultation process, noise impacts, amenity, property value and lifestyle impacts of an eastern corridor and a potential interchange at Raymond Road. Feedback was received that the community had undertaken due diligence with landowners buying into the area based on an understanding that the current BORR alignment (green alignment) was the preferred option and not anticipated to change. Consultation created frustration which was acknowledged via further communication activities with the community and an extension of the consultation period (including opportunity for submissions).

Feedback included a request that should an eastern corridor be considered, a refinement of the corridor further east be considered in order to minimise impacts to the existing community. As a result of feedback from potentially impacted landholders, the Shire of Harvey and Meadow Landing as well as a number of other important considerations and potential benefits the Eastern BORR North corridor was extended as far as practicable as detailed in yellow on the plan below in Figure 22. Further expansion of the investigation corridor (further east of that shown below) was not considered acceptable given more significant refinements east away from Meadow Landing are likely to be at the expense of transport planning and project objectives and effectively transfer impacts onto other landholder groups which is seen as unreasonable. Section 5.5.1 (part 5) provides further detail regarding consideration of corridor refinements further east.

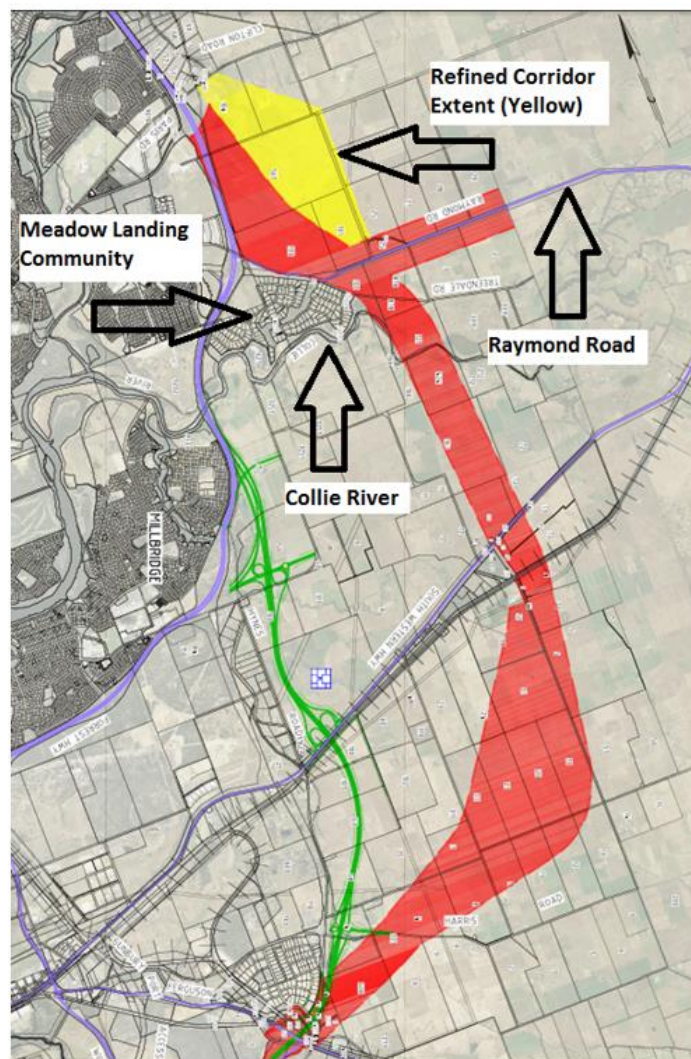


Figure 22 - BORR North – Options Consultation Plan

Green - Current BORR North Corridor

Red - Alternative Eastern Corridor
Yellow - Refined Corridor (considered subsequent to targeted consultation)

As a result of this feedback, Main Roads has engaged with additional landholders north of Raymond Road extending the corridor width further east in this area to accommodate a potential refinement of the corridor. Desktop assessments have confirmed that a number of feasible options are possible to address the issues raised (avoid or minimise impacts) which will form part of further detailed planning assessments. Other potential benefits of this refinement represented by the yellow area in figure 22 include;

- Greater separation of the BORR/Raymond Road intersection from the Forrest Hwy;
- Improved opportunities for provision of safe and effective access into Meadow Landing;
- Potential avoidance of a Heritage site north of Raymond Road;
- Coordination with future (long term) land use identified as an “Investigation Area” in the Greater Bunbury Strategy (which will be the subject of further land use planning assessments by the Local Governments and relevant agencies); and
- This refinement could be possible whilst avoiding significant additional impacts to other adjacent landholders and does not erode the overall objectives of the BORR proposal.

Refinement of a “corridor for investigation” should not influence the Alignment Selection process currently under consideration and as a result a full assessment of the options to mitigate these impacts will be undertaken as part of further detailed planning work (subject to Alignment Selection).

In summary, engagement with the Meadow Landing community included an initial letter drop of approximately 80 properties being undertaken in early February 2018 followed by a wider letter drop of over 160 letters to residents around early March 2018. This resulted in 36 written responses and included:

- A number of meetings with individuals and a large group of residents.
- 28 residents expressing opposition to the eastern alignment due to:
 - Impact on amenity
 - Impact on environment (including river crossing)
 - Questioning around efficacy of the Wanju residential and Waterloo Industrial developments
- 6 residents supporting the eastern alignment due to:
 - Provides an effective forward thinking solution for future planning
 - Opportunity to reduce current traffic impacts on Raymond Road.
- 2 residents not stating support or opposition - providing general feedback

Further consultation with this and the broader community is proposed as part of further detailed planning assessments including through the establishment of Community Reference Groups (CRG) including a selection of community members willing to represent their broader communities interests.

8.1.7. Traditional Owners (Aboriginal Heritage)

Engagement with the Traditional Owner group covering the BORR proposal was sought by Main Roads in November 2017 seeking nomination of representatives through the South West Aboriginal Land and Sea Council (SWALSC). SWALSC provided details of appropriate local representatives from the Gnaala Karla Booja (GKB) Native Title group. Once these representatives were identified, initial discussion commenced with eight members of the GKB in May 2018. These discussions provided an update and broad discussion regarding the BORR North alignment and overall Bunbury Outer Ring Road proposal. The discussions largely focussed on the following:

- Main Roads describing planning work undertaken to date, the two options under consideration for BORR North (current concept and alternative eastern corridor) and further detailed planning work proposed over the coming 18-24 month period once a preferred corridor is selected;
- Potential Indigenous training, employment opportunities, recognition of the ongoing and long-term Indigenous presence in the Bunbury area, stories and naming of key features surrounding the area/proposal;
- Further engagement processes, formal assessments and possible timeframes including funding to date and potential timing of construction.

Initial response from the GKB representatives suggest those in attendance are comfortable with alignment corridor assessments undertaken to date (two options under consideration) as presented in the landholder consultation

plan (refer section 8.1.5 – Figure 21). It was acknowledged further detailed assessment of the heritage values surrounding the proposal will be undertaken with their involvement once a preferred corridor is selected. This includes further detailed consultation, discussion and site inspections as part of the formal Aboriginal heritage assessment and approvals process, and broader Indigenous community engagement. Based on initial discussions, no specific preference for option selection was offered by the GKB representatives in attendance.

8.2. Endorsements

A number of endorsements will be sought throughout the planning process. To date endorsement has been received as follows:

Wanju / Waterloo Steering Committee

In September 2017 the committee, comprising Department of Planning, Lands and Heritage, Shire of Dardanup, LandCorp, South West Development Commission and Department of Water offered their support into investigations into an Eastern BORR North corridor identifying that this alternative corridor aligns strongly with the objectives of the Wanju and Waterloo development proposals.

Western Australian Planning Commission (WAPC)

On 1 May 2018 Main Roads presented to the Western Australian Planning Commission (WAPC) detailing the alignment selection planning assessment for BORR North and identifying that a submission would be made to the Commission for consideration at the 30 May 2018 session seeking their support for the preferred alignment selection recommended. In June 2018 the WAPC confirmed their support for selection of the eastern BORR North corridor to allow further detailed planning activities to progress based on this corridor.

9. Conclusion and Recommendation

An alignment selection planning study has been undertaken by Main Roads for the BORR North section. Two options were shortlisted and assessed through a desktop process identifying that an Eastern BORR North option is preferred. The key benefits of the Eastern BORR North option includes:

- Provision of an integrated planning solution and defines an outer perimeter rather than dividing the urban footprint of Greater Bunbury;
- Separates regional/freight traffic from local traffic;
- Separation of local and regional traffic improves road safety, efficiency and provides a more effective bypass and improved Port access;
- Can cater for population growth for Greater Bunbury in excess of 200,000. Traffic demand can be accommodated with four lanes for the entire extent of BORR;
- Provides Wanju improved connectivity to Greater Bunbury through additional access points to Forrest Hwy (strong east-west movements are suggested in the traffic model);
- Ties in further north of the existing green alternatives considered bypassing an additional major intersection on Forrest Highway, improving safety and efficiency;
- Strongly aligns with State, Federal and Infrastructure Australia frameworks, drivers and objectives;
- Is a cost effective solution consistent with broader overall ultimate South West Freeway strategy between Perth and the South West Region
- Does not preclude future rail options, including a future fast rail station within Wanju, a station in Bunbury's CBD and a number of other possible rail scenarios yet to be identified/planned.

Consultation with key stakeholders and Government Agencies confirmed broad stakeholder support for the Eastern BORR North option with several considerations and objections raised considered manageable through further detailed planning assessments.

Targeted consultation with potentially impacted landholders has identified a significant number of constraints and considerations requiring further ongoing and detailed engagement. It is acknowledged that landholders will be the most impacted group from such a large scale infrastructure project and as a result ongoing sensitivity and understanding is required to ensure impacts are understood and minimised wherever possible. If not avoidable then options and other ways of satisfying landholders are to be explored and considered in an honest and timely manner.

Further to the Western Australian Planning Commission (WAPC) decision of support in May 2018, it is recommended that the Eastern BORR North option be adopted as the preferred route in order to undertake further detailed planning activities based on this corridor. As a result the previous concept for BORR North bisecting the future urban footprint of Greater Bunbury is no longer under consideration.

9.1. Further Refinements

Further refinements required during detailed planning assessments includes:

- Ongoing and detailed consultation with landholders regarding potential impacts to property, homes and businesses, exploring options available to avoid, minimise and manage impacts and ensure that circumstances are understood and open regular communication is maintained to help alleviate uncertainty as far as practicable;
- Continued refinements of the BORR in collaboration with the DPLH and Local Governments as they progress the Draft District Structure Plans for the Wanju urban and Waterloo industrial developments;
- Refinement of the BORR corridor north of the Collie River to investigate options that minimise future potential and current land use impacts, which are not at the expense of other adjacent landholders whilst maintaining delivery of the BORR objectives;
- Detailed planning assessments and traffic modelling for interchange locations, options, layout and associated

local road access and connections;

- Assessment and engagement with key stakeholders regarding broader implications of the BORR on the Greater Bunbury road network;
- Investigation of options to promote stakeholder engagement in order to recognise opportunities and risks of a bypass and preparing and implementing a timely action plan to manage/maximise these aspects;
- Undertake detailed planning “Alignment Definition” to allow project development activities to follow in a timely manner.
- Consultation regarding potential future rail planning, options and requirements; and
- Wider and ongoing community consultation for the BORR planning and project development.

