

Fauna Assessment



Lot 4 Runnymede Road (CPS 8479/1) Wellesley

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Version 1

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Acronyms/Abbreviations:

ALA: Atlas of Living Australia – Website - www.ala.org.au/

BA: Birdlife Australia (Formerly RAOU, Birds Australia).

BC Bill: *Biodiversity Conservation Bill (2015)*. WA Government.

BoM: Bureau of Meteorology, Australian Government.

°C: Degrees Celsius.

CALM: Department of Conservation and Land Management (now DPaW), WA Government.

CAMBA: China Australia Migratory Bird Agreement 1998.

CBD: Central Business District.

DAA: Department of Aboriginal Affairs, Western Australia.

DAFWA: Department of Agriculture and Food, Western Australia.

DBCA: Department of Biodiversity, Conservation and Attractions (formerly DPaW, DEC, CALM, DoE), WA Government

DBH: Diametre at breast height (~1.5m) of a tree.

DEC: Department of Environment and Conservation (now DPaW and DER), WA Government.

DEH: Department of Environment and Heritage (now DotE), Australian Government.

DEP: Department of Environment Protection (now DER), WA Government.

DER: Department of Environment Regulation (formerly DEC, DoE), WA Government.

DEWHA: Department of the Environment, Water, Heritage and the Arts (now DotEE), Australian Government

DMP: Department of Mines and Petroleum (now DMIRS), WA Government.

DoE: Department of Environment (now DWER), WA Government.

DotE: Department of the Environment (now DotEE), Australian Government.

DotEE: Department of the Environment and Energy (formerly DotE, SEWPaC, DWEHA, DEH), Australian Government.

DoIR: Department of Industry and Resources (now DMIRS), WA Government.

DMIRS: Department of Mines, Industry Regulation and Safety (formerly DMP, DoIR), WA Government.

DoW: Department of Water (now DWER), WA Government..

DPaW: Department of Parks and Wildlife (formerly DEC, CALM, DoE), WA Government.

DWER: Department of Water and Environmental Regulation (formed by the amalgamation of OEPA, DoW and DER), WA Government.

EP Act: *Environmental Protection Act 1986*, WA Government.

EPA: Environmental Protection Authority, WA Government.

EPBC Act: *Environment Protection and Biodiversity Conservation Act 1999*, Australian Government.

GIS: Geographical Information System.

ha: Hectare (10,000 square metres).

IBRA: Interim Biogeographic Regionalisation for Australia.

IUCN: International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union.

JAMBA: Japan Australia Migratory Bird Agreement 1981.

kms: Kilometres.

MNES: Matters of National Environmental Significance.

MRWA: Main Roads Western Australia, WA Government

m: Metre.

mm: Millimetre.

P: Priority - DPaW fauna conservation ranking.

POS: Public Open Space.

RAOU: Royal Australia Ornithologist Union.

ROKAMBA: Republic of Korea-Australia Migratory Bird Agreement 2007.

S: Schedule - Western Australian *Wildlife Conservation Act (1950)* Threatened Fauna Category.

SEWPaC: Department of Sustainability, Environment, Water, Population and Communities (now DotEE, formerly DEH, DEWHA), Australian Government

SRE: Short Range Endemic.

SSC: Species Survival Commission, International.

WA: Western Australia.

WAM: Western Australian Museum, WA Government.

WRP: Western Ringtail Possum.

SUMMARY

This report details the results of a fauna assessment of an area of proposed clearing within Lot 4 Runnymede Road, Wellesley (the subject site) (Figure 1). The landowners (B & J Catalano Pty Ltd) are proposing to clear up to 18.9 ha of vegetation from within the subject site for the purpose of continuing sand extraction and have applied to the DWER for a clearing permit (CPS 8479/1) pursuant to Section 51E of the *Environmental Protection Act 1986* (Figure 2).

It is anticipated that the information presented here will also be used by regulatory authorities to assess the potential impact of the proposal on fauna and fauna habitats at the site, during the project evaluation and clearing permit approval process

The fauna assessment has included a literature review and a series of field surveys. Daytime field survey work at the site was carried out on several days between September 2019 and December 2019. A nocturnal survey of the subject site was carried out on the 30 November 2019. All field survey work was carried out by Greg Harewood (Zoologist)..

Key Findings

- With respect to native vertebrate fauna, 17 mammal (including nine bat species), 76 bird, 28 reptile and three frog species have previously been recorded in the wider area, some of which have the potential to occur in or utilise sections of the subject site at times. Seven species of introduced animals could also frequent the area.
- Of the 124 native animals that are listed as occurring or potentially occurring in the area, six are considered to be endangered/vulnerable or in need of special protection under State and/or Federal law (i.e. Carnaby's black cockatoo, Baudin's black cockatoo, forest red-tailed black cockatoo, peregrine falcon, south-western brush-tailed phascogale and western ringtail possum). In addition, six DBCA priority species (i.e. coastal plains skink, Perth lined lerista, masked owl, quenda, western brush wallaby and western false pipistrelle) may also be present or frequent the area at times.
- The subject site is largely comprised of a jarrah and marri open woodland over a banksia low woodland. Peppermint replaces banksia as the dominant midstorey species in the north west section of the subject site. Ground cover and low shrubs vary in density from area to area being very sparse at some locations and dense in others.
- With respect to fauna habitat values, the majority of the vegetation appears to be in good to very good condition and would therefore have the capacity to support a wide range of the predicted fauna species. Some units appear to have been subject to some historical and ongoing disturbance (e.g. livestock grazing, firewood collecting, logging and/or clearing and as a consequence contain vegetation of a lower quality relative to other areas.

- The subject site was found to contain 200 potential “black cockatoo breeding habitat trees” (DBH \geq 50cm). Eight trees appeared to contain hollows with larger entrances (greater than ~10cm) that were possibly big enough to allow the entry of a black cockatoo into a suitably sized and orientated branch/trunk, though none showed any sign of current or previous use by cockatoos for this purpose.
- Almost all the remnant vegetation present (~18.9 ha) can be regarded as quality foraging habitat for black cockatoos given the presence of jarrah, marri and/or banksia in all areas. No existing roosting trees (trees used at night by black cockatoos to rest) were positively identified during the survey.
- The subject site does contain what superficially looks like suitable habitat for western ringtail possums (i.e. peppermint trees) however no evidence of the species utilising the subject site was found during the day or night surveys (i.e. no dreys, scats or individuals). This would suggest that they were either absent from the area surveyed or present in very low densities. WRPs have therefore been listed as a potential species as a precautionary measure, but they may in fact not use the site except on rare occasions.
- The potential impacts on fauna species of conservation significance and/or their habitat will need to be taken into consideration during ongoing planning and construction phases of the proposed project.
- If approval for the project is obtained, it is recommended that a fauna relocation program be implemented prior to and during clearing works, to ensure direct impact on fauna (e.g. common brushtail possum) most likely to be encountered, is minimised.
- The results of this assessment should be provided to the relevant regulatory authorities for their consideration during the clearing permit assessment process.

1. INTRODUCTION

This report details the results of a fauna assessment of an area of proposed clearing within Lot 4 Runnymede Road, Wellesley (the subject site) (Figure 1). The landowners (B & J Catalano Pty Ltd) are proposing to clear up to 18.9 ha of vegetation from within the subject site for the purpose of continuing sand extraction and have applied to the DWER for a clearing permit (CPS 8479/1) pursuant to Section 51E of the *Environmental Protection Act 1986* (Figure 2).

Information obtained as part of this fauna assessment report will be used in conjunction with other environmental investigations to guide project planning and will also be used in the formulation of management plans, both of which will aim to minimise potential environmental impacts.

It is anticipated that the information presented here will also be used by regulatory authorities to assess the potential impact of the proposal on fauna and fauna habitats at the site, during the project evaluation and clearing permit approval process.

2. SCOPE OF WORKS

The scope of works was to conduct a Level 1 fauna survey as defined by the EPA (EPA 2016). Because the general area is known to be utilised by black cockatoos and western ringtail possums, the scope of the survey work was expanded to include a baseline assessment of the site's significance to these species as well. The fauna assessment has therefore included:

1. Level 1 fauna assessment (in accordance with EPA (2016) guidelines);
2. Targeted searches for black cockatoo habitat/site use (habitat trees, existing and potential nest hollows, foraging and roosting habitat);
3. Targeted day and night searches for western ringtail possum habitat/site use (foraging, refuge and dispersal habitat and individuals);
4. An assessment of the likelihood of occurrence of any other significant fauna species and their habitat; and
5. Report summarising results, methods and conclusions.

Note: For the purposes of this report the term black cockatoo is in reference to Baudin's black cockatoo *Calyptorhynchus baudinii*, Carnaby's black cockatoo *Calyptorhynchus latirostris* and the forest red-tailed black cockatoo *Calyptorhynchus banksii naso*.

3. METHODS

3.1 POTENTIAL FAUNA INVENTORY - LITERATURE REVIEW

3.1.1 Database Searches

Searches of the following databases were undertaken to aid in the compilation of a list of conservation significant fauna potentially occurring within the subject site:

- DBCA's NatureMap Database Search (combined data from DBCA, ALA, WAM, BA and consultant's reports) (DBCA 2020); and
- Protected Matters Search Tool (DotEE 2020).

It should be noted that lists produced during the abovementioned database searches contain observations/inferred distributions from a broader area than the subject site and therefore may include species that would never occur/only ever occur as vagrants due to a lack of suitable habitat or the presence of only marginal habitat within the subject site itself. The databases also often include or are based on very old records and in some cases the species in question have become locally or regionally extinct.

Information from these sources should therefore be taken as indicative only and local knowledge and information also needs to be taken into consideration when determining what actual species may be present within the specific area being investigated.

3.1.2 Previous Fauna Surveys in the Area

Fauna surveys, assessments and reviews have been undertaken in nearby areas in the past, though not all are publicly available and could not be referenced. The most significant of those available have been used as the primary reference material for compiling a list of fauna species of conservation significance most likely to occur in the general area.

Those reports referred to included, but were not limited to:

- 360 Environmental Pty Ltd (2008). Southern Seawater Desalination Project 2007, Terrestrial Flora and Fauna Survey Report. Unpublished report for the Water Corporation.
- ATA Environmental (2005). Lot 1001 Mardo Avenue, Australind, Environmental Assessment. Unpublished report for Marist Brothers.
- ATA Environmental (2006). Kemerton Power Station Reserve Vegetation, Flora and Fauna Assessment. Unpublished report for Transfield Services Kemerton Pty Ltd. May 2006.
- ATA Environment (2005). Environmental Assessment, South Binningup V2, June 2005. Unpublished report.

- Bamford Consulting Ecologists (2008a). Fauna Assessment of the Proposed South Binningup Development. Unpublished report for RPS Consulting/Mirvac.
- Bamford Consulting Ecologists (2008b). Significant Fauna Assessment for the Proposed Binningup Desalination Plant 132KV Transmission Line. Unpublished report for Western Power.
- Bullen, R.D. (2009). Binningup Bat Survey 2009. Echolocation Survey of Bat Activity in the Lake Clifton and Lake Preston Localities on the Swan Coastal Plain. Prepared for Department of Environment and Conservation by Bat Call WA. Hillarys, Western Australia.
- Coffey Environments Pty Ltd (2008). Portion of Lot 510 Marriott Road, Kemerton – Stage 1 Subdivision. Flora Vegetation, Wetlands and Fauna Assessment. Unpublished report for the TME.
- Dell, J. and Hyder, B. (2009a). An Assessment of the Avifauna of the area between Dawesville and Binningup, Southern Swan Coastal Plain. Report prepared for Environmental Protection Authority, Perth.
- Dell, J. and Hyder, B. (2009b). Summary of the Fauna Values of the area between Dawesville and Binningup, Southern Swan Coastal Plain. Report prepared for Environmental Protection Authority, Perth.
- Eco Logical Australia (2014). Targeted Ecological Surveys for Kemerton Industrial Park. Prepared for LandCorp.
- Eco Logical Australia (2017a). Desktop Assessment of Selected Lots within Kemerton Industrial Area. Prepared for S2V Consulting.
- Eco Logical Australia (2017b). Kemerton Industrial Area Spring Flora and Fauna Survey. Prepared for S2V Consulting.
- Eco Logical Australia (2017c). Kemerton Industrial Area: Additional Assessment of Proposed Access Road Area'. Prepared for S2V Consulting.
- GHD (2015). Waterloo Urban and Industrial Expansion. Flora and Fauna Survey. Unpublished report for Shire of Dardanup.
- GHD (2017). Biological Assessment - Additional Area Assessment - Kemerton Strategic Industrial Area. Unpublished letter report for Albemarle Lithium Pty Ltd.
- Harewood, G. (2009). Fauna Assessment (Level 1) and Targeted Fauna Survey (Western Ringtail Possum and Southern Brush-tailed Phascogale) in the Mine Expansion Area. Unpublished Report for Kemerton Silica Pty Ltd.
- Harewood, G. (2010). Fauna Survey (Level 2). Kemerton Industrial Core. Unpublished report for Cardno (WA) Pty Ltd.

- Harewood, G. (2012). Threatened Fauna Assessment - Proposed Clearing Area Lot 43 Stanley Road, Wellesley. Unpublished report for GHD.
- Harewood, G. (2012). Fauna Assessment of Lot 9004 (part) Treendale Stage 4. Unpublished report for Treendale.
- Harewood, G. (2015). Fauna Survey (Level 2). Dampier to Bunbury Natural Gas Pipeline Corridor Bristol Road (Waroona) to Clifton Road (Brunswick). Unpublished report for Aurora Environmental.
- Harewood, G. (2015). Fauna Assessment. Lot 510 (part) Kemerton Industrial Park. Unpublished report for RPS Australia Asia Pacific.
- Harewood, G. (2016). Lots 7, 9, 10, 50, 100 (east) & 100 (west) Clifton Road, Brunswick. Unpublished report for JAK Civil.
- How, R. A., Maryan, B. and Stevenson, C. A. (2009). An Assessment of Herpetofauna on Near-Coastal Landforms between Dawesville and Binningup, Southern Swan Coastal Plain. Prepared for Department of Environment and Conservation. Welshpool, Western Australia.
- Hyder, B. and Dell, J. (2009). An Assessment of the Non-volant Mammal Fauna of the area between Dawesville and Binningup, Southern Swan Coastal Plain. Report prepared for Environmental Protection Authority, Perth.
- Western Wildlife (2009). Lot 76 Binningup Road Binningup. Fauna Survey 2008. Unpublished report for Niche Consulting.

As with the databases searches some reports refer to species that would not occur in the subject site due to a lack of suitable habitat (extent and/or quality) and this fact was taken into consideration when compiling the potential fauna species list. It should also be noted that the NatureMap database is likely to include some records from previous fauna surveys in the area including some of those listed above.

3.1.3 Existing Publications

The following represent the main publications used to identify and refine the potential fauna species list for the subject site:

- Anstis, M. (2013). Tadpoles and Frogs of Australia. New Holland Publishers, Sydney.
- Barrett, G., Silcocks, A., Barry, S., Cunningham, R. and Poulter, R. (2003). The New Atlas of Australian Birds. Royal Australasian Ornithologists Union, Victoria.
- Bush, B., Maryan, B., Browne-Cooper, R. & Robinson, D. (2007). Reptiles and Frogs in the Bush: Southwestern Australia. UWA Press, Nedlands.

- Churchill, S. (2008). Australian Bats. Second Edition, Allen & Unwin.
- Cogger, H.G. (2014). Reptiles and Amphibians of Australia. 7th Edition. CSIRO Publishing.
- Johnstone, R.E. and Storr, G.M. (1998). Handbook of Western Australian Birds: Volume 1 – Non-passerines (Emu to Dollarbird). Western Australian Museum, Perth Western Australia.
- Johnstone, R.E. and Storr, G.M. (2004). Handbook of Western Australian Birds: Volume 2 – Passerines (Blue-winged Pitta to Goldfinch). Western Australian Museum, Perth Western Australia.
- Menkhorst, P. and Knight, F. (2011). A Field Guide to the Mammals of Australia. Oxford University Press, Melbourne.
- Morgan, D.L., Beatty, S.J., Klunzinger, M.W, Allen, M.G. and Burnham, Q.E (2011). Field Guide to the Freshwater Fishes, Crayfishes and Mussels of South Western Australia. Published by SERCUL.
- Storr, G.M., Smith, L.A. and Johnstone R.E. (1983). Lizards of Western Australia II: Dragons and Monitors. WA Museum, Perth.
- Storr, G.M., Smith, L.A. and Johnstone R.E. (1990). Lizards of Western Australia III: Geckos and Pygopods. WA Museum, Perth.
- Storr, G.M., Smith, L.A. and Johnstone R.E. (1999). Lizards of Western Australia I: Skinks. Revised Edition, WA Museum, Perth.
- Storr, G.M., Smith, L.A. and Johnstone R.E. (2002). Snakes of Western Australia. Revised Edition, WA Museum, Perth.
- Tyler M.J. & Doughty P. (2009). Field Guide to Frogs of Western Australia, Fourth Edition, WA Museum, Perth.
- Van Dyck, S., Gynther, I. & Baker, A. Eds (2013). Field Companion to The Mammals of Australia. Queensland Museum.
- Wilson, S. and Swan, G. (2013). A Complete Guide to Reptiles of Australia. Reed, New Holland, Sydney.
- Woinarski, J., Burbidge, A. & Harrison, P. (2014). The Action Plan for Australian Mammals 2012. CSIRO Publishing.

