Yan Yean Road (Stage 2)

Biodiversity Expert Review

Cameron Miller

Project No: VEP20-013(01)

Prepared for Major Roads Projects Victoria
31 July 2020

Environment Effects Statement

Proponent: Major Road Projects Victoria

Statement by Cameron Miller

- Masters of Science (Ecology and Management)
- Bachelor of Science (Biology)
- Graduate Certificate in Arboriculture (AQF Level 8)
- Department of Environment, Land, Water and Planning Vegetation Quality Assessment accredited assessor

Emerge Environmental Services Pty Ltd Project No. VEP20-013(01)

By

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Cameron Miller

31 July 2020

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Acronyms

Table A1: Acronyms

Acronym / Term	Explanation
BCS	Biodiversity Conservation Status
CMA	Catchment Management Authority
DELWP	Department of Environment, Land, Water and Planning
EE Act	*Environment Effects Act 1978*
EES	Environment Effects Statement
EVC	Ecological Vegetation Class
HHa	Habitat Hectare
NVIM	Native Vegetation Information Management
MRPV	Major Roads Projects Victoria
P&E Act	*Planning and Environment Act 1987*
VQA	Vegetation Quality Assessment
VROTS	Advisory list of Victoria Rare and Threatened Species (flora and fauna)

Key terms

Table A2: Key terms

Term	Definition
Biodiversity	The variety of all life-forms, the different plans, animals and micro-organisms, the genes they contain, and the ecosystems of which they form a part.
Bioregional Conservation Status	An assessment of the conservation status of the native vegetation type in the context of a particular bioregion, taking account of how commonly it originally occurred, the current level of depletion and the level of degradation of condition typical of remaining stands.
Ecological Vegetation Class (EVC)	A type of native vegetation classification that is described through a combination of its floristics, life form and ecological characteristics, and through an inferred fidelity to particular environment attributes. Each EVC includes a collection of floristic communities that occurs across a biogeographic range, and although differing in species, have similar habitat and ecological processes operating.
Exotic Vegetation	Any vegetation that is not native to Australia or its States and Territories. This can sometimes include non-indigenous vegetation.
Indigenous Vegetation	Indigenous vegetation includes vegetation that is native to Australia as well as being native to a specific geographic region.
Native Vegetation	Native vegetation is defined in planning schemes as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses.
Non-indigenous Vegetation	Vegetation that is native to Australia, but not to the geographic region to which a site is located.

1 Introduction

I, Cameron Miller of Emerge Environmental Services (Victoria) Pty Ltd (trading as Emerge Associates) have been engaged to prepare this peer review report in relation to Yan Yean Road (Stage 2) Upgrade Environmental Effects Statement (EES).

1.1 Qualifications and experience

Appendix A contains a statement setting out my qualifications and experience. A copy of my *curriculum vitae* is provided in **Appendix B.**

1.2 Background

Yan Yean Road– Stage 2 upgrade project (the Project) is the proposed duplication of a 5.5 km section of Yan Yean Road between Kurrak Road and Bridge Inn Road, Doreen and the associated intersection upgrades and installation of new walking and cycling paths. Stage 1 of the Yan Yean Road upgrade (Diamond Creek Road to Kurrak Road) was completed in 2019. The Project would support increased traffic volumes resulting from urban growth to the north of the Project within the township of Doreen and improve safety and connectivity for pedestrians and cyclists.

On 14 October 2018, the Minister for Planning determined an EES would be required under the Environment Effects Act 1978 to assess the potential for significant environmental effects of the Project.

The scoping requirements, including draft Evaluation Objectives, were set out by the Minister for Planning in June 2019. The Minister determined an EES was required for the Project due mainly to the potential significant effects on biodiversity and social and cultural values as a result of the proposed clearance of a very large number of trees and habitat, including potential cumulative effects on the habitat of the Swift Parrot.

The evaluation objective for effects on biodiversity in the Minister for Planning's EES Scoping Requirements is:

To avoid or, at least, minimise adverse effects on native vegetation (including remnant, planted, regenerated and large old trees), listed migratory and protected species/ecological communities and then to address offset requirements consistent with relevant state and commonwealth policies.

Existing environment:

- *Characterise species, origin, dimension, health and lifespan of trees that may be affected by the project assuming current conditions continue, and appropriate care is provided.*
- *Describe the biodiversity values that could be directly or indirectly affected by the project, including:*
  - *native vegetation and ecological communities listed under the EPBC Act, FFG Act and DELWP Advisory List;*
  - *native flora and fauna species (including assessment of likelihood of presence), particularly those listed under the EPBC Act, FFG Act and DELWP Advisory Lists; and*

- *adequate surveys for EPBC Act listed threatened species and ecological communities should be undertaken in accordance with Commonwealth Conservation Advices and Threatened Species Recovery Plans and completed prior to exhibition of the EES.*

Likely effects:

