3Foxes Biodiversity Solutions
ECOLOGICAL SPECIALIST SERVICES
Assessment/Management/Research

Simon Todd Pr.Sci.Nat
Director & Principle Scientist
C: 082 3326502
O: 021 782 0377
Simon.Todd@3foxes.co.za

60 Forrest Way
Glencairn
7975

Ecological Solutions for People & the Environment

3 Foxes Biodiversity Solutions
60 Forrest Way
Glencairn
7975

Savannah Environmental (Pty) Ltd
P.O. Box 148
Sunninghill
2157
Tel. 011 656 3237
Att: **Hermien Slabbert**

20 April 2019

RE: Amendment Application for Gunstfontein Wind Energy Facility

This statement letter is in reference to the authorized Gunstfontein Wind Farm (DEA REF14/12/16/3/3/2/826) and the request from Savannah Environmental (Pty) Ltd for comment on the ecological implications of the proposed changes to the layout and turbine specifications that would be included in the amendment application to the Department of Environmental Affairs.

The changes to the layout and technical specifications of the turbines include the following:

- Increase in turbine capacity up to 6.5MW;
- Increase in turbine hub height up to 150m
- Increase in rotor diameter to a maximum of up to 180m;
- Potential increase to WTG foundation area and laydown area;
- A second access point approximately 7km south-east of the original access point; and
- Update the layout as required
- ;

As the turbines and associated infrastructure will change position, Savannah have requested confirmation regarding the assessed impacts in term of the following:

1. Ground-truth the final turbine positions where necessary and provide input on the original sensitivity mapping that was conducted as part of the EIA; and provide a refined sensitivity map based on an additional field assessment to the affected area.
2. Provide recommendations on any turbines or other infrastructure located in no-go areas and high sensitivity areas that should be relocated.
3. Discussion on the change in impact, if any
4. Additional mitigation measures, if any
5. Any disadvantages and advantages that may result due to the amendment

1. Revised Sensitivity Mapping

The revised layout for the amendment and the revised sensitivity mapping as produced for the amendment is provided below in Figure 1. The revised sensitivity mapping is based on the original ecological study by Todd (2016), the review and field assessment of MacDonald (2017) (see Appendix), as well as the specific field assessment that was conducted for the current assessment on the 16th of January 2019. During the field assessment for the current study, those areas that had previously been identified as high or very high sensitivity[1] were checked and where necessary refined in the field and specific note was taken of the presence of species or habitats of conservation concern in these areas. Where appropriate, the sensitivity of these areas was adjusted upwards, downwards or kept the same as necessary. This information was provided to the developer in the form of the revised sensitivity map, which was then used to inform the layout for the amendment. In addition to the sensitivity mapping, to ensure that the impacts associated with the project remain within acceptable bounds, limits of acceptable change associated with each sensitivity class were provided to the developer. This provides a guide for the developer in terms of ensuring that the spatial distribution of impact associated with the final layout is appropriate with respect to the sensitivity of the site. In addition, it provides a benchmark against which impacts can be assessed and represents an explicit threshold that when exceeded indicates that potentially unacceptable impacts may have occurred. The updated (including revised turbine positions and additional access road)[2] turbine layout is presented below in Figure 1, along with the revised sensitivity assessment. The limits of acceptable change provided to the developer are listed in Table 1.

The final development footprint in relation to the above limits of change are listed below in Table 2. The extent of the development within each sensitivity class is well-within the specified limits of acceptable change and as such, there are no fatal flaws associated with the amended layout. As there are also no turbines or other development features within the mapped no-go areas, no specific recommendations are made with regards to relocating any of the turbines or other features of the layout. As such, the final layout as provided for the amendment is considered acceptable with regards to the identified sensitive features and general sensitivity mapping at the site.

[1] The areas that were mapped as high and very high sensitivity by Todd (2016) were those areas that had the potential to contain *pockets* of sensitive vegetation or species of special concern. These areas were subsequently revisited, and the pockets of sensitivity on site were delineated at a finer scale based on further site visits by Macdonald (2017) and Todd (2019).

[2] During the original EIA process, 68 turbines were assessed but only 46 of these were approved in the Environmental Authorization. This amendment application therefore only assessed the amended layout that consists of 46 turbines.

