

# Troglofauna Pilot Study



## Medcalf Vanadium Mining Project

### Audalia Resources Ltd

OCTOBER 2017

*VERSION 2*

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# TABLE OF CONTENTS

1. INTRODUCTION.....	1
2. SURVEY SCOPE.....	1
3. METHODS.....	1
4. RESULTS.....	2
5. CONCLUSION.....	3
6. REFERENCES.....	4

## TABLES

TABLE 1: Table 1: Troglifauna Trap Details

## FIGURES

FIGURE 1: Troglifauna Sample Sites

# 1. INTRODUCTION

This report details the results of a single phase of a troglofauna “pilot study” (EPA 2016b) within Audalia Resources Limited’s (Audalia) Medcalf Vanadium Project Area situated about 100 km west, south-west of Norseman, Western Australia.

Exploration work to date by Audalia and previous mining companies, has identified a potential economic resource of vanadium and titanium in three mineralised zones within the project area. The pilot study reported on here has been carried out to provide preliminary data on the presence/absence of troglofauna within the project area. The results will guide the need for additional work and ultimately it is anticipated that the survey results will be taken into consideration by State and Federal environmental regulatory authorities when future applications to mine are submitted for approval.

# 2. SURVEY SCOPE

The scope of works is to carry out a preliminary troglofauna survey (i.e. “pilot study”) at the subject site to determine presence/absence of this fauna group within the proposed mining footprint.

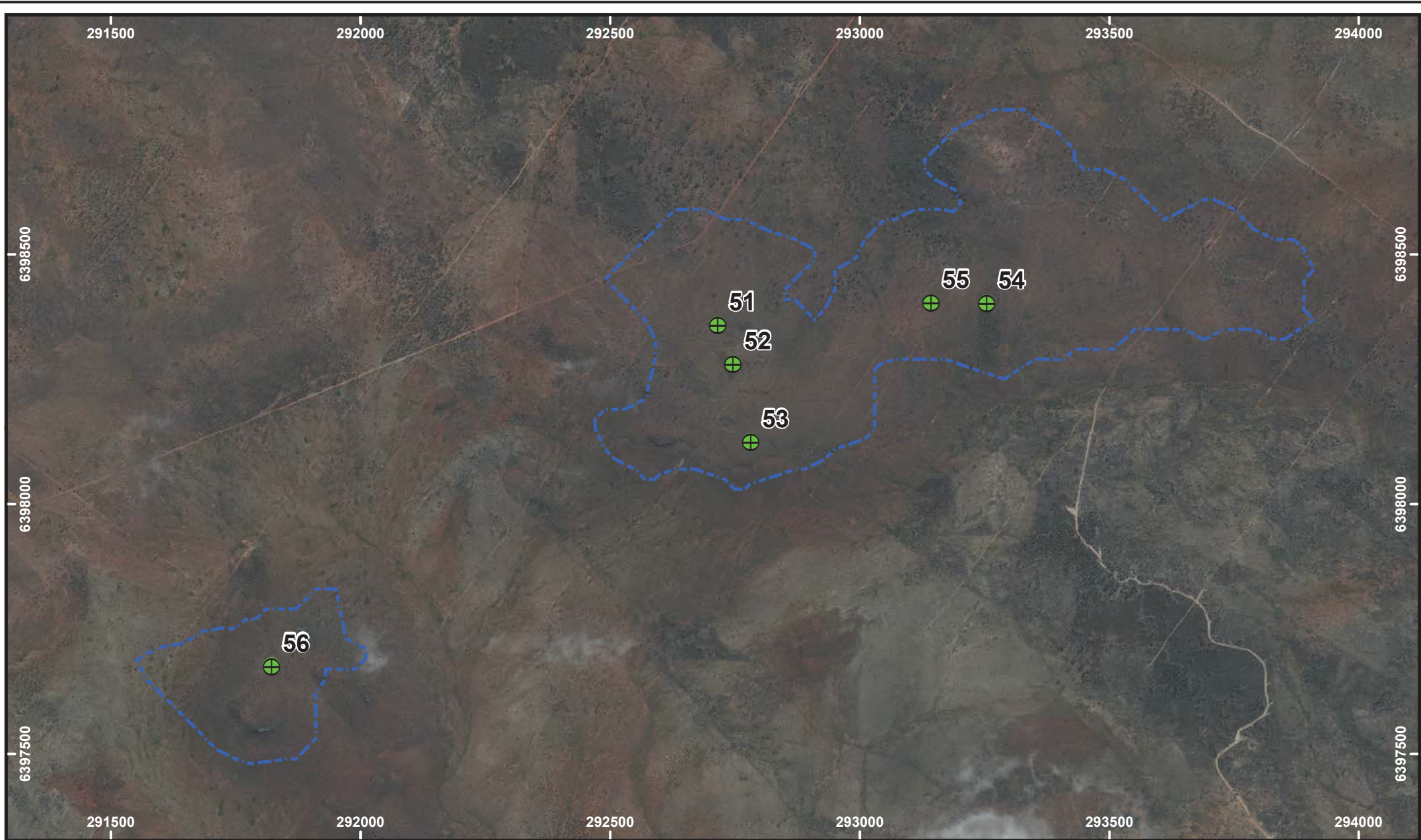
The scope of works and methods has been formulated to comply with the following guidelines:

- EPA (2016a). Technical Guidance – Subterranean Fauna Survey (replaces Technical Environmental Assessment Guideline No. 12 (EPA 2013) and Guidance Statement No. 54 (EPA 2003) but as yet not updated);
- EPA (2016b). Technical Guidance – Sampling Methods for Subterranean Fauna (replaces Technical Appendix to Guidance Statement No. 54 (EPA 2007) but as yet not updated)



# 3. METHODS

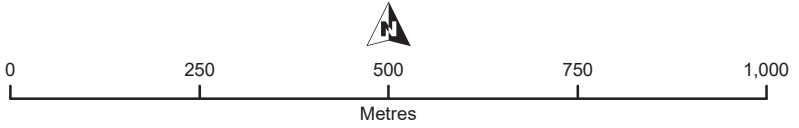
Field survey work was carried out by Jim Williams (Botanica Consulting).


