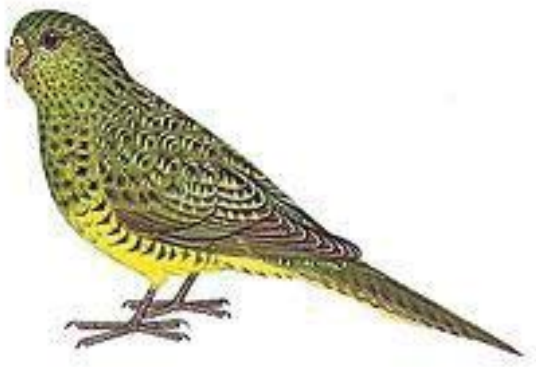
Night Parrot Survey Report



Lake Disappointment
Potash Project
Reward Minerals Ltd

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VERSION 3

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1. INTRODUCTION

This report details the results of a series of surveys targeting the night parrot (*Pezoporus occidentalis*) carried out as part of Reward Minerals Limited (Reward) Lake Disappointment Potash (LDP) Project situated in the Little Sandy Desert, approximately 180km south of Telfer and 285km east of Newman, Western Australia.

The survey work completed to date has been carried out in five phases, these being:

- June 2017 – Survey points located [redacted] and locations in the vicinity of Lake Disappointment including the proposed plant site;
- August/September 2017 – Survey points located within one area [redacted] and a number of areas in close vicinity to Lake Dora;
- October/November 2017 – A "regional survey" at various locations around Lake Disappointment and along/near Savory Creek.
- December 2017 – Survey points located within two areas [redacted]
- March/April 2018 – As with the December 2017 survey – survey undertaken at points located within two areas [redacted]

This report summarises the methods and results of each survey.

2. SURVEY SCOPE

The scope of the targeted surveys reported on here were to determine if the night parrot was utilising sections of the Project area as habitat and also to try and determine if it was also present at other locations in the general region. This survey work has been facilitated by the relatively recent release of night parrot call recordings, in particular those made in Western Australia, which allows for the reliable identification of the species using autonomous recording units (ARUs).

To comply with the scope of works and the likely requirements of environmental regulatory authorities the survey documented in this report was planned and implemented in accordance with the recently released document:

- Department of Parks and Wildlife (2017). Interim guideline for preliminary surveys of night parrot (*Pezoporus occidentalis*) in Western Australia. Version 1 May 2017.

3. METHODS

3.1 EQUIPMENT AND CALL ANALYSIS

During all surveys, passive call detection using automated recording units (ARUs) was undertaken using a Wildlife Acoustic SM2+ and/or SM4 recorders. The ARUs were set to record from or just before sunset and turn off at or just after sunrise each day.

Sound recordings were analysed for night parrot calls by Bob Bullen (Bat Call WA Pty Ltd).

3.2 JUNE 2017 SURVEY

In June 2017 targeted surveys were undertaken at various points [redacted] and [redacted]

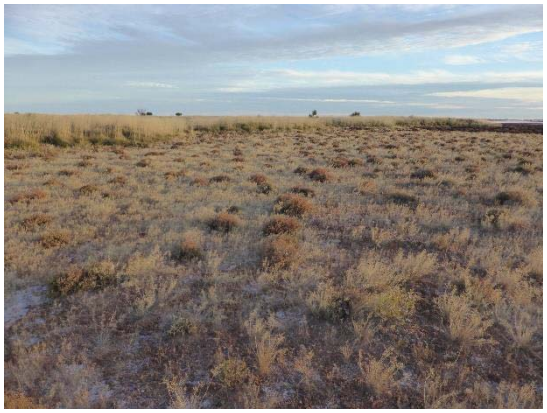
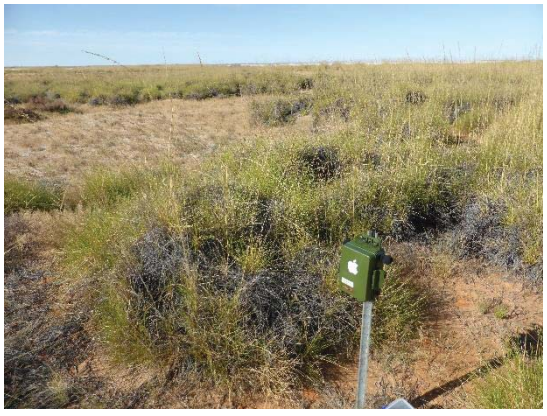
This phase of survey work included:

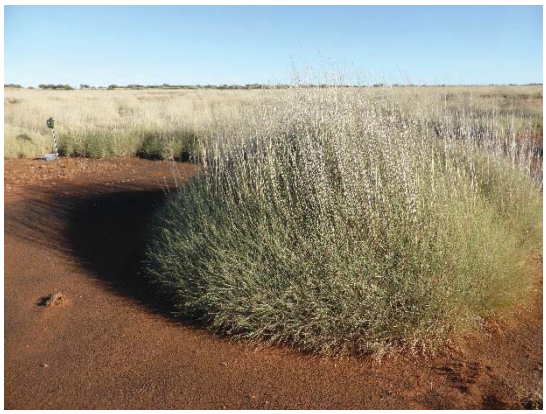
- passive acoustic surveys (using ARUs);
- listening surveys; and
- targeted and area searches around waterholes/bores while looking for night parrot feathers. Two camera traps were also placed at watering points at two bores.

