

9 August 2023

Our Reference: 14000-009-22-BILR-1Rev0_230809

Sally Pickard
Senior Environmental Approvals Advisor
Rio Tinto
Central Park
158 St Georges Terrace
Perth WA 6000

Dear Sally,

Re: Hope Downs 2 Proposal – Grey Falcon Environmental Impact Assessment, August 2023

1 Introduction

1.1 Background

Rio Tinto has referred to the Environmental Protection Authority (EPA) the potential development of two above water table iron ore deposits, Hope Downs 2 (HD2) and Bedded Hilltop (referred to as the 'HD2 survey area'), located within the Greater Hope Downs area, in the Pilbara region of Western Australia. A Preliminary Feasibility Study (PFS) Study has commenced. Based on the outcome of the PFS, the Project is expected to progress into Feasibility Study in late 2022/23. The environmental approvals process commenced in 2021 with referral under both the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) being undertaken. The EPA set a Public Environmental Review level of assessment.

The Department of Agriculture, Water and the Environment (DAWE) determined the project a controlled action under the EPBC Act, with an accredited assessment pathway. DAWE identified that the proposed action is likely to have a significant impact on Matters of National Environmental Significance species, including the Grey Falcon (*Falco hypoleucos*), which has been listed as Vulnerable since the baseline surveys were undertaken (Astron Environmental Services 2020).

1.2 Scope of Work

The Scope of Work was to undertake a review of the Grey Falcon's occurrence within the HD2 survey area based on the records captured during the baseline survey and any local surveys that have been completed in adjacent areas, to inform environmental impact assessment.

2 Grey Falcon

The Grey Falcon (*Falco hypoleucos*) is specially protected under both State and Federal legislation. The species is listed as Criterion 4 ('Vulnerable') under the Western Australian *Biodiversity Conservation Act 2016* and as 'Vulnerable' under the Commonwealth EPBC Act.

The Grey Falcon is an elusive species endemic to mainland Australia. It is the rarest of six Australian falcons and one of the least common raptors (Olsen and Olsen 1986; Marchant and Higgins 1993). The Grey Falcon is a medium-sized raptor (400 g – 500 g) with females weighing on average about 30% more than males (Schoenjahn 2011). The Grey Falcon is a compact, pale grey falcon with a heavy thick chest, long wings and dark wing tips (Debus 2019; Schoenjahn 2010).

The species occurs in arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia (Marchant and Higgins 1993). The species is mainly found where annual rainfall is less than 500 mm, except when wet years are followed by drought when the species might become marginally more widespread, although it is essentially confined to the arid and semi-arid zones at all times (Schoenjahn 2018). The species appears to be absent from Cape York Peninsula, areas east of the Great Dividing Range in Queensland and New South Wales, south of the Great Dividing Range in Victoria, and south of latitude 26°S in Western Australia (Barrett et al. 2003; Schoenjahn 2018).

The Grey Falcon occurs at low densities across inland Australia (Birdlife Australia 2019). The species frequents timbered lowland plains, particularly *Acacia* shrublands that are crossed by tree-lined water courses (Garnett et al. 2011, Watson 2011, Janse et al. 2015, Ley and Tynan 2016, Schoenjahn 2018). The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter (Janse et al. 2015, Schoenjahn 2018). While breeding, Grey Falcons feed almost exclusively on birds (Cupper and Cupper 1980, 1981, Schoenjahn 2013, Janse et al. 2015, Ley and Tynan 2016). Prey species include doves, pigeons, small parrots and cockatoos, and finches, but a variety of other bird prey species has been recorded (Marchant and Higgins 1993, Deebus and Rose 2000, Hollands 2003, Schoenjahn 2013). Grey Falcons have also been observed preying on small mammals and lizards (Czechura 1981, Moore 2016).

Breeding occurs from June to November. Clutch size can vary from one to four eggs (Olsen and Olsen 1986, Garnett et al. 2011, Schoenjahn 2013). Data on laying dates and breeding events suggests that above average rainfall in the first half of the year may encourage breeding (Sutton 2010). Eggs are laid in the old nests of other birds, particularly those of other raptors or corvids. The nests chosen are usually in the tallest trees along watercourses, particularly River Red Gum (*Eucalyptus camaldulensis*) and Coolibah (*E. coolabah*), but falcons also nest in telecommunication towers (Marchant and Higgins 1993, Schoenjahn 2013, Schoenjahn 2018). Therefore, the critical breeding habitat for this species includes major drainage lines with established tall trees. The incubation period is 34 to 35 days (Cupper and Cupper 1980, Hollands 2003, Sutton 2010, Ley and Tynan 2016), with the nesting period between 40 to 50 days (Hollands 2003). Young falcons typically remain with their parents up to at least 12 months after fledging (Schoenjahn 2018).

