




# Heron Resources Limited

ABN: 30 068 263 098

REGISTERED OFFICE

 Level 7, 191 Clarence Street Sydney NSW 2000

 [heron@heronresources.com.au](mailto:heron@heronresources.com.au)

 +61 2 9119 8111

Executive Director – Resource Assessments & Business Systems  
The Department of Planning & Infrastructure  
320 Pitt Street / GPO Box 39  
SYDNEY NSW 2001

February 13<sup>th</sup> 2017

Dear Executive Director,

## RE: Jupiter Wind Farm

### Introduction

Heron Resources Ltd (Heron or the Company) is an Australian mineral exploration and development company listed on the ASX (HRR), which holds current mining tenure over the Woodlawn Mine, a world-class zinc, lead and copper deposit in south-east New South Wales. The Woodlawn Zinc/Copper Project is located 40 km southwest of Goulburn and has a published projected cashflow (post tax) of A\$402M with potential to significantly expand this as new mineral resources are found, post start-up. Heron is progressing the Woodlawn Zinc/Copper Project through to mine development and operations over the next 18 months

The Woodlawn Project also includes a number of exploration licences that cover prospective geology around the Woodlawn Mine. These prospects have been targeted to be explored for and potentially developed in order to extend the current mine life at Woodlawn, see Figure 1.

The Jupiter Wind Farm project area covers a belt of prospective rocks within Heron's Boro Exploration Licence EL 8353 that is located 6 km southeast of the Woodlawn Mine Site and contains a number of historical silver and base metal workings.

This report outlines the prospectivity of the area for additional mineral deposits and the impacts the proposed wind farm would have on future exploration efforts and potential mine development.

### Geology

The Boro mineralisation is hosted within Silurian (420Ma) shallow water felsic volcanics and sediments of the DeDrack Formation, intruded by later granitoids such as the Boro Granite (Figure 2). The stratigraphic succession in the main area of workings consists of quartzose sandstone, limestone, shale, acid volcanic tuff up to 100m wide.

### Mineralisation

Mineralisation was discovered in the Boro area in 1888 and production is believed to have been in the order of several hundred tonnes of secondary silver-lead ore. The old workings and shafts are shown in Figure 2. The old workings and geochemistry suggest that there are two north-westerly trending zones of mineralisation at the Boro Prospect. The eastern line of workings is associated with the main acid volcanic horizon. The western line of workings appears to occupy fractures extending above the main acid volcanic horizon, about 400m southwest of the eastern line.

#### PERTH OFFICE:

 Level 1, 37 Ord Street, West Perth WA 6005  
 P O Box 1380, West Perth WA 6872  
 +61 8 6500 9200