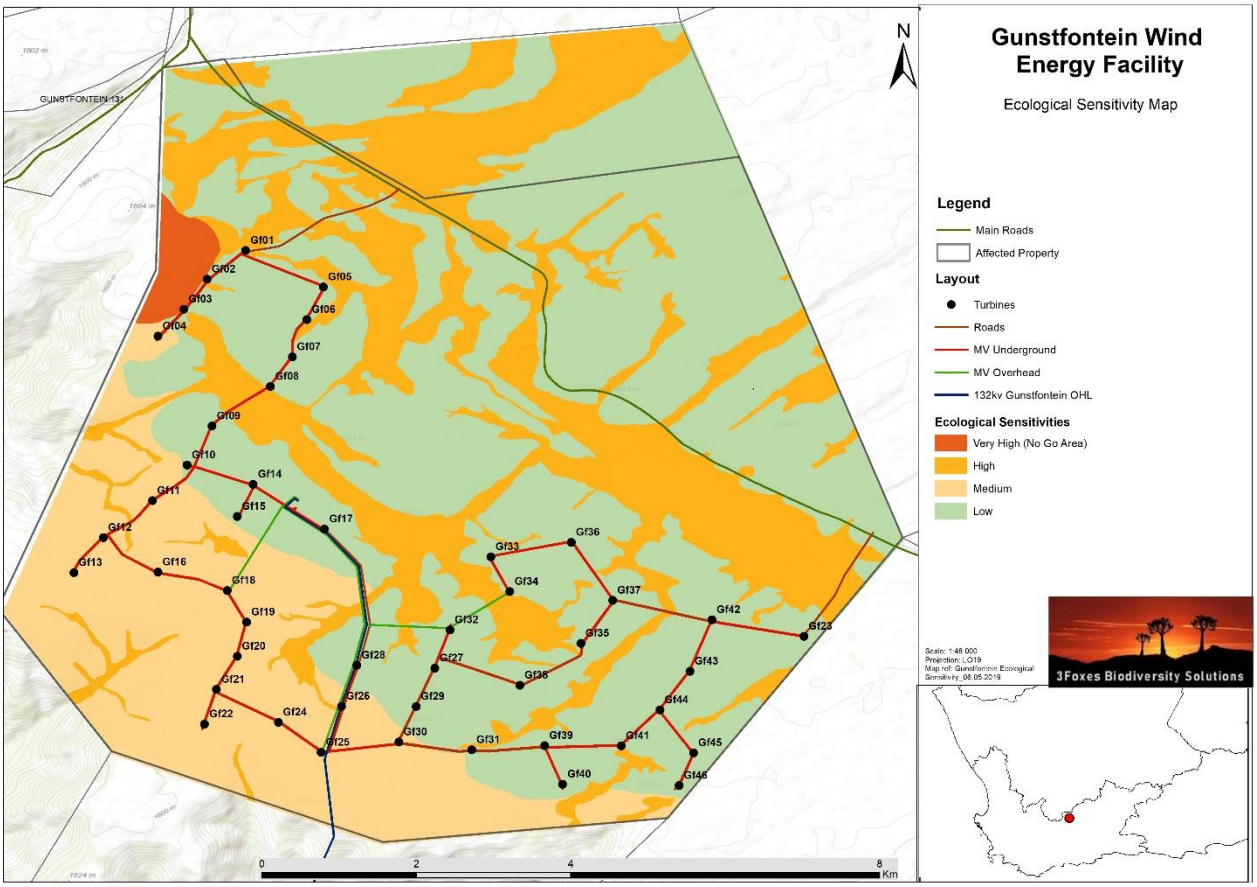

Figure 1. Revised and refined sensitivity map of the Gunstfontein WEF site, depicting the amended layout of the facility. No parts of the development are within the no-go area.

Table 1. Limits of acceptable change provided to the developer for the assessment, to provide guidance on the distribution of impact within the different sensitivity classes as indicated. The total extent and the final footprint within each class is indicated in Table 2.

Sensitivity	Acceptable Loss	Description
Low	5%	Units with a low sensitivity where there is likely to be a low impact on ecological processes and terrestrial biodiversity. This category represents transformed or natural areas where the impact of development is likely to be local in nature and of low significance with standard mitigation measures.
Medium	2.5%	Areas of natural or previously transformed land where the impacts are likely to be largely local and the risk of secondary impacts such as erosion low. Development within these areas can proceed with relatively little ecological impact provided that appropriate mitigation measures are taken.
High	0.25%	Areas of natural or transformed land where a high impact is anticipated due to the high biodiversity value, sensitivity or important ecological role of the area. Development within these areas is undesirable and should only proceed with caution as it may not be possible to mitigate all impacts

		appropriately.
Very High/No-Go	Zero Loss	Critical and unique habitats that serve as habitat for rare/endangered species or perform critical ecological roles. These areas are essentially no-go areas from a developmental perspective and should be avoided as much as possible. Where these features need to be traversed, existing roads or disturbance footprints should be used.

Table 2. The final development footprint within the different sensitivity classes as indicated. This includes the footprint of the turbines, hard stands, access roads and underground cabling.

