Member of the Surbana Jurong Group

30042353

9 April 2021

Environmental Management and Aboriginal Values
Barwon Water
55-67 Ryrie Street (PO Box 659)
Geelong VIC 3220

RE: Bellarine Basin Bird Habitat Assessment

Introduction

SMEC Australia Pty Ltd (SMEC) were engaged by Barwon Water to undertake a bird habitat assessment and provide ecological advice for nesting birds species of concern at Bellarine Basin ('the study site'), Wallington, Victoria (Attachment 1). It is understood that Barwon Water are proposing to clear the pine plantation within the study site for habitat restoration purposes of the headwaters of Yarram Creek and to create new public parkland ('the project').

Barwon Water have engaged arborist services to remove the pine plantation from the study site commencing mid-2021. Geelong Field Naturalists Club (GFNC) have highlighted concerns that the removal of Pine Trees (***Pinus*** sp.) may impact nesting sites of raptor species. The bird habitat assessment has been undertaken to identify active raptor nesting locations and provide recommendations to mitigate potential impacts to any nesting native birds.

Methods

The following scope of works were undertaken:

Desktop review

The following resources were reviewed as part of the desktop assessment:

- Birdlife Australia Birdata (Birdlife Australia 2021a) and Cornell Lab of Ornithology eBird databases (eBird 2021);
- Victorian Biodiversity Atlas (VBA) (DELWP 2021);
- Background reports relevant to the site, including:
  - Ecology Partners 2008: Flora and Fauna Assessment of the Bellarine Service Basin, Victoria
  - Ecology Partners 2011: Targeted Growling Grass Frog ***Litoria raniformis*** Survey at Bellarine Basin, Wallington, Victoria
  - Okologie Consulting 2020: Vegetation Assessment – Bellarine Services Basin, Wallington;

SMEC
Tower 4, Level 20, 727 Collins Street
Docklands, VIC 3008, Australia
PO Box 23027, Docklands, VIC 8012, Australia)
T +61 3 9514 1500 **F** +61 3 9514 1502 **E** melbourne@smec.com

www.smec.com

- Consultation with the Geelong Field Naturalists Club; and
- Aerial imagery of the study site.

Study site and site assessment

The study site is approximately 39.2 ha and comprises the Bellarine Basin (Attachment 1). Habitat within the study site includes areas of pine plantation, wetlands and patches of native indigenous revegetation. The study site is located approximately 17 kilometres south-east of Geelong, Victoria. The study site is located in the Otway Plain bioregion and within the Corangamite Catchment Management Authority (CMA) and City of Greater Geelong municipality.

A site assessment of the area proposed to be impacted was undertaken by a SMEC ecologist on 21 January 2021. A secondary site assessment was undertaken on 01 April 2021 in response to advice received from the GFNC on other raptor nests occurring on site. The assessment involved:

- Identifying all bird species occurring within and immediately surrounding the Bellarine Basin pine plantation;
- Identifying and mapping bird habitat within and immediately surrounding the pine plantation, focusing on active nesting and roosting sites; and
- Assessing only areas where pine plantation occurred within the study site.

The site assessment was undertaken during the early morning when birds are usually more active, allowing for increased likelihood of detection.

Reporting

This report aims to address the following objectives:

- The findings of the desktop review and field investigation;
- Outcomes of consultation with the GFNC;
- Mapping of bird habitat recorded within the study site; and
- Mitigation measures that could be implemented to reduce impacts to birds and their habitats (i.e. nesting sites).

Results

Desktop assessment

Consultation with GFNC identified key raptor species of concern for the study site such as Brown Goshawk (***Accipiter fasciatus***), Wedge-tailed Eagle (***Aquila audax***) and Collared Sparrowhawk (***Accipiter cirrocephalus***) (Craig Morley, GFNC, pers. comm.). In addition to raptors, GFNC also highlighted the impact that project works may have on local populations of Yellow-tailed Black-cockatoo (***Calyptorhynchus funereus***) given they are commonly known to forage on pinecones produced by pine trees in the local area.