3.1.4 Fauna of Conservation Significance

The conservation significance of fauna species has been assessed using data from the following sources:

- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. Administered by the Australian Government DoEE;
- *Biodiversity Conservation Act 2016 (BC Act)*. Administered by the Western Australian DBCA (Govt. of WA 2018). Note: The Wildlife Conservation (Specially Protected Fauna) Notice 2018 has been transitioned under regulations 170, 171 and 172 of the Biodiversity Conservation Regulations 2018 to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the *BC Act*;
- Red List produced by the SSC of the World Conservation Union (also known as the IUCN Red List - the acronym derived from its former name of the International Union for Conservation of Nature and Natural Resources). The Red List has no legislative power in Australia but is used as a framework for State and Commonwealth categories and criteria; and
- DBCA Priority Fauna list. A non-statutory list maintained by the DBCA for management purposes (DBCA 2019).

The *EPBC Act* also requires the compilation of a list of migratory species that are recognised under international treaties including the:

- Japan Australia Migratory Bird Agreement 1981 (JAMBA);
- China Australia Migratory Bird Agreement 1998 (CAMBA);
- Republic of Korea-Australia Migratory Bird Agreement 2007 (ROKAMBA); and
- Bonn Convention 1979 (The Convention on the Conservation of Migratory Species of Wild Animals).

(Note: Some but not all species listed under JAMBA are also protected under Schedule 5 of the *BC Act*.)

Most, but not all migratory bird species listed in the annexes to these bilateral agreements are protected in Australia as matters of national environmental significance (MNES) under the *EPBC Act*.

The conservation status of all vertebrate fauna species listed as occurring or possibly occurring in the vicinity of the subject site has been assessed using the most recent lists published in accordance with the above mentioned instruments and is indicated as such in the fauna listings of this report. A full listing of conservation codes is provided in Appendix A.

3.1.5 Taxonomy and Nomenclature

Taxonomy and nomenclature for vertebrate fauna species used in this report is generally taken from the DBCA's WA Fauna Census Database which is assumed to follow Aplin and Smith (2001) for amphibians and reptiles and Johnstone (2001) for birds. Jackson and Groves (2015) has been used for mammals.

Common names are taken from the Western Australia Museum (WAM) recognised primary common name listings when specified, though where common names are not provided they have been acquired from other publications. Sources include Cogger (2014), Wilson and Swan (2017), Van Dyck & Strahan (2013), Christidis and Boles (2008), Bush *et al.* (2010), Bush *et al.* (2007), Tyler & Doughty (2009), and Glauret (1961). Not all common names are generally accepted.

3.1.6 Likelihood of Occurrence – Fauna of Conservation Significance

Fauna of conservation significance identified during the literature review as previously being recorded in the general area were assessed and ranked for their likelihood of occurrence within the subject site itself. The rankings and criteria used were:

- Would Not Occur: There is no suitable habitat for the species in the subject site and/or there is no documented record of the species in the general area since records have been kept and/or the species is generally accepted as being locally/regionally extinct (supported by a lack of recent records).
 - Locally Extinct: Populations no longer occur within a small part of the species natural range, in this case within 10 or 20 km of the subject site. Populations do however persist outside of this area.
 - Regionally Extinct: Populations no longer occur in a large part of the species natural range, in this case within the southern swan coastal plain region. Populations do however persist outside of this area.
- Unlikely to Occur: The subject site is outside of the currently documented distribution for the species in question, or no suitable habitat (type, quality and extent) was identified as being present during the field assessment. Individuals of some species may occur occasionally as vagrants/transients especially if suitable habitat is located nearby but the subject site itself would not support individuals or a population the species.
- Possibly Occurs: The subject site is within the known distribution of the species in question and habitat of at least marginal quality was identified as being present during the field assessment, supported in some cases by recent records being documented in literature from within or near the subject site. In some cases, while a species may be classified as possibly being present at times, habitat may

be marginal (e.g. poor quality, fragmented, limited in extent) and therefore the frequency of occurrence and/or population levels may be low.

- Known to Occur: The species in question was positively identified as being present (for sedentary species) or as using the subject site as habitat for some other purpose (for non-sedentary/mobile species) during the field survey. This information may have been obtained by direct observation of individuals or by way of secondary evidence (e.g. foraging debris, tracks and scats). In some cases, while a species may be classified as known to occur, habitat may be marginal (e.g. poor quality, fragmented, limited in extent) and therefore the frequency of occurrence and/or population levels may be low.

3.2 SITE SURVEYS

Daytime field survey work at the site was carried out on several days between September 2019 and December 2019. A nocturnal survey of the subject site was carried out on the 30 November 2019. All field survey work was carried out by Greg Harewood (Zoologist).

3.2.1 Fauna Habitat Assessment

The vegetation communities, landforms and soils observed during the fauna assessment have been used as the basis for a classification of areas into broad fauna habitat types.

As part of the literature review, available information on the habitat requirements of the species of conservation significance listed as possibly occurring in the area was researched. During the daytime reconnaissance survey, the habitats within the subject site were assessed and specific elements identified, if present, to determine the likelihood of listed species of conservation significance occurring and its likely overall value to them on a local and regional scale.

3.2.2 Black Cockatoo Habitat Assessment

The following methods were employed during the black cockatoo habitat assessment to comply with the defined scope of works and are based on guidelines published by the DotEE (Commonwealth of Australia 2012) which states that surveys for Carnaby's, Baudin's and forest red-tailed black cockatoo habitat should:

- be done by a suitably qualified person with experience in vegetation or cockatoo surveys, depending on the type of survey being undertaken;
- maximise the chance of detecting the species' habitat and/or signs of use;
- determine the context of the site within the broader landscape—for example, the amount and quality of habitat nearby and in the local region (for example, within 10 km);
- account for uncertainty and error (false presence and absences); and

- include collation of existing data on known locations of breeding and feeding birds and night roost locations.

Habitat used by black cockatoos have been placed into three categories by the DotEE (Commonwealth of Australia 2012) these being:

- Breeding Habitat;
- Foraging Habitat; and
- Night Roosting Habitat.

So as to comply with the requested scope of works and in line with the published guidelines the following was carried out.

3.2.2.1 Black Cockatoo Breeding Habitat

The black cockatoo breeding habitat assessment involved the identification of all suitable breeding trees species (native, endemic species only) within the subject site that had a DBH of equal to or over 50cm. The DBH of each tree was estimated using a pre-made 50 cm “caliper”.

Target tree species included marri and jarrah or any other *Corymbia/Eucalyptus* species of a suitable size that may have been present. Peppermints, *banksia*, sheoak and *melaleuca* tree species (for example) were not assessed as they typically do not develop hollows that are used by black cockatoos.

The location of each tree identified as being over the threshold DBH was recorded with a GPS and details on tree species, number and size of hollows (if any) noted. Trees observed to contain hollows (of any size/type) were marked with “H” using spray paint for easy future reference.

Potential hollows were placed into one of four categories, based on the size of the apparent hollow entrance, these being:

- Small = ~<5cm diameter (i.e. entrance too small for a black cockatoo);
- Medium = ~5cm-10cm diameter (i.e. entrance too small for a black cockatoo);
- Large = ~>10cm diameter (entrance large enough for a black cockatoo but possible hollow appears to be unsuitable for nesting i.e. wrong orientation, too small, too low or too shallow); or
- Large (cockatoo) = ~>10cm diameter (entrance appears big enough to provide access to a possible hollow that may be suitable for a black cockatoo to use for nesting).

Based on this assessment, trees present within the subject site have been placed into one of four categories:

- Tree < 50cm DBH or an unsuitable species (not recorded);
- Tree \geq 50cm DBH, no hollows seen;
- Tree \geq 50cm DBH, one or more hollows seen, none of which were considered suitable for black cockatoos to use for nesting; or
- Tree >50cm DBH, one or more possible hollows seen, with at least one considered potentially suitable for black cockatoos to use for nesting.

For the purposes of this assessment, a tree containing a potential cockatoo nest hollow was defined as:

Generally, any tree which is alive or dead that contains one or more visible hollows (cavities within the trunk or branches) or possible hollows considered potentially suitable for occupation by a black cockatoo for the purpose of nesting/breeding. Hollows or apparent hollows that had an entrance greater than about 10cm in diameter and would allow the entry of a black cockatoo into a suitably orientated and sized branch/trunk were recorded as a “potential black cockatoo nest hollow”.

Identified hollows were examined using binoculars for evidence of actual use by black cockatoos (e.g. chewing around hollow entrance, scarring and scratch marks on trunks and branches). Trees with possible nest hollows were also scratched and raked with a large stick/pole in attempt to flush any sitting birds from hollows and calls of chicks were also listened for. It should be noted that the survey may have been conducted outside of the main breeding season of one or more of the three species of black cockatoo.

3.2.2.2 Black Cockatoo Foraging Habitat

The location and nature of black cockatoo foraging evidence (e.g. chewed fruits around base of trees) observed during the reconnaissance survey was recorded. The nature and extent of potential foraging habitat present was also documented irrespective of the presence of any actual foraging evidence.

3.2.2.3 Black Cockatoo Roosting Habitat

Direct and indirect evidence of black cockatoos roosting in trees within the subject site was noted, if observed (e.g. branch clippings, droppings or moulted feathers).

3.2.3 Western Ringtail Possum Assessment

To determine if western ringtail possums were utilising the subject site, the following was carried out:

- Concurrent with the daytime black cockatoo habitat assessment, dreys (and other potential daytime refuge habitat), scats and individual WRPs were searched for and recorded if observed; and
- One night time survey was carried out to locate and record the distribution and abundance of WRPs within the subject site. The nocturnal count involved the systematic searching of potential WRP habitats on foot using a head torch.

3.2.4 Camera Traps

Twelve (12) motion sensing, infrared “camera traps” (Acorn model LTI 5210A) were placed within subject site on the 30 September 2019. These were retrieved on the 26 October 2019 (26 days of deployment). The camera traps were set to take three consecutive pictures when triggered, with a 5 second time lapse before any subsequent trigger event. The location of each camera trap is shown in Figure 3. Camera trap location coordinates and details are contained within Appendix B.

A total of 312 “camera trap days” were achieved and several thousand pictures taken, though it should be noted that on some cameras a high percentage of photos taken were caused by moving vegetation. All pictures were examined and fauna species, where possible, identified. Only one image of each species taken on any one day was documented as a record.

3.2.5 Acoustic Bat Recordings

One night of acoustic bat call recordings were undertaken using a Wildlife Acoustics SM2+ Bat Detector. The recordings were commenced at sunset and continued until sunrise the following day. The recording location is shown in Figure 3. Recording location coordinates and details are contained within Appendix B.

The detector converts ultrasonic echolocation signals produced by bats into audible electronic signals that are then recorded. The recordings were later processed by Bob Bullen (Bat Call WA Pty Ltd) to determine the presence of species specific calls.

3.2.6 Other Fauna Species of Conservation Significance

Evidence of the presence or likely presence of other fauna species of conservation significance (or suitable habitat) was searched for and recorded concurrent with other site surveys. The aim was to obtain sufficient information to make a definitive comment on the likely significance of the subject site to other fauna species of conservation significance.

Methods involved searching microhabitats such as logs, rocks, leaf litter and observations with binoculars. Secondary evidence of a species presence such as tracks, scats, skeletal remains, foraging evidence or calls were also noted, if observed/heard.

3.2.7 Opportunistic Fauna Observations

Opportunistic observations of fauna species were made during all field survey work and recorded where positive species identifications were made.

4. SURVEY CONSTRAINTS

No seasonal sampling has been carried out as part of this fauna assessment. The conclusions presented are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of the field assessments. It should also be recognised that site conditions can change with time.

Some fauna species are reported as potentially occurring based on there being suitable habitat (quality and extent) within the subject site or immediately adjacent. With respect to opportunistic observations, the possibility exists that certain species may not have been detected during field investigations due to:

- seasonal inactivity during the field survey;
- species present within micro habitats not surveyed;
- cryptic species able to avoid detection; and
- transient wide-ranging species not present during the survey period.

Lack of observational data on some species should therefore not necessarily be taken as an indication that a species is absent from the site or does not utilise it for some purpose at times.

The habitat requirements and ecology of many of the species known to occur in the wider area are often not well understood or documented. It can therefore be difficult to exclude species from the potential list based on an apparent lack of a specific habitat or microhabitat within the subject site. As a consequence of this limitation the potential fauna list produced is most likely an overestimation of those species that actually utilise the subject site for some purpose. Some species may be present in the general area but may only use the subject site itself on rare occasions or as vagrants/transients.

In recognition of survey limitations, a precautionary approach has been adopted for this assessment. Any fauna species that would possibly occur within the subject site (or immediately adjacent), as identified through ecological databases, publications, discussions with local experts/residents and the habitat knowledge of the Author, has been assumed to potentially occur in the subject site.

During the black cockatoo habitat survey trees with hollows were searched for. It should be noted that identifying hollows suitable for fauna species from ground level has limitations. Generally, the full characteristics of any hollow seen are not fully evident (e.g. internal dimensions). It is also difficult to locate all hollows within all trees as some are not observable from ground level.

5. RESULTS

5.1 POTENTIAL FAUNA INVENTORY – LITERATURE REVIEW

A list of fauna species considered most likely to occur in the subject site has been compiled from information obtained during the literature review and is presented in Appendix B. This list was refined after information gathered during the site reconnaissance survey was assessed. The results of some previous fauna surveys carried out in the general area are summarised in this list as are the DBCA NatureMap database search results (with species considered unlikely to occur being omitted). The raw database search results from NatureMap (DBCA 2020) and the Protected Matters Search Tool (DotEE 2020) are contained within Appendix C.

The list of potential fauna takes into consideration that firstly, the species in question is not known to be locally extinct and secondly, that suitable habitat for each species, as identified during the habitat assessment, is present within the subject site, though compiling an accurate list has limitations (see Section 4 above) and therefore as discussed, the list is very likely to be an overestimation of the fauna species actually present onsite at any one time.

With respect to native vertebrate fauna, 17 mammal (including nine bat species), 76 bird, 28 reptile and three frog species have previously been recorded in the wider area, some of which have the potential to occur in or utilise sections of the subject site at times. Seven species of introduced animals could also frequent the area.

Of the 124 native animals that are listed as potentially occurring, six are considered to be endangered/vulnerable or in need of special protection under State and/or Federal law. In addition, six DBCA priority species are also listed as potential species. These particular species are discussed in further detail in the following sections of the report.

5.2 SITE SURVEYS

5.2.1 Fauna Habitat Assessment


Descriptions of the broadly defined fauna habitats based primarily on vegetation units and landforms identified during the field reconnaissance survey are provided in Table 1. The extent of vegetation within the subject site is evident in the various figures.

The subject site is largely comprised of a jarrah and marri open woodland over a *banksia* low woodland. Peppermint replaces *banksia* as the dominant midstorey species in the north west section of the subject site. Ground cover and low shrubs vary in density from area to area being very sparse at some locations and dense in others.

Hollow bearing trees make up about 25% of the trees present (based on the habitat tree survey). Fallen hollow bearing logs are uncommon.

Example images of the fauna habitats present are shown below.

Table 1: Main Fauna Habitats within the Subject site

Unit	Fauna Habitat Description	Example Images
1	<p>Open woodland of <i>Eucalyptus marginata</i> and <i>Corymbia calophylla</i> over a low woodland dominated <i>Banksia attenuata</i> and/or <i>Agonis flexuosa</i> over an open shrubland or heath on dune crest and slope with grey to light grey/white sands (grading to yellow at depth).</p>	 <p>The 'Example Images' column contains three photographs. The top image shows a large, mature tree with a thick trunk and dense canopy in a woodland setting. The middle image shows a low woodland with sandy ground and sparse vegetation. The bottom image shows a dense woodland with many trees and a sandy ground surface.</p>

With respect to fauna habitat values, the majority of the vegetation appears to be in good to very good condition and would therefore have the capacity to support a wide range of the predicted fauna species. Some units appear to have been subject to some historical and ongoing disturbance (e.g. livestock grazing, firewood collecting, logging and/or clearing and as a consequence contain vegetation of a lower quality relative to other areas.