- *Assess the potential effects (including facilitated) of the project (and feasible alternatives) on trees (including remnant, planted, regenerated and large old trees).*
- *Assess the potential effects (including facilitated) of the project (and feasible alternatives) on native vegetation, ecological communities and flora species, in particular any listed under the EPBC Act, FFG Act and DELWP Advisory list.*
- *Assess the potential effects (including facilitated) of the project (and feasible alternatives) to biodiversity values, including but not limited to:*
  - *removal or destruction of habitat (including remnant, regenerated or planted vegetation);*
  - *disturbance or alteration of habitat conditions or other sources of increased habitat threat;*
  - *initiating and/or exacerbating potentially threatening processes under the EPBC Act and FFG Act;*
  - *increasing risk of mortality of fauna listed under the EPBC Act, FFG Act and DELWP Advisory List (e.g., through increased car strikes of fauna);*
  - *introduction and/or spread of declared weeds or pathogens within or near the project area; and*
  - *impacts to MNES caused by water quality changes within and downstream of the project area.*
- *Assess the potential effects (including facilitated) on habitat connectivity and wildlife movement of fauna species listed under the EPBC Act, FFG Act and DELWP Advisory List.*

1.3 Scope of this statement

I have been requested by Arup Australia Pty Ltd (Arup) on behalf of Major Roads Projects Victoria (MRPV) to undertake a peer review of specific key risks of the project to the ecological values of trees in the project area. Furthermore, to focus on the key question in relation to that, which is:

Does the assessment adequately address the risk to / impact on the ecological value of trees from the Project?

The objectives of this statement are to independently review the existing ecological reports as they relate to the Project and to provide commentary on the existing ecological conditions and the potential risks and ecological impacts associated with the removal of trees.

1.4 Key project descriptors

The following project descriptors are used within this report:

The Project: Yan Yean Road Upgrade – Stage 2 project

The Project Area: includes the existing Yan Yean Road corridor between Kurrak Road, Plenty and Bridge Inn Road, Doreen, including some adjoining private and public land, as displayed in **Figure 1**.

Site Assessment Area: Means a broader study area to contextualise flora and fauna records and better understand the wider ecological landscape in which the Project Area exists. Where this term is used it is based on that defined by the relevant consultant report being reviewed (eg SMEC or WSP).

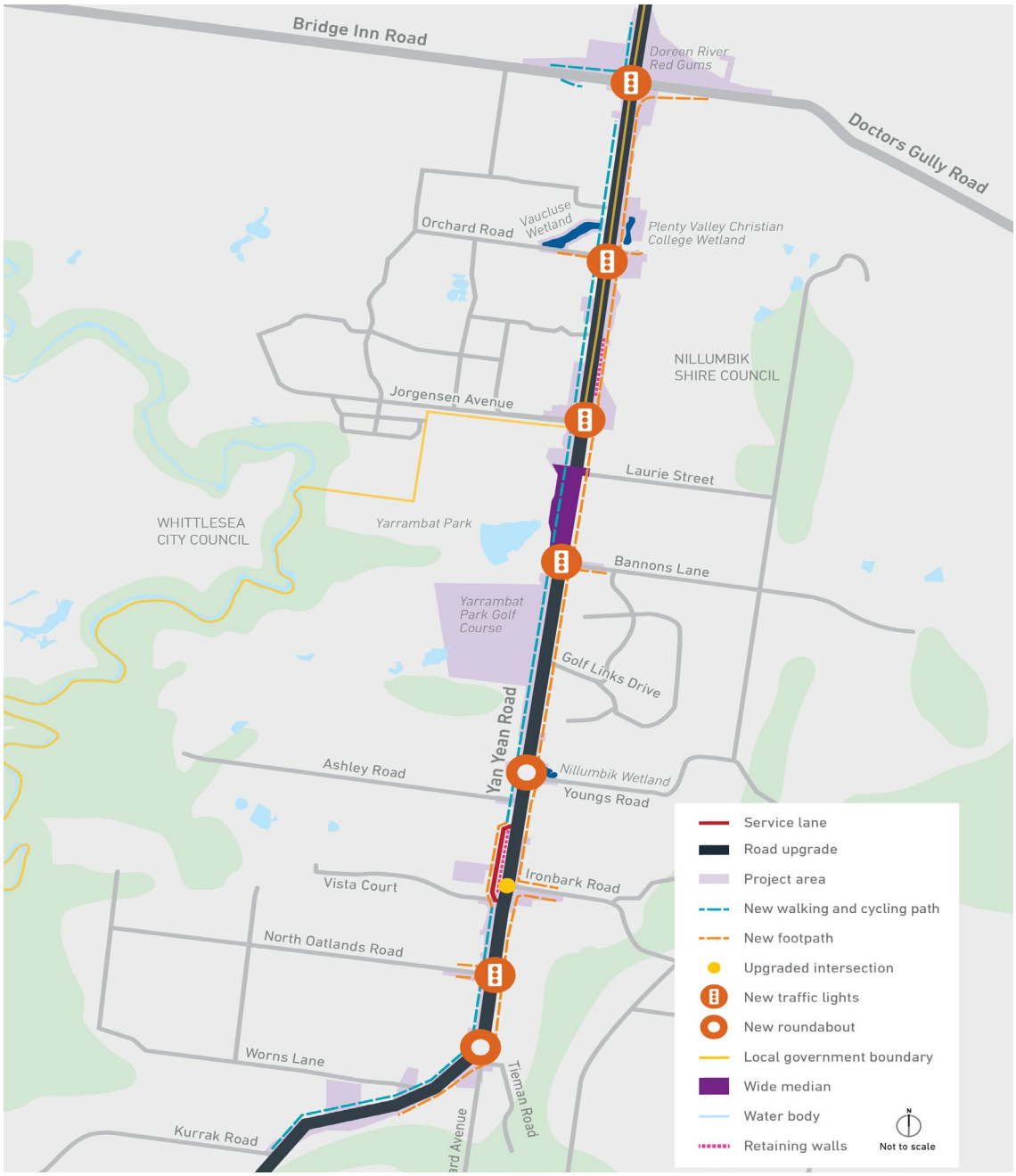

Figure 1. Project area and main project elements.

