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Dear Marcel

PROPOSED BRICKWOOD RESERVE ENVIRONMENTAL OFFSET PROPOSAL: THREATENED ECOLOGICAL COMMUNITY SCP3A DESKTOP REVIEW AND 10 YEAR FUTURE ROAD INFRASTRUCTURE PROGRAM

1 EXECUTIVE SUMMARY

Based on the completion of our scope of work, Emmerge Associates (Emmerge) provides the following summary of our advice:

- Emmerge modelled the potential extent of threatened ecological community (TEC) Swan Coastal Plain type 3a (SCP 3a) 'Corymbia calophylla - Kingia australis woodlands on heavy soils community of the Swan Coastal Plain' (the community) within the Shire of Serpentine Jarrahdale (the Shire). This is a prediction and is partially validated by known occurrences of the community.
- Based on the indicative future road projects provided by the Shire, we would suggest that there will be situations whereby road expansion projects will encounter the community.
- Given the significance of the community under the environmental policy and approval frameworks, we would strongly recommend that avoidance be the first option pursued for road upgrades (i.e. design roads to avoid or minimise the extent to which the community is impacted/cleared).
- While the indicative community mapping shows the extent of potential impacts associated with the future road projects, the same approach could also be used to find potential offset site opportunities beyond those already known in Brickwood Reserve (the reserve).
- In relation to the Brickwood Reserve offset proposal (the offset proposal), we note that this would not take up all of the extent of the community, and therefore the extent of potential offset opportunities for the community within the reserve.
- Emmerge does not envisage any reason why the Shire should not progress with providing in-principle support for the offset proposal, and this would provide the opportunity for the Shire to gain more detail around the specifics of the offset proposal and the Shire's benefits and obligations arising from this.
- We would strongly suggest that the Shire avoid taking on any of the specific statutory compliance obligations associated with the proposed offset delivery, and this would require

careful consideration of the actual offset delivery agreement with the Public Transport Authority (PTA).

- More broadly, Emerge recommends that the Shire undertake a review of potential offset opportunities that might be available within land already under the control of the Shire, and this would assist with understanding the extent to which the Shire can respond to its own potential future offset requirements, as well as any offset requests that come in the future from Government or the private sector. With the policy expectation that offsets are moving from averted loss to restoration-based outcomes, this could provide an opportunity for funding for environmental restoration within the Shire.

The details of our review and the basis of our advice is outlined in more detail in the following written advice.

2 INTRODUCTION

The Shire of Serpentine Jarrahdale (the Shire) is planning for the Shire's future road infrastructure program (future road projects) for the next 10 years. As part of this, the Shire is interested in its own potential requirements for threatened ecological community (TEC) Swan Coastal Plain type 3a (SCP3a) '*Corymbia calophylla* - *Kingia australis* woodlands on heavy soils community of the Swan Coastal Plain' (the community) offsets to respond to proposed vegetation clearing which may occur during the works for the future road projects. In addition, the Shire is considering implications of supporting a proposal to use Brickwood Reserve to meet part of the offset requirements of the Metronet project (the offset proposal).

Emerge Environmental Services (trading as Emerge Associates) (Emerge) was engaged by the Shire to undertake the following tasks to assist with responding to the above:

- Review the provided documentation (the Brickwood Reserve Environmental Offset – Byford Rail Extension, letter from the Public Transport Authority (PTA) to the Shire dated 8 November 2023).
- Review the Shire's future road projects in a Geographic Information System (GIS), to determine the likely extent to which vegetation could be impacted.
- Strategically review the likelihood that road projects would coincide with the community.
- If there is a likelihood of the community occurring, consider what might be the general magnitude of impact and offset size that the Shire could potentially face.
- Based on the above, provide general recommendations on both benefits and risks of the Shire supporting the offset proposal.

3 REVIEW OF COMMUNITY LIKELY EXTENT

3.1 Method/approach

The likelihood that the community occurs at any given location within the Shire was predicted using *Maxent software for modelling species niches and distributions* (presence only prediction / maximum entropy modelling).

Records of the community within the Shire from the Department of Biodiversity, Conservation and Attractions (DBCA) database were input into MaxEnt, along with other relevant, publicly available environmental datasets. Five replicates were run with cross validation using standard settings and 'cloglog' output format. Model sensitivity was good (area under the curve 0.987), with a range of climatic variables, soils and elevation providing the greatest relative contribution.

