PHOENIX
ENVIRONMENTAL SCIENCES

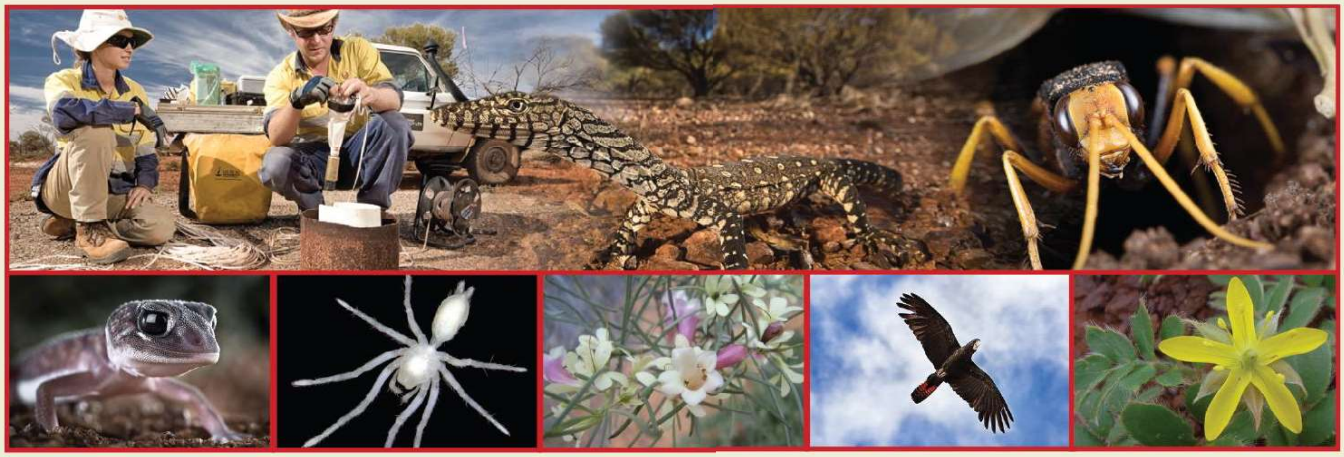
Addendum to:

Terrestrial fauna surveys for the Balla Balla Railway

Prepared for Preston Consulting on behalf of Rutila Resources Ltd

November 2014

Final Report



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1 INTRODUCTION

In May 2014, Phoenix Phoenix was commissioned by Preston Consulting Pty Ltd (Preston) on behalf of Rutila Resources Ltd (Rutila) to undertake terrestrial fauna surveys for the Balla Balla Railway (the Project) including Level 1 vertebrate fauna, Level 2 short-range endemic (SRE) invertebrate fauna and targeted fauna surveys (Figure 1) (Phoenix 2014). This report is an addendum to the original technical report (Phoenix 2014).

This addendum documents a supplementary Level 1 vertebrate fauna survey conducted for two alternative alignment options (the study area) for the Project. These are referred to in this report as (Figure 1):

- western option – 16 km x 2 km
- eastern option – 48 km x 2 km.

2 METHODS

The desktop review for the initial surveys (Phoenix 2014) covered the two new alignment options. The conservation significant species identified from this review were assessed in relation to the additional alignment options to support these species.

The field survey was conducted from 20–22 October 2014. Part of the eastern option of the study area, occurring within Mt Florence station could only be surveyed by helicopter from an altitude of approximately 500 feet (150 m) due to access constraints (Figure 1); therefore, ground survey methods employed in the initial Level 1 vertebrate fauna survey could not be undertaken in this area.