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Bunbury Outer Ring Road Northern Section – Alignment Selection Report (Main Roads 2018) – Part 2 (part 2 of 2)

11. Appendices

11.1. Appendix 1 – Multi-Criteria Analysis

	Current BORR North Alignment	Eastern BORR North Alternative Alignment
Environmental		
Rare flora and native vegetation	Expected to impact approx. 33.3ha native vegetation. No rare flora sites within 100m. Majority of alignment rural farmland, vegetation present adjacent to tie in points, road reserves and river	Expected to impact approx. 15.2ha native vegetation. No rare flora sites within 100m. Majority of alignment rural farmland, vegetation present adjacent to tie in points, road reserves and river
	1	1
Rare fauna, fauna habitat and TECs	3 rare fauna sites within 100m ID 24166 (Western Ringtail Possum). Fauna habitat likely to occur. Potential to impact 31 Priority 3 (State) / Endangered (Commonwealth) Ecological Communities (Banksia Woodland) near Hynes Rd and along Forrest Hwy. Potential to impact 1 Critically Endangered (State) / Endangered (Commonwealth) Ecological Community (Eucalyptus woodlands and shrublands) near SWH.	3 rare fauna sites within 100m ID 24734 & 34045 (Carnaby's Cockatoo and South Western Brush-tailed Possum). Fauna habitat likely to occur. Potential to impact 17 Priority 3 (State) / Endangered (Commonwealth) Ecological Communities (Banksia Woodland) between Forrest Hwy and Raymond Rd. Potential to impact 2 Vulnerable (State) / Critically Endangered (Commonwealth) Ecological Community (Shrubland in Clay) near SWH.
	1	1
Waterways and wetlands	Two major waterway crossings at Collie River and Ferguson River. Potential to retain existing bridge at Collie River (11m kerb to kerb width). Expected to impact approx. 248.8ha of wetlands or 89% of reservation, 1ha Conservation Category Wetlands (UFI 1534, 14323), 247.8ha Multiple Use Wetlands (UFI 14329, 15223, 1550, 1751, 1389, 1406).	Two major waterway crossings at Collie River and Ferguson River. New river crossing required at Collie River, bridge approx. 130m long. Expected to impact approx. 250.4ha of wetlands or 92% of reservation, 250ha Multiple Use Wetlands (UFI 1710, 1711, 1756, 14329, 15223, 1720, 1721, 1719, 1752, 1736, 1389), 0.4ha Not Assessed Wetland (UFI 1729).
	1	2

Social		
Land acquisition and severance	Total footprint estimated at 281ha Approx. 193.7ha impacted across 94 properties. Approx. 24.1ha state owned across 28 properties. Land impact known since 2012. Similar severance.	Total footprint estimated at 273ha. Approx. 229.7ha impacted across 84 properties. Land cost estimated to be approx 40% higher than current alignment. Approx. 7.9ha state owned across 20 properties. New alignment therefore land impacted previously not known. Similar severance.
	1	2
Heritage	Potential impact on approx. 81.3ha and 7 Aboriginal Heritage Sites, 2 of which are mythological associated with Collie River and Ferguson River. The 7 Aboriginal Sites include 16713 (Collie River Waugal), 19796 (Ferguson River), 4865, 5168, 18885, 18886 and 18889. There are no Heritage WA sites expected to be impacted. There is 1 Australian Heritage site expected to be impacted, 17887 Lower Brunswick, Collie and	Potential impact on approx. 19.1ha and 5 Aboriginal Heritage Sites, 2 of which are mythological associated with Collie River and Ferguson River. The 5 Aboriginal Sites include 16713 (Collie River Waugal), 19796 (Ferguson River), 5168, 18885 and 18886. There are no Heritage WA sites expected to be impacted. There is 1 Australian Heritage site expected to be impacted, 9509 South West Irrigation Area.
	2	1
Noise and visual amenity	Similar overall noise and visual amenity impacts, location of impact different. Impact for sensitive land use west of Forrest Hwy. Sensitive land use east of Forrest Hwy is Meadow Landings. Impact to western side of Meadow Landings greatest, less than 100m away. Remaining surrounding land use is rural in GBRS.	Similar overall noise and visual amenity impacts. Lower impact for sensitive land use west of Forrest Hwy. Sensitive land use east of Forrest Hwy is Meadow Landings. Impact to eastern side of Meadow Landings greatest approximately 200-700m away. Remaining surrounding land use is rural in GBRS.
	2	1

Economic		
Whole of life costs	<p>Greater infrastructure requirements on BORR and Forrest Hwy therefore higher whole of life costs. Requirement for 6 lanes on BORR and Forrest Hwy. Greater number of interchanges on BORR and Forrest Hwy. 4 interchanges required between Boyanup Picton Rd and Clifton Rd at Harris Rd, SWH, Hynes Rd, Raymond Rd</p>	<p>Lower infrastructure requirements on BORR and Forrest Hwy therefore lower whole of life costs. Forrest Hwy 6 lanes ultimately, BORR 4 lanes ultimately. Opportunity for 2 access points to Wanju from Forrest Hwy. Lower number of interchanges on BORR and Forrest Hwy. 2 interchanges required between Boyanup Picton Rd and Clifton Rd, at Harris Rd and Raymond Rd.</p>
	3	1
Faciliates development	<p>Lower facilitation of development by alignment segregating Wanju and Waterloo from greater Bunbury area. Good access and permeability provided to/from Wanju to greater Bunbury area via direct access to BORR at Hynes Rd modelling suggesting 6 lane access to Wanju).</p>	<p>Higher facilitation of development by alignment forming outer boundary to Wanju, Waterloo and greater Bunbury development. Good access and permeability to/from Wanju to greater Bunbury area via SWH and Forrest Hwy, but no access provided to BORR. Impacts Treendale East "Investigation Area" in Greater Bunbury Strategy, extent of impact unknown pending further detailed work.</p>
	2	1
Utilities	<p>Similar impact on Utilities. Alignment crosses 4 x 132kV powerlines and 1 x 66kV poweline. Alignment crosses 6 x high pressure gas pipelines.</p>	<p>Similar impact on Utilities. Alignment crosses 5 x 132kV powerlines and 1 x 66kV poweline. Alignment crosses 5 x high pressure gas pipelines.</p>
	1	1

Engineering		
Road network performance	Length 12.5km Boyanup Picton Rd to Clifton Rd. Less efficient due to 4 interchanges between Boyanup Picton Rd and Clifton Rd. Increase in demand on SWH as a result of connectivity.	Longer length by 2km, 14.3km Boyanup Picton Rd to Clifton Rd. More efficient due to only 2 interchanges between Boyanup Picton Rd and Clifton Rd. Reduces demand on SWH.
	2	1
Road safety	Provides relief on local/internal road network. Does not byass entire congested and high crash density section of Forrest Hwy. Does not separate local and regional traffic on Forrest Hwy and BORR. Greater number of interchanges provides lower safety benefits. Raymond Rd west of Treendale Rd remains important frieght route.	Provides relief on local/internal road network. Provides bypass of congested and high crash density section of Forrest Hwy. Separates local traffic on Forrest Hwy from regional traffic on BORR by moving tie in to north of Raymond Rd. Lower number of interchanges provides greater safety benefits. Raymond Rd west of Treendale Rd no longer plays important freight route, freight traffic diverted to BORR.
	2	0
Rail	Flexibility to facilitate future rail if required	Flexibility to facilitate future rail if required
	1	1

Total Scores	Current BORR North Alignment	Eastern BORR North Alternative Alignment
Environmental	3	4
Social	5	4
Economic	6	3
Engineering	5	2
Total Scores	19	13

Colour Code/Outcome	Impact	Scoring
Poor Outcome	Major impact, major constraint, very difficult to mitigate	3
Fair Outcome	Significant impact, potential to be significant constraint, difficult to mitigate	2
Good Outcome	Less significant impact, potential constraint but less significant, reasonable mitigation measures available	1
Very Good outcome	Minor or no impact / constraint	0

11.2. Appendix 2 – Wanju Draft District Structure Plan

Wanju Draft District Structure Plan (Department of Planning, Lands and Heritage, 2016)

Background

The proposed new community of Wanju will be the most significant greenfield development in Greater Bunbury over the next 40 years. It will be designed as an innovative 'step-change' in the type and form of development traditionally built in the area. At its core will be an urban, mixed-use and relatively high-density environment. It is envisioned that pedestrians, cyclists and public transport will be prominent on the streets and car trips will be far fewer than in most car-based suburban development, and linear open spaces will connect the Collie River and Millars Creek foreshores, district playing fields and other areas of open space.

The site conditions, with a clay sub-soil resulting in a high perched water table, which will require further investigation into suitable building construction techniques to be employed. The extent of this structure plan is shown in Figure 23 below. Public comment on this structure plan closed on July 13, 2016.

Key Outcome

A development of the size and scale proposed for Wanju will take a number of decades to complete. To divide the District Structure Plan (DSP) area into more manageable parts this DSP identifies eight precincts. For development to take place each precinct will require the preparation of a local structure plan which, once completed, will need to be endorsed by the Western Australian Planning Commission (WAPC). The town and local activity centres will require separate Activity Centre Plans endorsed by the WAPC.

The precincts developed first will be required to ensure that strategic infrastructure can be provided in an integrated way across the whole of the development area and that the implications for infrastructure provision in other parts of the DSP area are resolved and implemented to the satisfaction of the WAPC before development commences.

The staging for the development will be dealt with in a Staging Plan that will be produced by the Department of Planning, Lands and Heritage prior to the finalisation of the DSP. It will be informed by the outcomes from the Servicing Needs Assessment and will help inform the final DSP.

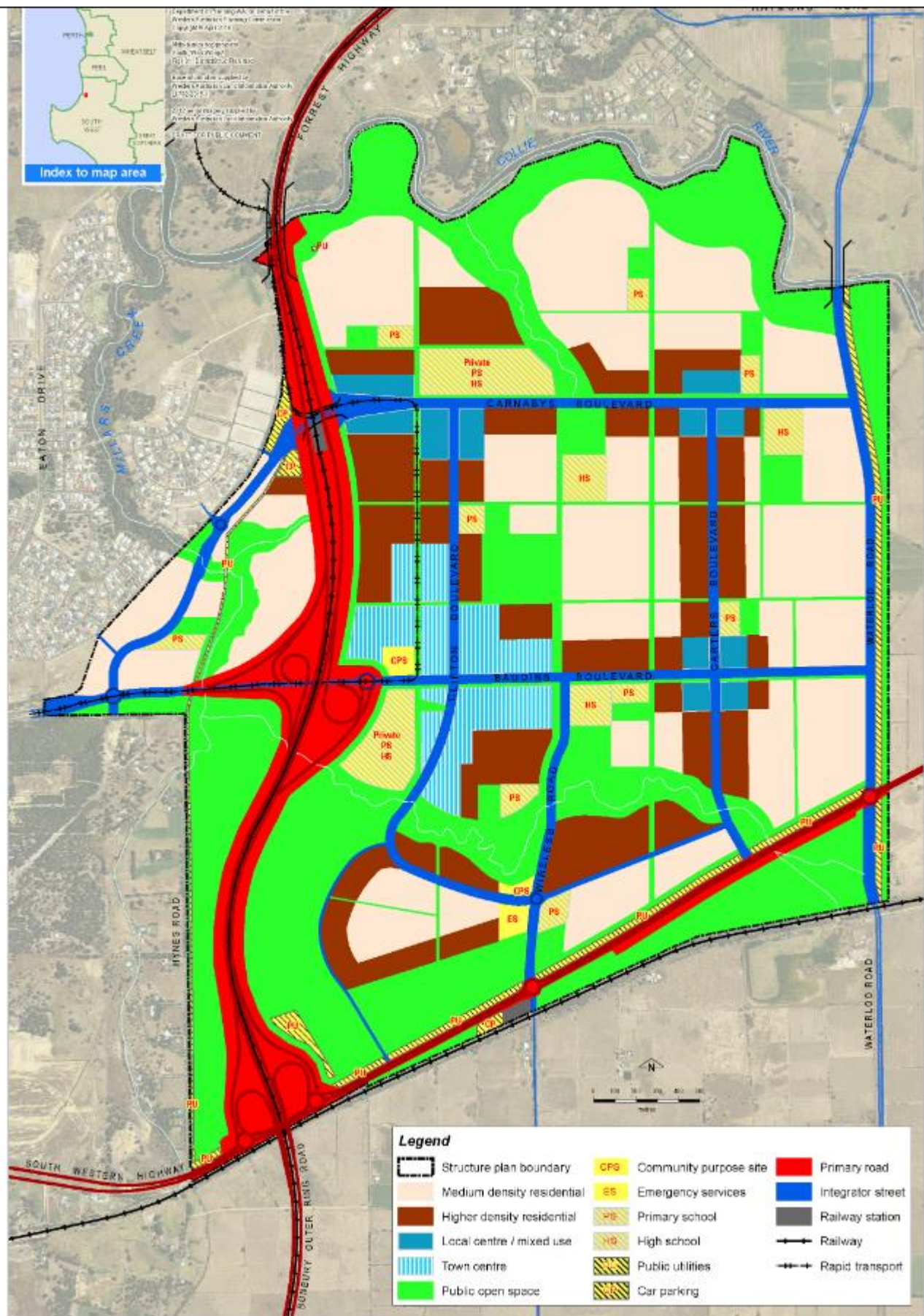


Figure 23 – Draft Wanju District Structure Plan

11.3. Appendix 3 – Waterloo Draft District Structure Plan

Draft Waterloo Industrial Park District Structure Plan (Department of Planning, Lands and Heritage, 2017)

