PART 5 ATTACHMENTS

Attachment V
Swift Parrot Management Plan

Image courtesy: Andrew Silcocks of Birdlife Australia.

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Yan Yean Road (Stage 2) Upgrade (Kurrak Road to Bridge Inn Road) Swift Parrot Management Plan

Prepared for WSP Australia Pty Ltd

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- Mark Venosta (site inspection)

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1. Introduction

Biosis Pty Ltd was commissioned by WSP Australia Pty Ltd to prepare the required management plan for Swift Parrot in relation to the planned Yan Yean Road (Stage 2) Upgrade in Yarrambat and Doreen.

The Yan Yean Road (Stage 2) Upgrade (Kurrak Road to Bridge Inn Road) (the project) is located approximately 25 kilometres north-east of the Melbourne CBD and involves a 5.5 kilometre duplication of the existing Yan Yean Road, from Kurrak Road in the south to Bridge Inn Road in the north. The project passes through the villages of Yarrambat and Plenty, connecting the established areas of Diamond Creek and Greensborough to the growth area of Doreen (Figure 1).

The project is located within the:

- Whittlesea and Nillumbik Local Government areas
- Victorian Volcanic Plains and Highlands Southern Fall Bioregions
- Port Phillip and Westernport Catchment Management Authority.

For this report the **project area** is the area for which planning and environmental approvals are being sought. This includes areas of land that are outside the proposed design footprint where works are expected to be completed.

The project would duplicate a 5.5 kilometre portion of Yan Yean Road between Kurrak Road and Bridge Inn Road increasing the existing two lanes to four lanes (comprising two lanes in each direction). The design speed along Yan Yean Road within the extent of the project area is 70 kilometres per hour, with the exception of north of Bridge Inn Road which is 80 kilometres per hour. The design for the project assessed in the Environment Effects Statement has 3.5 metre wide lanes with the majority of the project using a central 2.2 metre-wide median. This cross section was adopted in design due to various constraints ranging from road safety issues, steep and rolling terrain, high cut and fill batters and subsequent retaining walls at certain locations, as well as seeking to limit impacts to existing properties, local accesses and trees along Yan Yean Road. The existing road alignment has been retained due to constraints around the existing topography and road reserve limitations.

The project includes two new roundabouts (at Heard Avenue, and Youngs Road), five new signalised intersections (Bannons Lane, Jorgensen Avenue, North Oatlands, Orchard and Bridge Inn Roads), upgrades to one existing signalised intersection, including an additional right hand turning lane, slip lane, and traffic island (Ironbark Road), as well as new street lighting at all intersections, road signage and landscaping.

A new 3-metre-wide shared use path on the western side and 1.2 metre wide footpath on the eastern side of Yan Yean Road is also included in the project. The paths would link Diamond Creek to Doreen and are expected to improve safety and connectivity for pedestrians and cyclists. Continuous safety barriers would run along the project's length and are proposed in the median and behind outer kerbs along the mid-block sections of the carriageways.

The project will also entail the construction of a fence along the eastern boundary of Yarrambat Golf Course to prevent golf balls from entering the Yan Yean Road alignment. The fence is proposed to be between 30 and 36 metres high.

An initial biodiversity assessment of the project area was completed by Arcadis (2018). It identified potential habitat for the critically endangered Swift Parrot *Lathamus discolor* within the project Area and that the project was expected to entail removal of trees that are potential habitat for the species.

On 14 October 2018 the Victorian Minister for Planning determined under the *Environment Effects Act 1978* (EE Act) that Major Road Projects Victoria (MRPV) is to prepare an Environment Effects Statement (EES) for the Yan Yean Road (Stage 2) Upgrade (Kurrak Road to Bridge Inn Road). On 2 April 2019 the proposed works were declared a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Both decisions cited potential for the project to have an impact on the Swift Parrot.

An existing conditions report (WSP 2020) and a biodiversity impact assessment report (SMEC 2020) have each been prepared for the EES (currently in draft form). This Swift Parrot Management Plan builds upon mitigation strategies developed by SMEC and MRPV to provide measures for Swift Parrot. Its fundamental objectives are to ensure that the project appropriately addresses requirements for the species and that, to the extent feasible, the design and construction of the project avoid detrimental effects on the species and that residual effects on it are kept to the minimum.

2. Swift Parrot

2.1 Description of Swift Parrot

The Swift Parrot *Lathamus discolor* is a medium size, nectarivorous parrot that is endemic to Australia. It is identified by its bright green colouration with patches of yellow, red and blue located on its throat, chin, face and wings. They breed in Tasmania and overwinter in mainland Australia (Commonwealth of Australia 2019). Breeding occurs between September and April in Tasmania in a range of forest types (Higgins 1999).
Once breeding is complete, they disperse from breeding areas, across Tasmania, and to mainland Australia (Higgins 1999). Birds arrive in Victoria as early as February and March, however most 'first' records for the year are from April (Higgins 1999). Most birds spend the winter in Victoria and New South Wales, but they are also known to extend as far north as Brisbane, although this is unusual (Higgins 1999). They disperse across broad landscapes, foraging on nectar, pollen and lerps in a variety of eucalypt species. (Saunders and Tzaros 2011). They return to Tasmania in August and September, with the largest number of 'returning' records from September (Higgins 1999).

Upon arrival on the mainland, Swift Parrot disperse throughout Victoria and New South Wales, and occasionally into southern Queensland and eastern South Australia, where they forage on flowers and lerps in preferred *Eucalyptus* and *Corymbia* spp. (Commonwealth of Australia 2019). Swift Parrots may utilise woodlands and forests supporting those species across their mainland range. Previous studies evaluating the tree species in Box-Ironbark woodlands found that White Box *Eucalyptus albens* (19.5% of observations) was the preferred nectar for Swift Parrot. Additionally, Swift Parrots forage upon a range of other species including Yellow Gum *Eucalyptus leucoxylon*, Yellow Box *Eucalyptus melliodora* and Grey Box *Eucalyptus microcarpa* (Higgins 1999), all of which are found within the project area. Although Swift Parrot will utilise a variety of age classes, they prefer larger, mature trees as these provide more reliable resources than younger trees (Wilson and Bennett 1999, Law et al. 2000, Kennedy and Overs 2001, Kennedy and Tzaros 2005).

Habitat mapping conducted throughout the Box-Ironbark forest regions in Victoria identified 40 priority sites where Swift Parrot have a high level of site fidelity or occur in large flocks (Saunders et al. 2007).

2.2 Conservation status and threats

Swift Parrots occur as a single population that is estimated to be approximately 2000 mature individuals which is most likely continuing to decline (Garnett et al. 2011, Commonwealth of Australia 2019). Swift Parrot is currently listed as 'Critically Endangered' under the EPBC Act and is also listed as a threatened species in all states and territories in which it occurs (New South Wales, Tasmania, Victoria, Queensland, ACT and South Australia).

Key factors contributing to the species decline reported in the National Recovery Plan (Commonwealth of Australia 2019) include:

- Loss and alteration of nesting and foraging habitat due to forestry activities (particularly in Tasmania)
- Firewood harvesting
- Fire effects on habitat trees

- Residential and industrial developments
- Agricultural tree senescence and dieback
- Predation by introduced Sugar Gliders (in Tasmania)
- Flight collision hazards
- Competition for food resources and tree hollows
- Climate change
- Cumulative impacts of the various effects above.

2.3 Swift Parrot habitat within the project area and vicinity

There are no records of Swift Parrot from the Yan Yean Road (Stage 2) Upgrade project area. However, WSP (2020) assessed the species as having a moderate likelihood of occurrence within the project area, and it can be assumed that the species may make occasional use of the project area for foraging during the annual period when the birds are on the Australian mainland. The *Eucalyptus* and *Corymbia* species of the project area and surrounding landscape can be characterised as open woodland, with areas of intact vegetation, mature trees and sparse understorey. WSP (2020) gives a detailed description of Swift Parrot habitat in the local area. In summary, the local area supports a matrix of urban development, low density residential areas, small scale farming and linear reserves such as Plenty Gorge Park, which runs along the Plenty River. SMEC (2020) provides an assessment of the project's potential impact on Swift Parrot, including a cumulative impact assessment.

Trees within the project area that may be used by Swift Parrots include Yellow Gum *E. leucoxylon*, Yellow Box *E. melliodora* and one Grey Box *E. microcarpa*, which are known foraging species for Swift Parrots. Also identified from the project area are planted Mugga Ironbark *Eucalyptus sideroxylon* and Spotted Gum *Corymbia maculata*. Additional species recognised in the Arcadis (2018) impact assessment as 'secondary feed species' are mostly Red Box *Eucalyptus polyanthemos*. The latter species is not identified or discussed as a forage species in the Swift Parrot Recovery Plan but it is conceivable that Swift Parrots might rarely use them if the trees were to support high densities of psyllids and their lerps. SMEC (2020) has documented a total of 656 *Corymbia* and *Eucalyptus* trees recognized as key forage species for Swift Parrots (Commonwealth of Australia 2019) within the project area, incorporating a 20 metre buffer, comprising 639 small trees (<60cm DBH) and 17 large trees (≥60cm DBH). Of these, 60 trees (57 small and 3 large) are located within the 20 metre project area buffer (SMEC 2020).

The area within 6 kilometres of the project area, including woodlands of the Plenty Gorge, provides regular over-wintering foraging resources for Swift Parrots (Practical Ecology 2017). Potential habitat suitability for Swift Parrots in the local area, as modelled by DELWP, is shown in Figure 2. Trees within the project area that offer some potential as habitat for Swift Parrots are shown in Figure 3.

Regional use of habitat throughout the mainland, including the region under consideration, varies from year to year based on tree flowering patterns and availability of other foraging resources (Kennedy and Overs 2001, Kennedy and Tzaros 2005, Saunders 2005, Saunders and Heinsohn 2008, Saunders and Tzaros 2011). Furthermore, seasonality including amount of rainfall and subtle temperature increase can influence timing and frequency of *Eucalyptus* spp. flowering which affects Swift Parrot habitat selection (MacNally et al. 2009). For instance, throughout 2002 and 2009, increased numbers of Swift Parrot were recorded in coastal NSW due to low rainfall throughout Victoria (Saunders and Tzaros 2001).

Resources that have been used for the present project to assess and identify environmental impacts on the Swift Parrot include the National Recovery Plan (Commonwealth of Australia 2019), the Threatened Species Scientific Committee Conservation Advice (2016), the Biodiversity Assessment and database searches of Yan Yean Road (Stage 2) Upgrade project (Arcadis 2018) and the EPBC Act referral 2018-8371. Full citations can be found in the References section.