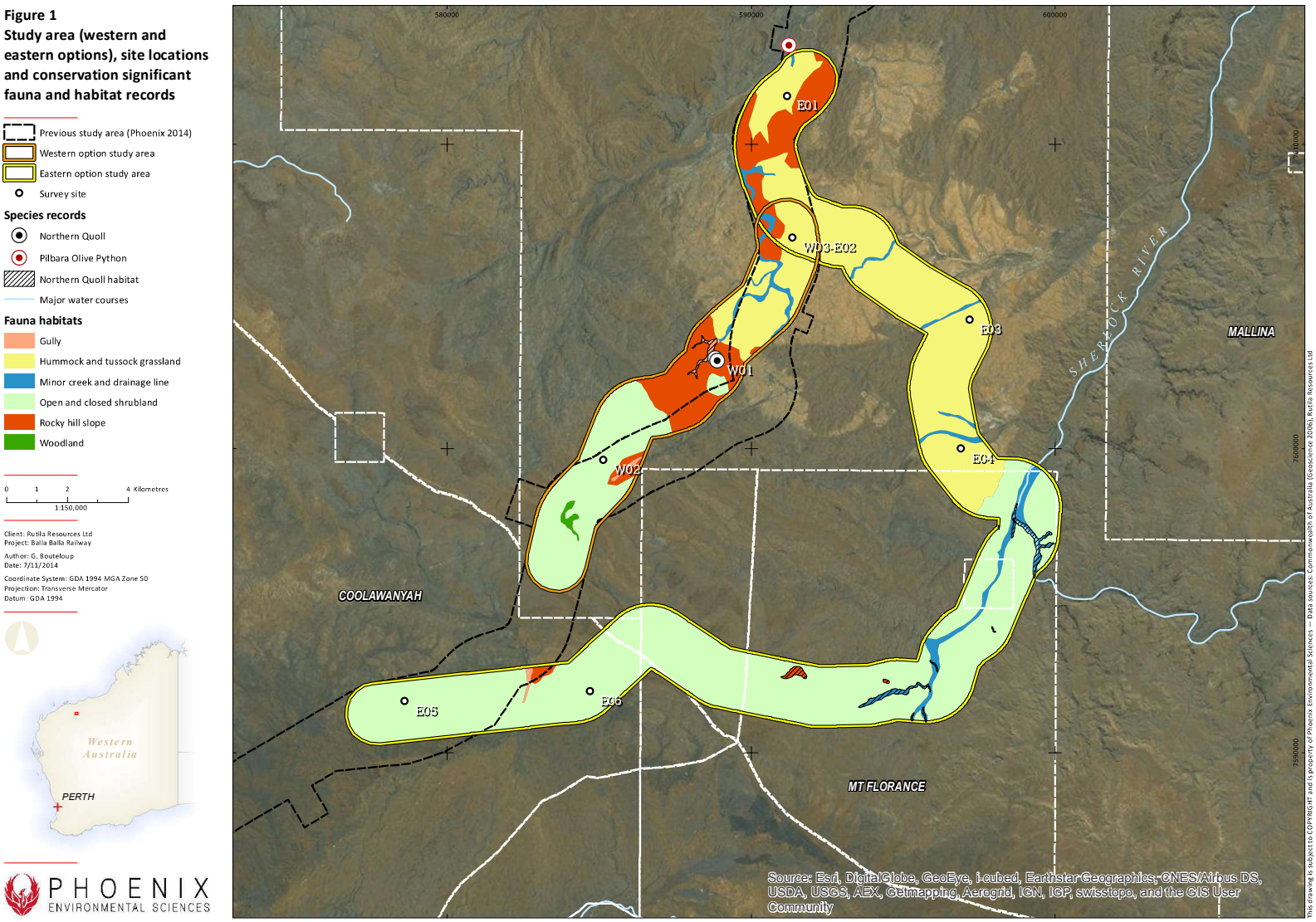
As there was some overlap between the current study area and that of the previous surveys (Phoenix 2014), habitat mapping was only conducted in areas not previously mapped.

Survey methods for the remainder of the study area were consistent with methods employed in the previous Level 1 vertebrate fauna survey (Phoenix 2014); except that SongMeter bat recording devices and remote camera traps were not deployed due to time constraints of the field survey. Eight sites were surveyed within the accessible section of the study area (Table 1; Figure 1; Appendix 1).

Table 1 Vertebrate fauna survey sites of the study area

Site	Alignment option	Habitat type	Easting	Northing	Zone
W01	Western	Gully	588893	7602883	50K
W02	Western	Open shrubland	585132	7599570	50K
W03-E02	Western/Eastern	Spinifex grassland	591359	7606928	50K
E01	Eastern	Spinifex grassland	591195	7611521	50K
E03	Eastern	Open shrubland	597194	7604226	50K
E04	Eastern	Spinifex grassland	596897	7600016	50K
E05	Eastern	Open shrubland	578622	7591684	50K
E06	Eastern	Open shrubland	584712	7592024	50K

Figure 1
Study area (western and eastern options), site locations and conservation significant fauna and habitat records



3 RESULTS

3.1 FAUNA HABITATS

Six habitats were defined within the study area (Figure 1):

- gully
- hummock and tussock grassland
- minor creek and drainage line
- open and closed shrubland
- rocky hill slope
- woodland

The habitats present are consistent with those identified in the previous surveys conducted for the Project (Phoenix 2014). The study area was dominated by stony plains and low stony hills with a mixture of hummock and tussock grassland and open and closed shrubland vegetation with sparsely scattered eucalypts.

Some areas within the two alignment options were recently burnt making it difficult to distinguish between grassland and shrubland habitats in some areas; therefore we relied mainly on historic aerial imagery to delineate boundaries. Both habitats are well represented within the study area and within the greater region.