5.2.2 Black Cockatoo Habitat Assessment

5.2.2.1 Black Cockatoo Habitat Tree Assessment

Trees considered potentially suitable for black cockatoos to use as nesting habitat (subject to a suitable hollow being present and other factors) which were found within the subject site are comprised of the following species:

- Jarrah - *Eucalyptus marginata*;
- Marri – *Corymbia calophylla*; and
- Dead unidentifiable species (most likely jarrah).

It should be noted that the likelihood of any one particular tree species developing hollows suitable for black cockatoos to use for breeding varies considerably. For example, available data suggests that jarrah (*Eucalyptus marginata*) rarely produces hollows large enough for black cockatoos. Kirkby (2009) reports that from a database of 109 confirmed black cockatoo nest trees throughout the jarrah forest only six were located in jarrah trees.

A summary of the potential black cockatoo breeding trees (using DotEE criteria i.e. any suitable tree species with a DBH \geq 50cm (Commonwealth of Australia 2012)) observed within the subject site is provided in Table 2 and their location shown in Figure 4.

Table 2: Summary of potential cockatoo breeding habitat trees (DBH \geq 50cm)

Total Number of Habitat Trees	Number of Trees with <u>No Hollows Observed</u>	Number of Trees with Hollows Considered <u>Unsuitable</u> for Nesting Black Cockatoos	Number of Trees with Hollows Considered <u>Possibly Suitable</u> for Nesting Black Cockatoos	Tree Species		
				Jarrah	Marri	Dead Unknown
200	144	48	8	144	38	18

The assessment identified a total of 200 trees with a DBH of \geq 50cms within the subject site. One hundred and forty-four of the trees (~72%) were not observed to contain hollows of any size. Forty-eight trees (~24%) contained one or more possible hollows considered by the Author not to be suitable for black cockatoos to use for nesting purposes.

Eight trees (~4.0%) appeared to contain hollows with larger entrances (greater than ~10cm) that appeared big enough to possibly allow the entry of a black cockatoo into a

suitably sized and orientated branch/trunk, though none showed any sign of current or previous use by cockatoos for this purpose.

Additional details on each habitat tree observed can be found in Appendix D.

There are substantial areas of similar habitat in vegetation bordering the subject site and it can be reasonably expected that these also contain numerous “habitat trees” many of which are likely to provide breeding opportunities for black cockatoos.


5.2.2.2 Black Cockatoo Foraging Habitat Assessment

Following is a list of the main flora species recorded within the subject site during the fauna assessment that are known to be used as a direct food source (i.e. seeds or flowers) by one or more species of black cockatoo:

- Jarrah - *Eucalyptus marginata*;
- Marri - *Corymbia calophylla*; and
- Banksia - *Banksia attenuata*.

Evidence of black cockatoos foraging was observed during the field survey in the form of chewed marri fruits, jarrah fruits and banksias cones. This evidence was attributed to one or more of the three black cockatoo species depending on the plant species involved and the characteristics of the foraging activity (i.e. bite marks). Representative examples of the foraging activity observed are shown in Table 3.

Table 3: Foraging Evidence Examples

Foraging Evidence Description	Example Image
<p>Marri Fruits – foraging activity attributed to the forest red-tailed black-cockatoo.</p>	

Foraging Evidence Description	Example Image
<p>Marri Fruits – foraging activity attributed to the Baudin’s black cockatoo.</p>	
<p>Jarrah Fruits – foraging activity attributed to the forest red-tailed black-cockatoo (or possibly Carnaby’s black cockatoo.)</p>	
<p>Banksia Cones – foraging activity attributed to Carnaby’s black-cockatoo (or possibly Baudin’s black cockatoo.)</p>	

Almost all the remnant vegetation present (~18.9 ha) can be regarded as quality foraging habitat for black cockatoos given the presence of jarrah, marri and/or banksia in all areas.

There are substantial areas of similar habitat in vegetation bordering the subject site and it can be reasonably expected that these areas also contain vegetation that represents foraging habitat suitable for black cockatoos.

5.2.2.3 Black Cockatoo Roosting Habitat Assessment

No evidence of black cockatoo roosting within trees located within the subject site was observed during the field reconnaissance survey.

There are substantial areas of similar habitat in vegetation bordering the subject site and it can be reasonably expected that these areas contain many roosting options for black cockatoos.

5.2.3 Western Ringtail Possum Assessment

The subject site does contain some areas of what superficially looks like suitable habitat for the species (i.e. woodland with significant concentrations of peppermint trees) however no evidence of western ringtail possums utilising the subject site was found during the day or night surveys i.e. no dreys, no scats and no individuals. This would suggest that they were either absent from the area surveyed or present in very low densities.

WRPs have been listed as a potential species as a precautionary measure, but they may in fact not use the site, except on rare occasions. Previous surveys carried out by the Author in this general area (i.e. east of Forrest Highway) have also failed to find individuals of the species, though it is very likely to occur at some locations, in particular along the Wellesley/Brunswick Rivers further to the south and eastwards of the subject site.

5.2.4 Camera Traps

The complete results of the camera trapping carried out are provided within Appendix F. In total, six fauna species (native and introduced) were recorded. The most commonly recorded native species recorded was the western grey kangaroo and the common brushtail possum.

Feral species recorded included the red fox and rabbits.

5.2.5 Acoustic Bat Recordings

Five bat species were recorded during the acoustic survey, these being:

- Gould's Wattled Bat *Chalinolobus gouldii*;
- Western Long-eared Bat *Nyctophilus major major*;
- Lesser Long-eared Bat *Nyctophilus geoffroyi*; and
- South Western Freetail Bat *Ozimops kitcheneri*.

All of the bats recorded are common widespread species.

5.2.6 Other Fauna Species of Conservation Significance

No evidence of any fauna species of conservation significance utilising the subject site was found during the various site surveys.

The habitat assessment and other observations made during the field reconnaissance survey does however suggest that some fauna species of conservation significance are likely to persist in the general area. Subject to suitable habitat being present (i.e. quality and extent) it is considered possible that some are also likely to reside or at least frequent the subject site at times. The total size of the subject site is however relatively small and therefore any fauna species actually present are only likely to be represented by a small number of individuals at any one time. A summary of those species considered likely to be present is provided in Table 5 within Section 7 and in Appendix B.

5.2.7 Opportunistic Fauna Observations

Opportunistic fauna observations are listed in Appendix B. Including those species recorded on camera traps, bat detecting and during the nocturnal survey, a total of 31 native fauna species were observed (or positively identified from foraging evidence, scats, tracks, skeletons or calls) within the subject site during the survey period. Three introduced species (red fox, rabbit and laughing kookaburrah) were also recorded.

Most of the fauna species recorded were common, widespread bird species.

5.3 FAUNA INVENTORY – SUMMARY

Table 4 summarises the number of fauna species potentially occurring within or utilising at times, the subject site, based on results from the literature review and observations made during the field assessment. A complete list of fauna possibly inhabiting or frequenting the subject site is located in Appendix B.

As previously indicated, not all species listed as potentially occurring within the wider area in existing databases and publications (i.e. *EPBC Act* Threatened Fauna and Migratory species lists, DBCA's NatureMap database, various reports and publications) are shown in the expected listing in Appendix B. Some species have been excluded from this list based largely on the lack of suitable habitat at the subject site (e.g. marine and wetland species) and in the general area, or known local extinction even if suitable habitat is present.

Table 4: Summary of Potential Fauna Species (as listed in Appendix B)

Group	Total number of <u>Potential</u> species	Potential number of <u>Specially Protected</u> species	Potential number of <u>Migratory</u> species	Potential number of <u>Priority</u> species	Number of species <u>Observed:</u> Field Survey 2019
Amphibians	3	0	0	0	0
Reptiles	28	0	0	2	2
Birds	77 ¹	4	0	1	24 ¹
Non-Volant Mammals	14 ⁶	2	0	2	4 ²
Volant Mammals (Bats)	9	0	0	1	4
Total	131⁷	6	0	6	34³

Superscript = number of introduced species included in total.

As previously indicated, not all species listed as potentially occurring within the wider area in existing databases and publications (i.e. *EPBC Act* Threatened Fauna and Migratory species lists, DBCA's NatureMap database, various reports and publications) are shown in the expected listing in Appendix B. Some species have been excluded from this list based largely on the lack of suitable habitat at the subject site (e.g. marine and wetland species) and in the general area, or known local extinction even if suitable habitat is present.

Despite the omission of some species it should be noted that the list provided is still very likely an over estimation of the fauna species utilising the site (either on a regular or infrequent basis) as a result of the precautionary approach adopted for the assessment. At any one time, only a subset of the listed potential species are likely to be present within the bounds of the subject site.

The following vertebrate fauna species of conservation significance were positively identified as utilising the subject site for some purpose during the survey period:

- Baudin's Black-Cockatoo *Calyptorhynchus baudinii* – S2 (*BC Act*), Endangered (*EPBC Act*)
Known to occur. Not seen during the survey period but some foraging evidence attributed to this species found within the subject site (chewed marri fruits and *banksia* cones). The subject site contains potential breeding habitat (trees with a DBH ≥ 50 cm) though no actual nest hollows identified. The majority of the

subject site contains potential foraging habitat for this species. No evidence of roosting observed.

- Carnaby's Black-Cockatoo *Calyptorhynchus latirostris* – S2 (BC Act), Endangered (EPBC Act)
Known to occur. Not seen during the survey period but some foraging evidence attributed to this species found within the subject site (chewed marri/jarrah fruits and *banksia* cones). The subject site contains potential breeding habitat (trees with a DBH >50cm) though no actual nest hollows identified. The majority of the subject site contains potential foraging habitat for this species. No evidence of roosting observed.
- Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso* – S3 (BC Act), Vulnerable (EPBC Act)
Known to occur. Seen during the survey period and some foraging evidence attributed to this species observed (chewed marri and jarrah fruits). The subject site contains a large amount of potential breeding habitat (trees with a DBH \geq 50cm) though no actual nest hollows identified. The majority of the subject site contains potential foraging habitat for this species. No evidence of roosting observed.

Based on the habitats present and current documented distributions it is considered possible that several additional species of conservation significance may use the subject site for some purpose at times, though, as no evidence of any was found at the time of the field survey, the status of some in the area remains uncertain.

These species are:

- Coastal Plains Skink *Ctenotus ora* – P3 (DBCA Priority Species)
Status of this species within the subject site is difficult to determine without a detailed survey, however, given the location within its documented range, some recent nearby records and the presence of habitat that appears suitable it must be assumed to be present. Listed as a potential species based on available information.
- Perth Lined Skink *Lerista lineata* - P3 (DBCA Priority Species)
Status of this species within the subject site is difficult to determine without a detailed survey, however, given the location within its documented range, some recent nearby records and the presence of habitat that appears suitable it must be assumed to be present. Listed as a potential species based on available information.
- Peregrine Falcon *Falco peregrinus* – S7 (BC Act)
This species potentially utilises some sections of the subject site as part of a much larger home range though it is only likely to occur infrequently. Also has the potential to breed in the area though no evidence of nesting seen. Listed as a potential species based on available information.

- Masked Owl *Tyto novaehollandae* – P3 (DBCA Priority Species)
Status in the general area is difficult to determine. May utilise woodland areas within and near the subject site for roosting and may forage in more open areas. Probably only present rarely if at all. Listed as a potential species based on available information.
- Quenda *Isoodon fusciventer* – P4 (DBCA Priority Species)
Habitat is generally marginal for this species given the sparse nature of groundcover but it may occur in some areas where the densest vegetation occurs. Listed as a potential species based on available information.
- South-western Brush-tailed Phascogale *Phascogale tapoatafa wambenger* – S6 (BC Act)
Status of this species within the subject site is difficult to determine without a detailed survey, however, given the location within its documented range, some recent nearby records and the presence of habitat that appears suitable it must be assumed to be present. Listed as a potential species based on available information.
- Western Ringtail Possum *Pseudocheirus occidentalis* – Critically Endangered (BC Act), Critically Endangered (EPBC Act)
Not recorded during the survey period despite targeted day and night surveys. Known to occur in the general area though it appears to be more commonly encountered west of Forrest Highway. Listed as a potential species based on available information.
- Western Brush Wallaby *Macropus irma*. - P4 (DBCA Priority Species)
Known to occur in the Kemerton area and given the presence of suitable habitat it must be assumed to be present, though probably only occasionally and in low numbers. Listed as a potential species based on available information.
- Western False Pipistrelle *Falsistrellus mackenziei* – P4 (DBCA Priority Species)
Not recorded during the survey period despite targeted bat survey but previously recorded in the general area in recent times. Given the presence of suitable habitat it must be assumed to be present, though probably only occasionally and in low numbers. Listed as a potential species based on available information.

As listed in Table 5 (Section 6), a number of other species of conservation significance, while possibly present in the wider area are not considered as potential species due to known localised extinction (and no subsequent recruitment from adjoining areas), lack of suitable habitat and/or the presence of feral predators.

6. LIKELIHOOD OF OCCURRENCE AND POTENTIAL IMPACTS

Fauna of conservation significance identified during the literature review as previously being recorded in the general area are listed in Table 5. Each has been assessed and ranked for their likelihood of occurrence within the subject site itself based on information obtained during the fauna assessment.

The potential direct and indirect impact on fauna that may occur as a consequence of clearing and then ongoing use of the area will be dependent on each fauna species' habits, population density and the quantity and quality of potential habitat that will be affected.

In general, the most significant potential impacts to fauna of any development include:

- Loss of vegetation/fauna habitat that may be used for foraging, breeding, roosting, or dispersal (includes loss of hollow bearing trees);
- Fragmentation of vegetation/fauna habitat which may restrict the movement of some fauna species;
- Modifications to surface hydrology, siltation of creek lines;
- Changes to fire regimes;
- Pollution (e.g. oil spills);
- Noise/Light/Dust;
- Spread of plant pathogens (e.g. dieback) and weeds;
- Potential increase in the number of predatory introduced species (e.g. cats, foxes);
- Death or injury of fauna during clearing and construction; and
- An increase in fauna road kills subsequent to development.

In this instance impacts are most likely to be related to the loss of habitat and the potential for some species to be killed or injured during clearing. Based on the anticipated extent of clearing and the habitats present, likely impacts on species of conservation significance previously recorded in the general area has been assessed, a summary of which is provided in Table 5.

Table 5: Likelihood of Occurrence and Possible Impacts – Fauna Species of Conservation Significance (continues on following pages).

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Possible Impacts
	WC Act/ DBCA Priority	EPBC Act				
Carter's Freshwater Mussel <i>Westralunio carteri</i>	S3	-	Occurs in greatest abundance in slower flowing streams with stable sediments that are soft enough for burrowing amongst woody debris and exposed tree roots.	No	Would Not Occur.	No impact.
Black-stripe Minnow <i>Galaxiella nigrostriata</i>	S2	-	Permanent or ephemeral pools, roadside ditches and small creeks in sandy, thickly vegetated wetland areas. Water is usually darkly tannin stained and acidic (pH 4.6 – 6.5)	No	Would Not Occur.	No impact.
Perth Lined Lerista <i>Lerista lineata</i>	P3	-	This small species of skink inhabits white sands under areas of shrubs and heath where it inhabits loose soil and leaf litter particularly in association with banksias.	Yes	Possibly Occurs but only rarely.	Loss/modification of an area of habitat.
Coastal Plains Skink <i>Ctenotus ora</i>	P3	-	Sandy substrates with low vegetation (including heath) in open <i>Eucalyptus/Corymbia</i> woodland over <i>Banksia</i> .	Yes	Possibly Occurs but only rarely.	Loss/modification of an area of habitat.
Malleefowl <i>Leipoa ocellata</i>	S3	VU	Mainly scrubs and thickets of mallee <i>Eucalyptus</i> spp., boree <i>Melaleuca lanceolata</i> and bowgada <i>Acacia linophylla</i> , also dense litter forming shrublands	No	Would Not Occur	No impact.
Blue-billed Duck <i>Oxyura australis</i>	P4	-	Well vegetated freshwater swamps, large dams and lakes, winters on more open water. Occasionally salt lakes and estuaries freshened by floodwaters.	No	Would Not Occur.	No impact.
Glossy Ibis <i>Plegadis falcinellus</i>	S5	Mig	Well vegetated wetlands, wet pastures, rice fields, floodwaters, floodplains, brackish or occasionally saline wetlands, mangroves, mudflats, occasionally dry grasslands.	No	Would Not Occur.	No impact.
Painted Snipe <i>Rostratula benghalensis</i>	S2	EN, Mig	Well vegetated shallows and margins of wetlands, dams, sewerage ponds, wet pastures, marshy areas, irrigation systems, lignum, tea tree scrub, open timber. Requires dense low cover.	No	Would Not Occur	No impact.
Hooded Plover <i>Charadrius rubricollis</i>	P4	-	Broad sandy ocean beaches and bays, coastal and inland salt lakes	No	Would Not Occur	No impact.