Background

The proposed Waterloo Industrial Park represents a significant medium to long-term economic development opportunity for Greater Bunbury. It is well situated within close proximity and with good road and rail linkages to the Port of Bunbury, and will have excellent access to the proposed Bunbury Outer Ring Road, which will ultimately provide freeway standard road linkages around Greater Bunbury as well as to Perth, Fremantle Port and ultimately a potential Out Harbour at Kwinana. The proposed BORR will offer highway links to the existing Forrest Highway and access to Perth and Peel to the north, and to the rest of the South West Region to the south and the Wheatbelt and Collie to the East. Proposed improvements to the South Western Highway in the vicinity of the draft district structure plan (DSP) area will also help provide good vehicle access to Waterloo from the north-east. The existing Perth-Bunbury and the disused Manjimup-Bunbury railway lines are positioned immediately to the north and south-west of the DSP area, respectively. The existing railway provides the opportunity for multi-modal terminal facilities to be developed at Waterloo, potentially linking in with the Port of Bunbury, which is situated between 10 and 14 kilometres to the north-west of the area. The site conditions, with a clay sub-soil resulting in a high perched water table, provide the opportunity for innovative and sustainable building construction techniques to be employed and the provision of sustainable energy and water management measures to provide for a resilient future. The Waterloo Industrial Park will, in many ways, be inextricably linked to the proposed new community of Wanju, which is to be located immediately to the north of Waterloo. Without the economic development and new jobs arising from the development of Waterloo the urban expansion proposed for Wanju will be developed at a significantly slower rate than might otherwise be the case. Public comment on this structure plan closed on July 18, 2017.

Key Outcome

Development of the size and scale proposed for Waterloo Industrial Park is likely to take a number of decades to be fully completed. Consequently, it is necessary to have a sufficiently adaptable planning framework that enables the development of a suitable range of industrial land uses while achieving an attractive and unified industrial area. For development to take place within a particular precinct a local structure plan will be required to be prepared for that area and, once completed, approved by the WAPC. The local structure plans will set down specific design guidelines for the individual precincts, as opposed to the DSP stage. The planning principles for each precinct will be used to guide the preparation of local structure plans, and any associated planning objectives and design guidelines. Which areas are developed first will be a decision for the WAPC and market driven forces. However, those initial development areas will need to ensure that the infrastructure implications for other parts of the DSP area are resolved and implemented before development commences. The extent of this structure plan is shown in Figure 24 below.

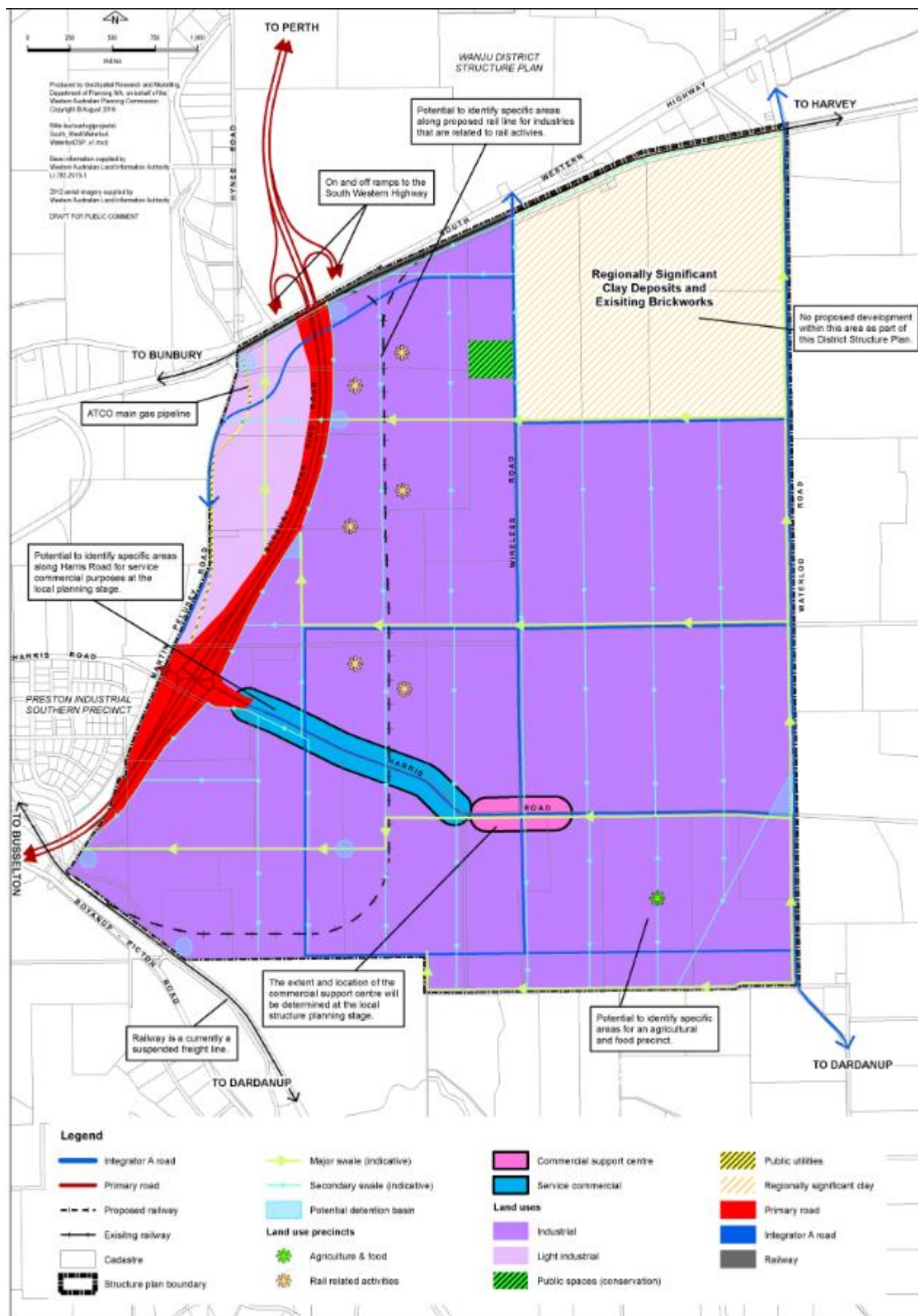
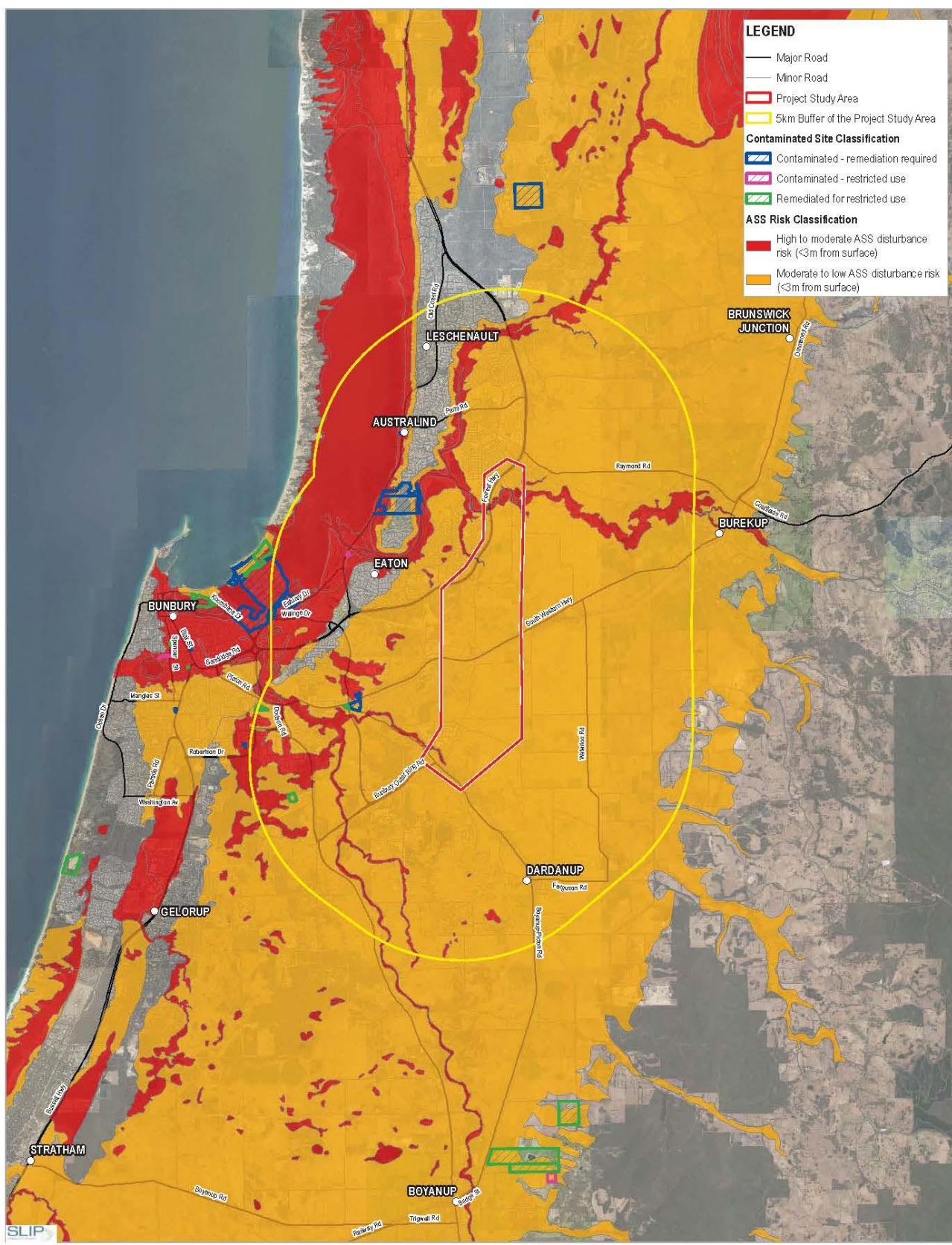