Small areas of gully and rocky hill slope habitat were identified within both options of the study area. Gully habitat was present in the north of the western option with large boulders and rocks present. In the eastern option the rocky hill slope habitat was present in small areas in the south-east of the alignment option.

Minor creek and drainage line habitat including associated riparian vegetation was identified within both options of the study area. No woodland habitat was identified in the study area outside the original alignment (Figure 1).

3.2 CONSERVATION SIGNIFICANT SPECIES

Northern Quoll (*Dasyurus hallucatus*) were recorded from secondary evidence (scats) twice during the survey from site W01 (Figure 1; Table 2). Suitable habitat for the species, gullies and rocky hill slopes, was identified in both alignment options(Figure 1). Suitable denning/shelter habitat was identified in the northern part of the western option. Potential denning/shelter habitat was identified within the eastern option; however, the access limitations at Mt Florence prevented a thorough assessment of suitability for Northern Quoll and targeted searches for secondary evidence.

A scat belonging to the Pilbara Olive Python (*Liasis olivaceus barroni*) was recorded at one site during the survey (Figure 1; Table 2). The record was not from within the current study area but was located within site 12 of the previous Level 1 survey for the Project (Phoenix 2014).

No other species of conservation significance was recorded during the survey; however, several species may occur within the study area due to the presence of suitable habitat and/or proximity of other records of the species Table 3. Likelihood of occurrence could not be confidently assessed for some species within the eastern option due to the access constraints at Mt Florence Station.

Table 2 Conservation significant species recorded during the survey

Site	Species	Common Name	Record type	Easting	Northing	Zone
W01	*Dasyurus hallucatus*	Northern Quoll	scat	588830	7602962	50K
W01	*Dasyurus hallucatus*	Northern Quoll	scat	588894	7602883	50K
S12*	*Liasis olivaceus barroni*	Pilbara Olive Python	scat	591254	7613253	50K

*indicates reference to site number from Level 1 survey for previous alignment options outside of current study area (Phoenix 2014).

4 SURVEY LIMITATIONS

Habitat mapping was conducted mainly at a broad scale, based on information collected during flights over the study areas and only ground-truthed at survey sites. The habitat assessment in the Mt Florence sections is limited to aerial observations only, therefore the habitat mapping for Northern Quoll and general habitat types in this section should be considered preliminary.

Ground-based assessment of the habitats within the Mt Florence section would be required to adequately determine extent, suitability and quality for Northern Quoll. Following refinement of Northern Quoll habitat, a targeted survey may be required in areas where impact is likely to occur.

Table 3 Summary of conservation significant vertebrate species, and likelihood of occurrence in the study area

Scientific name	Common name	EPBC Threatened	EPBC Migratory	WC Act	DPaW	Likelihood of occurrence		Suitable habitats for the species						Summary of records and likelihood of occurrence
						Western option	Eastern option	Gully	hummock and tussock grassland	Minor creek and drainage line	Open and closed shrubland	Rocky hill slops	Woodland	
REPTILES														
Notoscincus butleri	Lined Soil-crevice Skink				P4	Likely	Likely		•	•	•			The species was recorded three times during previous Level 1 survey of the earlier study area. Grassland habitat bordering creek and drainage line habitat consistent with that of previous records was identified within the study area.
Ramphotyphlops ganei	Gane's Blind Snake				P1	Likely	Possible	•						Limited knowledge of habitat and occurrence of species; however, gully habitat identified within the west option study area consistent with previous records of the species. Species may occur.
Liasis olivaceus barroni	Pilbara Olive Python	VU		S1	VU	Likely	Possible	•		•				Species likely to occur in rocky habitats where water is permanent or persists for long periods including gully and minor creek and driange line habitats.

Scientific name	Common name	EPBC Threatened	EPBC Migratory	WC Act	DPaW	Likelihood of occurrence		Suitable habitats for the species						Summary of records and likelihood of occurrence
						Western option	Eastern option	Gully	hummock and tussock grassland	Minor creek and drainage line	Open and closed shrubland	Rocky hill slops	Woodland	
BIRDS														
Apus pacificus	Fork-tailed Swift		•	S3		Likely	Likely	•	•	•	•	•	•	Species likely to forage in flight; however, unlikely to land or nest in the study area.
Ardea modesta	Eastern Great Egret		•	S3		Likely	Likely			•				Potential habitat present along creek and drainage line. May occur when water present.
Falco hypoleucos	Grey Falcon			S1	VU	Likely	Likely	•	•	•	•	•	•	The species is likely to forage within and in the vicinity of the study area, particularly grassland and shrubland habitat and possibly nest where suitable tall trees or suitable infrastructure are present, particularly along rivers and drainage lines.
Falco peregrinus	Peregrine Falcon			S4	SP	Likely	Likely	•	•	•	•	•	•	The species is likely to forage within and in the vicinity of the study area, particularly grassland and shrubland habitats and possibly nest on cliff edges of suitably sized gullies present within the western option.