#### CANADIAN CONTACT:


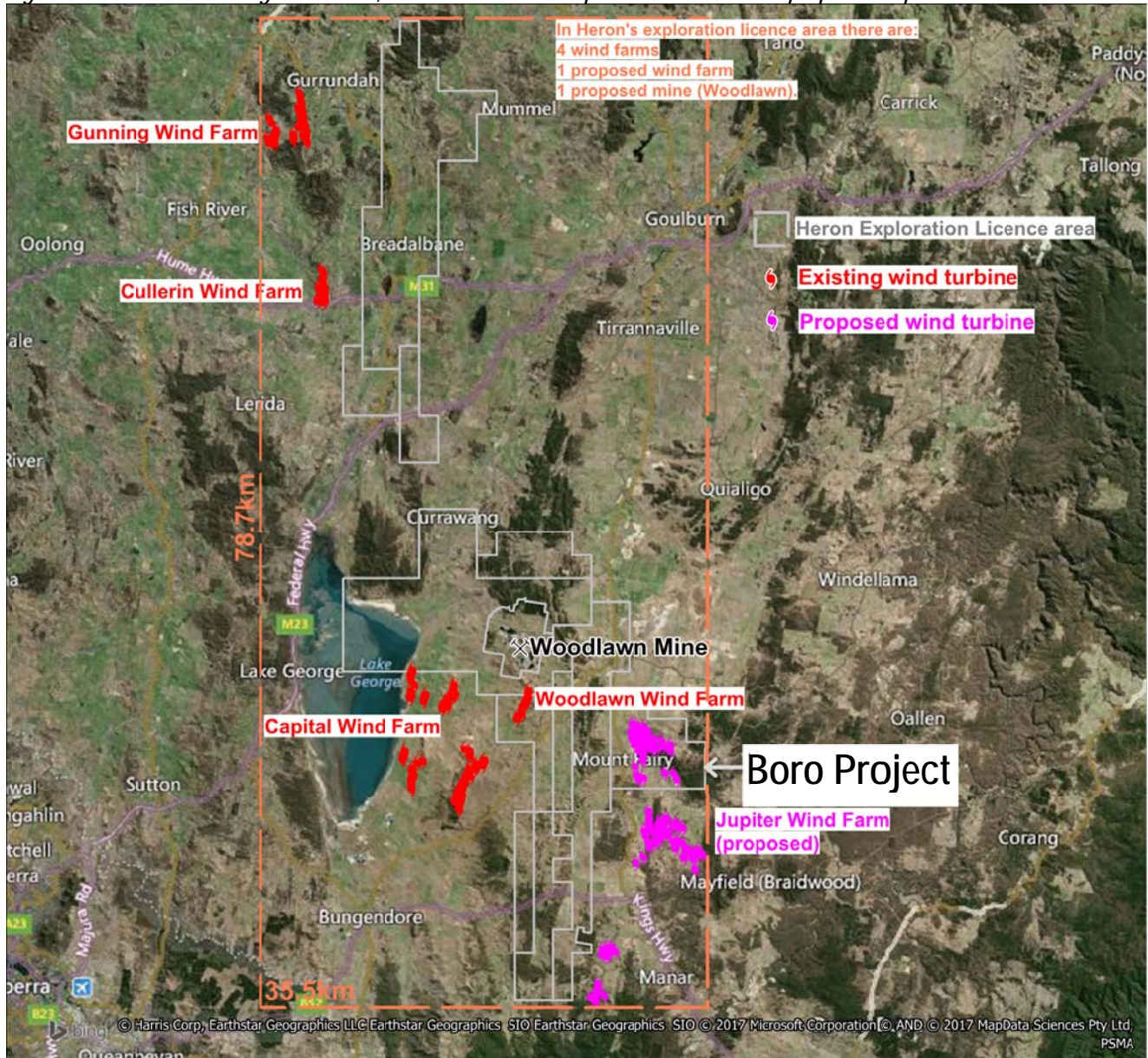
 1 647 862 1157

Figure 1: Location of existing wind farms, Heron's Woodlawn exploration licences and proposed Jupiter Wind Farm.



The mineralisation appears to be fracture-controlled and associated with quartz-carbonate veining and sericitic/clayey/chloritic/silicic alteration of the country rock. The alteration minerals also include bornite, covellite, and oxidised copper, lead and zinc minerals.

The sulphide mineralisation consists of pyrite, galena, sphalerite and some chalcopyrite, with relatively high silver and low gold values. The sulfide bodies in the workings were reported as massive but relatively small in terms of their individual size.

In the 'Great Boro Mine' shaft the mineralisation appears to be oxidised to the depth of about 45 m from surface. The rich shoot was reported to dip 80 ° southwesterly. However, the mineralisation as a whole was reported to have an overall dip of 75 ° to the southeast (Mc Clatchie, 1993). The maximum width of mineralisation is about 30 m at 61 m level. The mineralisation was semi-continuously (in workings and hole B4) followed down dip for about 150 m. It is thought based on the historic drilling and the extent of workings that the mineralisation extends from Boro Mine along strike for at least about 90 m to the north and 300 m to the south.