Sensitivity	Acceptable Loss	Mapped Extent (ha)	Tolerance (ha)	No. Turbines	Footprint (ha)
Low	5%	2 561	128	29	38.49
Medium	2.50%	848	21.2	17	18.35
High	0.25%	1 272	3.18	0	2.88
Very High/No-Go	Zero Loss	800	0	0	0.00

In terms of impact of the development on CBAs, no parts of the original layout were within a CBA, although the whole footprint was within an ESA. As a result, the original assessed impacts on CBAs and broad-scale processes was assessed as being of Low significance after mitigation. Similarly no parts of the amended layout is within the same CBAs as defined under the Namakwa District Biodiversity Sector Plan (Desmet & Marsh 2008). The CBA map for the Northern Cape has however been released in the intervening period between the original assessment and the current amendment. Under the more recent Northern Cape CBA map, the whole footprint is within a CBA 1 or a CBA 2 (Figure 2). If the application was for a new development, this could bring the suitability of the development into question. However, as this is an amendment, the current assessment is in relation to the original assessment and the baseline information as available at that time. Under this scenario, there are no significant differences in impact on CBAs and broad-scale processes between the original layout and the amended layout.

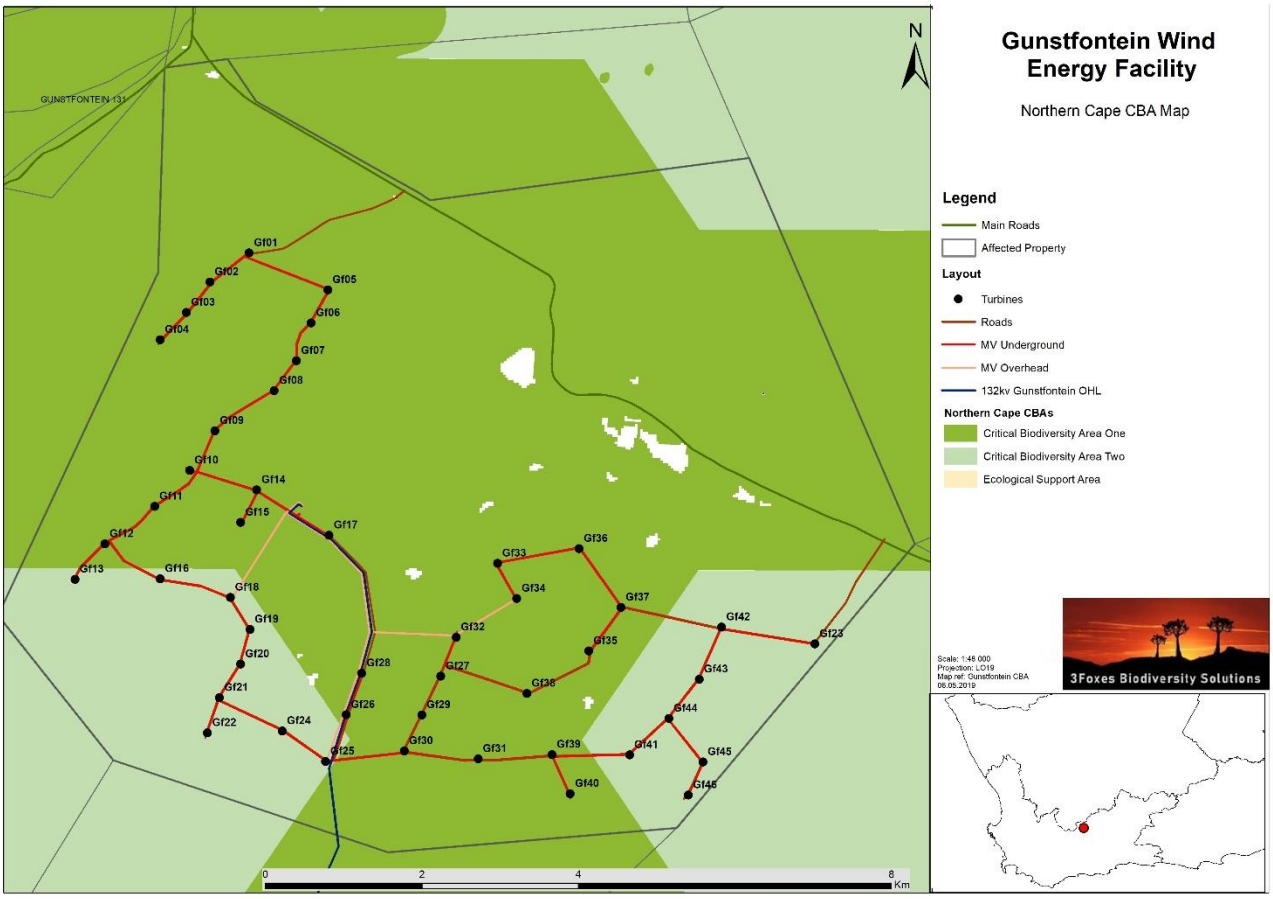

Figure 2. The current turbine layout in relation to the Northern Cape CBA map which has superseded the Namakwa District CBA map which was used for the original assessment.