1.5 Field assessment

No field assessments were completed by Emerge Associates as part of this review.

2 Background Review

2.1 Documents reviewed in the preparation of the statement

The following reports were reviewed in undertaking my review and in the preparation of this report:

- *Technical Report B1 – Biodiversity Existing Conditions: Yan Yean Road Upgrade – Stage 2: Kurrak Road to Bridge Inn Road* (WSP, 2020)
- *Technical Report B2 – Biodiversity Impact Assessment: Yan Yean Road Upgrade – Stage 2: Kurrak Road to Bridge Inn Road*.(SMEC, 2020)
- *Technical Report C – Arboriculture Assessment: Yan Yan Yean Road Upgrade – Stage 2: Kurrak Road to Bridge Inn Road* (Ryder, 2020).
- *Scoping requirements for Yan Yean Road (Stage 2) Upgrade Environment Effects Statement* (DELWP, 2019)
- *Attachment III – Environmental Risk Report* (MTIA, 2020)
- *Technical Report G – Yan Yean Road Upgrade Stage 2: Landscape Strategy*. (ARUP, 2020)
- *Guidelines for the removal, destruction or lopping of native vegetation*(the Guidelines) (DELWP, 2017)
- *Assessors-handbook-Applications-to-remove,-lop-or-destroy-native-vegetation-V1.1*. (DELWP, 2018)
- Protection of trees on development sites. Standards Australia. Australian Standard (AS4970-2009).

3 Discussion

Table 1 presents my determinations in relation to the key documents reviewed and specific scoping requirements as they relate to my brief.

Table 1. Key scoping requirements, the EES response and an assessment of the adequacy of response.

Scoping requirement	EES response	Adequacy of the response and commentary
Existing environment		
Characterise species, origin, dimension, health and lifespan of trees that may be affected by the project assuming current conditions continue, and appropriate care is provided.	• Ryder (2020) visually inspected all trees within the Project Area as presented in Figure 3 of their report. For each tree encountered the following data was collected: ○ Unique ID for each tree in logical numerical order ○ Image of tree ○ Botanical and common name ○ Tree dimensions (Height x Width) ○ Diameter at Breast Height (DBH at 1.3m) and Diameter at Base (DAB) ○ Largest stem diameter ○ Health ○ Structure ○ Useful Life Expectancy (ULE) ○ Tree significance ○ Retention value ○ Presence of hollows (5 X 15cm) ○ Comments. • WSP (2020) also collected or collated a significant amount of information on vegetation including collating information from Ecology and Heritage Partners and Arcadis. This information combined with arboriculture data was used to map and quantify native vegetation. In addition, WSP completed Vegetation Quality Assessments (VQA) over March and April 2019. • WSP characterised trees into 'canopy trees' including 'scattered trees' and trees in patches as defined by the Guidelines (DELWP, 2017)	• The Ryder arboriculture team is considered to have the appropriate skills and training to complete the arboriculture assessment, led by Cameron Ryder (BHort[Hons] and AdvDipHort [Arb]) and Saravanan Krishnaraj (PhD & MSc [Forestry] and BSc [Forestry]). • The tree definitions applied are considered appropriate by the author and adequately characterise the species, origin, dimension, health and lifespan (in this case a ULE is used to predict the potential future life of the individual tree). • Ryder is transparent that some small 'trees' or saplings are not accounted for in the arboriculture assessment. The reason being that in bushland areas there are often numerous patches of regenerated saplings and that these would be accounted for in the ecological assessments. I believe this is an appropriate and acceptable response and does not diminish the characterisation of the trees within the Project Area. • The WSP document is considered to provide a comprehensive review of previous ecological assessments, quantification and presentation of areas of native vegetation including patches and scattered trees. It was not the intent of this assessment to review the EVC determinations and the species encountered, however, in principle, EVC classifications and their mapping (scale and detail) are considered to present an appropriate characterisation of the environment. Furthermore, the mapping of scattered trees is also considered very detailed and appropriate to meeting the scoping requirement. • It was not a requirement of this assessment to review the Ecology and Heritage Partners report nor the Arcadis report, therefore I cannot comment on the qualifications of the staff involved in the VQA