The VBA contains records for 263 species of bird within 5 km of the study site (excluding marine based species such as albatross or petrels) (DELWP 2021). Eight bird surveys reported to Birdata have been previously undertaken in proximity to the study site between 2000 to 2020 with a total of 58 bird species recorded, including Collared Sparrowhawk, Brown Goshawk, Wedge-tailed Eagle and Yellow-tailed Black Cockatoo (Birdlife Australia 2021a).

Brown Goshawk, Yellow-tailed Black-cockatoo, Wedge-tailed Eagle and Collared Sparrowhawk have all been previously reported on eBird in proximity to the study site between 2019 to 2021 (eBird 2021). Collared Sparrowhawk have numerous previous reports of nests and fledged chicks occurring within the pine tree areas of the study site (eBird 2021). Whilst not recorded within the study site, Brown Goshawk has previous records within 250 m of the study site, particularly along Maddens Lane where there are numerous records of two breeding pairs of Brown Goshawks nesting and raising chicks near the road reserve (eBird 2021). Wedge-tailed Eagle was reported on eBird to be nesting and roosting within the study site in March 2021 from a GFNC survey with Barwon Water (eBird 2021).

Previous ecological reports pertaining to the study site have observed 29 native species of bird using habitat within or adjacent the study site (Ecology Partners 2008).

Site assessment

Species recorded

During the site assessment, a total of 32 bird species were detected. Of these, 27 species were observed within or flying through pine forest habitat, with another five species only observed using wetland habitat within the study site. In addition to bird species, European Rabbit (***Oryctolagus cuniculus***) and Garden Skink (***Lampropholis guichenoti***) were also observed within the pine forest. Indirect evidence of Red Fox (***Vulpes vulpes***) was encountered throughout the site assessment in the form of scats and prey remains (i.e. rabbit skins, chicken feathers) in open grassland areas. A full list of bird species observed during the site assessment is provided below in Table 1.

Table 1: Bird species observed within the study site during the site assessment.

Common Name	Scientific Name	Habitat	Comment
Australian Magpie	***Gymnorhina tibicen***	Pine forest	
Australian Reed-warbler	***Acrocephalus australis***	Wetland	
Black-faced Cuckoo-shrike	***Coracina novaehollandiae***	Pine forest	
Black-fronted Dotterel	***Elseyornis melanops***	Wetland	
Black-winged Stilt	***Himantopus leucocephalus***	Wetland	

Common Name	Scientific Name	Habitat	Comment
Brown Falcon	***Falco berigora***	Pine forest	
Brown Goshawk	***Accipiter fasciatus***	Pine forest	1x adult
Brown Thornbill	***Acanthiza pusilla***	Pine forest	
Collared Sparrowhawk	***Accipiter cirrocephalus***	Pine forest	2x adults and 2x juveniles
Common Blackbird	***Turdus merula***	Pine forest	* introduced species
Common Bronzewing	***Phaps chalcoptera***	Pine forest	
Common Myna	***Acridotheres tristis***	Pine forest	* introduced species
Crested Pigeon	***Ocyphaps lophotes***	Pine forest	
Eastern Rosella	***Platycercus eximius***	Pine forest	
Galah	***Eolophus roseicapilla***	Pine forest	
Grey Butcherbird	***Cracticus torquatus***	Pine forest	
Grey Currawong	***Strepera versicolor***	Pine forest	
Grey Fantail	***Rhipidura albiscapa***	Pine forest	
Grey Shrike-thrush	***Colluricincla harmonica***	Pine forest	
Magpie-lark	***Grallina cyanoleuca***	Pine forest	
Masked Lapwing	***Vanellus miles***	Wetland	
Noisy Miner	***Manorina melanocephala***	Pine forest	
Pacific Black Duck	***Anas superciliosa***	Wetland	
Pied Currawong	***Strepera graculina***	Pine forest	
Rainbow Lorikeet	***Trichoglossus molucannus***	Pine forest	
Red Wattlebird	***Anthochaera carunculata***	Pine forest	
Red-rumped Parrot	***Psephotus haematonotus***	Pine forest	
Silvereye	***Zosterops lateralis***	Pine forest	