2. Advantages and Disadvantages of the Proposed Amendment

The major change to the development in terms of the current amendment and which could have potentially significant ecological impacts, is the increase in turbine size as this could result in an increase in the footprint of each turbine. However, this would occur simultaneously with a decrease in the number of turbines required from that assessed in the EIA. The change in turbine size is not likely to result in significant additional impact as any increase from the original assessed turbine size would be simultaneously associated with a decrease in turbine number, thereby largely ameliorating the increased individual footprint. In terms of the roads, the total extent of the road footprint is similar to the original assessed layout and as such there is not likely to be any change in impact associated with the roads as the amount of footprint within the high sensitivity parts of the site has not increased. Overall, no upward or downward adjustment of impacts is justified based on the changes to the layout (Table 3). As such, the amendment is supported from an ecological perspective as it would not increase or change any impacts associated with the development. As the amended layout and development proposal are similar to the original assessed impacts, no specific additional mitigation and avoidance are recommended for inclusion in the amendment.

Table 3. The original summary assessment as assessed in the EIA and the impacts of the amended layout as assessed here. No changes in impact are seen as a result of the amendment.

	Original Assessment		Amendment Layout	
Phase & Impact	**Before Mitigation**	**After Mitigation**	**Before Mitigation**	**After Mitigation**
Planning & Construction Phase Impacts				
Impacts on vegetation and listed plant species	Medium	Medium	Medium	Medium
Faunal impacts due to construction activities	Medium	Medium	Medium	Medium
Increased erosion risk during construction	Low	Low	Low	Low
Operational Phase Impacts				
Faunal impacts due to operational activities	Medium	Low	Medium	Low
Increased alien plant invasion risk	Medium	Low	Medium	Low
Increased erosion risk during operation	Medium	Low	Medium	Low
Decommissioning				
Faunal impacts due to decommissioning activities	Medium	Low	Medium	Low
Increased alien plant invasion risk	Medium	Low	Medium	Low
Increased erosion risk during decommissioning	Low	Low	Low	Low
Cumulative Impacts				
Impacts on broad-scale ecological processes	Medium	Low	Medium	Low

Conclusions & Summary Findings

- An additional site visit was carried out specifically to inform the amendment. This was used to verify the mapped features on-site as well as confirm that the revised positions of the turbines are acceptable from an ecological perspective. In addition to this, limits of acceptable change for each sensitivity category were provided to the developer to ensure that the layout was within

acceptable limits of change. The extent of the development within each sensitivity class are well-within the specified limits of acceptable change and as such, there are no fatal flaws associated with the amended layout.

- As there are no turbines or other development features within the mapped no-go areas, no specific recommendations are made with regards to relocating any of the turbines or other features of the layout. As such, the final layout as provided for the amendment is considered acceptable with regards to the identified sensitive features and general sensitivity mapping at the site.
- The findings of this statement are contingent of the layout as provided for the assessment. There are a variety of high sensitivity areas and features at the site, which are currently outside of the development footprint or which have acceptable levels of impact, but which could be impacted by any changes to the road or turbine layout. As such any further changes to the road or turbine positions should be checked by the specialist to ensure that sensitive features are avoided.
- Should the development proceed to construction, the final development footprint should be subject to a preconstruction walk-through to locate and identify species of conservation concern that are within the development footprint. Some search and rescue of plant species of conservation concern may be required.
- The Gunstfontein Wind Farm Amended layout is well supported in terms of terrestrial ecology impacts. Overall the impact of the amended layout on fauna and flora would be the same as the authorized layout and there are no fatal flaws or critical issues associated with the proposed changes. As a result, the amendment is supported from an ecological perspective as it will not result in an increase in the significance in any of the assessed ecological impacts.

Prepared by Simon Todd
Director
3Foxes Biodiversity Solutions
20 April 2019

Pr.Sci.Nat
SACNASP 400425/11.

APPENDIX:

REVIEW OF ECOLOGICAL IMPACT ASSESSMENT AND ENVIRONMENTAL AUTHORISATION OF THE GUNSTFONTEIN WIND FARM NEAR SUTHERLAND, NORTHERN CAPE

Bergwind Botanical Surveys & Tours CC.
14A Thomson Road
Claremont
Cape Town
7708

10 May 2017

TO WHOM IT MAY CONCERN

REVIEW OF ECOLOGICAL IMPACT ASSESSMENT AND ENVIRONMENTAL AUTHORISATION OF THE PROPOSED GUNSTFONTEIN WIND FARM NEAR SUTHERLAND, NORTHERN CAPE PROVINCE (DEA Ref 14/12/16/3/3/2/826).

BACKGROUND AND BRIEF

An ecological study was undertaken by Mr Simon Todd as part of the requirements to support the application for environmental authorisation (EA) for the Gunstfontein Wind Farm near Sutherland, Northern Cape Province. From his survey, Todd (2016) prepared a sensitivity map of the area of the proposed wind farm and stated in his report that construction of wind turbines and associated infrastructure would be permissible in areas of low, medium and high sensitivity with well implemented mitigation such as micro-siting turbine locations. The only area that Todd considered to be a 'No Go' area is the area he mapped as having VERY HIGH sensitivity. Todd provided clarification of the question of 'ecological sensitivity' in a letter dated 6 April 2016 that was submitted to the Department of Environmental Affairs (DEA).