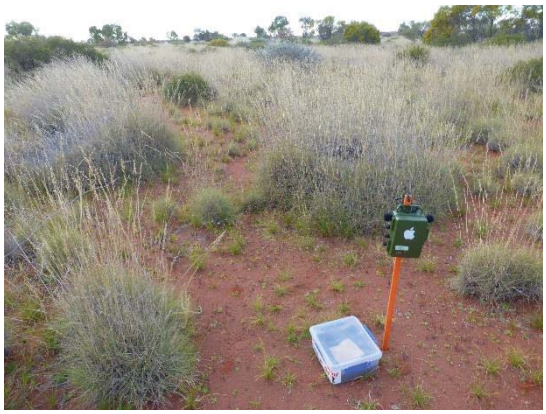
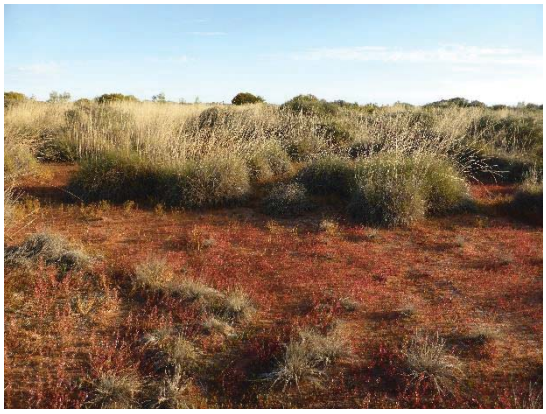
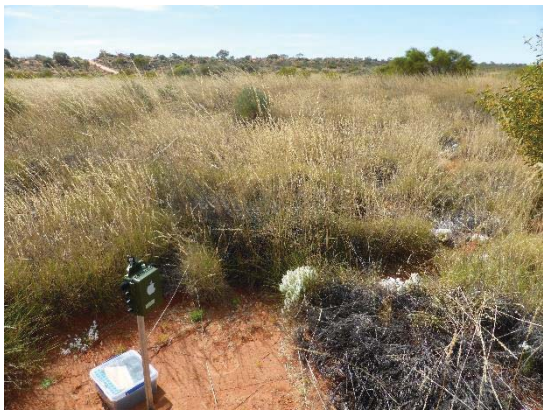
The passive acoustic and listening surveys were carried out in areas that appeared to contain the most likely roosting and nesting habitat (e.g. long unburnt spinifex, in particular near areas of healthy stands of samphire, if present) located within the defined study area and any other location in close proximity to proposed development areas or Lake Disappointment). Site selection was carried out by Greg Harewood and George Swann.

During this survey ARUs were deployed at 14 different locations for period of between one to eight nights. The location of the various survey points is shown in Figure 1. Other details on the locations surveyed are provided in Table 1 below.

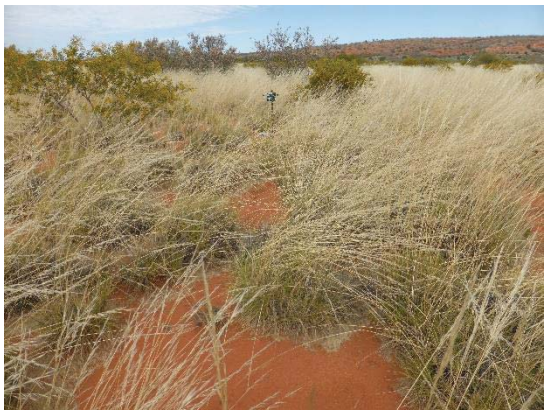
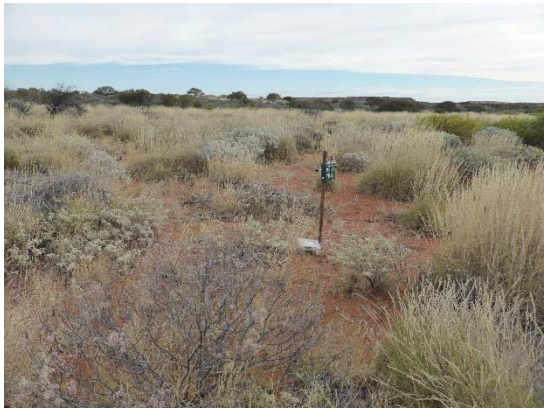
Table 1: ARU Sites – June 2017

