BORR Team

BORR Northern and Central Response to Public Submissions on ARI

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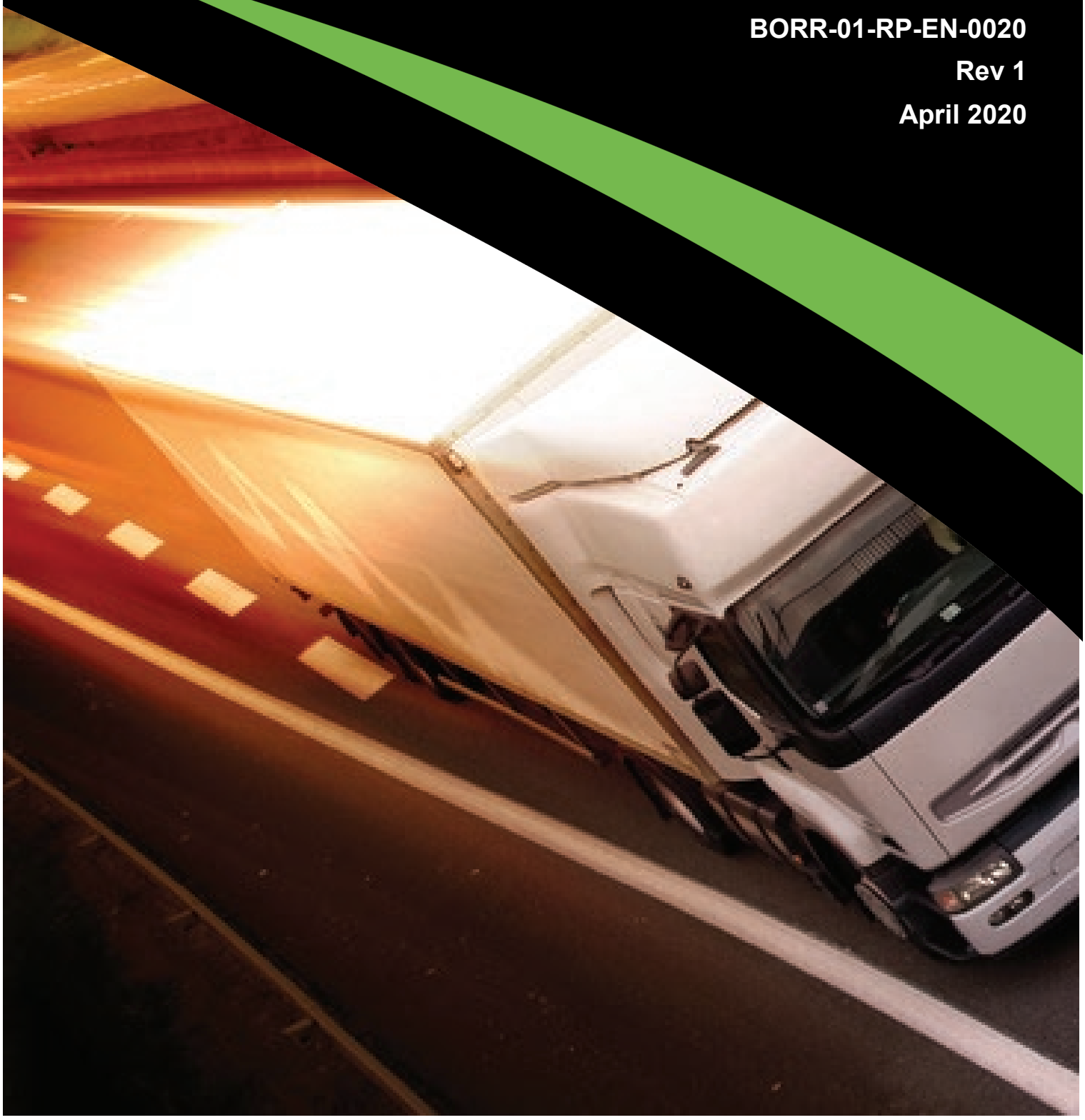

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APPENDICES

Appendix A Summary of Submissions

Document *Control*

Revision	Date	Description	Prepared	Reviewed	Approved
A	23/04/2020	Draft for Main Roads Review	MJ MP	FH	FH
0	24/04/2020	Response to Submissions EPA 1st Submission	MJ MP	FH	FH
1	30/04/2020	Response to Submissions EPA 2nd Submission	MJ MP	FH	FH

1. INTRODUCTION

1.1. Background

The Commissioner of Main Roads Western Australia (Main Roads) is proposing to construct and operate the Northern and Central sections of the Bunbury Outer Ring Road (BORR) project (Figure 1). BORR is a planned Controlled Access Highway linking the Forrest Highway and Bussell Highway. The completed project will provide a high standard route for access to the Bunbury Port, improve road user safety and facilitate proposed development to the east of the City of Bunbury. BORR will also provide an effective bypass of Bunbury for inter-regional traffic. BORR forms a major component of the planned regional road network for the Greater Bunbury area.

The proposed BORR comprises three sections:

- 'BORR Northern Section' – Forrest Highway to Boyanup-Picton Road
- 'BORR Central Section' – Boyanup-Picton Road to South Western Highway
- 'BORR Southern Section' – South Western Highway (near Bunbury Airport) to Bussell Highway.

The majority of the BORR Central Section (four kilometres) was completed in May 2013, along with a three km extension of Willinge Drive southwards to South Western Highway.

This document refers to BORR Northern and Central (unbuilt) Sections only. Although the majority of the Central Section has been built, improved connection to the Central Section is still required.

1.2. Assessment of Referral Information and response to submissions

In June 2019, Main Roads referred the Proposal to the Environmental Protection Authority (EPA) for assessment under Section 38 of the *Environmental Protection Act 1986* (EP Act). The referral included an Environmental Referral Supporting Document (BORR IPT, 2019) that describes in detail the receiving environments, potential impacts and mitigation strategies to address the identified impacts. The Proposal was advertised for a seven day public comment period on 14 June 2019. The EPA determined that the Proposal would be assessed on Referral Information with additional information required under Section 40(2)(a) of the EP Act on 3 July 2019.

The Response to the EPA's Decision to Assess: Additional Information Requirements (BORR IPT 2020) (ARI document) document was submitted by Main Roads to the EPA in March 2020 and released for a four week public comment period from 13 March 2020 ending on 9 April 2020.

A total of 17 public submissions were received by the EPA, Table 1-1. The key issues raised are:

- Alternative alignments not considered adequately
- Unacceptable impacts to conservation significant fauna species (particularly western ringtail possum and black cockatoos) and threatened and priority ecological communities (TECs/PECs)
- Offsets identified are inadequate
- Unacceptable impacts to natural hydrology
- Unacceptable impacts to amenity from noise; and proposed mitigation is inadequate

- Inadequate consideration and/or consultation with local residents on the alignment change from original planning scheme
- Loss of productive farming land.

Table 1-1 List of public submissions on the ARI

Submission number	Submitter	EPA Services reference
1		ANON-55DK-U4DV-V
2		ANON-55DK-U4DC-9
3		ANON-55DK-U4DK-H
4	BirdLife WA	ANON-55DK-U4DP-P
5		ANON-55DK-U4DD-A
6		ANON-55DK-U4DQ-Q
7		ANON-55DK-U4DN-M
8		ANON-55DK-U4DX-X
9	Greens (WA)	ANON-55DK-U4D5-U
10		ANON-55DK-U4DT-T
11		ANON-55DK-U4D1-Q
12		ANON-55DK-U4D4-T
13	Department of Planning, Lands and Heritage - Bunbury Office	ANON-55DK-U4DF-C
14		ANON-55DK-U4D2-R
15		ANON-55DK-U4DU-U
16	Urban Bushland Council WA Inc	n/a
17	Wildflower Society of Western Australia (Inc)	n/a

A submission was provided to the EPA by the Department of Biodiversity and Conservation. EPA Services provided these comments in their advice and have been responded to in Section 3 of this document. The EPA Services comments and Summary of Public Submissions are provided in Appendix A.

1.3. Purpose of this Document

The purpose of this document is to provide responses to issues in submissions provided to Main Roads on 20 April 2020 that relate to content of the ARI document. This document does not provide responses on all issues raised within submissions, unless they relate to content in the ARI document. This document also provides Main Roads with an opportunity to:

- Address any errors and/or omissions identified in the ARI document

- Present additional information from investigations undertaken since the ARI document was submitted.
- Modify aspects of the Proposal in response to submissions received.
- Amend environmental commitments and/or include additional environmental commitments in response to submissions received.

1.4. Response Method and Structure of this Document

This Response to Submissions document has a number of components. Each component and their purpose is described below:

1. Introduction – this introduction is intended to provide the context of the Response to Submissions document.
2. Description of the Proposal –the Proposal has not changed since the issue of the ARI but a brief description has been provided for context.
3. Response to EPA Services Submissions – EPA Services sought comments from the DBCA on the Proposal. A submission was received from EPA Services that incorporated the comments received from DBCA, see Appendix A. This section includes Main Roads' response to EPA Services/DBCA's submission addressing the key issues for the Proposal including:
    a) Terrestrial Fauna
    b) Flora and Vegetation
    c) Conservation Significant Fauna Management and
    d) Offset Strategy
4. Responses to Public Submissions – EPA Services has summarised the main issues raised in public submissions in the "Summary of Submissions" provided in Appendix A. The public submissions have been collated by the EPA Services on the key issues of:
    a) The Proposal – General comments
    b) Flora and Vegetation
    c) Terrestrial Fauna
    d) Inland Waters
    e) Social Surroundings and
    f) Offsets
5. References – The final section of the document includes full references for citations included in this document.
6. Appendix A – Summary of Submissions is included here.

2. DESCRIPTION OF THE PROPOSAL

2.1. Background

Subsequent to the s38 referral, the BORR North and Central Proposal Area has been modified as a result of refinement of the alignment. This refinement was in part the result of modifications to the road design, and in part the outcome of targeted efforts to avoid, wherever possible, the direct loss of TECs and PECs and fauna habitats. The changes were summarised and submitted to the EPA as a Section 43a change to the Proposal and subsequently approved by the EPA on 13 February 2020. The ARI document summarised the changes to the Proposal and detailed the change in potential impact with particular attention to the potential impact to threatened species and communities as detailed in the EPA request for additional information. As detailed in the ARI document, the changes to the Proposal resulted in a reduction in the overall area (from 651 hectares (ha) to 625 ha) and potential impact of the Proposal on the environment, in particular on habitat for threatened species, TECs and one PEC.

2.2. Description of Proposal

The Proposal is located approximately 200 km south of Perth and at its closest point, approximately six kilometres south-east of Bunbury. It occurs within the City of Bunbury and the Shires of Dardanup and Harvey.

The Proposal includes construction and operation of BORR Northern and Central sections. These sections comprise 19 km of new freeway standard dual carriageway and associated bridges, interchanges and other road infrastructure including, but not limited to, culverts, lighting, noise barriers, fencing, landscaping, road safety barriers and signs.

The development envelope for the Proposal referred by Main Roads is up to 625 ha and referred to as the Proposal Area (Figure 1, Appendix A in the ARI).

No changes have been made to the Proposal since the submission of the ARI document to the EPA and its release for public comment on 13 March 2020.

The key proposal characteristics of the Proposal are presented in Table 2-1.

Table 2-1 Key Proposal characteristics

ELEMENT	PROPOSED EXTENT
Physical elements	
Overall Proposal footprint (including all physical elements below)	Clearing or disturbance of up to 625 ha comprising approximately: • 73 ha of native vegetation and approximately 19 ha of revegetation (~15 % combined) • 532 ha (~82 %) of cleared and highly modified areas (agricultural land and existing built infrastructure).
Road construction and associated infrastructure	The road construction and associated infrastructure for the Proposal includes the following components: • 19 km of new rural freeway standard, dual carriageway

ELEMENT	PROPOSED EXTENT
	• A grade separated interchange at the intersection of Forrest Highway, Paris Road and Clifton Road • A grade separated interchange at Raymond Road • A grade separated interchange at South West Highway • A grade separated interchange at Waterloo (Wireless Road) • A grade separated interchange at Willinge Drive • Extension of Willinge Drive south (3 km) to intersect with South West Highway • New local roads and existing local road modifications • Utility modifications.
Bridges and drainage infrastructure	The bridge construction and associated infrastructure for the Proposal includes the following components: • New bridge [14 m and 19 m width / 4 x 35 m spans] BORR over the Collie River • New bridge [35 m width / 2 x 40 m spans] BORR over the South Western Highway (north) • New bridge [35 m width/ 40 m and 20 m spans] BORR over the Perth Bunbury Rail line and Railway Road • New bridge [27 m width/ 3 x 32 m spans] BORR over Golding Crescent/Ferguson River • New bridge [16.5 m width / 3 x 32 m spans] Martin Pelusey over Golding Crescent/Ferguson River • New bridge [27 m width / 40 m span] BORR over Boyanup-Picton Rail • New bridge [16.5 m width / 40 m span] Martin Pelusey over Boyanup-Picton Rail • New bridge [27 m width / 32 m span] BORR over Boyanup-Picton Road • New bridge [16.5 m width / 32 m span] Martin Pelusey over Boyanup-Picton Road • New bridge [30.5 m width/ 40 m span] over South West Highway near Davenport • Drainage basins, drains and other associated infrastructure.
Principal Shared Path (PSP)	A PSP [4.6 m width] will be constructed for the full length of the Proposal, situated on the western side and generally elevated 1 – 1.5 m above the existing ground level.
Other road infrastructure and furniture	Other road infrastructure and furniture, including but not limited to culverts, lighting, noise barriers, fencing, landscaping, road safety barriers and signs.
Operational elements	
Constructed BORR	Main Roads will operate the Proposal including standard management and maintenance practices.

2.3. Spatial Data

The spatial extent of the Proposal has not changed since submission of the ARI document. Digital spatial data was submitted to the Department of Water and Environmental Regulation (DWER) on submission of the ARI document, in accordance with the *Instructions on how to define the key characteristics of a proposal* (EPA n.d.).

3. RESPONSE TO EPA SERVICES SUBMISSION

Responses received from EPA Services, incorporating comments by DBCA.

3.1. EPA Services comments

3.1.1. Terrestrial Fauna

Item No.	EPA Services Comments
1	Provide further information to enable an assessment of the potential effectiveness of the proposed fauna crossing structures to reduce impacts to western ringtail possum (WRP): • Provide an analysis of the proximity to vegetation that provides refuge and safe pathway to preferred habitat. DBCA have noted that in some circumstances there are few options for alternative locations due to the limited number of vegetated patches adjacent to the development envelope. • DBCA has noted that two locations have undergone detailed investigations with results published; and that these studies have demonstrated mixed results. Assessment of these studies have not been provided within the referral documentation. Please provide further assessment information outlining the effectiveness of WRP crossing structures at a regional scale, and further demonstrate that the proposed crossing structures for this proposal will be effective mitigation.

Regarding proximity to vegetation, the density of WRP within different habitat patches is not predictable and does not follow a set pattern (Shedley & Williams, 2014). As such, the carrying capacity of a given habitat patch as refuge is difficult to determine. Some factors which intuitively would be considered important, such as canopy cover and vegetation condition, have been found not to influence WRP densities. WRP have adapted to urban and semi-urban area and are often found in high densities in these areas (Shedley & Williams, 2014). This indicates that they are able to adjust to and thrive in developed areas with light and noise levels higher than would be found in undeveloped areas.

Shedley and Williams (2014) further noted that nearly half of the patches assessed in their study with high and very high WRP densities were degraded to completely degraded “where the basic vegetation structure had been severely impacted by disturbance, and where intensive management was required for regeneration”.

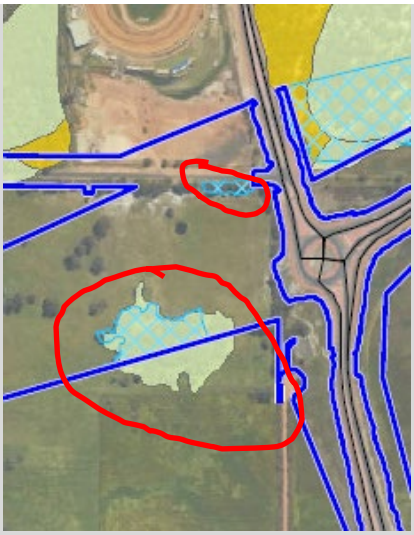
Two attempts to mitigate habitat disjunctions associated with linear structures have relied primarily on rope bridges or cables over existing roads that have been subject to investigations that have been published, including investigation of the existing rope bridge within BORR Central. On Caves Road near Vasse a 26.5 m long bridge built in 2013 was used by WRPs within 36 days of construction and recorded 1,300 crossing in 270 days (nine months) of monitoring (Yokochi & Bencini, 2015). The 88 m rope bridge span of BORR’s existing central segment, constructed in 2014, only had two confirmed crossings in 13 months of monitoring (Chambers & Bencini, 2016). Chambers & Bencini (2016) also observed the underpass installed in BORR Central, which had dual use for drainage, was flooded in winter and spring, limiting the effectiveness of the underpasses. When not flooded, the underpasses did provide connectivity a range of common fauna, including Western grey kangaroo and common brushtail possum (Chambers & Bencini, 2016).

Rope cabling has also been used under Treendale Bridge (Eaton Drive) on the Collie River. The new bridge required a narrow riparian strip on one bank to be severed from a pre-existing connection used by resident WRPs. In autumn 2018, the resultant gap was treated with simple cabling that extended out to suitable nearby trees on either side of the bridge, and was continuous just below the underside of the bridge. When inspected in August 2019, WRP scat (differing ages) was found directly below the rope bridge, but it was most common where the rope bridge was sheltered by the road bridge, suggesting that on the sheltered part of the cable, WRPs were comfortable enough to pause and rest (pers comm. Ms Barbara Jones). On the exposed cabling adjacent to the bridge, WRP were not observed to linger in a comparable way. This cabling approach has been incorporated into the BORR Northern and Central bridges.

Fauna bridges in the South west to date have not featured WRP perching and lay-by areas. These allow for the structure to provide a more user-friendly environment, especially suited for WRPs doing staged explorations of a new set of cabling.