Common Name	Scientific Name	Habitat	Comment
Southern Boobook	***Ninox boobook***	Pine forest	Indirect evidence – feathers, pellets
Spotted Pardalote	***Pardalotus punctatus***	Pine forest	
Striated Pardalote	***Pardalotus striatus***	Pine forest	
Tawny Frogmouth	***Podargus strigoides***	Pine forest	Indirect evidence – feathers

Two species of concern, as highlighted by GFNC, were observed during the site assessment; Collared Sparrowhawk and Brown Goshawk. A total of four Collared Sparrowhawk, including two adults and two fledged juveniles, were observed using pine plantation habitat within the study site. One adult Brown Goshawk was observed flying through the pine plantation.

Roosting and nesting sites – first site assessment

During the first site assessment, two roosting sites with large amounts of whitewash covering the ground were encountered within the pine plantation of the study site (Attachment 1). Although indirect evidence of the ***Accipiter*** sp. was observed throughout the study site (i.e. feathers, whitewash and prey remains), it was evident during the site assessment that the Collared Sparrowhawks (particularly the juveniles), largely occurred at and demonstrated fidelity to the northern roosting site. The roosting site constituted multiple pine trees with evidence of frequent utilisation such as concentrated amounts of whitewash (droppings), feathers, prey remains (i.e. bones) and likely juvenile ***Accipiter*** sp. eggshells (Attachment 2; Plates 1-4). No bird species was observed using the southern roosting site.

A total of three stick nests were identified during the first site assessment within the study site occurring in forks of the top third of pine trees (Attachment 1). No bird species were observed actively using any nests within the study site during the assessment. However, given the territorial and defensive behaviour displayed by Collared Sparrowhawk, the nest occurring within the identified roost site is considered likely to have been the nesting location for the most recent Collared Sparrowhawk breeding season. Evidence of frequent use by Collared Sparrowhawks was observed approximately 40-50 m away from the identified nesting location.

Collared Sparrowhawk breeding season occurs between August to December where they build their nest in the fork of a tall tree often hidden by foliage (Menkhorst ***et al***. 2019). They usually build a new nest every breeding season but may occasionally refurbish a nest constructed in the previous season, or use an already built nest from a different species if unoccupied (Menkhorst ***et al***. 2019). Established pairs of Collared Sparrowhawk are generally considered as residentiary and occupy territories over successive years (Birdlife Australia 2021b).

Using evidence compiled from previous eBird (2021) reports, GFNC discussions, and results from the first site assessment, it is considered likely that the Collared Sparrowhawk pair have historically bred in the study site, potentially using the same roosting/nest site over previous years.

Roosting and nesting sites – second site assessment

In response to advice received from GFNC, a second site assessment was undertaken by SMEC to confirm roosting and nesting sites of Wedge-tailed Eagle within the study site. Both a Wedge-tailed Eagle roost and nest was located in the southern section of the study site within a ***Eucalyptus*** sp. and Pine Tree respectively (Attachment 2; Plate 5). Large amounts of whitewash, prey remains, and some feathers occurred underneath both the nest and roosting site (Attachment 2; Plate 6). No Wedge-tailed Eagle individuals were observed during either the first or second site assessments.

The breeding season for Wedge-tailed Eagle varies throughout its Australian distribution, however typically occurs between June to November, where they build their nests in the forks of tall trees that have strong limbs capable of supporting the large nests (DPIPWE 2021; Menkhorst ***et al***. 2019). Nests of Wedge-tailed Eagles are often used over successive years, usually growing larger as the eagles add more sticks to the nest annually

(Menkhorst ***et al***. 2019). It is considered likely that Wedge-tailed Eagles have historically bred within the study site, using the nest tree identified during the second site assessment.

Accipiter observations

Observations of the Collared Sparrowhawks during the site assessment included:

- Begging and active vocalisations from the juveniles, likely for food from the adults;
- Adults providing food to juveniles with the juveniles perching and consuming prey at the roost site;
- Adults and juveniles actively flying, with juveniles largely remaining within the study sites' northern linear pine tree patch, and the adults undertaking foraging forays to other areas of the pine plantation and adjacent farmland; and
- Adults mobbing other species of birds near the roosting site such as Pied Currawong and Red Wattlebird.

