

KELMSCOTT SENIOR HIGH SCHOOL

BLACK COCKATOO HABITAT ASSESSMENT

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The logo for PGV Environmental is located at the bottom of the page. It features the letters 'PGV' in a large, bold, white sans-serif font. Below 'PGV', the word 'ENVIRONMENTAL' is written in a smaller, white, all-caps sans-serif font. The background of the bottom half of the page is a vibrant orange with a subtle, curved white line that sweeps across the width of the page, creating a sense of movement and depth.

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1 INTRODUCTION

1.1 Background

Kelmscott Senior High School is located on 50 Third Avenue, Kelmscott approximately 23km south-east of the Perth Central Business District in the City of Armadale (Figure 1). A new sports hall is proposed to be constructed on the school grounds to the north of the existing tennis courts (Figure 2, Appendix 1).

An Aborigicultural assessment of the site identified 60 trees in the area that is proposed to be redeveloped (Civica, 2022). PGV Environmental was commissioned by RPS to undertake a Black Cockatoo Habitat Assessment to assess the impact of clearing the trees for the proposed sports hall.

1.2 Scope of Works

The Black Cockatoo Habitat Assessment was undertaken to:

- Describe the Black Cockatoo habitat on the study area; and
- Advise on the statutory processes at State and Federal level if any clearing of Black Cockatoo habitat is being considered.

2 EXISTING ENVIRONMENT

2.1 Land Use

The earliest available historical aerial photograph of the study area is from 1953 and shows the study area contains undeveloped native vegetation with a track through the central part (Plate 1). The alignment of Third Avenue is evident.

Plate 1: Aerial Photograph from 1953 (Landgate, 2022)



Kelmscott Senior High School was constructed between 1970 and 1974 (Landgate, 2022) (Plate 2). Remnant trees were maintained within the study area.

Plate 2: Aerial Photograph from 1974 (Landgate, 2022)



Additional sports courts were added between 1983 and 1985, with the retention of most of the remnant trees. Additional carparking and the clearing of some trees within the study area occurred prior to 2006 (Plate 3).

Plate 3: Aerial Photograph from 2006 (Landgate, 2022)



2.2 Topography

The study area is flat to gently sloping, generally from the east at 34 m Australian Height Datum (AHD) down to the west at 32 mAHD (Figure 2).

2.3 Geomorphology and Soils

The study area is mapped on the Bassendean Dune System and consists of very low relief, leached, grey siliceous Pleistocene sand dunes, intervening sandy and clayey swamps and gently undulating plains (Bolland, 1998). These soils are very leached, infertile and mildly acidic (DPIRD, 2021).

The soil phase mapped on the study area is EnvGeol S8 Phase (212Bs_S8) which are soils that consists of sand that is very light grey at the surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted of eolian origin.

2.4 Hydrology

Groundwater is at 25mAHD (DWER, 2022), between 7 and 9m below the surface. Groundwater below the study area flows generally to the north (DWER, 2022). There are no wetlands or expressions of surface water on the study area.

2.5 Flora and Vegetation

2.5.1 Flora

An arboricultural survey was undertaken on the study area by Civica in August 2022. A total of 60 trees were identified and tagged in the study area, consisting of nine species being:

- *Banksia attenuata* (Slender Banksia) – native;
- *Banksia grandis* (Bull Banksia) – native;
- *Banksia menziesii* (Firewood Banksia) – native;
- *Callistemon* 'Kings Park Special' (Kings Park Special Bottlebrush) – cultivar;
- *Corymbia maculata* (Spotted Gum) – introduced;
- *Eucalyptus grandis* (Flooded Gum) – introduced;
- *Eucalyptus leucoxylon* ssp. *leucoxylon* f. *rosea* (Red-flowered Yellow Gum) – Introduced;
- *Eucalyptus marginata* (Jarrah) – native; and
- *Xylomelum occidentale* (Woody Pear) – native (Civica, 2022).

The understorey on the study area consists of grassy weeds including Annual Veldt Grass (*Ehrharta longiflora*), Wild Oats (*Avena fatua*), Cape Weed (*Arctotheca calendula*) and other common weed species. The only native understorey species recorded by PGV Environmental in the study area were *Xanthorrhoea preissii* (Grass Tree) (Plate 4) and *Caladenia latifolia* (Fairy Orchid) (Plate 5).

Plate 4: Grass Tree



Plate 5: Fairy Orchids



2.5.2 Vegetation Complex

Vegetation Complexes are a broad level of vegetation description which is based on the underlying geomorphology and rainfall (Heddl *et al.*, 1980).

The study area is located on the Forrestfield Complex which ranges from open forest of *Corymbia calophylla* (Marri) – *Eucalyptus wandoo* (Wandoo) – *Eucalyptus marginata* (Jarrah) to open forest of *Eucalyptus marginata* (Jarrah) – *Corymbia calophylla* (Marri) – *Allocasuarina fraseriana* (Sheoak) – *Banksia* species. Fringing woodland of *Eucalyptus rudis* (Flooded Gum) in the gullies that dissect this landform (Heddl *et al.*, 1980).

2.5.3 Vegetation Condition

The vegetation condition on the study area was assessed using the system devised by Keighery and described in Bush Forever (Government of Western Australia, 2000) (Table 1).

Table 1: Vegetation Condition Rating Scale

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Source: Government of Western Australia, 2000.

The vegetation on the study area is Completely Degraded.