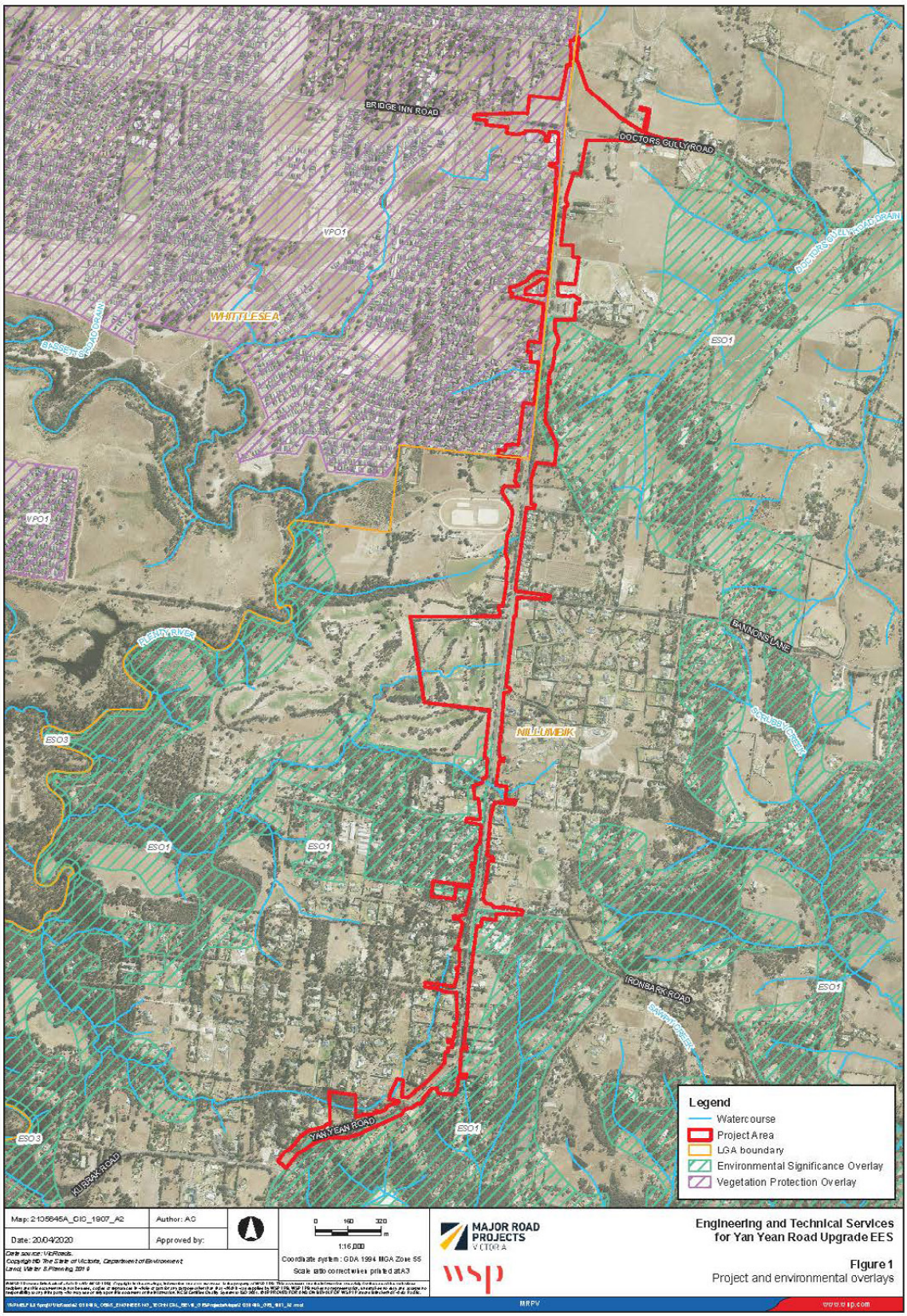

Figure 1 Location of the project area

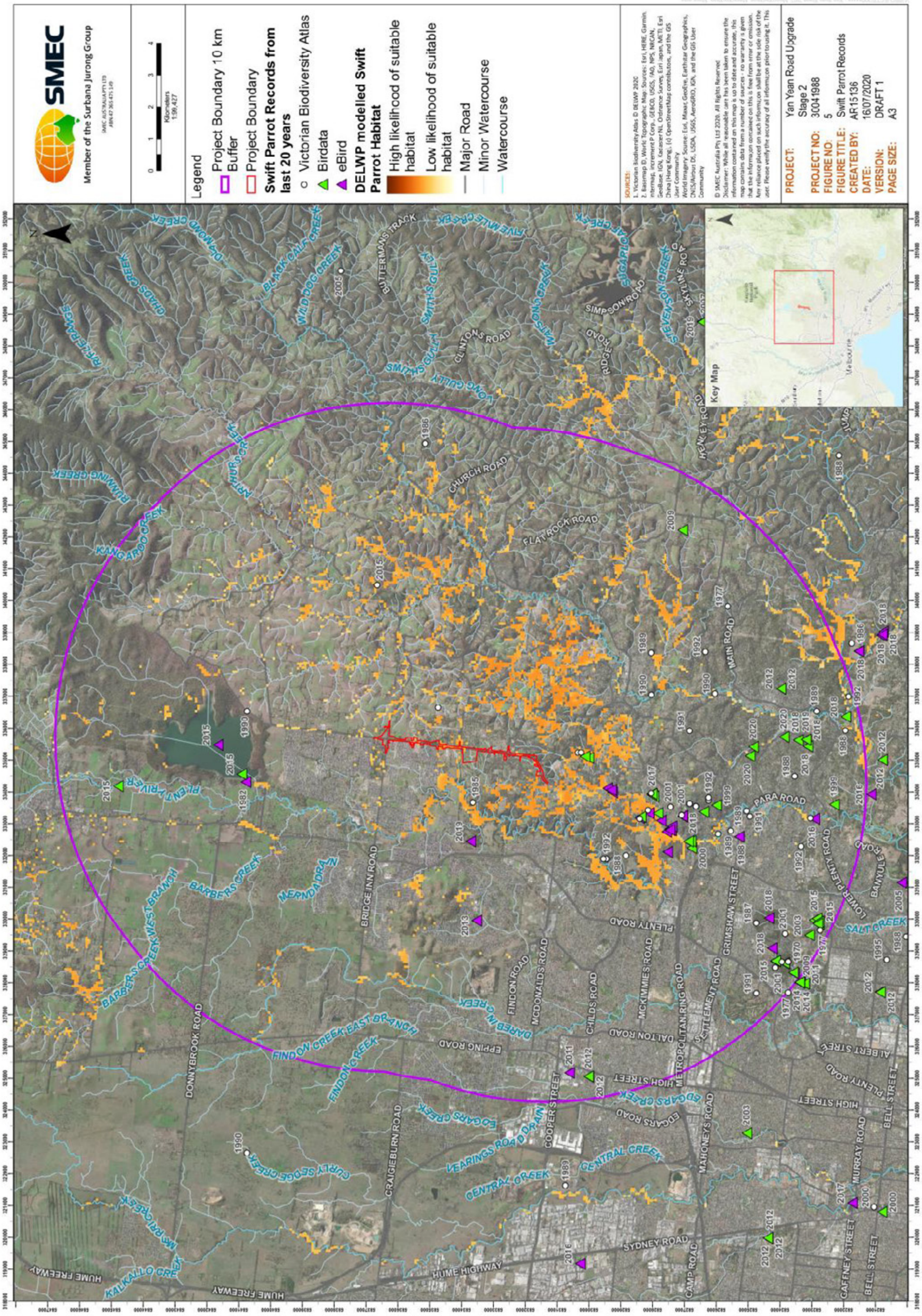

Figure 2 Swift Parrot records and modelled habitat for the species within 6 km of the study area