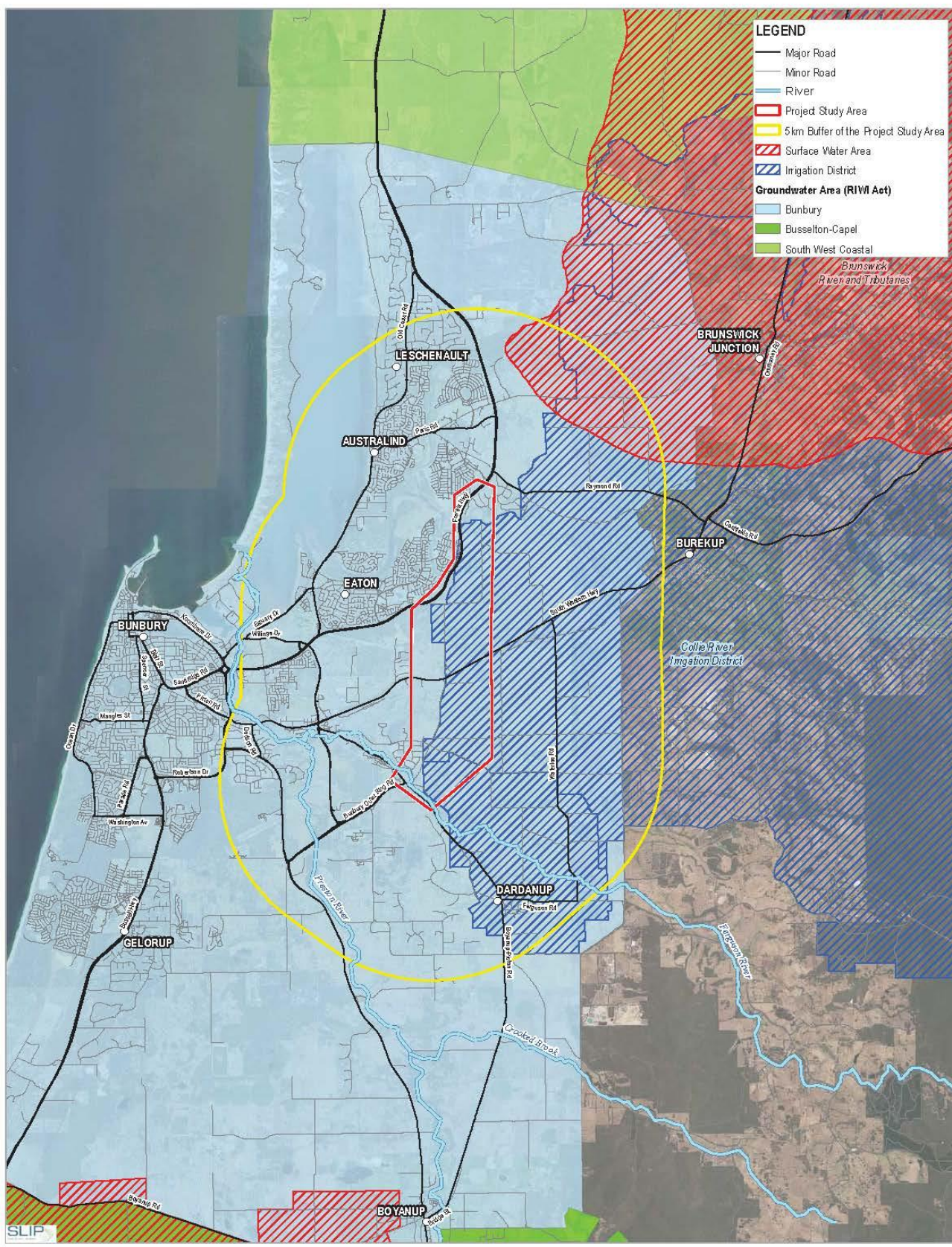
Figure 24 – Draft Waterloo District Structure Plan

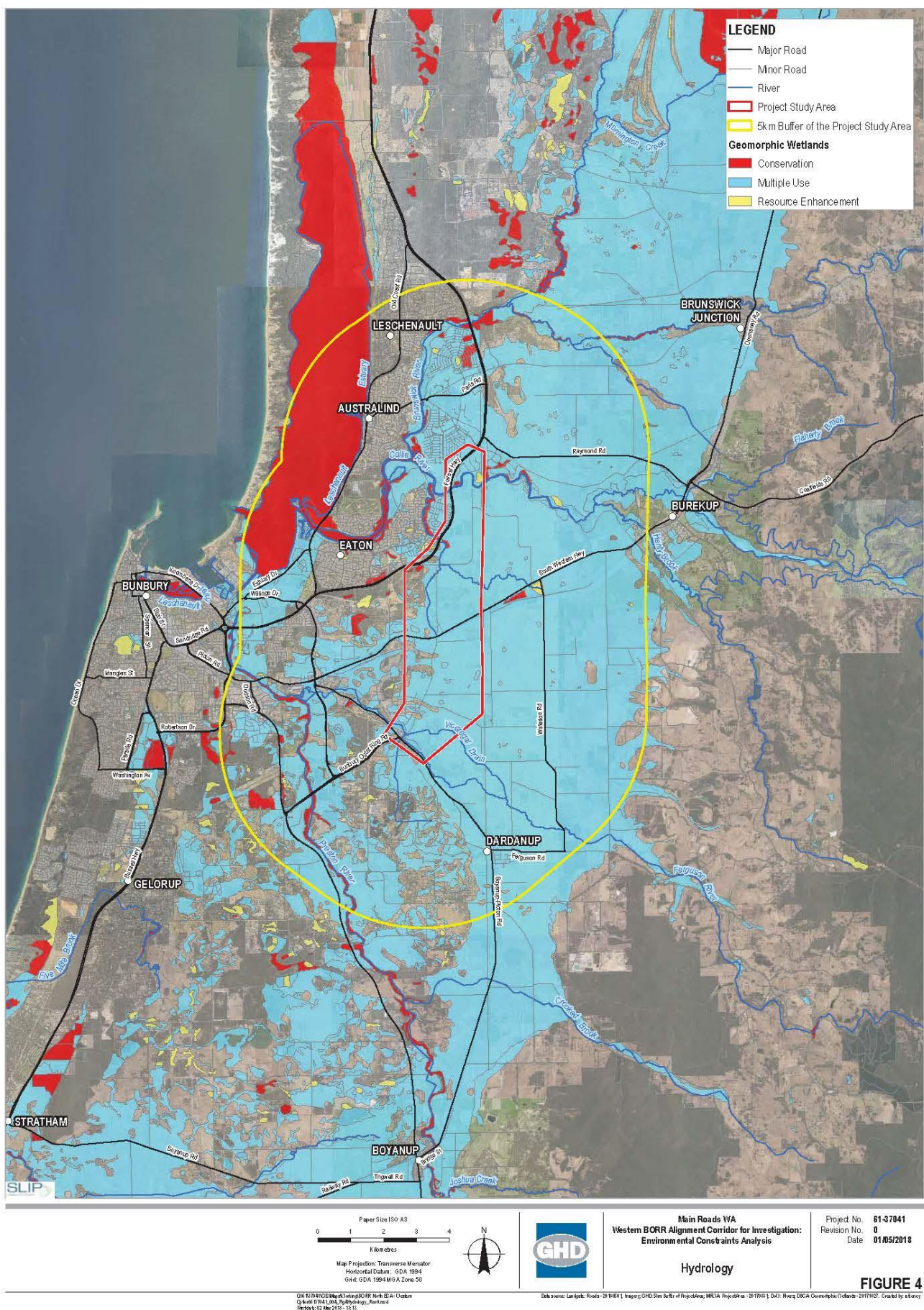
11.4. Appendix 4 – Bunbury Outer Ring Road, Northern Section – Western Alignment, Constraints Plans



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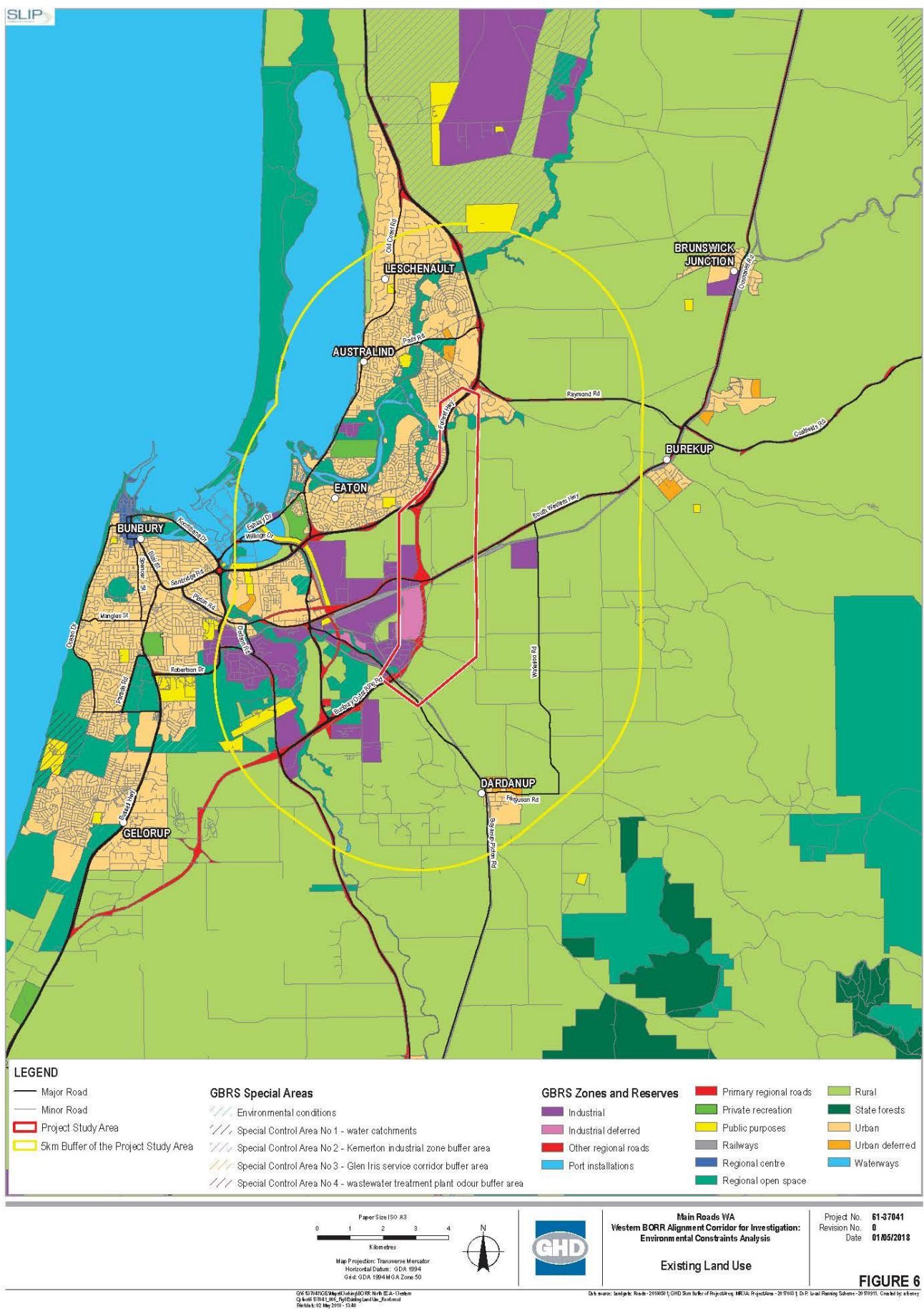