		assessments nor whether they were/are accredited assessors. I have reviewed the WSP assessors' accreditations and confirm that they are appropriately qualified for the completion of Vegetation Quality Assessments.
Describe the biodiversity values that could be directly or indirectly affected by the project,including: • native vegetation and ecological communities listed under the EPBC Act, FFG Act and DELWP Advisory List	• WSP (2020) completed several targeted surveys for flora, fauna, communities including those listed under the EPBC Act, FFG Act and DELWP Advisory List. Biodiversity assessments were completed for: ○ EPBC Act and FFG Act vegetation communities ○ Orchids ○ Matted Flax-lily *Dianella amoena* and Studley Park Gum *Eucalyptus* X *studleyensis* ○ Brown Toadlet *Pseudophryne bibronii* and Southern Toadlet *Pseudophryne semimarmorata* ○ Brush-tailed Phascogale *Phascogale tapoatafa* ○ Eltham Copper Butterfly *Paralucia pyrodiscus lucida* ○ Growling Grass Frog *Litoria raniformis* ○ Threatened Owls ○ Swift Parrot *Lathamus discolor*. • Furthermore, SMEC Australia (SMEC) were engaged to complete a Biodiversity Impact Assessment (SMEC, 2020). This built on the existing conditions document and examined impacts (direct and indirect) of the Project.	• Whilst I have not reviewed the qualifications of each WSP team member, based on my expertise and knowledge of the industry it is clear that WSP brought together a highly experienced team with a number of specialists with expertise in the survey of certain species (for example Karl Just for orchids, Ninox Pursuits Environmental Services for threatened owls etc). I consider this to be a very positive response and one that leads to a greater level of certainty in the determinations made within the WSP report. • The level of assessment of threatened flora and fauna and communities is considered thorough and appropriately considers survey guidance notes/methods where available. The rare and threatened flora species targeted for assessment are considered acceptable by the author as they may occur within the Project Area based on existing records and habitat (vegetation) documented to occur in the Project Area.
Likely effects		
Assess the potential effects (including facilitated) of the project (and feasible alternatives) on trees (including remnant, planted, regenerated and large old trees).	• SMEC (2020) documented that 6203 trees recorded in the Project area in total, including remnant native, planted and exotic trees. In addition, the Project area contained 118 native flora species and approximately 17 ha of native vegetation comprised of seven EVCs. The majority (14.301 ha) was identified as Grassy Dry Forest (EVC 22), which has a bioregional conservation status of Least Concern. Trees that met the definition of native vegetation in the Project area comprised 2,493 native canopy trees, including 164 large trees in patches, 47 large scattered trees and 187 small scattered trees.	• I consider the documentation of existing conditions (as they relate to trees) by both WSP and SMEC to be of sufficient detail as to quantify the impacts of the project on trees (including remnant, planted, regenerated and large old trees). • I have reviewed the impact pathways[1] and am satisfied that they are consistent with EES's in Victoria that I have been involved in and broadly considers the range of real and potential impact pathways. With regards to facilitated (or indirect impacts), it is my view that the key secondary impacts associated with the Project such as the potential for weed and disease spread has been appropriately

[1] Note: I have not reviewed the risk and consequence determinations for each impact pathways as I consider this beyond the scope of this review.

	• SMEC completed a risk assessment and documented 18 impact pathways. Of these, five (5) impact pathways were considered to be of medium, significant or high risk after mitigation (the application of the Environmental Performance requirements). • A number of direct and indirect impact pathways were considered. • Appendix B of SMEC (2020) examines key threatening processes listed under the EPBC Act and FFG Act • The risk assessment completed by SMEC contains five categories of likelihood and include 'Almost certain, likely, possible, unlikely and rare' (SMEC, 2020).	considered. Whilst some risk pathways (for example soil compaction with the TPZ of trees or accidental spills in no-go zones) are not explicitly dealt with in the ecological risk assessment, I am satisfied that they are considered within the EES in either Construction management or a related discipline such as arboriculture. • Whilst the risk assessment does not explicitly use the term 'planted vegetation' my interpretation is that it is considered in the context of 'habitat' for common and threatened fauna and is therefore considered within the risk assessment. Furthermore, in the context of key threatened species such as Swift Parrot or Grey-headed Flying-fox the assessment does consider the role of planted trees (particularly *Eucalyptus* and *Corymbia* spp.) • I believe the assessment of key threatening processes as described by the relevant environmental legislation has been thorough and adequately addresses these risks.
Assess the potential effects (including facilitated) of the project (and feasible alternatives) to biodiversity values, including but not limited to: • removal or destruction of habitat (including remnant, regenerated or planted vegetation); • disturbance or alteration of habitat conditions or other sources of increased habitat threat	• The SMEC (2020) report examines the direct and indirect impacts on biodiversity values including key threatened species (flora and fauna) and communities, including assessing the risks associated with: ○ Removal or destruction of habitat ○ Disturbance or alteration of habitat conditions ○ Initiating or exacerbating potentially threatening processes listed under the EPBC and FFG Acts ○ Introduction and/or spread of declared weeds or pathogens. ○ Impacts caused by water quality changes within and downstream of Project area. • The report has a detailed background review of Swift Parrot, modelled habitat and habitat preferences and the potential role trees within the Project Area (remnant, planted and regenerated) play in terms of Swift Parrot feed trees. In addition it explored other factors that may contribute to Swift Parrot decline including predation in breed habitat, climate change, bird strike etc.	• The SMEC report provides a comprehensive assessment of risks to 10 ecological elements (eg threatened flora, threatened fauna, wildlife, ecological communities) and cumulative impacts for the Swift Parrot. • I am satisfied with the adequacy of the assessment of potential impacts (direct and indirect) on threatened species and communities and the determinations made within the report with regards to the significance (or lack thereof) of the impact on these species and communities.
Design and mitigation		

Develop design options and measures that can avoid or minimise significant direct and indirect effects on trees and develop strategies to address the loss of trees or effects of further habitat fragmentation.
 	