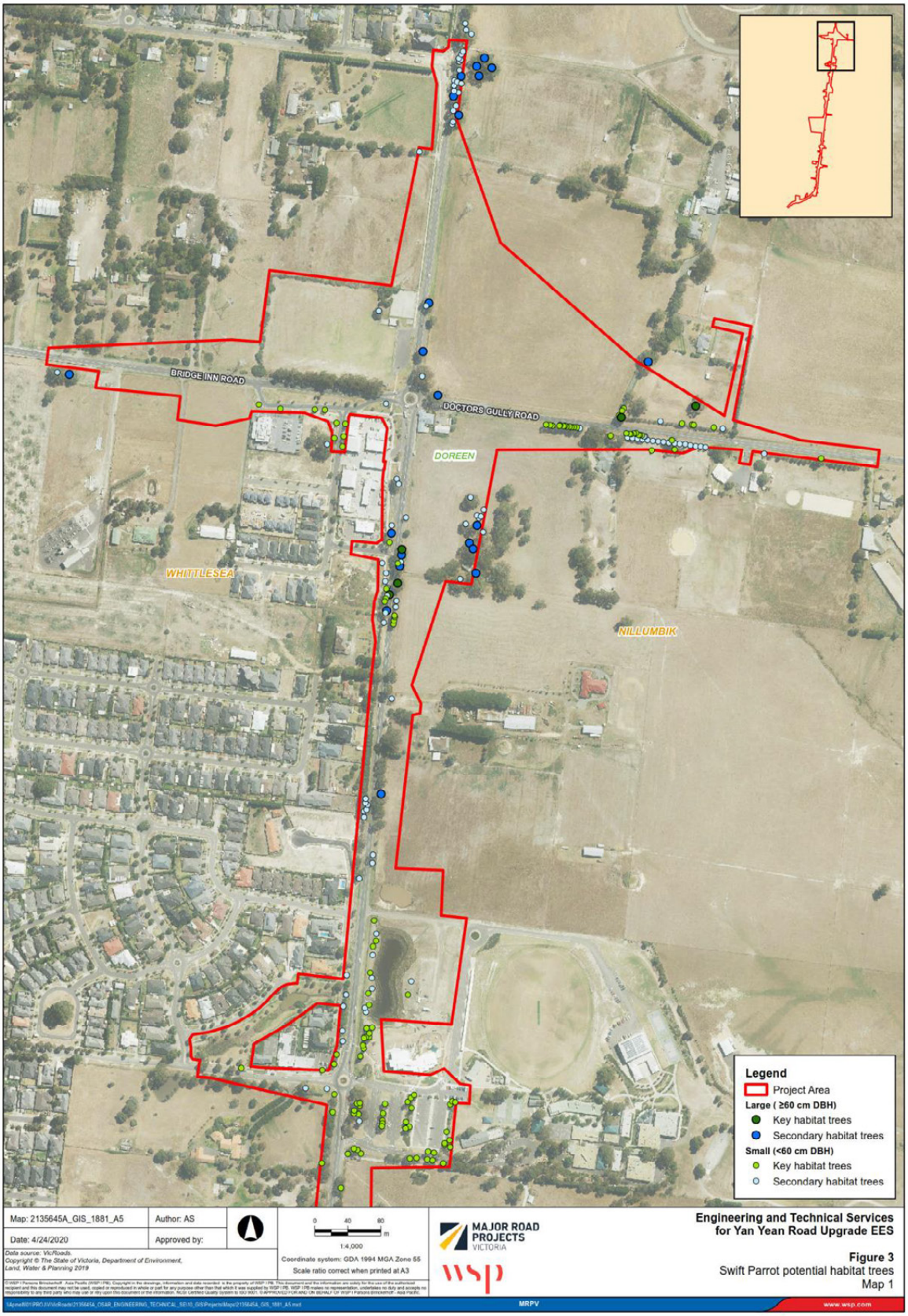

Figure 3.1 Potential habitat trees for Swift Parrots within the project area

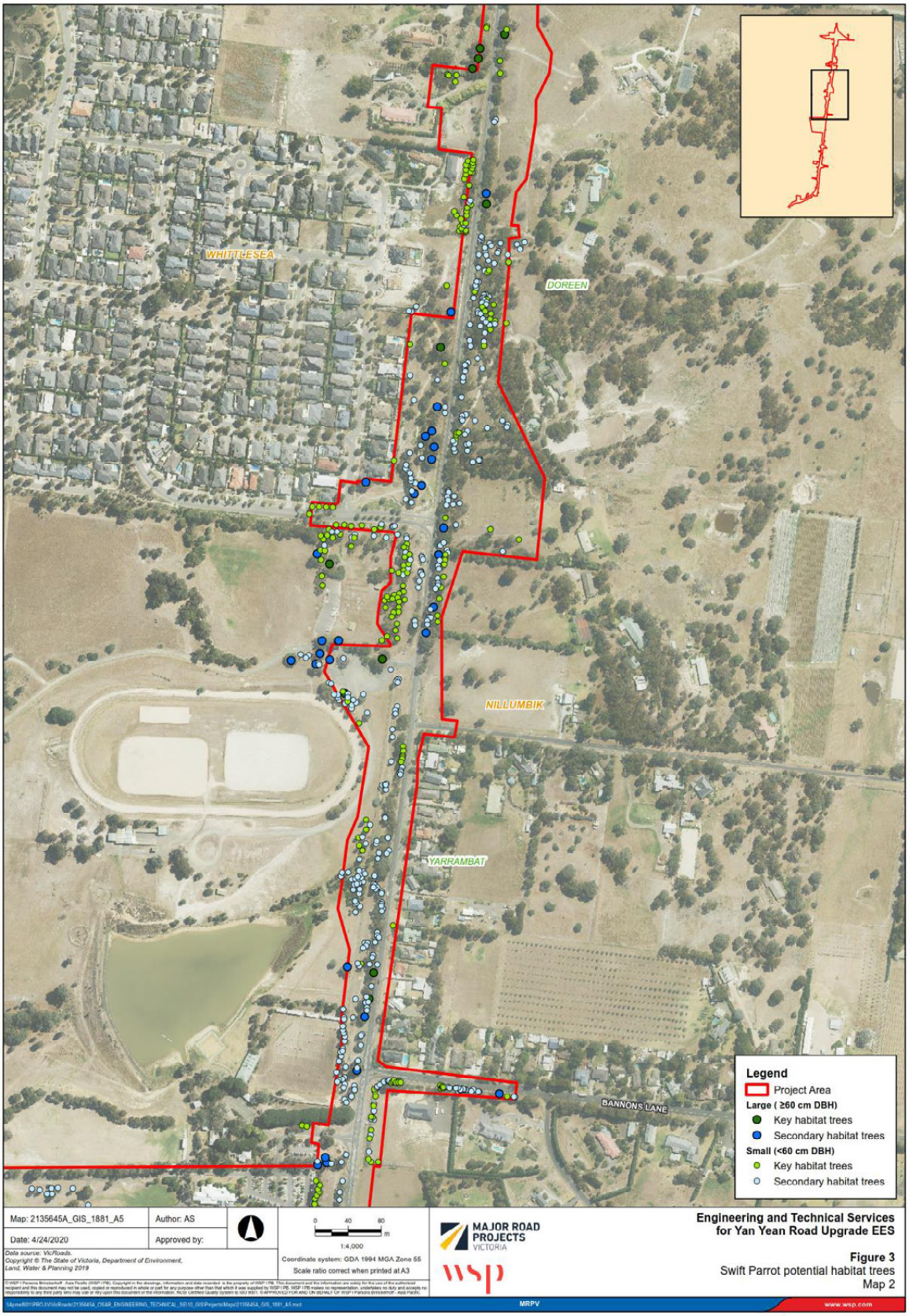

Figure 3.2 Potential habitat trees for Swift Parrots within the project area

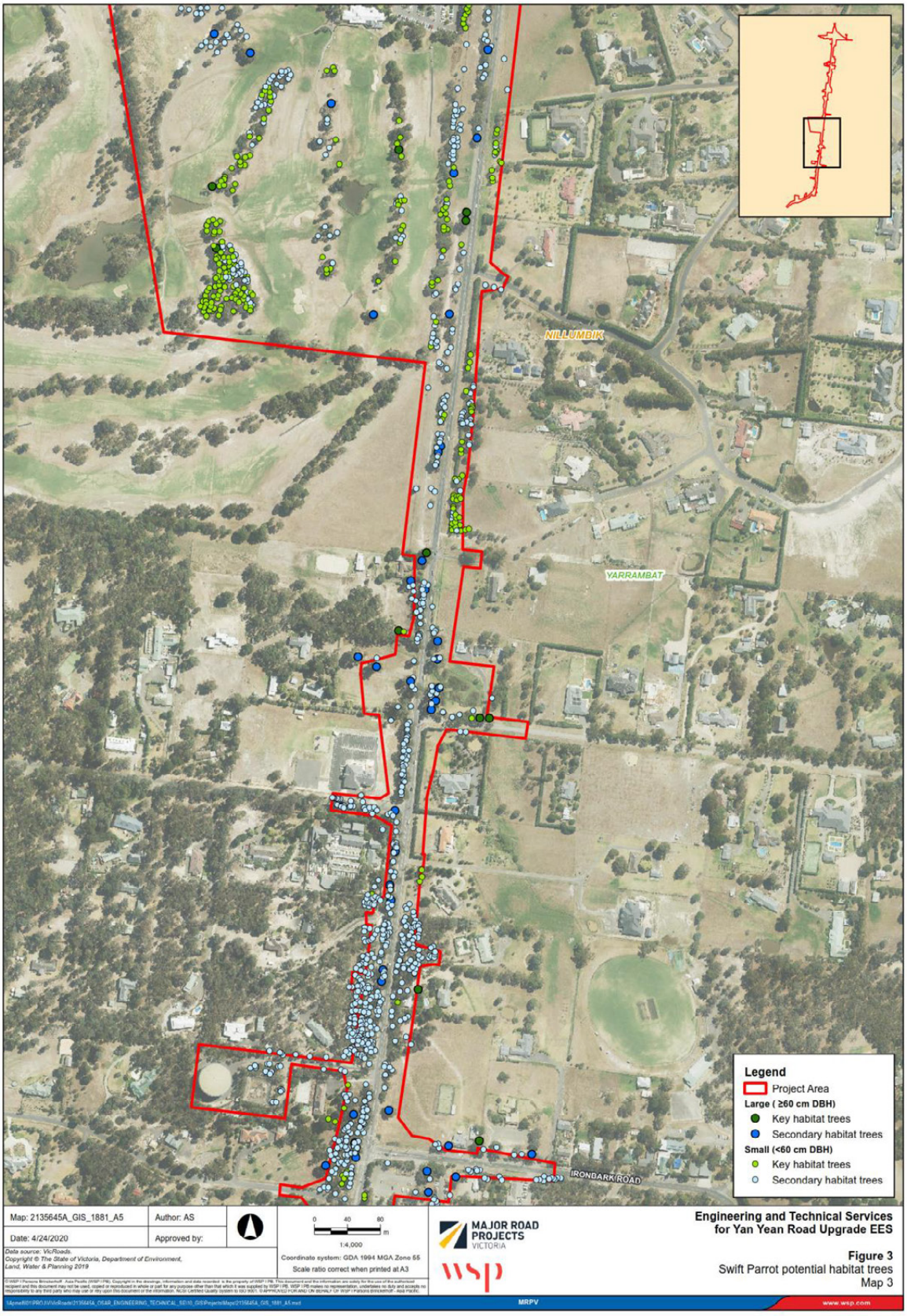

Figure 3.3 Potential habitat trees for Swift Parrots within the project area

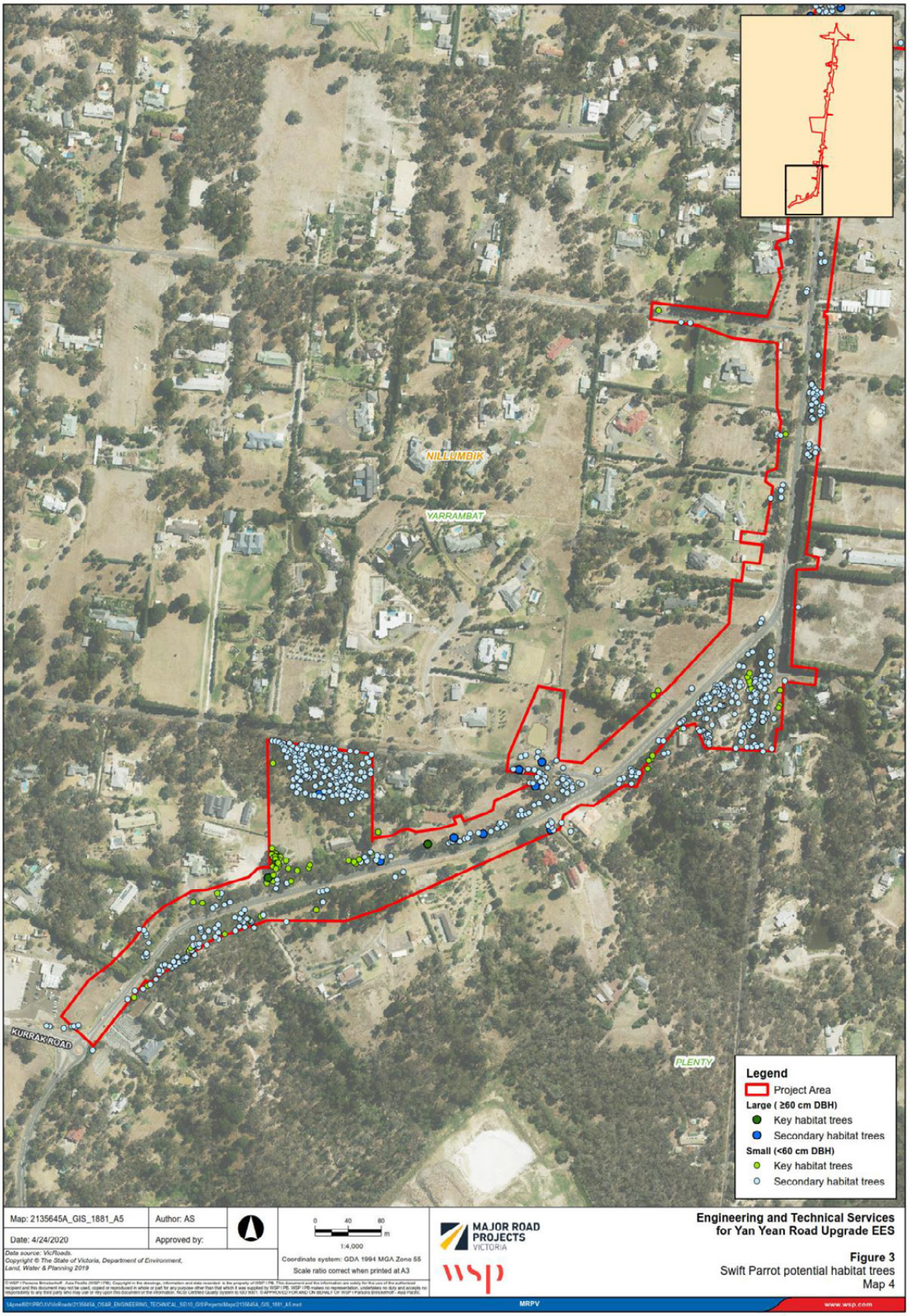

Figure 3.4 Potential habitat trees for Swift Parrots within the project area

2.4 Potential impacts of the project

The Victorian Biodiversity Atlas, Birdlife Australia and Ebird databases were used to determine the recorded distribution of Swift Parrot within and near the project area. This section sets out possible impacts of the Yan Yean Road (Stage 2) Upgrade on Swift Parrots. Measures aimed at avoidance and reduction of potential effects are discussed in Section 5 and Appendix 1. Below is a summary of potential impacts to Swift Parrot resulting from the proposed action.