3 BLACK COCKATOO SPECIES

3.1 Carnaby's Black Cockatoo (*Zanda (Calyptorhynchus) latirostris*)

Carnaby's Black Cockatoo is found in the south-west of Australia from Kalbarri through to Ravensthorpe. It has a preference for feeding on the seeds of *Banksia*, *Hakea*, *Eucalyptus*, *Grevillea*, *Pinus* and *Allocasuarina* spp. It is nomadic, often moving toward the coast after breeding. It breeds in tree hollows that are 2.5 – 12m above the ground and have an entrance of 23-30cm with a depth of 1-2.5m. Nesting mostly occurs in smooth-barked trees (e.g. Salmon Gum, Wandoo, Red Morrell). Eggs are laid from July to October, with incubation lasting 29 days (DoE, 2014).

The study area is inside the boundary of the modelled distribution for Carnaby's Black Cockatoos (SEWPaC, 2012). The study area is shown as being within the buffer of a confirmed roost site but is not within a confirmed breeding area (National Map, 2022).

3.2 Baudin's Black Cockatoo (*Zanda (Calyptorhynchus) baudinii*)

Baudin's Black Cockatoo is most common in the far south-west of Western Australia. It is known to breed from the southern forests north to Collie and east to near Kojonup. Baudin's Black Cockatoo is typically found in vagrant flocks and utilises the taller, more open Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) woodlands where it feeds mainly on Marri seeds and various Proteaceous species (Johnstone, Johnstone and Kirkby, 2011).

The study area is outside the modelled 'distribution for Baudin's Black Cockatoos however the species may be a vagrant visitor to the study area (SEWPaC, 2012).

3.3 Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*)

Forest Red-tailed Black Cockatoos are endemic to the humid to sub-humid south-west of Western Australia (SEWPaC, 2012). The range of Forest Red-tailed Black Cockatoos is bound by Gingin in the north to Mt Helena, Christmas Tree Well, West Dale, North Bannister, Mt Saddleback, Kojonup, Rocky Gully, upper King River and Green Range (east of Albany) (SEWPaC, 2012; DoE, 2014). It nests in tree hollows with a depth of 1-5m, that are predominately Marri, Jarrah and Karri (*E. diversicolor*) and it feeds primarily on the seeds of Marri and Jarrah (Johnstone, Johnstone and Kirkby, 2011).

The study area is inside the modelled distribution for Forest Red-tailed Black Cockatoos (SEWPaC, 2012).

4 METHODOLOGY

4.1 Habitat definitions

4.1.1 Foraging Habitat

'Foraging habitat' for Black Cockatoos is determined from the plant species that are present on the study area and evidence of feeding such as direct observation of birds or by chewed nuts and cones. Foraging plants utilised by each species of Black Cockatoo varies, with Carnaby's Black Cockatoo foraging on Eucalypts, pines and proteaceous species, whereas Forest Red-tailed Cockatoos prefer Eucalypts and Allocasuarina and many exotic species and Baudin's prefer mostly seeds of Marri and Jarrah, also Allocasuarina cones (DAWE, 2022).

4.1.2 Breeding Habitat

'Breeding habitat' is defined as trees of species known to support breeding within the range of the species which either have a suitable nest hollow OR have a DBH of 500mm or greater (DAWE, 2022).

Past studies have found that on average hollow openings are 25 cm x 27 cm (Saunders *et al.*, 1982, Saunders and Dawson, 2017) and 30 cm x 34 cm (Johnstone *et al.*, 2013). The height of a hollow entrance off the ground is on average 19.384 m (Johnstone *et al.*, 2013). Nearly all hollows that are used for nesting by Black Cockatoos are located in the main trunk and have a vertical aspect (Johnstone *et al.*, 2013, Saunders and Dawson, 2017). Black Cockatoos are large birds with shoulders that are about 100 mm wide, therefore they require hollows with an entrance bigger than this (as shown above they are typically much larger), but the internal dimensions (depth and floor base) need to be much larger in order for it to be suitable to lay eggs in and for adults to be able to move around.

Previous research has found for Carnaby's Black Cockatoo a mean depth of 1.2 m and a floor diameter of 40 cm is required in order for it to be suitable to lay eggs in and for adults to be able to move around (Johnstone *et al.*, 2013, Saunders and Dawson 2017).

The Black Cockatoo Referral Guidelines define trees of certain species with a DBH of 300 to 500mm or greater, dependent on the tree species, as breeding habitat regardless of the presence or not of hollows. The theory behind this definition is the concept that while the trees may not currently contain hollows, they are mature enough that in the next 50 years or so a hollow might form and be of use to Black Cockatoos for the purposes of breeding.

4.1.3 Roosting Habitat

'Roosting habitat' is usually evident due to the presence of Black Cockatoos in the survey area in the evening and early morning and if there are scats or moulted feathers under the roosting area. Black Cockatoos utilise a wide range of native and non-native trees, situated within a variety of land-use types. Roosting habitat is generally in tall (average of > 25 m) tree species that have relatively thick trunks (average DBH of 1 m) and medium foliage density (average of 50%), and that are not too densely forested amongst other trees (average tree crown connectivity of 20 %) (Le Roux, 2017). Black cockatoos rely upon the availability of suitable night roosting sites in proximity to foraging resources, and particularly access to water within 2 km of the roost site (SEWPaC, 2012).