ARU	Description	Example Image
4552	Landform/Vegetation Sandplain - Open shrub mallee of *Eucalyptus gamophylla/ E. kingsmillii* over low scrub of *Acacia bivenosa* and mid-dense hummock grass of *Triodia basedowii.* (P-HG2) Location [redacted] Deployment 16/06/2017 to 24/06/2017 Nights 8	
4605	Landform/Vegetation Salk lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp. (CD-CSSSF1) Location [redacted] 17/06/2017 to 23/06/2017 Nights 6	
4888	Landform/Vegetation Salk lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp. (CD-CSSSF1) Location [redacted] Deployment 17/06/2017 to 18/06/2017 Nights 1	

ARU	Description	Example Image
4888	Landform/Vegetation Rocky Plain - Open low woodland of *Corymbia aspera* over low scrub of *Acacia* spp. and mid-dense hummock grass of *Triodia basedowii.* (RP-HG1) Location [redacted] Deployment 18/06/2017 to 19/06/2017 Nights 1	
4888	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii*. (D-HG1) Location [redacted] Deployment 19/06/2017 to 20/06/2017 Nights 1	
4888	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii*. (D-HG1) Location [redacted] Deployment 20/06/2017 to 21/06/2017 Nights 1	

ARU	Description	Example Image
4888	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii*. (D-HG1) Location [redacted] 21/06/2017 to 22/06/2017 Nights 1	
4888	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) Location [redacted] 22/06/2017 to 23/06/2017 Nights 1	
4896	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] 17/06/2017 to 23/06/2017 Nights 6	

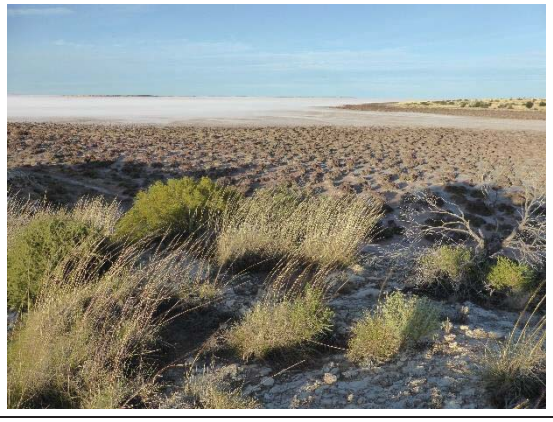
ARU	Description	Example Image
7566	Landform/Vegetation Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii*. (D-HG1) Location [redacted] Deployment 16/06/2017 to 21/06/2017 Nights 5	
11040	Landform/Vegetation Rocky Plain - Open low woodland of *Corymbia aspera* over low scrub of *Acacia* spp. and mid-dense hummock grass of *Triodia basedowii.* (RP-HG1) Location [redacted] Deployment 18/06/2017 to 23/06/2017 Nights 5	
11287	Landform/Vegetation Salk lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp. (CD-CSSSF1) Location [redacted] Deployment 16/06/2017 to 21/06/2017 Nights 5	

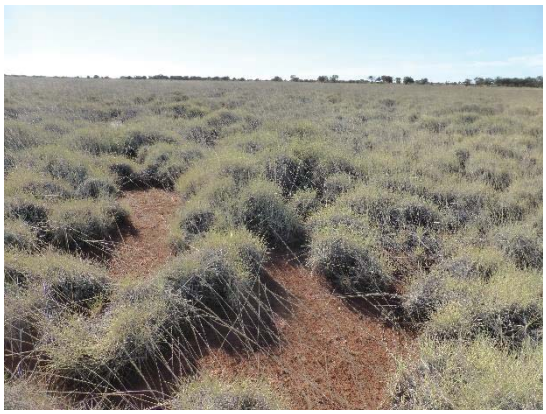
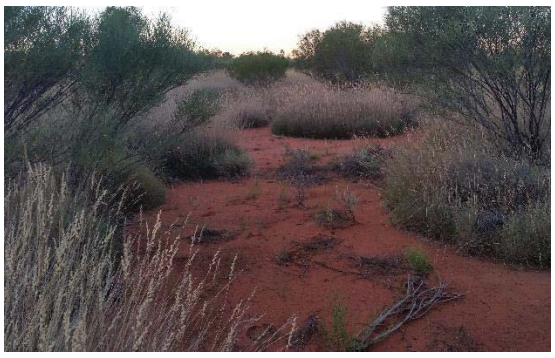
ARU	Description	Example Image
12791	Landform/Vegetation Sandplain - Open low woodland of *Corymbia* spp./ *Hakea* lorea over low scrub of *Acacia* spp. and mid-dense hummock grass of *Triodia* spp. (P-HG1) Location [redacted] 16/06/2017 to 21/06/2017 Nights 5	
12791	Landform/Vegetation Sandplain - Open low woodland of *Corymbia* spp./*Hakea lorea* over low scrub of *Acacia* spp. and mid-dense hummock grass of *Triodia* spp. (P-HG1) Location [redacted] 22/06/2017 to 23/06/2017 Nights 1	