Scientific name	Common name	EPBC Threatened	EPBC Migratory	WC Act	DPaW	Likelihood of occurrence		Suitable habitats for the species						Summary of records and likelihood of occurrence
						Western option	Eastern option	Gully	hummock and tussock grassland	Minor creek and drainage line	Open and closed shrubland	Rocky hill slops	Woodland	
Ardeotis australis	Australian Bustard				P4	Likely	Likely		●	●	●		●	The species has been recorded numerous times during previous Level 1 surveys for the project and is likely to occur within grassland and shrubland habitat in the study area.
Burhinus grallarius	Bush Stone-curlew				P4	Likely	Likely		●	●	●		●	The species is likely to occur in shrubland habitat and vegetation along minor creek and drainage lines of the study area.
Merops ornatus	Rainbow Bee-eater		●	S3		Likely	Likely	●		●	●		●	Recorded multiple times during Level 1 survey of previous alignment study area. Likely to occur within shrubland and creek and drainage line habitat within the study area.
Neochmia ruficauda subclarescens	Star Finch				P4	Possible	Possible	●		●			●	May occur along drainage lines and associated riparian habitat in study area when water is present.
MAMMALS														
Dasyurus hallucatus	Northern Quoll	EN		S1	EN	Recorded	Possible	●		●		●		Recorded twice from scats in western option. Suitable habitat identified; however, habitat on Mt Florence Station could not be ground truthed and assessed due to access

Scientific name	Common name	EPBC Threatened	EPBC Migratory	WC Act	DPaW	Likelihood of occurrence		Suitable habitats for the species						Summary of records and likelihood of occurrence
						Western option	Eastern option	Gully	hummock and tussock grassland	Minor creek and drainage line	Open and closed shrubland	Rocky hill slops	Woodland	
														constraints.
Sminthopsis longicaudata	Long-tailed Dunnart				P4	Possible	Possible	•				•		Species may occur in rock hill slope or gully habitat where suitable rock cover present in study area.
Macroderma gigas	Ghost Bat				P4	Possible	Possible	•		•		•	•	May occasionally forage within study area along drainage lines and gullies. No potential roost sites identified within the study area.
Pseudomys chapmani	Western Pebble-mound Mouse				P4	Likely	Likely	•	•		•			Recorded during previous Level 1 survey for the Project. Likely to occur in study area due to presence of suitable shrubland and grassland habitat on suitably stony substrates.

5 REFERENCES

Phoenix. 2014. *Terrestrial fauna surveys for the Balla Balla Railway Project*. Phoenix Environmental Sciences Pty Ltd, Balcatta, WA. Unpublished report prepared for Preston Consulting on behalf of Rutila Resources Ltd.

Appendix 1 Survey site descriptions

Site W01: Rocky gully with scattered eucalypts to 10 m over mixed shrubs to 3 m over spinifex to .75 m. Scattered areas with areas of sparse vegetation and large boulders and rocks forming piles. Parts of gully recently burnt. Small pools of water at based of gully.

Site W02: Open shrubland with eucalypts to 10 m over mixed small to large shrubs to 2.5 m over mature spinifex to 1m. Wheat toon sparsely scattered with large areas of open exposed substrate. Surrounding areas burnt recently.

Site W03-E02: Grassland on low stony rise with sparsely scattered eucalypts to 8 m over sparsely scattered mixed shrubs to 3m over spinifex to .5 m. Open areas of exposed stony substrate.

Site E01: Grassland on stony plain with scattered eucalypts to 10 m over sparsely scattered shrubs to 2 m over spinifex to .75 m. Dissected by deep drainage lines with dense shrubs to 2 m.

Site E03: Grassland on low stony hilltop with sparsely scattered eucalypts to 8 m and shrubs to 2 m over spinifex to .5 m. Areas of sparse vegetation with exposed substrate and base rock.

Site E04: Grassland on stony plain with sparsely scattered eucalypts to 8 m over sparse mixed shrubs to 3 m over spinifex to .5 m. Scattered areas of sparse vegetation with exposed stony substrate.

Site E05: Open shrubland on stony plain with eucalypts to 10 m over patches of dense mixed shrubs to 2 m over scattered spinifex to .75 m. Dissected with minor drainage lines with dense shrubs to 2.

Site E06: Open shrubland on stony plain with eucalypts to 10 m over patches of dense mixed shrubs to 2 m over scattered spinifex to .75 m. Dissected with minor drainage lines with dense shrubs to 2 m and scattered patches of sparse vegetation with exposed substrate.