

Attachment 6: Section 3.2.1 - Response

Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

Flora

Desktop Assessment

FVC (2023) identified seven Threatened flora species with the potential to occur within the survey area or which had previously been recorded within 10 km of the survey area (Att 4 Section 5.2 pp 33). Of these, one Commonwealth-listed species – the King Spider-orchid (*Caladenia huegelii*; listed Endangered) was assessed as 'may occur' as a specimen was found 5.6 km east of the survey area in suitable habitat. However, it was noted that suitable habitat for this species within the survey area was expected to be very limited.

The remaining six Commonwealth-listed species (listed below) were assessed as 'unlikely to occur' as suitable habitat was considered unlikely to occur within the survey area:

- Glossy-leafed Hammer Orchid (*Drakaea elastica*) – Endangered
- Purdie's Donkey-orchid (*Diuris purdiei*) – Endangered
- Slender Andersonia (*Andersonia gracilis*) – Endangered
- Dwarf Hammer-orchid (*Drakaea micrantha*) - Vulnerable
- Tall Donkey Orchid (*Diuris drummondii*) - Vulnerable
- Dwarf Bee-orchid (*Diuris micrantha*) - Vulnerable.

Field Survey

FVC (2023) undertook a reconnaissance flora assessment on 24 May 2022 and 13 July 2022. A detailed flora and vegetation assessment was undertaken on 1 September 2022. The findings of both surveys are collectively reported on in Att 4 FVC (2023). No flora of conservation significance were recorded during the FVC surveys (FVC, 2023).

A total of 69 flora species (comprising 20 native species and 49 introduced species) from 58 genera and 31 families were recorded during the field surveys. The families with the most species recorded were Poaceae (11 taxa), Asteraceae (six taxa), Fabaceae (six taxa) and Myrtaceae (six taxa). The low number of native species and high number of introduced species recorded can be attributed to the highly disturbed and largely cleared nature of the survey area.

It is noted that no flora of conservation significance were recorded during previous surveys by Strategen (2019) of the full extent of Lot 511 (surveyed in May 2019) and Lot 512 (surveyed in August 2019), or during a survey by Strategen (2011) in a portion of Lot 511 in November 2011.

FVC (2023) undertook targeted searches for the Threatened flora species identified through the desktop assessment within areas of suitable habitat and during the field survey. The King Spider-orchid was considered in a previous assessment by Strategen (2019 - Att 9) to have a 'Possible' potential of occurrence at the site. The King Spider-orchid was not recorded during field surveys undertaken by Strategen or FVC within the site. It is considered then that this species does not occur within the site.

Of the 49 weed species recorded by FVC (2023), five species (Bridal Creeper (**Asparagus asparagoides*), Paterson's Curse (**Echium plantagineum*), Cotton Bush (**Gomphocarpus fruticosus*), One-leaf Cape Tulip (**Moraea flaccida*) and Arum Lily (**Zantedeschia aethiopica*)) are listed as declared pests under the BAM Act (DPIRD 2021). Bridal Creeper is also listed as a Weed of National Significance (WoNS) under the Australian Weed Strategy 2017-2027 (Invasive Plants and Animals Committee 2016, DAWE 2021a).

Under the BAM Act, relevant species are assigned a control category to minimise the spread and infestation of each declared pest. Bridal Creeper, Cotton Bush, One-leaf Cape Tulip, Paterson's Curse and Arum Lily are assigned the 'Exempt' category, whereby landholders are under no obligation to control infestations.

Fauna

Desktop Assessment

The PMST report, DBCA fauna database and NatureMap reports generated by FVC (2023) identified 12 Threatened fauna species listed under the EPBC Act as potentially occurring within the survey area: two Critically Endangered, five Endangered, four Vulnerable, and one Conservation Dependent species.

Of these 12 listed Threatened species, two – the Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*; Endangered) and Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*; Vulnerable) - have been recorded close to (i.e. within approximately 2 km or less) the survey area. These species were subsequently considered regular visitors and likely to occur within or use the survey area. Baudin's Black Cockatoo (*Calyptorhynchus baudinii*; Endangered) - is considered an irregular visitor to the survey area, as the survey area is on the edge of its typical range. It is considered this species may, therefore; very occasionally occur within or use the survey area. The remaining nine species identified by the desktop assessment are not expected to occur within the survey area due to the lack of suitable habitat. This desktop assessment was based on the proximity and currency of previous records and the suitability of habitat provided within the site (Att 4 FVC 2023).