The mean probability output for the community was converted to a shapefile attributed by 'probability of presence' (PoP) categorized as 'high' (PoP >0.6), 'moderate' (PoP 0.3-0.6) and 'low' (PoP <0.3). A spatial model shapefile was then created through the union of the probability of the

community occurrence data with the Department of Primary Industries and Regional Development (DPIRD's) 'Native Vegetation Extent' dataset (DPIRD-005).

Potential impacts to the community arising from the Shire's future road projects were determined by contrasting the spatial model with the 'Hyper Growth Roads' shapefile¹ provided by the Shire. Of the 316 road features in this dataset, 215 intersected native vegetation (based on DPIRD-005 data) and were selected in the community analysis as shown in **Figure 1**.

Selected road features were assigned a unique ID and buffered by 50 metres (m). The intersection of the buffered road features and the spatial model generated a dataset showing the extent of native vegetation by SCP3a probability categories within 50 m of the centreline of proposed road projects. Note that as the buffers for adjacent road features may overlap reported extents may include some duplication.

3.2 Results

Ten road features were identified as being within 50 m of native vegetation with a high probability of being the community, totalling 7.04 ha as outlined in **Table 1**. Four of these road features and a further eight road features were identified as being within 50 m of native vegetation with a moderate probability of being the community.

Full results for each Road ID and probability category can be provided separately, and the road features identified with either high or moderate probability are shown in **Figure 1**.

Table 1: Road feature extent of native vegetation (ha) by high or moderate probability category

Road ID	SCP3a (the community) probability category and predicted extent (ha)	
	High	Moderate
22	0.51	5.29
33		0.1
46		0.31
52		0.95
54		0.45
55	0.17	1.19
108		0
244		0.14
271		0.04
274	0.01	0.21
279	0.07	
293		0.09
297	0.11	0.04
299	0.31	
320	0.26	
324	4.96	
329	0.54	
331	0.1	
TOTAL	7.04	8.81

¹ Which comprised 332 roads or road portions but was reduced to 316 features once duplicates associated with proposed roundabouts were removed.

3.3 Discussion

The spatial model prepared for this assessment predicts the probability of the presence of SCP3a adjacent to selected road features. Validation of the model in MaxEnt suggests that the predications are reliable. However, ground-truthing would be required to confirm this.

There are no fixed rules as to the point at which a predicted probability might be considered high enough to warrant a response. With reference to the probability categories applied in this assessment, where predicted probability of presence is high or moderate the Shire might assume that the community occurs until otherwise confirmed by ground-truthing.

According to DBCA (2023) ground-truthing to confirm the presence of the community would require quadrat sampling during the main flowering period (spring) and floristic analysis to compare data to the Gibson *et al.* (1994) dataset and assign a floristic community type (FCT).

4 REVIEW OF THE OFFSET PROPOSAL

The Shire provided correspondence from PTA regarding a request for in-principle support for Brickwood Reserve offset, for the Byford Rail extension.

We understand that as part of securing environmental approvals pursuant to the *Environmental Protection Act 1986* (EP Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), environmental offset measures were required to be implemented by PTA at four locations, including within the reserve. The extent of environmental values within Brickwood Reserve requiring environmental offset measures to be implemented were as follows:

- 6.5 ha of the community
- 4.2 ha of Conservation Category Wetland (CCW).

The PTA has identified an 'Offset Allocation Area' of approximately 7.5 ha within the reserve that it believes contains sufficient extent of the community and CCW to satisfy the approval requirements. PTA notes that it believes the reserve contains approximately 34 ha of the community in total, and on that basis suggests that there would be ample unallocated area remaining should the Shire require it for other environmental offsets in the future.

PTA identified a 12 ha 'Offset Management Area' of approximately 12 ha, and within this area on-ground management measures to be implemented may include, but are not limited to:

- Installation of fencing and signage
- Formalisation of access
- Rehabilitation of degraded areas
- Rubbish removal
- Weed control
- Surveys and monitoring.

At this point in time PTA is seeking confirmation of the Shire's in-principle support to utilise a portion of the reserve as an offset, and if confirmed would commence further consultation with the Shire regarding proposed on-ground management measures and also would prepare a Memorandum of Understanding (MoU) to outline the obligations of each party.

5 IMPACT AND OFFSET ADVICE

Based on the preliminary review of the likelihood of occurrence of the community and the Shire's future road projects, we would envisage that there is a high likelihood that the future road projects will encounter the community. In the first instance and given the significance of the community under the environmental policy and approval frameworks, we would strongly recommend that avoidance be the first option pursued for road upgrades (i.e. design roads to avoid or minimise the extent to which the community is impacted/cleared).