Only one Brown Goshawk was observed flying through pine plantation habitat. However, given the proximity of previous records nearby, it is considered that Brown Goshawk is likely to make similar frequent use of Bellarine Basin albeit for foraging or dispersal purposes given no roosting or nesting site for the species was encountered.

Implications

Removal of the pine plantation within the study site will impact the local pair of Collared Sparrowhawk and Wedge-tailed Eagle by removing roosting (Collared Sparrowhawk only) and known nesting habitat. Given the lack of previous breeding records for Brown Goshawk or Yellow-tailed Black-cockatoo within the study site, it is considered that the removal of pine plantation will only have a short-term impact on foraging or movement behaviours of these species rather than breeding or frequent roosting. The landscape surrounding the study site contains large pine trees and patches of indigenous vegetation which may be utilised more frequently for foraging purposes as a result of the loss of pine tree habitat within Bellarine Basin.

Given the sensitivity of nesting and the clear fidelity of Collared Sparrowhawk to the northern roosting site, it is recommended for the project to retain a patch of pine trees in the northern linear patch near the roosting site. It is also recommended for the project to protect a patch of pine trees in proximity to the Wedge-tailed Eagle nest given their likely previous use and dependence on the site for breeding.

It is suggested that disturbances within 'hundreds of metres' of a nesting site may cause Wedge-tailed Eagle to desert its nest during the breeding season (DPIPWE 2021). As a conservative approach, a minimum 100 m buffer should be applied to both the Collared Sparrowhawk and Wedge-tailed Eagle nesting site where any pine trees occurring within the buffered area should be retained. Whilst it is recommended to create the retention zone to mitigate impacts to Collared Sparrowhawk and Wedge-tailed Eagle, the retention zone should be feasible and align with Barwon Waters overall restoration masterplan. An approximate zone of pine tree retention surrounding both the Collared Sparrowhawk and Wedge-tailed Eagle nest sites are provided in Attachment 1.

Any pine trees within this zone should ideally be retained to avoid impacting the local Collared Sparrowhawk pair. However, if retaining sections of the pine plantation is not feasible for the project's overall long-term masterplan of the restoration of Bellarine Basin, then a staggered approach is the next best option to minimise impacts to Collared Sparrowhawk and Wedge-tailed Eagle. Two options to minimise impacts to Collared Sparrowhawk and Wedge-tailed Eagle have been provided in the 'Recommendations' section below.

Any removal of pine trees should be undertaken January through to May, outside of the Wedge-tailed Eagle and Collared Sparrowhawk breeding season and when the juveniles are less dependent on the adults. Wedge-tailed Eagles are particularly more tolerant to ongoing disturbances within an area that occurred before nesting began, than they are when the disturbance begins after nesting has commenced (DPIPWE 2021).

Recommendations

In addition to general recommendations for the project, SMEC has identified two options for Barwon Water to consider minimising impacts to Collared Sparrowhawk and Wedge-tailed Eagle depending on feasibility in the context of the Bellarine Basin restoration masterplan:

Option 1 – Pine tree retention

- Create a 100 m pine tree retention zone surrounding the Collared Sparrowhawk and Wedge-tailed Eagle roosting/nesting site; and
- Retain all trees indefinitely within the retention zone until they pose a safety hazard, the Collared Sparrowhawk and Wedge-tailed Eagle no longer frequently use them, or the surrounding indigenous revegetation has grown tall enough to support new roosting/nest sites.

Option 2 – Staggered removal approach

- Create a 100 m pine tree retention zone surrounding the Collared Sparrowhawk and Wedge-tailed Eagle roosting/nesting site;
- Retain all pine trees within the retention zone at least until the 2021 breeding season is complete;
- Over the course of the restoration masterplan, begin removing trees from within the retention zone, starting from the periphery of the boundary moving inwards towards the centre and roosting site;
- Removal of pine trees within the retention zone should be undertaken slowly over successive years to avoid intensive acute impacts to Wedge-tailed Eagle or Collared Sparrowhawk over a single period; and
- If there is a clear absence of nesting sites for two consecutive breeding seasons, then it is assumed the pair has chosen to nest in a different location nearby and that the pine tree retention zone no longer applies in which the complete removal of pines within the zone can be undertaken.