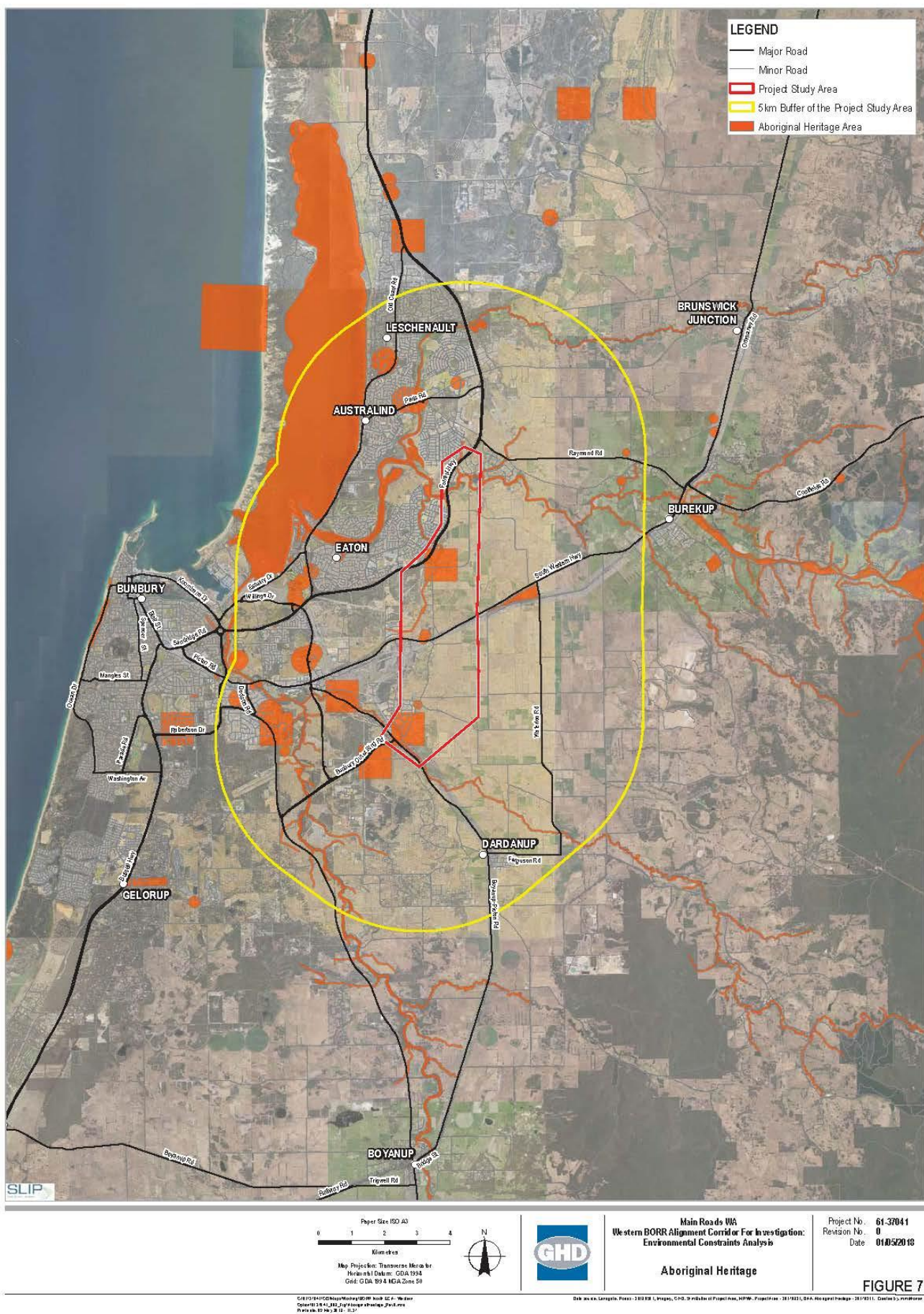


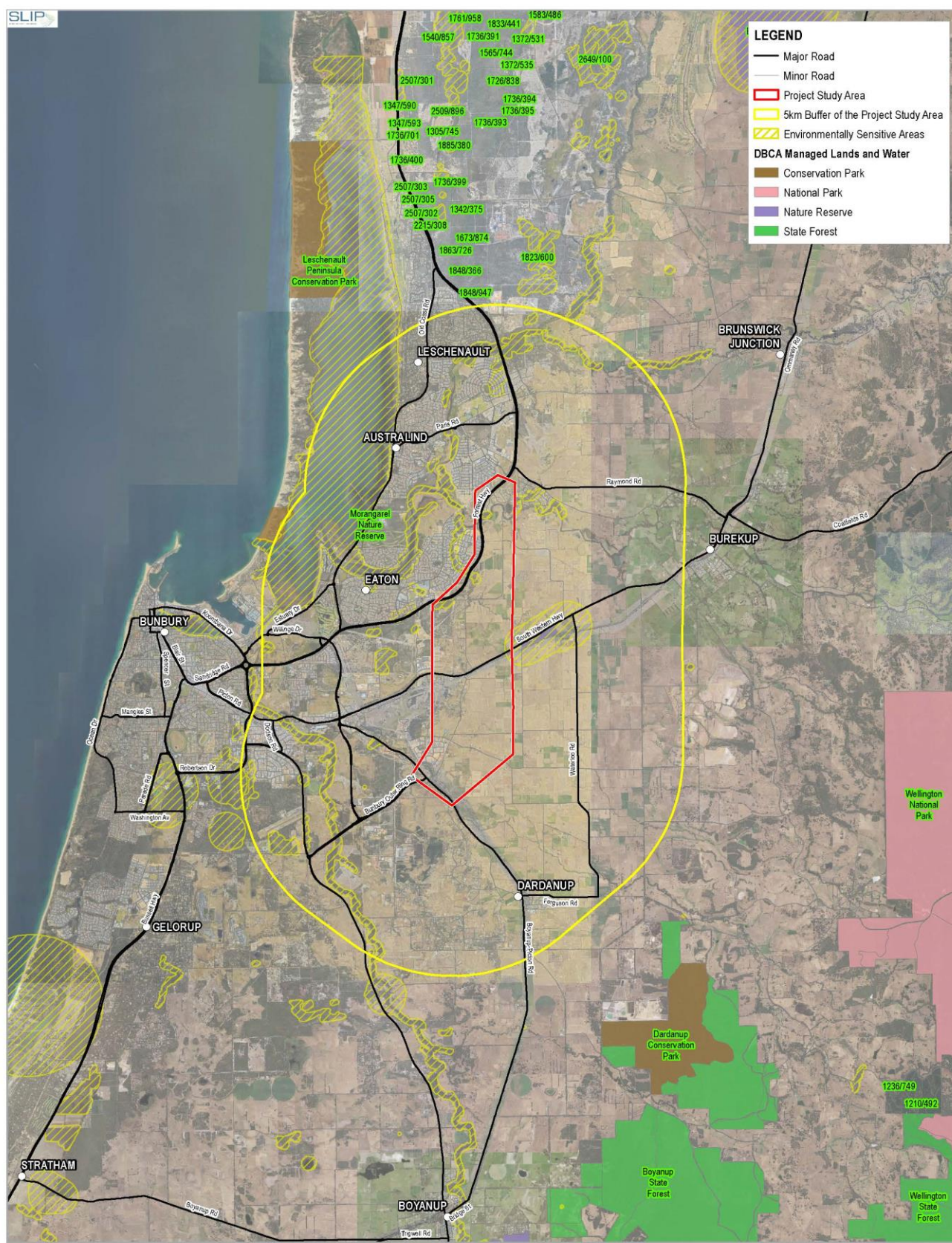




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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50



Main Roads WA
Western BORA Alignment Corridor for Investigation:
Environmental Constraints Analysis

Conservation Areas and
Environmentally Sensitive Areas

Project No. 61-37041
Revision No. 0
Date 01/05/2018

FIGURE 8

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Print date: 01 May 2018 - 11:28

Data source: Landgate, Roads - 2018/05/01, GHD, San Buffer of Project Area, MPAWA, Project Area - 2017/05/01, DBCA, Environmentally Sensitive Area - 2017/05/01, DBCA, Managed Lands and Water - 2017/05/01
Created by: emmabrown

11.5. Appendix 5 - Bunbury Outer Ring Road, Northern Section – Eastern Alignment, Constraints Plans



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Main Roads WA
Eastern BORR Alignment Corridor for Investigation:
Environmental Constraints Analysis

Project Study Area

Project No: **61-37041**
Revision No: **0**
Date: **01/05/2018**

FIGURE 1

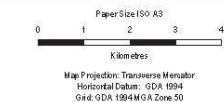
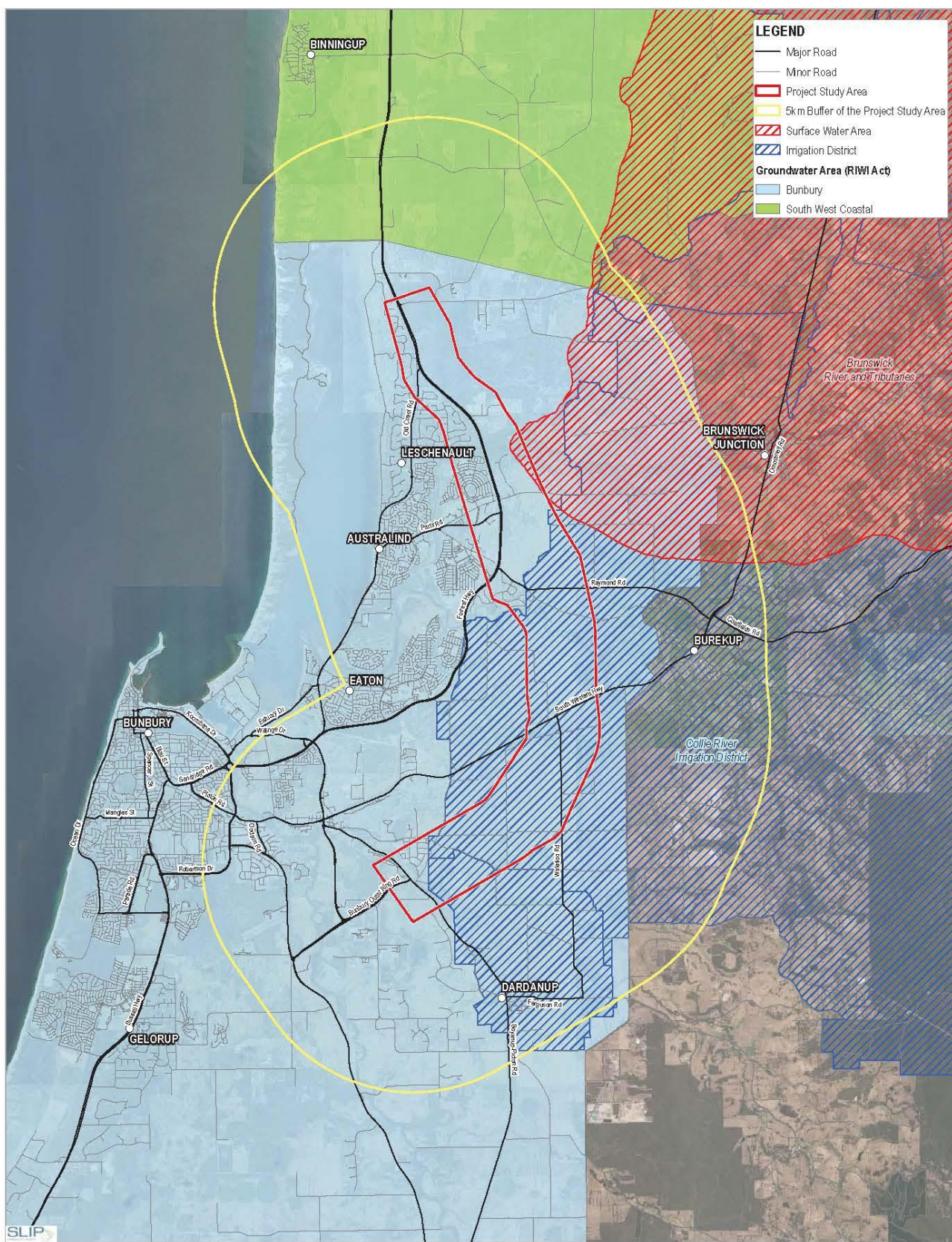



FIGURE 2



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Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 50