2.4.1 Direct loss of habitat

A decrease of foraging habitat throughout both Tasmania and mainland Australia is a major threat to the Swift Parrot. Land clearing for the development of plantations and native forest silviculture has greatly reduced the nesting and foraging habitat throughout most of the Swift Parrot's range in Tasmania (Prober and Thiele 1995, Saunders et al. 2007). Additional habitat loss has also resulted from clearing of land for residential, agricultural and industrial development (Wilson and Bennett 1999, Kennedy and Overs 2001, Kennedy and Tzaros 2005). Reduction of nesting habitat in Tasmania is of particular concern as competition with other hollow-nesting species increases (Stojanovic et al. 2012, Heinsohn et al. 2015) and is exacerbated by mortality of adults due to an introduced nest predator (Stojanovic et al. 2014).

The habitat within the project area that would be affected by the proposed project works is of moderate quality and, other than remnant Yellow Box, the trees there that offer potential foraging opportunities for the species are identified as having been planted, albeit many of them are locally indigenous.

The proposed project will remove native vegetation including potential foraging habitat for Swift Parrot within the project area. SMEC (2020) has calculated that a total of 354 key foraging trees and 1239 secondary foraging trees would be impacted by the project. A total of 285 key foraging trees (2 large and 283 small) and 555 secondary foraging trees (25 large and 530 small) will be retained and protected by No-go Zones, which are defined for this project as areas of vegetation to be retained and protected during construction. They are excluded from the calculation of project impacts on native vegetation. SMEC (2020) provides details of *Corymbia* and *Eucalyptus* tree species according to size classes and whether they will be retained (tree protection zone impacts <10%) or will be impacted or removed (tree protection zone impacts >10%).

An important concept for determining the potential significance of an impact under the EPBC Act is that of 'habitat critical to the survival' of a species. The *EPBC Act Significant impact guidelines 1.1* (Commonwealth of Australia 2013) provides the following guidance for determining whether an action may affect habitat critical to the survival of a species:

> '"Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:
>
> - for activities such as foraging, breeding, roosting, or dispersal
> - for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
> - to maintain genetic diversity and long term evolutionary development, or
> - for the reintroduction of populations or recovery of the species or ecological community.

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act."

There is no indication that the survival of Swift Parrots is reliant on the project area for any of the types of resources indicated as critical to survival in this guidance, and the recovery plan for the species (Commonwealth of Australia 2019) does not identify such habitat for Swift Parrots.

Extensive areas of Swift Parrot habitat and potential habitat remain within the local area including within Plenty Gorge Park (Figure 2) and the loss of potential habitat in the project area is very small in relation to the area of surrounding habitat. There are no records of the species from within the project area and as the use of the project area by Swift Parrots is likely to be episodic and rare, impacts on the population are expected to be low.

The project has been designed to minimise removal of trees, while maintaining the target safety improvement outcomes. The mitigation measures outlined in Section 5 and Appendix 1 are focussed on limiting vegetation removal to the minimum possible, through strict compliance with No-go Zone requirements. In addition to measures to limit vegetation removal, the project will also revegetate within the project area where possible with local indigenous tree and shrub species that are preferred by Swift Parrots.

2.4.2 Collisions with man-made structures

Because of their direct and rapid flight behaviour Swift Parrots are subject to collisions with some man-made obstacles that they either do not see or do not perceive as dangerous. These include chain-mesh fences and glass that is either not apparent to them because it is functionally invisible to them, or is reflective of vegetation and they are thus unable to differentiate from real vegetation (Pfennigwerth 2008). Injury and mortality of a range of fauna, including Swift Parrots, may also occur due to entanglement or impalement on barbed wire. Such obstacles are novelties with which the species has not evolved. Deaths of Swift Parrots due to collisions with such obstacles have been reported from fences, such as those around tennis courts and golf courses, and from windows and glass bus shelters in urban environments of cities and towns across the species range, particularly where such structures are in close proximity to trees frequented by the species.

Design of the Yan Yean Road (Stage 2) Upgrade project should avoid the use of chain-mesh fencing and of glass structures, particularly within 100 m of key forage species of *Eucalyptus* or *Corymbia* whether these are specimens that remain within the road reserve after completion of project construction, are planted in the road reserve, or are growing on land adjacent to the road reserve.

The proposed fence at Yarrambat Golf Course should not use wire mesh of any kind, including plain or plastic coated wire, nor should it use mesh with open or monofilament strands of any kind, which presents a risk of entanglement.

Key mitigation measures for addressing the aforementioned potential impacts during construction are detailed in Pfennigwerth (2008) and measures specific to the Yan Yean Road (Stage 2) Upgrade project are set out in Appendix 1.

2.4.3 Disturbance to foraging parrots during construction

Construction activity has potential to impact on fauna populations through increased noise, vibration, artificial lighting, tree removal, vegetation disturbance and dust.

2.4.4 Disturbance to foraging habitat through increase in weeds or pathogens

Nine flora species listed as noxious weeds under the *Catchment and Land Protection Act 1994* (Vic) were recorded within the project area (WSP 2020). These included Boneseed *Chrysanthemoides monilifera,* English Broom *Cytisus scoparius,* Montpellier Broom *Genista monspessulana,* Prickly Pear *Opuntia stricta,* Blackberry *Rubus fruticosus* spp. agg. and Wild Watsonia *Watsonia meriana* var. *bulbillifera* all of which are 'Regionally Controlled' weeds within the Port Phillip and Westernport Catchment Management Area (PPWCMA). It also includes Bridal Creeper *Asparagus asparagoides,* Chilean Needle Grass *Nassella neesiana* and Soursob *Oxalis pes-caprae* which are listed as 'Restricted' within the PPWCMA. Weed invasion has potential to impact on Swift Parrot habitat through displacement of native flora species and interference with regeneration and recruitment of foraging trees. The level of this risk is assessed as low.

The project also has the potential to introduce or spread pathogens such as Phytophthora *Phytophthora cinnamomic* which could affect Swift Parrot habitat. Controls to minimise this risk are required.

2.4.5 Disturbance to foraging habitat by fire

There is a low risk of unintentional fire resulting from ignition during works. Should this occur, there is potential for impact on woodland vegetation within the road reserve, resulting in an indirect impact on Swift Parrot foraging habitat. In addition to this there is risk of fire from a range of other sources in this landscape, unrelated to the road project.

2.4.6 Disturbance to foraging habitat by soil erosion and sediment pollution

Soil erosion and movement of sediment from the project area into adjacent native vegetation and waterways has potential to impact on native vegetation outside the No-go Zones. The risk of soil erosion or sediment movement impacting on Swift Parrot is assessed as low.

2.4.7 Disturbance to foraging habitat by contamination by chemical spills

Spills of chemicals, including fuel, into adjacent native vegetation and waterways has potential to impact on native vegetation outside the No-go Zones. The risk of this impacting on Swift Parrot is assessed as low.

2.5 Local, regional and national scale summary of the likely impacts

Local

Within the local area, the impacts on the Swift Parrot population through direct removal of habitat will be minimal, as the proposed works will remove 354 key foraging trees and 1239 secondary foraging trees. SMEC (2020) undertook a cumulative impact assessment which found that the removal of potential foraging habitat resulting from the project is unlikely to contribute to a cumulative impact on the Swift Parrot population (SMEC 2020).

Regional and National

Swift Parrots are known to disperse widely throughout south-eastern Australia while overwintering on the mainland. During this annual period, the species is known to range through south-eastern South Australia, most of southern and eastern Victoria, and coastal areas and the western slopes of the Great Dividing Range within New South Wales and south-eastern Queensland.

The proposed works will have a negligible impact on Swift Parrot on the regional and national scale relative to the extent of mainland overwintering foraging habitat available.

2.6 Impacts likely to be unknown, unpredictable or irreversible

All known potential impacts on the Swift Parrot population from the proposed works have been accounted for and are discussed above and in Appendix 1. Unpredictable impacts will be managed through the mitigation measures outlined in Appendix 1, which will be implemented via a Construction Environmental Management Plan (CEMP) for the project.

The removal of 354 key foraging trees and 1239 secondary foraging trees represents a reduction in the area of foraging habitat in Victoria. However, measured against criteria for significant impacts on critically endangered species (as defined in Commonwealth of Australia (2013)) as assessed in SMEC (2020), and with the management proposed, a significant impact on the species is not likely.

2.7 Significance of impacts summary

SMEC (2020) provides thorough assessments of project related impacts and the cumulative impact of several other projects within 6 kilometres on Swift Parrot.

The SMEC (2020) impact assessment has taken into account the mitigation measures recommended for the project. With the mitigation detailed in this plan, SMEC (2020) assessed the impacts of the project on this species as unlikely to be significant.

3. Proposed avoidance and mitigation measures

A comprehensive range of mitigation measures have been developed to manage environmental impacts related to the proposed road safety upgrade works, including impacts on Swift Parrot habitat. A detailed list of proposed measures is provided in Appendix 1 and summarised in this section.

Appendix 1 provides a tabulation of proposed mitigation measures, including the following information:

- The project phase (pre-construction, construction and post-construction)
- Details of the proposed measures
- Details of how the proposed measures relate to risk to Swift Parrot, and the level of residual risk following implementation of the measure
- Performance objectives and target outcomes
- Relevant Commonwealth and Victorian legislation

3.1 Responsibility

Major Road Projects Victoria (MRPV) will have ultimate responsibility for meeting performance criteria in accordance with the environmental objectives and mitigation measures detailed in Appendix 1, including satisfying requirements for monitoring, reporting, and for ensuring that any incidents (should they occur) are addressed, and appropriate corrective actions taken, in a timely manner.

The principal construction contractor will be responsible for ensuring that specified performance criteria are met on a day-to-day basis.

3.2 Statutory or policy basis

Appendix 1 outlines the statutory or policy basis for the proposed avoidance, management and mitigation measures. Relevant legislation includes:

- *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
- *Aboriginal Heritage Act 2006* (Vic.)
- *Catchment and Land Protection Act 1994* (Vic.)
- *Environment Protection Act 1970* (Vic.), which will be superseded by the *Environment Protection Act 2017* (as amended by the *Environment Protection Amendment Act 2018*).
- *Flora and Fauna Guarantee Act 1988* (Vic.)
- *Planning and Environment Act 1987* (Vic.)
- *Wildlife Act 1975* (Vic.)
- *Victorian Country Fire Act 1958* and Regulations (Vic.)