With respect to the existing 88 m BORR Central rope bridge, minor structural treatments will be applied to extend some peripheral cabling, mostly between existing trees to develop a desirable crossover forecourt area where dry-season watering points and cameras can be added. Retro fitting the existing long crossover (BORR Central) with features attractive to WRPs should create a better understanding of how to successfully span wider WRP disjunctions for the proposed BORR North structures.

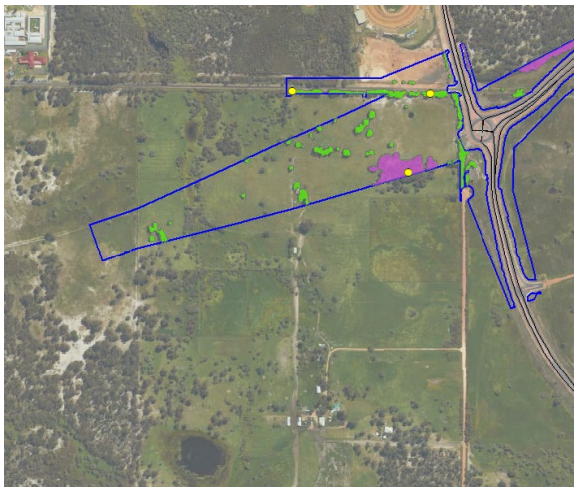
Item No.	EPA Services Comments
2	<u>Viability of fragmented habitat patches remaining</u> Page 53 of the ARI document states; “all WRP habitat areas within the Proposal Area are contiguous with or adjacent to other habitat areas that will be retained”. The proponent is relying on the assumption that WRP will self-relocate to adjacent areas of retained habitat ahead of clearing (ARI document, pg 56). However, there are some locations where individual WRP have been recorded in habitat that appears already isolated and self-relocation will not be possible (e.g. Appendix B, Figure 2 [page 5 of 5]). See examples as follows: The patch of habitat with WRP observations (central section of BORR proposal south of Manea Park and west of South West Hwy; Figure 7 [5 of 5]) is isolated from adjacent consolidated vegetation. a) Should the pre-clearing surveys identify a possum(s) in this patch, provide further information to demonstrate that the shepherding technique is appropriate in this circumstance rather than translocation? b) Also, as approximately 60% of the patch of vegetation is proposed to be cleared, what information is available to support the conclusion that the remaining portion of vegetation will remain viable support WRPs.



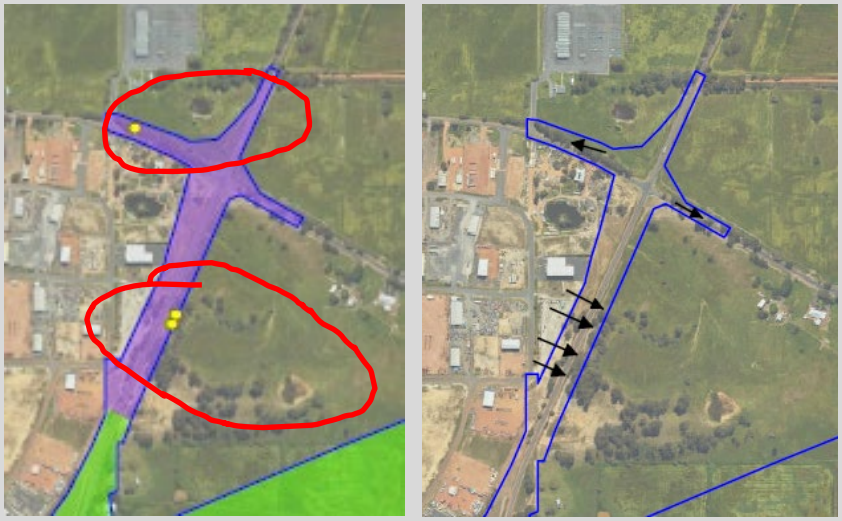
(*WRP habitat on left (EMP Figure 2 [4 of 5])*

WRP populations within a given area of habitat fluctuate seasonally. The maximum seasonal WRP population provides an indication of the year round WRP population an area of habitat is capable of sustaining (pers comm., Ms. Barbara Jones). Based on this advice and all information obtained through studies and consultation conducted for the Proposal, shepherding WRP into adjacent habitat areas during clearing is considered the optimal approach in regard to WRP welfare and is favoured over translocation. In addition, management provisions including timing clearing operations to occur outside of the population peak (spring and early summer) wherever possible if densities are high at the time of clearing, will ensure that adjacent habitat is capable of sustaining any existing resident individuals as well as dispersing individuals.

The specific patch noted south of Manea Park and west of South West Hwy is an existing degraded and isolated patch which still supports WRP and does connect to similar and larger patches of habitat to the east between Centenary Road and Lilydale Road, even taking into account the footprint of the future proposed BORR South Segment. The patch circled will still be larger than the isolated patched and trees immediately south of Centenary Road within which WRP have been recently observed (Figure 6, Appendix A of the Additional Information) and will have connectivity to surrounding habitat to the east of the proposal.



From Appendix A, Figure 6 (Page 5 of 5): Extent of WRP habitat types and WRP observations within the Proposal Area.

Item No.	EPA Services Comments
3	<u>Survivalship of WRP individuals post-impact</u> The proposal states that there will be no mortality of conservation significant fauna through the implementation of the proposal. The proposed monitoring will be able to determine if the remaining habitat is being used by WRP and estimate the abundance of population (post impact). However, the proposed management and monitoring methods will not be able to determine the survivorship of the displaced individuals. DBCA considers that individual animals may be injured and / or die following indirect impacts of clearing. Subsequent monitoring of the survivorship of displaced individuals is necessary to determine the impact of the proposal. Further, very low density possums in isolated vegetation presents a management challenge as these possums are more exposed to the indirect impacts of clearing (EMP Figure 2 [3 of 5; 4 of 5 and 5 of 5] – see examples below). In circumstances where possums cannot safely relocate is Main Roads considering trapping and relocation of individuals?  EMP Figure 2 [5 of 5]  (*WRP observations on left (EMP Figure 2 [4 of 5]); clearing direction on right*).

(WRP observations with paddock either side - EMP Figure 2 [3 of 5])

Main Roads is not proposing translocations of WRP. The approach of allowing WRP to self-relocate to adjacent habitat has been chosen over translocation of WRP to other areas because, for this Proposal, it is considered to provide the best outcome in terms of animal welfare. The success rates of documented translocation projects is poor, and as yet no successful methodology has been developed or implemented (Clarke, 2011; de Tores, 2005). Allowing WRP to relocate to adjacent habitat of their own accord eliminates the requirement for handling, substantially reducing the likelihood of WRP being put under further stress. Their transient nature also makes their familiarity with the adjacent habitat likely. Given the linear nature of the majority of clearing and the size of individual home ranges, it is anticipated that WRPs will readily relocate into other areas of their home ranges during construction.

Through the implementation of sensitive clearing protocols as detailed in the Conservation Significant Fauna EMP, WRP will be encouraged and enabled to move of their own accord into adjacent areas of retained habitat. Surveys conducted by Biota indicate that habitat areas adjacent to the Proposal Area support populations of WRP, indicating that these areas provide the necessary habitat requirements (Biota, 2020). Any given area of habitat is capable of sustaining a year-round WRP population equivalent to but not exceeding the maximum seasonal WRP population recorded for that habitat area (Barbara Jones, pers comm.) i.e. maximum seasonal population provides an indication of the maximum carrying capacity of a given area of habitat. Clearing will be timed (to avoid seasonal population peaks) and staged to encourage WRP to move into adjacent areas of habitat and, where possible, to the largest and best-connected habitat.

In the event WRP numbers in adjacent habitat are more than 30% higher than the maximum number recorded during monitoring, i.e. the seasonal peak, Main Roads will consult with relevant agencies (including DBCA) to determine appropriate action including consideration of translocation. As clearing operations will be timed to ensure WRP numbers are below this level at the time of clearing, the potential for translocation to be required as a management measure is not anticipated.

As noted above, the specific patch south of Manea Park and west of South West Hwy is an existing degraded and isolated patch which still supports WRP and does connect to larger patches of habitat to the east between Centenary Road and Lilydale Road.

Item No.	EPA Services Comments
4	DBCA has advised EPA Services that between 2019 and 2020, Main Roads undertook an investigation into the WRP territory size and movement across and through habitat patches in the Clifton Road area. The results of this study have not been provided to DBCA or used to support the ARI document. Please provide the results and assessment of this study to inform the consideration of impacts to WRP home ranges in the context of this proposal.

In addition to the original data presented in Environmental Referral Supporting Document (BORR IPT, 2019), data available for August, November and December 2019, were presented in Table 4-20 of the Additional Information. The survey data shows similar numbers for August and October surveys and significant seasonal variation of the local population between October and December. This information has been integral in the development of mitigation strategies and enhance connectivity between habitat areas along the alignment.

Biota's (2020b) survey data indicates that there may be a seasonal component to habitat use, for example, a single WRP was recorded from the road reserve habitat either side of the Forrest Highway north of Clifton Road during August 2019, yet in October of both 2018 and 2019 at least six detections were made in the same area.

Investigations into movement of WRP across patches and within home ranges throughout the Proposal Area commenced in 2020 and results are not yet available.

3.1.2. Flora and Vegetation

Item No.	EPA Services Comments
5	*Corymbia calophylla – Xanthorrhoea preissii woodlands and shrublands of the SCP* (FCT3c) TEC is listed as a Critically Endangered TEC in Western Australia and Endangered under the EPBC Act 1999. Consideration should be given to the impact on the ecological community as a whole rather than separating the occurrences. In many cases, the ecological community exists only as small, narrow and isolated patches as a result of historic clearing. DBCA has advised EPA Services that there is only 12 hectares remaining of this community in the south west region. DBCA has advised that all but one of the FCT3c occurrences that are proposed to be cleared are narrow, degraded roadside remnants and not considered to be significant. The exception is a 0.051 ha occurrence, which is part of a larger, relatively intact 0.15 ha remnant that is adjacent to the railway line, as shown on Appendix A Figure 4 (3 of 5). This occurrence is mapped as being in good or better condition, is the widest occurrence to be impacted and represents 1.25% of the total amount of FCT3c in the south west region. Removal of this occurrence will result in fragmentation of the existing vegetation linkage from the rail reserve. Please provide clear demonstration that clearing a Critically Endangered listed TEC is the only viable route within a corridor.

Consideration of the impact on this community as a whole has been considered as part of the impact assessment. As stated in section 4.1.8.3, the extent of clearing required under the Proposal (totalling up to 1.3 ha) equates to approximately 1.1 % of the known remaining extent of the TEC. As acknowledged by DBCA, the great majority of this FCT3c vegetation is in Degraded to Completely Degraded condition and unlikely to be viable in the long term. It is considered that the proposed clearing will not impact on the ecological community such that the persistence of the community as a whole is at risk.

The Proposal Area has been modified several times to avoid significant environmental values, including FCT3c. It will be further refined through the detailed design process. Clearing of up to 1.3 ha of FCT3c, of which 1.25 ha is Degraded (or worse) and 0.051 ha is in Good or better condition, cannot be avoided at this point in time for the Proposal to proceed.

Main Roads acknowledge that the Proposal Area will impact the existing vegetation linkage along the rail reserve.

tem No.	EPA Services Comments
6	<u>Indirect impacts.</u> DBCA has advised EPA Services that the removal of FCT03 occurrence along the railway line will isolate approximately 0.6 ha of FCT3c to the west. The floristic community of the retained vegetation to the east of the development envelope has not been mapped and may represent an occurrence of the Claypan TEC. MRWA has advised that the vegetation condition of the eastern section is degraded and not representative of the Claypan TEC, however information to substantiate this claim has not been provided. • Please advise if this area has been adequately surveyed? DBCA has also advised that they consider the two remnant patches either side of the development envelope patches, and may degrade post-proposal. • Are there any management measures that can be implemented to maintain these patches either side of the development envelope?

Recent surveys have confirmed that the extent of FCT3c to the west of the Proposal Area at Railway Road is 0.17 ha, rather than 0.6 ha (Ecoedge, 2020a), with 0.14 ha of mostly degraded FCT3c also within the Proposal Area.

The area of vegetation east of the Proposal Area south of the railway line has been mapped and does not represent Claypan TEC vegetation. This vegetation was provisionally mapped by BORR IPT as FCT11 or FCT13, neither of which are listed as TECs by either the state of Commonwealth, or as PECs.

Vegetation east of the Proposal Area to the north of the railway has been assessed by Ecoedge and confirmed as an occurrence of Claypan TEC (Ecoedge, 2020b).

Indirect impacts are not expected at this site as it occurs upstream of the Proposal Area. This site will be included in the Vegetation and Drainage Monitoring Programs detailed in Appendices E and F respectively (BORR IPT 2020) to enable adaptive management as required.

Both the occurrences of FCT3c to the west and the Claypan TEC to the east of the Proposal Area are currently unmanaged, therefore any management measures implemented by Main Roads are considered to be an improvement on the current situation. Management measures proposed to maintain these occurrences include the control of Declared Pests and WoNS, and management of the risks of introduction

of *Phytophthora* dieback and unplanned fire through Main Roads' Standard Scope of Work and Technical Criteria.

Item No.	EPA Services Comments
7	Indirect impacts. DBCA has advised that altering existing flow paths has the potential to negatively impact the hydrological regime (most notable drying) of TEC occurrences. The use of plant stress scores as triggers to indicate an impact from drying in Claypan TECs requires further clarification. Table 3 of Appendix E provides a 1-5 scale for measuring plant stress in the TEC and PEC communities however it largely relies on "wilting" as a basic measure of stress. This measure is not considered appropriate as many native species are sclerophyllous and are not likely to wilt (as a common definition) under stress. • Please further define the factors that are being measured in plant stress / "wilting". If this is not an appropriate parameter for monitoring drying, provide an alternative. • Please also provide more information to substantiate the selection of three days consecutive days of inundation to identify impacts for flooding is appropriate. Revise monitoring as required.

Wilting, especially of young leaves, is known to occur in native species as a result of water stress (Heliyanto, 2006), however for comprehensiveness, the plant stress scale included in Appendix E of the Additional Information has been revised to include assessment of defoliation and leaf yellowing. Defoliation and leaf yellowing are also recognised indicators of water and drought stress (Brundrett, 2018) (Galmes, 2007). Plant stress scores enable measurable assessment of vegetation stress/health at Impact Sites versus those at Reference Sites.

Main Roads acknowledges that altering existing flow paths has the potential to negatively impact the hydrological regime (most notably drying) of TEC occurrences. Through implementation of the Drainage Strategy developed for the Proposal and Main Roads' Standard Scope of Work and Technical Criteria, existing drainage patterns to adjacent TEC and PEC vegetation will be maintained. Impacts from changes to flow paths are therefore not expected to result from the Proposal. Monitoring for evidence of changes to overland flows, including drying of TEC vegetation, will be conducted (as detailed in Appendix F of the Additional Information) in addition to the plant stress assessments detailed in Appendix E.

In the vicinity of the Proposal Area, Banksia Woodlands TEC and PEC vegetation occurs in upland areas on free draining sandy soil. Inundation or flooding of these areas would therefore naturally occur infrequently and for short duration.

Inundation or flooding of these areas as a result of Proposal implementation to the extent that inundation for three consecutive days occurs is highly unlikely.

No published information regarding the tolerance of Banksia Woodlands to inundation is available however one study (Groom, 2004) has shown that *Banksia prionotes*, a species common to the community in the Perth region is impacted by inundation after 28 days, with 22 % mortality of seedlings recorded, and another (Heliyanto, 2006) indicates that *B. ilicifolia*, which occurs in Banksia Woodlands adjacent to the Proposal Area, shows reduced seedling growth and root development as well as leaf senescence after 42 days of waterlogging. These results, and the fact that this community occurs on uplands not frequently subject to inundation leads to the assumption that the community's inundation tolerance is low.

Cognisant of these factors and the low risk of this impact occurring, the requirement of a response after three consecutive days of inundation is considered a reasonable amount of time with regard to organising the response and mitigating the impact.

Item No.	EPA Services Comments
8	Indirect impacts. Appendix G provides basic triggers and thresholds but does not propose any monitoring to measure the trigger/threshold exceedance or actions to manage impact. The triggers and thresholds are vague and not quantified for e.g. "TEC/PEC vegetation health declined". Additionally the document mentions "attributable to the proposal", specific variables and measurements are necessary for attributing variables to a proposal, and demonstrating compliance during implementation. • Please review and update Appendix G to ensure that it is appropriate to manage indirect impacts to TECs and PECs adjacent to the proposal area. • Furthermore, Appendix E and G are interrelated in relation to monitoring and triggers/thresholds but do not appear to have direct connection for these variables. Please ensure that these documents are consistent.

Monitoring against triggers and thresholds is set out in Appendices E and F (of the Additional Information). Appendices E and F have been updated to include clearer reference to the triggers and thresholds detailed in Appendix G. Appendix G has been updated to more closely link to the monitoring outlined in Appendices E and F.

All triggers and thresholds in Appendix G (of the Additional Information) are quantified. Appendix G is considered sufficient to manage Proposal impacts on adjacent TEC and PEC vegetation.

Attribution of variables to the Proposal will be made possible through the comparison of Reference Site data with potential Impact Site data.

3.1.3. Offset Strategy

Item No.	EPA Services Comments
9	DBCA has identified that Appendix K Offsets Strategy uses the South west regional scale populations of WRP to justify impacts to the local population with the development envelope. The impacts to WRP should be stated in terms of the local population and its persistence within the proposal area. • Please revise accordingly.

Section 4.2.6.2 (Potential Impacts) of the Additional Information evaluates WRP impacts within the context of the Proposal, the Bunbury management zone of Shedley and Williams (2014), and the estimated 2019 Southern Swan Coastal Plain Management Zone population. Both the local and Regional context of potential impacts on WRP will be appropriately referenced for inclusion in Appendix K (*Offsets Strategy*).