Identify design options and measures that could avoid or minimise significant direct and indirect effects on native vegetation, listed ecological communities, or protected flora and fauna species and their habitat, including habitat connectivity and associated wildlife movement.
	• Sections 6.1, 6.2 & 6.3 of SMEC (2020) provide a comprehensive list of committed activities to avoid and minimise the impacts of tree losses on habitat, listed flora and fauna and communities.
	• Chapter 5 of SMEC (2020) 'Impact Assessment' identifies that the loss of habitat connectivity may impede wildlife movement for certain species including:
	  ○ Possums, gliders and Brush-tailed Phascogale, and
	  ○ Common mobile ground-dwelling fauna such as kangaroos, wombats and echidnas.
	• To minimise the impacts of the loss of habitat connectivity the Project is committed to:
	  ○ applying the MRPV Fauna Sensitive Road Design Guideline and states it will install rope bridges
	  ○ Revegetation activities using indigenous species including trees likely to be used by Swift Parrot and Grey-headed Flying-fox
	  ○ Providing contextual planting along roads and walking and cycling paths where feasible to achieve tree canopy cover for habitat creation and connectivity
		• I consider the application of the Guidelines and the three-step 'avoid, minimise and offset' to be appropriate and the consultants appear to have correctly mapped the impact to canopy trees (including where the TPZ of the canopy extends beyond the Project area).
		• Section 6 'avoid and minimise statement' articulates a design response to avoid and minimise impacts to native vegetation. The establishment of 'no-go zones' is viewed positively, particularly since this sets aside 144 areas to be avoided. Ultimately this has led to a reduction in the area of native vegetation patch removal of approximately 5.4 ha (representing approximately 30% of native vegetation patches assessed) and a reduction in the number of canopy trees removed.
		• It is clear through the Ryder (2020) and SMEC (2020) reports that there has been significant technical work (arboriculture, ecology and engineering) to further reduce impacts on particularly important trees such as the Doreen River Red Gums.
		• With regards to minimisation (mitigation), again there appears to be a thorough examination of engineering solutions to minimise impacts such as the use of range of treatment including:
		  ○ Installation of retaining walls or under-boring technology to minimise impacts on trees.
		  ○ The installation of rope bridges for arboreal fauna habitat connectivity
		  ○ Revegetation using indigenous and native species, and
		  ○ Contextual planting.
		• I support all of the above-mentioned solutions to minimise the impacts of the loss of canopy and habitat connectively. However, it is recommended that further detail is provided prior to detailed design that documents:
		  ○ the quantum and location of rope bridges
		  ○ Where is under-boring technology likely to be implemented
		  ○ The quantum and location of revegetation
		  ○ the quantum and location of 'contextual planting'

		• In order to fully assess the potential success of such mitigation activities and to balance this against the loss of habitat connectively it would be beneficial to have all the information up front. It is understood that significant work has occurred to date, again I recommend further exploration of mitigation options such that the Planning Panel can make a determination based on more complete knowledge of both the proposed impacts and mitigation.
Develop rehabilitation strategies to enable the recovery or restoration/replanting of vegetation that can provide habitat for protected and listed threatened species and amenity to local community, consistent with any relevant threat abatement plan or conservation action plan.	• A number of rehabilitation strategies are discussed within the SMEC report including: ○ Strategic revegetation to minimise long term fragmentation impacts to be incorporated into the Landscape Strategy. ○ Revegetation will be undertaken in accordance with the Project's Landscape Strategy and will include: Using indigenous species as appropriate from relevant ecological vegetation classes to maximise fauna habitat value and connectivity, including trees likely to be used by Swift Parrot and Grey-headed Flying-fox. In addition, incorporating indigenous mid-storey plants as appropriate which will complement retained habitat. • A Tree Protection Management Plan (in line with AS 4970-2009) will be developed that will cover: ○ Trees to be removed or retained which will be informed by Tree Impact Assessment ○ Condition or significance of trees to be removed ○ Options for relocation and reinstatement of trees if feasible ○ All tree protection zones and structural root zones ○ All tree protection fenced off areas and areas where ground protection systems will be used ○ All services to be located within the tree protection zone (i.e. boring locations) ○ Location of tree protection measures and ground protection	• The strategies discussed within SMEC (2020) are encouraged, and when implemented will lead to minimisation of impacts to flora and fauna. Whilst I consider the intent there, many important details that would help determine the potential benefit of such actions are currently unresolved or require further detailed planning. For example: ○ What does 'reinforce habitat connection' within the Landscape Strategy (ARUP, 2020) actually mean in terms of tree cover, area of reinforcement or number of individual trees? ○ Where is the 'enhancement and rehabilitation' planting going? I find it difficult to interpret Figures 6.3 and 6.4 within the Landscape Strategy (ARUP, 2020). Furthermore there appears to be no quantification of the number or cover of trees to be replanted in either of SMEC (2020) or ARUP (2020). ○ Where and how many rope bridges are to be installed? ○ How many trees are likely to be relocated or reinstated as part of the Tree Management Plan? It is understood that this level of design will occur during detailed design stages of the project (including a detailed landscape plan), and are committed to through various EPRs on the project (including those related to fauna sensitive road design). • I am satisfied that the Landscape Strategy provides an acceptable over-arching response to the scoping requirement, however, I recommend further development of mitigation strategies to fully comprehend the potential effectiveness of the mitigations proposed. • The Landscape Strategy (ARUP, 2020) appears to focus only on the Project Area. I believe there are further opportunities for the Project to consider enhancement and rehabilitation outside the Project Area to further mitigate impacts that occur within the Project Area.