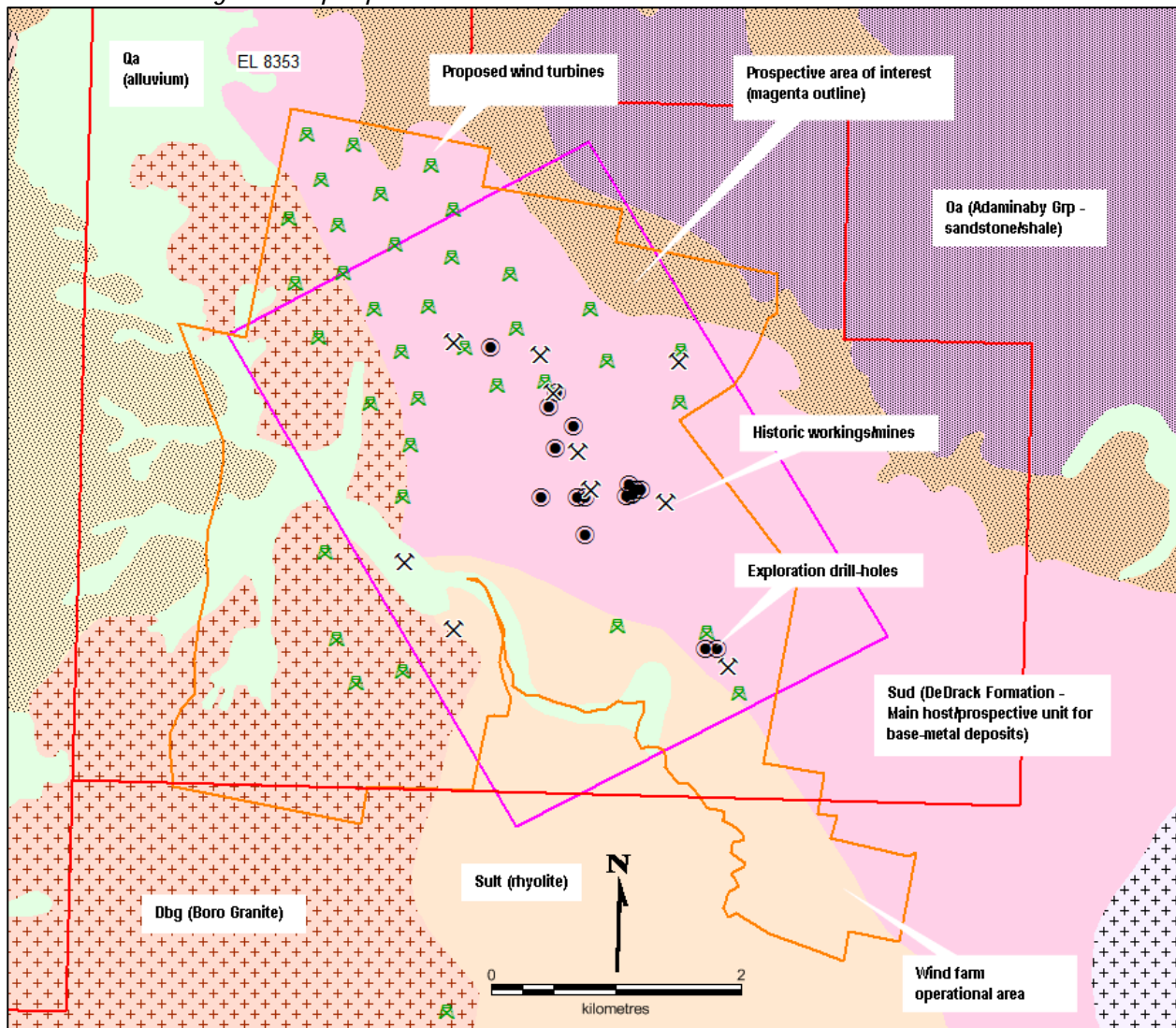


## Exploration Potential

The Boro Prospect is host to high-grade pods of base metal and silver mineralisation. While some exploration has been undertaken over the years there has been little systematic application of modern high-powered geophysical techniques (e.g. Electro Magnetic techniques 'EM') that have proved so successful at the nearby Woodlawn deposit. Heron would undertake to cover the prospective horizon with ground based EM surveys to identify the mineralisation at depth, which can then be effectively targeted with drilling.

Given the proximity to the Woodlawn mine even relatively small resources of higher grade material could be transported to Woodlawn for processing. Without the presence of Woodlawn, it would be difficult to see a stand-alone mining operation at Boro as the mineralisation appears to be of generally limited extent, however, Woodlawn makes a significant difference to the economic viability of any mineralisation the area.