**Main Roads WA
Eastern BORR Alignment Corridor for Investigation:
Environmental Constraints Analysis**

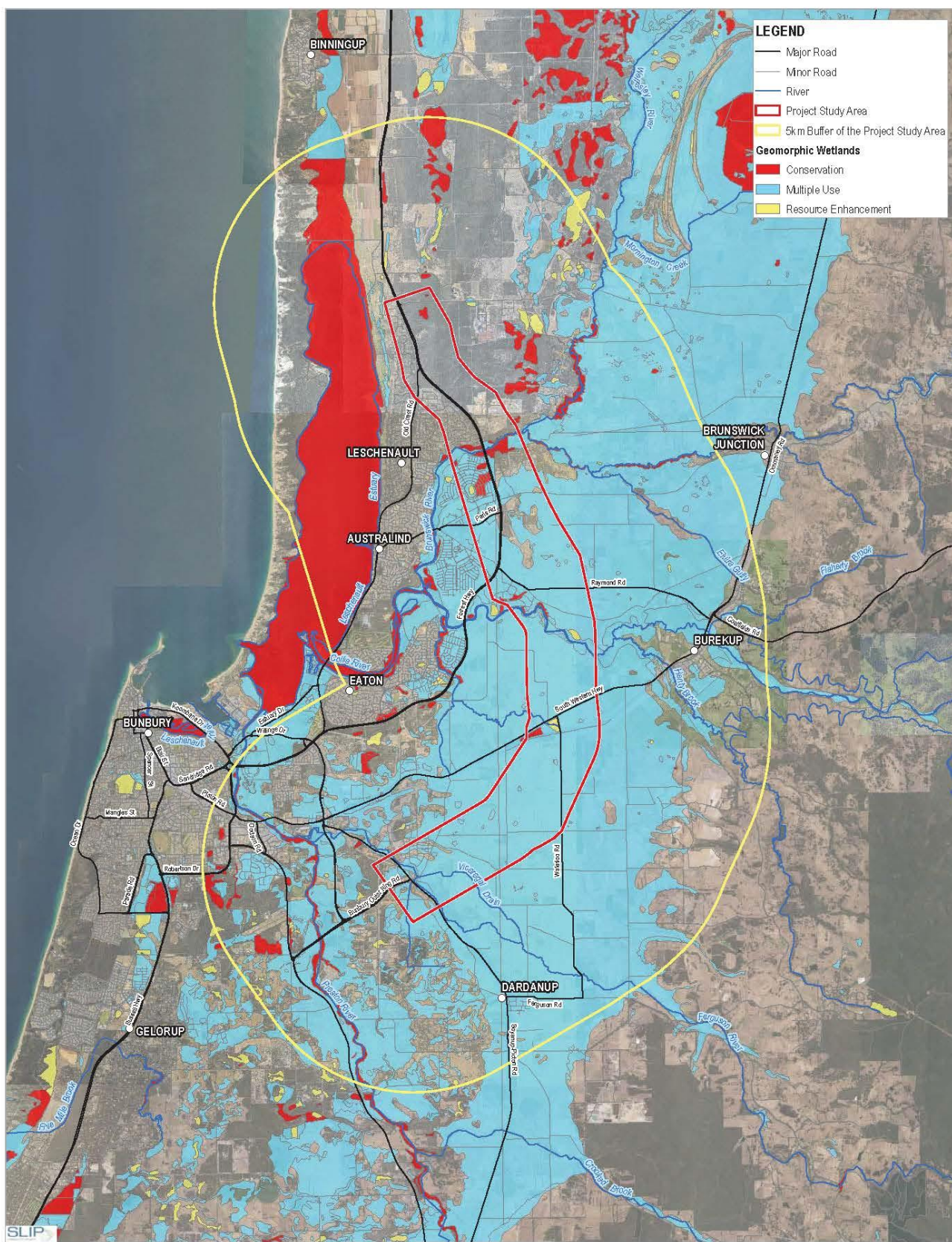
**Rights in Water and Irrigation Act 1914
and Public Drinking Water Supply Areas**

Project No. 61-37041
Revision No. 0
Date 01/05/2018

FIGURE 3

G6 107047GE94p20Joking80 FR: North EDA - Eastern
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Data source: Landsat-8; Roads - 20100501; Imagery: GNR_Sim_Buffer_of_Project_Area; MREAC_Project_Area - 20170631; DCEPC Contaminated Sites Database - 20160110; DCE: R311ActSurface_Under_and
 Impacts Database; R311ActGroundwater_Areas; Created by: Agency



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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50



Main Roads Y&A
Eastern BORR Alignment Corridor for Investigation:
Environmental Constraints Analysis

Hydrology

Project No: 61-37041
Revision No: 0
Date: 01/05/2018

FIGURE 4

GIS: STRATACON/Map of Leschenault BORR North E&A - Eastern
Q: Asset 37041, Leschenault, Hydrology, Final
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Data source: Landgate: Roads - 2016/01; Imagery: GHD: 5km Buffer of Project Study Area; Hydrology: 2017/01; D&I: Worrg. ORCA Geomorphology Database - 2017/02; Created by: e&e

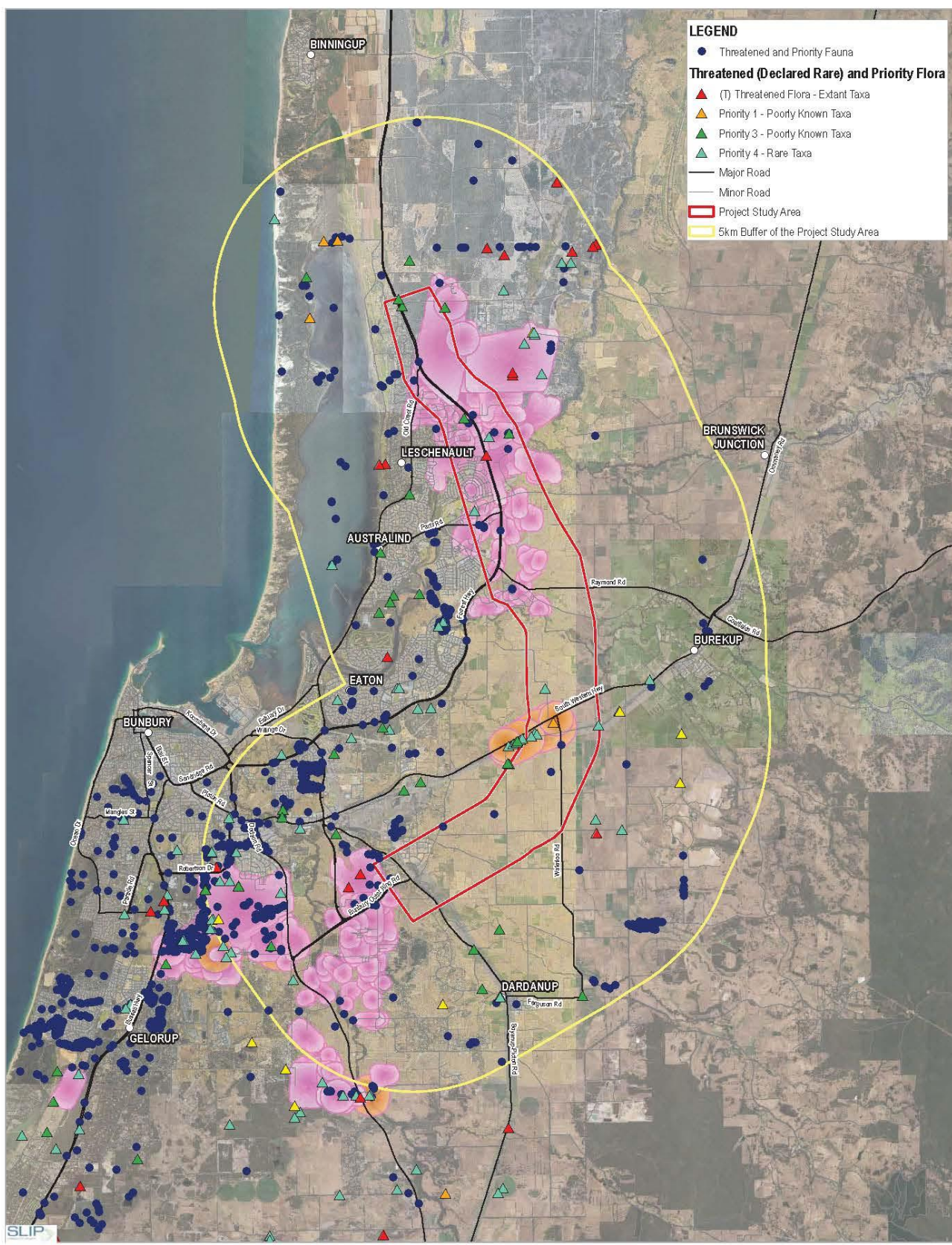


FIGURE 5

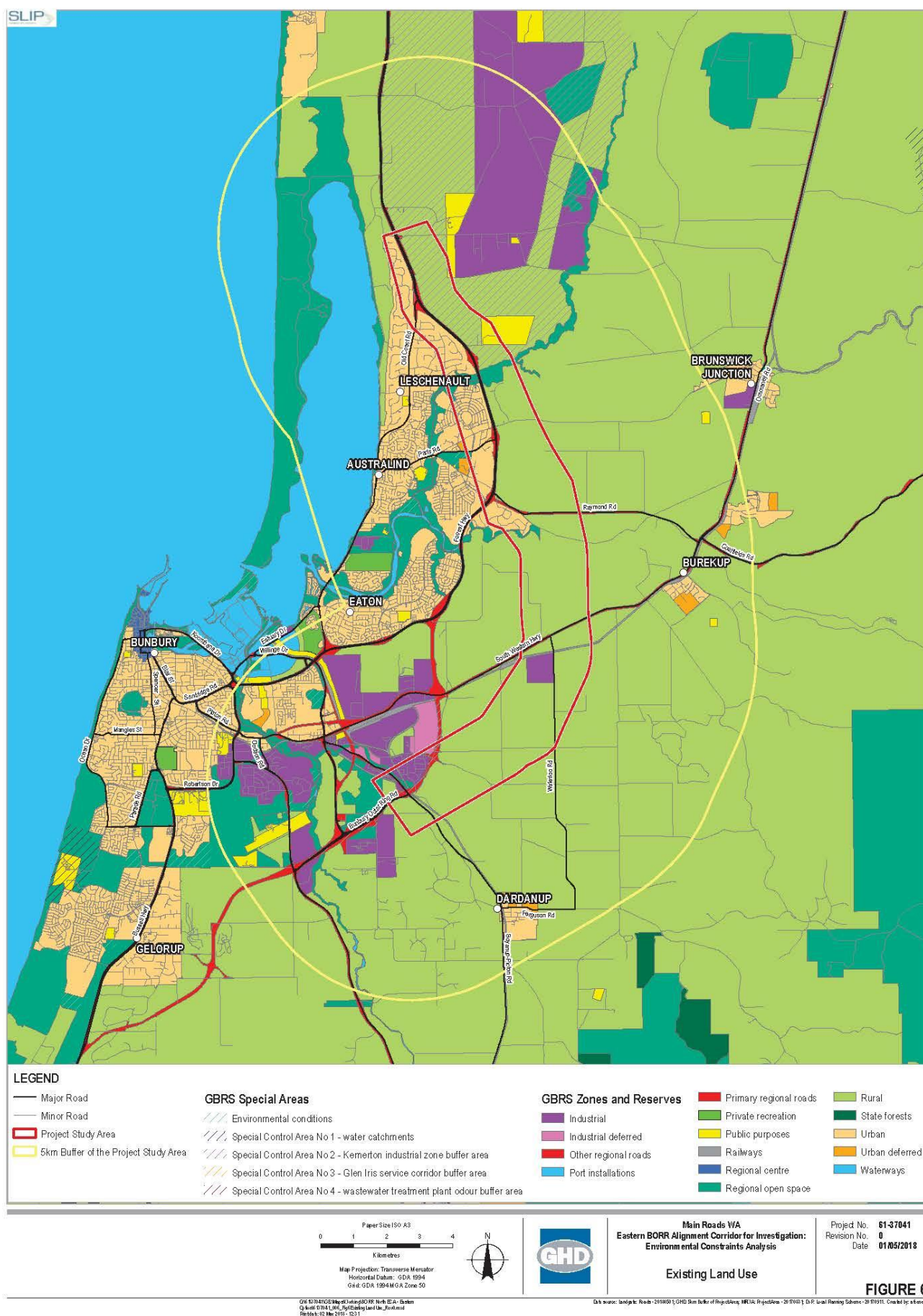
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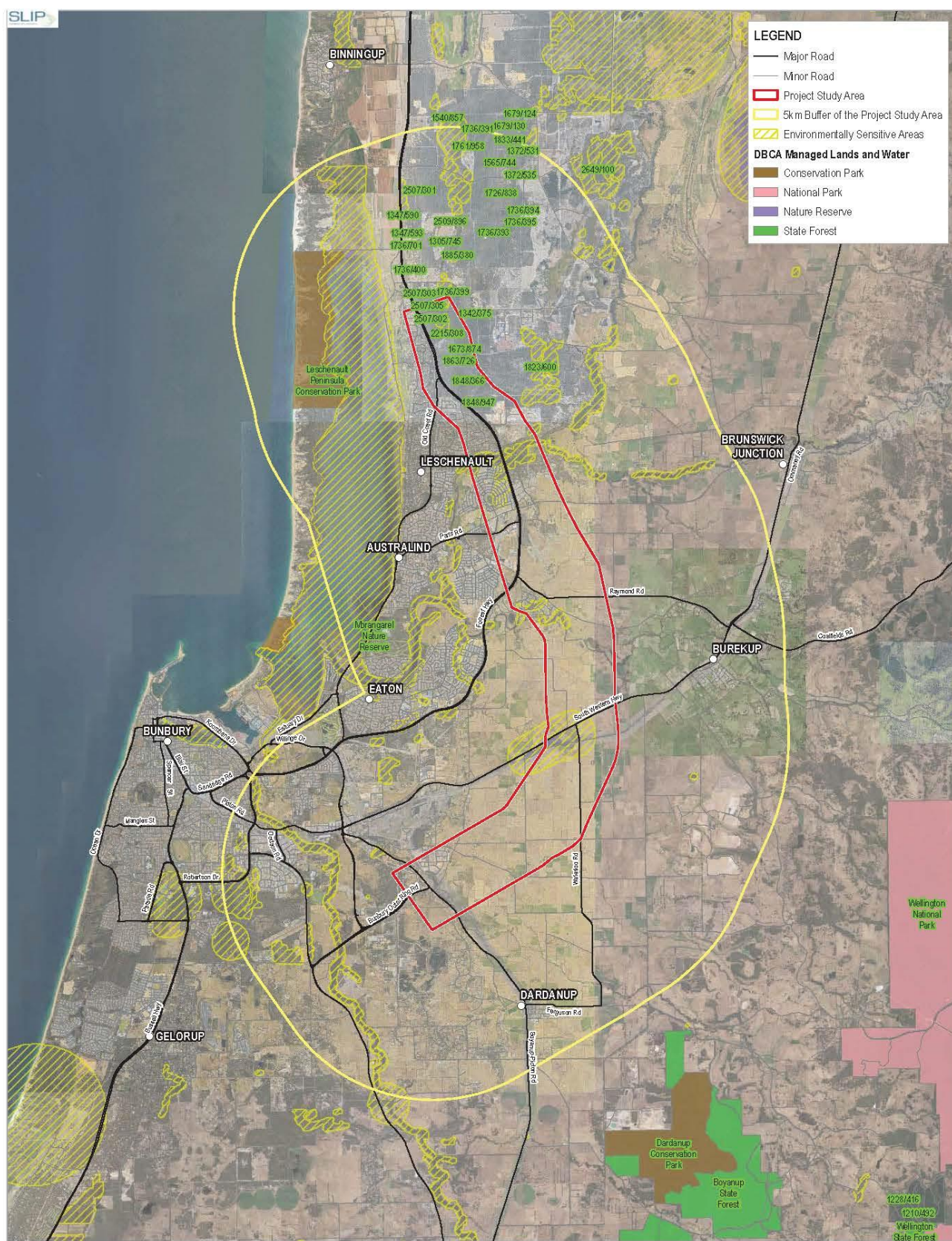