In addition, 12 Marine and/or Migratory species were identified from the PMST report as potentially occurring within the survey area. These species are not expected to occur in the survey area due to the lack of suitable habitat (Att 4 FVC, 2023).

Field Survey

Field surveys undertaken by FVC included two reconnaissance surveys of within two areas (undertaken on 24 May 2022, 13 July 2022) and a detailed biological survey during the Spring survey season (1 September 2022). The findings of these surveys are collectively reported on within Att 4 Section 4.3 pp 24 and Section 5.3 pp 52. The field surveys focused on fauna habitat mapping, opportunistic fauna observations, and a targeted survey for relevant fauna species of conservation significance and their habitats.

A total of 43 vertebrate fauna species were recorded, either from direct sightings or evidence (such as calls, scats, tracks, diggings, foraging evidence, feathers or bones). The recorded vertebrate fauna consisted of 37 birds, two reptiles and four mammals.

One conservation significant fauna species, the Carnaby's Black Cockatoo, was observed during the FVC (2023) survey. Six Carnaby's Black Cockatoos were observed flying over, but not specifically using the survey area.

The field surveys conducted by FVC (2023) identified four key fauna habitats, as follows:

- Tall woodland - Tuart woodland over Acacia Tall Open Shrubland with sparse to dense understorey of weeds. Substrate is sand with some limestone, which is not seasonally damp or inundated. This habitat was recorded to cover 31.89% (18.98 ha) of the survey area.
- Shrubland - Acacia Tall Open Shrubland with sparse to dense understorey of weeds. Substrate is sandy which is not seasonally damp or inundated. This habitat was recorded to cover 8.23% (4.9 ha) of the survey area.
- Open grassland and cleared areas - Cleared areas devoid of native vegetation consisting of weeds and grasses and some areas of inundation and significant degradation. This habitat was recorded to cover 14.42% (8.58 ha) of the survey area.
- Cleared and built environment was recorded to cover 45.45% (28.05 ha) of the survey area.

As the survey area is largely degraded or cleared, and surrounded by established developments (e.g. major roads, a railway corridor and the existing rail depot) there is limited habitat remaining for native vertebrate fauna within the survey area and it is considered that few fauna species would permanently occupy or directly use much of the survey area (Att 4 Section 6 pp 67).

The habitat considered to be of greatest relative value to fauna within the survey area is the 'Tall woodland' habitat, with some (limited) value considered to be provided by the 'Shrubland' habitat and little to no value provided in the 'Open grassland' habitat (FVC 2023).

Black Cockatoo Habitat

Desktop Assessment

The desktop assessment conducted by FVC (2023) identified the following regarding Black Cockatoo habitat relevant to the survey area (See Att 4 Figure 10 pp 51):

- **Breeding Habitat:** There are no confirmed or unconfirmed breeding sites for Black Cockatoos that occur within the survey area or within 15 km of the survey area. The nearest confirmed breeding site for Carnaby's Black Cockatoos occurs approximately 18 km north-east of the survey area and unconfirmed Carnaby's Black Cockatoo breeding sites occur 15 km east and 13 km south of the survey area (DBCA, 2020).
- **Roosting Habitat:** The southern part of the survey area intersects with the 6 km buffer of a confirmed Carnaby's Black Cockatoo roost site. The nearest confirmed roosting sites for Carnaby's Black Cockatoos are 5 km south and 9 km east of the survey area. The nearest unconfirmed roosting site for Carnaby's Black Cockatoos occurs 6.5 km south-west of the site (DBCA 2020).

Field Survey

Foraging Habitat

In accordance with the DAWE (2022) referral guideline ('Referral guideline for 3 WA threatened black cockatoo species'), the survey area recorded foraging values between 0 and 6 (with the maximum foraging value being 10; Att 4 FVC, 2023). Carnaby's Black Cockatoo recorded the highest score of 6 (moderate) and Baudin's Black Cockatoo recorded a foraging value of 5 (moderate). It was concluded that the survey area did not provide foraging value for the Forest Red-tailed Black Cockatoo due to a lack of suitable food source plants (Att 4 Section 5.4 pp 57). It was concluded that the survey area was unlikely to support the Forest Red-tailed Black Cockatoo (Att 4 Section 5.4 pp 57).