3.2. Conservation Significant Fauna Management Plan

Item No.	EMP Section No.	EPA Services Comments

1	General comment	Environmental objectives/outcomes of the Conservation Significant Fauna Management Plan (the Plan) are not defined specific to the proposal. The Plan instead defaults to the EPA objective for Terrestrial Fauna. The EPA's objective for Terrestrial Fauna can be referred to as an over-arching objective, however this cannot replace the requirement for proposal-specific objectives/outcomes (EMP provisions).
		
		As per Section 2 of the EPA's Instructions on how to prepare *Environmental Protection Act 1986* Part IV Environmental Management Plans (EMP Guidance) the provisions in the EMP are either outcome-based or management-based. For outcome-based provisions, outcomes with need to be written; and for management-based provisions, objectives will need to be written:
		• Revise the Plan and ensure it is consistent with the EPA's EMP Guidance.
		• Develop proposal-specific outcomes and/or objectives for the EMP for the outcome-based provisions and/or management-based provisions respectively.
		• Revise plan to clearly distinguish outcome-based provisions from management based provisions.
		  ○ Note that trigger and threshold criteria are for outcome-based provisions.
		  ○ Note that management actions and management targets are for management-based provisions.
		• Ensure timing / frequency and duration of monitoring are explicit (e.g: Tables 11; 12 and 13 include monitoring parameters but no information about frequency, duration and timing. It is acknowledge that this information is within other sections of the Plan, however, it would be beneficial to combine information from Tables 8, 9 and 10, particularly information about frequency and duration, in Tables 11, 12 and 13. For ease of use and review, consider restructuring the Plan and/or adding columns in Tables 11; 12 and 13 to include this information).
		
		(See also examples in the Attachment 1 of the EMP Guidance).
		
		[For additional guidance see sections 4.2.3.1 and 4.2.3.2 of the Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual: *Requirements under the Environmental Protection Act 1986*].
		
		[Main Roads' Perth to Darwin National Highway (Swan Valley Section) EMPs are also good examples]

Proposal related objectives for conservation significant fauna have been identified in Proposal documentation and will be updated in the EMP as applicable.

The EMP will be amended to be consistent with the EPA's EMP Guidance. Information regarding the timing, frequency and duration of monitoring will be presented more clearly.

Item No.	EMP Section No.	EPA Services Comments
2	Table 8 Table 9 Table 10 Table 11 Table 12 Table 13	<u>Triggers, thresholds and contingency actions</u> Note that many of the nominated trigger and thresholds for managing potential impacts to conservation significant species will be difficult to demonstrate compliance against or determine if the cause is project attributable i.e: *Western ringtail possum and brush-tailed phascogale (Table 8 and 11):* • The trigger and threshold criteria for clearing habitat are identical. Triggers should be set below threshold criteria so a management response can be implemented prior to the threshold being reached. • The criteria should state measurable values to be used, such as "clearing within xx meters of WRP habitat". *Carter's freshwater mussel (CFM) (Table 9 and Table 12)* • No values have been defined for the trigger and threshold criteria. Specific trigger and threshold values for each proposed water physico- chemical parameter should be included so it is clear when a management response is required. Triggers and thresholds should be based on baseline values that are set in consideration of temporal variability. Each trigger value should be set so management can be adapted in response, prior to the threshold being reached. *Black-striped minnow (BSM) (Table 10 and Table 13)* • No values have been defined for the trigger and threshold criteria. Specific trigger and threshold values for each proposed water physico- chemical parameter should be included so it is clear when a management response is required. Triggers and thresholds should be based on baseline values that are set in consideration of temporal variability. Each trigger value should be set so management can be adapted in response, prior to the threshold being reached. • Additional parameters such as Total Nitrogen (TN) and Total Phosphorus (TP) would be beneficial to monitor the potential impacts of resuspension of sediment. It is noted that Main Roads are collecting a baseline in 2020 for CFM and BSM, do you intend to update the Plan with specific baseline values, once these are available? Please identify which months of the year you intend to construct near BSM habitat and if there are any life-cycle requirements for BSM that need to be considered in this context? Please update both the ARI and EMP as required to clarify this information.

As part of the amendment of the EMP in line with the EPA's guidance, triggers and thresholds will be clarified and specified for all included species as required to enable determination of whether any resulting impacts are attributable to the Proposal. Selected trigger values to be added to the EMP include:

- **Western ringtail possum and brush-tailed phascogale** (Table 8 and 11). a) Unauthorised clearing of WRP or BTP habitat within the approved development envelope and b) Unauthorised clearing outside the approved development envelope.
- **Carter's freshwater mussel** (Table 9 and 12) and **Black-striped minnow** (Table 10 and Table 13).
    - **Trigger** – Exceedance of ANZECC guidelines Vol 1 standard triggers for toxicants at 95% level of protection (Table 3.4.1) and Tables 3.3.6 – 3.3.7 default trigger values for physical and chemical stressors for south-west Australia for slightly disturbed ecosystems. (and reflect background sampling)
    - **Threshold** - Exceedance of ANZECC guidelines Vol 1 standard triggers on two occasions (and reflect background sampling)

Triggers for CFM and BSM based on ANZECC Guidelines will also take into account current baseline conditions. In accordance with the adaptive management approach detailed in Section 4 of the EMP, the EMP will be updated to include baseline data for CFM and BSM once this data becomes available.

Main Roads is not able to confirm at this stage the months of the year during which construction near BSM habitat is likely to occur. Proposed mitigation measures and management actions have been designed to address potential impacts to BSM throughout all stages of the species' lifecycle. Construction timing is therefore not considered a determining factor in regards to the potential for impact on BSM. However where practicable, all initial earthworks in CFM and BSM habitat will occur during summer months (Oct-April) when wetlands are dry and water levels are at their lowest.

Item No.	EMP Section No.	EPA Services Comments
3	Table 5 on p.10	<u>MRWA "Sensitive clearing protocols":</u> The management action in Table 5 on p.10 states: *Trees […] that are observed to support WRP and / or BTP after 48 hours will be 'bumped gently" with a machine prior to felling. The operator and spotter will wait and observe the tree for a short time. If the animal remains in the tree it shall be pushed over slowly onto vegetation within the clearing area that is yet to be cleared. The 'soft felling' of habitat trees will provide a 'cushion' for the vegetation being felled, minimising the risk of injury to the animal and allowing any WRP and BTP present with the opportunity to safely vacate.* • Are there other actions that can be implemented if/when this circumstance arises? • Are you considering trapping and relocation of individuals an option for fauna unable to safely self-relocate ahead of clearing? Is this method intended for identification of black cockatoo nesting, and if so, can an alternative be used?

Prior to clearing, accessible vacant dreys will be removed and accessible tree hollows suitable for possums will either be removed or blocked. Immediately prior to and during clearing works inspections for resident fauna in tree hollows, including Black Cockatoos, will be conducted. Should any WRP or BTP be present, the tree will be left for 48 hours to allow the animal to vacate. If the tree continues to be occupied after 48 hours, the animal will be coerced / moved to a safe area outside of the clearing footprint by the appointed zoologist / environmental scientist / fauna spotter.

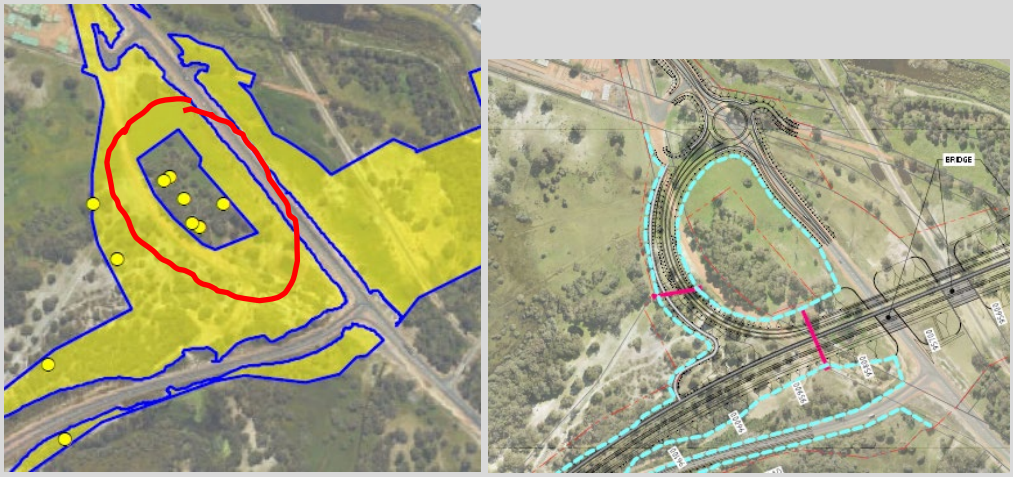
Implementation of this sequential series of proposed actions is expected to make it highly unlikely that any tree needs to be 'bumped' as described. As such, no additional actions are proposed should this circumstance arise.

Main Roads is not proposing translocation of WRP. The approach of allowing WRP to self-relocate to adjacent habitat has been chosen over translocation of WRP to other areas because, for this Proposal, it is considered to provide the best outcome in terms of animal welfare. The success rates of documented translocation projects is poor, and as yet no successful methodology has been developed or implemented (Clarke, 2011; de Tores, 2005). Allowing WRP to relocate to adjacent habitat of their own accord eliminates the requirement for handling, substantially reducing the likelihood of WRP being put under undue stress. Their transient nature also makes their familiarity with the adjacent habitat likely. Given the linear nature of the majority of clearing and the size of individual home ranges, it is anticipated that WRPs will readily relocate into other areas of their home ranges during construction.

In the event WRP numbers in adjacent habitat are more than 30% higher than the maximum number recorded during monitoring, i.e. the seasonal peak, Main Roads will consult with relevant agencies (including DBCA) to determine appropriate action including consideration of translocation. As clearing operations will be timed to ensure WRP numbers are below this level at the time of clearing, the potential for translocation to be pursued as a management measure is not anticipated.

With regard to identification and management of Black Cockatoo nesting, the following is proposed in conjunction with the management measures proposed for WRP:

1. Where any of the three trees with suitable nest hollows for Black Cockatoo require clearing for the Proposal, the hollow will be visually inspected where safe and practicable. Where not in use the hollow will be 'blocked' to prevent breeding
2. Where blocking of the nest hollows cannot be undertaken (e.g. timing, access), a pre-clearing fauna assessment will be undertaken by a suitably experienced person to determine if the hollows are being used by Black Cockatoos
3. Where a suitable nest hollow within the area of the Proposal has been blocked prior to the Black Cockatoo breeding season, the tree may be felled as part of the standard vegetation clearing process
4. Where a suitable nest hollow within the area of the Proposal has not been blocked and the pre-clearing fauna assessment has not identified Black Cockatoo occupation of the nest hollow, prior to clearing the tree, the tree will be 'bumped gently' with a machine with the machine operator and zoologist then to wait and observe the tree for a short time after. If no Black Cockatoo appears to be present then the tree may be pushed over slowly to minimise risk of injury to any undetected animal (if present)
5. Where suitable nest hollow within the area of the Proposal has not been blocked and the pre-clearing fauna assessment identifies Black Cockatoo occupation of the nest hollow (which may include chicks (young)), the tree with the nest hollow will not be cleared until after the chick/s have left the nest. No vegetation within 10 m of the tree will be cleared until after the hollow is vacant.

Item No.	EMP Section No.	EPA Services Comments
4		<u>Effectiveness of fauna crossing structures post-construction:</u> Main Roads proposes to install and monitor rope bridge overpasses and underpasses for five years post construction using motion sensor IR cameras. This will provide useful information about the use of bridges by arboreal fauna; however, the Plan does not discuss actions required if the bridges/crossing structures remain unused (beyond assessment and modification of the structures). Main Roads has included appropriate contingencies (e.g. including assessment and modification of the structures) in the event the structures are not being used (as informed by the proposed Environmental Monitoring Plan (EMP) Appendix B, Table 7 & 11). However, the proponent should address the impacts to species such as the WRP and brush-tailed phascogale (BTP) if they remain unused.  (WRP observations on left, EMP Figure 2 [4 of 5] clearing creating an island of vegetation; and proposed underpasses on right, EMP Figure 4). Underpasses are proposed in this location to mitigate fragmentation impacts, however continued use of this area by WRP is reliant on the assumption that the proposed underpasses will be successful at maintaining habitat use by possums. Collie River habitat corridor: The fragmentation of the Collie River habitat corridor for western ringtail possum (mapped as B – high suitable habitat: Figure 7 [2 of 5]) from clearing of riparian vegetation and construction of road bridges is proposed to be mitigated by possum rope bridges. Again, the effectiveness of this mitigation relies on the success of such structures.

Colie River WRP habitat Figure 7 [2 of 5] on left; proposed possum rope bridges on right).

If the crossings remain unused then the fragmentation impacts to WRP and BTP resulting from implementation of the proposal would not have been mitigated.

If the proposed contingency actions (such as modification of crossing structures) are not successful, and isolated patches remains unutilised by possums and/or fragmented vegetation remains disconnected; is there any further actions that Main Roads can implement to mitigate the loss of function and ecological connectivity for western ringtail possums?

A discussion of the effectiveness of the proposed movement structures is included in Section 4.1.1.

As detailed in Section 4.2.6.4 in BORR IPT (2020f), 32 movement structures will be installed by Main Roads to facilitate the movement of WRP and BTP between habitat areas. Both WRP and BTP have been shown to use the kinds of structures that are proposed, at Busselton and BORR Central (Yokochi & Bencini, 2015) (Chambers & Bencini, 2016) and Treendale (anecdotal). WRP densities in Busselton (where rope bridges are frequently used) are significantly higher than those in the vicinity of the Proposal Area, which may necessitate and incentivise the use of these structures by WRP. In the vicinity of the Proposal Area, WRP and BTP densities are low, and as such there may be no need or incentive for WRP to move between patches. For this reason, a lack of use of the installed structures could not be inferred to represent a failure of the structure(s), only that it it/they not been used. Should WRP and/or BTP densities increase substantially at a future time, monitoring may show that the structures are being utilised in response to the need for WRP to move between habitat areas.

The provision of effective movement structures does not guarantee use of the connected habitat areas by WRP. Further, not all currently isolated patches of WRP habitat are utilised by WRP, and conversely, against expectations and the species' known habitat preferences, many isolated patches are utilised.

Considering both WRP population densities and the extent of habitat available for their use in the vicinity of the Proposal, the measures being proposed by Main Roads are sufficient, and further measures to mitigate the loss of connectivity for WRP are not considered necessary.

Item No.	EMP Section No.	EPA Services Comments
5	Figures	The figure illustrating the fauna crossing structures in the management plan (Figure 4) does not show all the fauna crossing structures proposed and mapped in the ARI document (Figure 8) e.g: rope bridges at Collie River, Preston River are not included in the management plan. Ensure that maps are updated in the management plan to show all proposed fauna crossing structures and consistent with Figure 8 in the ARI. It would be beneficial to provide one image with the following layers: • the proposed fauna crossing structures • mapped possum-suitable habitat and possum observations • overlaid with the construction footprint and development envelope.

Figure 4 of the Conservation Significant Fauna EMP (Fauna Crossing Provisions and Exclusion Fencing Concept Plan) has been revised to show all fauna crossing structures proposed and mapped in the ARI document. An additional set of Figure 4 that includes mapped possum-suitable habitat and possum observations has also been provided to EPA in conjunction with the response to submissions.

Item No.	EMP Section No.	EPA Services Comments
6	Section 1.3	IBSA Update the IBSA section of the Plan to align with EPA EMP requirements with regard to developing and submitting IBSA data package/s both during assessment but also during the compliance process if/when relevant.

The Proposal IBSA package will be updated as required.

3.3. Offsets Strategy

Item No.	EPA Services Comments
1	EPA Services advise that an additional offset is required to counterbalance all impacts to *Corymbia calophylla – Xanthorrhoea preissii* woodlands and shrublands of the SCP (FCT3c) TEC. While the FCT3c TEC occurrences proposed to be cleared are considered small, narrow, isolated and mostly degraded (with the exception of 0.015 ha which is mapped as good or better condition and connected a larger remnant), DBCA have advised that only 12 ha remains of this TEC in the south west. In this context, EPA Services considers that cumulative impact to this TEC is already at a critical level, and that all impacts to this TEC should be offset.

	Therefore, if impacts to this TEC cannot be avoided, Main Roads should include an offset to counterbalance the direct impact of 1.3 ha of FCT3c TEC, noting that DBCA's advice indicates that appropriate management should be implemented to ensure indirect impacts area avoided.

Considering that more than 95% of the 1.3 ha of the *Corymbia calophylla – Xanthorrhoea preissii* woodlands and shrublands of the SCP (FCT3c) TEC that will be cleared under the Proposal is Degraded or Completely Degraded, Main Roads does not consider that an additional offset to counterbalance impacts to this TEC is required.

The area, location and condition of the four TEC sites that occur within the Proposal Area are described in Table 3-1 (street view images sourced from Google Maps).