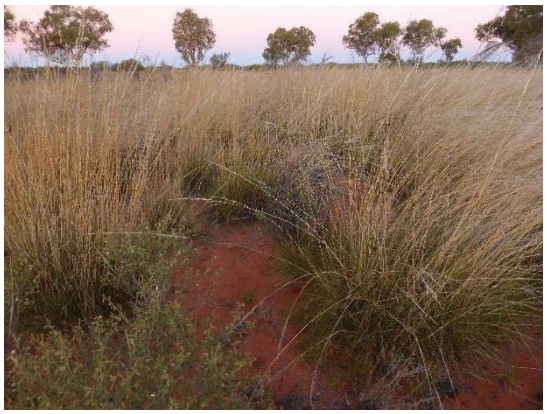
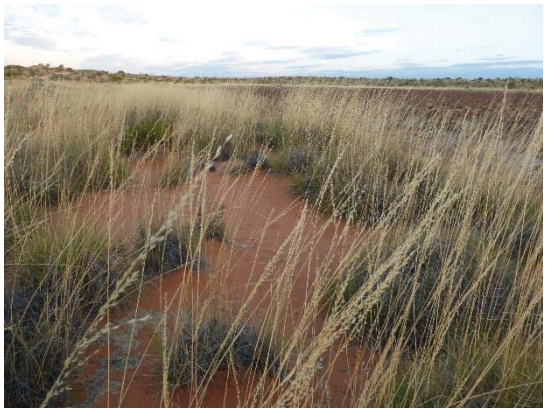
The listening surveys were carried out by two personnel (Greg Harewood and George Swann) at wide spaced (several hundred metres) intervals within potential habitat at six locations (Figure 1). The surveys commenced just before sunset and continued until approximately one hour after last light. Both personnel are familiar with WA night parrot calls.

Other details on the locations surveyed are provided in Table 2 below.

Table 2: Dusk Listening Sites – June 2017

Site	Description	Example Image
1	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp. (CD-CSSSF1) Location [redacted] Date 16/06/2017 Time	

Site	Description	Example Image
	Sunset to 1 hour after last light.	
2	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp. (CD-CSSSF1) Location [redacted] Date 17/06/2017 Time Sunset to 1 hour after last light.	
3	Landform/Vegetation Rocky Plain - Open low woodland of *Corymbia aspera* over low scrub of *Acacia* spp. and mid-dense hummock grass of *Triodia basedowii.* (RP-HG1) Location [redacted] 18/06/2017 Time Sunset to 1 hour after last light.	
4	Landform/Vegetation Sandplain - Open shrub mallee of *Eucalyptus gamophylla/ E. kingsmilliii* over low scrub of *Acacia bivenosa* and mid-dense hummock grass of *Triodia basedowii* (P-HG2) Location [redacted] 19/06/2017 Time Sunset to 1 hour after last light.	

Site	Description	Example Image
5	Landform/Vegetation Sandplain - Open low woodland of *Corymbia* spp./ *Hakea lorea* and low scrub of *Acacia* spp. and mid-dense hummock grass of *Triodia* spp. (P-HG1) Location [redacted] 20/06/2017 Time Sunset to 1 hour after last light.	
6	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp (CD-CSSSF1) Location [redacted] Date 22/06/2017 Time Sunset to 1 hour after last light.	

3.3 AUGUST/SEPTEMBER 2017 SURVEY

The August/September 2017 targeted survey work was undertaken at a site [redacted] previously surveyed [redacted] where night parrot calls were recorded and at a number of regional locations in close vicinity to Lake Dora.

This phase of survey work included:

- passive acoustic surveys (using ARUs).

At [redacted] three ARUs were initially placed [redacted] about 500m apart [redacted] These were left in place for eight nights and then moved to [redacted] here they were left for 12 nights.

The three units were them moved to Lake Dora and left for nine nights before being moved again and left for 11 nights at which point the survey was terminated. This phase of survey work was undertaken by Reward Minerals personnel under the direction of Greg Harewood.

The location of the various survey points is shown in Figure 2. Other details on the locations surveyed are provided in Table 3 below.