4.2 Site Survey

PGV Environmental undertook a Black Cockatoo habitat assessment on 15 September 2022 in accordance with the Black Cockatoo Referral Guidelines and the methodology outlined in the SPRAT Database for each of the Black Cockatoo species.

The Jarrah trees are potential breeding habitat for Black Cockatoos, depending on whether they have suitable hollows or have the potential to form suitable hollows in the next 50 years. Each Jarrah tree recorded by Civica was inspected to determine if the tree provides breeding habitat or meets the definition of potential breeding habitat.

The site contains plant species that are known to be foraged by Black Cockatoo species.

The study area was traversed on foot and information on Black Cockatoo foraging, roosting and breeding habitat was assessed. The extent, type and quality of the vegetation present, including the presence and extent of plants known to be used by Black Cockatoos was recorded.

5 BLACK COCKATOO HABITAT

5.1 Foraging

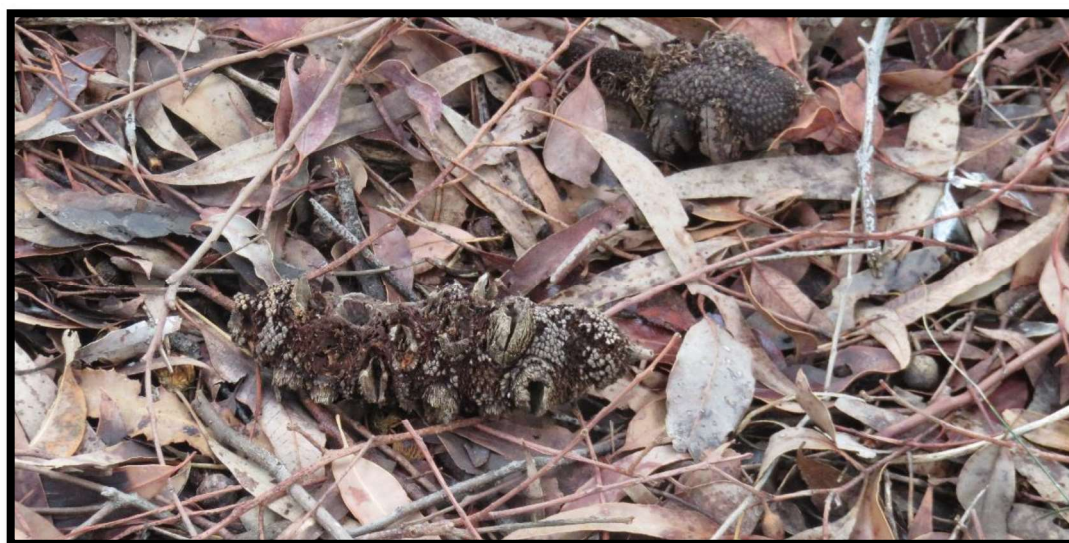
The study area contains eight species that are recognised as foraging habitat for Black Cockatoos (Table 2) (Davies 1966; Saunders 1980; Johnstone and Storr 1998; Johnstone and Kirkby 1999; Valentine and Stock, 2008; Groom 2011; Johnstone *et al.*, 2011; SEWPaC, 2012; Johnstone, *et al.*, 2013; Groom, 2015; Johnstone *et al.*, 2016; DAWE, 2022). The total area of foraging habitat is 0.21ha (Figure 3).

Table 2: Foraging Species for Black Cockatoos

Species	Common Name	Carnaby's Black Cockatoo	Baudin's Black Cockatoo	Forest red-tailed Black Cockatoo
<i>Banksia attenuata</i>	Slender Banksia	High	High	None
<i>Banksia grandis</i>	Bull Banksia	High	High	None
<i>Banksia menziesii</i>	Firewood Banksia	High	High	None
<i>Callistemon</i> 'Kings Park Special'	Kings Park Special Bottlebrush	Moderate	Moderate	None
<i>Eucalyptus leucoxylon</i> ssp. <i>Leucoxylon</i> f. <i>rosea</i>	Red-flowered Yellow Gum	Low	None	None
<i>Eucalyptus marginata</i>	Jarrah	Moderate	High	High
<i>Xanthorrhoea preissii</i>	Grass Tree	Low	Low	None
<i>Xylomelum occidentale</i>	Woody Pear	Moderate	None	None

There was a small amount of older evidence of black cockatoos having foraged on Banksia cones in the study area (Plate 6).

Plate 6: Foraging Evidence on Banksia Cone



The extent of foraging habitat on the site is estimated to be 0.21ha.

5.2 Breeding

Black Cockatoos are known to breed in hollows of large eucalypts, including Jarrah trees. The study area is not known as a breeding site for Black Cockatoos (DoP, 2011; National Map, 2022).

There were two Jarrahs recorded by PGV Environmental that meet the definition of breeding habitat or potential breeding habitat due to their DBH being >500mm (Figure 3, Appendix 2). These were Tree number 7 (Plate 7) located on the western corner of the study area and Tree 33 (Plate 8) in the southern part of the study area. None of the trees in the study area contained hollows.