General recommendations

- To limit disturbance, remove pine trees between January to May outside of Wedge-tailed Eagle and Collared Sparrowhawk breeding season and when juveniles are less dependent;
- Begin removing pine trees from areas within the study site away from the nest/roosting site to limit disturbance such as the western pine tree patch that occurs near Grubb Road; and
- In the process of pine tree removal, the site should be revegetated with advanced established indigenous tree stock (1 – 2 m tall) to begin replacing established tree resources that will be lost. In addition to ***Eucalyptus*** sp., planted trees should also include indigenous ***Allocasuarina*** sp. and ***Banksia*** sp. individuals specifically for Yellow-tailed Black-cockatoo to replace the loss of pinecone foraging resources.

If you have any questions, please feel free to contact me at Nicholas.Carter@smec.com.

Yours sincerely,

Nicholas Carter

Ecologist

References

Birdlife Australia 2021a. ***Birdata database***. Maintained by Birdlife Australia. Available at: https://birdata.birdlife.org.au/explore#map

Birdlife Australia 2021b. ***Collared Sparrowhawk***. Maintained by Birdlife Australia. Available at: https://www.birdlife.org.au/bird-profile/collared-sparrowhawk

DELWP 2021. ***Victorian Biodiversity Atlas***. Maintained by the Victorian Department of Environment, Land, Water and Planning, East Melbourne, Victoria.

DPIPWE 2021. ***Threatened Species Link: Wedge-tailed Eagle***. Maintained by the Tasmanian Department of Primary Industries, Parks, Water and Environment. Available at: https://www.threatenedspecieslink.tas.gov.au/Pages/Wedge-tailed-Eagle.aspx

eBird 2021. ***eBird Australia database***. Maintained by eBird Australia. Available at: https://ebird.org/australia/map

Ecology Partners 2008. ***Flora and Fauna Assessment of the Bellarine Service Basin, Victoria***. Prepared for Barwon Water.

Ecology Partners 2011. ***Targeted Growling Grass Frog Litoria raniformis Survey at Bellarine Basin, Wallington, Victoria***. Prepared for Barwon Water.

Menkhorst, P., Rogers, D., Clarke, R., Davies, J., Marsack, P. and Franklin, K. 2019. ***The Australian Bird Guide***. Published by CSIRO, Collingwood, Victoria.

Okologie Consulting 2020: ***Vegetation Assessment – Bellarine Services Basin, Wallington***. Prepared for Spiire Pty Ltd on behalf of Barwon Water.

Attachment 1: Study site and site results

FIGURE TITLE	Study Site and Site Results	DATE	01-04-2021
DRAWING NO.	1		
PROJECT NO.	30042353	PROJECT TITLE	Bellarine Basin Bird Habitat Assessment

0 50 100 150 200 m

PAGE SIZE A3

CREATED BY NC14936 SOURCES Metromap

SMEC
Member of the Surbana Jurong Group

SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

Filepath: X:\Projects\300423\30042353 - Bellarine Basin Avian Assessment (Revision 0)\04 Technical\GIS\Bellarine Basin Bird Habitat Assessment.qgz

Attachment 2: Photographs

Plate 1. Prey remains (bones) found near the Collared Sparrowhawk roosting site (N, Carter. 21/01/2021)

Plate 2. Egg shells found near the Collared Sparrowhawk roosting site (N, Carter. 21/01/2021)

Plate 3. Whitewash splashed throughout Collared Sparrowhawk roosting site (N, Carter. 21/01/2021)

Plate 4. Collared Sparrowhawk roosting area (N, Carter. 21/01/2021)

Plate 5. Wedge-tailed Eagle nest in a pine tree (N, Carter. 01/04/2021)

Plate 6. Bones and prey remains underneath the Wedge-tailed Eagle nest (N, Carter. 01/04/2021)