Table 3: ARU Sites – August/September 2017

Site/ARU	Description	Example Image
NP1 4605	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 12/08/2017 to 20/08/2017 Nights 8	
NP2 4896	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 12/08/2017 to 20/08/2017 Nights 8	
NP3 4552	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 12/08/2017 to 20/08/2017 Nights 8	

Site/ARU	Description	Example Image
NP4 4605	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 20/08/2017 to 01/09/2017 Nights 12	No Image
NP5 4896	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 20/08/2017 to 01/09/2017 Nights 12	No Image
NP6 4552	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 20/08/2017 to 01/09/2017 Nights 12	No Image

Site/ARU	Description	Example Image
Dora 1 4552	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp. Location [redacted] Deployment 01/09/2017 to 10/09/2017 Nights 9	No Image
Dora 2 4605	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp. Location [redacted] Deployment 01/09/2017 to 10/09/2017 Nights 9	No Image
Dora 3 4896	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp. Location [redacted] Deployment 01/09/2017 to 10/09/2017 Nights 9	No Image
Dora 4 4605	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp. Location [redacted] 10/09/2017 to 21/09/2017 Nights 11	No Image

Site/ARU	Description	Example Image
Dora 5 4896	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp. Location [redacted] Deployment 10/09/2017 to 21/09/2017 Nights 11	No Image
Dora 6 4552	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp. Location [redacted] Deployment 10/09/2017 to 21/09/2017 Nights 11	No Image

3.4 OCTOBER/SEPTEMBER 2017 SURVEY

The October/November 2017 targeted survey work was undertaken to try an obtain a regional perspective on the possible distribution of the night parrot in the area. ARUs were therefore deployed at various locations around Lake Disappointment and along/near Savory Creek.

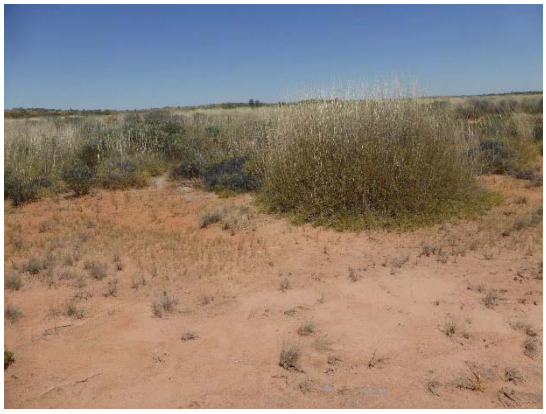
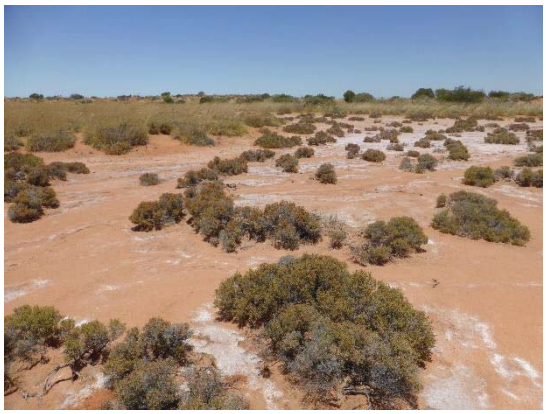
This phase of survey work included:

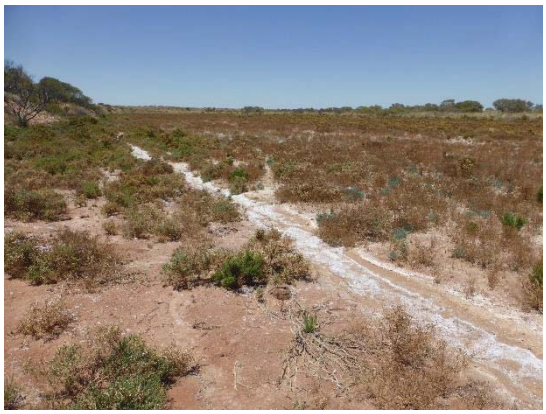
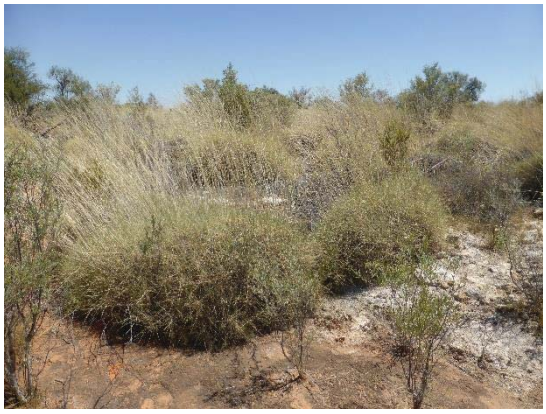
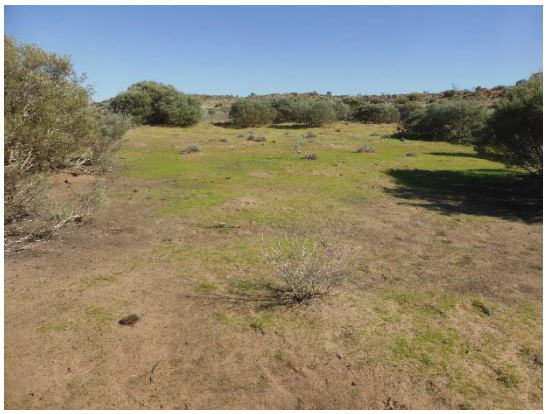
- passive acoustic surveys (using ARUs).