Plate 7: Tree 7

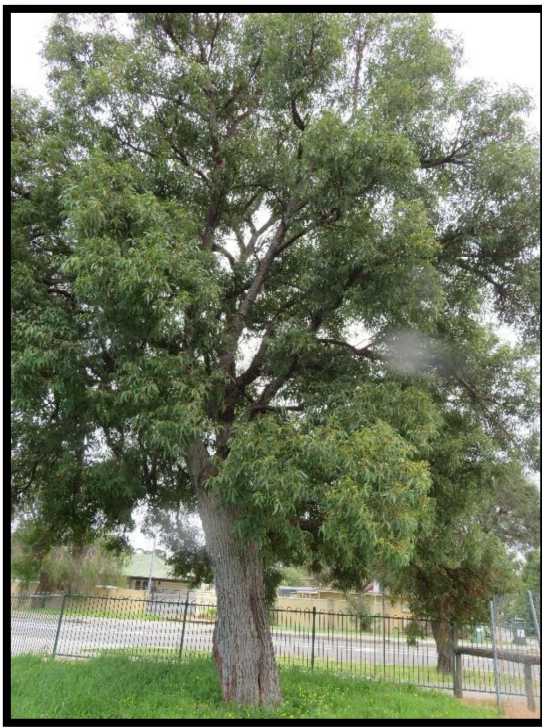


Plate 8: Tree 33



The nearest breeding sites for Black Cockatoos are located 30km to the north-east and 47km to the north-west (National Map, 2022).

5.3 Roosting

Black Cockatoos are known to roost overnight in tall trees including native and introduced eucalypts and pine trees generally in close proximity to a fresh water source. The study area contains tall Jarrah trees, however no evidence of roosting was recorded during the survey.

The study area is not mapped as containing a recorded roosting habitat for Black Cockatoos but is in the buffer of two known sites and near several others (DoP, 2011; Peck *et al.*, 2018; National Map, 2022). The nearest roosting sites are reported to be around 480m to the south, 1.3km to the south-east and 2.6km to the south-west (National Map, 2022) (Figure 4).

6 REGIONAL CONTEXT

To assist in determining the significance of any impact on Black Cockatoo habitat on the study area an assessment of Black Cockatoo habitat within the vicinity of the study area was undertaken (Table 3). There is a total of 8,700ha of Black Cockatoo habitat in secure reserves within 12km of the study area (Figure 4) (DPIRD, 2022).

Table 3: Black Cockatoo Habitat within 12km

Name	Area (ha)
Conservation Park	0.27
Crown Freehold - Dept Managed	2605.90
National Park	4622.97
Nature Reserve	557.74
SCRM Act - River Reserve	48.72
Section 5(1)(g) Reserve	28.27
State Forest	859.22
TOTAL	8723.09

7 SIGNIFICANCE OF IMPACT

7.1 Background

Any proposal that is likely to have a significant impact on Black Cockatoos is required to be referred under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Development of the study area is highly likely to result in some clearing of Black Cockatoo habitat.

The significance of an impact can be assessed using the EPBC Act Significant Impact Guidelines 1.1 which is a generic guideline for species and communities, or the Black Cockatoo Referral Guidelines which are guidelines more specific to Black Cockatoos.

The following section identifies what level of clearing would be considered significant under both guidelines and therefore may require a Referral under the EPBC Act.

7.2 Significant Impact Guidelines

According to the EPBC Act Significant Impact Guidelines 1.1 (DoE, 2013), the significance of the impact on Black Cockatoos depends on the sensitivity, value and quality of the environment and the intensity, duration, magnitude and geographic extent of the impacts. The category of listing (for example; Endangered, Vulnerable or Migratory) determines the significant impact criteria for listed flora and fauna species and ecological communities.

The following assessments are for the Carnaby's Black Cockatoo and Baudin's Black Cockatoo which are listed as Endangered and the Forest Red-tailed Black Cockatoo which is listed as Vulnerable.

Carnaby's and Baudin's Black Cockatoos

The criteria for a significant impact on an Endangered species as set out in the Significant Impact Guidelines 1.1 is described below:

- *Lead to a long-term decrease in the size of a population*

There was no evidence that the study area supports breeding or roosting of these species of Black Cockatoos. There are large areas (in excess of 8,700ha) of habitat within 12km consisting of large areas of foraging, roosting and potential breeding habitat. Therefore, clearing of any trees on the study area is not likely to result in this outcome.

- *Reduce the area of occupancy of the species*

Clearing for the proposed sports hall would not result in a reduction of any known breeding and roosting habitat although it would result in a small reduction of foraging habitat. Within 12km of the study area, however, there is more than 8,700ha of foraging habitat and therefore the proposal would not result in this outcome.

- *Fragment an existing population into two or more populations*

Clearing of the study area is unlikely to fragment the population of Carnaby's Black Cockatoos in the area into sub-populations due to the State Forest, Regional Parks and National Parks in the area

providing linkages consisting of large areas of Black Cockatoo habitat. Carnaby's Black Cockatoos and Baudin's Black Cockatoos can fly large distances between foraging areas. Clearing for the proposed sports hall would therefore not result in this outcome.

- *Adversely affect habitat critical to the survival of a species*

There was no evidence of breeding or roosting by Carnaby's Black Cockatoos or Baudin's Black Cockatoos on the study area. The three trees that contained potentially suitable hollows/spouts and the approximately 8,700ha of foraging habitat is not considered to be critical to the survival of the species due to the large amount of foraging and potential breeding habitat within 12km of the study area, therefore clearing for the proposed sports hall would not result in this outcome.

- *Disrupt the breeding cycle of a population*

The area proposed to be cleared for the sports hall does not contain breeding habitat or potential breeding habitat therefore clearing of the study area would not result in this outcome.

- *Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Clearing of the study area would not result in this outcome due to the large extent of Black Cockatoo habitat reserved within 12km of the study area.