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Possible Impacts
	WC Act/ DBCA Priority	EPBC Act				
Migratory Shorebirds/Wetland Species/Marine Species (various reptiles, birds and mammals)	S5, Various	Ma, Mig, Various	Varies between species but includes open ocean, beaches and permanent/temporary wetlands varying from billabongs, swamps, lakes, floodplains, sewerage farms, saltwork ponds, estuaries, lagoons, mudflats sandbars, pastures, airfields, sports fields and lawns.	No	Would Not Occur.	No impact.
Eastern Osprey <i>Pandion haliaetus</i>	S5	Ma, Mig	Coasts, estuaries, bays, inlets, islands, and surrounding waters, coral atolls, reefs, lagoons, rock cliffs and stacks. Ascends larger rivers.	No	Would Not Occur.	No impact.
Peregrine Falcon <i>Falco peregrinus</i>	S7	-	Diverse from rainforest to arid shrublands, from coastal heath to alpine Mainly about cliffs along coasts, rivers and ranges and about wooded watercourses and lakes.	Yes	Possibly Occurs but only rarely.	Loss/modification of an area of habitat.
Masked Owl (SW population) <i>Tyto n. novaehollandiae</i>	P3	-	Roosts and nests in heavy forest, hunts over open woodlands and farmlands.	Yes/Marginal	Possibly Occurs but only rarely.	Loss/modification of an area of habitat.
Australasian Bittern <i>Botaurus poiciloptilus</i>	S1	EN	Freshwater wetlands, occasionally estuarine; prefers heavy vegetation such as beds of tall dense <i>Typha</i> , <i>Baumea</i> and sedges in freshwater swamps.	No	Would Not Occur.	No impact.
Black Bittern <i>Ixobrychus flavicollis</i>	P1	-	Freshwater pools, swamps and lagoons, well screened with trees. Shelters in dense waterside vegetation.	No	Would Not Occur.	No impact.
Little Bittern <i>Ixobrychus minutus</i>	P4	-	Dense vegetation surrounding/within freshwater pools, swamps and lagoons, well screened with trees. Shelters in dense beds of <i>Typha</i> , <i>Baumea</i> and tall rushes in freshwater swamps around lakes and along rivers.	No	Would Not Occur.	No impact.
Carnaby's Black Cockatoo <i>Calyptorhynchus latirostris</i>	S2	EN	Forests, woodlands, heathlands, farms; feeds on <i>Banksia</i> , <i>Hakea</i> and Marri.	Yes	Known to Occur.	Loss/modification of an area of habitat.
Baudin's Black Cockatoo <i>Calyptorhynchus baudinii</i>	S2	EN	Mainly eucalypt forests where it feeds primarily on the marri seeds.	Yes	Known to Occur	Loss/modification of an area of habitat.

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Possible Impacts
	WC Act/ DBCA Priority	EPBC Act				
Forest Red-tailed Black Cockatoo <i>Calyptrorhynchus banksii naso</i>	S3	VU	Eucalypt forests, feeds on marri, jarrah, blackbutt, karri, sheoak and snottygobble.	Yes	Known to Occur	Loss/modification of an area of habitat.
Fork-tailed Swift <i>Apus pacificus</i>	S5	Ma, Mig	Low to very high airspace over varied habitat from rainforest to semi desert.	Yes	Unlikely to Occur, Flyover only on very rare occasions.	No impact.
Grey Wagtail <i>Motacilla cinerea</i>	S5	Mig, Ma	In Australia, near running water in disused quarries, sandy, rocky streams in escarpments and rainforest, sewerage ponds, ploughed fields and airfields.	No	Would Not Occur.	No impact.
Chuditch <i>Dasyurus geoffroi</i>	S3	VU	Forest, mallee shrublands, woodland and desert. The densest populations have been found in riparian jarrah forest.	Yes	Unlikely to Occur – Locally extinct.	No impact anticipated.
South-western Brush-tailed Phascogale <i>Phascogale tapoatafa wambenger</i>	S6	-	Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover.	Yes	Possibly Occurs.	Loss/modification of an area of habitat. Death/injury of individuals during clearing.
Quenda <i>Isoodon fusciventer</i>	P4	-	Dense scrubby, often swampy, vegetation with dense cover.	Yes	Possibly Occurs.	Loss/modification of an area of habitat. Death/injury of individuals during clearing.
Western Ringtail Possum <i>Pseudocheirus occidentalis</i>	S1	CE	Coastal peppermint, coastal peppermint-tuart, jarrah-marri associations, sheoak woodland, and eucalypt woodland and mallee.	Yes	Possibly Occurs.	Loss/modification of an area of habitat. Death/injury of individuals during clearing.
Western Brush Wallaby <i>Macropus irma</i>	P4	-	Open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets.	Yes	Possibly Occurs.	Loss/modification of an area of habitat.
Western False Pipistrelle <i>Falsistrellus mackenziei</i>	P4	-	Wet sclerophyll forest dominated by karri and in high rainfall zones of the jarrah and marri forest.	Yes	Possibly Occurs.	Loss/modification of an area of habitat. Death/injury of individuals during clearing.
Water Rat <i>Hydromys chrysogaster</i>	P4	-	Permanent water, fresh, brackish or marine.	No	Would Not Occur.	No impact.

See Appendix A for conservation status codes

7. CONCLUSION

The fauna assessment within the subject site was undertaken for the purposes of delineating and characterising the fauna habitats and faunal assemblages present and to identify potential impacts of the proposed works. Targeted black cockatoo and western ringtail possum assessments were also carried out.

The subject site was found to contain 200 potential “black cockatoo breeding habitat trees” (DBH \geq 50cm). Eight trees appeared to contain hollows with larger entrances (greater than ~10cm) that were possibly big enough to allow the entry of a black cockatoo into a suitably sized and orientated branch/trunk, though none showed any sign of current or previous use by cockatoos for this purpose.

Almost all the remnant vegetation present (~18.9 ha) can be regarded as quality foraging habitat for black cockatoos given the presence of jarrah, marri and/or banksia in all areas. No existing roosting trees (trees used at night by black cockatoos to rest) were positively identified during the survey.

The subject site does contain what superficially looks like suitable habitat for western ringtail possums (i.e. peppermint trees) however no evidence of the species utilising the subject site was found during the day or night surveys (i.e. no dreys, scats or individuals). This would suggest that they were either absent from the area surveyed or present in very low densities. WRPs have therefore been listed as a potential species as a precautionary measure, but they may in fact not use the site except on rare occasions.

With respect to native vertebrate fauna, 17 mammal (including nine bat species), 76 bird, 28 reptile and three frog species have previously been recorded in the wider area, some of which have the potential to occur in or utilise sections of the subject site at times. Seven species of introduced animals could also frequent the area.

Of the 124 native animals that are listed as occurring or potentially occurring in the area, six are considered to be endangered/vulnerable or in need of special protection under State and/or Federal law (i.e. Carnaby’s black cockatoo, Baudin’s black cockatoo, forest red-tailed black cockatoo, peregrine falcon, south-western brush-tailed phascogale and western ringtail possum). In addition, six DBCA priority species (i.e. coastal plains skink, Perth lined lerista, masked owl, quenda, western brush wallaby and western false pipistrelle) may also be present or frequent the area at times.

The potential impacts on fauna species of conservation significance and/or their habitat will need to be taken into consideration during ongoing planning and construction phases of the proposed project.

If approval for the project is obtained it is recommended that a fauna relocation program be implemented prior to and during clearing works to ensure direct impact on fauna (e.g. common brushtail possum) most likely to be encountered, are minimised.

The results of this assessment should be provided to the relevant regulatory authorities for their consideration during the clearing permit assessment process.

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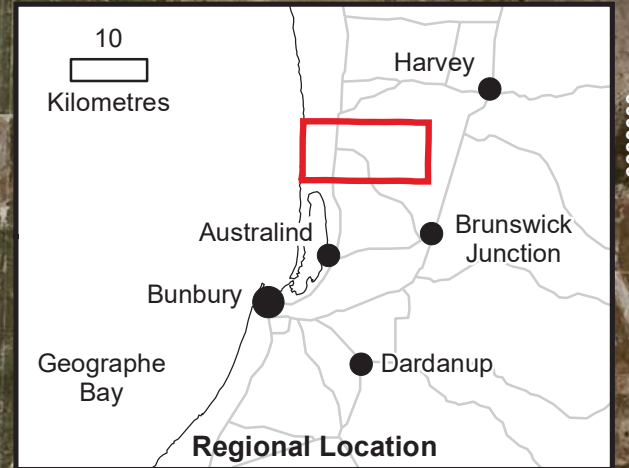
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FIGURES



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

 Subject Site (CPS 8479/1)

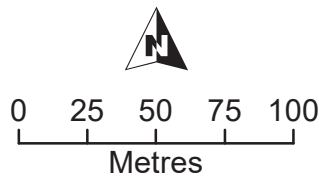

Fauna Assessment
 Drawn: G Harewood
 Date: Janl 2020
 Scale: 1:50,000
 Projection/Coordinate System: UTM/MGA Zone 50

**Lot 4 Runnymede Road
 Wellesley**
**Subject Site
 &
 Surrounds**



Legend

 Subject Site (CPS 8479/1)




Fauna Survey
 Drawn: G Harewood
 Date: Jan 2020
 Scale: 1:2,750

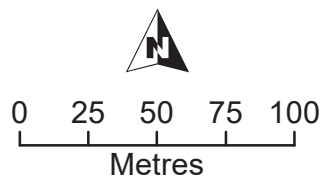

Lot 4 Runnymede Road
Wellesley

**Subject Site
Air Photo**



Legend

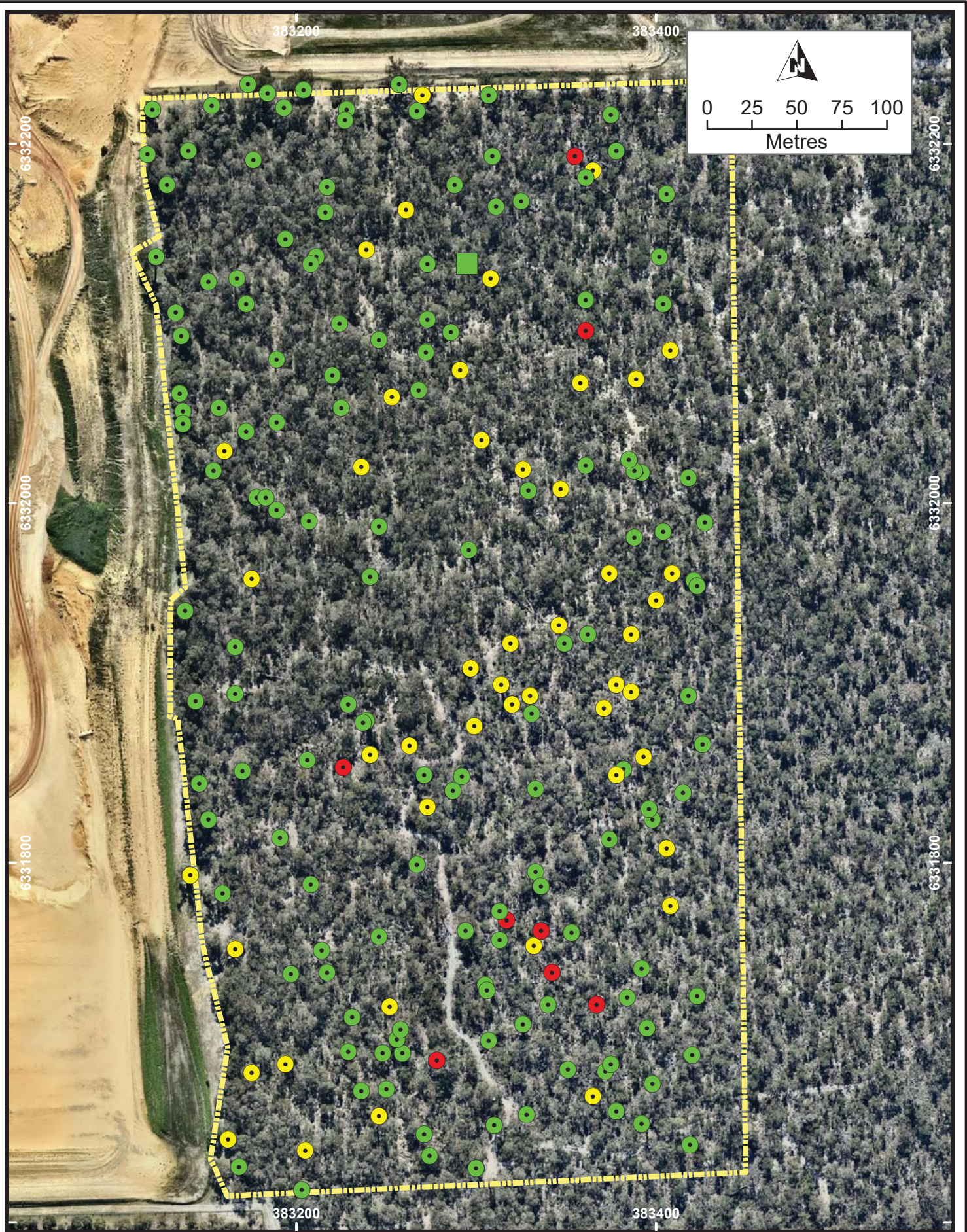
-  Subject Site (CPS 8479/1)
-  Bat Recording
-  Camera Trap

Fauna Survey
 Drawn: G Harewood
 Date: Jan 2020
 Scale: 1:2,750
 Projection/Coordinate System: UTM/MGA Zone 50




Lot 4 Runnymede Road
Wellesley

Recording Locations



Legend

 Subject Site (CPS 8479/1)

-  Habitat Tree - One or more large hollows possibly suitable for black cockatoos
-  Habitat Tree - One or more possible small/medium hollows
-  Habitat Tree - No hollows seen



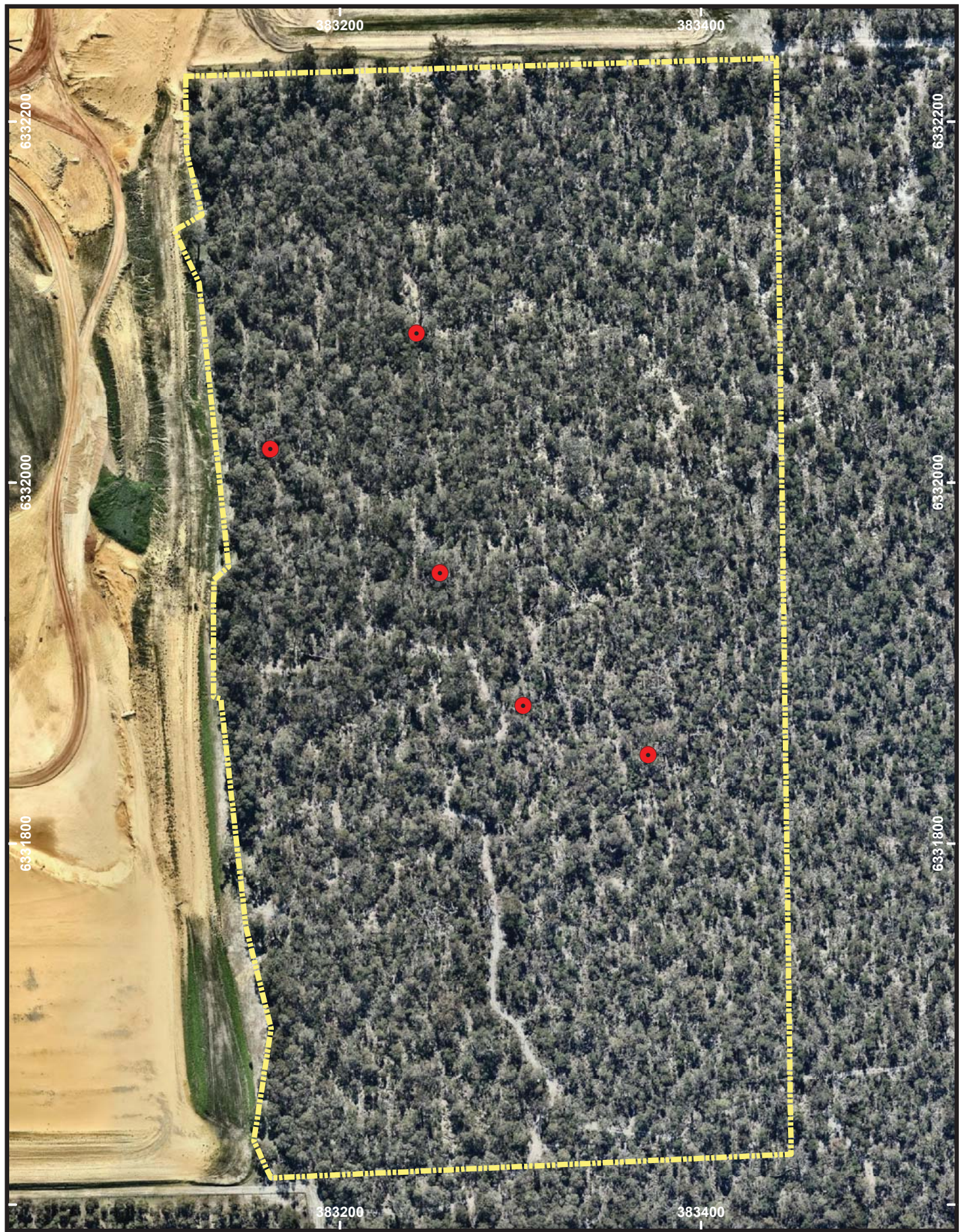
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Lot 4 Runnymede Road
 Wellesley