As with previous surveys the passive acoustic surveys were carried out in areas that appeared to contain the most likely roosting and nesting habitat (e.g. long unburnt spinifex, in particular near areas of healthy stands of samphire, if present) located within the area of interest. Site selection was carried out by Greg Harewood. The ARUs were left in place for 12 nights before being retrieved.

The location of the various survey points is shown in Figure 3. Other details on the locations surveyed are provided in Table 4 below.

Table 4: ARU Sites – October/November 2017

ARU	Description	Example Image
4552	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp Location [redacted] 30/10/2017 to 11/11/2017 Nights 12	
4605	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp (CD-CSSSF1) Location [redacted] Deployment 30/10/2017 to 11/11/2017 Nights 12	
4888	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. Location [redacted] Deployment 30/10/2017 to 11/11/2017 Nights 12	

ARU	Description	Example Image
4896	Landform/Vegetation Salt creek edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp Location [redacted] Deployment 30/10/2017 to 11/11/2017 Nights 12	
5263	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp Location [redacted] Deployment 30/10/2017 to 11/11/2017 Nights 12	
5275	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp Location [redacted] Deployment 30/10/2017 to 11/11/2017 Nights 12	
5284	Landform/Vegetation Edge of seasonally inundated freshwater claypan - open mixed herbs. Location [redacted] 30/10/2017 to 11/11/2017 Nights 12	

ARU	Description	Example Image
5285	Landform/Vegetation Salt lake edge – Mosaic of dense hummock grass of *Triodia* spp. and heath of mixed *Tecticornia* spp Location [redacted] Deployment 30/10/2017 to 11/11/2017 Nights 12	

3.5 DECEMBER 2017 SURVEY

The December 2017 targeted survey work was undertaken near the site [redacted] where night parrot calls were recorded. A section of this area had recently been burnt and the survey was carried out to determine if birds were still utilising the area.

This phase of survey work included:

- passive acoustic surveys (using ARUs).

Two ARUs were placed [redacted] in the interdunal swale previously surveyed during [redacted] monitoring events. ARU 4552 was placed near the same position as [redacted] and ARU 5263 near the same position as [redacted]. An additional three ARUs were placed near the base of in the dune in the next interdunal swale [redacted] (Figure 4). These were left in place for four nights.

This phase of survey work was undertaken by Reward Minerals personnel under the direction of Greg Harewood.

Other details on the locations surveyed are provided in Table 5 below.

Table 5: ARU Sites – December 2017

ARU	Description	Example Image
5263	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 14/12/2017 to 18/12/2017 Nights 4	No Image
4552	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 14/12/2017 to 18/12/2017 Nights 4	
4605	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 14/12/2017 to 18/12/2017 Nights 4	No Image

ARU	Description	Example Image
4896	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 14/12/2017 to 18/12/2017 Nights 4	No Image
5285	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 14/12/2017 to 18/12/2017 Nights 4	No Image

3.6 MARCH/APRIL 2018 SURVEY

The March/April 2018 targeted survey work was again undertaken near the site [redacted] previously surveyed in [redacted].

This phase of survey work included:

- passive acoustic surveys (using ARUs).

Seven ARUs were placed [redacted] hese were left in place for twelve

This phase of survey work was undertaken by Reward Minerals personnel under the direction of Greg Harewood.

Other details on the locations surveyed are provided in Table 6 below.

Table 6: ARU Sites – March/April 2018

ARU	Description	Example Image
5285	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 21/03/2018 to 04/04/2018 Nights 12	No Image
4605	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 21/03/2018 to 04/04/2018 Nights 12	No Image
5263	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 21/03/2018 to 04/04/2018 Nights 12	No Image

ARU	Description	Example Image
5275	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 21/03/2018 to 04/04/2018 Nights 12	No Image
4552	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 21/03/2018 to 04/04/2018 Nights 12	No Image
5284	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 21/03/2018 to 04/04/2018 Nights 12	No Image

ARU	Description	Example Image
4896	Landform/Vegetation Sand Dunes/Swales - Open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* adjacent to open mixed herbs in clay-loam depression. (D-HG1) (CD-OGHSR1) Location [redacted] Deployment 21/03/2018 to 04/04/2018 Nights 12	No Image

4. SURVEY RESULTS

4.1 JUNE 2017 SURVEY

Calls attributed to a night parrot were recorded on an ARU [redacted] during the targeted survey carried out in June 2017 at a location [redacted] The calls were recorded several times over the course of one night (20 – 22 June 2017) (Table 7) and have been confirmed as being that of a night parrot by Bob Bullen, Nigel Jacket and several members of the Night Parrot Recovery Team (Alan Burbidge and Nick Leseburg). It is still not known at this stage if this area represents a roosting, nesting or foraging site for the species.