- *Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

The study area is surrounded by residential housing. Clearing of the study area would not result in the establishment of an invasive species harmful to Carnaby's Black Cockatoos.

- *Introduce disease that may cause the species to decline*

Clearing of the study area would not cause disease to be introduced therefore would not result in this outcome.

- *Interfere with the recovery of the species*

The Carnaby's Black Cockatoos that would utilise the study area have access to greater than 8,700ha of habitat within 12km in reserves. Therefore, any clearing of habitat on the study area would not interfere substantially with the recovery of the species.

The conclusion of this assessment in accordance with the criteria set out in the Significant Impact Guidelines 1.1 is that any clearing on the study area would not have a significant impact on Carnaby's Black Cockatoos or Baudin's Black Cockatoos.

Forest Red-tailed Black Cockatoo

The criteria for a significant impact on a Vulnerable species as set out in the Significant Impact Guidelines 1.1 is described below:

- *Lead to a long-term decrease in the size of an important population of a species*

In the Significant Impact Guidelines 1.1 an important population is defined as “a population that is necessary for a species’ long-term survival and recovery” and may be “key source populations either for breeding or dispersal, populations that are necessary for maintaining genetic diversity, and/or populations that are near the limit of the species’ range”.

There was no evidence of breeding occurring on the study area. The surrounding area contains greater than 8,700ha of reserves providing large areas of foraging and potential breeding habitat for Forest Red-tailed Black Cockatoos that may utilise the study area. Development in the study area would therefore not result in this outcome.

- *Reduce the area of occupancy of an important population*

There was no evidence found of Forest Red-tailed Black Cockatoos breeding or roosting on the study area. Clearing of the study area would slightly reduce the area of foraging available, however there is greater than 8,700ha of foraging habitat within 12km of the study area in surrounding reserves therefore clearing on the study area would not result in this outcome.

- *Fragment an existing important population into two or more populations*

The large area of reserves containing habitat within 12km of the study area that provide foraging and potential breeding habitat. Forest Red-tailed Black Cockatoos can fly large distances between foraging areas. Therefore, clearing on the study area would not result in this outcome.

- *Adversely affect habitat critical to the survival of a species*

There was no evidence that Forest Red-tailed Black Cockatoos breed on the study area and there are large areas of foraging habitat within 12km of the study area, as formal reserves, therefore the study area is not considered critical to the survival of this species.

- *Disrupt the breeding cycle of an important population*

There was no evidence that Forest Red-tailed Black Cockatoos breed on the study area, therefore clearing of the study area would not result in this outcome.

- *Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The large areas of foraging and breeding habitat located in reserves within 12km of the study area would prevent the population from declining as a result of clearing of the study area.

- *Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species’ habitat*

Clearing the study area would not result in invasive species being introduced, therefore would not result in this outcome.

- *Introduce disease that may cause the species to decline*

Clearing the study area would not result in disease being introduced as it is already present, therefore would not result in this outcome.

- *Interfere substantially with the recovery of the species*

The Forest Red-tailed Black Cockatoos that would utilise the study area have access to an area greater than 8,700ha of Black Cockatoo habitat within 12km in reserves. Therefore, the clearing of foraging habitat on the study area would not interfere substantially with the recovery of this species.

In accordance with the criteria set out in the Significant Impact Guidelines 1.1 the conclusion of this assessment is that any clearing on the study area would not have a significant impact on Forest Red-tailed Black Cockatoos.

7.3 Black Cockatoo Referral Guidelines

The *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black-cockatoo* (DAWE, 2022) (Black Cockatoo Referral Guidelines) contain several steps to determine whether or not a referral is required. These steps are:

1. Will the action directly or indirectly impact on Black Cockatoo Habitat;
2. Does your action involve loss of any habitat as defined in Section 4 and Appendix A of the guidelines;
3. Formulation of a mitigation strategy to reduce the scale of impact; and
4. A flowchart to assist in decision making on whether or not an action should be referred.

Step 1 Black Cockatoo Habitat

The study area contains approximately 0.21ha of foraging habitat for Black Cockatoos but with no evidence of foraging on Jarrah and minimal evidence of foraging on Banksia cones. There is no known breeding or roosting on the study area.

Step 2 Loss of Habitat

Breeding

According to the Black Cockatoo Referral Guidelines the clearing of any known nesting tree has a high risk of being a significant impact. A known nesting tree is defined in the Black Cockatoo Referral Guidelines as any existing tree in which breeding has been recorded or suspected. There are no known nesting trees that occur on the study area and therefore there is no risk of a significant impact on known breeding habitat of Black Cockatoos.

The Black Cockatoo Referral Guidelines also consider that the clearing or degradation of any part of a vegetation community known to contain breeding habitat is likely to have a high risk of a significant impact. Breeding habitat is defined as woodlands, forests or isolated trees that contain or consist of live or dead trees of certain species with either a DBH of or greater than 500mm or the presence of suitable nest hollows.

There are two trees on the study area that meet the definition of breeding habitat due to their trunk diameter. Both trees are not proposed to be cleared as part of the construction of the proposed sports hall and therefore the proposed development is unlikely to have a significant impact according to the Guidelines.

Roosting

The Black Cockatoo Referral Guidelines consider the clearing of a known roosting site as a high risk of being a significant impact. The study area is not a known roosting site however roosting sites are nearby. Clearing of any trees on the study area would not have a significant impact on roosting habitat on the study area.