With the exception of *Eucalyptus gomphocephala* and *Banksia attenuata*, limited foraging food species for Black Cockatoos occur within the survey area (FVC, 2023). Tuart, as a food source used by Black Cockatoo species, is listed on one occasion by Johnstone et al. (2011) as a food item for Carnaby's Black Cockatoo and there is evidence that the species will forage on Tuart fruits (Mike Bamford, pers. comm.) As cited in Att 4 Section 5.4 pp 57.

Given the 'Moderate' to 'No' foraging value for Black Cockatoos within the survey area (dependent on species), the degraded condition of the survey area, and the presence of similar vegetation in the immediate vicinity to the east of the survey area, it is unlikely that Black Cockatoos would rely on vegetation within the survey area as a main source of food. They may use food sources within the survey area in an ad hoc manner however as they travel to areas of better foraging habitat in the adjacent areas (Att 4 Section 6.6 pp 72).

A review of the SCP Vegetation Complexes spatial dataset indicates that remnant vegetation to the north, east and south of the survey area comprises vegetation complexes that provide suitable foraging and breeding resources for Black Cockatoos and would be considered potential habitat. Approximately 11,858 ha of remnant vegetation within the extents of these complexes occurs within 12 km of the site. It is, therefore, considered that the site contains 0.21% of the suitable foraging and breeding habitat available within this 12 km buffer.

Although six Carnaby's Black Cockatoos were observed flying over the survey area by FVC (2023) during the field survey, they were not observed by the survey team to be utilising the site (e.g. foraging, nesting or roosting). Black Cockatoos are not known to forage within the survey area or to occupy the site regularly, with no observations of Black Cockatoos utilising the site by Aurizon site staff.

Roosting Habitat

While the tall trees within the 'Tall woodland' habitat have the potential to support Black Cockatoo roosting there was no evidence of roosting observed during the field surveys (FVC, 2023).

It was determined that the regional extent of roosting habitat for Black Cockatoos within a 20 km buffer is approximately 21,022 ha. Any tall tree may provide roosting habitat for Black Cockatoos (DAWE, 2022). Based on the assumption that all remaining remnant vegetation occurring within the 20 km buffer (i.e. 21,022 ha) has the potential to contain tall trees, it is considered that the survey area contains 0.12% of suitable roosting habitat at a regional level. No evidence of Black Cockatoo roosting was observed during the field survey. It is considered unlikely that Black Cockatoos use the survey area for roosting. Furthermore, since better-quality roost sites that are known to support roosting exist outside the survey area, it is likely that these areas would be preferred.

Breeding Habitat

Any tree of suitable diameter at breast height (DBH) (being a tree with $DBH \geq 500$ mm) within the survey area was recorded during the field surveys and scored as described in Att 4 Section 4.3.3.2 pp 30.

Categories of potential Black Cockatoo breeding habitat tree recorded within the survey area were as follows (shown in Att 1-3_Att 1 Fig 7 and listed in Att 4 Table 24 pp 64):

- Potentially suitable hollow (referred to as a Rank 3 tree) - Potentially suitable hollow visible but no chew marks present; or potentially suitable hollow present (as suggested by structure of tree, such as large, vertical trunk broken off at a height of >10 m).
- Potential breeding tree with unsuitable hollow (referred to as a Rank 4 tree) - Tree with large hollows or broken branches that might contain large hollows, but hollows or potential hollows are not vertical or near-vertical; thus, a tree with or likely to have hollows of sufficient size but not to have hollows of the angle preferred by Black Cockatoos.
- Potential breeding tree (referred to as a Rank 5 tree) - Tree lacking large hollows or broken branches that might have large hollows; a tree with more or less intact branches and a spreading crown.

A total of 365 trees considered potential breeding trees (i.e. Rank 3, 4 or 5) for Black Cockatoos were recorded within the survey area, as summarised in Att 5 Table 3 . Of these, 18 trees have potentially suitable hollows but no evidence of use by Black Cockatoos (i.e. are considered Rank 3).