Table 3-1 Descriptions of the four *Corymbia calophylla – Xanthorrhoea preissii* woodlands and shrublands of the SCP (FCT3c) TEC sites that occur within the Proposal Area

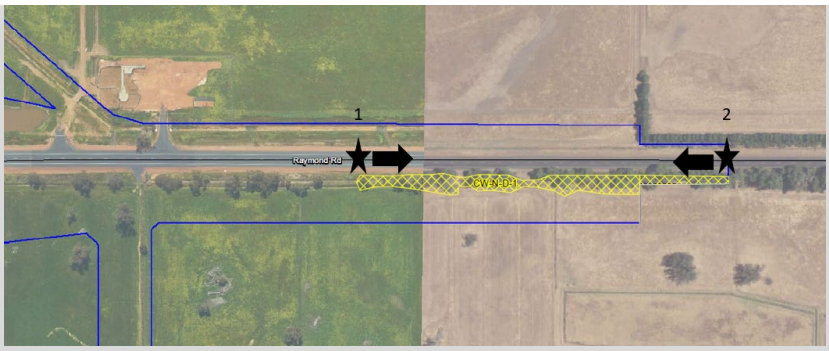
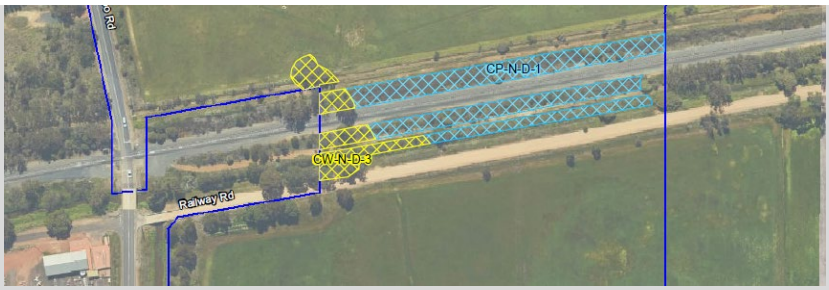
Site No.	Location	Area (Ha)	Vegetation Condition
CW-N-D-1	Raymond Road	0.29	 Mapped TEC extent within Proposal Area at Raymond Road highlighted in yellow (black star and arrow represent photo point and field of view direction).  Photo Point 1: Raymond Road looking east

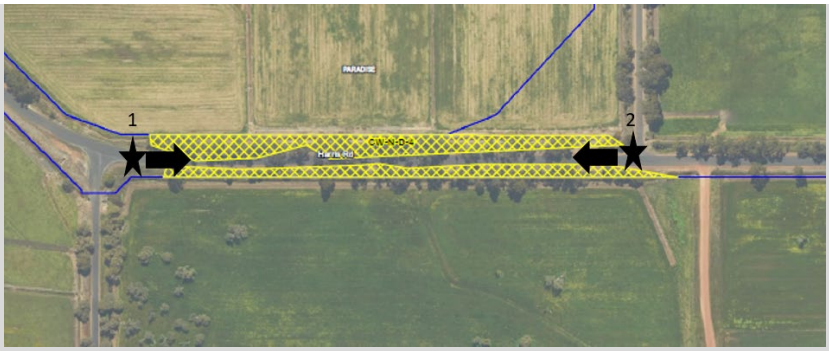
			 Photo Point 2: Raymond Road looking west (note trunk sizes of *Corymbia calophylla*) Condition: 6-7 (Degraded to Completely degraded) Very narrow verge with cleared paddock on either side of the road. No large trees located within road reserve with only one tree greater than 500 mm DBH recorded within TEC. Clearing of this patch of TEC is not considered significant as it is highly degraded, narrow (less than 3m wide), surrounded by cleared paddocks, is less than 0.3 ha in size and does not contain any large mature *Corymbia calophylla*.
CW-N-D-2	Treendale Road	0.33	 Mapped TEC extent within Proposal Area at Treendale Road highlighted in yellow (black star and arrow represent photo point and field of view direction). 

Photo Point 1: Treendale Road western patch looking east (note only one *Xanthorrhoea preissii* was observed within either Treendale Road patch)

Photo Point 2: Treendale Road western patch looking west (note only one individual *Xanthorrhoea preissii* observed within either patch)

Photo Point 3: Treendale Road eastern patch looking east

			 Photo Point 4: Treendale Road eastern patch looking west (note no *Xanthorrhoea preissii* in understorey) The Treendale Road TEC consists of two patches (eastern and western patches). No *Xanthorrhoea preissii* were observed within the eastern patch. Condition: 6-7 (Degraded to Completely degraded) Clearing of these two patches of TEC is not considered significant as they are highly degraded, weed infested, parkland cleared, narrow (less than 5m wide), surrounded by cleared paddocks, with neither patch being larger than 0.3 ha in size, with only one *Xanthorrhoea preissii* observed.
CW-N-D-3	Railway Road	0.14	 Mapped TEC extent within Proposal Area at Railway Road highlighted in yellow (note area west of yellow hatched area that has been excised from Proposal Area to minimise impacts on TEC). Condition: 3-4 (Very Good to Good) - 0.05 ha 6-7 (Degraded to Completely degraded) - 0.09 ha The Railway Road TEC is split by the railway line. Main Roads has minimised its impact on this TEC patch to less than 0.15 ha at this crossing point by avoiding the TEC to the west, rather than clearing through to Waterloo Road. The clearing of this TEC at Railway Road is

			not considered significant given the small area to be impacted and its degraded nature.
CW-N-D-4	Harris Road	0.52	 Mapped TEC extent within Proposal Area at Harris Road highlighted in yellow (black star and arrow represent photo point and field of view direction).  Photo Point 1: Western end of Harris Road TEC looking east  Photo Point 2: Eastern end of Harris Road TEC looking west (note bare area on right hand side that has been mapped as the TEC) Condition: 6 (Degraded) - 0.52 ha

			Although this was assessed as being the largest of the four patches of TEC within the Proposal Area, many areas mapped as TEC at the Harris Road site do not contain native vegetation (see Photo Point 2 above) Clearing of this patch of TEC is not considered significant as it is highly degraded, narrow (less than 5m wide), surrounded by cleared paddocks and is approximately 0.5 ha in size.

It is considered that the majority of vegetation occuring within the four areas mapped as FCT3c no longer structurally or floristically represent the TEC and are degraded to such a degree that the regeneration of the community is highly unlikely to occur.

The conservation listing advice (DoEE, 2017a) states that 29 occurrences totalling 115 ha of FCT3c have been located between Bullsbrook and Capel. DBCA has advised EPA Services that only 12 ha of this TEC remains in the south west, however it appears that these estimated extents exclude occurrences on road reserves and private property and therefore understate the actual extent remaining.

With regards to the 12 ha of this community that occurs within the south west, Main Roads is uncertain where DBCA has recorded these areas or whether they are on lands managed for conservation purposes. Limited information has been published on this community type since the 2000-2003 Interim Recover Plan was released in 2000 (English & Blyth, 2000).

Based on visual assessments of roadside vegetation, FCT3c occurs regularly in areas the vicinity of the Proposal Area (between Waterloo, Paradise and Burekup), with the vegetation communities in these reserves typically being larger and in better condition than the degraded communities that occur with the Proposal Area.

The proposed management of indirect impacts resulting from the Proposal is considered appropriate and adequate to ensure that such impacts are avoided.

Item No.	EPA Services Comments
2	Revise the Offsets Strategy to include information regarding the proposed protection (e.g. conservation covenant, conversion to conservation estate) of the sites that will ensure enduring offset outcomes.

In the Proposal Offset Strategy, Table 4-2 provides an overview of the offsets proposed and the status of each site is described in detail in Section 4.6. Lot 2 Boyanup Picton Road (Offset 1) is owned freehold by the Commissioner of Main Roads and was acquired with the intention of utilising the site vegetation as an offset for the BORR project. A 22.3 ha portion was set aside as an offset for the existing BORR Stage 1 (BORR Central) constructed in 2013. Lot 2 directly abuts the existing BORR Central section of the current Proposal. After purchase, Main Roads initiated the re-zoning of the property from rural to Regional Open Space under the Greater Bunbury Region Scheme (GBRS).

Lot 104 Willinge Drive Davenport (Offset 2) is also owned freehold by the Commissioner of Main Roads and was purchased as a potential sand source and environmental offset site. Offset 4 is currently privately owned freehold land, but would be acquired by Main Roads as an Offset for herb rich clay pans of the SCP (FCT08) pending confirmation surveys in 2020.

Offset 3 comprises the proposed revegetation of a 90 ha area of a degraded portion of State Forest No. 2 which is protected within formal conservation reserves vested in the Conservation and Parks Commission

Item No.	EPA Services Comments
3	Where information is available, please spatially define the environmental values within the offset areas.

Provision of spatial data associated with proposed offsets will be provided at the completion of spring 2020 surveys for all of the proposed offsets.

Item No.	EPA Services Comments
4	Update the Offsets Strategy to include, in a table format, an assessment against the six Principles in the WA Environmental Offsets Policy (2011) to demonstrate appropriate application of the offsets policy and guidelines.

Assessment of Offsets against the Principles of the WA Environmental Offsets Policy has been added to the Offsets Strategy in Table 6-2 of Section 6 (*Counterbalance of Significant Residual Impacts*).

Item No.	EPA Services Comments
5	Update the Offsets Strategy to include a completed Residual Impact Significance Model (RSIM) table (template in Attachment 2). Please note that the table should include all impacts from the proposal (not just those that Main Roads consider to be significant). Ensure a rationale/analysis is also be included to support whether or not Main Roads consider the residual impacts to be significant or not.

The residual significance of the impacts associated with the Proposal have been fully assessed both in the June 2019 referral package and the February 2020 additional information document. A summary of the residual significance of the proposal consistent with the Residual Impact Significance Model is included in Table 1 2 of the Offset Strategy as a summary of the conclusions of the larger assessment process.

Item No.	EPA Services Comments
6	Provide greater detail in the Offsets Strategy about how the plan aligns with relevant plans and policies (e.g. recovery plans).

Additional context relevant to the application of other State and Commonwealth plans and policies has been added in Section 4.4 of the Offsets Strategy.

Item No.	EPA Services Comments
7	Risks and contingency measures: We note that several required details remain uncertain i.e: • the unconfirmed details of the 90 ha revegetation of State forest No.2 (Offset 3) and the formal arrangement between Main Roads and DBCA • the unconfirmed occurrence of *'Herb rich claypans'* TEC on private land (Offset 4); the level of uncertainty or risk associated with the potential land acquisition; and that there remains a shortfall of 16.9% of the required offset • the unconfirmed occurrence of *'Banksia dominated woodlands of the Swan Coastal Plain IBRA region'* PEC at Lot 2 Boyanup Picton Road (Offset 1) Please provide evidence that supports the success or viability of the above offset, such as • evidence to support the level of confidence that the revegetation and rehabilitation will be successful • whether there are other suitable sites in the case that the land cannot be acquired for the Herb Rich Shrublands on Clay Pans (FCT08) TEC as proposed (noting that additional sites are still to identified to achieve the 100 per cent) • surveys do not confirm the Banksia Woodlands PEC, or level of confidence in the rehabilitation methods. EPA Services notes that a formal agreement between Main Roads WA and DBCA is unlikely to occur before the finalisation of the assessment at it relates to Offset 3. It is noted that this agreement is likely to contain completion criteria as it relates to rehabilitation actions.

Successful revegetation of State forest No.2 (Offset 3). The proposed rehabilitation works are congruent with the objectives of the Tuart Forest National Park Management Plan (TFNPMP) (Department of Parks and Wildlife, 2014) and would be consistent with ongoing revegetation already occurring in existing conservation reserves within the Tuart Forest National Park planning area. Monitoring and adaptive management of revegetation would be undertaken in consultation with DBCA to ensure that the objectives and success criteria of the TFNPMP are being met. Working with DBCA as part of the larger management program and integration with existing completion criteria and revegetation strategies for State Forest No.2 are anticipated to contribute to the success of the revegetation program.

Assurance of Herb Rich Shrublands on Clay Pans (FCT08) TEC Acquisition. Alternative suitable Clay Pans (FCT08) TEC offset sites are being investigated. Should the proposed offset site not be secured, Main Roads will consult with DBCA to determine alternative sites suitable for acquisition.

Banksia Woodlands PEC at Lot 2 Boyanup Picton Road (Offset 1). A site survey conducted in October 2013 (GHD, 2014) identified 17 ha of vegetation communities consistent with the Banksia Woodland TEC / PEC designation. While additional site assessment is proposed in spring 2020 to confirm the proposed offset area vegetation conforms to Banksia woodland TEC / PEC, the existing survey work indicates a high probability of identifying Banksia woodland TEC / PEC and that additional sites will not be required.

Item No.	EPA Services Comments
8	There are several issues with readability of the document as a result of inconsistencies between the 'Section 4 - Descriptions of the offsets' and 'Section 5 - Offsets Guide Inputs and Justification'. For example Site 2 Site 2 (Lot 104 Willinge Drive) – the description of the offset in Section 5 indicates that revegetation will be undertaken; however Table 5-3 also includes site management actions such as (fencing and access management, weed control, firebreaks and feral animal control) which is not included in the description in section 4. These inconsistences cause issues for the assessment as it is not explicit in one succinct section what is being proposed. For ease of document use and review, please revise the document to provide clear and consistent descriptions of what is proposed across sections. Consider making the structural changes to the document if necessary, such as combining the two sections.

Main Roads has not chosen to merge Sections 4 and 5, but has worked to clarify both sections and eliminated potential inconsistencies between the two sections to improve readability and understanding of the commitments of the Offset Strategy. Of note, ongoing site management for long term conservation (maximum 20 years) will include fencing and access management, weed control, firebreaks and feral animal control to maintain/improve habitat quality at Offset Sites 1-3. Ongoing site management for long term conservation at Offset Site 4 (fencing and access management and weed control) to improve the site vegetation quality in the long term. These commitments have been clearly noted in Section 4 of the Offsets Strategy.

Item No.	EPA Services Comments
9	Provide a completed WA environmental offsets template (located on the EPA's website).

The completed WA Offsets template has been added as Appendix C to the Offsets Strategy.

Item No.	EPA Services Comments
10	Table 5-4 (WRP Site 4) in the offsets strategy indicates that percentage of impact offset is 38.5%, whereas in Table 6-1 the percentage of offset required for Site 4 is 45.3%. The Offsets

	Assessment Guide at the back of the offsets strategy indicates that 45.3% is correct, however please clarify and amend inconsistences in the document.

As per the Assessment Guide, the correct percentage of impact offset for Western Ringtail Possum at Site 4 is 45.3%. Table 5-4 has been updated accordingly.

4. RESPONSES TO PUBLIC SUBMISSIONS

4.1. The Proposal - General Comments

No consideration of cumulative impacts of BORR Northern proposal combined with BORR Southern proposal:

This section of the project has impacts on seven conservation significant fauna species, three TEC's and one PEC and removes a total of 92 hectares of vegetation. In seeking approval for this northern section of the project first, Main Roads has isolated the impacts from this section from the additional significant impacts from the southern section, with no consideration of the cumulative effects of the combined sections of the project on the already fragile regional and global environment.

(ANON-55DK-U4DV-V)

The assessment of impacts for the BORR Northern and Central Sections has been considered at both local and regional levels, taking into account historic vegetation loss and the context of remaining native vegetation, including threatened ecological communities and habitat for conservation significant flora and fauna. Assessment of each Factor looks at impacts with the context of the Proposal Area and a wider local and regional context, as relevant in the assessment of each Factor.

While the assessment of this Proposal has not had regard to the potential impacts of the BORR Southern Section (Assessment No. 2225), although they won't be delivered at the same time, Main Roads has pursued concurrent assessment of both proposals, allowing the EPA and the public to consider the potential impacts associated with both proposals.

Alternative alignments not considered adequately:

- Alternative alignments not analysed quantitatively to demonstrate that the chosen route has the least environmental impacts.
- Extension of Willinge Drive to link up with the South Western Highway and Lillydale Road. Willinge Drive is at present easily accessible from South Western Highway via the BORR Central Section. To construct this additional road and bridge over the Preston River and another large roundabout on South Western Highway is not needed.
- The increased truck movements from Talison's Lithium Mine at Greenbushes can be stopped by renovating the existing railway line from Picton to Manjimup.

Excessive project extent. The extent of the proposal with its possible grade separation (one road over another) at Forrest Road, Raymond Road, South Western Highway near Waterloo Road, Waterloo Road at Wireless Road, Willinge Drive, Centenary Road/Lillydale Road and Bussell Highway – although roundabouts may be sufficient in some areas - is huge. Main Roads estimated that fill requirements are equivalent to approximately 6.5 times the volume of Optus Stadium (p7 Sustainability Outcomes). This is both extraordinary and unacceptable.

(ANON-55DK-U4DC-9, ANON-55DK-U4DD-A, ANON-55DK-U4D1-Q, ANON-55DK-U4D4-T, ANON-55DK-U4D2-R, Urban Bushland Council WA (UBC))

This matter was not addressed in the Additional Information, but has been previously addressed in the June 2019 s38 referral of the Proposal in Section 2.4 (*Alternative options considered*) of the Environmental Referral Supporting Document (BORR IPT, 2019).

The Northern section should remain on the green line, i.e. the original route (Titled 'current northern section alignment') which - Landowners have been aware of this route for decades and consulted with.

Ignore the new proposed pink route which was devised at a much later stage without adequate local resident consideration or consultation in a face to face – personal approach. The requirement for consultation is inadequate.
(ANON-55DK-U4D1-Q, ANON-55DK-U4D4-T, ANON-55DK-U4D2-R)

This matter was not addressed in the Additional Information, but has been previously addressed in the June 2019 s38 referral of the Proposal in Section 2.4 (*Alternative options considered*) of the Environmental Referral Supporting Document (BORR IPT, 2019).

4.2. Flora and Vegetation

Environmental impacts could be further mitigated by reducing the scale or number of grade-separation interchanges in the project. The most notable example is the interchange at the northern end of the project at Paris and Clifton Roads and Forrest Highway. The need for interchanges of this magnitude do not appear to be counterbalanced adequately by environmental concerns due to the lack of engagement with environmental stakeholder groups (Table 3-1 of BORR-01-RP-EN-0009).

Implement the following options to avoid and minimise clearing, especially in areas of high biodiversity value, including ancient trees, and in grade-separated interchanges, to the maximum extent possible:

- steepen batters
- use retaining walls
- erect road safety barriers on the edge of the sealed shoulder, or 1m from the edge of the driving lane, while retaining vegetation to within 500mm of the back of the barrier if it is a W-beam road safety barrier
- reducing speed limits
- reducing median widths, and installing road safety barriers on the edge of the sealed edge to prevent head-on collisions
- design the vertical road alignment as close as possible to the existing ground level to minimise the batter widths
- retain vegetation in areas proposed for infiltration of storm water runoff.

(Wildflower Society of WA (WSWA))

The original Main Roads planning for the staggered T-intersections of Paris/ Clifton and Raymond/ Grand Entrance was for these to be eventually replaced with grade separated interchanges (dependent on traffic volumes), and for BORR to connect to Forrest Highway near Hynes Road.

With the change to a more eastern route alignment for BORR, the connection to Forrest Highway has shifted further north to coincide with the planned Paris/ Clifton grade separation.

Generally, whilst grade separated interchanges for rural areas are planned at a spacing of 5 km to 8 km (c.f. Austroads Guide to Road Design, Part 4C: Interchanges), in peri-urban areas connection to arterials and other primary distributor roads may dictate a closer spacing (e.g. where BORR intersects with Raymond Road and South Western Highway North).