Develop offset strategies to offset loss of native vegetation consistent with state and commonwealth policies.	Section 6.3 of SMEC (2020) states that losses of native vegetation will be offset in-line with the Guidelines. The extent of removal is 11.888 ha or 17.458 hectares including past removal and 174 large trees resulting in an offset of: • 4.478 general units (minimum biodiversity score of 0.423) in the vicinity of Port Phillip and Westernport CMA • 1.861 species units of habitat for Little Pink Spider-orchid *Caladenia rosella* • 174 large trees.	• I consider the offset determination to be consistent with the Guidelines and has satisfied the DELWP approved processes including: ○ The provision of a Native Vegetation Removal report (NVR report), and ○ Demonstration that offsets (not more than six months old) are available (DELWP, 2018). • Commonwealth offsets are not required.

4 Conclusion

The following section presents my determinations with regards to the development of the Project and recommendations. For ease of review I have categorised these into major and minor determinations as detailed below:

4.1 Major determinations

1) On balance, the survey approaches, documentation and determinations of the Ryder and WSP reports comprehensively document the existing conditions of the Project Area with regards to trees (planted, remnant and regeneration) and native vegetation (including patches and scattered trees).
2) The Ryder arboriculture team is considered to have the appropriate skills and training to complete the arboriculture assessment.
3) The tree definitions applied are considered appropriate by the author and adequately characterise the species, origin, dimension, health and lifespan (in this case a ULE is used to predict the potential future life of the individual tree).
4) I believe the Project Arborist has applied an appropriate and acceptable method to the collection of tree data within the Project Area.
5) The WSP document is considered to provide a comprehensive review of previous ecological assessments, quantification and presentation of areas of native vegetation including patches and scattered trees. The mapping of scattered trees is also considered very detailed and appropriate to meeting the scoping requirement. Furthermore, I consider the documentation of existing conditions (as they relate to trees) by both WSP and SMEC to be of sufficient detail as to quantify the impacts of the project on trees (including remnant, planted, regenerated and large old trees).
6) The level of assessment of threatened flora and fauna and communities is considered thorough and appropriately considers survey guidance notes/methods where available. The rare and threatened flora species targeted for assessment are considered acceptable by the author as they may occur within the Project Area based on existing records and habitat (vegetation) documented to occur in the Project Area.
7) I have reviewed the impact pathways and am satisfied that they are consistent with EES's in Victoria that I have been involved in and broadly considers the range of real and potential impact pathways. With regards to facilitated (or indirect impacts), it is my view that the key secondary impacts associated with the Project such as the potential for weed and disease spread has been appropriately considered.
8) Whilst the risk assessment does not explicitly use the term 'planted vegetation' my interpretation is that it is considered in the context of 'habitat' for common and threatened fauna and is therefore considered within the risk assessment. Furthermore, in the context of key threatened species such as Swift Parrot or Grey-headed Flying-fox the assessment does consider the role of planted trees (particularly *Eucalyptus* and *Corymbia* spp.)

9) I believe the assessment of key threatening processes as described by the relevant environmental legislation has been thorough and adequately addresses these risks.

10) I am satisfied with the adequacy of the assessment of potential impacts (direct and indirect) on threatened species and communities and the determinations made within the report with regards to the significance (or lack thereof) of the impact on these species and communities.

11) I consider the application of the Guidelines and the three-step 'avoid, minimise and offset' to be appropriate and the consultants appear to have correctly mapped the impact to canopy trees (including where the TPZ of the canopy extends beyond the Project area).

12) Section 6 'avoid and minimise statement' articulates a design response to avoid and minimise impacts to native vegetation. The establishment of 'no-go zones' is viewed positively, particularly since this sets aside 144 areas to be avoided. Ultimately, this has led to a reduction in the area of native vegetation patch removal of approximately 5.4 ha (representing approximately 30% of native vegetation patches assessed) and a reduction in the number of canopy trees removed.

13) With regards to minimisation (mitigation), there appears to be a thorough examination of engineering solutions to minimise impacts such as the use of range of treatment including:

    a) Installation of retaining walls or under-boring technology to minimise impacts on trees.
    b) The installation of rope bridges for arboreal fauna habitat connectivity
    c) Revegetation using indigenous and native species, and
    d) Contextual planting.

    I support all of the above-mentioned solutions to minimise the impacts of the loss of canopy and habitat connectively. I am satisfied that the Landscape Strategy provides an acceptable over-arching response to the scoping requirement, however, I recommend that prior to delivery of the project as part of the design process that following are confirmed:

    a) the quantum and location of rope bridges
    b) Where under-boring technology likely to be implemented
    c) The quantum and location of revegetation activities
    d) the quantum and location of 'contextual planting' and 'enhancement planting'
    e) the quantum and details regarding 'reinforce habitat connection' within the Landscape Strategy
    f) the quantum of trees that are likely to be relocated or reinstated as part of the Tree Management Plan.

In order to fully assess the potential success of such mitigation activities and to balance this against the loss of habitat connectively it is recommended that this be completed prior to detailed design.