Notwithstanding the above, there is the possibility that the Shire may be in the situation in the future whereby it is needing to seek and resolve environmental offsets for impacts to the community. The reserve would be an opportunity to formulate environmental offsets, as has been pursued by the PTA. It is important to note that the offset proposal presented by PTA does not intend to involve the entirety of the reserve and therefore there would likely be some residual offset potential associated with the reserve, but this would need to be investigated and progressed based on the actual conditions within the reserve. It is not possible at this point in time to be clear as to whether the residual offset opportunity available in the reserve would be sufficient to address the Shire's needs in implementing its future roads projects.

Alternatively, while the indicative community mapping shows the extent of potential impacts associated with the future road projects, the same approach could also be used to find other potential offset site opportunities beyond those already known in the reserve. This could be done by undertaking a similar review of land currently under the management authority of the Shire in relation to the likely extent of the community.

Subject to being comfortable with the operational and financial details of any offset arrangements for the reserve, Emerge does not envisage any reason why the Shire should not progress with providing in-principle support for the offset proposal, and this would provide the opportunity for the Shire to gain more detail around the specifics of the offset proposal and the Shire's benefits and obligations arising from this from the proposed MoU.

We would strongly suggest that the Shire avoid taking on any of the specific statutory compliance obligations associated with the PTA's proposed offset delivery, and this would require careful consideration of the actual offset delivery agreement. While it is expected that there would be obligations established between the Shire and PTA, the Shire should be careful as to the extent to which it takes responsibility for the delivery of the offset outcomes, particularly where there is any uncertainty in relation to the ultimate outcomes (i.e. in relation to revegetation and satisfying completion criteria).

More broadly, the Shire is situated in an area where the nature of the vegetation communities, wetlands and fauna/fauna habitat is such that it is likely that numerous environmental offset opportunities exist on land under the control of the Shire. Emerge recommends that the Shire undertake a review of potential offset opportunities that might be available on land under the control of the Shire (beyond just the community), and this would greatly assist with understanding the extent to which the Shire can respond to its own potential future offset requirements, as well as respond to any offset requests that come in the future from Government or the private sector. With the prevailing environmental policy expectation that offsets are moving from averted loss (land acquisition) to restoration-based environmental outcomes, this could provide an opportunity for substantial funding for environmental restoration within the Shire.

Summary and closing

Based on our review of the available relevant information, and the request from the Shire as responded to in our proposed scope of work, we provide the following summary:

- We modelled the potential extent of the community within the Shire.
- Based on the indicative future road projects provided by the Shire, it is likely that there will be situations whereby road expansion projects will encounter the community.
- Given the significance of the community, avoidance of impacts should be the first option pursued for road upgrades (i.e. design roads to avoid or minimise the extent to which the community is impacted/cleared).
- The same approach undertaken for the future road projects could also be used to find other potential offset site opportunities across the Shire beyond those already known in the reserve.

- The offset proposal would not take up all of the extent of the community within the reserve, and therefore the extent of potential offset opportunities for the community within the reserve.
- There is no currently perceivable reason why the Shire should not progress with providing in-principle support for the offset proposal, and this would provide the opportunity for the Shire to gain more detail around the specifics of the offset proposal and the Shire's expected benefits and obligations arising from this to be accommodated in the MoU.
- The Shire should be careful in relation to obligations around specific statutory/approval compliance requirements associated with the PTA's proposed offset delivery whereby there might be uncertainty (i.e. meeting revegetation completion criteria).
- The Shire should undertake a broader review of potential offset opportunities that might be available on land already under the control of the Shire, for environmental values beyond just the community. This would assist with understanding the extent to which the Shire can respond to its own potential future offset requirements, as well as any offset requests that come to the Shire from third parties. Given the policy expectation that offsets move towards restoration-based outcomes, this could provide a substantial opportunity for funding for environmental restoration within the Shire.

We trust that this advice provides suitable information on the probability of the community occurring within the Shire's future road projects, and associated implications of this and the PTA offset proposal within the reserve.

Should you have any questions regarding the content of this letter, please do not hesitate to contact the undersigned.

Yours sincerely
Emerge Associates



Jason Hick
PRINCIPAL ENVIRONMENTAL CONSULTANT

cc: None

Encl: Figure 1: Hypergrowth Roads

General References

Department of Biodiversity, Conservation and Attractions (DBCA) 2023, *Methods for survey and identification of Western Australian threatened ecological communities (draft)*, Perth, Western Australia.