3.3 Mitigation measures and target outcomes

Detailed mitigation measures are provided in Appendix 1. A summary is provided in Table 1. The mitigation measure numbers correspond with the numbers used in Appendix 1.

Table 1 Summary of risks and mitigation measures

Relevant impact	Mitigation measures	Target outcome
Pre-construction phase		
Direct loss of Swift Parrot foraging habitat	Minimise project footprint through design and development of No-go Zones (1).	Residual impact on 354 key foraging trees and 1239 secondary foraging trees.
Direct loss of Swift Parrot foraging habitat within approved No-go Zones	Preparation of CEMP (1.3, 5.1). Pre-works start induction and training (5.1). Surveillance plan (2.1).	No removal or disturbance of native vegetation within the No-go Zones defined within the project area
Collision risk	Design to avoid materials or fencing that could result in collisions (3.1).	No mortality of Swift Parrots due to collisions with structures
Construction phase		
Disturbance to Swift Parrot foraging habitat within No-go Zones	Implement and monitor compliance with CEMP, Tree Protection Management Plan and defined No-go Zones (1.3, 5, 6).	No removal or disturbance of native vegetation with the No-go Zones defined within the project area
Disturbance to foraging Swift Parrots during construction	To the extent practicable removal of trees to be undertaken during spring and summer (November to February, inclusive) while Swift Parrots are in Tasmania and therefore seasonally absent from mainland Australia (6; 6.4; 10.2). In instances where this timing is not feasible an ornithologist experienced in identification of Swift Parrot must be on-site to determine whether Swift Parrots are using native trees on the day of their planned removal. If Swift Parrots are using relevant trees, their removal will be postponed.	No disturbance of Swift Parrots.

Relevant impact	Mitigation measures	Target outcome
Disturbance to Swift Parrot habitat by pests, weeds and pathogens	Protocols for prevention of weed and pathogen spread to be specified in the CEMP (8), including treatment of existing weeds prior to ground disturbance, equipment cleaning procedures and reuse of topsoil. Post-construction monitoring and control of noxious and environmental weeds as per SMEC (2020) (15.2)	No removal or disturbance of native vegetation with the No-go Zones defined within the project area. No establishment of high threat weeds or soil pathogens within the project area.
Disturbance to Swift Parrot habitat by accidental fire ignition	Procedures for managing fire risk to be specified in the CEMP and/or Safety Management Plan (7).	No disturbance of habitat by fire.
Disturbance to Swift Parrot habitat by surface runoff, erosion or sedimentation	Protocols for management of stormwater, drainage, sedimentation and erosion to be specified in the CEMP (9).	No removal or disturbance of native vegetation with the No-go Zones defined within the project area
Disturbance to Swift Parrot foraging during construction works by Noise, Light, Air pollution, and Dust generation	To the extent practicable removal of trees to be undertaken during spring and summer (November to February, inclusive) while Swift parrots are in Tasmania (6; 6.4; 10.2). In instances where this timing is not feasible an ornithologist experienced in identification of Swift Parrot must be on-site to determine whether Swift Parrots are using native trees on the day of their planned removal. If Swift Parrots are using relevant trees, their removal will be postponed. Protocols for management of light, noise, air pollution and dust generation to be specified in the CEMP (10; 11; 12).	No disturbance to foraging Swift Parrots during construction
Disturbance to Swift Parrot habitat within No-go Zones by chemical or fuel spills	Procedures for chemical and fuel storage, handling and spill response to be specified in the CEMP (#12).	No removal or disturbance of native vegetation within the No-go Zones defined within the project area

Relevant impact	Mitigation measures	Target outcome
Post-construction phase		
Disturbance to Swift Parrot habitat within No-go Zones from site reinstatement works.	The CEMP will include protocols for site rehabilitation and reinstatement (13; 14; 15), including weed monitoring.	No removal or disturbance of native vegetation within the No-go Zones defined within the project area. Habitat is re-established, where possible, in accordance with the Project's Landscape Strategy.

3.4 Exclusion and buffer zones

The project 'No-go Zones' have been identified as part of the EES process and are shown in Figure 4. No-go Zones will be specified in the Contract, marked on a set of the contract drawings (plans) and must be complied with for the duration of the Contracted works.

No-go Zone requirements related to conservation of all biodiversity values for the project are set out below:

- No-go Zones should be fenced prior to any works occurring in the area, including tree clearing, and fencing must remain in place until completion of works or sign-off by the Superintendent. Fencing should incorporate an additional buffer of at least one metre wherever possible. If the contractor determines it to be feasible for construction, fencing should be extended to combine multiple No-go Zones. For example, this may be appropriate in situations where scattered trees with separate No-go Zones are located sufficiently close to one-another.
- No-go Zones should be demarcated with fencing using:
  - Posts that are at least 1 metre high when installed
  - Para-webbing around the entire fence
  - Signage including the words 'No-go Zone' to be attached at 20 m intervals with at least one per No-go Zone.
  - Alternatives may be approved by MRPV where the likelihood of a breach is extremely low.
- Any works proposed near patches of native vegetation with trees should consider how the impact might affect the critical root zone of tree species by following the Assessor's handbook – Applications to remove, destroy or lop native vegetation (DELWP 2017a). This specifies the way in which impacts upon trees should be assessed and Tree Protection Zones should be demarcated to prevent losses of native vegetation during construction activities.
- Prior to construction commencing, develop and implement a Tree Protection Management Plan based on the recommendations of Australian Standard 4970-2009 Protection of Trees on Development Sites. This will be in consultation with the City of Whittlesea and Shire of Nillumbik and informed by a project arborist (with a minimum qualification of Diploma in Arboriculture (AQF level 5 or equivalent).

Under the Contract, the establishment of the project worksite No-go Zones will be a Contract Hold Point. Native vegetation removal and construction activities cannot commence until this Contract Hold Point is released. The Contract Hold Point can only be released once the No-go Zones have been established and delineated in accordance with the Contract specification to the satisfaction of MRPV. These requirements will also be established in the MRPV Contract Surveillance Plan for site inspection and monitoring.

MRPV will ensure that:

- Prior to commencement of any works, a project site induction(s) for the Contractor and MRPV staff is completed. This induction will include communication about the project approvals / permits conditions, contract environmental requirements, authorised native vegetation / tree removal clearances, fauna management and defined 'No-go Zones' for authorised native vegetation removal;
- Prior to commencement of any works, the No-go Zones are established and clearly marked. A joint inspection by MRPV Project management staff, Contractor representatives and Surveillance staff will not let work commence until the No-go Zones have been established and delineated in accordance with the Contract specification;
- Construction activities, including vehicle / plant parking, turn around points or temporary storage areas, do not occur within No-go Zones;
- Construction activities are monitored through onsite inspection to ensure that construction impacts do not extend beyond the established works area and within No-go Zones; and
- Regular inspection of the No-go Zones, barriers and other environmental controls are to be carried out and recorded in the Surveillance Plan.

3.5 Revegetation and rehabilitation within project area

All work under the Contract will require the rehabilitation of affected areas. A landscape strategy has been prepared for the project (Arup 2020). It includes specific provision for revegetation to give priority to tree species of known value to Swift Parrots.

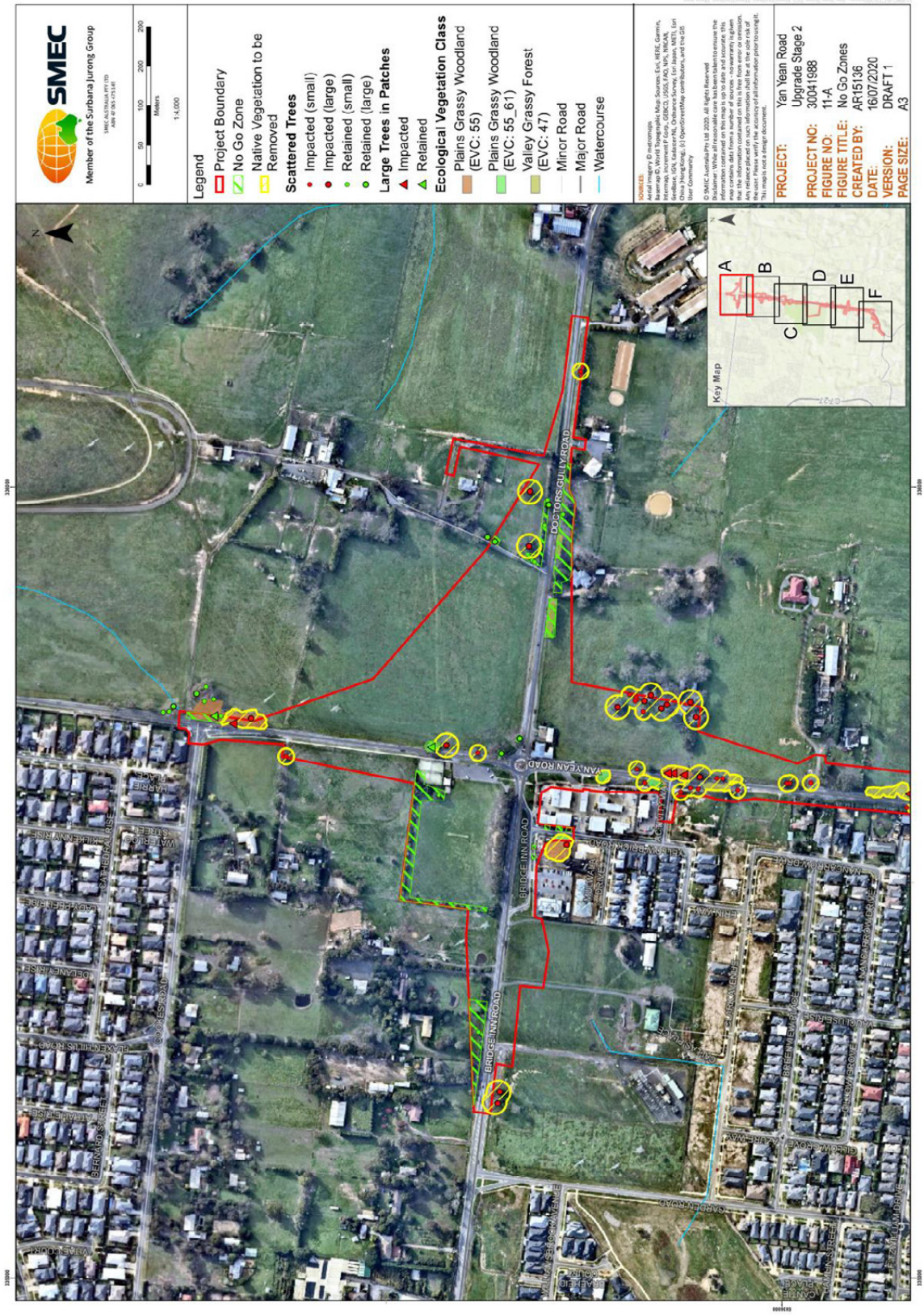

Figure 4.1 Ecological Vegetation Classes and No-go Zones within the project area (SMEC 2020)

Figure 4.2 Ecological Vegetation Classes and No-go Zones within the project area (SMEC 2020)

Figure 4.3 Ecological Vegetation Classes and No-go Zones within the project area (SMEC 2020)