14) I consider offset determination to be consistent with the Guidelines and has satisfied the DELWP approved processes including:

    a) The provision of a Native Vegetation Removal report (NVR report), and
    b) Demonstration that offsets (not more than six months old) are available (DELWP, 2018).

15) Prior to vegetation removal a formal Native Vegetation Regulations (NVR) report will be required from DELWP.

4.2 Minor determinations

1) Whilst I have not reviewed the qualifications of each team member, based on my expertise and knowledge of the industry it is clear that WSP brought together a highly experienced team with a number of specialists with expertise in the survey of certain species (for example Karl Just for orchids, Ninox Pursuits Environmental Services for threatened owls etc). I consider this to be a very positive response and one that leads to a greater level of certainty in the determinations made within the WSP report.
2) I believe there is an opportunity for the Project to consider enhancement and rehabilitation outside the Project Area to mitigate impacts that occur within the Project Area, noting there is no statutory requirement for this.

4.3 Recommendation

It is recommended that the Project team develop:

1) A Mitigation and Enhancement Plan (or sub-plan)[2]. This plan should as a minimum document:
   a. Proposed mitigation measures and the target ecological element(s). For example, rope bridges and arboreal mammals
   b. As best as possible quantify (numbers, canopy cover, area) the mitigation measures. This does not have to be fixed, it could present aspirational targets or present a range. For example between 2-6 rope bridges are likely to be installed. Areas under investigation for rope bridges include X, Y, Z
   c. The process for determining the most appropriate location for contextual and enhancement planting and the likely quantum
   d. Key stakeholders and how they will be engaged
   e. Key regulators and approval requirements associated with the Mitigation and Enhancement Plan.

[2] In my view this could form part of the Landscape Strategy or be a separate document.

5 Declaration

I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance which I regard as relevant have to my knowledge been withheld from the Panel.

Cameron Miller

Dated 31 July 2020

6 References

ARUP (2020) *Technical Report G - Yan Yean Road Upgrade Stage 2: Landscape Strategy*. Arup Australia for Major Roads Projects Victoria.

DELWP (2017) *Guidelines for the removal, destruction or lopping of native vegetation*. Department of Environment, Land, Water and Planning. Government of Victoria.

DELWP (2018) *Assessors-handbook-Applications-to-remove,-lop-or-destroy-native-vegetation-V1.1*. Department of Environment, Land, Water and Planning. Government of Victoria.

DELWP (2019) *Scoping requirements for Yan Yean Road (Stage 2) Upgrade Environment Effects Statement*. Government of Victoria.

MTIA (2020) *Attachement III - Environmental Risk Report*. MajorTransport Infrastructure Authority, Government of Victoria.

Ryder (2020) *Technical Report C - Arboriculture Assessment: Yan Yean Road Upgrade - Stage 2 - Kurrak Road to Bridge Inn Road*. Consultant report by Ryder Arboriculture and Environment.

SMEC (2020) *Technical Report B2 - Biodiversity Impact Assessment: Yan Yean Road Upgrade – Stage 2: Kurrak Road to Bridge Inn Road*. Consultant report by the Snowy Mountain Engineering Corporation to Major Roads Projects Victoria, Government of Victoria.

WSP (2020) *Technical Report B1 - Biodiversity Existing Conditions: Yan Yean Road Upgrade - Stage 2: Kurrak Road to Bridge Inn Road*. Consultant report to Major Road Projects Victoria, Government of Victoria.

Appendix A

Matters raised by guide to expert evidence

Name and address of expert

Name: Cameron J Miller

Address: Level1, 5 Queens Road,

Melbourne, VIC 3004

Qualifications and Experience of Expert

a) My name is Cameron Miller and I am an Principal Ecologist and Manager of the Victorian Environmental Practice at Emerge Associates.

b) I completed a Masters of Science (Ecology and Management) at the University of Adelaide in 1996, a Bachelor of Science at the University of Melbourne in 1992 and Graduate Certification of Arboriculture at the University of Melbourne in 2019.

c) Refer to Appendix B for copy of my *curriculum vitae*.

Experts area of expertise to make the report

For the past 20 years I have been employed as an ecologist in the capacity as a consultant or working for government agencies such as Parks Victoria and the Environment Protection Authority (Victoria). I also have a technical role and have expertise in:

- Flora and fauna surveys, fauna habitat mapping and assessment
- Environmental impact assessment, ecological planning advice, State and Commonwealth referrals
- Habitat hectare analysis
- Arboriculture assessments and the role of trees in the urban landscape.

Other significant contributors to the report

Not applicable

Scope of the report

I have been requested by Arup Australia Pty Ltd on behalf of Major Roads Projects Victoria to undertake a peer review of specific key risks of the project to the ecological values of trees in the project area. Furthermore, to focus on the key question in relation to that, which is: does the assessment adequately address the risk to / impact on the ecological value of trees from the Project?

Person who carried out tests or experiments upon which the expert relied

- None.

Appendix B

Curriculum Vitae

Qualifications

- Masters of Science (Ecology & Management), 1996 (University of Adelaide)
- Bachelor of Science, 1992 (Melbourne University)
- Graduate Certificate in Arboriculture (AQF Level 8), 2019 (Melbourne University)

Key Experience and Office Role

Cameron is a Principal Environmental Consultant in our Victorian Studio and manager of the Victorian environmental practice. Cameron has over 24 years professional experience in technical and operational roles. He is trained as an ecologist having completed a masters and undergraduate degree in natural science and is an 'accredited vegetation assessor' in Victoria (certificate of competency 2009, 2016 & 2019). In addition, Cameron has completed a Graduate Certificate in Arboriculture.