An EA for the Gunstfontein Wind Farm was issued in July 2016 in which permission was granted for construction of turbines only in the low and medium sensitivity areas and not in the high and very high sensitivity areas. This meant that 22 of the envisaged 68 turbines were not authorised for construction. (Turbines 14, 15, 16, 17, 18, 23, 24, 30—37, 44—47, 55, 56 and 68 were not authorised).

Todd, in a second letter dated 12 August 2016, in response to the EA, once again clarified his sensitivity classification and commented on the conditions of the EA, noting that his intention was not to declare the high sensitivity areas as 'No Go' areas but that turbines would be compatible with the ecology and landscape in these areas as long as localised sensitive habitats were avoided. Secondly, he indicated that he viewed the burying of cables to be more damaging than overhead cables. Todd's letter was submitted together with the appeal of the EA

Points 4.12, 4.13 and 4.14 of the Appeal Decision document issued by DEA on 17 January 2017, reference LSA 156427, refer.

Bergwind Botanical Surveys & Tours CC (Dr D.J. McDonald) was appointed in March 2017 to undertake an independent review of the ecological impact assessment and to consider the EA and Appeal Decision, specifically as relates to the exclusion of turbines from the areas mapped as "high sensitivity" by Todd. For this purpose, a site visit was undertaken and all the relevant documentation and maps scrutinized.

SITE VISIT AND OBSERVATIONS

A visit to the area of the proposed Gunstfontein Wind Farm was undertaken on 18 April 2017. Owing to the extremely dry conditions for the independent survey, detailed observations of, for example, plant species of conservation concern were not possible. The approach was to travel through the landscape, paying particular attention to changes in habitat with the purpose of 'testing' the veracity of the sensitivity map prepared by Todd (2016). Numerous georeferenced photographs were taken for reference and comparative purposes. The site was traversed along existing farm roads across the length and breadth of the site from north-east to south-west and from south to north. This provided a clear overview of the habitats that would be affected by the proposed wind farm. Despite the limitation of not being able to locate and identify plant species of conservation concern, the site assessment was carried out with a high level of confidence in terms of the habitats present and was more than adequate to determine the sensitivity of the different areas within the site.

Apart from the shallow valleys with drainage lines and pans (that would be avoided by any turbine and road construction simply due to the unsuitability of the terrain), the most striking feature of the site is its general uniformity. The vegetation and habitats do not show high variability and there is low diversity of pattern in the landscape. Todd (2016) has elegantly described the types of habitat found.

Reference to the Vegetation Map of South Africa Lesotho & Swaziland (SANBI, 2012) (VEGMAP) supports the observation that there is very low variability and only a single vegetation type (Roggeveld Shale Renosterveld) over the entire area proposed for construction of wind turbines. Variability in the landscape and ecology is found at a localised scale that is not reflected in this map. However, what it clearly shows is that no wind turbines would be located in Tanqua Escarpment Shrubland which is the vegetation type found on the slopes of the escarpment.