Table 7: June 2017 Survey Results

Recorder No	Site	Date	Time	Call Description
[redacted]	N/A	20 June	02:24	3 Calls (hollow whistle)
[redacted]	N/A	21 June	23:43	5 Calls (hollow whistle)
[redacted]	N/A	21 June	01:17	2 Calls (hollow whistle)
[redacted]	N/A	21 June	03:03	2 Calls (hollow whistle)
[redacted]	N/A	22 June	00:30	1 Call (hollow whistle)
[redacted]	N/A	22 June	03:03	3 Calls (hollow whistle)

The area at which the calls were detected is located in an interdunal swale and is characterised by having relatively large, dense spinifex coverage adjacent to open mixed herbs which surround seasonally inundated freshwater clay-loam depressions.

No other evidence (calls, feathers or photographs) were recorded at any of the other locations surveyed.

4.2 AUGUST/SEPTEMBER 2017 SURVEY

All six recorders placed at [redacted] here night parrot calls were recorded in June 2017 picked up calls of the species during the August/September 2017 survey. A summary of the calls recorded is provided in Table 8 below. The locations of the various recordings sites are shown in Figure 3.

Table 8: August/September 2017 Survey Results

Recorder No	Site	Date	Time	Call Description
[redacted]	NP1	12 Aug	04:32	Series of 1 syllable calls
[redacted]	NP1	14 Aug	02:10	1 and 2 syllable calls
[redacted]	NP2	13 Aug	02:08	1 and 2 syllable calls
[redacted]	NP2	14 Aug	04:55	2 syllable call
[redacted]	NP2	15 Aug	01:32	1 syllable call
[redacted]	NP3	13 Aug	19:06 02:08 02:09	Series of 1 and 4 syllable calls 2 syllable call 1 syllable call
[redacted]	NP3	15 Aug	01:32 01:47 05:51	Series of 1 syllable calls 1 syllable call Series of multi syllable calls
[redacted]	NP3	16 Aug	17:34 05:49	Long series of strong and weak multi syllable calls 4 syllable call
[redacted]	NP4	22 Aug	03:07	1 syllable call
[redacted]	NP5	21 Aug	06:00	Long series of strong and weak multi syllable calls
[redacted]	NP5	22 Aug	03:07	1 syllable call (possibly same bird as site NP4)
[redacted]	NP5	23 Aug	17:42 20:52	Long series of multi syllable calls 1 syllable call
[redacted]	NP6	22 Aug	06:08	Series of multi syllable calls

Recorder No	Site	Date	Time	Call Description
[redacted]	NP6	23 Aug	20:42 05:58	Possible: very hoarse single syllable call 1 syllable call
[redacted]	NP6	25 Aug	04:57	Possible: 1 syllable call in windy conditions

The results indicated that night parrots are using vegetation [redacted]. The timing of four of the calls close to sunset (i.e. ~5:30pm) and at dawn (~6:00am) at [redacted] and at [redacted] strongly suggest vegetation in the vicinity of these two locations (~300m) was at least temporarily being used as a roost site given the birds would at these times of the day be in very close proximity to their point of origin when calling. Studies in Queensland have clearly shown that night parrots consistently call to each other in the first hour after sunset, and again just before sunrise (Threatened Species Recovery Hub 2017). It is also assumed that the site also contains foraging habitat given call recordings at various times of the night.

No night parrot calls were recorded during surveys undertaken at Lake Dora.

4.3 OCTOBER/NOVEMBER 2017 SURVEY

No night parrot calls were recorded during the regional surveys undertaken in October/November 2017.

4.4 DECEMBER 2017 SURVEY

Three of the five recorders placed at [redacted] in December 2017 picked up calls attributed to night parrots in close proximity to where they have been recorded before and in the swale to the south. A summary of the calls recorded is provided in Table 9 below. The locations of the various recordings sites are shown in Figure 4.

Table 9: December 2017 Survey Results

Recorder No	Site	Date	Time	Call Description
[redacted]	T2	14 Dec	04:22	2 single syllable calls. The first one I have called a possible. The second one is short like a “didit” call but I am confident
[redacted]	T4	14 Dec	04:11	2 short single syllable and 2 “didit” calls over 2 minutes. Multiple 2 and 4 syllable calls follow
[redacted]	T4	15 Dec	00:26	1 syllable call
[redacted]	T4	15 Dec	00.48	1 syllable call
[redacted]	T4	15 Dec	03:47	Probable 1 syllable call

Recorder No	Site	Date	Time	Call Description
[redacted]	T4	15 Dec	04:05	1 syllable call with multiple 1, 2 and 3 syllable and "didit" calls follow over the next 15 minutes
[redacted]	T5	14 Dec	18:34	Possible 2 syllable call at sunset
[redacted]	T5	16 Dec	18:52	Possible 2 syllable call.

