



Integrating Resource Management

**Fauna Survey:
Lot 7779 on Deposited Plan 209806
Wannamal Road, Cullalla**

**Wannamal Road Organics Pty Ltd
Western Australia
August 2021**



Flora Survey

Lot 7779 Wannamal Rd, Cullalla

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Executive Summary

Vinsan Holdings Pty Ltd, the owners of Lot 7779 on Deposited Plan 209806, Cullalla, are seeking to develop a composting facility which is a Prescribed Activity under the Environmental Protection Act (DWER reference CPS 7612/1). To this end and to conform to regulatory requirements for the development of land, they have commissioned Bioscience Pty Ltd to conduct both a Terrestrial Flora and Vegetation Survey and a Fauna survey (this report) to support the clearing of native vegetation from 25 ha of their 1647 ha property.

Several surveys were conducted within the 25 ha area in question and the broader surrounding area (2015 and 2017/2018, and in 2020 and 2021). The area was defined as mostly low open Banksia (*Banksia attenuata*, *B. menziesii*) woodland largely representing a disturbed Cullula Complex (Hedde et al. 1980). The broader area outside the area proposed to be cleared is likewise mostly low open banksia woodland, but also contains a mosaic of cleared land, low Banksia heathland and *Melaleuca preissiana* wetlands.

Preliminary background desktop investigations relied on surveys previously conducted in the adjoining Boonanarring Nature reserve and nearby land to the south east.

During the wetland and fauna surveys, which were intensive, very little evidence of fauna was found. During field work, very few fauna species were found. This is consistent with other fauna surveys which concluded the area is relatively depauperate.



1 Introduction

1.1 Purpose of this Report

Vinsan Holdings Pty Ltd, the owners of Lot 7779 on Deposited Plan 209806, Cullalla, is seeking to develop a composting facility which is a Prescribed Activity under the Environmental Protection Act (DWER reference CPS 7612/1). To achieve this development aspiration, and to conform to regulatory requirements for the development of land, they have commissioned Bioscience Pty Ltd to conduct a Terrestrial Flora and Vegetation Survey to support the clearing of native vegetation from 25 ha of their 1647 ha property. This follows a fauna survey conducted by Dr Mark Bundock in 2015 which found no evidence of rare or endangered fauna.

There are two distinct purposes for this report. The first is to undertake work to meet the general requirements of EPA Guidance 56 and the *Technical Guide – Terrestrial Fauna Surveys* (EPA December 2016) to enable regulatory authorities to gauge the conservation value of the area in consideration of a Permit to Clear Native Vegetation. The second purpose is to assist with development of the land by identifying both fauna, flora and vegetation complexes present and the vegetation condition, to facilitate its preservation as well as the conservation of adjacent land.

1.2 Survey Area

The area proposed for clearing is the northern portion of Lot 7779 Wannamal Rd (31.09.44° S, 115.58.04° E), 25 ha of low open Banksia (*Banksia attenuata*, *B. menziesii*) woodland largely representing a disturbed Cullulla Complex (Hedde et al. 1980). Although *Eucalyptus todtiana* and *B. ilicifolia* are present in low numbers, *Corymbia calophylla* was not found. The site is situated approximately 90 km north of Perth and approximately 55 km east of the coast. (Figure 1). It lies within the Shire of Gingin and is surrounded by Boonanarring Nature Reserve to the west, a mix of mostly uncleared rural properties to the north and east, and an approved landfill site proposed on the lot 7778 at the southern boundary.

1.3 Site History and Previous Land Use

The property has been privately owned by Vinsan Holdings Pty Ltd for the last 10 years. Mapviewer shows that in 1981, the land had been cleared of native vegetation for farming, by chaining, windrowing, and burning, with distinct burn lines evident (Figures 2 and 3).

According to the current owners, the property had been used for low level grazing for approximately 40 years prior to 1981. This prolonged period of grazing most likely resulted in the understory of the property becoming modified. The combined actions of low level grazing, then clearing have likely led to major changes in the vegetation communities present and/or the vegetation unit structure.

In 1996 part of the northern eastern section of the property near the proposed development site was classified as a Resource Enhancement Wetland under the (then) Department of



Environment's Wetland Classification guidelines. This area was already cleared, so was sown to oats by the current owners in 2014.