**Habitat Trees
 (DBH >50cm)**

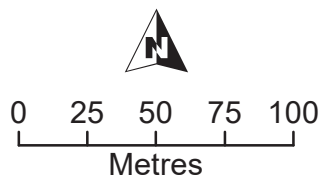

Projection/Coordinate System: UTM/MGA Zone 50

Figure: 4



Legend

-  Subject Site (CPS 8479/1)
-  Common Brushtail Possum

Fauna Survey
 Drawn: G Harewood
 Date: Jan 2020
 Scale: 1:2,750

Lot 4 Runnymede Road
 Wellesley

**Possum
 Observations**

APPENDIX A

CONSERVATION CATEGORIES

EPBC Act (1999) Threatened Fauna Categories

Threatened fauna may be listed under Section 178 of the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* in any one of the following categories:

Category	Code	Description
Extinct	E	There is no reasonable doubt that the last member of the species has died.
*Extinct in the wild	EW	A species (a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or (b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
*Critically Endangered	CE	A species is facing an extremely high risk of extinction in the wild in the immediate future.
*Endangered	EN	A species: (a) is not critically endangered; and (b) is facing a very high risk of extinction in the wild in the near future.
*Vulnerable	VU	A species (a) is not critically endangered or endangered; and (b) is facing a high risk of extinction in the wild in the medium-term future.
Conservation Dependent	CD	A species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered
*Migratory	Migratory	(a) all migratory species that are: (i) native species; and (ii) from time to time included in the appendices to the Bonn Convention; and (b) all migratory species from time to time included in annexes established under JAMBA, CAMBA and ROKAMBA; and (c) all native species from time to time identified in a list established under, or an instrument made under, an international agreement approved by the Minister.
Marine	Ma	Species in the list established under s248 of the <i>EPBC Act</i>

Note: Only species in those categories marked with an asterisk are matters of national environmental significance (NES) under the *EPBC Act*.

Wildlife Conservation (Specially Protected Fauna) Notice 2018 Categories

Published as Specially Protected under the *Wildlife Conservation Act 1950*, and listed under Schedules 1 to 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

Category	Code	Description
Schedule 1 (S1) Critically Endangered species	CR	Threatened species considered to be facing an extremely high risk of extinction in the wild in the immediate future.
Schedule 2 (S2) Endangered species	EN	Threatened species considered to be facing a very high risk of extinction in the wild in the near future.
Schedule 3 (S3) Vulnerable species	VU	Threatened species considered to be facing a high risk of extinction in the wild in the medium-term future.
Schedule 4 (S4) Presumed extinct species	EX	Species which have been adequately searched for and there is no reasonable doubt that the last member of the species has died.
Schedule 5 (S5) Migratory birds protected under an international agreement	MI	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds.
Schedule 6 (S6) Fauna that is of special conservation need as conservation dependent fauna	CD	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened.
Schedule 7 (S7) Other specially protected fauna.	OS	Fauna otherwise in need of special protection to ensure their conservation.

Western Australian DBCA Priority Fauna Categories

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened flora or fauna.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

Category	Code	Description
Priority 1 (P1) Poorly Known Species.	P1	Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority 2 (P2) Poorly Known Species.	P2	Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
Priority 3 (P3) Poorly Known Species.	P3	Species that are known from several locations and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority 4 (P4) Rare, Near Threatened and other species in need of monitoring.	P4	<p>(a) Rare: Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p>(b) Near Threatened: Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.</p> <p>(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>

*Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

IUCN Red List Threatened Species Categories

The *IUCN Red List of Threatened Species™* is a checklist of taxa that have undergone an extinction risk assessment using the *IUCN Red List Categories and Criteria*.

Categories are summarized below.

Category	Code	Description
Extinct	EX	Taxa for which there is no reasonable doubt that the last individual has died.
Extinct in the Wild	EW	Taxa which is known only to survive in cultivation, in captivity or and as a naturalised population well outside its past range and it has not been recorded in known or expected habitat despite exhaustive survey over a time frame appropriate to its life cycle and form.
Critically Endangered	CR	Taxa facing an extremely high risk of extinction in the wild.
Endangered	EN	Taxa facing a very high risk of extinction in the wild.
Vulnerable	VU	Taxa facing a high risk of extinction in the wild.
Near Threatened	NT	Taxa which has been evaluated but does not qualify for CR, EN or VU now but is close to qualifying or likely to qualify in the near future.
Least Concern	LC	Taxa which has been evaluated but does not qualify for CR, EN, VU, or NT but is likely to qualify for NT in the near future.
Data Deficient	DD	Taxa for which there is inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status.
Not Evaluated	NE	Taxa which has not been evaluated.

A full list of categories and their meanings are available at:

<http://www.iucnredlist.org/technical-documents/categories-and-criteria/2001-categories-criteria>

APPENDIX B

CAMERA TRAP AND BAT RECORDING DETAILS

Bat Recording Details

ID	Zone	mE	mN	Start Date	End Date
Bat 1	50H	383195	6331790	26-10-2019	27-10-2019

Camera Trap Details

ID	Zone	mE	mN	Start Date	End Date
GH 09	50H	383421	6331586	30-09-2019	26-10-2019
GH 14	50H	383247	6331653	30-09-2019	26-10-2019
GH 21	50H	383380	6332216	30-09-2019	26-10-2019
GH 22	50H	383382	6331797	30-09-2019	26-10-2019
GH 23	50H	383212	6331801	30-09-2019	26-10-2019
GH 24	50H	383296	6332129	30-09-2019	26-10-2019
GH 25	50H	383175	6332005	30-09-2019	26-10-2019
GH 26	50H	383160	6332177	30-09-2019	26-10-2019
GH 29	50H	383284	6331688	30-09-2019	26-10-2019
GH 31	50H	383318	6331895	30-09-2019	26-10-2019
GH 46	50H	383419	6332010	30-09-2019	26-10-2019

APPENDIX C

FAUNA OBSERVED OR POTENTIALLY IN SUBJECT SITE

Observed and Potential Fauna Listing

Compiled by Greg Harewood - Jan 2020

Lot 4 (part) Runnymede Road, Wellesley

Recorded (Captured/Recorded/Sighted/Heard/Signs) = X
Approximate centroid = 33.145078° and 115.748659°

A = Harewood, G. (2020). Fauna Assessment Lot 4 Runnymede Road (CPS 8479/1) Wellesley. Unpublished report for B J Catalano Pty Ltd.

B = GHD (2017). Biological Assessment - Additional Area Assessment - Kemerton Strategic Industrial Area. Unpublished letter report for Albemarle Lithium Pty Ltd

C = Harewood, G. (2015). Fauna Survey (Level 2) Dampier to Bunbury Natural Gas Pipeline Corridor. Bristol Road to Clifton Road. Unpublished report for Aurora Environmental.

D = GHD (2015). Waterloo Urban and Industrial Expansion. Flora and Fauna Survey. Unpublished report for Shire of Dardanup.

E = Harewood, G. (2010). Kemerton Industrial Core - Fauna Survey. Unpublished report for Landcorp.

F = 360 Environmental Pty Ltd (2008). Southern Seawater Desalination Project 2007, Terrestrial Flora and Fauna Survey Report. Unpublished report for the Water Corporation.

G = Bamford Consulting Ecologists (2008). Fauna Assessment of the Proposes South Binningup Development. Unpublished report for RPS Consulting/Mirvac.

H = Western Wildlife (2009). Lot 76 Binningup Rd, Binningup: Fauna Survey 2008. Unpublished report for Niche Consulting.

I = ATA Environmental (2005). Lot 1001 Mardo Avenue, Australind, Environmental Assessment. Unpublished report for Marist Brothers.

J = DBCA (2020). NatureMap Database search. "By Circle" Centre - 115° 44' 55" E, 33° 08' 42" S; Accessed 03/01/2020.

Class Family Species	Common Name	Conservation Status	A	B	C	D	E	F	G	H	I	J
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Amphibia

Myobatrachidae

Ground or Burrowing Frogs

<i>Heleioporus eyrei</i>	Moaning Frog	LC			X	X	X	X	X	X	X	X
<i>Limnodynastes dorsalis</i>	Western Banjo Frog	LC			X	X	X	X	X	X	X	X
<i>Pseudophryne guentheri</i>	Crawling Toadlet	LC			X							X

Reptilia

Diplodactylidae

Geckoes

<i>Strophurus spinigerus</i>	Soft Spiny-tailed Gecko	LC						X				
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Class Family Species	Common Name	Conservation Status	A	B	C	D	E	F	G	H	I	J
Gekkonidae												
Geckoes												
<i>Christinus marmoratus</i>	Marbled Gecko	LC			X		X	X	X	X	X	X
Pygopodidae												
Legless Lizards												
<i>Aprasia repens</i>	Sandplain Worm Lizard	LC										
<i>Lialis burtonis</i>	Burton's Legless Lizard	LC			X		X	X	X	X		X
<i>Pygopus lepidopodus</i>	Common Scaly Foot	LC										
Agamidae												
Dragon Lizards												
<i>Pogona minor</i>	Western Bearded Dragon	LC			X		X	X	X	X		X
Varanidae												
Monitor's or Goanna's												
<i>Varanus gouldii</i>	Sand Monitor	LC			X		X	X				X
<i>Varanus rosenbergi</i>	Heath Monitor	LC	X		X		X					X

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Scincidae												
Skins												
<i>Acritoscincus trilineatum</i>	Southwestern Cool Skink	LC			X		X			X		
<i>Cryptoblepharus buchananii</i>	Buchanan's Snake-eyed Skink	LC	X	X	X		X			X	X	X
<i>Ctenotus australis</i>	Western Ctenotus	LC							X	X		
<i>Ctenotus fallens</i>	West Coast Ctenotus	LC						X				
<i>Ctenotus impar</i>	Odd-striped Ctenotus	LC			X		X				X	X
<i>Ctenotus ora</i>	Coastal Plains Skink	P3			X		X					X
<i>Egernia kingii</i>	King's Skink	LC				X		X				
<i>Egernia napoleonis</i>	Salmon-bellied Skink	LC			X	X	X					X
<i>Hemiergis quadrilineata</i>	Two-toed Mulch Skink	LC		X	X		X	X	X	X	X	X
<i>Lerista elegans</i>	West Coast Four-toed Lerista	LC			X		X	X	X	X	X	X
<i>Lerista lineata</i>	Perth Lined Lerista	P3					X	X	X	X		X
<i>Menetia greyii</i>	Dwarf Skink	LC		X	X	X	X	X	X	X		X
<i>Morethia lineocellata</i>	West Coast Pale-flecked Morethia	LC			X	X	X	X	X	X	X	X
<i>Tiliqua rugosa</i>	Bobtail	LC		X	X		X	X	X	X	X	X
Typhlopidae												
Blind Snakes												
<i>Anilius australis</i>	Southern Blind Snake	LC					X	X		X	X	

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Elapidae												
Elapid Snakes												
<i>Neelaps bimaculatus</i>	Black-naped Snake	LC					X	X		X		X
<i>Notechis scutatus</i>	Tiger Snake	LC			X		X	X				X
<i>Parasuta gouldii</i>	Gould's Hooded Snake	LC					X			X		X
<i>Pseudonaja affinis</i>	Dugite	LC			X	X	X	X				X
<i>Simoselaps bertholdi</i>	Jan's Banded Snake	LC			X			X		X	X	X
Aves												
Casuariidae												
Emus, Cassowaries												
<i>Dromaius novaehollandiae</i>	Emu	Bp LC			X		X					X
Phasianidae												
Quails, Pheasants												
<i>Coturnix pectoralis</i>	Stubble Quail	LC										X

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Accipitridae												
Kites, Goshawks, Eagles, Harriers												
<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk	Bp LC									X	X
<i>Accipiter fasciatus</i>	Brown Goshawk	Bp LC				X	X	X				X
<i>Aquila audax</i>	Wedge-tailed Eagle	Bp LC	X		X		X	X				X
<i>Aquila morphnoides</i>	Little Eagle	Bp LC							X	X		
<i>Elanus caeruleus</i>	Black-shouldered Kite	LC				X	X		X			
<i>Haliastur sphenurus</i>	Whistling Kite	Bp LC			X		X					X
<i>Hamirostra isura</i>	Square-tailed Kite	Bp LC		X			X		X	X	X	X
Falconidae												
Falcons												
<i>Falco berigora</i>	Brown Falcon	Bp LC				X			X			X
<i>Falco cenchroides</i>	Australian Kestrel	LC	X		X	X	X	X	X		X	X
<i>Falco longipennis</i>	Australian Hobby	LC										X
<i>Falco peregrinus</i>	Peregrine Falcon	S7 Bp LC				X		X				X
Turnicidae												
Button-quails												
<i>Turnix varia</i>	Painted Button-quail	Bp LC	X		X			X		X		

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Columbidae												
Pigeons, Doves												
<i>Ocyphaps lophotes</i>	Crested Pigeon	LC		X	X	X	X		X	X		X
<i>Phaps chalcoptera</i>	Common Bronzewing	Bh LC		X	X	X	X	X	X	X	X	X
Psittacidae												
Parrots												
<i>Cacatua roseicapilla</i>	Galah	LC		X	X	X	X	X	X	X	X	X
<i>Cacatua sanguinea</i>	Little Corella	LC				X	X			X		X
<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black-Cockatoo	S3 VU Be LC	X	X	X	X	X			X		X
<i>Calyptorhynchus baudinii</i>	Baudin's Black-Cockatoo	S2 EN Bp EN A3cde	X				X					X
<i>Calyptorhynchus latirostris</i>	Carnaby's Black-Cockatoo	S2 EN Bp EN A2bcde	X		X		X	X	X			X
<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet	LC							X	X	X	
<i>Neophema elegans</i>	Elegant Parrot	LC			X	X	X	X				X
<i>Platycercus icterotis icterotis</i>	Western Rosella (western ssp)	Bp LC										X
<i>Platycercus spurius</i>	Red-capped Parrot	LC	X	X	X	X	X		X	X	X	X
<i>Platycercus zonarius</i>	Australian Ringneck	LC	X	X	X	X	X	X	X	X	X	X
<i>Polytelis anthopeplus</i>	Regent Parrot	LC			X	X	X		X		X	X

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Cuculidae												
Parasitic Cuckoos												
<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo	LC								X		X
<i>Chrysococcyx basalis</i>	Horsfield's Bronze Cuckoo	LC		X								
<i>Chrysococcyx lucidus</i>	Shining Bronze Cuckoo	LC	X		X		X	X		X		X
<i>Cuculus pallidus</i>	Pallid Cuckoo	LC				X						
Strigidae												
Hawk Owls												
<i>Ninox novaeseelandiae</i>	Boobook Owl	LC			X	X	X	X	X	X	X	
Tytonidae												
Barn Owls												
<i>Tyto alba</i>	Barn Owl	LC										
<i>Tyto n. novaehollandiae</i>	Masked Owl (SW pop)	P3 Bp										
Podargidae												
Frogmouths												
<i>Podargus strigoides</i>	Tawny Frogmouth	LC					X			X		X
Aegothelidae												
Owlet-nightjars												
<i>Aegotheles cristatus</i>	Australian Owlet-nightjar	LC										X