Figure 4.4 Ecological Vegetation Classes and No-go Zones within the project area (SMEC 2020)

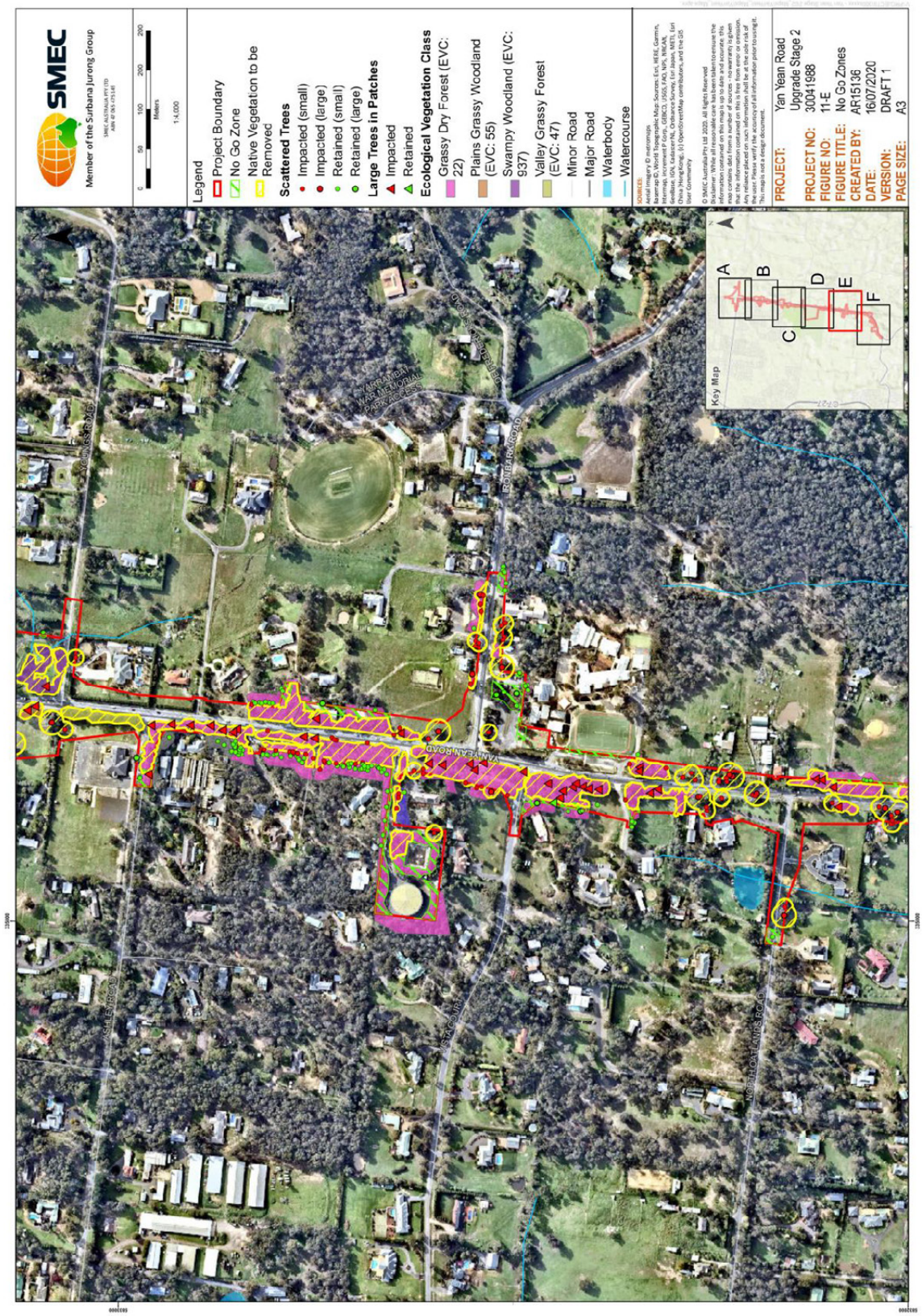

Figure 4.5 Ecological Vegetation Classes and No-go Zones within the project area (SMEC 2020)

Figure 4.6 Ecological Vegetation Classes and No-go Zones within the project area (SMEC 2020)

3.6 Expected achievability and effectiveness of avoidance and mitigation measures

The impact upon Swift Parrot habitat has been avoided and minimised through the design process to achieve a balance between the impact and the effectiveness of the works in improving the road for users.

SMEC (2020) outlines the avoidance and minimisation measures that have been incorporated into the design to date, where possible. These include measures to reduce the width of the project area such as reduction of the centre median and incorporation of a shared user path on the western side of the project only. They also include examination and incorporation of design changes to reduce native vegetation loss (including loss of Swift Parrot habitat trees) where possible. Further avoidance and minimisation will be required during detailed design, including arborist assessment of trees with >10% TPZ impact, and determination of additional No-go Zones once construction methods and service relocations are better known. MRPV will incorporate contractual incentives and/or penalties to encourage further impact minimisation.

The proposed management and mitigation measures will limit impacts to Swift Parrot foraging habitat to the minimum extent (defined by the approved No-go Zones and authorised native vegetation removal) required for the project to achieve the required project outcomes.

All mitigation, monitoring and management measures proposed in this document are to be designed to be achievable throughout the duration of this project.

3.7 Monitoring and independent auditing

MRPV will undertake monitoring and surveillance during the project works to ensure compliance with mitigation measures (Appendix 1) and the conditions of Contract, as per standard MRPV contract management procedures.

There will be several hold points, requiring satisfactory demonstration of compliance before further work can be undertaken by a contractor. At each hold point, the site will be inspected by the surveillance officer, MRPV project engineer and an environmental representative, contractor's representative and an independent ecologist (as required).

Key hold points relating to environmental management are:

1. Preparation of a comprehensive Construction Environmental Management Plan (CEMP), Site Environmental Management Plan and sub-plans, including a Tree Protection Management Plan, by the contractor.
2. Establishment and marking of the project No-go Zones.
3. Marking of trees for removal and determination of proposed end use of timber.

The MRPV surveillance officer will undertake regular inspections of the worksite to ensure no works, or vegetation disturbance, are conducted beyond the approved No-go Zones.

The contractors CEMP will also include procedures for day to day monitoring by the contractor to ensure compliance with approval conditions and conditions of Contract (see Appendix 1 and 2).

4. Environmental policy of Major Roads Projects Victoria

Major Road Projects Victoria, in the interim of developing their own environmental management systems, adopt existing VicRoads systems and procedures. VicRoads has a well-established environmental management system for managing the potential environmental impacts of major road projects. The contractor is required to prepare, implement and maintain an Environmental Management Plan (EMP) that will meet the requirements of the Contract Specification and the EES Environmental Management Framework (EMF).

During and after construction, the mitigation process is typically managed through a Construction Environmental Management Plan (CEMP). A CEMP typically outlines all practicable measures to minimise and mitigate impacts on biodiversity from the construction and operational phase to the management and maintenance phases. Protection measures outlined in the MRPV Fauna Sensitive Road Design Guidelines (MRPV 2019) (or most recent version of guideline document, as it is regularly updated by MRPV) will be included, where appropriate, in the CEMP. Prior to the commencement of any works, adequate briefing and induction of construction crews, as well as daily toolbox talks, should occur to ensure that environmental values are given due consideration during construction.

Contractors are required to undertake monitoring and audits for construction activities, including works undertaken by subcontractors employed on their behalf to verify compliance with the contract Specification and their EMP. In addition to the contractor auditing and monitoring of the works, MRPV also conducts its own surveillance and auditing to assess the contractor's compliance with the Environmental Management and the requirements of the Contract Specifications.

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Appendices

Environmental Issue and Management Objective	Risk to Swift Parrot without mitigation measures	Performance Objective	Measures to Address the Environmental Issue, Mitigation and Management Requirements	Applicable Legislation (Victorian State (Vic) or Commonwealth (Comm)	Residual Risk to Swift Parrot with mitigation measures applied Target Outcome
Reduce / minimise project footprint impacts	• Direct and indirect loss of potential foraging habitat. • Disturbance to foraging Swift Parrots.	1. **Design - minimise project footprint impacts**	**1.1 Reduce tree impacts** Planning and design of barriers (wire rope and guard fence) have utilised significantly reduced offsets, ranging from 1.2 – 3 metres from the edge of traffic lane, to reduce the impact to native vegetation. Refer to project alignment plans. (*Note* - design notes for both Steel Beam Guard Fence and the Wire Rope Safety Barrier call for a desirable offset of 4.0 metres from the edge-line of traffic lane to barrier, or an absolute minimum of 3.0 metres.) **1.2 Avoidance of Matters of MNES** Other impacts on native vegetation can be further minimised via the Contract, by stipulating the use of existing lay down areas and road formation within the project area for material storage, site compounds and plant / vehicle storage (i.e. areas within the project area outside any established No-go Zones). **1.3 Specified Limits of Work** The worksite No-go Zones, which are defined for the project as areas of vegetation to be retained and protected during construction, will be incorporated into the Contract specifications to ensure no additional impact on flora and fauna, in accordance with the works footprint and authorised native vegetation removal. A requirement for the Contractor is to incorporate specified No-go Zones into site plans / CEMP for this project.	• Planning and Environment Act 1987 (Vic) • Environment Protection and Biodiversity Conservation Act 1999 (Comm)	**Residual risk:** **Some direct loss of potential foraging habitat. Low risk to the species** **Target outcome:** **No removal of native vegetation beyond that authorised for removal**
		2. **Surveillance Plan for Contract**	**2.1 Surveillance Planning** MRPV develops specific risk-based surveillance plans for each major contract. Risk Plans are developed by Project Engineers and reviewed and accepted by Project Managers. Risk Plans are converted into Surveillance Plans based on the number of weekly site reviews of specific activities. For this Contract, Environmental Management will be designated a High Risk and hence the Surveillance plan will be developed accordingly and will contain, at a minimum, a requirement for weekly environmental inspections by a dedicated MRPV Environmental Officer.		