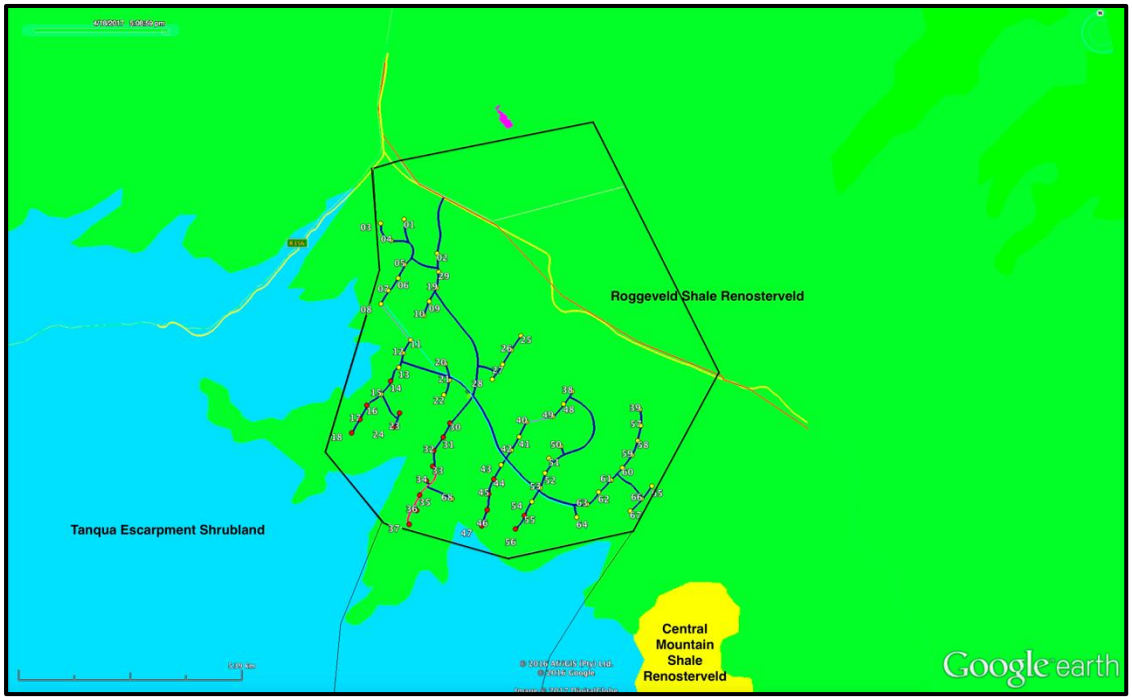

Figure 1. Portion of the VEGMAP (SANBI, 2012) indicating that all 68 of the proposed wind turbines fall within Roggeveld Shale Renosterveld.

In addition to the VEGMAP the Critical Biodiversity Areas map of Desmet & Marsh (2008) for the Namakwa District Municipality was applied to the Gunstfontein Wind Farm site by overlaying the shapefiles on Google Earth. It is noted, as can be seen in Figure 2, that none of the proposed 68 wind turbines would be located

within any Critical Biodiversity Area. It is true, however, that ALL the wind turbines would be located within an Ecological Support Area (Corridor) as mapped by Desmet and Marsh (2008) (Figure 2). It is also true that the development area falls within the Sutherland- Kamiesberg SKEP Expert Plans Priority Area and within the Bokkeveld-Hantam-Roggeveld Priority Area (Point 4.12 in Appeal Decision document). However, the latter two 'priority areas' are irrelevant in determining the sensitivity of turbines at a site-specific scale. These are broad-scale biodiversity determinants used to inform regional planning activities, and are not an indication of localised (site-specific) sensitivity. In this case much more focused questions of site sensitivity are being considered. If the argument that these broad-scale areas are important and a determinant to disallow turbines, then all the turbines at Gunstfontein as well as at other wind farms in these priority areas should be disallowed. It is thus important to keep focus on the site itself and not confuse this with broader-scale biodiversity sector plans that are merely general informants.

The proposed turbines at Gunstfontein would not impact on broad-scale ecological functioning i.e. the ecological support areas *sensu* Desmet & Marsh (2008) would continue to function without hindrance; the wind farm would be compatible with the ecological processes and functioning on the site.

