BAT SITE WALK-THROUGH REPORT FOR THE KOMSBERG WEST WIND ENERGY FACILITY NEAR SUTHERLAND, NORTHERN CAPE PROVINCE

DFFE REF: 14/12/16/3/3/2/856

On behalf of

SAVANNAH ENVIRONMENTAL (PTY) LTD

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1 INTRODUCTION

Komsberg Wind Farms (Pty) Ltd (the 'Developer') received Environmental Authorisation (EA) from the Department of Forestry, Fisheries and the Environment (DFFE) for the construction and operation of the Komsberg West Wind Energy Facility (WEF) (the development) near Sutherland in the Northern Cape Province, (DFFE Ref: 14/12/16/3/3/2/856) on 8 September 2016. Following advances in technology since the issuing of the EA, the Developer requested that the DFFE amend the project description, layout and turbine specifications of the Komsberg West WEF which was authorised on 8 June 2020.

A condition of the Environmental Authorisation is that the final layout (which includes the revised turbine positions and the additional access roads) be assessed by a bat specialist prior to the commencement of construction, by means of a site walk-through and micro-siting exercise. Consequently, this report serves to fulfil this condition by providing feedback on the various observations made by Arcus during the relevant site visit, which includes specialist mapping and design comment based on the site walk-through findings.

1.1 Project Details

The authorised Komsberg West WEF comprises of up to 45 Wind Turbine Generators (WTG) with a contracted capacity of up to 275 MW. To achieve this, the WTG that have been selected have rotor diameters of up to 180 m, with their hub heights being up to 150 m. Additional infrastructure includes:

- Concrete foundations to support the turbines;
- Cabling between the turbines;
- Laydown areas;
- Internal access roads;
- An on-site substation, access point, workshop, control, administration and security facilities; and
- Temporary construction compound and temporary site offices.

The development site is located ~40km south east of Sutherland and includes: Portion 1 of De Plaat 205, Portion 2 of Schalkwykskraal 204, Portion 0 of VlakKloof 11, Portion 1 of Weldemoed 268, Portion 2 of Weldemoed 268 and Portion 2 of Taayboschkraal 12. Access to the site will be via the R354 tarred road between Matjiesfontein and Sutherland to the west of the site, and then using local district gravel roads.

2 TERMS OF REFERENCE

The terms of reference for the site walk-through, as agreed on in discussion with Savannah, were to:

- Conduct a walk-through of the development over a period of 3-days.
- Confirm the applicability of the buffer distances.
- Compile a report which confirms the applicability of mitigation measures based on on-site observations.
- Mapping.
- Statement on the final design layout of the development.

2.1 Assumptions and Limitations

It is emphasised that information, as presented in this report, only has bearing on the development site, as indicated on the accompanying map This information cannot be applied to any other area, however similar in appearance or any other aspect, without proper investigation by an appropriate bat specialist.

2.2 Relevant Legislation and Guidelines

The following policies and guidelines have informed the methodologies employed during the site visit and walk-through and will ensure the Developer meets all legislative requirements regarding construction and operation of the Komsberg West WEF.

- The Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention) (1983)
- Chapter 1 of the National Environmental Management Act, 1998 (NEMA) (Act 107 of 1998).
- Convention on Biological Diversity (1993)
- Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)
- National Environmental Management Act, 1998 (NEMA, Act No. 107 of 1998)
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
- Northern Cape Nature Conservation Act, 2009 (Act No. 9 of 2009)
- The Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention) (1983)
- The Equator Principles (2013)
- The Nature and Environmental Conservation Ordinance No 19 of 1974
- The Red List of Mammals of South Africa, Swaziland and Lesotho (2016)
- National Biodiversity Strategy and Action Plan (2005)
- Nature and Environmental Conservation Regulations (1975)
- South African Best Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities - ed 5. South African Bat Assessment Association of June 2020.
- South African Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy Facilities – ed 2. South African Bat Assessment Association of June 2020.
- Western Cape Nature Conservation Laws Amendment Act of 2000

3 REVIEW OF DATA COLELCTED TO DATE

Based on the pre-construction monitoring data (Arcus 2016), bat activity levels are moderate on average compared to activity levels at other sites at which the specialist has been involved, with similar ecology. Bat activity at 80 m was also lower compared to near ground level. Activity was also generally higher in lower lying areas of the site but during December and January (i.e. in summer) activity of some species was high on the ridges.