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Halcyonidae												
Tree Kingfishers												
<i>Dacelo novaeguineae</i>	Laughing Kookaburra	Introduced	X	X	X	X	X		X	X	X	X
<i>Todiramphus sanctus</i>	Sacred Kingfisher	LC			X	X	X			X		X
Meropidae												
Bee-eaters												
<i>Merops ornatus</i>	Rainbow Bee-eater	JA LC		X	X		X	X		X		X
Maluridae												
Fairy Wrens, GrassWrens												
<i>Malurus splendens</i>	Splendid Fairy-wren	Bh LC		X	X	X	X	X	X	X		X
Acanthizidae												
Thornbills, Geryones, Fieldwrens & Whitefaces												
<i>Acanthiza apicalis</i>	Broad-tailed Thornbill	Bh LC	X	X	X		X	X	X	X	X	X
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	Bh LC	X		X	X	X			X		X
<i>Acanthiza inornata</i>	Western Thornbill	Bh LC	X									X
<i>Gerygone fusca</i>	Western Gerygone	LC	X	X	X	X	X	X	X	X	X	X
<i>Sericornis maculatus</i>	Spotted Scrubwren	Bh LC		X	X		X	X	X	X		
<i>Smicrornis brevirostris</i>	Weebill	Bh LC	X	X	X	X	X	X	X	X		X

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Pardalotidae												
Pardalotes												
<i>Pardalotus punctatus</i>	Spotted Pardalote	LC			X	X						X
<i>Pardalotus striatus</i>	Striated Pardalote	LC	X	X	X	X	X	X	X	X	X	X
Meliphagidae												
Honeyeaters, Chats												
<i>Acanthorhynchus superciliosus</i>	Western Spinebill	LC		X	X	X	X				X	X
<i>Anthochaera carunculata</i>	Red Wattlebird	LC	X	X	X	X	X	X	X	X	X	X
<i>Anthochaera lunulata</i>	Western Little Wattlebird	Bp LC		X						X	X	
<i>Lichenostomus virescens</i>	Singing Honeyeater	LC		X		X		X		X		
<i>Lichmera indistincta</i>	Brown Honeyeater	LC		X	X	X	X	X		X	X	X
<i>Phylidonyris nigra</i>	White-cheeked Honeyeater	Bp LC									X	
<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater	Bp LC		X		X	X	X	X		X	X
Petroicidae												
Australian Robins												
<i>Eopsaltria australis</i>	Western Yellow Robin	Bh LC					X					
<i>Petroica multicolor</i>	Scarlet Robin	Bh LC	X	X	X		X					
Neosittidae												
Sittellas												
<i>Daphoenositta chrysoptera</i>	Varied Sittella	Bh LC										X

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Pachycephalidae												
Crested Shrike-tit, Crested Bellbird, Shrike Thrushes, Whistlers												
<i>Colluricincla harmonica</i>	Grey Shrike-thrush	Bh LC			X	X	X	X		X		X
<i>Pachycephala occidentalis</i>	Western Whistler	Bh LC	X	X	X		X	X	X	X		
<i>Pachycephala rufiventris</i>	Rufous Whistler	LC	X	X	X	X				X	X	X
Dicruridae												
Monarchs, Magpie Lark, Flycatchers, Fantails, Drongo												
<i>Grallina cyanoleuca</i>	Magpie-lark	LC			X	X	X		X	X	X	X
<i>Rhipidura fuliginosa</i>	Grey Fantail	LC	X	X	X	X	X	X	X	X	X	
<i>Rhipidura leucophrys</i>	Willie Wagtail	LC		X	X	X	X	X	X	X		X
Campephagidae												
Cuckoo-shrikes, Trillers												
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	LC		X	X	X	X	X	X	X	X	X
Artamidae												
Woodswallows, Butcherbirds, Currawongs												
<i>Artamus cinereus</i>	Black-faced Woodswallow	Bp LC		X		X	X					X
<i>Artamus cyanopterus</i>	Dusky Woodswallow	Bp LC			X	X						X

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Cracticidae												
Currawongs, Magpies & Butcherbirds												
<i>Cracticus tibicen</i>	Australian Magpie	LC	X	X	X	X	X		X	X		X
<i>Cracticus torquatus</i>	Grey Butcherbird	LC		X	X	X	X	X	X	X	X	X
<i>Strepera versicolor</i>	Grey Currawong	Bp LC				X	X					X
Corvidae												
Ravens, Crows												
<i>Corvus coronoides</i>	Australian Raven	LC	X	X	X	X	X	X	X	X	X	X
Motacillidae												
Old World Pipits, Wagtails												
<i>Anthus australis</i>	Australian Pipit	LC				X	X					X
Hirundinidae												
Swallows, Martins												
<i>Hirundo neoxena</i>	Welcome Swallow	LC		X	X	X	X			X	X	X
<i>Hirundo nigricans</i>	Tree Martin	LC		X	X		X		X	X	X	
Sylviidae												
Old World Warblers												
<i>Cincloramphus cruralis</i>	Brown Songlark	LC										
<i>Cincloramphus mathewsi</i>	Rufous Songlark	LC			X	X						

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Zosteropidae White-eyes												
<i>Zosterops lateralis</i>	Silvereye	LC	X	X	X	X	X	X	X	X	X	X
Mammalia												
Tachyglossidae Echidnas												
<i>Tachyglossus aculeatus</i>	Echidna	LC										
Dasyuridae Carnivorous Marsupials												
<i>Phascogale tapoatafa wambenger</i>	South-western Brush-tailed Phascogale	S6 NT			X		X					X
Peramelidae Bandicoots												
<i>Isodon fusciventer</i>	Quenda	P4 LC			X		X					X
Phalangeridae Brush-tail Possums, Cuscuses												
<i>Trichosurus vulpecula</i>	Common Brushtail Possum	LC	X	X	X	X	X	X	X	X	X	X
Burramyidae Pygmy Possums												
<i>Cercartetus concinnus</i>	Western Pygmy-possum	LC					X					X
Pseudocheiridae Ringtail Possums												
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum	S1 CE CR A2bce+3bce+4bc				X	X	X				X

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Macropodidae												
Kangaroos, Wallabies												
<i>Macropus fuliginosus</i>	Western Grey Kangaroo	LC	X	X	X	X	X	X	X	X	X	X
<i>Macropus irma</i>	Western Brush Wallaby	P4 LC			X		X					
Molossidae												
Freetail Bats												
<i>Austronomus australis</i>	White-striped Free-tailed Bat	LC			X		X	X	X			
<i>Ozimops kitcheneri</i>	Western Free-tailed Bat	LC	X		X		X	X	X			
Vespertilionidae												
Ordinary Bats												
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat	LC	X		X		X	X			X	X
<i>Chalinolobus morio</i>	Chocolate Wattled Bat	LC			X		X					
<i>Falsistrellus mackenziei</i>	Western False Pipistrelle	P4 NT			X		X					X
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat	LC	X		X		X					X
<i>Nyctophilus gouldi</i>	Gould's Long-eared Bat	LC			X							
<i>Nyctophilus major major</i>	Western Long-eared Bat	LC	X		X		X				X	
<i>Vespadelus regulus</i>	Southern Forest Bat	LC			X		X		X		X	X

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Muridae Rats, Mice												
<i>Mus musculus</i>	House Mouse	Introduced			X			X	X	X	X	X
<i>Rattus rattus</i>	Black Rat	Introduced			X							X
Canidae Dogs, Foxes												
<i>Vulpes vulpes</i>	Red Fox	Introduced	X	X	X	X	X	X	X	X	X	X
Felidae Cats												
<i>Felis catus</i>	Cat	Introduced			X	X	X		X	X	X	X
Suidae Pigs												
<i>Sus scrofa</i>	Pig	Introduced		X	X		X					X
Leporidae Rabbits, Hares												
<i>Oryctolagus cuniculus</i>	Rabbit	Introduced	X	X	X	X	X	X	X	X	X	X

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APPENDIX D

DBCA NATUREMAP & PROTECTED MATTERS SEARCH TOOL RESULTS

NatureMap - Lot 4 Runnymede Rd Wellesley

Created By Greg Harewood on 03/01/2020

Kingdom Animalia
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 44' 55" E, 33° 08' 42" S
Buffer 10km
Group By Species Group

Species Group	Species	Records
Amphibian	9	192
Bird	155	3520
Fish	5	80
Invertebrate	43	93
Mammal	24	543
Reptile	27	617
TOTAL	263	5045