Cameron has been consulting for over 14 years and has worked on major residential and commercial developments, linear infrastructure and roads, threatened species monitoring and undertaking ecological reviews and management planning for government agencies. Professionally, Cameron has designed and implemented ecological surveys, environmental impact assessments and ecological approvals within south-eastern Australia. Prior to consulting, Cameron worked for a number of government agencies including Parks Victoria, the Environment Protection Authority (Victoria) and the Department of Primary Industries (Queensland).

This experience has provided Cameron with significant working knowledge of the relevant State and Commonwealth legislation, including the federal *Environment Protection and Biodiversity Conservation Act* (1999), the Victorian *Planning and Environment Act* (1987), the *Flora and Fauna Guarantee Act* (1988) and associated policy.

Expert Evidence Experience

Cameron also has experience providing expert evidence at Victorian Planning Panels and the Victorian Civil and Administrative Tribunal (VCAT) to a range of clients including:

- North-East Link Project – Inquiry and Advisory Committee, Planning Panels Victoria
- *VCAT expert evidence* – 47 Fisher Parade, Ascot Vale, Auski Nominees Pty Ltd
- *VCAT expert evidence* – Metro Quarry Group, Nyora Workplan Variation, Nyora
- Edithvale and Bonbeach Level Crossing Removal Project – Inquiry and Advisory Committee, Planning Panels Victoria
- West Gate Tunnel Project – Inquiry and Advisory Committee, Planning Panels Victoria
- Horsham Planning Scheme Amendment C72, Planning Panels Victoria
- Stockman Project – Terrestrial Fauna Expert Witness – Planning Panels Victoria
- *VCAT expert evidence* – Amendment C23 for Searoad Ferries, Queenscliff
- *VCAT expert evidence* – McLears Hill, 143 Nepean Highway, Dromana, Victoria
- *VCAT expert evidence* – Aqueduct Road, Langwarrin.

Cameron has also overseen expert panel advice for staff including:

- Birregurra Quarry (MCG Group)
- Princess Highway Duplication (VicRoads).

Memberships and Associations

- Member of the Environment Institute of Australia and New Zealand

- Member of the Ecological Society of Australia
- Member Box-Ironbark Farm Forestry Network (BIFFN) and hardwood plantation grower
- Former president Australian Marine Conservation Society (AMCS): Victorian branch

Professional Employment

- 2019 – Current Emerge Associates, Melbourne VIC
- 2009 – 2018 AECOM, Melbourne VIC
- 2007 – 2009 SMEC Australia
- 2006 – 2007 Environmental Resources Management
- 2002 – 2006 Parks Victoria
- 2001 – 2002 Department of Primary Industries, Queensland.
- 1997– 2000 Environment Protection Authority, Victoria, Australia.
- 1996 – Centre for Education and Research in Environmental Strategies (CERES) (Part-time)
- 1995 – 1996 Part-time marine diver & laboratory assistant, South Australian Coastal Board.

Selected Project Experience

- North-east Link Environmental Effects Statement
- Armstrong Creek (Geelong) Native Vegetation Precinct Plan
- Mernda Rail Extension Project, Mernda
- Pakenham East Train Stabling Yard ecological assessment
- Bloomdale Estate, Diggers Rest
- Hobbs Road, Wydnham Vale
- Level Crossing Removal Authority (LXRA) Technical Advisor – numerous projects across Melbourne
- Searoad Ferries native vegetation assessment, Queenscliff
- McLears Hill, 143 Nepean Highway, Dromana
- Paramount Industrial Estate, Mt Derrimut Road, Deer Park
- Evans Park Business Village, Evans Road, Cranbourne West
- West Gate Tunnel Environmental Effects Statement, Melbourne
- Sites of Biodiversity Significance (SOBS): Biodiversity Conservation and Site Management Plans, Melbourne VIC (Melbourne Water)
- Stockman Project – Environmental Effects Statement, Benambra
- Growth Areas Authority Biodiversity Assessment, Melbourne's Urban Growth Zone
- Net Gain and Ecological Assessments, Various Locations VIC
- National Radiation Storage Facility (Dept. of Innovation, Industry & Science), SA
- Western Highway – Anthony's Cutting Realignment, Melbourne
- Swan Island Kangaroo Management Plan (Department of Defence)
- Kangaroo Population Assessment – HMAS Creswell (Department of Defence)
- Workplan Variation – Ecological components, Bacchus Marsh Quarry (Boral)
- Biosecurity Management Plan (RES Wind Farms)
- Savana Estate Ecological Approvals (Avid Property Group)
- Rifle Range Reserve Vegetation Management Plan, Hobsons Bay (Hobsons Bay City Council)
- Frankston Ecological Reserves Assessment, Frankston (City of Frankston)
- Darebin Creek Ecological Improvement Study, Darebin Creek (City of Darebin)
- Flora, Fauna and Net Gain Assessment, Princes Highway Duplication, Waurn Ponds to Winchelsea (VicRoads)
- Portland Penguin Eco-tourism Management Advice, Portland (Parks Victoria)