Environmental Issue and Management Objective	Risk to Swift Parrot without mitigation measures	Performance Objective	Measures to Address the Environmental Issue, Mitigation and Management Requirements	Applicable Legislation (Victorian State (Vic) or Commonwealth (Comm)	Residual Risk to Swift Parrot with mitigation measures applied Target Outcome
Minimise potential for Swift Parrot mortalities due to collisions with structures	• Unquantified potential for mortalities if inappropriate structures used in design or operation of Yan Yean Road (Stage 2) Upgrade (Kurrak Road to Bridge Inn Road)	**3. Minimise potential for collisions**	**3.1 Design to specifically exclude high collision-risk structures** Design and operation of project to avoid chain-mesh or barbed wire fencing as well as clear glass for any structures, including but not limited to transparent barriers and bus shelters. If chain mesh or other fencing is required (e.g. near the golf course), it must be designed to minimise collision risk. The fence proposed for Yarrambat Golf Course should be designed to include the following: • mesh made of knotted or woven braided polyethylene / polyester • mesh of between 15 x 15 mm and 25 x 25 mm • a maintained tension that will 'give', allowing the best chance that a Swift Parrot will not be injured if it collides with the fence • a tension that will generally not permit the mesh to fold or form a pocket around a bird on impact • a dense plantation of shrubs and small trees running parallel with the fence and between it and trees within the golf course, in an attempt to prevent low swooping flights at speed. The proposed golf course fence should not use wire mesh of any kind, including plain or plastic coated wire, nor should it use mesh with open or monofilament strands of any kind, which presents a risk of entanglement. The fence design should be further refined during the detailed design phase to reduce the height and length of the fence to the minimum size practicable.	• Environment Protection and Biodiversity Conservation Act 1999 (Comm)	**Residual risk:** **Low risk / minimal impact provided fence design recommendations are adhered to** **Target outcomes:** **No mortalities of Swift Parrots due to collisions with structures**
Establish project site and contract works in accordance with applicable legislation and conditions of any permits and approvals **Protect and minimise risks to native vegetation and fauna within the project area**	• Direct and indirect loss of potential foraging habitat. • Disturbance to foraging parrots.	**5. Preparation of Construction and Environmental Management Plan to identify and monitor project site risks and mitigation a measures, prior to commencement of any construction works** **Induction and training of staff / contractor staff, prior to commencement of any construction works**	**5.1 Preparation and approval of contractors Construction Environmental Management Plan (CEMP) and Site Environmental Management** A comprehensive CEMP, Site Environmental Management Plan and Tree Protection Management Plan will be prepared for the project construction works for review and approval by MRPV Project Manager under a contract Hold Point. The approval of the CEMP will only be released when MRPV is satisfied that it meets the requirements of the Contract specification for each stage of works. The review ensures all risks identified in the Specification, Planning Permit (including conditions) and EPBC Act Permit (including conditions) have been addressed by the Contractor in this planning stage. **5.2 Pre –Commencement of Works Training** Prior to commencement of works onsite, MRPV and the Contractor shall ensure that all personnel are informed of the environmental issues and specific risks associated with the project and the required management and mitigation measures to address these risks. This will be completed through a project site induction by MRPV, and by ensuring that personnel have the required training and accreditations to implement the CEMP. On-site records of inductions of all workers on site reviewed by Surveillance Officer. **5.3 Pre-commencement of Works – Swift Parrot site induction** MRPV and the contractor shall ensure that all construction personnel receive a project site induction that includes communication about the project approvals / permits conditions, contract environmental requirements, authorised native vegetation / tree removal clearances, fauna management, and defined "No go Zones' for	• Aboriginal Heritage Act 2006(Vic) • Catchment and Land Protection Act 1994 (Vic) • Environment Protection Act 1970 (Vic) to be superseded by the Environment Protection Act 2017 (Vic) • Environment Protection and Biodiversity Conservation Act 1999 (Comm) • Flora and Fauna Guarantee Act 1988 (Vic) • Planning and Environment Act 1987 (Vic) • Wildlife Act 1975 (Vic)	**All Contractors that are inducted have completed the Swift Parrot site induction**

Environmental Issue and Management Objective	Risk to Swift Parrot without mitigation measures	Performance Objective	Measures to Address the Environmental Issue, Mitigation and Management Requirements	Applicable Legislation (Victorian State (Vic) or Commonwealth (Comm)	Residual Risk to Swift Parrot with mitigation measures applied Target Outcome
			authorised native vegetation removal. All construction personnel are to receive a project site induction addressing these details prior to commencement of works. On-site records of inductions of all workers on site reviewed by Surveillance Officer.		
Establish project site and contract works in accordance with applicable legislation and conditions of any permits and approvals **Protect and minimise risks to native vegetation and fauna within the project area**	• Direct and indirect loss of potential foraging habitat. • Disturbance to foraging parrots.	6. **Implementation and Monitoring of Construction and Environmental Management Plan (CEMP) and Establishment of No-go Zones.** **Prevent the removal of Native Vegetation not authorised under Approvals or Permits** **Limit the removal of Native Vegetation to that as authorised under Approvals or Permits**	**6.1 Construction Footprint** Prior to the commencement of works, the extent of the construction zone, vehicle and machinery access will be clearly defined both on a plan (Appendix 3) included within the CEMP and physically delineated (e.g. through temporary fencing, wooden stakes / and or rope bunting or similar on the project length where works are occurring. **6.2 No-go Zones** Under the Contract, the establishment of the project worksite No-go Zones is a Contract Hold Point. Native vegetation removal and construction activities cannot commence until this Contract Hold point is released. The Contract Hold Point can only be released once the No-go Zones have been established and delineated in accordance with the Contract specification to the satisfaction of MRPV per the No-go Zones. These requirement are also established in the MRPV Surveillance Plan for site inspection and monitoring. No-go Zones should be fenced prior to works occurring in the area, including adjacent tree clearing, and remain until completion of works or sign-off by the Superintendent. Fencing should incorporate an additional buffer of at least one metre wherever possible. If the contractor determines it to be feasible for construction, fencing should be extended to combine multiple No-go Zones. For example, this may be appropriate in situations where scattered trees with separate No-go Zones are located sufficiently close to one-another. No-go Zones should be demarcated with fencing using: • Posts that are at least 1 metre high when installed • Para-webbing around the entire fence • Signage including the words 'No-go Zone' to be attached at 20 m intervals with at least one per No-go Zone. • Alternatives may be approved by MRPV where the likelihood of a breach is extremely low. Any works proposed near patches of native vegetation with trees should consider how the impact might affect the critical root zone of tree species by following the Assessor's handbook – Applications to remove, destroy or lop native vegetation (DELWP 2017a). This specifies the way in which impacts upon trees should be assessed and Tree Protection Zones should be demarcated to prevent losses of native vegetation during construction activities. Prior to construction commencing, develop and implement a Tree Protection Management Plan based on the recommendations of Australian Standard 4970-2009 Protection of Trees on Development Sites. This will be in consultation with the City of Whittlesea and Shire of Nillumbik and informed by a project arborist (with a minimum qualification of Diploma in Arboriculture (AQF level 5 or	• Aboriginal Heritage Act 2006 • Catchment and Land Protection Act 1994 (Vic) • Environment Protection Act 1970 (Vic) to be superseded by the Environment Protection Act 2017 (Vic) • Environment Protection and Biodiversity Conservation Act 1999 (Comm) • Flora and Fauna Guarantee Act 1988 (Vic) • Planning and Environment Act 1987 (Vic) • Wildlife Act 1975 (Vic)	**Residual risk:** **Low risk / minimal impact if works undertaken in spring / summer (November–February) while Swift Parrots are in Tasmania.** **Target outcomes:** **No removal of native vegetation beyond that authorised for removal within the project No-go Zones.** **No disturbance to Swift Parrot foraging behaviour.**

Environmental Issue and Management Objective	Risk to Swift Parrot without mitigation measures	Performance Objective	Measures to Address the Environmental Issue, Mitigation and Management Requirements	Applicable Legislation (Victorian State (Vic) or Commonwealth (Comm)	Residual Risk to Swift Parrot with mitigation measures applied Target Outcome
			equivalent). MRPV will ensure that: • No-go Zones (No-go zones) (e.g. native vegetation adjoin works footprint) are established and clearly marked. A joint inspection by MRPV Project management staff, Contractor representatives and Surveillance staff will not let work commence until limits have been established and delineated in accordance with the Contract Hold Point. • Construction activities, including vehicle / Plant parking, turn around points or temporary storage areas, do not occur within the No-go Zones. • Construction activities are monitored through onsite inspection to ensure that construction impacts do not extend into the established No-go Zones. • Regular inspection of the No-go Zones, barriers and other environmental controls carried out and recorded in the Surveillance Plan, in accordance with the CEMP. **6.3 Removal of Native Vegetation** In conjunction with Section 6.2, under a Contract Hold Point, prior to removing any vegetation, all trees authorised for removal and trimming will be clearly identified and marked onsite with high visibility marking paint by MRPV Project management staff, Contractor representatives and the tree removal contractor in accordance with the MRPV Road Safety Treatments - Construction Drawings and the contract specified tree list table. Any marked vegetation removal will be consistent with all authorisations, permits and the designated No-go Zones. MRPV Surveillance staff will conduct regular inspection of the No-go Zones and barriers and other environmental controls carried out and recorded in the Surveillance Plan, in accordance with the CEMP. Environmental Incidents managed on-site by Surveillance Officer and in accordance with approved EMPs. **6.4 Tree Removal - Timing of Works** Where practicable, vegetation / tree removal activities for the project works will be conducted during spring and summer (November–February) while Swift Parrots are in Tasmania and therefore seasonally absent from mainland Australia. In instances where this timing is not feasible an ornithologist experienced in identification of Swift Parrot must be on-site to determine whether Swift Parrots are using native trees on the day of their planned removal. If Swift Parrots are using relevant trees, their removal will be postponed.		
		To the extent practicable removal of trees to be undertaken during spring and summer (November to February, inclusive) while Swift parrots are in Tasmania			
Fire resulting in damage to adjoining / nearby land or vegetation supporting Swift Parrot habitat. **Minimise impacts to terrestrial native vegetation within or adjoining the project area.**	• Direct and indirect loss of potential foraging habitat. • Disturbance to foraging parrots.	**7. Prevention and minimisation of fire risk and risk of fire ignition during the Construction works period.**	**7.1 Procedures for the Prevention of Bush Fire risk and Emergency Response** A comprehensive CEMP and Site Environmental Management Plan will be prepared for the project Construction works for review and approval by MRPV Project Manager under a contract Hold Point. As part of the Safety Management Plan, the contractor must have an emergency preparedness and response procedure in place. The Contractor will also be responsible for ensuring that: • Appropriate fire-fighting equipment is provided and maintained on site.	• Victorian *Country Fire Act* 1958 and Regulations (Vic)	**Residual risk:** **Low risk / minimal impact with controls in place** **Target outcomes:** **No disturbance of native vegetation beyond that authorised for removal within the project No-go**

Environmental Issue and Management Objective	Risk to Swift Parrot without mitigation measures	Performance Objective	Measures to Address the Environmental Issue, Mitigation and Management Requirements	Applicable Legislation (Victorian State (Vic) or Commonwealth (Comm)	Residual Risk to Swift Parrot with mitigation measures applied Target Outcome
			• No work is undertaken on days declared as Total Fire Ban or with a Code Red Fire Danger Rating. • No fires are lit on site. • The requirements of the Victorian Country Fire Act 1958 and Regulations are met. • The construction plant is fitted with fully working and efficient spark control devices in accordance with the applicable standard. Compliance with the CEMP and Contract requirements will be monitored by MRPV Surveillance Officer through a Surveillance Plan for site inspection and monitoring.		**Zones** **No disturbance to Swift Parrot foraging habitat.**

Works activities resulting in an invasive species that is harmful to a critically endangered or endangered species becoming established in the habitat of the Swift Parrot
 	