Schoenjahn (2018) identified 10 plausible threats to the Grey Falcon and ranked them according to severity. These threats were extrapolated from closely related species since there is little data on specific threats to the Grey Falcon. The main threats (threat status equal to high or very high) identified were predation by cats, increased temperatures due to climate change, grazing by exotic herbivores, small population size and nest shortage (Garnett et al. 2011, Schoenjahn 2013).

3 Methods

The primary method of recording Grey Falcon is via opportunistic sightings. Targeted searches for this species are difficult due to their rarity, nomadic nature, and potential to range across a variety of habitats. Historical surveys within and surrounding the project area relied mainly on opportunistic sightings to detect this species. This species could have also been detected during targeted searches for other conservation significant species such as the Northern Quoll (*Dasyurus hallucatus*) and Pilbara

Olive Python (*Liasis olivaceus barroni*). Targeted searching for Grey Falcon involves intensive area searches on foot, involving detection by sight, call and signs of occupancy, especially nests.

Astron completed a Department of Biodiversity, Conservation and Attractions (DBCA) threatened and priority fauna search to identify any new records of this species within 75 km of the HD2 survey area (Department of Biodiversity, Conservation and Attractions 2022) and reviewed known information on this species, the survey effort completed in previous surveys and sightings recorded to date within the vicinity of the survey area.

The likelihood of the species being present within the survey area and the likely impacts to this species from the Project in accordance with the Commonwealth significant impact guidelines (Department of Environment 2013) were assessed.

4 Results

A DBCA database search returned four Grey Falcon records within 50 km of the HD2 survey area. Three of these records were from Area C South Flank deposit in 2008 within approximately 8 km from the HD2 survey area. The three records were of one individual each, all within 5 km of each other and four days apart, suggesting it was likely the same individual on all three occasions. The fourth record was from West Angelas in June 1997, within 22 km of the HD2 survey area. The record was of two individuals and given the record was from June and breeding occurs from June to November, it is possible that this was a record of a breeding pair.

Nine previous fauna surveys within 50 km of the HD2 survey area returned only one (1 record from 1,239 person days) Grey Falcon record (Table 1). During detailed fauna surveys at Rhodes Ridge, two adults were sighted opportunistically together on powerlines leading from Hope Downs 4 camp within Low Hills and Slopes habitat, approximately 45 km south-east from the HD2 survey area (Astron Environmental Services 2020). The record was from August and since breeding occurs from June to November, it is possible that this was a record of a breeding pair.

All habitats previously identified within the HD2 survey area (Astron Environmental Services 2020) could be utilised by the Grey Falcon for foraging, particularly areas where prey bird species are found. However, no Major Drainage Line habitat (preferred breeding habitat) is present within the HD2 survey area. Minor Drainage Line habitat is not considered suitable breeding habitat due to the lack of mature trees within this habitat. The closest potential breeding habitat for the Grey Falcon is the sections of Weeli Wollie Creek near discharge points that support riparian vegetation with larger trees, approximately 5 km north-east of the HD2 survey area, since it provides tall, established trees for breeding.

Table 1: Summary of literature review results from surveys conducted within the vicinity of the survey area.