For the interchange at Paris/ Clifton and Forrest Highway, a grade separation is required for bifurcation of BORR and for traffic volumes from connecting roads. The Clifton Road connection was identified through stakeholder consultation as a critical route for fire-fighting and emergency response.

The proposed interchange form at this location has been significantly compressed, providing only for critical movements, and strategically located so as to avoid and minimise impacts to existing native vegetation through maximising use of previously disturbed or non-vegetated areas (e.g. where the Collie Power Station saline outfall pipeline and Atco Gas high pressure gas main traverse through this area).

The options identified in the adjacent list have been considered and included where applicable, such as steepened batters, retaining walls, connecting road over (reduced speed), main alignment near/ at ground level (reduced earthworks), barriers at edge of sealed shoulder (reduced footprint), and passive infiltration of storm water runoff through vegetated areas.

Significant consultation has been undertaken for this Proposal, as detailed in the June 2019 s38 referral of the Proposal in Section 3.

4.3. Terrestrial Fauna

Installation of approximately 43 possum over/ underpasses is noted however from review of Appendix A Figure 8 there are only 33 proposed new fauna crossings. This include 15 rope bridges and 9 dedicated fauna underpasses. There are a further 9 underpasses proposed however they are actually drainage culverts which will have a 300mm wide shelf for fauna, placed at the 1 year ARI level.

This is despite recommendations from three years of monitoring, post construction of Stage 1 BORR that separate structures are used for drainage and fauna crossings, (Chambers, Bencini, 2016).

Chambers, B.K., Bencini, R. (2016). Bunbury Outer Ring Road: Fauna monitoring, rope bridge and fauna underpass use. Doi; 10.13140/RG 2.2 32866.02243

(ANON-55DK-U4DV-V)

Progress on fauna crossings and structures is continuing in consultation with Barbara Jones, a recognised expert in WRP with local expertise in the species. Figure 4 of the Conservation Significant Fauna EMP (*Fauna Crossing Provisions and Exclusion Fencing Concept Plan*) now reflects the design changes and includes 32 crossings, as follows:

- 14 rope bridges,
- nine underpasses, and
- an additional nine dual-use culverts.

In the design and application of crossings, the recommendations from the monitoring of BORR Central have been taken into account. It is notable that the recommendation from BORR Central monitoring (included below) does not preclude the use of structures that also have hydrologic function, but is cognisant that

those structures will have negligible value during storm events and should be designed to avoid lengthy retention of standing water

> *"We therefore recommend the use of separate structures for the drainage of the road and fauna crossings in future road construction projects, or drainage designed and constructed to ensure water is not retained in the structure."* (Chambers & Bencini, 2016)

Only two of the nine designed underpasses provide any hydrologic function as part of the drainage strategy. The additional nine dual use culverts that provide drainage capacity are included in the Proposal as they do provide valuable crossing opportunities for common and conservation significant fauna species. All structures with a drainage function have been designed to the maximum extent practicable to not retain water as recommended.

It is recommended that long term (more than 3 years) monitoring of the underpasses and bridges is undertaken to determine their effectiveness and identify and implement any remedial measures.

(ANON-55DK-U4DV-V)

Based on the monitoring of underpasses and bridges with previous Main Roads projects (Yokochi & Bencini, 2015; Chambers & Bencini, 2016) the effectiveness of structures has been shown to be readily definable within a three year period. The use of structures (or lack thereof) has been clearly definable in the first year of monitoring and studies have shown that WRP will begin testing and investigating structures before construction has completed. As such, the three year period of monitoring is considered sufficient to define the use of structures or identify the need for remedial action.

In detail 3 of Figure 8, sheet 2/4 the transverse (under bridge) rope bridges have no connecting vegetation.

(ANON-55DK-U4DV-V)

This has been rectified in design review by moving the rope bridges in to the edge of the riparian corridor of the Collie River for the Proposal. The inset below from Figure 4 of the Conservation Significant Fauna EMP (*Fauna Crossing Provisions and Exclusion Fencing Concept Plan*) now reflects the design change.

BirdLife WA also notes that there is a long-term (>20 years) Black Cormorant nesting colony on the Brunswick River (accessible via Billabong Court) that will be impacted by the proposed development.

(BirdLife WA)

The Brunswick River and the nesting colony sit more than 700 m north of the northern terminus of the Proposal boundary. No direct indirect impacts on the colony would be anticipated to occur.

BirdLife WA recognises the intent in the proposal to revegetate an area of 19 ha but does not consider this as an ecologically equivalent replacement for the habitat value of the native vegetation that will be lost. The net effect of the impact will be negative for birds, especially those requiring nesting hollows, for a very long time.

(BirdLife WA)

Revegetated areas will inherently provide different quality of habitat at the completion of construction but also return temporary areas of construction to viable habitat over time.

The Proposal has been revised to avoid hollows and habitat for bird species, primarily including conservation significant Black Cockatoo species. No trees with known Black Cockatoo nest hollows will be cleared for the Proposal. Three trees with potentially suitable nest hollows will be cleared. In surveyed areas adjacent to the Proposal Area, Biota (2020a) located one known Black Cockatoo nesting tree and 18 trees with 19 potentially suitable nest hollows.

The EMP states: if an animal is in the tree, the tree will be bumped softly, and if the animal remains there, the tree will be soft-felled onto other vegetation so the animal has a chance to escape. This does not justify loss of their habitat. Most are likely to be injured or killed, and there will be a net loss. Also trees provide habitat to thousands of small native fauna which will be killed.

(Urban Bushland Council WA (UBC))

Management measures are proposed to minimise impacts to conservation significant fauna during the clearing of habitat and are targeted to avoid mortality to conservation significant fauna that will also reduce the potential for mortality on many common species of fauna. The Proposal does include the clearing of native vegetation that provides habitat for a range of fauna and inherently recognises impacts on fauna will occur. The full range of management measures proposed for WRP are more extensive than the process for felling large habitat trees and include:

- A qualified zoologist / environmental scientist / fauna-spotter will be on-site at all times during clearing of habitat for WRP and must maintain radio communication with machinery operators.
- Trees that have been identified as supporting WRP will be 'bumped gently" with a machine prior to felling. The operator and zoologist will wait and observe the tree for a short time. If no possum appears to be present then the tree shall be pushed over slowly to minimise risk of injury to any undetected animal (if present).
- If WRP are detected during clearing operations, the tree containing the animal shall be left for up to 48 hours to allow for the animal to vacate the tree, while clearing continues adjacent to the inhabited tree. If the tree continues to be occupied after 48 hours, the animal will be coerced/moved

to a safe area outside of the clearing footprint by the appointed zoologist / environmental scientist / fauna spotter.

- Potential habitat trees would be cleared appropriately, by either directional onto vegetation within the clearing area that is yet to be cleared or by ensuring trees don't fall on hollows whenever possible (trees with multiple hollows will be assessed on a case by case basis). The 'soft felling' of habitat trees will provide a 'cushion' for the vegetation being felled, allowing any WRP in a hollow more opportunity to safely vacate the hollow.
- Felled trees will be checked immediately after felling, and where any undetected fauna are identified the tree will be left on the ground overnight to allow time for the fauna to vacate.
- Vacant dreys within felled trees will be destroyed immediately to prevent animals re-entering it.
- Where clearing operations abut existing roads, visual message boards will be installed to warn drivers of the potential for fauna to cross the road during clearing operations
- Habitat clearing to be staged, commencing from existing edge lines / roads and progressing towards habitat that will be retained to direct WRP towards these areas
- Any WRP showing signs of injury or illness will be promptly referred to an experienced wildlife veterinarian or approved wildlife rehabilitation facility

These measures are anticipated to also minimise potential impacts on Brush-tailed Phascogale and would minimise impacts on common fauna species.

With regard to identification and management of Black Cockatoo nesting, the following is proposed in conjunction with the management measures proposed for WRP:

1. Where any of the three trees with suitable nest hollows for Black Cockatoo require clearing for the Proposal, the hollow will be visually inspected where safe and practicable. Where not in use the hollow will be 'blocked' to prevent breeding
2. Where blocking of the nest hollows cannot be undertaken (e.g. timing, access), a pre-clearing fauna assessment will be undertaken by a suitably experienced person to determine if the hollows are being used by Black Cockatoos
3. Where a suitable nest hollow within the area of the Proposal has been blocked prior to the Black Cockatoo breeding season, the tree may be felled as part of the standard vegetation clearing process
4. Where a suitable nest hollow within the area of the Proposal has not been blocked and the pre-clearing fauna assessment has not identified Black Cockatoo occupation of the nest hollow, prior to clearing the tree, the tree will be 'bumped gently' with a machine with the machine operator and zoologist then to wait and observe the tree for a short time after. If no Black Cockatoo appears to be present then the tree may be pushed over slowly to minimise risk of injury to any undetected animal (if present)
5. Where suitable nest hollow within the area of the Proposal has not been blocked and the pre-clearing fauna assessment identifies Black Cockatoo occupation of the nest hollow (which may include chicks (young)), the tree with the nest hollow will not be cleared until after the chick/s have left the nest. No vegetation within 10 m of the tree will be cleared until after the hollow is vacant.

4.4. Inland Waters & Drainage

The proponent has not demonstrated that the pre-construction hydrology will be maintained. The road will, in effect, act as a constraint to the natural sheet flow of the water, impacting the natural hydrology and cause pooling and water logging of land which will be lost to grazing or other activities.

(ANON-55DK-U4DK-H)

We note that the report provided by Main Roads includes a drainage management strategy. This drainage management strategy is said to have included participants of various stakeholders. It should be noted that at no stage were we invited to make any comments in respect of drainage strategies despite the fact that we have lived on the land and been in the location for many generations. We know the drainage of the land intimately and we are concerned that the construction of a road, 3 metres high with all of the compacting, will affect the natural hydrology.

The reports provided to us have not given any consideration to ensuring that the natural hydrology will be maintained. We are concerned that the culverts that are proposed to be constructed under the road do not in fact continue to ensure that the pre-construction hydrology will be maintained. As matters presently stand, it is apparent to us that the road will, in effect, act as a constraint to the natural sheet flow of the water, impacting the natural hydrology and cause pooling and water logging of land which will be lost to grazing or other activities.

Main Roads has failed to identify the impacts of the BORR caused by a road constructed at a height of some 3 metres above the natural ground level on our views across the landscape. We consider this a matter that Main Roads ought properly to have taken into account and do not see any proposed mitigation strategies contained within their reports. The drainage strategy falls well short of giving careful consideration to the hydrological impacts caused by the compaction of the road on the existing hydrology and the potential for drainage impact and loss of additional pasture areas.

(ANON-55DK-U4DK-H)

A drainage reference group was formed with authorities responsible for and who take an active role in management of surface water runoff and drainage in the region. Two meetings were held with these members in 2018, as part of the development of a Drainage Strategy for BORR. Members included representatives from: BORR IPT, Water Corporation, Harvey Water, DWER, Main Roads WA, Main Roads WA - South West Region, Parks and Wildlife Service, Leschenault Catchment Council Inc., City of Bunbury, Department of Primary Industry & Regional Development, Shire of Capel, Shire of Dardanup, Shire of Harvey, and the South West Catchment Council.

As part of the detailed drainage investigation, two dimensional flood modelling was conducted to establish the pre-development and post-development flood behaviour across the Proposal. The two dimensional flood modelling takes account of the existing topography and the way water moves through the catchment. This modelling was specifically undertaken to account for the presence of shallow sheet flow across paddocks at the localised level.

The proposed culverts were determined based on this two dimensional flood modelling to mimic the pre-development hydrology, as per the undertaking in the Drainage Strategy. Modelling indicates that there may be some minor increases in flooding depth (<200mm) adjacent the highway during a 1% annual exceedance probability (100 year Average Recurrence Interval) flood event. However, in the more frequent/ regular rainfall events these impacts will be reduced and further modelling will be undertaken during the detailed design phase to assess these impacts and limit any increase in pre-development flooding level, extent and time of inundation.

Seasonal inundation and waterlogging is typical of the palusplain flats adjacent to parts of the BORR alignment and is due to the low lying and flat nature of the land in combination with sand clay soil conditions. The existing standing water in areas that are seasonally waterlogged will not be altered by culverts and drainage structures of the BORR. These culverts are proposed to maintain the existing flow patterns and surface water hydrology. Therefore, if there is existing standing water on areas adjacent to the BORR, this won't be changed.

Design for BORR has also considered potential impacts to groundwater in vicinity of earthwork embankments from compaction associated with construction.

4.5. Social Surrounds

We have reviewed the Report prepared by Main Roads for the purposes of obtaining environmental approvals. We note that the proposed impact by noise caused by the construction and use of the BORR on our property and dwelling will exceed the limits as contained within the Environmental (Noise) Regulations 1997 (WA) (Regulations) and we further note that there is no proposed noise mitigation strategy to limit such impact. This would ordinarily be expected by way of appropriate bund walls or other mitigation to limit the noise to levels as required by the Regulations.

We note that the EPA has already identified in its Notice to Main Roads that there are properties in the northern alignment expected to receive noise levels above the State Planning Policy 5.4 limits and that EPA has requested additional justification for the absence of noise walls to mitigate noise impacts.

Main Roads has suggested to us privately that they would double-glaze and give us new air-conditioning. These proposals do nothing to ensure that we enjoy the amenity in our property at noise levels below the standard set by the Regulations, which renders it unusable given the excessive noise created both during construction and operation of the BORR.

Further, we are concerned that during the construction period, there is nothing identified within any of the reports that expressly set out how noise will be mitigated. Whether that be by way of use of squawkers for reversing of trucks and other machinery or other methods that are intended to reduce or limit the impact of noise to levels set by the EPA as concluded with the Regulations.

Main Roads has failed to properly consider the noise impacts on us caused by the BORR and we are very concerned that the noise created will not be reduced by any of the accommodation works proposed by Main Roads and there is nothing in any Main Roads proposal which addresses this.

(ANON-55DK-U4DK-H)

Main Roads will comply with SPP 5.4 in regards to identification of sensitive noise receptors and the provision of mitigation treatments to properties above the identified threshold. Landowners predicted to be impacted by noise levels above the relevant day-time and night-time targets in the northern and central corridors have been in contact with Main Roads.

Noise mitigation treatments may include using a quieter road surface, constructing noise walls or installing architectural treatment at individual properties in order to comply with SPP 5.4. Where mitigation is required, Main Roads will continue to liaise with landowners to help identify the best overall solution for the location.

The noise modelling process is conservative and assumes a worse-case noise scenario to ensure likely noise exceedances are identified and acted upon.

With respect to the notice from EPA to Main Roads, this has been addressed in the latest revision of the noise report and ARI response: *Bunbury Outer Ring Road Northern and Central Sections, Traffic Noise Assessment,*

Rev E; 31 January 2020 that identified 40 properties in the Kingston area west of the Forrest Highway predicted to experience noise levels above the SPP 5.4 outdoor noise target for upgraded roads of 60 LAeq (Day)dBin 2041. However, with the suggested noise wall mitigation installation, all of these residences are predicted to experience outdoor noise levels that satisfy the SPP 5.4 noise target for upgraded roads.

Currently individual reports are being compiled to consider noise mitigation options for the remaining 47 properties predicted to experience noise levels above the SPP 5.4 outdoor noise target for new roads of 55 LAeq (Day) dB in 2041. These include assessment and modification of the existing façade, roof, glazing, doors and outside living areas.

Construction noise will be managed in accordance with Regulation 13 of the Environmental (Noise) Regulations 1997 (WA) (Noise Regulations). Noise management measures during construction will be included in the Construction Management Plan (CMP) to be prepared by the Alliance contractor. This will address the Environmental (Noise) Regulations 1997 (WA) (Regulations) requirements. Note that the Noise Regulations do not apply to noise emissions from motor vehicles operating on a road (Regulation 3).

We believe there are still significant gaps in the planning process that drastically impact on amenity of the eastern portion of the established community of Meadow Landing of which we are residents. We are aggrieved because the environmental impact of this proposal is much more significant on our home as we purchased our block and built our family home after undertaking due diligence checks to confirm no significant planned developments in the area to the east of our location. We purchased in good faith after identifying that the BORR was planned to be 4km to our south at Hynes Road. The socio-economic impact of the proposed new alignment on us is significant and application of specifications outlined in SPP 5.4 unfairly applies a common amenity standard as if we purchased with the knowledge that the road was to be constructed in close proximity to our residence.
The additional information provided in the traffic noise assessment, 31 January 2020, submitted by Main Roads still retains a range of deficiencies that unfairly affect the new roads' impact on our amenity and socio-economic well-being.

We raise the following issues with the revised noise assessment:

1) Noise modelling for Meadow Landing estate is based on a single site in Bevan Loop. This site does not represent the residents located on the eastern boundary of Meadow Landing which will be subject to the greatest increase in noise level with the installation of the BORR, a new road previously unplanned. The noise sample at Site B off Bevan Loop can only address noise from Raymond Rd and does not address noise emanating from the proposed BORR and Interchange at Raymond Rd. The noise logger installed at [redacted] at the request of residents and was not included in the initial study. We requested a subsequent sample which was undertaken by the BORR team at [redacted] and we note that this data has also not been included in this revised assessment.

2) The noise model does not adequately consider noise produced at elevation. The noise from the Raymond Road interchange and Collie River Bridges will be projected from an elevated position. The inputs listed in Table 4-1 Noise Modelling Assumptions and Configurations do not reflect the production of additional noise from traffic slowing down and accelerating under load to negotiate roundabouts either side of the interchange.

3) Noise level contours in FIG 4.8 and FIG 4.9, immediately east of Meadow Landing, appear to deviate closer to the proposed highway alignment and align with the eastern vegetated boundary of the wetland compared to equivalent contour east of the highway. It is difficult to comprehend given that the vegetation in that area is on a low-lying flood plain some 6+ metres lower than our and other residences in this area. We also note within the inputs/assumptions' in Table 4.1 for the noise

modelling does not include effect of vegetation. We believe we are unfairly assessed as non-sensitive receptors as our property is almost "line of site" with the BORR.