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Amphibian				
1.	25398 <i>Crinia georgiana</i> (Quacking Frog)			
2.	25399 <i>Crinia glauerti</i> (Clicking Frog)			
3.	25400 <i>Crinia insignifera</i> (Squelching Froglet)			
4.	25404 <i>Geocrinia leai</i> (Ticking Frog)			
5.	25410 <i>Heleioporus eyrei</i> (Moaning Frog)			
6.	25415 <i>Limnodynastes dorsalis</i> (Western Banjo Frog)			
7.	25378 <i>Litoria adelaidensis</i> (Slender Tree Frog)			
8.	25388 <i>Litoria moorei</i> (Motorbike Frog)			
9.	25433 <i>Pseudophryne guentheri</i> (Crawling Toadlet)			
Bird				
10.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
11.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
12.	24262 <i>Acanthiza inornata</i> (Western Thornbill)			
13.	24560 <i>Acanthorhynchus superciliosus</i> (Western Spinebill)			
14.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
15.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
16.	25755 <i>Acrocephalus australis</i> (Australian Reed Warbler)			
17.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
18.	25544 <i>Aegotheles cristatus</i> (Australian Owllet-nightjar)			
19.	24310 <i>Anas castanea</i> (Chestnut Teal)			
20.	24312 <i>Anas gracilis</i> (Grey Teal)			
21.	24315 <i>Anas rhynchotis</i> (Australasian Shoveler)			
22.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
23.	47414 <i>Anhinga novaehollandiae</i> (Australasian Darter)			
24.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
25.	25670 <i>Anthus australis</i> (Australian Pipit)			
26.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
27.	25558 <i>Ardea ibis</i> (Cattle Egret)			
28.	41324 <i>Ardea modesta</i> (great egret, white egret)			
29.	24340 <i>Ardea novaehollandiae</i> (White-faced Heron)			
30.	24341 <i>Ardea pacifica</i> (White-necked Heron)			
31.	25736 <i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
32.	25566 <i>Artamus cinereus</i> (Black-faced Woodswallow)			
33.	24353 <i>Artamus cyanopterus</i> (Dusky Woodswallow)			
34.	24318 <i>Aythya australis</i> (Hardhead)			
35.	<i>Barnardius zonarius</i>			
36.	24319 <i>Biziura lobata</i> (Musk Duck)			
37.	24345 <i>Botaurus poiciloptilus</i> (Australasian Bittern)		T	
38.	24721 <i>Cacatua galerita subsp. galerita</i> (Sulphur-crested Cockatoo)	Y		
39.	25715 <i>Cacatua roseicapilla</i> (Galah)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
40.	25716 <i>Cacatua sanguinea</i> (Little Corella)			
41.	25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo)			
42.	42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo)			
43.	24779 <i>Calidris acuminata</i> (Sharp-tailed Sandpiper)		IA	
44.	24784 <i>Calidris ferruginea</i> (Curlew Sandpiper)		T	
45.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
46.	24790 <i>Calidris tenuirostris</i> (Great Knot)		T	
47.	25717 <i>Calyptorhynchus banksii</i> (Red-tailed Black-Cockatoo)			
48.	24731 <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> (Forest Red-tailed Black Cockatoo)		T	
49.	24733 <i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo)		T	
50.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		T	
51.	48400 <i>Calyptorhynchus</i> sp. (white-tailed black cockatoo)		T	
52.	25575 <i>Charadrius leschenaultii</i> (Greater Sand Plover)		T	
53.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			
54.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
55.	<i>Chroicocephalus novaehollandiae</i>			
56.	25601 <i>Chrysococcyx lucidus</i> (Shining Bronze Cuckoo)			
57.	24288 <i>Circus approximans</i> (Swamp Harrier)			
58.	24774 <i>Cladorhynchus leucocephalus</i> (Banded Stilt)			
59.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
60.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
61.	25592 <i>Corvus coronoides</i> (Australian Raven)			
62.	24671 <i>Coturnix pectoralis</i> (Stubble Quail)			
63.	25701 <i>Coturnix ypsilophora</i> (Brown Quail)			
64.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
65.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
66.	24322 <i>Cygnus atratus</i> (Black Swan)			
67.	30901 <i>Dacelo novaeguineae</i> (Laughing Kookaburra)	Y		
68.	25673 <i>Daphoenositta chrysoptera</i> (Varied Sittella)			
69.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
70.	<i>Egretta garzetta</i>			
71.	<i>Egretta novaehollandiae</i>			
72.	<i>Elanus axillaris</i>			
73.	47937 <i>Elseya melanops</i> (Black-fronted Dotterel)			
74.	<i>Eolophus roseicapillus</i>			
75.	24567 <i>Epthianura albiglans</i> (White-fronted Chat)			
76.	24379 <i>Erythronyx cinctus</i> (Red-kneed Dotterel)			
77.	25746 <i>Eudyptula minor</i> (Little Penguin)			
78.	24818 <i>Eudyptula minor</i> subsp. <i>novaehollandiae</i> (Little Penguin)			
79.	25621 <i>Falco berigora</i> (Brown Falcon)			
80.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
81.	25623 <i>Falco longipennis</i> (Australian Hobby)			
82.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
83.	25727 <i>Fulica atra</i> (Eurasian Coot)			
84.	24761 <i>Fulica atra</i> subsp. <i>australis</i> (Eurasian Coot)			
85.	25729 <i>Gallinula tenebrosa</i> (Dusky Moorhen)			
86.	24763 <i>Gallinula tenebrosa</i> subsp. <i>tenebrosa</i> (Dusky Moorhen)			
87.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			
88.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
89.	24481 <i>Glareola maldivarum</i> (Oriental Pratincole)		IA	
90.	24443 <i>Gallina cyanoleuca</i> (Magpie-lark)			
91.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			
92.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)			
93.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			
94.	24296 <i>Hamirostra isura</i> (Square-tailed Kite)			
95.	47965 <i>Hieraaetus morphnoides</i> (Little Eagle)			
96.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
97.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
98.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
99.	47975 <i>Ixobrychus dubius</i> (Australian Little Bittern)		P4	
100.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
101.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
102.	24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck)			
103.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
104.	25758 <i>Megalurus gramineus</i> (Little Grassbird)			
105.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
106.	<i>Microcarbo melanoleucos</i>			
107.	25610 <i>Myiagra inquieta</i> (Restless Flycatcher)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
108.	24738 <i>Neophema elegans</i> (Elegant Parrot)			
109.	24798 <i>Numenius madagascariensis</i> (Eastern Curlew)		T	
110.	25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron)			
111.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
112.	24328 <i>Oxyura australis</i> (Blue-billed Duck)		P4	
113.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
114.	24693 <i>Pachyptila desolata</i> (Antarctic Prion)			
115.	48591 <i>Pandion cristatus</i> (Osprey, Eastern Osprey)		IA	
116.	25681 <i>Pardalotus punctatus</i> (Spotted Pardalote)			
117.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
118.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
119.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
120.	48066 <i>Petroica boodang</i> (Scarlet Robin)			
121.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
122.	25698 <i>Phalacrocorax melanoleucos</i> (Little Pied Cormorant)			
123.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
124.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
125.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
126.	24596 <i>Phylidonyris novaehollandiae</i> (New Holland Honeyeater)			
127.	24841 <i>Platalea flavipes</i> (Yellow-billed Spoonbill)			
128.	25720 <i>Platycercus icterotis</i> (Western Rosella)			
129.	24747 <i>Platycercus spurius</i> (Red-capped Parrot)			
130.	25721 <i>Platycercus zonarius</i> (Australian Ringneck, Ring-necked Parrot)			
131.	24843 <i>Plegadis falcinellus</i> (Glossy Ibis)		IA	
132.	24382 <i>Pluvialis fulva</i> (Pacific Golden Plover)		IA	
133.	24383 <i>Pluvialis squatarola</i> (Grey Plover)		IA	
134.	25703 <i>Podargus strigoides</i> (Tawny Frogmouth)			
135.	24681 <i>Poliiocephalus poliocephalus</i> (Hoary-headed Grebe)			
136.	25722 <i>Polytelis anthopeplus</i> (Regent Parrot)			
137.	25731 <i>Porphyrio porphyrio</i> (Purple Swamphen)			
138.	24767 <i>Porphyrio porphyrio</i> subsp. <i>bellus</i> (Purple Swamphen)			
139.	24769 <i>Porzana fluminea</i> (Australian Spotted Crane)			
140.	25732 <i>Porzana pusilla</i> (Baillon's Crane)			
141.	24771 <i>Porzana tabuensis</i> (Spotless Crane)			
142.	<i>Purpureicephalus spurius</i>			
143.	24776 <i>Recurvirostra novaehollandiae</i> (Red-necked Avocet)			
144.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
145.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
146.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
147.	30948 <i>Smicronis brevirostris</i> (Weebill)			
148.	24329 <i>Stictonetta naevosa</i> (Freckled Duck)			
149.	25597 <i>Strepera versicolor</i> (Grey Currawong)			
150.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
151.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
152.	24682 <i>Tachybaptus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
153.	24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck)			
154.	48597 <i>Thalasseus bergii</i> (Crested Tern)		IA	
155.	48135 <i>Thinornis rubricollis</i> (Hooded Plover, Hooded Dotterel)		P4	
156.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
157.	25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher)			
158.	48141 <i>Tribonyx ventralis</i> (Black-tailed Native-hen)			
159.	24803 <i>Tringa brevipes</i> (Grey-tailed Tattler)		P4	
160.	24806 <i>Tringa glareola</i> (Wood Sandpiper)		IA	
161.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
162.	48147 <i>Turnix varius</i> (Painted Button-quail)			
163.	24386 <i>Vanellus tricolor</i> (Banded Lapwing)			
164.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silveryeye)			
Fish				
165.	34031 <i>Carcharodon carcharias</i> (Great White Shark)		T	
166.	<i>Edelia vittata</i>			
167.	34027 <i>Galaxiella nigrostriata</i> (Black-stripe Minnow, black-striped dwarf galaxias)		T	
168.	<i>Gambusia affinis</i>			
169.	<i>Pseudogobius olorum</i>			
Invertebrate				
170.	<i>Aname mainae</i>			
171.	<i>Aname tepperi</i>			
172.	<i>Argiope protensa</i>			
173.	<i>Baetidae</i> sp.			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
174.	<i>Caenidae sp.</i>			
175.	<i>Calamoecia clitellata</i>			
176.	<i>Ceratopogonidae sp.</i>			
177.	<i>Chironominae sp.</i>			
178.	<i>Coenagrionidae sp.</i>			
179.	<i>Corixidae sp.</i>			
180.	<i>Dytiscidae sp.</i>			
181.	<i>Ecnomidae sp.</i>			
182.	<i>Ephydriidae sp.</i>			
183.	<i>Erpobdellidae sp.</i>			
184.	<i>Gyrinidae sp.</i>			
185.	<i>Hemicorduliidae sp.</i>			
186.	<i>Hydrophilidae sp.</i>			
187.	<i>Hydropsychidae sp.</i>			
188.	<i>Laetesia mollita</i>			
189.	<i>Leptoceridae sp.</i>			
190.	<i>Leptophlebiidae sp.</i>			
191.	<i>Libellulidae sp.</i>			
192.	<i>Maratus pavonis</i>			
193.	<i>Mesoveliidae sp.</i>			
194.	<i>Missulena granulosa</i>			
195.	<i>Notonectidae sp.</i>			
196.	<i>Nunciella aspera</i>			
197.	<i>Oligochaeta sp.</i>			
198.	<i>Oniscidae sp.</i>			
199.	<i>Orthoclaadiinae sp.</i>			
200.	<i>Palaemonidae sp.</i>			
201.	<i>Pentastemon intermedium</i>			
202.	<i>Perthiidae sp.</i>			
203.	<i>Physidae sp.</i>			
204.	<i>Raveniella arenacea</i>			
205.	<i>Raveniella peckorum</i>			
206.	<i>Scirtidae sp.</i>			
207.	<i>Scolopendra laeta</i>			
208.	<i>Simuliidae sp.</i>			
209.	<i>Sphaeriidae sp.</i>			
210.	<i>Tanypodinae sp.</i>			
211.	<i>Veliidae sp.</i>			
212.	34113 <i>Westralunio carteri</i> (Carter's Freshwater Mussel)		T	
Mammal				
213.	24209 <i>Arctocephalus tropicalis</i> (Subantarctic fur-seal)		T	
214.	24086 <i>Cercartetus concinnus</i> (Western Pygmy-possum, Mundarda)			
215.	24186 <i>Chalinolobus gouldii</i> (Gould's Wattled Bat)			
216.	24092 <i>Dasyurus geoffroyi</i> (Chuditch, Western Quoll)		T	
217.	24043 <i>Eubalaena australis</i> (Southern Right Whale)		T	
218.	24189 <i>Falsistrellus mackenziei</i> (Western False Pipistrelle, Western Falsistrelle)		P4	
219.	24041 <i>Felis catus</i> (Cat)	Y		
220.	24215 <i>Hydromys chrysogaster</i> (Water-rat, Rakali)		P4	
221.	48588 <i>Isoodon fusciventer</i> (Quenda, southwestern brown bandicoot)		P4	
222.	24132 <i>Macropus fuliginosus</i> (Western Grey Kangaroo)			
223.	24051 <i>Megaptera novaeangliae</i> (Humpback Whale)		S	
224.	24213 <i>Mirounga leonina</i> (Southern Elephant Seal)			
225.	24223 <i>Mus musculus</i> (House Mouse)	Y		
226.	24210 <i>Neophoca cinerea</i> (Australian Sea-lion)		T	
227.	24194 <i>Nyctophilus geoffroyi</i> (Lesser Long-eared Bat)			
228.	24085 <i>Oryctolagus cuniculus</i> (Rabbit)	Y		
229.	48070 <i>Phascogale tapoatafa</i> subsp. <i>wambenger</i> (South-western Brush-tailed Phascogale, Wambenger)		S	
230.	24166 <i>Pseudocheirus occidentalis</i> (Western Ringtail Possum, ngwayir)		T	
231.	24245 <i>Rattus rattus</i> (Black Rat)	Y		
232.	24259 <i>Sus scrofa</i> (Pig)	Y		
233.	24158 <i>Trichosurus vulpecula</i> subsp. <i>vulpecula</i> (Common Brushtail Possum)			
234.	30954 <i>Tursiops aduncus</i> (Indo-Pacific Bottlenose Dolphin)			
235.	24206 <i>Vespadelus regulus</i> (Southern Forest Bat)			
236.	24040 <i>Vulpes vulpes</i> (Red Fox)	Y		
Reptile				
237.	42368 <i>Acritoscincus trilineatus</i> (Western Three-lined Skink)			
238.	25335 <i>Caretta caretta</i> (Loggerhead Turtle)		T	
239.	24980 <i>Christinus marmoratus</i> (Marbled Gecko)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
240.	30893 <i>Cryptoblepharus buchananii</i>			
241.	25047 <i>Ctenotus impar</i>			
242.	25049 <i>Ctenotus labillardieri</i>			
243.	41641 <i>Ctenotus ora</i> (Coastal Plains Skink)		P3	
244.	25100 <i>Egernia napoleonis</i>			
245.	25119 <i>Hemiergis quadrilineata</i>			
246.	25133 <i>Lerista elegans</i>			
247.	25147 <i>Lerista lineata</i> (Perth Slider, Lined Skink)		P3	
248.	25005 <i>Lialis burtonis</i>			
249.	25184 <i>Menetia greyii</i>			
250.	25240 <i>Morelia spilota</i> subsp. <i>imbricata</i> (Carpet Python)			
251.	25191 <i>Morethia lineocellata</i>			
252.	25248 <i>Neelaps bimaculatus</i> (Black-naped Snake)			
253.	25252 <i>Notechis scutatus</i> (Tiger Snake)			
254.	25253 <i>Parasuta gouldii</i>			
255.	25510 <i>Pogona minor</i> (Dwarf Bearded Dragon)			
256.	24907 <i>Pogona minor</i> subsp. <i>minor</i> (Dwarf Bearded Dragon)			
257.	25511 <i>Pseudonaja affinis</i> (Dugite)			
258.	25259 <i>Pseudonaja affinis</i> subsp. <i>affinis</i> (Dugite)			
259.	25266 <i>Simoselaps bertholdi</i> (Jan's Banded Snake)			
260.	25519 <i>Tiliqua rugosa</i>			
261.	25207 <i>Tiliqua rugosa</i> subsp. <i>rugosa</i>			
262.	25218 <i>Varanus gouldii</i> (Bungarra or Sand Monitor)			
263.	25225 <i>Varanus rosenbergi</i> (Heath Monitor)			

Conservation Codes

T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 02/01/20 17:58:14

[Summary](#)

[Details](#)

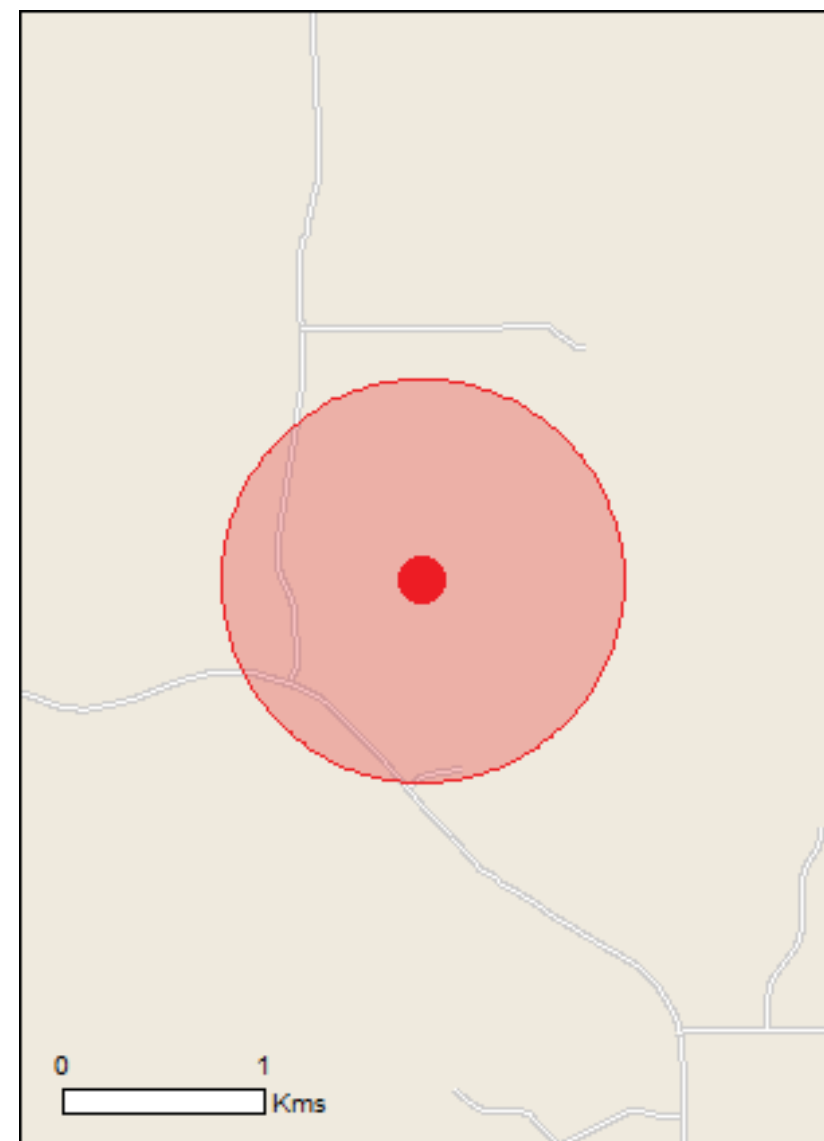
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

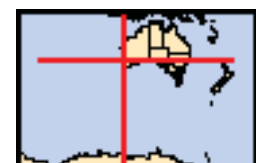
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Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	23
Listed Migratory Species:	10

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	16
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	23
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Peel-yalgorup system	Within 10km of Ramsar

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area
Calyptorhynchus baudinii Baudin's Cockatoo, Long-billed Black-Cockatoo [769]	Endangered	Breeding likely to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Breeding likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within

Name	Status	Type of Presence area
Fish		
Galaxiella nigrostriata Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat may occur within area
Mammals		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area
Plants		
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat likely to occur within area
Caladenia procera Carbunup King Spider Orchid [68679]	Critically Endangered	Species or species habitat may occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat may occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat likely to occur within area
Drakaea elastica Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat known to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat known to occur within area
Synaphea sp. Fairbridge Farm (D. Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat may occur within area
Synaphea sp. Serpentine (G.R. Brand 103) [86879]	Critically Endangered	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		

Name	Threatened	Type of Presence
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species

Name	Threatened	Type of Presence
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		habitat may occur within area Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
NTWA Bushland covenant (0095)	WA

Invasive Species	[Resource Information]
Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.	

Name	Status	Type of Presence
Birds		
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-33.14482 115.74874

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

APPENDIX E

HABITAT TREE DETAILS

Habitat Trees

DBH >50cm

Datum - GDA94

Entrance Size Ranges - Small = >5cm, Medium = 5 to 10cm, Large = >10cm

Waypoint Number	Zone	mE	mN	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Estimated Hollow Entrance Size Range (cm)	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt001	50H	383162	6331646	Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt002	50H	383168	6331631	Marri	15-20	>50	0					
wpt003	50H	383205	6331640	Jarrah	15-20	>50	1	Large	No Signs	No Signs	No	Appears too shallow
wpt004	50H	383203	6331618	Marri	10-15	>50	0					
wpt019	50H	383365	6331670	Dead Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt021	50H	383419	6331643	Jarrah	15-20	>50	0					
wpt022	50H	383392	6331655	Jarrah	10-15	>50	0					
wpt023	50H	383378	6331662	Jarrah	15-20	>50	0					
wpt024	50H	383398	6331677	Jarrah	15-20	>50	0					
wpt025	50H	383420	6331693	Jarrah	10-15	>50	0					
wpt026	50H	383395	6331708	Jarrah	10-15	>50	0					
wpt027	50H	383395	6331708	Jarrah	10-15	>50	0					
wpt028	50H	383423	6331726	Jarrah	10-15	>50	0					
wpt029	50H	383408	6331776	Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt030	50H	383406	6331808	Jarrah	15-20	>50	1	Large	No Signs	No Signs	No	Appears too shallow
wpt031	50H	383415	6331839	Jarrah	15-20	>50	0					
wpt032	50H	383426	6331866	Jarrah	15-20	>50	0					
wpt033	50H	383418	6331893	Jarrah	0-5	>50	0					
wpt034	50H	383400	6331946	Dead Jarrah	15-20	>50	1	Small	Bees	No Signs	No	
wpt035	50H	383409	6331961	Dead Jarrah	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt036	50H	383421	6331957	Jarrah	10-15	>50	0					
wpt037	50H	383423	6331954	Jarrah	15-20	>50	0					
wpt038	50H	383404	6331984	Jarrah	15-20	>50	0					
wpt039	50H	383388	6331981	Jarrah	15-20	>50	0					
wpt040	50H	383427	6331989	Dead Jarrah	5-10	>50	0					
wpt041	50H	383418	6332014	Jarrah	15-20	>50	0					
wpt042	50H	383392	6332017	Jarrah	10-15	>50	0					
wpt043	50H	383388	6332018	Jarrah	15-20	>50	0					
wpt044	50H	383385	6332024	Jarrah	15-20	>50	0					