Gibson, N., Keighery, B., Keighery, G., Burbidge, A. and Lyons, M. 1994, *A Floristic survey of the southern Swan Coastal Plain*, Department of Conservation and Land Management and the Conservation Council of Western Australia, Perth.

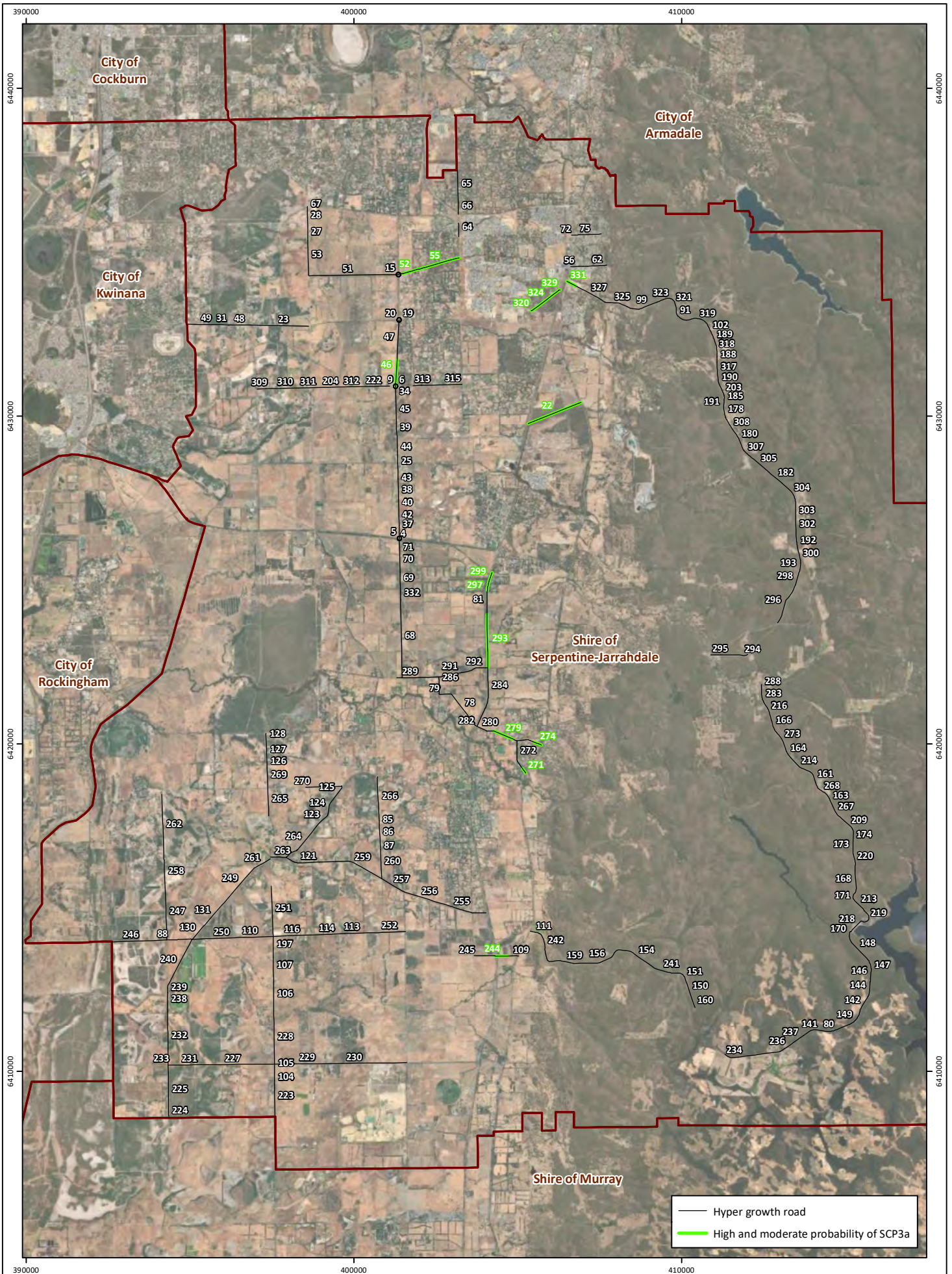


Figure 1: Hypergrowth Roads

Project: Brickwood Reserve Offset Plan Advice
Client: Shire of Serpentine-Jarrahdale

Plan Number: EP24-011(01)--F01
Drawn: WJC
Date: 28/02/2024
Checked: RAW
Approved: RAW
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0 2,000 4,000
 Metres
Scale: 1:150,000@A4
 GDA 1994 MGA Zone 50