4) The revised submission does not include the impact of the noise predicted to emanate from vehicles travelling over expansion joints on the new Collie River bridges on residents that are considered to be "non-sensitive receptors". The simple fact is that the intermittent nature of this noise and the elevation from which it is projected will impact our residence and those in the eastern sections of Meadow Landing community. This cannot be dismissed as it will potentially have the greatest impact on interior noise and prevent sleep due to its intermittent nature. Noise data from the current Forest Highway bridges over the Collie River would provide suitable comparable information to model this noise and its impact on the residents at the eastern end of the Meadow Landing community.

5) Noise modelling has identified night time noise of 49 decibels (FIG 4.7) at our property [redacted]. We have evaporative cooling which requires our windows to be open at night in order to effectively operate. The façade of our house, containing bedrooms with large glazed areas, faces east towards the proposed BORR and we will not be able to reduce interior night time bedroom noise to 30 decibels as per SPP5.4. Similarly, our outdoor living area is on the east side of our home which will also have severely compromised amenity.

(ANON-55DK-U4DQ-Q)

With respect to the issues raised in regard the revised noise assessment:

1) Noise monitoring was carried out at Bevan Loop as part of the noise model validation and calibration process. This was one of the sites chosen to collect validation data. The process involved comparing the in-situ monitored noise data with the modelled noise data at the same locations. The site reporting the lowest noise model over-prediction was then selected to calibrate the model.

   Additional noise monitoring was carried out at three locations in the Meadow Landing area between 26 November 2019 to 03 December 2019, and compared to the CadnaA noise modelling predicted LAeq(day) dB noise levels in the 2018 model. With the façade correction (+2.5dB) applied to the two free-field locations and the model calibration factor (-1.4 dB) applied, the modelled results were within zero to four dB higher than the in-situ measurements. This comparison of the predicted versus in-situ SPP 5.4 outdoor LAeq(day) dB noise levels demonstrates that the model predictions were accurate at all three monitoring locations. This provided for greater confidence in the noise model.

   In summary, whilst monitoring is only undertaken at a few select locations, modelling considers the noise impact at all significant residences and sensitive noise receptors.

2) As confirmed on numerous occasions (incl. Community Reference Group Meetings and Public Drop-in Sessions) the noise modelling does include for noise produced at height, as a composite of the road design superimposed onto the topographical feature survey is used in the modelling.

   The algorithms apply a correction for positive gradient. However, as noted previously the model does not incorporate acceleration and braking of vehicles. To counteract this, the modelling uses the posted speed rather than the likely actual speed of a vehicle. For instance, it assumes

vehicles are travelling at 60km/hr whereas in reality, they will potentially slow to a stop and then gradually increase to 60km/hr near the roundabout. By using a higher than actual speed, the model predicts higher noise levels and thus is considered to be a similar outcome to an accelerating vehicle at a lower speed.

3) As noted above, the noise model includes a composite of the road design superimposed onto the topographical feature survey. It is noted that through this section, north of Raymond Road through to Collie River, BORR is proposed to be depressed below ground; only rising above surface level again some 170m south of the crossing of Treendale Road. A distance of 700m away from the existing Ranson Drive and Treendale Road intersection.

   To the east and south east of residences at Ranson Road /Treendale Road intersection there is a river valley and then a rise in topography up to 15m. This rise and valley has an effect on the noise propagation. Single point façade noise prediction was also carried out, as contour maps are not as accurate since these are an interpolation of single point calculations. Ground absorption effects are included in the modelling.

4) As noted and confirmed at Community Reference Group Meetings, noise modelling does not include for expansion joints. However, the concern of residents has been noted and documented for further consideration during detailed design, with structural reports highlighting:

   a. *"At key locations across the project where noise sensitive receptors are located close to the bridge site, a quieter joint type is required."*
   b. *"For longer bridges, such as the Collie River crossing, finger plate joints or similar may be required."*

5) SPP 5.4 guides a target night-time outdoor noise level of 50 LAeq (Night) dB for new roads. A 49 dB(A) falls below the outdoor target and SPP 5.4 criteria are satisfied.

The deviation for the new trucking route from Willinge roundabout cutting through (farm land and a river course) to a proposed roundabout at Lillydale Road is not required. We have considerable concern for this roundabout addition (at Lillydale Road) and deviation to the Willinge round about. These concerns of nearby residents include:
* Noise pollution with truck braking, and vehicles slowing and then accelerating
* Light pollution from lighting towers around the roundabout and lead in/out roads
* Ongoing excessive traffic along Lillydale Road (which has significantly escalated due to the Willinge link to the Wharf plus allowing , an 'alternative' type BORR through way (or short cut) for motorists and trucks using Lillydale to get to Collie mining, Perth, Picton industrial etc.
* Extreme concern over the Lillydale Roads safety with motorbikes and motorists travelling at speeds well in excess of the 90km
* Considerable concern about the safety of residents and animals due to the traffic volume and speed. (I am not convinced with the flawed modelling presented to indicate that the traffic has and will not be significantly increased = research /modelling tweaked to indicate a favourable result for the BORR/main Roads teams). (ANON-55DK-U4D1-Q)

Point source noises (e.g. horns, noise emissions from propulsion and braking systems of motor vehicles) and noises during construction are not subject to State Planning Policy 5.4. Details on the management of construction noises and vibrations will form part of the Contract. Main Roads will require noise management

measures during construction to be included in the Construction Management Plan (CMP) to be prepared by the Alliance contractor. This will address the Environmental (Noise) Regulations 1997 (WA) (Regulations) requirements.

The matters of light pollution, traffic volumes and traffic speed were not addressed in the Additional Information, but were previously addressed in the June 2019 s38 referral of the Proposal in Section 2.4 (*Alternative options considered*) of the Environmental Referral Supporting Document (BORR IPT, 2019).

4.6. Offsets

Section 4.5.5 - The proposal to claim the apparently completed research as 10 % of the offset is not considered appropriate. According to the EPA Environmental Offsets Guidelines research projects are generally only appropriate as offsets when there is a high uncertainty regarding the impacts of an action which is not the case here as it is well documented that removal of habitat is a threatening process for the critically endangered WRT, (DWER, 2017). As the outcome of the research was to determine an estimate of WRT numbers only using the standard distance sampling survey method in use since around 2010 (Finlayson et al, 2010), it will not significantly improve or provide insight into the management of the species recovery or directly result in a positive outcome. There is a risk that Main Roads motivation for this research was not to improve the conservation status of WRT rather justification for less rigorous approaches to management of impacts on WRT in future road projects, should higher numbers be counted than anticipated.

(ANON-55DK-U4DV-V)

Main Roads commissioned the regional WRP population assessment (Biota, 2020b), on its own initiative in order to provide information to both industry and community regarding the extent and distribution of the species. This information was identified as a high priority in the WRP Recovery Plan (DPAW, 2017). Prior to Main Roads' commissioning this work, the species' extent was a recognised knowledge gap, the addressing of which was identified as required in the species' recovery plan (DPaW, 2017). Through addressing this knowledge gap, Main Roads has provided vital information that will assist species' management and recovery. This approach is wholly consistent with the WA Environmental Offsets Policy, which states:

> *Indirect offsets, which are actions aimed at improving scientific or community understanding and awareness of environmental values that are affected by a development or activity. These actions are designed to result in positive conservation outcomes and may include research to improve the management and protection of existing conservation estate or contributions to State Government initiatives, policies or strategic funds.*

Main Roads considers the request for inclusion of this investment as contribution towards the Proposal offset strategy to be fair and reasonable.

As a government department, Main Roads is well placed to demonstrate leadership in this regard and go beyond the usual interpretations of the [WA Offset] principles of the relevant state and federal policies.

It would be preferable to secure offset sites that are larger than the area of land being cleared or contain greater environmental values, to achieve a net benefit.

I also note that while some of the offsets being considered involve revegetation, others consist of existing habitat. Once again, this will not achieve a net benefit unless the offset area is at immediate risk of environmental harm.

(ANON-55DK-U4D5-U)

Under the WA Offsets Policy and Guidance, areas of vegetation or habitat proposed for use as offsets are determined based on the environmental values of the impact and proposed offset sites, the risk of loss and the ecological benefit a specific order of magnitude greater than the impact area. Main Roads has prepared the offset strategy in accordance with the requirements of this policy.

BWA has further concern about the dependence of this proposal, and the many other similar proposals, on environmental off-sets. These are intended to be a last-resort impact mitigation mechanism but now too often, they are adopted as a first line of project justification. BWA is yet to be convinced that areas of environmental off-set are consistently and effectively managed for the environmental purpose for which they are intended. Our current understanding is that most environmental off-sets are not effective for the purpose for which they were intended (i.e. as an ecological equivalent to the area being impacted).

(BirdLife WA)

The offsets proposed for this Proposal are consistent will the relevant WA and Commonwealth Offset policies and guidelines.

Section 4.5.2 of BORR-01-RP-EN-0017, relating to Offset 2, states that: "Main Roads may excavate sand from the cleared areas of the Lot prior to implementing revegetation and rehabilitation works". Such sand excavation may reduce the ability to properly rehabilitate the land with several key species, such as Banksia species, which depend on a deep sandy soil profile (many metres of sand). Such a proviso implies that the revegetation plan could do much better and reintroduce part of the original biodiversity (e.g. Banksia, Marri and Peppermint woodland) rather than simply focussing on trees that may provide food for black cockatoos.

Section 4.5.3, relating to Offset 3, states: "Similar to Offset 2, plant species will be selected to provide habitat for offset target species based on site parameters". It is not entirely clear what "target species based on site parameters" equates to, but it seems as though a biodiverse offset, targeting the original flora communities, is likely not being proposed. WSWA believes that providing a much more biodiverse offset than currently proposed would provide a much more adequate counterbalancing of the residual impacts of the proposal.

Section 4.5.4 states that the land for the offset has not yet been acquired. However, in general, potential for rehabilitation as an offset has been overlooked. In Table 5-12, it is noted that the proposed offset does not fulfill 100% of the impact – it only fulfills 83%. Table 5-12 seems to state that the parcel of land, part of which is proposed as an acquisition offset, also has a large (1.146 ha) degraded portion of the Claypan TEC, which was not considered for part of the offset. Rehabilitation of this portion, using translocated sections of the claypan to be destroyed, could provide one avenue to (partially) rehabilitate this section, and decrease the net loss of the TEC. WSWA strongly advocates for rehabilitation to form part of this offset to reduce the net loss of this highly threatened community.

Section 4.5.5 states that MRWA is proposing to use prior funding for WRP surveys as an indirect offset for the future impact of the project on the WRP. This implies that research funding can somehow be "banked" for future impacts, which is a curious concept that could defeat any additional benefit from a true offset, and WSWA questions whether this meets the WA's definition and criteria of an acceptable offset.

(Wildflower Society Western Australia (WSWA))

Removal of sand from revegetation areas would be evaluated prior to removal to ensure that suitable soil profiles exist to support revegetation success criteria.

In accordance with the WA Offsets Policy and Guidelines, for offsets addressing impacts to conservation significant fauna species, rehabilitation should comprise plant species that will provide habitat for the impacted species. Plant species used in rehabilitation offsets for the Proposal will be chosen for their ability to provide habitat for impacted conservation significant fauna species and for their suitability in regard to the location and characteristics of the offset site.

Translocation of Claypan TEC vegetation has not been demonstrated to be effective and was not supported by DBCA and therefore is not considered suitable for inclusion in the offset strategy. Main Roads is currently investigating additional offset options in consultation with DBCA to complement already identified offsets and adequately compensate for significant residual impacts to the 'Herb rich shrublands in Claypans' TEC.

Main Roads commissioned the regional WRP population assessment (Biota, 2020b), on its own initiative in order to provide information to both industry and community regarding the extent and distribution of the species. Prior to Main Roads' commissioning this work, the species' extent was a recognised knowledge gap, the addressing of which was identified as required in the species' recovery plan (DPaW, 2017). Through addressing this knowledge gap, Main Roads has provided vital information that will assist species' management and recovery. Main Roads considers the request for inclusion of this investment as contribution towards the Proposal offset strategy to be appropriate. By accepting this significant research as an offset, it will encourage other proponents to be above and beyond the level of work required for their projects. This much needed, and very costly, work will greatly assist in the recovery of the species.

Although offsets and a management plan have been presented, what has not been considered is the impact of size reduction to the fragments of remaining TECs. Those TECs to be impacted are the Banksia PEC/TEC and the Corymbia Woodland TEC. Fragmentation and reduction in remnant patch size is itself a threatening process, and this is not adequately captured by the Commonwealth Offset Calculator. This makes it even more imperative to be conservative with offsets and include rehabilitation of degraded/cleared land to reduce the net loss of vegetation.

(WSWA)

Main Roads acknowledges that fragmentation and reduction in remnant patch size are threatening processes and has assessed the impact from the Proposal in regards to this. Considering the current extents of the occurrences and the scale of the direct impact, the long-term viability of the remaining occurrences of Banksia Woodlands or Corymbia Woodland TEC is not expected to change as a result of the Proposal.

Main Roads has prepared the offset strategy in accordance with the requirements of the WA Offsets Policy and Guidance and Commonwealth Environmental Offsets Policy and Guide.

MRWA should be required to collect seed of local native plants to be cleared prior to clearing and be required to rescue and translocate large plants that feasibly can be moved, such as *Xanthorrhoea* and *Macrozamia* species. Additionally, we recommend that MRWA liaise with individuals and community groups (such as WSWA) to collect material from plants destined to be destroyed, for propagation or translocation.

(WSWA)

Given the scale and scope of the Proposal, Main Roads recognised the requirement for native seed for use in rehabilitation works for the Proposal and engaged Landscape Planners Pty Ltd in 2018 to conduct this work. During the 2018/19 and 2019/20 seasons, approximately 45.3 kg native seed has been collected for the Proposal.

Main Roads will consider salvage and translocation of plant material from clearing areas on a case by case basis in an ongoing capacity with community and industry groups.

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BORR Team

APPENDIX A SUMMARY OF RESPONSES TO SUBMISSIONS

Summary of Submissions

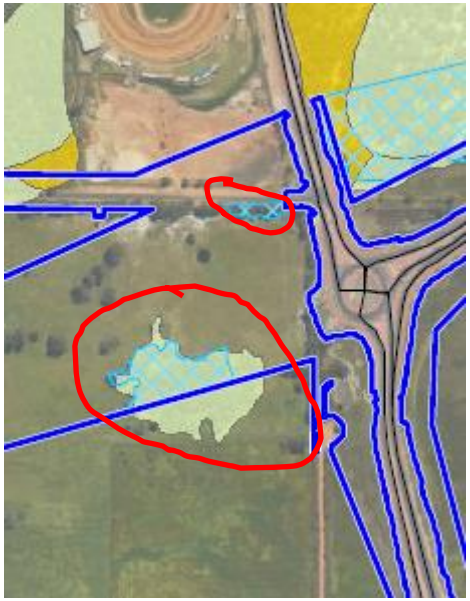
Bunbury Outer Ring Road – Northern and Central

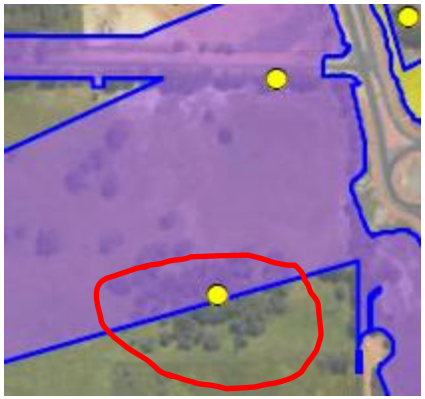
Main Road's Response to EPA Notice of Decision to Assess: Additional Information Requirements (ARI) Document; and Appendices Assessment No. 2215

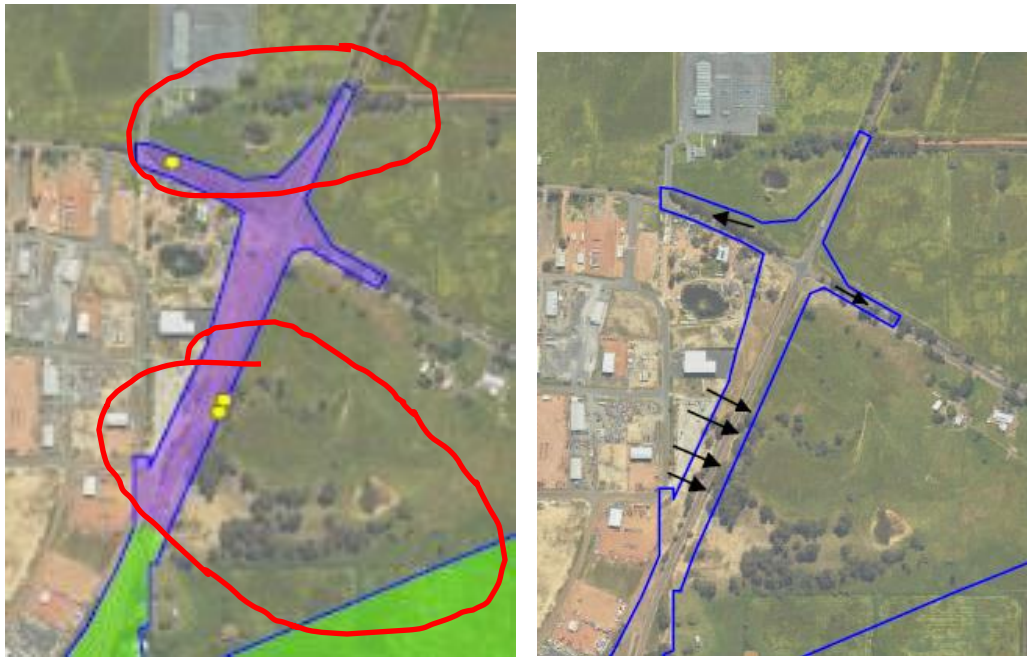
COMMENTS FROM THE EPA SERVICES

This document provides the comments from the EPA Services regarding the ARI document and Appendices for the Bunbury Outer Ring Road – Northern and Central proposed by Main Roads Western Australia (MRWA).