Despite the available pre-construction monitoring data showing that bat activity at 50 m and 80 m is low, it would be preferential to maximize the distance between the ground and blade tips by using turbines with the shortest possible blades and the highest possible hub height. This would reduce the number of species potentially impacted upon by turbine blades during the operational phase. It would also be preferential to use shorter blades so that they don't intrude into higher airspaces and in so doing reduces the potential impact to high flying species such as free-tailed bats. Despite the low activity at height, increasing evidence suggests that bats actively forage around wind turbines (Cryan et al. 2014; Foo et al. 2017), so the installation of turbines in the landscape may alter bat activity patterns either by increasing activity at height and/or increasing the diversity of species making use of higher airspaces.

The most common species on site recorded during the pre-construction monitoring were the Egyptian free-tailed bat and Cape Serotine which accounts for approximately 58% and 23% of activity respectively. The other bat species that were confirmed on site are Robert's flat-headed bat, Long-tailed serotine and Natal long-fingered bat.

The main mitigation measure to protect bats was to adhere to the sensitivity map which contained buffers of several important bat features, buffered by 200 m according to best practise guidelines. The confirmed roost was buffered by 500m. All these buffers are no-go zones to the turbine blade tip.

4 PURPOSE AND AIM OF THE SITE VISIT

The aim of the site visit was to conduct a site walk-through and micro-siting process to ground truth important bat features. Further to this the site visit was conducted to ensure that all turbine blades and other infrastructure are positioned outside of their respective bat sensitivity buffers.

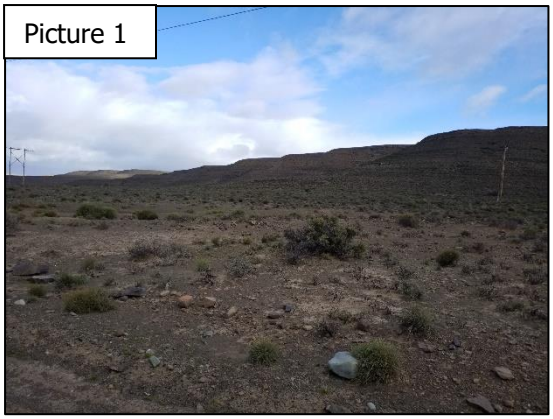
5 METHODOLOGY

The site walk-through visit took place from 29 May to 3 June 2021. Important bat features, sensitivities and final layouts were loaded onto the ArcCollector app to ground truth the features and update the sensitivities accordingly. The positions of the turbines, powerlines, roads, substation, and O&M building were prioritised. Additionally, habitats with roosting potential were identified beforehand and inspected for possible bat roosts which included rocky outcrops, cliffs, buildings and trees.

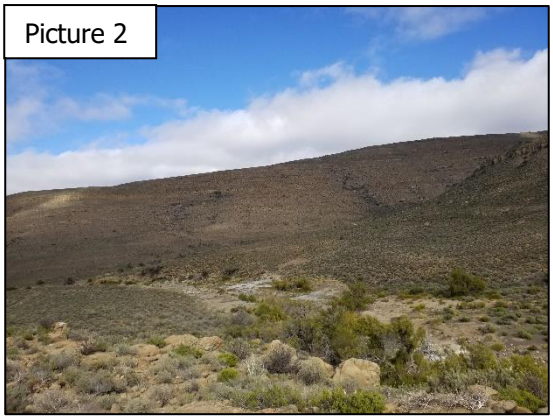
6 ON-SITE OBSERVATIONS

The site is characterised by hills and valleys, the turbines are proposed for the top of hills (Picture 1-4) where bat activity is expected to be lower. Roosting potential in the area is relatively low and therefore powerlines and road infrastructure do not pose a significant threat to bats. The bat sensitive areas are mostly around major drainage lines with established riparian vegetation (Picture 2-4), water points and dolerite sills (Picture 4). Only one building was observed to have evidence of being used by bats as a roost (Picture 5). There was only one horseshoe bat (Rhinolophus sp.) present (Picture 6).

