
Peer review of
Biota Environmental Sciences'
Winu Project Targeted Night Parrot
Survey

Report to:
Rio Tinto Winu Pty Ltd

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1. Introduction

Rio Tinto Winu Pty Ltd (RTW) plans to develop a new copper-gold mine in the Great Sandy Desert bioregion of Western Australia. The location of the proposed mine and supporting infrastructure is approximately 320 km east of Port Hedland, close to the western boundary of the Great Sandy Desert bioregion.

During fauna surveys conducted as part of RTW's environmental assessments in March and April 2024, Night Parrot calls were detected within the project's proposed development envelope, at a proposed regional borefield. As a result, Biota Environmental Sciences (Biota) was commissioned to undertake targeted Night Parrot surveys and assess the species' status within the project area.

The results of that assessment were provided by Biota in the report 'Winu Project Targeted Night Parrot Survey'. This peer review will assess that report, its methods and conclusions.

The validity of any Night Parrot survey rests on two key aspects of that survey: the habitat assessment and resulting survey effort. Therefore, this peer review will consider:

- (1) whether the habitat assessment methodology applied was suitable;
- (2) whether acoustic survey effort was satisfactory; and
- (3) whether the conclusions drawn were justifiable.

2. Peer review

Habitat assessment methodology

Broadly, the original RTW project area consisted of three discrete areas: (1) the mine and infrastructure area (MIA) which encompasses the area that will be occupied by the mine itself and associated infrastructure; (2) the Rimfire borefield; and (3) the Texas borefield. The location of these areas is shown in the Biota report at Fig. 2.2.

Following the initial Night Parrot detection at the Texas borefield, Biota conducted detailed habitat mapping of an area encompassing the entire project area, including the MIA, Rimfire and Texas borefields. This mapping process included a preliminary desktop assessment using available GIS layers such as soil type, vegetation mapping and satellite imagery, followed by

a field assessment to determine whether those areas identified via the desktop analysis were in fact suitable. This habitat mapping aimed to identify both roosting and foraging habitat.

The habitat mapping process was conducted to a high standard, and in accordance with the most recent guidelines for determining the presence of Night Parrot (DBCA 2024). It determined that most suitable Night Parrot roosting and foraging habitat is contained within the Texas borefield (see Fig. 5.1 of Biota's report).

Acoustic survey effort

The primary acoustic survey effort consisted of ARUs deployed throughout most of the suitable habitat identified within the project area. These ARUs were left in place for a minimum of four weeks, and in several cases up to three months, representing significant survey effort in the highest priority survey areas. Initial deployments occurred in April 2024, following the wettest period of the year, a time when Night Parrot calling behaviour is known to increase (Murphy *et al.* 2017), providing the best chance of detecting birds that may be in the landscape.

Acoustic data was analysed using analysis algorithms and techniques known to successfully extract Night Parrot calls, and by ecologists sufficiently familiar with Night Parrot calls to ensure that calls extracted using the algorithm were likely to have been recognised.

This pattern of deployments, including the placement of ARUs and recording periods were in accordance with the most recent guidelines for determining the presence of Night Parrot (DBCA 2024). The techniques used for analysis are known to successfully detect Night Parrot calls, and it is likely that the results of this survey provided an accurate representation of the status of Night Parrots within the project area.

It was noted that the majority of calls detected in the Texas borefield were of the two-note trill type, were consistently given at a very high-frequency, and probably represented a single individual Night Parrot.

Additional habitat mapping and survey effort at Lake Waukarlycarly

Acoustic surveys repeatedly detected what was probably an individual Night Parrot within the Texas borefield area during the period April-May 2024. Only sporadic detections from June

onwards suggested that the bird left the area, raising the question of where it may have come from or gone to.

A decision was made to conduct further acoustic surveys in the Lake Waukarlycarly area, approximately 40-50 km to the south of the Texas borefield, and the nearest area known to support potential Night Parrot habitat. Following informal habitat mapping using satellite imagery and existing desktop habitat analysis from the area, a number of ARUs were deployed to try and detect Night Parrots. These ARUs were not deployed to systematically survey the area, but were deployed in areas deemed highly suitable, with the aim of simply detecting Night Parrots if they occurred there. ARUs were deployed initially for a period of almost three months before first data collection and remain deployed in the area.