Author (year)	Survey area; size (ha)	Survey level	Survey timing	Survey effort	Grey Falcon records
Astron (unpublished)	Rhodes Ridge survey area 110,745 ha	Level 2 (2 phases)	June 2019 -present (ongoing)	Baseline fauna assessment of terrestrial vertebrate fauna and short-range endemic (SRE) invertebrate fauna species within the survey area. Habitat assessments, 60 trapping sites, avifauna censuses at each trapping site, foot traverses, nocturnal searches, targeted searches for both vertebrates and SRE invertebrates, and the use of SM2 acoustic bat echolocation recorders and motion sensor cameras.	12 fauna sampling surveys 4 people per survey. Trip length from 7 to 11 days. 1 record of 2 individuals together. 1 record (2 individuals)/ 700 person days.
Astron (2020)	Hope Downs 2 survey area 10,817.7 ha	Level 2 (3 phases)	November 2017 May 2018 March 2019	Baseline fauna assessment of terrestrial vertebrate fauna and SRE invertebrate fauna species within the survey area. Habitat assessments, 19 trapping sites, avifauna censuses at each trapping site, foot traverses, nocturnal searches, targeted searches for both vertebrates and SRE invertebrates, and the use of SM2 acoustic bat echolocation recorders and motion sensor cameras.	12 days 6 people, 10 days 5 people and 11 days 4 people. 166 person hours. Considered to have moderate potential to occur. Not recorded during survey. 0 records/ 166 person days.
Biota Environmental Sciences (2006)	Hope Downs Rail Corridor (Juna Downs) Size not stated	Level 2 (1 phase)	September 2005	The survey focused on areas and habitat, which may not have been sampled in previous assessments. Sampling methods included the use of Elliott traps, avifauna surveys, harp nets, and opportunistic methods.	5 days 11 people. 55 person days. Not recorded during survey. 0 records/ 55 person days.
Biota Environmental Sciences (2009)	Hope Downs 1 Iron Ore mine Size not stated	Desktop Review	N/A	To provide a desktop and habitat-based review of potential SREs and troglobitic fauna values and habitats within the expanded project footprint for the Hope Downs Iron Ore mine project.	3 reports with potential for Grey Falcon records reviewed. No records. Unclear how many person days/hours spent searching. 0 records/ unknown number of person days.
Biota Environmental Sciences (2011b)	Hope Downs 1 Size not stated	Targeted/ Level 1	June 2010	Five Elliott trapping transects located within potential Northern Quoll habitat. Camera trapping and opportunistic searches.	4 people 7 days. 28 person days. Not recorded during survey. 0 records/ 28 person days.
Biota Environmental Sciences (2014a)	Hope Downs South West Marra Mamba deposit 2,758 ha	Targeted/ Level 1	September 2013	Four cage and large Elliott trapping transects located within potential Northern Quoll habitat and opportunistic searches. Motion sensor cameras and SM2 acoustic bat echolocation recorders were used to detect the presence of conservation significant fauna species.	8 days 3 people. 24 person days. 21 hours of avifauna survey. Not recorded during survey. 0 records/ 24 person days.
Ecologia Environment (2014)	Greater West Angelas 17,565 ha	Level 2 (2 phases)	September – October 2012 March 2013	Habitat assessments, 12 trapping sites, avifauna censuses at each trapping site, foot traverses, nocturnal searches, targeted searches for both vertebrates and SRE invertebrates, and the use of SM2 acoustic bat echolocation recorders and motion sensor cameras.	Two phases, 21 days total. 134 person days. 46 hours of searching with the potential to encounter this species. Considered to have moderate potential to occur. Not recorded during survey. 0 records/ 134 person days.
Ninox Wildlife Consulting (2009a)	Hope Downs 4 Option 1 Infrastructure Corridor Size not stated	Level 2 (1 phase)	May 2008	Four trapping sites, Anabat ultrasonic call detector, avifauna census, SRE sampling and opportunistic searches.	8 days 6 people. 48 person days. 10.5 hours of survey. Considered to have moderate potential to occur. Not recorded during survey. 0 records/ 48 person days.
Ninox Wildlife Consulting (2009b)	Hope Downs 4 Option 6 Infrastructure Corridor Size not stated	Level 2 (2 phases)	September 2008 April 2009	Six trapping sites, Anabat ultrasonic call detector, avifauna census, SRE sampling and opportunistic searches.	14 days 6 people. 84 person days. 21 hours of avifauna survey. Considered to have moderate potential to occur. Not recorded during survey. 0 records/ 84 person days.

5 Discussion

Major Drainage Line habitats represent the most suitable breeding and foraging habitat for Grey Falcons since they provide large trees for nesting and waterbodies which act as attractants for prey.

The closest major drainage line is the sections of Weeli Wolli Creek near discharge points that support riparian vegetation with larger trees, approximately 5 km north-east of the HD2 survey area. Since Major Drainage Line habitat does not lie within the HD2 survey area, it is unlikely that the Project will have significant impacts on breeding/nesting success.

The sighting of two individuals near HD4 camp (approximately 45 km from HD2 survey area) shows the species occurs in the general vicinity of the survey area. Given the time of year (August) and the maturity of the individuals, they were likely to be a breeding pair. Since the individuals were observed away from nesting habitat (within Low Hills and Slopes habitat), it is likely that they were foraging at the time of observation.

Grey Falcons forage across a variety of habitats. While suitable foraging habitat exists within the HD2 survey area and the Grey Falcon is likely to utilise the survey area for foraging, they are unlikely to rely solely on habitat within the survey area. Given the nomadic nature of the Grey Falcon, they tend not to be reliant on a specific habitat or area. The lack of fidelity to a set home range means that the species is less likely to be reliant on the habitats of the HD2 survey area and less likely to be impacted by the Project. The fauna habitats within the HD2 survey area are also not considered unique, and similar habitat is found in the surrounding area. Consequently, the HD2 survey area does not represent critical foraging or breeding habitat for this species.

The records of potential breeding pairs and individual records within 50 km of the HD2 survey area suggests a population of Grey Falcons exist in the surrounding area and may utilise the HD2 survey area for foraging.

6 Conclusions

Based on few previous records within 50 km of the HD2 survey area, the lack of historical records within the HD2 survey area despite a large amount of survey effort (1 record from 1,239 person days), lack of preferred breeding habitat within the survey area, and the nature of Grey Falcons to forage across a variety of habitats, it is unlikely that the Project will have a significant impact on this species.

This letter was prepared by Zoologist Brittany Osborn and technically reviewed by Principal Zoologist Dr Jessica Johnston. If you have any queries please contact Senior Project Coordinator, Melissa Ford on (08) 9421 9600.

Yours sincerely

ASTRON ENVIRONMENTAL SERVICES



Brett Lucas
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