	EPA Services comment	Proponent response
	Bunbury Outer Ring Road Northern and Central	
Item No.	**Terrestrial Fauna**	
1.	Provide further information to enable an assessment of the potential effectiveness of the proposed fauna crossing structures to reduce impacts to western ringtail possum (WRP): • Provide an analysis of the proximity to vegetation that provides refuge and safe pathway to preferred habitat. DBCA have noted that in some circumstances there are few options for alternative locations due to the limited number of vegetated patches adjacent to the development envelope. • DBCA have noted that two locations have undergone detailed investigations with results published; and that these studies have demonstrated mixed results. Assessment of these studies have not been provided within the referral documentation. Please provide further assessment information outlining the effectiveness of WRP crossing structures at a regional scale, and further demonstrate that the proposed crossing structures for this proposal will be effective mitigation.	
2.	<u>Viability of fragmented habitat patches remaining</u> Page 53 of the ARI document states; “all WRP habitat areas within the Proposal Area are contiguous with or adjacent to other habitat areas that will be retained”. The proponent is relying on the assumption that WRP will self-relocate to adjacent areas of retained habitat ahead of clearing (ARI document, pg 56). However, there are some locations where individual WRP have been recorded in habitat that appears already isolated and self-relocation will not be possible (e.g. Appendix B, Figure 2 [page 5 of 5]). See examples as follows:	

	EPA Services comment	Proponent response
	The patch of habitat with WRP observations (central section of BORR proposal south of Manea Park and west of South West Hwy; Figure 7 [5 of 5]) is isolated from adjacent consolidated vegetation. a) Should the pre-clearing surveys identify a possum(s) in this patch, provide further information to demonstrate that the shepherding technique is appropriate in this circumstance rather than translocation? b) Also, as approximately 60% of the patch of vegetation is proposed to be cleared, what information is available to support the conclusion that the remaining portion of vegetation will remain viable support WRPs.  (*WRP habitat on left (EMP Figure 2 [4 of 5])*	

	EPA Services comment	Proponent response
3.	<u>Survivalship of WRP individuals post-impact</u> The proposal states that there will be no mortality of conservation significant fauna through the implementation of the proposal. The proposed monitoring will be able to determine if the remaining habitat is being used by WRP and estimate the abundance of population (post impact). However, the proposed management and monitoring methods will not be able to determine the survivorship of the displaced individuals. DBCA considers that individual animals may be injured and / or die following indirect impacts of clearing. Subsequent monitoring of the survivorship of displaced individuals is necessary to determine the impact of the proposal. Further, very low density possums in isolated vegetation presents a management challenge as these possums are more exposed to the indirect impacts of clearing (EMP Figure 2 [3 of 5; 4 of 5 and 5 of 5] – see examples below). In circumstances where possums cannot safely relocate is Mian Roads considering trapping and relocation of individuals?  	

	EPA Services comment	Proponent response
	EMP Figure 2 [5 of 5] 1.  (*WRP observations on left (EMP Figure 2 [4 of 5]); clearing direction on right*).	

	EPA Services comment	Proponent response
	 (WRP observations with paddock either side - EMP Figure 2 [3 of 5])	
4.	DBCA has advised EPA Services that between 2019 and 2020, Main Roads undertook an investigation into the WRP territory size and movement across and through habitat patches in the Clifton Road area. The results of this study have not been provided to DBCA or used to support the ARI document. Please provide the results and assessment of this study to inform the consideration of impacts to WRP home ranges in the context of this proposal.	
	Flora and Vegetation	
5.	*Corymbia calophylla – Xanthorrhoea preissii woodlands and shrublands of the SCP* (FCT3c) TEC is listed as a Critically Endangered TEC in Western Australia and Endangered under the EPBC Act 1999. Consideration should be given to the impact on the ecological community as a whole rather than separating the occurrences.	

	EPA Services comment	Proponent response
	In many cases, the ecological community exists only as small, narrow and isolated patches as a result of historic clearing. DBCA has advised EPA Services that there is only 12 hectares remaining of this community in the south west region. DBCA has advised that all but one of the FCT3c occurrences that are proposed to be cleared are narrow, degraded roadside remnants and not considered to be significant. The exception is a 0.051 ha occurrence, which is part of a larger, relatively intact 0.15 ha remnant that is adjacent to the railway line, as shown on Appendix A Figure 4 (3 of 5). This occurrence is mapped as being in good or better condition, is the widest occurrence to be impacted and represents 1.25% of the total amount of FCT3c in the south west region. Removal of this occurrence will result in fragmentation of the existing vegetation linkage from the rail reserve. Please provide clear demonstration that clearing a Critically Endangered listed TEC is the only viable route within a corridor.	
6.	<u>Indirect impacts</u> DBCA has advised EPA Services that the removal of FCT03 occurrence along the railway line will isolate approximately 0.6 ha of FCT3c to the west. The floristic community of the retained vegetation to the east of the development envelope has not been mapped and may represent an occurrence of the Claypan TEC. MRWA have advised that the vegetation condition of the eastern section is degraded and not representative of the Claypan TEC, however information to substantiate this claim has not been provided. • Please advise if this area has been adequately surveyed? DBCA has also advised that they consider the two remnant patches either side of the development envelope patches, and may degrade post-proposal. • Are there any management measures that can be implemented to maintain these patches either side of the development envelope?	

	EPA Services comment	Proponent response
7.	<u>Indirect impacts</u> DBCA has advised that altering existing flow paths has the potential to negatively impact the hydrological regime (most notable drying) of TEC occurrences. The use of plant stress scores as triggers to indicate an impact from drying in Claypan TECs requires further clarification. Table 3 of Appendix E provides a 1-5 scale for measuring plant stress in the TEC and PEC communities however it largely relies on "wilting" as a basic measure of stress. This measure is not considered appropriate as many native species are sclerophyllous and are not likely to wilt (as a common definition) under stress. • Please further define the factors that are being measured in plant stress / "wilting". If this is not an appropriate parameter for monitoring drying, provide an alternative. • Please also provide more information to substantiate the selection of three days consecutive days of inundation to identify impacts for flooding is appropriate. Revise monitoring as required.	
8.	<u>Indirect impacts.</u> Appendix G provides basic triggers and thresholds but does not propose any monitoring to measure the trigger/threshold exceedance or actions to manage impact. The triggers and thresholds are vague and not quantified for e.g. "TEC/PEC vegetation health declined". Additionally the document mentions "attributable to the proposal", specific variables and measurements are necessary for attributing variables to a proposal, and demonstrating compliance during implementation. • Please review and update Appendix G to ensure that it is appropriate to manage indirect impacts to TECs and PECs adjacent to the proposal area.	

	EPA Services comment	Proponent response
	• Furthermore, Appendix E and G are interrelated in relation to monitoring and triggers/thresholds but do not appear to have direct connection for these variables. Please ensure that these documents are consistent.	
9.	**Offsets**	
10.	DBCA has identified that Appendix K Offsets Strategy uses the South west regional scale populations of WRP to justify impacts to the local population with the development envelope. The impacts to WRP should be stated in terms of the local population and its persistence within the proposal area. • Please revise accordingly.	
11.	*Note: Further comments are still to be supplied by EPA Services regarding Offsets; and may require a subsequence response from Main Roads.*	

	Conservation Significant Fauna Management Plan		
Item No.	**EMP Section No.**	**EPA Services Comments**	**Proponent Response**
1.	General comment	Environmental objectives/outcomes of the Conservation Significant Fauna Management Plan (the Plan) are not defined specific to the proposal. The Plan instead defaults to the EPA objective for Terrestrial Fauna. The EPA's objective for Terrestrial Fauna can be referred to as an over-arching objective, however this cannot replace the requirement for proposal-specific objectives/outcomes (EMP provisions). As per Section 2 of the EPA's Instructions on how to prepare *Environmental Protection Act 1986* Part IV Environmental Management Plans (EMP Guidance) the provisions in	

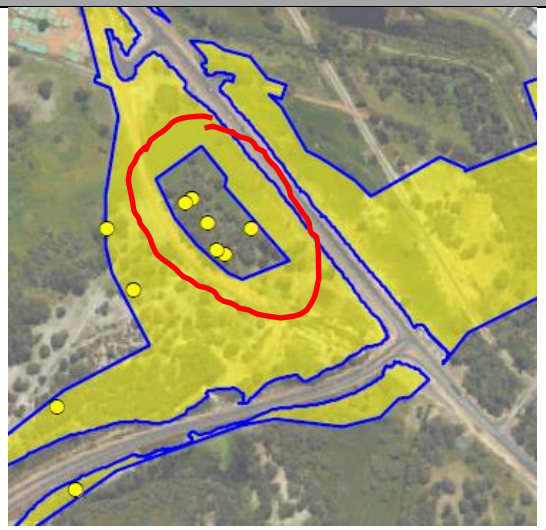
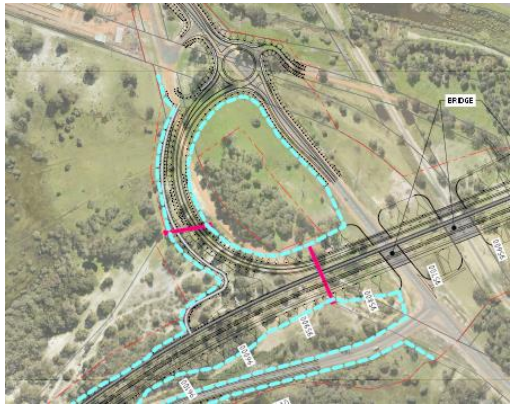
	Conservation Significant Fauna Management Plan		
Item No.	**EMP Section No.**	**EPA Services Comments**	**Proponent Response**

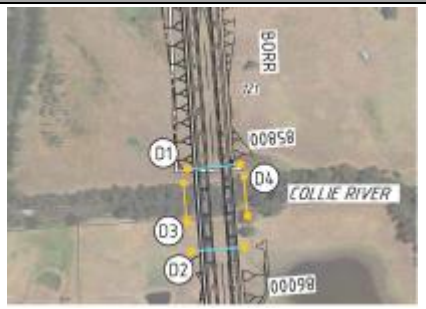
		the EMP are either outcome-based or management-based. For outcome-based provisions, outcomes with need to be written; and for management-based provisions, objectives will need to be written:
		• Revise the Plan and ensure it is consistent with the EPA's EMP Guidance.
		• Develop proposal-specific outcomes and/or objectives for the EMP for the outcome-based provisions and/or management-based provisions respectively.
		• Revise plan to clearly distinguish outcome-based provisions from management based provisions.
		  ○ Note that trigger and threshold criteria are for outcome-based provisions.
		  ○ Note that management actions and management targets are for management-based provisions.
		• Ensure timing / frequency and duration of monitoring are explicit (e.g: Tables 11; 12 and 13 include monitoring parameters but no information about frequency, duration and timing. It is acknowledge that this information is within other sections of the Plan, however, it would be beneficial to combine information from Tables 8, 9 and 10, particularly information about frequency and duration, in Tables 11, 12 and 13. For ease of use and review, consider restructuring the Plan and/or adding columns in Tables 11; 12 and 13 to include this information).
		(See also examples in the Attachment 1 of the EMP Guidance).
		[For additional guidance see sections 4.2.3.1 and 4.2.3.2 of the Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual: *Requirements under the Environmental Protection Act 1986*].	

	Conservation Significant Fauna Management Plan		
Item No.	**EMP Section No.**	**EPA Services Comments**	**Proponent Response**
		[Main Roads' Perth to Darwin National Highway (Swan Valley Section) EMPs are also good examples]	
2.	Table 8 Table 9 Table 10 Table 11 Table 12 Table 13	<u>Triggers, thresholds and contingency actions</u> Note that many of the nominated trigger and thresholds for managing potential impacts to conservation significant species will be difficult to demonstrate compliance against or determine if the cause is project attributable i.e: *Western ringtail possum and brush-tailed phascogale (Table 8 and 11):* • The trigger and threshold criteria for clearing habitat are identical. Triggers should be set below threshold criteria so a management response can be implemented prior to the threshold being reached. • The criteria should state measurable values to be used, such as "clearing within xx meters of WRP habitat". *Carter's freshwater mussel (CFM) (Table 9 and Table 12)* • No values have been defined for the trigger and threshold criteria. Specific trigger and threshold values for each proposed water physico- chemical parameter should be included so it is clear when a management response is required. Triggers and thresholds should be based on baseline values that are set in consideration of temporal variability. Each trigger value should be set so management can be adapted in response, prior to the threshold being reached. *Black-striped minnow (BSM) (Table 10 and Table 13)* • No values have been defined for the trigger and threshold criteria. Specific trigger and threshold values for each proposed water physico- chemical	

	Conservation Significant Fauna Management Plan		
Item No.	**EMP Section No.**	**EPA Services Comments**	**Proponent Response**
		parameter should be included so it is clear when a management response is required. Triggers and thresholds should be based on baseline values that are set in consideration of temporal variability. Each trigger value should be set so management can be adapted in response, prior to the threshold being reached. • Additional parameters such as Total Nitrogen (TN) and Total Phosphorus (TP) would be beneficial to monitor the potential impacts of resuspension of sediment. It is noted that Main Roads are collecting a baseline in 2020 for CFM and BSM, do you intend to update the Plan with specific baseline values, once these are available? Please identify which months of the year you intend to construct near BSM habitat and if there are any life-cycle requirements for BSM that need to be considered in this context? Please update both the ARI and EMP as required to clarify this information.	
3.	Table 5 on p.10	<u>MRWA "Sensitive clearing protocols":</u> The management action in Table 5 on p.10 states: *Trees […] that are observed to support WRP and / or BTP after 48 hours will be 'bumped gently" with a machine prior to felling. The operator and spotter will wait and observe the tree for a short time. If the animal remains in the tree it shall be pushed over slowly onto vegetation within the clearing area that is yet to be cleared. The 'soft felling' of habitat trees will provide a 'cushion' for the vegetation being felled, minimising the risk of injury to the animal and allowing any WRP and BTP present with the opportunity to safely vacate.* • Are there other actions that can be implemented if/when this circumstance arises?	

	Conservation Significant Fauna Management Plan		
Item No.	**EMP Section No.**	**EPA Services Comments**	**Proponent Response**
		• Are you considering trapping and relocation of individuals an option for fauna unable to safely self-relocate ahead of clearing? • Is this method intended for identification of black cockatoo nesting, and if so, can an alternative be used?	
4.		<u>Effectiveness of fauna crossing structures post-construction:</u> Main Roads proposes to install and monitor rope bridge overpasses and underpasses for five years post construction using motion sensor IR cameras. This will provide useful information about the use of bridges by arboreal fauna; however, the Plan does not discuss actions required if the bridges/crossing structures remain unused (beyond assessment and modification of the structures). Main Roads has included appropriate contingencies (e.g. including assessment and modification of the structures) in the event the structures are not being used (as informed by the proposed Environmental Monitoring Plan (EMP) Appendix B, Table 7 & 11). However, the proponent should address the impacts to species such as the WRP and brush-tailed phascogale (BTP) if they remain unused.	

	Conservation Significant Fauna Management Plan		
Item No.	**EMP Section No.**	**EPA Services Comments**	**Proponent Response**
		  (WRP observations on left, EMP Figure 2 [4 of 5] clearing creating an island of vegetation; and proposed underpasses on right, EMP Figure 4). Underpasses are proposed in this location to mitigate fragmentation impacts, however continued use of this area by WRP is reliant on the assumption that the proposed underpasses will be successful at maintaining habitat use by possums. Collie River habitat corridor: The fragmentation of the Collie River habitat corridor for western ringtail possum (mapped as B – high suitable habitat: Figure 7 [2 of 5]) from clearing of riparian vegetation and construction of road bridges is proposed to be mitigated by possum rope bridges. Again, the effectiveness of this mitigation relies on the success of such structures.	

	Conservation Significant Fauna Management Plan		
Item No.	**EMP Section No.**	**EPA Services Comments**	**Proponent Response**
		  Colie River WRP habitat Figure 7 [2 of 5] on left; proposed possum rope bridges on right). If the crossings remain unused then the fragmentation impacts to WRP and BTP resulting from implementation of the proposal would not have been mitigated. If the proposed contingency actions (such as modification of crossing structures) are not successful, and isolated patches remains unutilised by possums and/or fragmented vegetation remains disconnected; is there any further actions that Main Roads can implement to mitigate the loss of function and ecological connectivity for western ringtail possums?	

	Conservation Significant Fauna Management Plan		
Item No.	**EMP Section No.**	**EPA Services Comments**	**Proponent Response**
5.		Figures: The figure illustrating the fauna crossing structures in the management plan (Figure 4) does not show all the fauna crossing structures proposed and mapped in the ARI document (Figure 8) e.g: rope bridges at Collie River, Preston River are not included in the management plan. Ensure that maps are updated in the management plan to show all proposed fauna crossing structures and consistent with Figure 8 in the ARI. It would be beneficial to provide one image with the following layers: • the proposed fauna crossing structures • mapped possum-suitable habitat and possum observations • overlaid with the construction footprint and development envelope.	
6.	Section 1.3	IBSA Update the IBSA section of the Plan to align with EPA EMP requirements with regard to developing and submitting IBSA data package/s both during assessment but also during the compliance process if/when relevant.	

Bunbury Outer Ring Road – Northern and Central

Assessment No. 2215
CMS 17624

Summary of Public Submissions

This document forms a summary of public submissions and advice received regarding the Response to EPA Notice of Decision to Assess: Additional Information Requirements (ARI) for the Bunbury Outer Ring Road Northern and Central proposed by Main Roads Western Australia.

The public review period for the proposal commenced on March 13 2020 for a period of 4 weeks, ending on April 9 2020. A total of 17 submissions were received.

The principle issues raised in the submissions and advice received included environmental and social issues as well as issues focussed on questions of fact and technical aspects of the proposal. Although not all of the issues raised in the submissions are environmental, the proponent is asked to address all issues, comments and questions, as they are relevant to the proposal.