Foraging

According to the Black Cockatoo Referral Guidelines the clearing of more than 1ha of quality foraging habitat or more than 10ha of low quality foraging habitat has a high risk of causing a significant impact. Degradation of more than 1ha of quality habitat by things such as altered hydrology or fire regimes has an uncertain risk. The significance of degradation depends on the type of degradation and the quality of the habitat.

The study area contains approximately 0.21ha of foraging habitat of which is less than 1ha and the foraging habitat quality scoring tool does not apply. Therefore, the proposed clearing of the study area is unlikely to have a significant impact.

Step 3 Mitigation

The consideration of a mitigation strategy during the determination of the level of impact and requirement to refer is allowed by the Black Cockatoo Referral Guidelines and setting in place the best practice mitigation strategy may reduce the level of impact and in turn the risk of a significant impact. Mitigation strategies include avoiding impact, managing impact so that there is no net decline in habitat and monitoring the effectiveness of mitigation.

Depending on the amount of clearing proposed and the area of vegetation to be retained there may be opportunities to plant some of the bare areas with Black Cockatoo habitat species.

Step 4 Referral Advice

The Decision Making flowchart in Figure 1 of the Black Cockatoo Referral Guidelines was applied to the study area and is shown in sequence below:

- 1 Will your action(s) directly or indirectly impact on black cockatoo habitat (see Section 3)? – YES
- 2 Does your action involve loss of
 - any breeding habitat (i.e. known, suitable or potential nesting trees) OR
 - part of a night roosting site OR
 - >1 ha of high quality foraging habitat OR
 - >10 ha of low quality foraging habitat for one of the black cockatoo species – NO
- 3 Have you adopted the mitigation standards to remove the likelihood of significant impact? – YES

RESULT – The clearing of less than 1ha of foraging habitat and no roosting habitat or potential breeding habitat is unlikely to have a significant impact and the Action is unlikely to require a referral.

8 SUMMARY AND CONCLUSIONS

The Black Cockatoo Habitat Assessment resulted in the following findings:

- The study area contains habitat for three species of Black Cockatoo, although Baudin's Black Cockatoo is likely to be a vagrant visitor only;
- The study area contains eight plant species that are known to be foraged by Black Cockatoos. However, only a small amount of evidence of old foraging on Banksia cones was observed. The total amount of foraging habitat on the study area is approximately 0.21ha;
- There is no recorded roosting or breeding on the study area;
- The tall Jarrah trees provide potential roosting habitat and there is roosting habitat recorded nearby;
- There are two potential breeding habitat trees within the study area but not located within the footprint of the proposed sports hall;
- There is around 8,700ha of Black Cockatoo habitat within 12km of the study area; and
- Clearing of any Black Cockatoo habitat is not likely to lead to a significant impact according to the EPBC Act Significant Impact Guidelines 1.1 or the Black Cockatoo Referral Guidelines. Therefore, the clearing of a small amount of foraging habitat does not require referral under the EPBC Act.

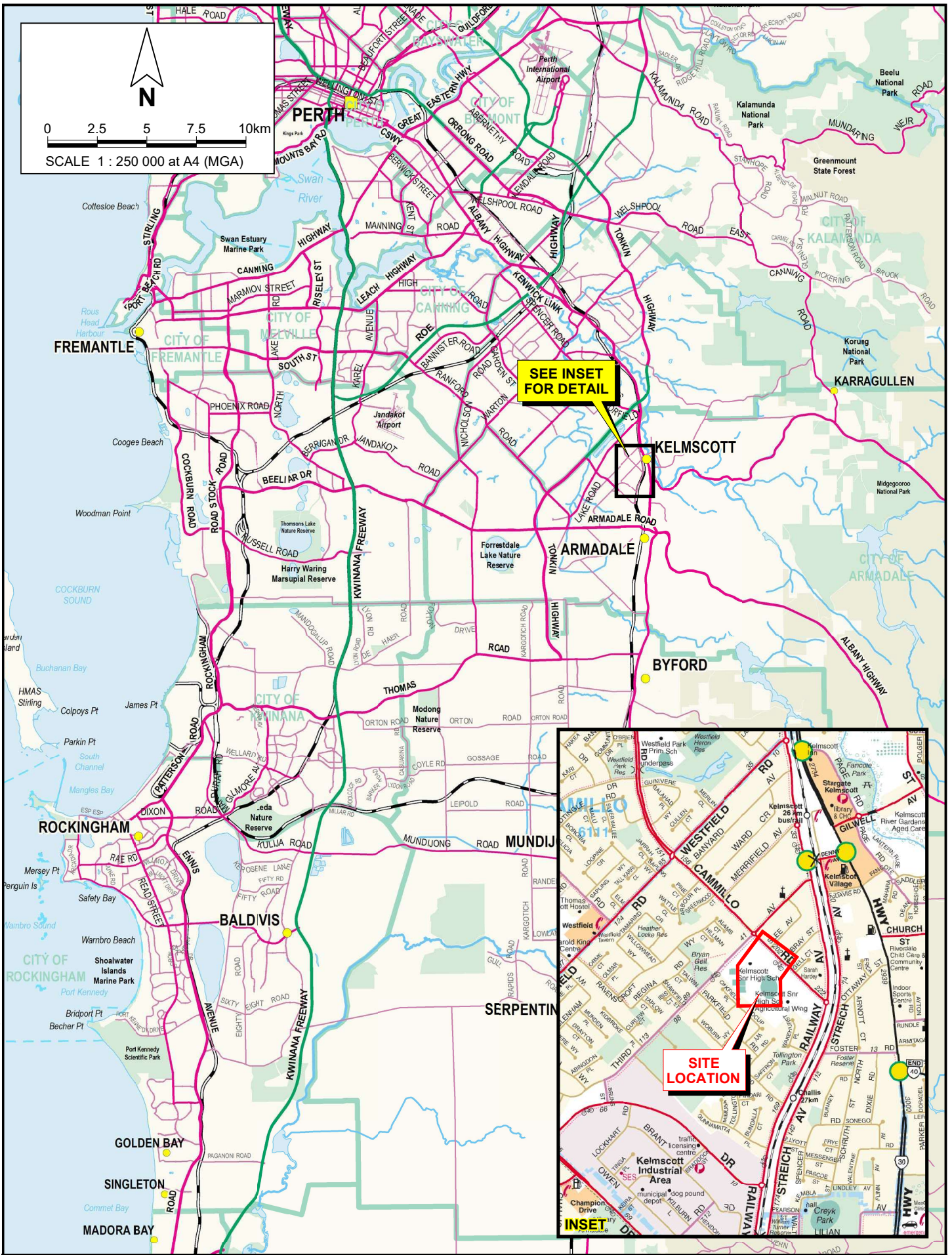
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FIGURES