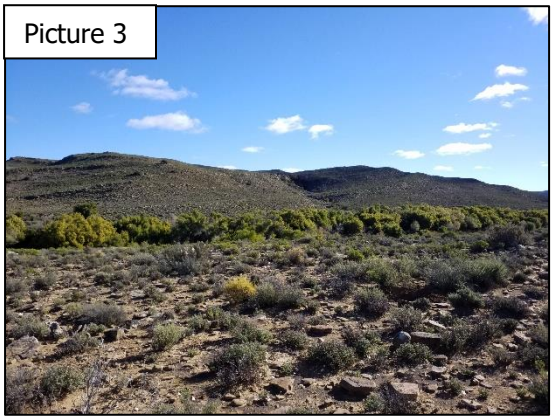
Picture 1



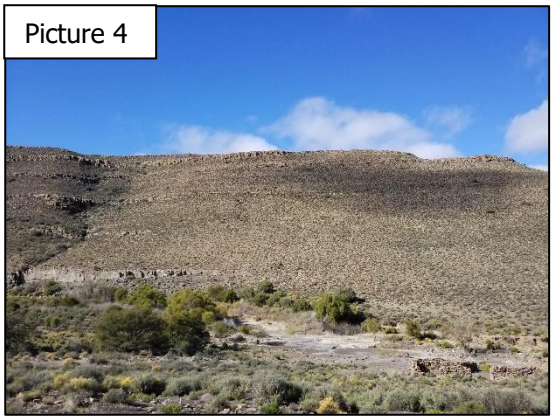
Picture 2



Picture 3



Picture 4



Picture 5

Picture 6

7 RECOMMENDATIONS AND CONCLUSION

The original high sensitivity (No Go) buffers suggested by the pre-construction monitoring report was 200 m. These buffers are to blade tip, to get the distance to the turbine base to assist with placement of the turbines, the following formula is used (Mitchell-Jones and Carlin 2014):

$$b = \sqrt{(bd + bl)^2 - (hh - fh)^2}$$

Where: bd = buffer distance, bl = blade length, hh = hub height and fh = feature height (zero in this instance)

The bat sensitivity buffers were updated according to the turbine dimensions being applied for which is a hub height of 150 m and a rotor diameter of 180 m, which resulted in 248 m buffers to turbine base (Figure 1). The observations made on site confirm that the buffers are sufficient. No turbines are currently located within the No Go buffers. When the final turbine dimensions are chosen, these buffers should be recalculated to make sure that no turbines are located within the no go buffers. These buffers are not applicable to the construction of roads, underground MV cables, overhead MV cables and substation.

A small bat roost was confirmed on site which was occupied by one horseshoe bat. Horseshoe bats have a low fatality risk with regards to impacts from wind turbines and would require a buffer of 500 m to blade tip. This would result in a 583 m buffer to turbine base. An additional 200 m no-go buffer around the roost was created for the construction of roads, underground MV cables, overhead MV cables and substation to reduce impacts of roost disturbance during construction (Figure 1). No infrastructure is currently located within this buffer.

All mitigation measures and findings proposed by Arcus (2016 and 2019) remain valid and the impact of turbines on bats remains medium after mitigation. The layout of the turbines and balance of plant infrastructure is acceptable from a bat perspective.