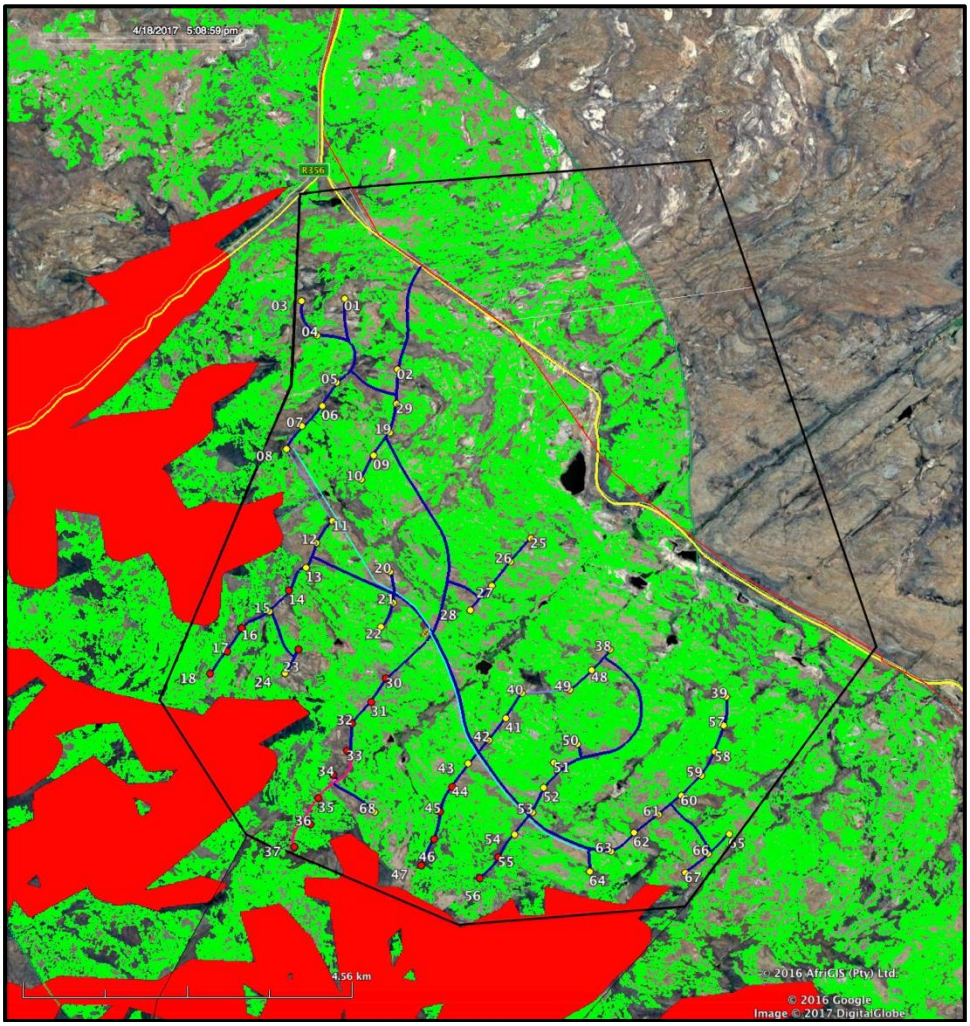

Figure 2. The Critical Biodiversity Areas map of Desmet & Marsh (2008) as applied to the Gunstfontein Wind Farm Area (black boundary). The red areas are Critical Biodiversity Areas and the green area is Ecological Support Area (Corridor).

CRITIQUE OF ECOLOGICAL IMPACT ASSESSMENT

Having read and considered Todd's Ecological Impact Assessment for Gunstfontein Wind Farm (Todd, 2016) I am in general agreement with his findings. However, I believe that the sensitivity map that he compiled is overstated (overly precautionary) in places and this has led to a highly conservative approach by DEA in

determining which wind turbines are acceptable and which not. I agree with Todd (as noted in correspondence referred to above) that mitigation by micro-siting of turbines and roads would obviate a large degree negative impact as is suggested by DEA in their EA and subsequent appeal decision. I concur with Todd's findings that all of the proposed turbine locations are acceptable (subject to the implementation of the recommended mitigation measures), including the turbines proposed in the areas mapped as "high sensitivity" by Todd, and that the exclusion of turbines on the basis of ecological sensitivity is not warranted.

INDEPENDENT ASSESSMENT

I have plotted the wind turbines that have to date been disallowed by DEA on an aerial photograph with superimposed contours. I have then, from my on-site observations and from interpretation of aerial imagery (Google Earth, Bing and Garmin Birds-eye imagery), mapped what I consider to be the sensitivity of the site. The sensitivity map I have compiled is presented in Figure 3 and differs to some degree from Todd's (2016) sensitivity map. According to the sensitivity map I have compiled, the only HIGH or VERY HIGH sensitivity areas are located in the south-west portion of the site towards the escarpment. In my assessment, the remainder of the site is of medium to low sensitivity. It can be seen that a total of eight turbines fall within the HIGH sensitivity areas that I have mapped, specifically turbines 14-18 and 35-37. However, despite the relative higher sensitivity in these areas, the proposed turbines are still considered acceptable subject to micro-siting and mitigation. Although the sensitivity mapping shown in Figure 3 differs from that of Todd, our findings are essentially aligned i.e. the proposed layout of the Wind Farm is acceptable in terms of terrestrial ecology.