Minimise impacts via implementation Vehicle / Plant Hygiene Measures to prevent the spread or importation of weeds and diseases (pathogens) into the project area or adjoining Native Vegetation
	• Construction works resulting in invasive species / pathogen becoming established in the habitat of an endangered or critically endangered species'.	**8. Prevent the spread of noxious or environmental weeds or pathogens to within or areas adjoining the project area from the Construction Works**	**8.1 Prevention of the Spread or Importation of Weeds and Diseases (Pathogens) into the project area.**
			A comprehensive CEMP and Site Environmental Management Plan will be prepared for the project construction works for review and approval by MRPV Project Manager under a contract Hold Point. This risk is identified in the Contract specification and requires that the Contractor prevent the spread of declared weeds, pests and diseases (pathogens) within the Site and offsite. The Contractor and site personnel will be responsible specifically for ensuring that the implementation of the following controls / measures as a minimum include:
			• treatment of declared weeds prior to the commencement of any ground disturbing activities
			• response to their identification through monitoring of the site
			• management of weed and soil pathogen potential within imported materials
			• provisions for cleaning plant and equipment at the following times -
			  ○ prior to arrival on Site
			  ○ prior to departure from Site
			  ○ prior to movement within the Site from any infested areas to non-infested areas, in accordance with the CEMP.
			Topsoil and organic mulch from within project area will be retained and reused for rehabilitation within the project. MRPV will also conduct monitoring post the end of construction works for any declared noxious or environmental weed outbreaks. Any outbreaks identified will be treated and monitored as part of any MRPV periodic weed treatment programs.
				• Environment Protection and Biodiversity Conservation Act 1999 (Comm)
				• Catchment and Land Protection Act 1994 (Vic)
					Residual risk:
					Low risk / minimal impact with controls in place
					
					Target outcomes:
					No disturbance of native vegetation beyond that authorised for removal within the project No-go Zones
					
					No disturbance to Swift Parrot foraging habitat

Water quality – surface - Prevent the generation and discharge of turbid and contaminated water from construction activities into adjoining native vegetation, drainage lines and or waterways. **Minimise the risk of soil erosion and sediment pollution of the site, adjacent land, and waterways, by defining**	• Direct and indirect loss of potential foraging habitat.	**9. Prevent and minimise damage or sedimentation any adjoining waterways and areas of adjoining terrestrial native vegetation.**	**9.1. Stormwater, drainage, sedimentation and erosion management** A comprehensive CEMP will include measures to control stormwater runoff, site drainage, sedimentation and erosion in accordance with EPA's Environmental Guidelines for Major Construction Sites (EPA 1996) and EPA's Construction Techniques for Sediment Pollution Control (EPA 1991). The Contractor must minimise the risk of soil erosion and sediment pollution of the site, adjacent land, and waterways, by defining and implementing erosion and sediment controls measures as part of the CEMP.	• Environment Protection Act 1970 (Vic) to be superseded by the Environment Protection Act 2017 (Vic) • Catchment and Land Protection Act 1994 (Vic)	**Residual risk:** **Low risk / minimal impact with controls in place** **Target outcomes:** **No disturbance of native vegetation beyond that authorised for removal within the project No-go Zones**

Environmental Issue and Management Objective	Risk to Swift Parrot without mitigation measures	Performance Objective	Measures to Address the Environmental Issue, Mitigation and Management Requirements	Applicable Legislation (Victorian State (Vic) or Commonwealth (Comm)	Residual Risk to Swift Parrot with mitigation measures applied Target Outcome
and implementing erosion and sediment controls measures as part of the CEMP.			Appropriate control structures (such as sediment control fences) will be required to prevent surface water run-off contaminated with suspended sediments and other contaminants from exiting works zones in adjoining native vegetation. . Compliance with the CEMP and Contract requirements will be monitored by MRPV Surveillance Officer through a Surveillance Plan for site inspection and monitoring.		**No disturbance to Swift Parrot foraging habitat**
Disturbance to fauna from noise and light. **Minimise impacts to local amenity and native fauna from Construction Works / Activities.**	• Disturbance to foraging parrots	**10. Minimise disturbance to terrestrial Fauna**	**10.1. Restricting working hours and noise criteria** A comprehensive CEMP will include measures to control disturbance from Noise and light during works. The Contract Specification should require all work under the Contract to comply with the following requirements: • hours of work should be in accordance with EPA document 480: Environmental guidelines for major construction sites • construction vehicles and equipment shall have appropriate measures fitted and be effectively maintained to minimise engine noise • noisy equipment shall be enclosed where possible Any variation requires MRPV approval prior to undertaking works outside of these requirements. Compliance with the CEMP and Contract requirements will be monitored by the MRPV Surveillance Officer through a Surveillance Plan for site inspection and monitoring. **10.2 Timing of Construction Works** In accordance with mitigation measure 6.4, vegetation / tree removal activities for the project will be conducted during spring and summer (November– February, inclusive), where practicable, while Swift Parrots are seasonally absent from mainland Australia.	• Environment Protection Act 1970 (Vic) to be superseded by the Environment Protection Act 2017 (Vic)	**Residual risk:** **Minimal impact with controls in place** **Target outcomes:** **No disturbance to foraging Swift Parrots.**
Air pollution and dust generation **Minimise impacts to local amenity from air and dust pollution arising from construction activities.**	• Disturbance to foraging parrots	**11. Prevent and Minimise Disturbance to terrestrial fauna and local community amenity**	**11.1. Controlling emissions of vehicles, plant and equipment and dust generation from construction activities** A comprehensive CEMP will include measures to control disturbance from air pollution during works, including dust, smoke and vehicle emissions. To ensure no disturbance to foraging Swift Parrots, the Contract Specification should require all work under the Contract to comply with the air pollution measures listed in the CEMP. Compliance with the CEMP and Contract requirements will be monitored by MRPV Surveillance Officer through a Surveillance Plan for site inspection and monitoring.	• Environment Protection Act 1970 (Vic) to be superseded by the Environment Protection Act 2017 (Vic)	**Residual risk:** **Minimal impact with controls outlined in the CEMP in place.** **Target outcomes:** **No disturbance to foraging Swift Parrots.**
Project site or adjoining area contamination from chemicals and fuels spills **Prevent any contamination from chemicals and fuels of the adjoining environment (i.e. road reserve, waterways, adjoining state forest and**	• **Direct and indirect loss of potential foraging habitat**	**12. Prevent any contamination from chemicals and fuels and Storage and handling of fuels and chemicals in accordance with Victorian EPA SEPP s and Guidelines**	**12.1. Procedures for chemical and fuel storage, handling and spill response** A comprehensive CEMP will include measures to ensure any leakage or spillage of any fuels or chemicals shall not have detrimental environmental impact from the construction works. The Contract Specification should require all work under the Contract to comply with the following measures: • The Contractor shall include specific procedures to mitigate the effect on the environment from fuels and chemicals,	• Environment Protection Act 1970 (Vic) to be superseded by the Environment Protection Act 2017 (Vic)	**Residual risk:** **Minimal Impact with controls in Place** **Target outcomes:** **No disturbance of native vegetation beyond that authorised for removal within the project No-go**

Environmental Issue and Management Objective	Risk to Swift Parrot without mitigation measures	Performance Objective	Measures to Address the Environmental Issue, Mitigation and Management Requirements	Applicable Legislation (Victorian State (Vic) or Commonwealth (Comm)	Residual Risk to Swift Parrot with mitigation measures applied Target Outcome
reserves).			including herbicides and pesticides. Such procedures shall include but not be limited to: ○ nominated fuel and chemical storage areas are to comply with Dangerous Goods (Storage and Handling) Regulations 2012 and EPA Bunding Guidelines (EPA Publication No. 347) including the placarding of compounds and bulk storage containers ○ refuelling and fluid top up of vehicles and plant to be undertaken on stable ground at least 20 metres from any drainage point or waterway, and in accordance with the CEMP. ○ provision of readily accessible and maintained spill kits for the purpose of cleaning up chemical, oil and fuel spillages on the Site at all times ○ ensuring that personnel trained in the efficient deployment of the spill kits are readily available in the event of spillages ○ Any spills to be appropriately contained, treated and disposed of in accordance with the CEMP ○ Monitoring any fuel and chemical storages and equipment fill areas for compliance at intervals of not more than 7 days. Any storage of chemicals and fuels must at all times comply with the requirements of the Victorian *Environment Protection Act 1970* and *Dangerous Goods Act 1985*. All chemicals and fuels stored on site must be kept to a minimum and bunded in accordance with EPA's Bunding Guidelines (EPA 1992).		**Zones.** **No disturbance to Swift Parrot foraging habitat.**
Revegetation and rehabilitation within project area	• Direct and indirect loss of potential foraging habitat.	**13. Re-establish habitat within project area where possible**	**13.1 Revegetation methods** Plant species appropriate for planting within zones of relevant EVCs in accordance with the Project's Landscape Strategy. Seed collection to be undertaken prior to clearing. Seed will be collected from a selection of indigenous plants proposed to be lost, to ensure local provenance of plants for revegetation. Engage local nursery to undertake propagation of seed and supply of planting stock. Follow-up protection and maintenance of plants.	• N/A	**Residual risk:** **Not applicable** **Target outcome:** **Habitat is re-established where possible**
Disturbance to flora and fauna from site reinstatement. **Minimise the impact of the project on the existing site and adjacent areas.**	• **Direct and indirect loss of potential foraging habitat.**	**14. Prevent and minimise damage or sedimentation any adjoining waterways and areas of adjoining terrestrial native vegetation. Where practicable and appropriate to road safety considerations, include locally indigenous tree species that provide foraging resources for Swift Parrot within revegetation of project area.**	**14.1. Site rehabilitation and reinstatement** Topsoil and organic mulch from within project area will be retained and reused for rehabilitation within the project. Any re-seeding works is subject to MRPV approval before this activity can commence and requires that any grass seed used is consistent with the existing native vegetation values of the works site(s).	Environment Protection Act 1970 (Vic) to be superseded by the Environment Protection Act 2017 (Vic) • Catchment and Land Protection Act 1994 (Vic)	**Residual impact:** **Minimal impact with controls in place.** **Target outcome:** **No disturbance of native vegetation beyond that authorised for removal within the project No-go Zones.**

Environmental Issue and Management Objective	Risk to Swift Parrot without mitigation measures	Performance Objective	Measures to Address the Environmental Issue, Mitigation and Management Requirements	Applicable Legislation (Victorian State (Vic) or Commonwealth (Comm)	Residual Risk to Swift Parrot with mitigation measures applied Target Outcome
Disturbance to flora and fauna from site reinstatement – post Construction Works. **Minimise the impact of the project on the existing site and adjacent areas.**	• **Direct and indirect loss of potential foraging habitat.**	**15. Prevent and minimise damage or sedimentation any adjoining waterways and areas of adjoining terrestrial native vegetation** **Prevent the spread of noxious or environmental weeds or Pathogens within or adjacent to the project area from the Construction Works.**	**15.1. Monitoring of site rehabilitation and reinstatement** MRPV will be responsible for oversight of the monitoring of progress of site re-instatement post works completion. Any identified site reinstatement requirements will be rectified under the Contract Specification defects liability period. **15.2. Weed management** MRPV will be responsible for oversight of the monitoring of weed control measures as part of the post-construction site monitoring. The focus will be on high threat environmental and/or noxious weed species.	• Environment Protection Act 1970 (Vic) to be superseded by the Environment Protection Act 2017 (Vic) • Catchment and Land Protection Act 1994 (Vic)	**Residual risk:** **Minimal Impact with controls in Place** **Target outcomes:** **No disturbance of native vegetation beyond that authorised for removal** **No disturbance to Swift Parrot foraging habitat**

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