Main Roads WA
Eastern BORR Alignment Corridor for Investigation:
Environmental Constraints Analysis
Flora and Ecological Communities
of Conservation Significance

Project No: 61-37041
Revision No: 0
Date: 01/05/2018

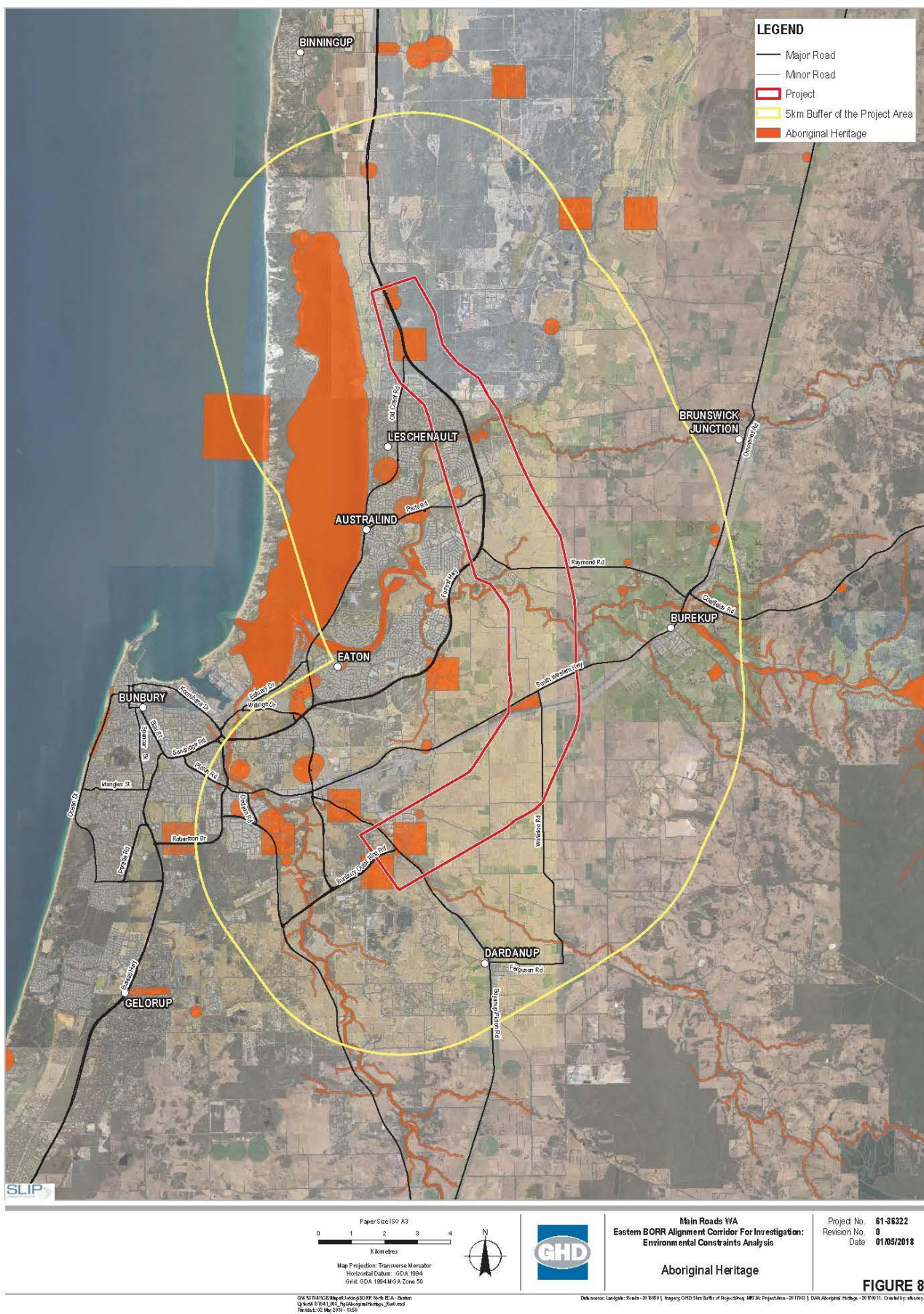
Data source: Landgate; Fields - 2018/01; Imagery: GHD 5km Buffer of Project Area; MGA Zone 50; GDA 1994; Threatened Flora and Fauna - 2018/01/01. Created by: efc/ky





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Data source: Landgate; Roads - 2018/18; GHD; Main Roads WA; Project Area - 2018/18; DBCA; Managed Lands and Water - 2018/18; Wellington National Park - 2018/18; Wellington State Forest - 2018/18



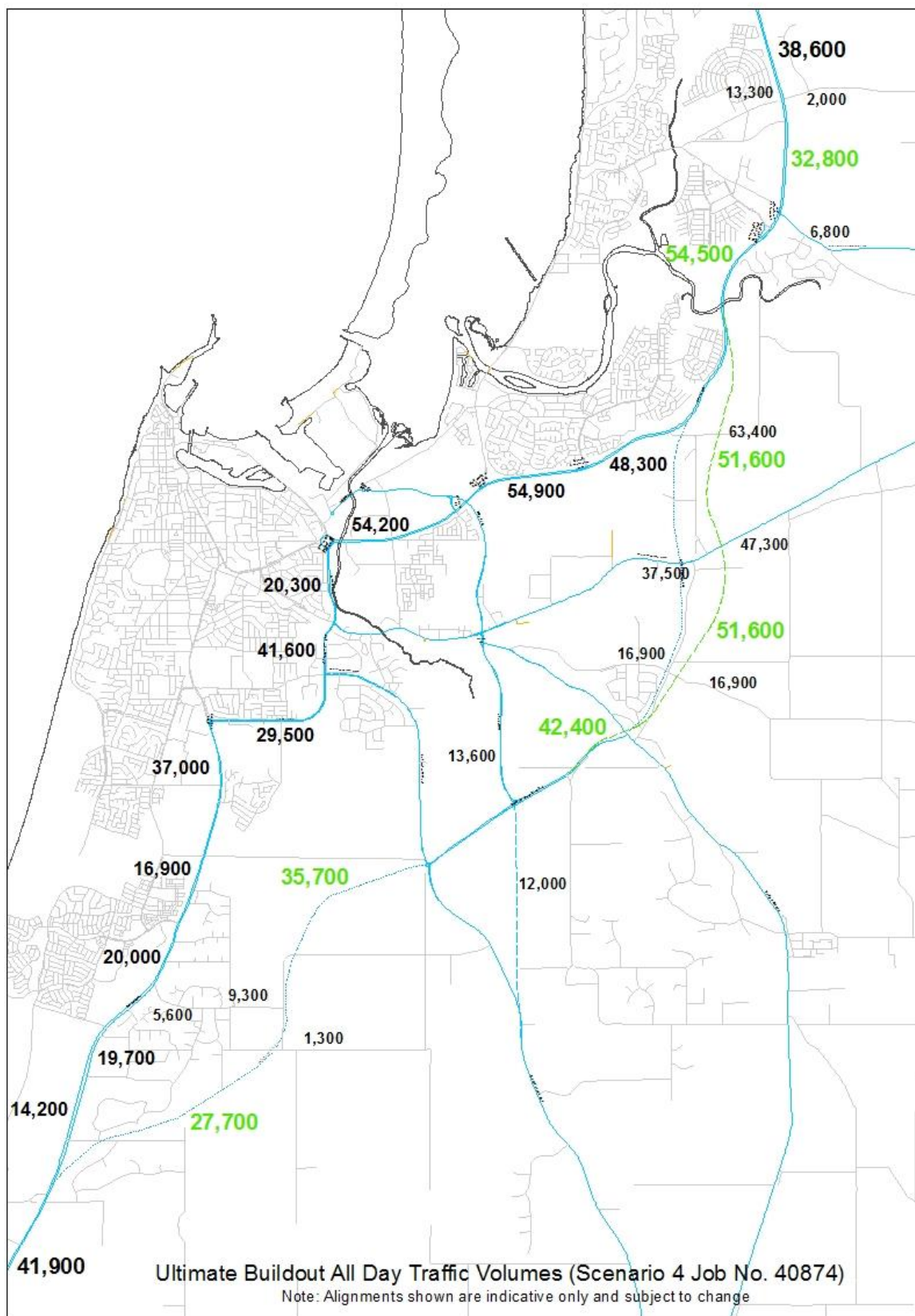
11.6. Appendix 6 – Infrastructure Australia Principals, Priorities and Objectives