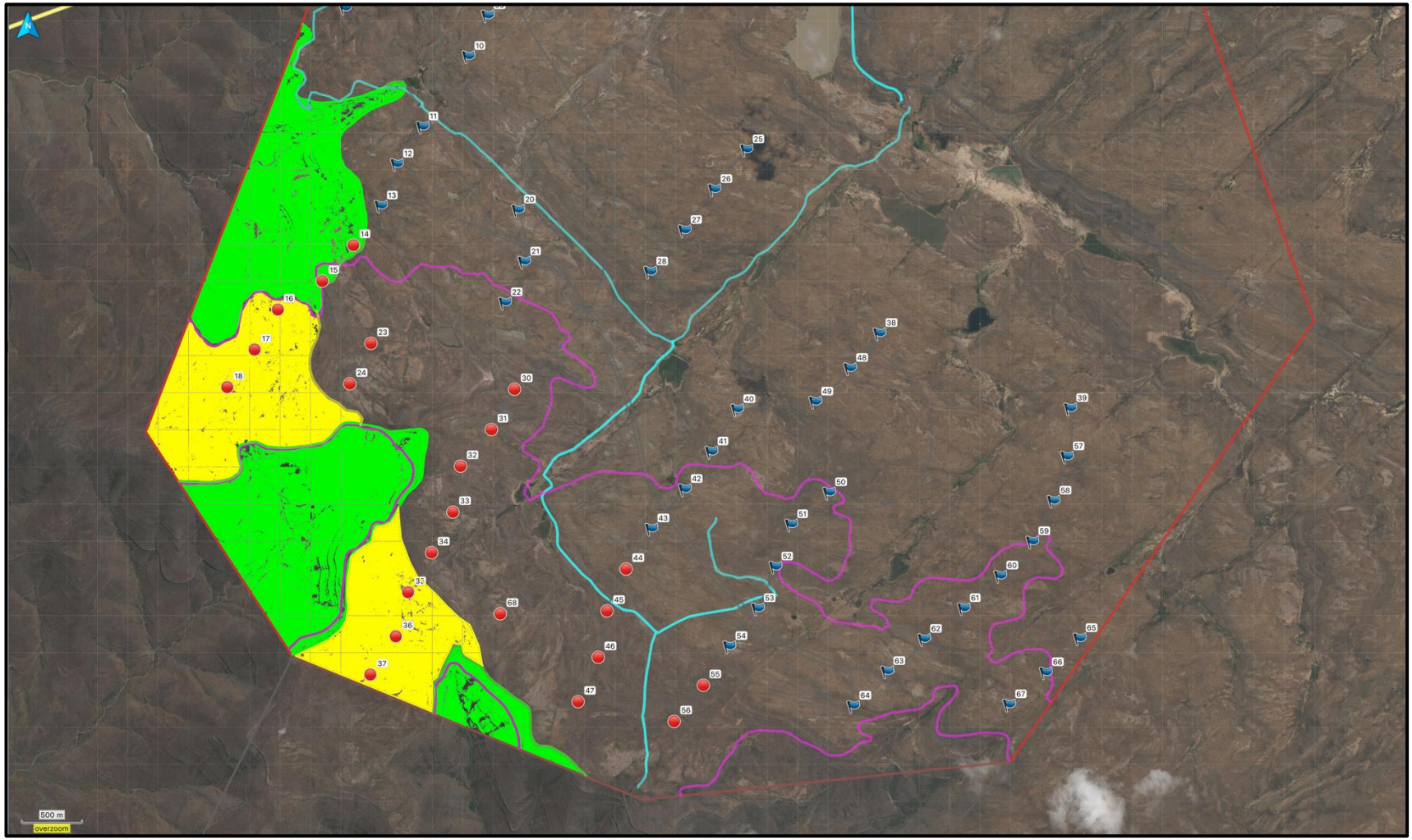

Figure 3. Sensitivity Map of the Gunstfontein Wind Farm area based on independent observations and mapping by the author. The pink contour lines designate the 1 580 m contour. Blue flags = turbine locations approved by DEA, Red dots = turbine locations not approved by DEA. The yellow areas are HIGH sensitivity areas and the green areas are VERY HIGH sensitivity areas. Uncoloured areas have Low to Medium sensitivity (drainage lines and dams / pans have not been mapped). The light blue line indicates the route followed on the site visit, 18 April 2017.

Point 4.14 of the Appeal Decision document (DEA) states, 'The Department submits, therefore that it maintains the view that the placement of turbines and infrastructure on areas in the high sensitive escarpment must be avoided'. This position is not disputed, however, the definition of the high sensitive (sic) escarpment requires clarification. According to my on-site observations the escarpment is found below 1 580 m above mean sea level (a.m.s.l.) on the south and south-west sides of the Gunstfontein Wind Farm area. If the proximity to the edge of the escarpment is used as the criterion by which to exclude turbines, then all 68 turbines should be included in the Environmental Authorisation since none of those on the 'plateau' on the south and south-west side of the Gunstfontein Wind Farm area (as currently disallowed by DEA) would be located below 1 580 m a.m.s.l. i.e. near the edge of the escarpment.

Of far more value is the criterion of ecological sensitivity and this is not necessarily directly linked to the proximity of the escarpment edge. As has been demonstrated all 68 turbines fall within one vegetation type (VEGMAP) and none of the turbines fall within a CBA (*sensu* Desmet & Marsh, 2008). These indicators together with on-site observations that have taken account of local ecological conditions (habitat variability, pattern and processes) therefore are far more informative than an arbitrary definition of proximity to the escarpment edge.

CONCLUSIONS AND RECOMMENDATIONS

Simon Todd, as the originally appointed ecological specialist for the Gunstfontein Wind Farm, has expressed the view in his report and subsequent correspondence that all the turbines (68) and roads proposed would be acceptable with mitigation (micro-siting). I agree with this view. However, my sensitivity map that has taken topography as well as habitat sensitivity into consideration indicates that the extent of the high sensitivity areas as I have mapped is much less than that delineated in Todd's assessment. It is my assessment that the disallowing of 22 turbines within the high sensitivity areas (as mapped by Todd) is overly conservative and has limited foundation on ecological criteria.

I thus would support the re-institution of the 22 disallowed turbines and believe that with mitigation, as has been recommended numerous times by the ecologists, negative impacts can be reduced and the wind farm infrastructure would be compatible with the receiving environment.

Dr D.J. McDonald Pr. Sci. Nat.
Botanical Specialist