PINPOINT CARTOGRAPHICS (08) 9562 7136

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RPS
 BLACK COCKATOO HABITAT ASSESSMENT
 KELMSCOTT SENIOR HIGH SCHOOL

SITE LOCATION

Figure 1



CADASTRAL SOURCE: Landlinks, October 2022.
 AERIAL PHOTOGRAPH SOURCE: Nearmap, June, August 2022.
 CONTOUR SOURCE: Generated from Geoscience Australia 5m DEM.

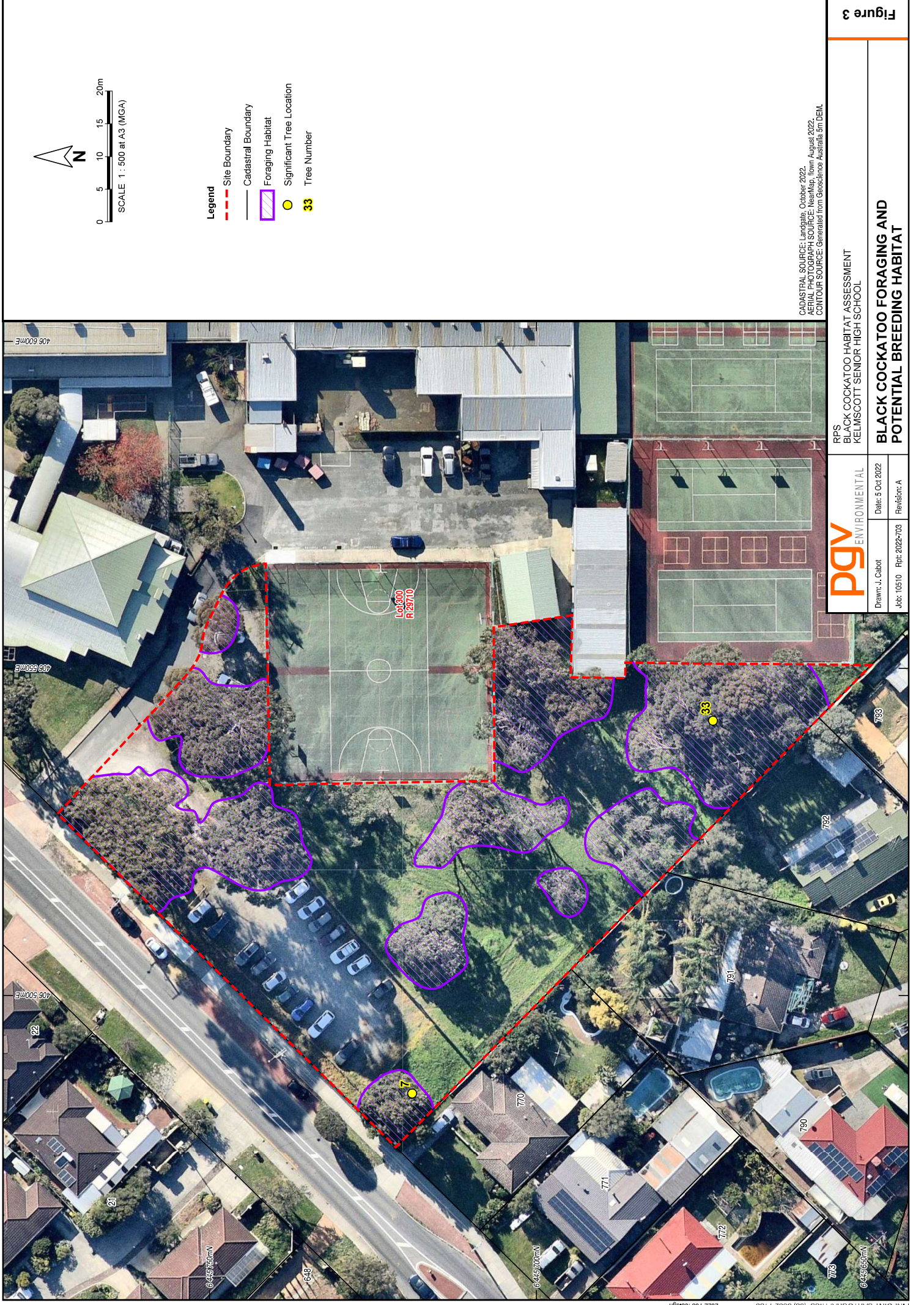
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Figure 2