As with some previous results calls were recorded in vegetation [redacted] The timing of some calls close to sunset (i.e. ~6:34pm and 6:52pm) strongly suggest there was a roost site nearby given the birds would at these times of the day be in very close proximity to their point of origin when calling, though the lack of any calls on subsequent nights suggest they moved on.

4.5 MARCH/APRIL 2018 SURVEY

Six of the seven recorders placed at [redacted] in March/April 2018 picked up calls attributed to night parrots. The recordings were made in close proximity to where they have been recorded before in both swales. A summary of the calls recorded is provided in Table 9 below. The locations of the various recordings sites are shown in Figure 5.

Table 10: March/April 2018 Survey Results

Recorder No	Site	Date	Time	Call Description
[redacted]	M2	27 March	02:03:36	Very weak call (hollow whistle)
[redacted]	M2	27 March	02:04:13	Strong call (hollow whistle)
[redacted]	M7	27 March	02:03:40	Very weak call (hollow whistle)
[redacted]	M7	27 March	02:04:18	Very weak call (hollow whistle)
[redacted]	M3	27 March	02:04:17	Good call (hollow whistle)
[redacted]	M4	27 March	02:04:11	Very faint call (hollow whistle)
[redacted]	M6	27 March	02:04:12	Very faint call (hollow whistle)
[redacted]	M1	24 March	?	2 Syllable call - speculative
[redacted]	M1	24 March	?	Call - speculative
[redacted]	M1	27 March	02:03:29	Strong call (hollow whistle)

Recorder No	Site	Date	Time	Call Description
[redacted]	M1	27 March	02:04:08	Strong call (hollow whistle)

The fact that calls were all recorded on one night suggest the birds were not residing or often frequenting the area in the immediate vicinity of the recorders location during the survey period.

5. CONCLUSION

The targeted surveys reported on here were carried out to determine if the night parrot was utilising sections of the Lake Disappointment Project area as habitat and also to try and determine if it was also present at other locations in the general region.

The survey work confirmed the presence of night parrots within apparent suitable roosting and presumably foraging habitat [redacted] within (and outside of) the proposed development footprint. This area is comprised of two interdunal swales mapped by Botanica Consulting (2017) as typically containing an open low woodland of *Corymbia opaca* over low scrub of *Acacia/Grevillea* spp. and mid-dense hummock grass of *Triodia basedowii* (D-HG1) adjacent to open mixed herbs in a clay-loam depression (CD-OGHSR1). Claypans are present in the lower lying areas and are subject to inundation by freshwater after significant rain events. These contained water at the time of June 2017 surveys.

Calls attributed to night parrots were not recorded in any of the other locations surveyed. It not possible to determine if this is a consequence of the habitat being unsuitable (despite the presence in most areas of old growth spinifex and in some cases also extensive chenopods) or simply because the species, while being widespread only occurs in low densities and therefore is confined to discrete locations at any one time.

Studies being undertaken in Queensland indicate that superficially the habitats where night parrots occur are quite different (Threatened Species Recovery Hub 2017). This would suggest that, while large old growth spinifex is often stated as being a priority component of the species habitat, the other associated vegetation and landforms can vary considerably. This, combined with the species apparent low population levels makes finding the species difficult as it is not possible, at least with current knowledge on the species requirements, to specifically identify habitat most likely to be in current use without targeted surveys. Recent records of the night parrot south of Newman (Busselton Naturalists Club - August 2017 pers. coms.) and by the WWF/Paruku Indigenous Rangers (July 2017 - ABC News 2017) south of Lake Gregory support this conclusion.

At Lake Disappointment the landform/vegetation association within which nights parrots were recorded has been mapped as occurring over about 22% of the study area (i.e. 29,470 ha). The associated closed depression vegetation is much less extensive (0.4 %/642 ha) but it is unclear what part this component plays in the site being utilised by night parrots at this point in time. Almost all of vegetated sections of the study area has been mapped as containing *Triodea* spp in various densities with many areas also being in close proximity to areas of chenopods (Figure 6 to 10). This

suggests that suitable habitat for night parrots maybe extensive within (and also outside) of the Project area.

It is recommended that monitoring of night parrot activity at the identified location continue. Additional surveys at other locations [redacted] may also be warranted to determine presence/absence of the species. Management actions will also have to be formulated for inclusion in fauna management plans at this location given the close proximity of proposed [redacted] activities when production is commenced.

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FIGURES

Please note: Figures showing survey locations have been removed from this redacted version of the report at the request of the Department of Water and Environmental Regulation.

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