*Figure 2: Location of 'Northern Precinct' of Jupiter Wind turbines within Heron's Exploration Licence 8353 showing geology, old mines and workings and the prospective area of interest*



## Exploration Impacted by Proposed Windfarm

Boro will be explored for silver and base metal deposits that often are found using a variety of electrical geophysical techniques. Significantly, Heron has built the case for mine development at Woodlawn based on mineral discoveries made through EM geophysical techniques. With the go ahead of the Jupiter Wind Farm, these important techniques will not be able to be used as they are significantly impacted by the electrical sources in the turbines plus the metal content of the turbines themselves (see Annexure 1 for further information on the potential effects).

The process of mineral exploration is a scientific and methodical endeavor and takes a significant period of time – on the scale of a number of years – in order to determine if a commercially viable deposit exists.

Exploration involves a staged approach over the medium term. The general progression of the exploration activities is:

1. Ground mapping and surface sampling
2. First pass shallow drilling
3. Deeper diamond core drilling to prove deposit potential
4. Resource definition drilling and metallurgical testing
5. Reserve definition drilling and mine planning/feasibility studies

Any one of these stages can potentially produce negative results to a level where the next stage does not proceed. If all stage are successful then the Company would be seeking to develop a mine in the area.

The 'Northern Precinct' of the Jupiter Wind Farm covers approximately 50% of EL 8353, see Figure 2. The physical presence of the wind turbines and any construction works will impact on exploration activities by obstructing access to the prospects. It is unclear to Heron of the actual exclusion zone around the wind turbines but a quantitative figure of 200 m is commonly observed at other wind farms and this will significantly block access to much of the prospective area.

The permanence of the wind turbine infrastructure will also prevent future resource development – in the form of satellite mineral deposits that could feed into the existing and neighbouring Woodlawn Mine and extend its mine life.

## Conclusions


Heron objects to the location of the proposed Jupiter Wind Farm at Boro over the medium term on the basis that it will encumber the exploration assessment and potential mine development of this area. The key conclusion are provide below:

- The Boro Prospect has the potential to deliver a high-grade base-metal silver deposit which could be transported to the Woodlawn mine for processing. This would have significant local economic benefits and flow-on effects.
- A number of the proposed wind turbines of the Jupiter Wind farm have the potential to significantly impact on the exploration activities of Heron at the Boro Prospect.
- Exploration activities at Boro are at an early stage and providing each stage of exploration is successful it could take a number of years before any mine would actually be developed.
- The staged approach to exploration also means that Heron can conduct the early stages over the next 12 -24 months to know whether an economic deposit is likely.
- It would therefore assist Heron if there was no construction of the wind turbines in the Boro area of interest in the next 24 months so this scientific assessment can be effectively undertaken.

Go ahead of the Jupiter Wind Farm in its current proposed location will likely remove any potential social and economic benefit to the state and community that the resources within this exploration licence could provide.

Please feel free to contact me directly and I would be happy to discuss any of the above in person.

Yours sincerely,



---

Mr David von Perger  
General Manager Geology and Exploration  
Heron Resources Ltd