SITE BOUNDARY AND TOPOGRAPHY



0 5 10 15 20m
SCALE 1 : 500 at A3 (MGA)

- Legend**
- - - Site Boundary
 - Cadastral Boundary
 - Foraging Habitat
 - Significant Tree Location
 - 33** Tree Number

CADASTRAL SOURCE: LandInfo, October 2022
AERIAL PHOTOGRAPH SOURCE: NorthMap, June, August 2022
CONTOUR SOURCE: Generated from Geoscience Australia 5m DEM.

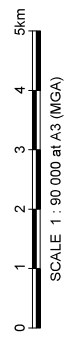
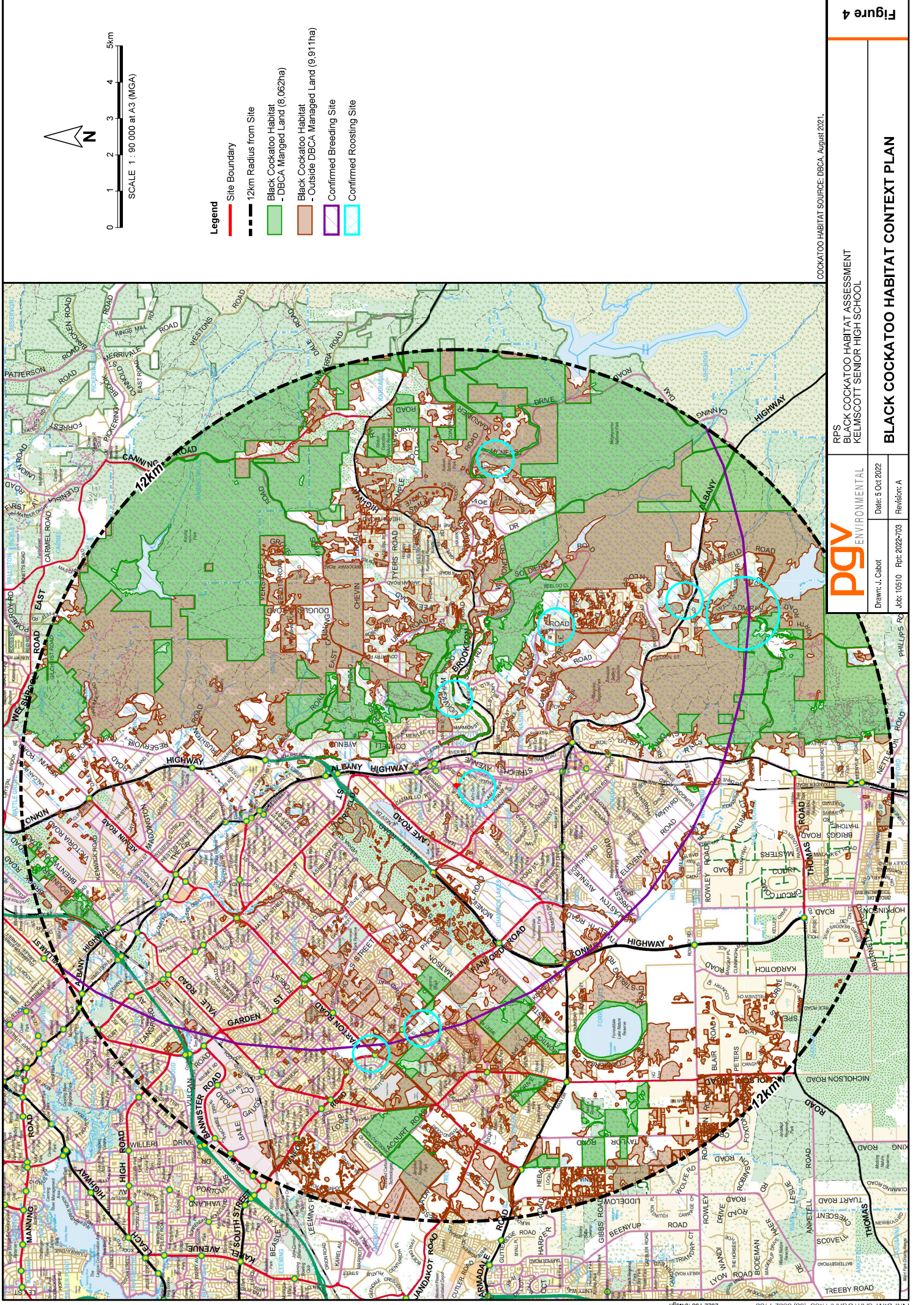
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**BLACK COCKATOO FORAGING AND
POTENTIAL BREEDING HABITAT**

Revision: A

Figure 3



- Legend**
- Site Boundary
 - - - 12km Radius from Site
 - █ Black Cockatoo Habitat - DBCA Manged Land (8,062ha)
 - █ Black Cockatoo Habitat - Outside DBCA Manged Land (9,911ha)
 - Confirmed Breeding Site
 - Confirmed Roosting Site

COCKATOO HABITAT SOURCE: DBCA, August 2021.

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BLACK COCKATOO HABITAT CONTEXT PLAN

Figure 4