1.4 Geomorphology, Geology and Hydrogeology

The property is located within the southern end of the Dandaragan Plateau which comprises mostly Tertiary laterites with outcroppings of Pleistocene to Quaternary sands over Cretaceous rock. The soils belonging to the Cullalla Association consist of white sands with low dunes and occasional wetlands. The specific site is exclusively white Bassendean sands, being well drained deep light grey sands with fine to coarse quartz and feldspar with a gentle relief to a central east/west dune ridge. The central dune is 215 m AHD, grading to 210 m at the northern and southern edges.

The proposal development envelope lies within the Gingin Groundwater Area (GGA) which is a gazetted groundwater area under the RIWI Act 1914, subject to a range of management protocols overseen by the Department of Water and Environmental Regulation (DWER). It is within the Red Gully Sub-area associated with the unconfined surficial formations and surficial resources over the confined Leederville and Yarragadee Aquifers. Adjoining the Red Gully Sub-area to the west is the Beermullah Plain Sub-area. Within the surficial formations there is lateral groundwater flow from east to west from the Red Gully Sub-area to the Beermullah Plain Sub-area and to the west and down-gradient there is groundwater flow within the Leederville and Yarragadee aquifer systems.

1.4.1 Local Hydrogeology

The hydrogeology of the proposed development area and surrounding area is characterised by four principle aquifers:

- Mirrabooka Aquifer – perched, surficial formations of the Red Gully Sub-area, beneath the Dandaragan Plateau.
- Surficial Aquifer – surficial formations of sub-areas Red Gully and Beermullah Plain, thus beneath the Gingin Scarp and Beermullah Plain.
- Leederville Aquifer – beneath the surficial formations (Dandaragan Plateau) and surficial formations (Gingin Scarp and Beermullah Plain).
- Yarragadee Aquifer – unconformably underlies the Leederville Aquifer in this area and is separated from the Leederville Aquifer by a clay layer.

1.4.2 Wetlands

The original information regarding classification of the wetlands of the sand plain was first published in the *Wetlands of the Swan Coastal Plain Volume 2B Wetland Mapping, Classification and Evaluation: Wetland Atlas* which was captured at a scale of 1:25,000 (Hill et al. 1996). According to this dataset a significant portion of the northeastern part of the property consists of a Resource Enhancement Sumpland (UFI 11503). The investigation area is 60 m to the west of this Sumpland.



In the central part of the property there are 14 discrete Conservation Category Wetlands and three Resource Enhancement damplands, however, these are not located in the subject area.

1.5 Climate

The south-west of Western Australia is characterised by a Mediterranean climate comprising of hot dry summers and cool wet winters. According to the Bureau of Meteorology the mean annual rainfall within the vicinity of the property is 651.3 mm (Gingin Aero, 009178). The monthly distribution of rainfall (Figure 4) indicates approximately 85% of the rainfall occurs during the months of May to October. The potential annual evaporation of the area is 1800 mm (BOM, 2019), which is significantly more than annual precipitation, the daily evaporation is closer to 5.2 mm/day. The prevailing wind is from a south-westerly direction, however westerly and easterly winds are common, particularly in the summer months.



2 Botanic Background

The botanic background of the area is described in the submitted flora survey of the site. In a nutshell, the entire 25 ha area is a uniform *Banksia* low open woodland belonging to Floristic Community Type 23c.

The detailed survey followed EPA (Dec 2016) *Technical Guidance, Flora and Vegetation Surveys for Environmental Impact Assessment*.

2.1 Previous Area Studies

Hedde et al. (1980) described the vegetation in the survey area as being Cullala Complex which occurs in the Dandaragan Plateau and consists of Low Open Forest of *Banksia attenuata*, *B. menziesii*, *B. ilicifolia* and *Eucalyptus todtiana* with open woodland of *Corymbia calophylla*.

Within the immediate area, flora, vegetation, and fauna studies have been undertaken in the adjoining Boonanarring Nature Reserve to the west (Burbridge et al. 1996) as have fauna surveys (DPAW 2015), and to the immediate south (Lot 7778 Wannamal Rd) by Coffey Environments 2007. Another fauna survey in the vicinity (Lot 7776 Wannamal Rd which is 2 – 3 km east of the site) was undertaken by GHD in 2014 as part of a potential offsets area for Main Roads.