During these deployments several different call types were detected, suggesting multiple individual Night Parrots occur in the area. Additionally, some of these calls were very similar to those detected in the Texas borefield. Biota concluded that the individual detected in the Texas borefield could be part of a larger population occurring in the Lake Waukarlycarly area that moves into the Texas borefield area when conditions are suitable.

Are conclusions justifiable?

The habitat mapping conducted by Biota within the RTW project area was of a high standard and is likely to have identified all suitable roosting and foraging habitat. The decision to remove the Texas borefield from the revised project area development envelope, and subsequent conclusion that there is no suitable Night Parrot habitat within the revised project development envelope is justified.

It should be noted that there are some areas of potentially suitable habitat close to the development envelope, associated primarily with the access road and pipeline that will service the Rimfire borefield. Indirect impacts to these areas of potential habitat will need to be considered as part of that development.

The acoustic survey effort conducted by Biota within the RTW project area was significant and is likely to have detected any Night Parrots that were present. That the analysis was able to detect what was probably a single Night Parrot across multiple ARUs over an extended period

suggests that if other Night Parrots were present, they would also have been detected. Further, the extended period over which the surveys have been undertaken justifies the conclusion that the bird was only present in the area for a period of time before largely leaving the area, only returning sporadically thereafter.

The detection of multiple Night Parrots in the Lake Waukarlycarly area, including what was likely the detection of the bird that had been detected within the Texas borefield supports the conclusion that the bird using the Texas borefield is probably part of a larger population that occurs within the broader Lake Waukarlycarly area.

Additional recommendations

In addition to the two-note trill calls detected in the Texas borefield, a number of one-note trill calls were detected. As most of these were faint, it was suggested that these could also be given by the same bird, with the second note of the call simply too faint to be detected. If analysis of the frequency of these one-note trill calls confirms that they are of a similarly high frequency as the two-note trill calls, this would give additional support to the conclusion that they were from the same bird. If these calls were consistently of a different frequency, it may suggest a second bird was present.

Analysis of the calling patterns at sites where calls were detected suggest that at least some of the time, the bird in the Texas borefield was roosting in proximity to ARUs which detected calls close to dusk and dawn. This conclusion was based on the times of calls being relatively early or late in the night. The dusk and dawn calling periods for Night Parrots at their roost sites are predictable, and their timing is relative to sunset and sunrise (Murphy *et al.* 2017, Leseberg *et al.* 2019). The dusk calling period typically occurs from 30-45 minutes post sunset, and while the dawn calling period is slightly less constrained, it usually occurs from 30-60 minutes before sunrise. Calculating the timing of the earliest and latest calls at these sites relative to sunset and matching them to these known dusk and dawn calling periods would give strong support to any conclusions about where the bird was roosting while present in the Texas borefield. Confirming these conclusions is important from a management perspective, as these roosting sites should be the targets of any specific management action such as fire protection or feral pest control.

It is suggested that the apparent arrival of the bird in the Texas borefield then departure after two months, is the result of the bird pursuing good foraging conditions following late wet season rainfall. In western Queensland where standing water is available year-round, Night Parrots are relatively sedentary (Murphy *et al.* 2018), suggesting that even in relatively arid areas, food is available year-round. There is emerging evidence from Ngururrpa IPA that in landscapes where availability of standing water is restricted at certain times of year, Night Parrots may leave those areas when standing water is not available (Ngururrpa Rangers *et al.* 2024). It is possible that the movement of birds to and from the Texas borefield is driven purely by water availability rather than the availability of food, and that determining the patterns of water availability at the site will help predict the movements of Night Parrots into and out of the area.

3. Conclusion

The habitat mapping and acoustic surveys conducted by Biota as part of their targeted Night Parrot survey were performed to a high standard, and in accordance with the recommended guidelines for determining the likely presence of Night Parrots (DBCA 2024). Additionally, after having detected birds within the project area, Biota sought to determine why birds occurred there and have established a plausible explanation for what is apparently the sporadic occurrence of Night Parrots in the Texas borefield.

Biota should be commended for this work. They have not only determined whether Night Parrots occur at a specific site, but by going further and providing a plausible explanation for the nature of this occurrence, have made a valuable contribution to our still developing knowledge of the Night Parrot, its distribution and ecology.

4. References

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