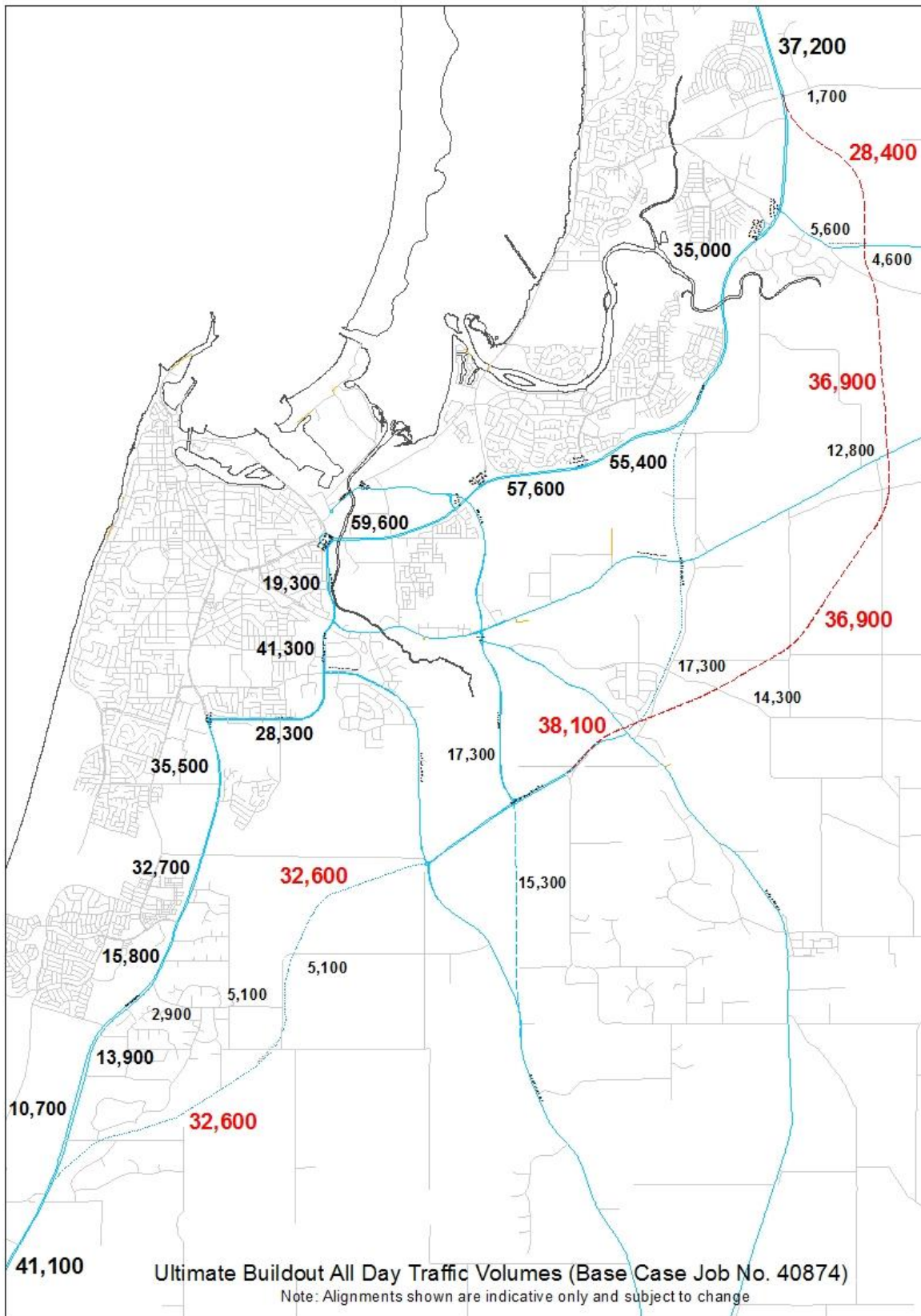
Aspect	#	Infrastructure Australia reform and investment recommendations guiding which projects will make the cut on the Infrastructure Priority List in future	MRWA value statement for SW Freeway	OPTION 1 – DO NOTHING	OPTION 2 – EXISTING CONCEPT (EAST OF HYNES RD)	OPTION 3 – EASTERN CORRIDOR FOR INVESTIGATION
Making better use of networks through investment and technology	1.7	Governments should increase funding for investments in projects and technologies that make better use of existing infrastructure. Australia can extract more from existing infrastructure networks through smarter operation, maximising their productive capacity and delaying the need for large-scale investments.	Traffic modelling suggests Option 2 will increase pressure on a number of strategic sections of the network including the South Western Highway. Option 3 offers separation of freight and regional traffic from general local traffic within the BORR extents to maximise existing network design life (by freeing up capacity)			
A new National Freight and Supply Chain Strategy to guide investments and reforms	3.4	Australia needs a National Freight and Supply Chain Strategy. Infrastructure Australia, in partnership with governments and the private sector, should lead the development of the Strategy. The Strategy should: map nationally significant supply chains and their access to supporting infrastructure and gateways; evaluate the adequacy of the institutional framework supporting freight networks; and recommend reforms and investments that will enable the more efficient movement of freight.	BORR as a RAV 7 freight route and a Bunbury bypass (separating freight from local traffic) strongly aligns with this principle. Option 2 builds the bypass over the Waterloo freight route (Harris Road) whereas Option 3 provides the freight route via BORR and PAR.			
Supporting active transport as a connected, accessible and safe alternative	7.4	Where this has not already begun, state, territory and local governments should demonstrate integration of active transport strategies through transport and land-use planning. Governments should provide active transport that is connected, accessible and safe, and encourage shifts to more efficient, sustainable transport options to improve transport sustainability and provide greater public amenity.	Option 2 aligns with this principal in part, however segregates the future strategic urban expansion area of Wanjū from the existing urban development areas potentially limiting opportunities to link these areas. Option 3 presents an opportunity to demonstrate alignment with this principle through improved coordination of transport and land use planning at a strategic level.			
Linking long-term strategic planning to community engagement processes	9.3	Alongside the delivery of integrated long term infrastructure plans, state and territory governments should initiate an ongoing process of community engagement to discuss present and future infrastructure challenges and potential solutions. Engaging the community at the strategic stage of infrastructure planning engenders a greater understanding within the community of future challenges and reduces the likelihood of opposition resulting from a lack of genuine consultation.	BORR presents some challenges in aligning with this principle due to the past consultative efforts based on multiple options including presentation of an additional eastern corridor for investigation (leading to frustration).			
Establish a mechanism to preserve corridors for future infrastructure investment	9.4	The Australian Government, in partnership with state and territory governments, should establish effective corridor protection mechanisms to ensure the timely preservation of surface, subterranean and air corridors, and strategic sites, for future infrastructure priorities. The mechanism should include: ■ Long-term strategic planning and project development work to identify corridors and lands; ■ A stable and independent governance framework; and ■ Shared financial responsibility between the Australian Government and its state and territory counterparts.	Option 2 aligns with this principal in part however requires significant interaction with the proposed development of Wanjū and increases of urban densities in other existing areas (including non-separation of local and freight/regional interactions). Option 3 aligns with this principle, allowing provision for Wanjū and increases of urban densities in other areas without being constrained by the future population growth of Bunbury in excess of 200,000 people.			
Fully realising the benefits of infrastructure investment	10.7	Project proponents should routinely develop strategies to ensure the full benefits of infrastructure investments are realised. Benefits associated with given projects should be actively managed to maximise return on investment and monitored through post-completion review processes. This approach could be equally beneficial when applied to under-utilised existing assets and network.	Option 2 aligns with this principal in part, however with increases in land use planning and the population of Greater Bunbury is sensitive to increasing local, freight/regional traffic requiring further upgrades. Option 3 aligns with this principle through separating local and freight/regional traffic improving safety, network efficiency while maintaining a suitable level of access to strategic industrial areas as well as for the Greater Bunbury community. Option 3 provides this with 4 lanes for the entire extent of BORR for all land use and future population scenarios for Greater Bunbury.			

The assessment is colour coded as follows and provides guidance on consistency with Nationally Significant criteria:

Red – No alignment with IA/Nationally significant requirements
 Yellow – Some alignment with IA/Nationally significant requirements
 Green – Strong alignment with IA/Nationally significant requirements

11.7. Appendix 7 – Traffic Modelling Summary





11.8. Appendix 8 – Summary of Consultation

Government and Key Stakeholders - Summary of Consultation

Organisation	Level of Consultation	Summary of Key Considerations
Department of Planning, Lands and Heritage (DoPLH)	Detailed and ongoing collaboration coordinating land use planning and transport planning. Ongoing input from Main Roads and DoPLH.	Ongoing coordination of updated Draft District Structure Plans, access and road network considerations. Support for consideration of an eastern corridor subject to further planning.
Western Australian Planning Commission, Chairman and Director General Planning, Lands and Heritage	Presentation, update, input and discussion of planning for BORR options.	Coordination with land use planning. Support for consideration of an eastern corridor subject to further planning.
Western Australia members of Parliament: Transport and Planning Minister Rita Saffioti; Bunbury MLA Don Punch; Murray Wellington MLA Robyn Clarke; Collie MLA Mick Murray.	Presentation, update, input and discussion of planning for BORR options.	Road network arrangements, connectivity, community impacts, land use (development) considerations, traffic impacts, project cost, timing, related projects as well as other considerations. Support for a bypass with varying views on support for investigations into an eastern corridor subject to further work and potential land, traffic and community impacts.
Local Government Authorities including the City of Bunbury, the Shire of Capel, the Shire of Dardanup, the Shire of Harvey	Presentation, update, input and discussion of planning for BORR options at officer level as well as formal presentations to Council.	Refer Section 8.1.4 of this report
Department of Biodiversity, Conservation and Attractions (DBCA)	Presentation, update and initial discussion of planning for BORR options.	General/initial views offered by local officers on potential environmental considerations. There may be the opportunity to reduce impacts with an eastern corridor compared to the existing corridor. Acknowledgement that impact comparisons are subject to further detailed desktop and field assessments as well as scope.
Regional Development Australia (RDA)	Presentation, update, input and discussion of planning for BORR options.	Federal Government interactions, significance of the proposal as enabling infrastructure for the South West, funding and support for consideration of an eastern corridor subject to further planning.
Bunbury Wellington Economic Alliance (BWEA)	Presentation, update, input and discussion of planning for BORR options.	Opportunities for Bunbury, the economy, risks and support for consideration of an eastern corridor subject to further planning. Managing risks associated with a bypass were acknowledged.

South West Development Commission (SWDC)	A number of presentations, input and discussions regarding the planning for BORR options and its strategic relevance.	Opportunities for Bunbury and the broader South West, related strategies and projects and support for consideration of an eastern corridor subject to further planning.
Wanju and Waterloo Working Group (including representatives from Department of Planning, Lands and Heritage, Department of Water and Environmental Regulation, South West Development Commission, LandCorp and the Shire of Dardanup)	Ongoing presentation and updates at working group meetings from mid-2017 and ongoing.	Ongoing coordination of updated Draft District Structure Plans with BORR planning. Endorsement minuted supporting investigations into an eastern corridor given its strong alignment with future land use planning for Wanju, Waterloo and the broader Greater Bunbury area.
Southern Ports Authority	Presentation, update, input and discussion of planning for BORR options. Several follow up discussions regarding key aspects of the planning and interactions with Port activities/access.	Focus on Port access and the proposed expansion of the Port. Discussion around closure/non-closure of Estuary Drive and impacts to Forrest Highway capacity. Discussion around port related industry being developed around the port site which is currently largely undeveloped. No clear preference expressed to existing or eastern corridor for investigation with a focus on critical industries, road and rail access to/from the Port.
Kemerton Industrial Park Coordinating Committee (including representatives from Southern Ports Authority, Cristal, SIMCOA, Department of Jobs, Tourism, Science and Innovation, Department of Planning, Lands and Heritage, Shire of Harvey, LandCorp, Regional Chambers of Commerce and Industries, South West Development Commission, Transfield Power Station and several Community Representatives)	Presentation, update, input and discussion of planning for BORR options.	Focus on access to Kemerton Industrial Park, support for a bypass with varying views expressed on investigations into an eastern corridor with some organisations expressing support and others including the Shire of Harvey expressing their concern regarding cost (due to additional length) and impact to future urban development land north to the Collie River.
Cube Transport	Involved in a broad “options” workshop for solutions to transport constraints around Bunbury.	High level workshop involving discussion and input on BORR planning and transport in and around Bunbury/the Port.
Harvey Water	Presentation, update, input and discussion of planning for BORR options.	Planning for water infrastructure upgrades, potential desalination plant proposal and general support offered for coordination with BORR planning including the eastern corridor for investigation.

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