The key issues raised in the submissions include:

- Alternative alignments not considered adequately
- Unacceptable impacts to conservation significant fauna species (particularly western ringtail possum and black cockatoos) and threatened and priorty ecological communities (TECs/PECs)
- Offsets inadequate
- Unacceptable impacts to natural hydrology
- Unacceptable impacts to amenity from noise; and proposed mitigation is inadequate
- Inadequate consideration and/or consultation with local residents on the alignment change from original planning scheme
- Loss of productive farming land

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The proposal – General comments

No.	Submitter	Submission and/or issue	Response to comment
	ANON-55DK-U4DV-V	No consideration of cumulative impacts of BORR Northern proposal combined with BORR Southern proposal: This section of the project has impacts on seven conservation significant fauna species, three TEC's and one PEC and removes a total of 92 hectares of vegetation. In seeking approval for this northern section of the project first, Main Roads have isolated the impacts from this section from the additional significant impacts from the southern section, with no consideration of the cumulative effects of the combined sections of the project on the already fragile regional and global environment.	
	ANON-55DK-U4DC-9 ANON-55DK-U4DD-A ANON-55DK-U4D1-Q ANON-55DK-U4D4-T ANON-55DK-U4D2-R ANON-55DK-U4DT-T ANON-55DK-U4DT-T Urban Bushland Council WA (UBC)	Alternative alignments not considered adequately: • Alternative alignments not analysed quantitatively to demonstrate that the chosen route has the least environmental impacts. • Extension of Willinge Drive to link up with the South Western Highway and Lillydale Road. Willinge Drive is at present easily accessible from South Western Highway via the BORR Central Section. To construct this additional road and bridge over the Preston River and another large roundabout on South Western Highway is not needed. • The increased truck movements from Talison's Lithium Mine at Greenbushes can be stopped by renovating the existing railway line from Picton to Manjimup. • Excessive project extent. The extent of the proposal with its possible grade separation (one road over another) at Forrest Road, Raymond Road, South Western Highway near	

No.	Submitter	Submission and/or issue	Response to comment
		Waterloo Road, Waterloo Road at Wireless Road, Willagee Drive, Centenary Road/Lillydale Road and Bussell Highway – although roundabouts may be sufficient in some areas - is huge. Main Roads estimated that fill requirements are equivalent to approximately 6.5 times the volume of Optus Stadium (p7 Sustainability Outcomes). This is both extraordinary and unacceptable.	

Flora and Vegetation

No.	Submitter	Submission and/or issue	Response to comment
	Wildflower Society of WA (WSWA)	Environmental impacts could be further mitigated by reducing the scale or number of grade-separation interchanges in the project. The most notable example is the interchange at the northern end of the project at Paris and Clifton Roads and Forrest Highway. The need for interchanges of this magnitude do not appear to be counterbalanced adequately by environmental concerns due to the lack of engagement with environmental stakeholder groups (Table 3-1 of BORR-01-RP-EN-0009). Implement the following options to avoid and minimise clearing, especially in areas of high biodiversity value, including ancient trees, and in grade-separated interchanges, to the maximum extent possible: • steepen batters • use retaining walls • erect road safety barriers on the edge of the sealed shoulder, or 1m from the edge of the driving lane, while retaining vegetation to within 500mm of the back of the barrier if it is a W-beam road safety barrier • reducing speed limits • reducing median widths, and installing road safety barriers on the edge of the sealed edge to prevent head-on collisions	

No.	Submitter	Submission and/or issue	Response to comment
		• design the vertical road alignment as close as possible to the existing ground level to minimise the batter widths • retain vegetation in areas proposed for infiltration of storm water runoff.	

Terrestrial Fauna

No.	Submitter	Submission and/or issue	Response to comment
	ANON-55DK-U4DV-V	Installation of approximately 43 possum over/ underpasses is noted however from review of Appendix A Figure 8 there are only 33 proposed new fauna crossings. This include 15 rope bridges and 9 dedicated fauna underpasses. There are a further 9 underpasses proposed however they are actually drainage culverts which will have a 300mm wide shelf for fauna, placed at the 1 year ARI level. This is despite recommendations from three years of monitoring, post construction of Stage 1 BORR that separate structures are used for drainage and fauna crossings, (Chambers, Bencini, 2016). Chambers, B.K., Bencini, R. (2016). Bunbury Outer Ring Road: Fauna monitoring, rope bridge and fauna underpass use. Doi; 10.13140/RG 2.2 32866.02243	
	ANON-55DK-U4DV-V	It is recommended that long term (more than 3 years) monitoring of the underpasses and bridges is undertaken to determine their effectiveness and identify and implement any remedial measures.	
	ANON-55DK-U4DV-V	In detail 3 of Figure 8, sheet 2/4 the transverse (under bridge) rope bridges have no connecting vegetation.	
	BirdLife WA	BirdLife WA also notes that there is a long-term (>20 years) Black Cormorant nesting colony on the Brunswick River (accessible via Billabong Court) that will be impacted by the proposed development.	
	BirdLife WA	BirdLife WA recognises the intent in the proposal to revegetate an area of 19 ha but does not consider this as an ecologically equivalent replacement for the habitat value of the native vegetation that will be	

No.	Submitter	Submission and/or issue	Response to comment
		lost. The net effect of the impact will be negative for birds, especially those requiring nesting hollows, for a very long time.	
	Urban Bushland Council WA (UBC)	The EMP states: if an animal is in the tree, the tree will be bumped softly, and if the animal remains there, the tree will be soft-felled onto other vegetation so the animal has a chance to escape. This does not justify loss of their habitat. Most are likely to be injured or killed, and there will be a net loss. Also trees provide habitat to thousands of small native fauna which will be killed.	

Inland Waters

No.	Submitter	Submission and/or issue	Response to comment
	ANON-55DK-U4DK-H	The proponent has not demonstrated that the pre-construction hydrology will be maintained. The road will, in effect, act as a constraint to the natural sheet flow of the water, impacting the natural hydrology and cause pooling and water logging of land which will be lost to grazing or other activities.	
	ANON-55DK-U4DK-H	We note that the report provided by Main Roads includes a drainage management strategy. This drainage management strategy is said to have included participants of various stakeholders. It should be noted that at no stage were we invited to make any comments in respect of drainage strategies despite the fact that we have lived on the land and been in the location for many generations. We know the drainage of the land intimately and we are concerned that the construction of a road, 3 metres high with all of the compacting, will affect the natural hydrology. The reports provided to us have not given any consideration to ensuring that the natural hydrology will be maintained. We are concerned that the culverts that are proposed to be constructed under the road do not in fact continue to ensure that the pre-construction hydrology will be maintained. As matters presently stand, it is apparent to us that the road will, in effect, act as a constraint to the natural sheet flow of the water, impacting the natural hydrology and cause pooling	

No.	Submitter	Submission and/or issue	Response to comment
		and water logging of land which will be lost to grazing or other activities. Main Roads has failed to identify the impacts of the BORR caused by a road constructed at a height of some 3 metres above the natural ground level on our views across the landscape. We consider this a matter that Main Roads ought properly to have taken into account and do not see any proposed mitigation strategies contained within their reports. The drainage strategy falls well short of giving careful consideration to the hydrological impacts caused by the compaction of the road on the existing hydrology and the potential for drainage impact and loss of additional pasture areas.	

Social Surroundings

No.	Submitter	Submission and/or issue	Response to comment
	ANON-55DK-U4DK-H	We have reviewed the Report prepared by Main Roads for the purposes of obtaining environmental approvals. We note that the proposed impact by noise caused by the construction and use of the BORR on our property and dwelling will exceed the limits as contained within the Environmental (Noise) Regulations 1997 (WA) (Regulations) and we further note that there is no proposed noise mitigation strategy to limit such impact. This would ordinarily be expected by way of appropriate bund walls or other mitigation to limit the noise to levels as required by the Regulations. We note that the EPA has already identified in its Notice to Main Roads that there are properties in the northern alignment expected to receive noise levels above the State Planning Policy 5.4 limits and that EPA has requested additional justification for the absence of noise walls to mitigate noise impacts.	

No.	Submitter	Submission and/or issue	Response to comment
		Main Roads has suggested to us privately that they would double-glaze and give us new air-conditioning. These proposals do nothing to ensure that we enjoy the amenity in our property at noise levels below the standard set by the Regulations, which renders it unusable given the excessive noise created both during construction and operation of the BORR. Further, we are concerned that during the construction period, there is nothing identified within any of the reports that expressly set out how noise will be mitigated. Whether that be by way of use of squawkers for reversing of trucks and other machinery or other methods that are intended to reduce or limit the impact of noise to levels set by the EPA as concluded with the Regulations. Main Roads has failed to properly consider the noise impacts on us caused by the BORR and we are very concerned that the noise created will not be reduced by any of the accommodation works proposed by Main Roads and there is nothing in any Main Roads proposal which addresses this.	
	ANON-55DK-U4DQ-Q	We believe there are still significant gaps in the planning process that drastically impact on amenity of the eastern portion of the established community of Meadow Landing of which we are residents. We are aggrieved because the environmental impact of this proposal is much more significant on our home as we purchased our block and built our family home after undertaking due diligence checks to confirm no significant planned developments in the area to the east of our location. We purchased in good faith after identifying that the BORR was planned to be 4km to our south at Hynes Road. The socio-economic impact of the proposed new alignment on us is significant and application of specifications outlined in SPP 5.4 unfairly applies a common amenity standard as if we purchased with the knowledge that the road was to be constructed in close proximity to our residence. The additional information provided in the traffic noise assessment, 31 January 2020, submitted by Main Roads still retains a range of	

No.	Submitter	Submission and/or issue	Response to comment
		deficiencies that unfairly affect the new roads' impact on our amenity and socio-economic well-being. We raise the following issues with the revised noise assessment: 1) Noise modelling for Meadow Landing estate is based on a single site in Bevan Loop. This site does not represent the residents located on the eastern boundary of Meadow Landing which will be subject to the greatest increase in noise level with the installation of the BORR, a new road previously unplanned. The noise sample at Site B off Bevan Loop can only address noise from Raymond Rd and does not address noise emanating from the proposed BORR and Interchange at Raymond Rd. The noise logger installed at [redacted] at the request of residents and was not included in the initial study. We requested a subsequent sample which was undertaken by the BORR team at [redacted] and we note that this data has also not been included in this revised assessment. 2) The noise model does not adequately consider noise produced at elevation. The noise from the Raymond Road interchange and Collie River Bridges will be projected from an elevated position. The inputs listed in Table 4-1 Noise Modelling Assumptions and Configurations do not reflect the production of additional noise from traffic slowing down and accelerating under load to negotiate roundabouts either side of the interchange. 3) Noise level contours in FIG 4.8 and FIG 4.9, immediately east of Meadow Landing, appear to deviate closer to the proposed highway alignment and align with the eastern vegetated boundary of the wetland compared to equivalent contour east of the highway. It is difficult to comprehend given that the vegetation in that area is on a low-lying flood plain some 6+ metres lower than our and other residences in this area. We also note within the inputs/assumptions' in Table 4.1 for the noise modelling does not include effect of vegetation. We believe we are unfairly assessed as non-sensitive receptors as our property is almost "line of site" with the BORR.	

No.	Submitter	Submission and/or issue	Response to comment
		4) The revised submission does not include the impact of the noise predicted to emanate from vehicles travelling over expansion joints on the new Collie River bridges on residents that are considered to be "non-sensitive receptors". The simple fact is that the intermittent nature of this noise and the elevation from which it is projected will impact our residence and those in the eastern sections of Meadow Landing community. This cannot be dismissed as it will potentially have the greatest impact on interior noise and prevent sleep due to its intermittent nature. Noise data from the current Forest Highway bridges over the Collie River would provide suitable comparable information to model this noise and its impact on the residents at the eastern end of the Meadow Landing community. 5) Noise modelling has identified night time noise of 49 decibels (FIG 4.7) at our property [redacted]. We have evaporative cooling which requires our windows to be open at night in order to effectively operate. The façade of our house, containing bedrooms with large glazed areas, faces east towards the proposed BORR and we will not be able to reduce interior night time bedroom noise to 30 decibels as per SPP5.4. Similarly, our outdoor living area is on the east side of our home which will also have severely compromised amenity.	
	ANON-55DK-U4D1-Q	The deviation for the new trucking route from Willinge roundabout cutting through (farm land and a river course) to a proposed roundabout at Lillydale Road is not required. We have considerable concern for this roundabout addition (at Lillydale Road) and deviation to the Willinge round about. These concerns of nearby residents include: * Noise pollution with truck braking, and vehicles slowing and then accelerating * Light pollution from lighting towers around the roundabout and lead in/out roads * Ongoing excessive traffic along Lillydale Road (which has significantly escalated due to the Willinge link to the Wharf plus allowing , an	

No.	Submitter	Submission and/or issue	Response to comment
		'alternative' type BORR through way (or short cut) for motorists and trucks using Lillydale to get to Collie mining, Perth, Picton industrial etc. * Extreme concern over the Lillydale Roads safety with motorbikes and motorists travelling at speeds well in excess of the 90km * Considerable concern about the safety of residents and animals due to the traffic volume and speed. (I am not convinced with the flawed modelling presented to indicate that the traffic has and will not be significantly increased = research /modelling tweaked to indicate a favourable result for the BORR/main Roads teams).	

Offsets

No.	Submitter	Submission and/or issue	Response to comment
	ANON-55DK-U4DV-V	Section 4.5.5 The proposal to claim the apparently completed research as 10 % of the offset is not considered appropriate. According to the EPA Environmental Offsets Guidelines research projects are generally only appropriate as offsets when there is a high uncertainty regarding the impacts of an action which is not the case here as it is well documented that removal of habitat is a threatening process for the critically endangered WRP, (DWER, 2017). As the outcome of the research was to determine an estimate of WRP numbers only using the standard distance sampling survey method in use since around 2010 (Finlayson et al, 2010), it will not significantly improve or provide insight into the management of the species recovery or directly result in a positive outcome. There is a risk that Main Roads motivation for this research was not to improve the conservation status of WRT rather justification for less rigorous approaches to management of impacts on WRTP in future road projects, should higher numbers be counted than anticipated.	
	ANON-55DK-U4D5-U	As a government department, Main Roads is well placed to demonstrate leadership in this regard and go beyond the usual interpretations of the [WA Offset] principles of the relevant state and federal policies.	

No.	Submitter	Submission and/or issue	Response to comment
		It would be preferable to secure offset sites that are larger than the area of land being cleared or contain greater environmental values, to achieve a net benefit. I also note that while some of the offsets being considered involve revegetation, others consist of existing habitat. Once again, this will not achieve a net benefit unless the offset area is at immediate risk of environmental harm.	
	BirdLife WA	BirdLife WA has further concern about the dependence of this proposal, and the many other similar proposals, on environmental off-sets. These are intended to be a last-resort impact mitigation mechanism but now too often, they are adopted as a first line of project justification. BWA is yet to be convinced that areas of environmental off-set are consistently and effectively managed for the environmental purpose for which they are intended. Our current understanding is that most environmental off-sets are not effective for the purpose for which they were intended (i.e. as an ecological equivalent to the area being impacted).	
	Wildflower Society Western Australia (WSWA)	Section 4.5.2 of BORR-01-RP-EN-0017, relating to Offset 2, states that: "Main Roads may excavate sand from the cleared areas of the Lot prior to implementing revegetation and rehabilitation works". Such sand excavation may reduce the ability to properly rehabilitate the land with several key species, such as Banksia species, which depend on a deep sandy soil profile (many metres of sand). Such a proviso implies that the revegetation plan could do much better and reintroduce part of the original biodiversity (e.g. Banksia, Marri and Peppermint woodland) rather than simply focussing on trees that may provide food for black cockatoos. Section 4.5.3, relating to Offset 3, states: "Similar to Offset 2, plant species will be selected to provide habitat for offset target species based on site parameters". It is not entirely clear what "target species based on site parameters" equates to, but it seems as though a biodiverse offset, targeting the original flora communities, is likely not being proposed. WSWA believes that providing a much more	

No.	Submitter	Submission and/or issue	Response to comment
		biodiverse offset than currently proposed would provide a much more adequate counterbalancing of the residual impacts of the proposal. Section 4.5.4 states that the land for the offset has not yet been acquired. However, in general, potential for rehabilitation as an offset has been overlooked. In Table 5-12, it is noted that the proposed offset does not fulfill 100% of the impact – it only fulfills 83%. Table 5-12 seems to state that the parcel of land, part of which is proposed as an acquisition offset, also has a large (1.146 ha) degraded portion of the Claypan TEC, which was not considered for part of the offset. Rehabilitation of this portion, using translocated sections of the claypan to be destroyed, could provide one avenue to (partially) rehabilitate this section, and decrease the net loss of the TEC. WSWA strongly advocates for rehabilitation to form part of this offset to reduce the net loss of this highly threatened community. Section 4.5.5 states that MRWA is proposing to use prior funding for WRP surveys as an indirect offset for the future impact of the project on the WRP. This implies that research funding can somehow be "banked" for future impacts, which is a curious concept that could defeat any additional benefit from a true offset, and WSWA questions whether this meets the WA's definition and criteria of an acceptable offset.	
	WSWA	Although offsets and a management plan have been presented, what has not been considered is the impact of size reduction to the fragments of remaining TECs. Those TECs to be impacted are the Banksia PEC/TEC and the Corymbia Woodland TEC. Fragmentation and reduction in remnant patch size is itself a threatening process, and this is not adequately captured by the Commonwealth Offset Calculator. This makes it even more imperative to be conservative with offsets and include rehabilitation of degraded/cleared land to reduce the net loss of vegetation.	
	WSWA	MRWA should be required to collect seed of local native plants to be cleared prior to clearing and be required to rescue and translocate large	

No.	Submitter	Submission and/or issue	Response to comment
		plants that feasibly can be moved, such as *Xanthorrhoea* and *Macrozamia* species. Additionally, we recommend that MRWA liaise with individuals and community groups (such as WSWA) to collect material from plants destined to be destroyed, for propagation or translocation.	

Consultation

No.	Submitter	Submission and/or issue	Response to comment
	ANON-55DK-U4D1-Q ANON-55DK-U4D4-T ANON-55DK-U4D2-R	The Northern section should remain on the green line, i.e. the original route (Titled 'current northern section alignment') which - Landowners have been aware of this route for decades and consulted with. Ignore the new proposed pink route which was devised at a much later stage without adequate local resident consideration or consultation in a face to face – personal approach. The requirement for consultation is inadequate.	

BORR
Team

Australian Government

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BUNBURY OUTER RING ROAD | PLANNING AND DEVELOPMENT