3 Methodology and Limitations of the Survey

3.1 Methods

3.1.1 Initial Survey

Environmental appraisal of Lot 7779 by reconnaissance surveys began in 2015 and were conducted by Bioscience's Dr Mark Bundock and Dr Peter Keating assisted by graduate staff including Kylie Macpherson, Genevieve Massam and Genette Keating who collectively have over 100 years' experience with the flora and fauna of south-western Australia. This work showed that the northern quarter of the property had poorer environmental values due to development history, stocking, cropping and construction of houses, sheds, dams, and roadways. The original intention of the property owners had been to develop an olive business, but after initial preparation and planting, this plan was put aside. The southern 75% of the property had less disturbance, and due to greater diversity of geomorphology, contains a wider range of community structures.

In 2017, the current north central site was investigated in more detail by walking east/west and north/south transects. The area was found to have no Declared Rare Flora or Fauna and had a generally very uniform vegetation structure, with minor changes associated with aspect. In the autumn and summer of 2017/18, equipped with lists of Priority and Rare flora, further transects were examined in detail, and no DRF or priority species were found, thus in early winter of 2018, 4 quadrats of 10 x 10 m were laid out and detailed work began. The site was repeatedly visited until July 2021.

3.1.2 Detailed Flora Survey

The Level 2 survey followed EPA (Dec 2016) *Technical Guidance, Flora and Vegetation Surveys for Environmental Impact Assessment*.

As the vegetation community was ascertained to be essentially similar across 25 ha, four quadrats of 10 x 10 m were selected based on slight differences in trees present, in aspect and/or surface soil colour. Boundary corners were marked out by stakes and recorded by GPS. A complete inventory of flora species was recorded five times between late winter (July) of 2018 to late Spring (November) of 2019 in each quadrat. Size and percentage cover of each species were also recorded.

Quadrat surveys were conducted by Dr Peter Keating and Ms Genette Keating, who both have tertiary qualifications and over 25 years' experience each with the flora of Western Australia. A fresh survey sheet was completed for each site visit, which looked within the quadrat in fine detail, and in the surrounding 10 m area for additional taxa in lesser detail.

Specimens were collected from quadrats and from transects to represent all species present (except for trees and larger species well known to the authors). Samples were pressed and dried for preservation and vouchering if required in the WA Herbarium. Photographs were also taken as an aid to identification.



Identification relied on the use of several taxonomic keys, principally Blackall and Grieve (1988), Marchant et al. (1998), and Meney and Pate (1999) and then by further reference and nomenclature updated using the WA Herbarium FloraBase.

3.2 Fauna Background (desktop & anecdotal) Investigations.

The most relevant nearby fauna studies have been in the Boonanarring Nature Reserve which adjoins the site. Of particular relevance to the request to undertake a formal fauna survey, the DPAW (2015) *The Fauna of Boonanarring Nature Reserve*, which revisited the work of Burbridge in 1986. Further nearby studies of fauna on nearby (2 – 3 Km east) uncleared land of essentially similar vegetation units were undertaken by GHD (2014) as part of seeking a potential offsets area for Main Roads.

These Boonabarring studies note that the 9250 ha reserve has 10 vegetation types as a mosaic. The proposed 25 ha clearing area has only one vegetation type. We note that the 1986 and 2015 studies included study areas (pit traps) within banksia woodland over mixed understorey – the vegetation unit most like the area of the flora survey. The 2015 study was quite intensive, setting 3142 night traps in autumn and spring, as well as examining scats and tracks. What was captured most (78%) was the common house mouse. Whereas of the 3 native mammals captured, none are considered endangered. We note that the most common mammal tracks seen were of foxes and cats. The authors do not attribute the presence of feral predators with the reduction in abundance (between 1986 and 2012) of reptiles, mammals, and birds, whereas amphibian abundance is unchanged. Note there are no wetlands to support amphibians in the area proposed to be cleared.

Discussion with the landowners suggested the only animals they had encountered in their 10 years of ownership were rabbits, whose numbers swelled when they attempted to grow oats, but have subsequently declined. Grey kangaroos were very rarely encountered.