8 REFERENCES

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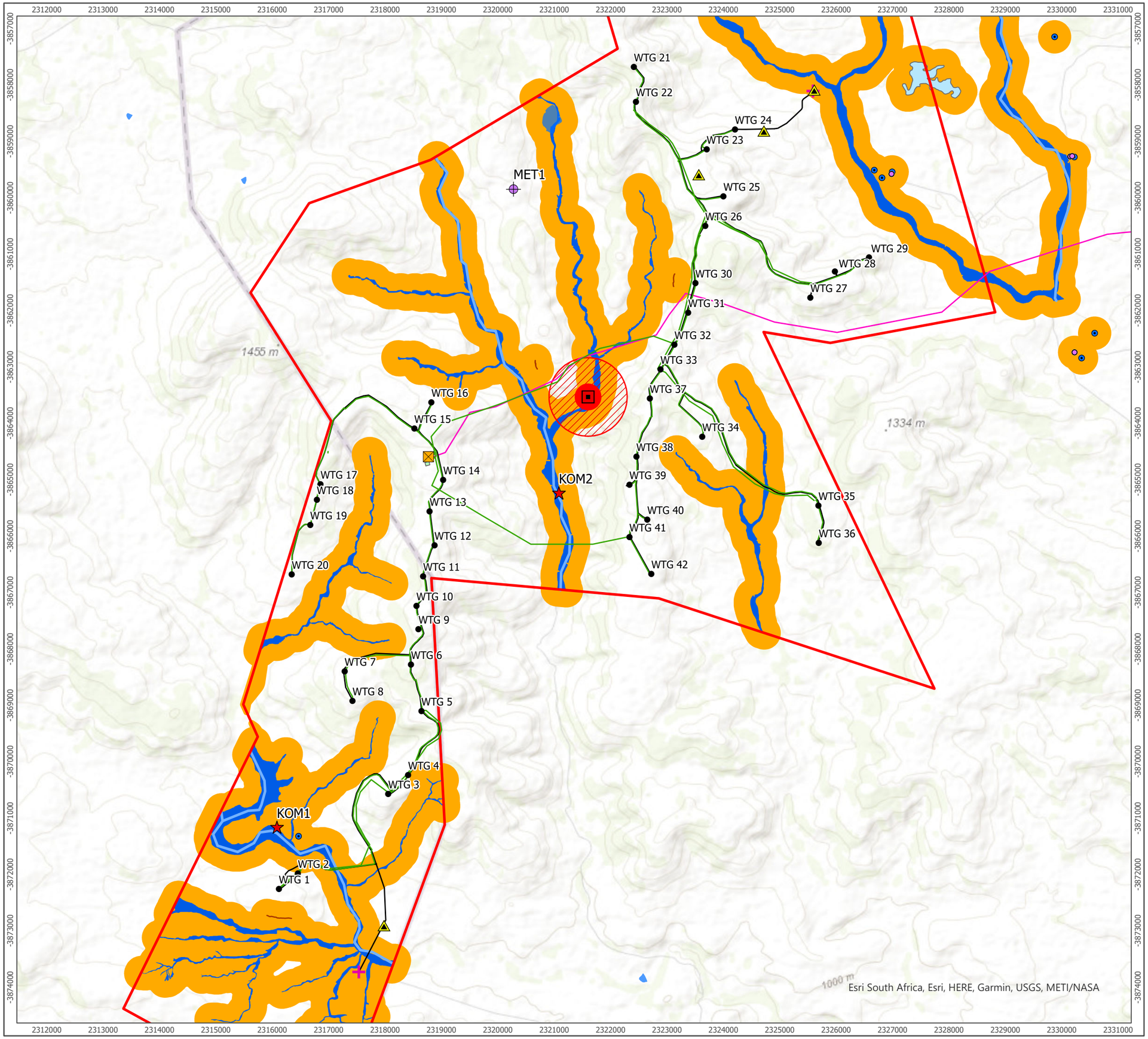
9 FIGURES



ARCUS

- Komsberg West WEF
- Short Mast Location
- Met Mast Location
- Proposed Turbines
- Facility Substation
- Access
- Construction camp/laydown
- Roads
- MV Cables
- 132.00 kV HV Transmission Line
- Substation
- O&M Building
- Bat No Go Area (for Buildings, Roads and Pylons)
- Bat Roost Buffer (for Turbines)
- Bat No Go Area (for Turbines)

Important Bat Features

- Buildings
- Farm Dams
- Confirmed Small Roost
- NFEPA River
- Dolerite Sills
- Dam
- Major Drainage Areas
- NFEPA Wetlands

1:65 000 Scale @ A3

0 1 2 km

NORTH

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Sensitivity Map
Figure 1

Bat Site Walk-through
Komsberg West WEF

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