Waypoint Number	Zone	mE	mN	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Estimated Hollow Entrance Size Range (cm)	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt045	50H	383389	6332069	Jarrah	10-15	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt046	50H	383408	6332085	Jarrah	10-15	>50	2+	Small	No Signs	No Signs	No	
wpt047	50H	383404	6332111	Jarrah	15-20	>50	0					
wpt048	50H	383402	6332137	Jarrah	10-15	>50	0					
wpt049	50H	383406	6332172	Dead Jarrah	15-20	>50	0					
wpt050	50H	383378	6332196	Jarrah	10-15	>50	0					
wpt051	50H	383375	6332216	Jarrah	15-20	>50	0					
wpt052	50H	383365	6332185	Jarrah	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt053	50H	383361	6332181	Dead Jarrah	15-20	>50	0					
wpt054	50H	383355	6332193	Dead Jarrah	15-20	>50	2+	Large (cockatoo)	No Signs	No Signs	Yes	Two side netry hollows - no signs
wpt055	50H	383309	6332193	Jarrah	15-20	>50	0					
wpt056	50H	383307	6332227	Jarrah	15-20	>50	0					
wpt057	50H	383270	6332227	Jarrah	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt058	50H	383267	6332218	Marri	15-20	>50	0					
wpt059	50H	383257	6332233	Jarrah	20+	>50	0					
wpt060	50H	383228	6332219	Jarrah	15-20	>50	0					
wpt061	50H	383227	6332213	Dead Unknown	10-15	>50	0					
wpt062	50H	383193	6332220	Marri	15-20	>50	0					
wpt063	50H	383204	6332230	Marri	15-20	>50	0					
wpt064	50H	383184	6332228	Marri	20+	>50	0					
wpt065	50H	383173	6332233	Dead Marri	15-20	>50	0					
wpt066	50H	383153	6332221	Marri	15-20	>50	0					
wpt067	50H	383120	6332219	Jarrah	15-20	>50	0					
wpt068	50H	383117	6332194	Marri	15-20	>50	0					
wpt069	50H	383140	6332196	Marri	15-20	>50	0					
wpt070	50H	383128	6332177	Marri	15-20	>50	0					
wpt071	50H	383122	6332137	Marri	20+	>50	0					
wpt072	50H	383151	6332123	Dead Jarrah	15-20	>50	0					
wpt073	50H	383167	6332125	Jarrah	15-20	>50	0					
wpt074	50H	383172	6332111	Dead Marri	15-20	>50	0					
wpt075	50H	383133	6332106	Marri	15-20	>50	0					
wpt076	50H	383136	6332093	Marri	15-20	>50	0					

Waypoint Number	Zone	mE	mN	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Estimated Hollow Entrance Size Range (cm)	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt077	50H	383135	6332061	Marri	15-20	>50	0					
wpt078	50H	383137	6332051	Marri	15-20	>50	0					
wpt079	50H	383137	6332044	Marri	15-20	>50	0					
wpt080	50H	383157	6332053	Jarrah	10-15	>50	0					
wpt081	50H	383172	6332040	Marri	15-20	>50	0					
wpt082	50H	383189	6332045	Jarrah	15-20	>50	0					
wpt083	50H	383160	6332029	Dead Jarrah	15-20	>50	1	Small	No Signs	No Signs	No	
wpt084	50H	383154	6332018	Dead Jarrah	15-20	>50	0					
wpt085	50H	383178	6332003	Jarrah	15-20	>50	0					
wpt086	50H	383183	6332003	Marri	15-20	>50	0					
wpt087	50H	383189	6331996	Jarrah	10-15	>50	0					
wpt088	50H	383207	6331990	Jarrah	10-15	>50	0					
wpt089	50H	383175	6331958	Dead Marri	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt090	50H	383138	6331940	Marri	15-20	>50	0					
wpt091	50H	383166	6331920	Jarrah	10-15	>50	0					
wpt092	50H	383166	6331894	Jarrah	15-20	>50	0					
wpt093	50H	383144	6331890	Marri	15-20	>50	0					
wpt094	50H	383170	6331851	Marri	15-20	>50	0					
wpt095	50H	383146	6331844	Marri	15-20	>50	0					
wpt096	50H	383151	6331824	Marri	15-20	>50	0					
wpt097	50H	383141	6331793	Jarrah	20+	>50	1	Small-Medium	No Signs	No Signs	No	
wpt098	50H	383159	6331783	Jarrah	10-15	>50	0					
wpt099	50H	383166	6331752	Jarrah	15-20	>50	1	Small	No Signs	No Signs	No	
wpt100	50H	383197	6331738	Dead Marri	0-5	>50	0					
wpt101	50H	383194	6331688	Jarrah	10-15	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt102	50H	383175	6331683	Jarrah	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt103	50H	383246	6331659	Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt104	50H	383271	6331649	Jarrah	15-20	>50	0					
wpt105	50H	383274	6331637	Jarrah	15-20	>50	0					
wpt106	50H	383300	6331630	Jarrah	10-15	>50	0					
wpt107	50H	383310	6331654	Jarrah	15-20	>50	0					
wpt108	50H	383278	6331690	Jarrah	15-20	>50	2+	Small-Large (cockatoo)	No Signs	No Signs	Yes	Spouts and side entry hollow - no signs

Waypoint Number	Zone	mE	mN	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Estimated Hollow Entrance Size Range (cm)	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt109	50H	383259	6331694	Jarrah	10-15	>50	0					
wpt110	50H	383256	6331702	Jarrah	10-15	>50	0					
wpt111	50H	383252	6331720	Jarrah	15-20	>50	1	Small-Medium	No Signs	No Signs	No	
wpt112	50H	383258	6331707	Jarrah	15-20	>50	0					
wpt113	50H	383246	6331759	Dead Jarrah	15-20	>50	0					
wpt114	50H	383267	6331799	Jarrah	20+	>50	0					
wpt115	50H	383241	6331860	Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt116	50H	383226	6331853	Dead Unknown	15-20	>50	2+	Small-Large (cockatoo)	No Signs	No Signs	Yes	Large spout - no signs
wpt117	50H	383239	6331879	Jarrah	15-20	>50	0					
wpt118	50H	383237	6331878	Jarrah	10-15	>50	0					
wpt119	50H	383263	6331865	Jarrah	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt120	50H	383229	6331888	Dead Jarrah	10-15	>50	0					
wpt121	50H	383206	6331857	Jarrah	15-20	>50	0					
wpt122	50H	383191	6331814	Jarrah	10-15	>50	0					
wpt123	50H	383208	6331788	Jarrah	15-20	>50	0					
wpt124	50H	383214	6331751	Jarrah	15-20	>50	0					
wpt125	50H	383217	6331739	Dead Unknown	15-20	>50	0					
wpt126	50H	383231	6331714	Dead Unknown	15-20	>50	0					
wpt127	50H	383229	6331695	Jarrah	15-20	>50	0					
wpt128	50H	383248	6331694	Jarrah	15-20	>50	0					
wpt129	50H	383250	6331674	Jarrah	15-20	>50	0					
wpt130	50H	383236	6331673	Jarrah	15-20	>50	0					
wpt131	50H	383372	6331684	Jarrah	10-15	>50	0					
wpt132	50H	383375	6331688	Jarrah	10-15	>50	0					
wpt133	50H	383367	6331721	Jarrah	20+	>50	2+	Small-Large (cockatoo)	No Signs	No Signs	Yes	
wpt134	50H	383342	6331739	Jarrah	10-15	>50	1	Large (cockatoo)	No Signs	No Signs	Yes	Possible large chimney - no signs
wpt135	50H	383340	6331721	Marri	10-15	>50	0					
wpt136	50H	383332	6331754	Dead Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt137	50H	383336	6331762	Jarrah	15-20	>50	2+	Small-Large (cockatoo)	No Signs	No Signs	Yes	
wpt138	50H	383313	6331757	Jarrah	10-15	>50	0					
wpt139	50H	383317	6331768	Jarrah	20+	>50	2+	Small-Large (cockatoo)	No Signs	No Signs	Yes	
wpt140	50H	383313	6331773	Jarrah	10-15	>50	0					

Waypoint Number	Zone	mE	mN	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Estimated Hollow Entrance Size Range (cm)	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt141	50H	383294	6331762	Jarrah	15-20	>50	0					
wpt142	50H	383305	6331732	Dead Jarrah	10-15	>50	0					
wpt143	50H	383306	6331729	Jarrah	15-20	>50	0					
wpt144	50H	383326	6331710	Jarrah	15-20	>50	0					
wpt145	50H	383351	6331685	Dead Jarrah	10-15	>50	0					
wpt146	50H	383328	6331660	Jarrah	10-15	>50	0					
wpt147	50H	383307	6331701	Dead Unknown	15-20	>50	0					
wpt148	50H	383333	6331795	Jarrah	15-20	>50	0					
wpt149	50H	383336	6331787	Marri	15-20	>50	0					
wpt150	50H	383353	6331761	Jarrah	10-15	>50	0					
wpt151	50H	383384	6331725	Jarrah	10-15	>50	0					
wpt152	50H	383392	6331741	Jarrah	10-15	>50	0					
wpt153	50H	383398	6331824	Dead Jarrah	10-15	>50	0					
wpt154	50H	383396	6331830	Jarrah	10-15	>50	0					
wpt155	50H	383382	6331852	Marri	15-20	>50	0					
wpt156	50H	383378	6331849	Dead Marri	20+	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt157	50H	383393	6331859	Dead Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt158	50H	383371	6331886	Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt159	50H	383378	6331899	Jarrah	10-15	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt160	50H	383386	6331895	Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt161	50H	383386	6331927	Jarrah	10-15	>50	2+	Small	No Signs	No Signs	No	
wpt162	50H	383374	6331961	Jarrah	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt163	50H	383329	6332007	Jarrah	10-15	>50	0					
wpt164	50H	383326	6332019	Jarrah	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt165	50H	383347	6332008	Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt166	50H	383361	6332021	Jarrah	10-15	>50	0					
wpt167	50H	383358	6332067	Dead Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt168	50H	383361	6332096	Dead Unknown	20+	>50	2+	Small-Large (cockatoo)	No Signs	No Signs	Yes	Possible large spout - no signs
wpt169	50H	383361	6332113	Dead Jarrah	10-15	>50	0					
wpt170	50H	383325	6332168	Dead Unknown	0-5	>50	0					
wpt171	50H	383311	6332165	Dead Jarrah	10-15	>50	0					
wpt172	50H	383288	6332177	Dead Unknown	0-5	>50	0					

Waypoint Number	Zone	mE	mN	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Estimated Hollow Entrance Size Range (cm)	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt173	50H	383261	6332163	Dead Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt174	50H	383217	6332176	Jarrah	15-20	>50	0					
wpt175	50H	383176	6332191	Jarrah	15-20	>50	0					
wpt176	50H	383194	6332147	Jarrah	10-15	>50	0					
wpt177	50H	383211	6332137	Jarrah	15-20	>50	0					
wpt178	50H	383208	6332133	Jarrah	15-20	>50	0					
wpt179	50H	383216	6332162	Jarrah	15-20	>50	0					
wpt180	50H	383239	6332141	Jarrah	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt181	50H	383246	6332091	Jarrah	15-20	>50	0					
wpt182	50H	383224	6332100	Dead Jarrah	10-15	>50	0					
wpt183	50H	383189	6332080	Dead Unknown	0-5	>50	0					
wpt184	50H	383220	6332071	Dead Unknown	0-5	>50	0					
wpt185	50H	383253	6332059	Jarrah	20+	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt186	50H	383268	6332063	Jarrah	15-20	>50	0					
wpt187	50H	383225	6332053	Dead Unknown	0-5	>50	0					
wpt188	50H	383236	6332020	Dead Unknown	20+	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt189	50H	383246	6331987	Jarrah	15-20	>50	0					
wpt190	50H	383241	6331959	Dead Unknown	15-20	>50	0					
wpt191	50H	383296	6331974	Dead Jarrah	20+	>50	0					
wpt192	50H	383303	6332035	Dead Unknown	20+	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt193	50H	383291	6332074	Dead Jarrah	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt194	50H	383286	6332095	Jarrah	15-20	>50	0					
wpt195	50H	383272	6332084	Dead Jarrah	10-15	>50	0					
wpt196	50H	383273	6332102	Jarrah	10-15	>50	0					
wpt197	50H	383273	6332133	Dead Unknown	0-5	>50	0	Small-Medium	No Signs	No Signs	No	
wpt198	50H	383295	6332133	Dead Jarrah	10-15	>50	2+					
wpt199	50H	383308	6332125	Jarrah	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt200	50H	383346	6331932	Marri	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt201	50H	383362	6331927	Marri	10-15	>50	0					
wpt202	50H	383349	6331922	Jarrah	15-20	>50	0					
wpt203	50H	383319	6331922	Dead Unknown	20+	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt204	50H	383297	6331908	Jarrah	20+	>50	2+	Small-Medium	No Signs	No Signs	No	

Waypoint Number	Zone	mE	mN	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Estimated Hollow Entrance Size Range (cm)	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt205	50H	383314	6331899	Marri	20+	>50	2+	Small-Large	Bees	No Signs	No	Possible large hollow has bees
wpt206	50H	383330	6331893	Marri	5-10	>50	1	Large	No Signs	No Signs	No	Too shallow
wpt207	50H	383331	6331883	Marri	15-20	>50	0					
wpt208	50H	383320	6331888	Dead Unknown	20+	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt209	50H	383299	6331876	Dead Unknown	15-20	>50	2+	Small-Medium	No Signs	No Signs	No	
wpt210	50H	383292	6331848	Marri	0-5	>50	0					
wpt211	50H	383287	6331840	Jarrah	10-15	>50	0					
wpt212	50H	383271	6331849	Jarrah	10-15	>50	0					
wpt213	50H	383273	6331831	Marri	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt214	50H	383333	6331841	Jarrah	15-20	>50	0					
wpt215	50H	383374	6331813	Jarrah	0-5	>50	0					

APPENDIX F

CAMERA TRAP RESULTS

Camera Trap results

Camera Number	Date	Common Name	Species	Number
GH09	11-10-2019	Common Brushtail Possum	Trichosurus vulpecula	1
GH09	17-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH14	16-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH14	23-10-2019	Common Brushtail Possum	Trichosurus vulpecula	1
GH21	01-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH21	03-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH21	10-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH22	01-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH22	05-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH22	12-10-2019	Western Grey Kangaroo	Macropus fuliginosus	3
GH22	14-10-2019	Australian Raven	Corvus coronoides	1
GH22	14-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH22	15-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH22	17-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH22	19-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH22	21-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH22	22-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH22	26-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH23	02-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH23	04-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH23	05-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH23	06-10-2019	Common Brushtail Possum	Trichosurus vulpecula	1
GH23	07-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH23	22-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH24	03-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH24	04-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH24	08-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH24	14-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH24	23-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH24	24-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH25	01-10-2019	Red Fox	Vulpes vulpes	1
GH25	01-10-2019	Western Grey Kangaroo	Macropus fuliginosus	3
GH25	02-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH25	03-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH25	04-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH25	05-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH25	06-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH25	07-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH25	10-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH25	13-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH25	14-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH25	16-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH25	18-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH25	22-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH25	23-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH25	24-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH25	25-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH26	30-09-2019	Western Grey Kangaroo	Macropus fuliginosus	1

Camera Number	Date	Common Name	Species	Number
GH26	01-10-2019	Rabbit	Oryctolagus cuniculus	3
GH26	01-10-2019	Red Fox	Vulpes vulpes	1
GH26	01-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH26	01-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH26	02-10-2019	Rabbit	Oryctolagus cuniculus	3
GH26	03-10-2019	Rabbit	Oryctolagus cuniculus	3
GH26	04-10-2019	Rabbit	Oryctolagus cuniculus	3
GH26	04-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH26	05-10-2019	Rabbit	Oryctolagus cuniculus	4
GH26	06-10-2019	Rabbit	Oryctolagus cuniculus	5
GH26	07-10-2019	Rabbit	Oryctolagus cuniculus	4
GH26	08-10-2019	Rabbit	Oryctolagus cuniculus	5
GH26	10-10-2019	Rabbit	Oryctolagus cuniculus	2
GH26	10-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH26	11-10-2019	Rabbit	Oryctolagus cuniculus	2
GH26	12-10-2019	Rabbit	Oryctolagus cuniculus	1
GH26	12-10-2019	Rabbit	Oryctolagus cuniculus	1
GH26	12-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH26	13-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH26	14-10-2019	Rabbit	Oryctolagus cuniculus	1
GH29	10-10-2019	Heath Monitor	Varanus rosenbergi	1
GH29	12-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH29	14-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH31	01-10-2019	Common Brushtail Possum	Trichosurus vulpecula	1
GH31	01-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH31	02-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH31	11-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH31	12-10-2019	Heath Monitor	Varanus rosenbergi	1
GH31	12-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH31	13-10-2019	Common Brushtail Possum	Trichosurus vulpecula	1
GH31	13-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH31	14-10-2019	Common Brushtail Possum	Trichosurus vulpecula	1
GH31	16-10-2019	Common Brushtail Possum	Trichosurus vulpecula	1
GH31	17-10-2019	Common Brushtail Possum	Trichosurus vulpecula	1
GH31	23-10-2019	Common Brushtail Possum	Trichosurus vulpecula	1
GH46	02-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH46	06-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH46	12-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH46	13-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH46	14-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1
GH46	16-10-2019	Western Grey Kangaroo	Macropus fuliginosus	2
GH46	17-10-2019	Western Grey Kangaroo	Macropus fuliginosus	1

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The conclusions are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of preparing the report. Also it should be recognised that site conditions, can change with time.

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