3.3 Fauna Field work

No native fauna were encountered during the hundreds of hours of field work during the flora survey. An exception occurred in January 2021 where one grey kangaroo was seen in the distance, then again in July 2021, when 2 emus were found in the northern part of the property.

The recently ploughed firebreaks surrounding the area were carefully scanned in January 2021. The only tracks found were of kangaroos. The only scats found were of kangaroos and a canid, possibly a fox. An abandoned dugout nest, likely belonging to *Varanus gouldii* (sand monitor) was found. Fallen stumps from previous land clearing were carefully examined for evidence of fauna habitat – no evidence was found. Dr David Bundock, a keen ornithologist, had identified 9 species of native birds from their calling. The most abundant fauna on the site were ants.

July 2021 field work was undertaken on the broader extent of the property to characterise the vegetation present in the proposed 600 Ha environmental offset. July 2021 was particularly wet, with an estimated 300 mm of rainfall. This essentially smoothed out all firebreaks, allowing



for better interpretation of animal tracks. Without exception, the only tracks found belonged to grey kangaroos. Interestingly, no fresh kangaroo scats were present.

Of the species trapped in the 2015 study above, it is likely the site is potentially a suitable habitat for three of the native mammals trapped in the DPAW study, being the Honey Possum *Tarsipes rostratus*, the ash grey mouse *Pseudomus albinocenerus* and the grey belted dunnart *Sminthopsis griseoventer*. Likewise, 12 of the small reptiles (skinks and geckos) commonly trapped could be present. None of the species found are considered rare or endangered.

The work undertaken by Bioscience thus constitutes a level 1 Survey according to EPA's Technical Guidance: Terrestrial Fauna Surveys (December 2016), as defined in Appendix 2. The Background research and the numerous reconnaissance surveys undertaken during the level 2 Flora survey led to the conclusion that there is a general paucity of fauna present at the site. The species seen (1 mammal, grey kangaroo,) and the 10 bird species identified by call, are all common. Detailed fauna surveys in the adjoining Nature Reserve point to the possible occurrence of a further 3 native mammals being present.

The extreme paucity of fauna found is most likely because the land contains very low levels of available feed. Kangaroos prefer to eat grasses, whereas virtually no grassy weeds are present.

The conclusion that very few faunae are present is consistent with the 2014 GHD report, with the caveat that the land they studied had not been previously cleared or grazed, and contained mostly similar Banksia woodland, but also had intact Marri woodland and Marri Jarrah woodland. They found 27 bird species were present, 6 reptile species, but the only mammal was the grey kangaroo.

It should be noted that if the land is cleared there is an abundance of refugia in the surrounding land for any native species present to escape to. Further, the environmental offset associated with the clearing will further assure the survival of any escapees.

4 Possible Cockatoo Habitat.

The survey site is within the known range of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*). No black cockatoos were seen or heard during field work.

4.1 Breeding Habitat

Black cockatoos breed in Jarrah/Marri Forest with tall trees. The study area does not contain any such habitat.

4.2 Foraging Habitat

Black cockatoos feed in banksia woodland, however as Carnaby's Black Cockatoo is highly mobile and adaptive, there are a number of nearby alternative foraging sites within the Boonanarring reserve, including more suitable banksia woodland in the proposed adjacent



environmental offset area, as well as a preferred foraging habitat of pine plantations west of Wannamal Rd. It is considered unlikely that clearing the proposed 25 ha will have any impact on Black Cockatoos.

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Appendix 1

Species List From Site Visits (2015 - 2021)

A) Identified from calls and song

Acanthiza inornata (Western Thornbill)

Anthochaera carunculata (Red Wattlebird)

Artamus cinereus (Black-faced Woodswallow)

Coracina novaehollandiae (Black-faced Cuckoo-shrike)

Corvus bennetti (Little Crow)

Corvus coronoides (Australian Raven)

Lichmera indistincta (Brown Honeyeater)

Phylidonyris novaehollandiae (New Holland Honeyeater)

Rhipidura leucophrys (Willie Wagtail)

B) Identified from sighting

Macropus giganteus (Grey Kangaroo)

Dromaius novaehollandiae (Emu)

C) Suspected from abandoned ground nests

Vananus gouldii (Gould's monitor)