ENCL: Annexure 1

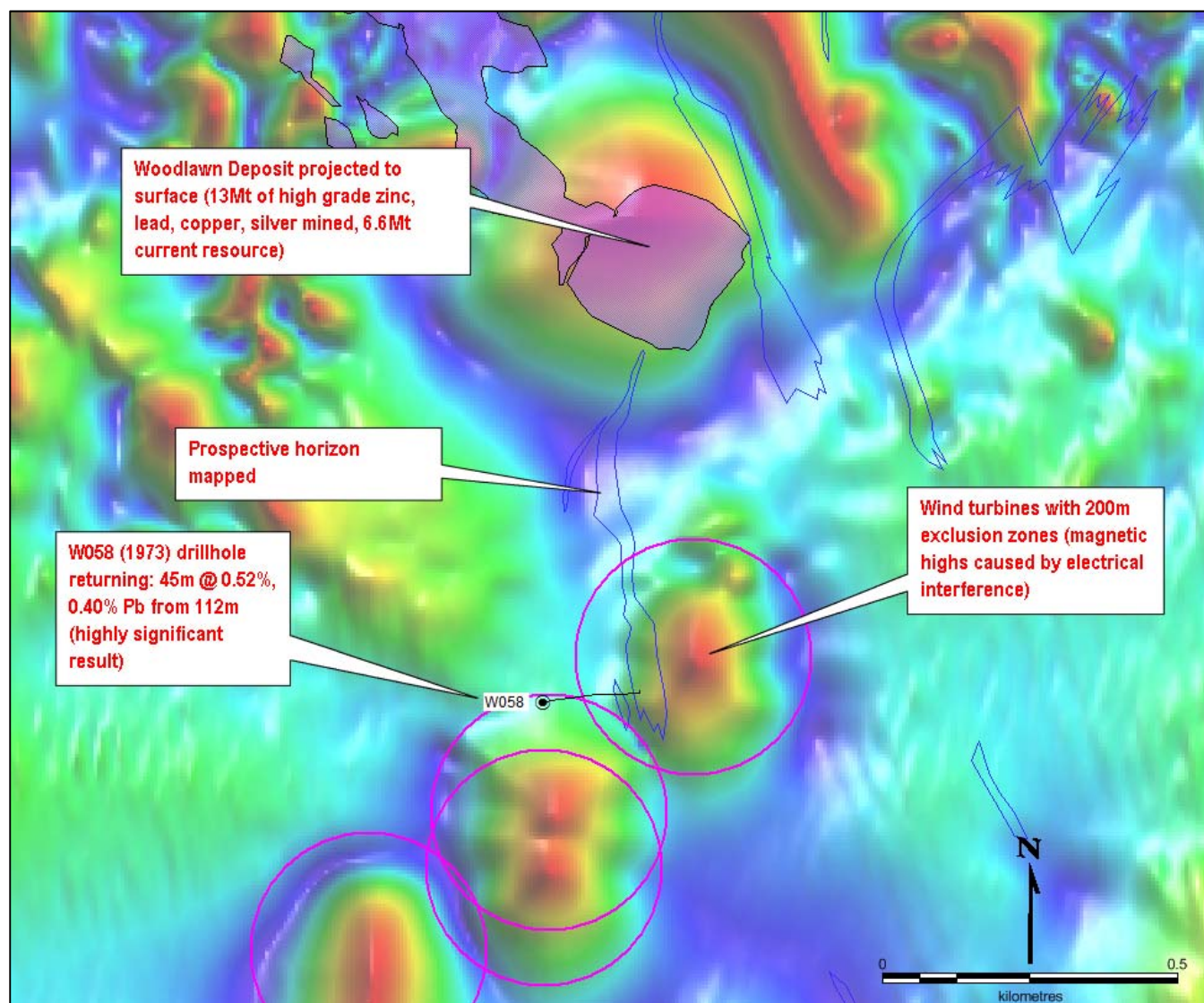
## Annexure 1

### Example of electromagnetic interference around wind turbines impeding mineral exploration.

The following diagram demonstrate some of the issue of wind turbines close to highly prospective mineral occurrences. The potential loss to the State of NSW, through revenues and royalties through not finding and developing such mineral deposits runs into the billions of dollars<sup>1</sup>.

**Figure A1:** Aeromagnetic image ( Flown 2015) from Woodlawn mine showing electromagnetic (EM) interference associated with the wind turbines. A highly significant drill result cannot be followed-up because of both exclusion zones and also the inability to apply electrical geophysical techniques (eg EM and IP). This sterilises a potential mineral deposit of significant value.

The prospective horizon extends south of Woodlawn for some 4km along the trend of the Capital Wind Farm, again sterilising potentially highly significant mineral deposits.



**Figure A2:** Same area as shown above in Figure 3, but with surface image overlayed showing Woodlawn open-pit and Wind Farm turbines and access roads.

A highly significant drill result cannot be followed-up because of both exclusion zones and also the inability to apply EM geophysical techniques. This sterilises a potential mineral deposit of significant value.

<sup>1</sup> Example is a 10 million tonne deposit grading 14% zinc equivalent (ie same as Woodlawn) produces revenues of approximately A\$3.9 billion over the space of 10-15 years. While some of this is company profits, the majority is spent building and operating the mine.