Six drill holes were sampled using one or two troglofauna “traps” each with a total of 10 traps being deployed. The “traps” consisted of cylindrical PVC (~270 x 70 mm, with entrance holes side and top) baited with moist leaf litter (sterilised by microwaving and supplemented with cheese and dig biscuits). Traps were lowered on nylon cord to various depths within each drill hole dependant on total hole depth and depth to water. Traps were deployed on the 10 June 2017 and retrieved on the 25 July 2007 (45 days/6.5 weeks). Table 1 below provides details relating to each trap. Figure 1 shows the location of each drill hole sampled.



**Legend**

-  Troglofauna Sample Sites
-  Proposed Open Pit



 Fauna Survey	Audalia Resources Ltd Medcalf Project
	<b>Troglofauna Sample Sites</b>
	Drawn: G Harewood Date: Oct 2017 Scale: 1:10,000
	Projection/Coordinate System: UTM/MGA Zone 51    Figure: 1

**Table 1: Troglifauna Trap Details**

Wpt	Zone	mE	mN	Trap Position	Trap Depth (m)	SWL (m)	EOH (m)	Deployed	Retrieved
051a	51	292716	6398359	Trap Shallow	?	?	?	10-Jun-17	Trap stuck - could not be retrieved
051b	51	292716	6398359	Trap Deep	?	?	?	10-Jun-17	Trap stuck - could not be retrieved
052a	51	292746	6398281	Trap Shallow	?	?	?	10-Jun-17	Trap stuck - could not be retrieved
052b	51	292746	6398281	Trap Deep	?	?	?	10-Jun-17	Trap stuck - could not be retrieved
053a	51	292782	6398125	Trap Shallow	15	?	?	10-Jun-17	25-Jul-17
053b	51	292782	6398125	Trap Deep	53	?	?	10-Jun-17	25-Jul-17
54	51	293255	6398403	Trap	5	?	?	10-Jun-17	25-Jul-17
55	51	293143	6398404	Trap	10	?	?	10-Jun-17	25-Jul-17
056a	51	291822	6397676	Trap Shallow	5	?	?	10-Jun-17	25-Jul-17
056b	51	291822	6397676	Trap Deep	20	?	?	10-Jun-17	25-Jul-17

SWL – Depth to water, EOH – Depth of drill hole. Coordinates = MGA94

Four traps at two drill holes could not be retrieved due to the holes caving in.

Upon retrieval the troglifauna traps were forwarded to Alacran Environmental Sciences (Dr Erich S. Volschenk) for invertebrate identifications and comments. Specimens were extracted from the leaf litter in traps using Tullgren® funnels under incandescent lamps. Litter from each funnel was also examined under a microscope for any remaining live or dead animals. Samples were then sorted under a dissecting microscope.

## 4. RESULTS

No troglifauna specimens were recorded during troglifaunal sampling. These results would support a conclusion that suitable habitat for troglifaunal is not present in the area surveyed.

## 5. CONCLUSION

The survey reported on here represents a single phase troglofauna “pilot study” carried out to comply with EPA guidelines (EPA 2016b).

No troglofauna specimens were recorded during troglofaunal sampling. Troglofauna have been recorded from few locations in the South-West, other than caves, although the existence of interstitial faunas has been documented (Schmidt *et al.*, 2007) and isolated studies have demonstrated the occurrence of subterranean communities, albeit not particularly rich, in a variety of settings. The occurrence of significant subterranean faunas in the South-West is likely to be associated with discrete geological features, particularly limestone formations (EPA 2016b), which are absent from the Audalia project area. The results of the pilot study and these previous reviews support a conclusion that suitable habitat for troglofaunal is unlikely to be present within the area surveyed.

At this stage no additional troglofauna survey work is considered warranted, though this conclusion will need to be reviewed as planning for the project progresses to ensure full compliance with regulatory requirements.

## 6. REFERENCES

EPA (2016a). Technical Guidance – Subterranean Fauna Survey (replaces Technical Environmental Assessment Guideline No. 12 (EPA 2013) and Guidance Statement No. 54 (EPA 2003) but as yet not updated).

EPA (2016b). Technical Guidance – Sampling Methods for Subterranean Fauna (replaces Technical Appendix to Guidance Statement No. 54 (EPA 2007) but as yet not updated).

Schmidt, S. I., Hahn, H.J., Hatton, T.J. & Humphreys, W.F. (2007). Do faunal assemblages reflect the exchange intensity in groundwater zones? *Hydrobiologia* 583, 1-19.

## **DISCLAIMER**

This fauna assessment report (“the report”) has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Greg Harewood (“the Author”). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. In accordance with the scope of services, the Author has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

The conclusions are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of preparing the report. Also it should be recognised that site conditions, can change with time.

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