

Proposed Witberg Wind Energy Facility Amendment 2018

Supplementary assessment of the proposed amendments.

(Assessment conducted under Section 38 (8) of the  
National Heritage Resources Act (No. 25 of 1999) as part of an EIA)

Prepared for  
Savannah Environmental Pty Ltd

February 2019



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## **Summary**

The proposed Witberg amendment (Laingsburg district), which sees a revised amended layout proposed with 25 turbines with an individual turbine capacity of up to 5 MW each, lies within a project area subject to a previous HIA study (dated 2011). The main area of concern was the visual impact that would be experienced from the Grade 2 Provincial Heritage Site of Matjiesfontein. Subject to some layout adjustments, the original 70 turbine layout and access road received approval from HWC in 2012.

The current proposed amended layout has been assessed and found to be beneficial (compared with earlier proposals), which were assessed to have a high negative impact on setting and cultural landscape.

The proposed amended layout is an improvement in that:

- The fewer number of turbines would help to decrease the potential visual clutter of turbines on the exposed ridgeline with reference to impacts to Matjiesfontein.
- The turbines are positioned in such a way that visual dominance of the Witberg Ridge is avoided.

Other heritage impacts which are of a lesser order, remain unchanged as does mitigation.

From a heritage perspective, the proposed activity is considered acceptable.

## Table of Contents

|       |  |    |
|-------|--|----|
| 1     | Introduction .....   | 4  |
| 1.1   | The proposed amendment.....                                      | 5  |
| 1.2   | Terms of reference.....  | 5  |
| 2     | Methodology.....   | 7  |
| 3     | Findings of the Assessment .....                                 | 8  |
| 3.1   | Summary of findings of the 2011 study .....                      | 8  |
| 3.2   | The impacts relating to the proposed amendments.....             | 9  |
| 3.2.1 | Impacts of power lines and other associated infrastructure. .... | 10 |
| 3.2.2 | Impacts on landscape and setting .....                           | 10 |
| 3.2.3 | Comparative impact assessment.....                               | 11 |
| 3.2.4 | Accumulative impacts.....  | 12 |
| 4     | Conclusion .....   | 13 |
| 4.1   | Mitigation.....  | 13 |
| 5     | Reference .....  | 15 |

# 1 Introduction

ACO Associates CC have been appointed by Savannah Pty Ltd to provide an assessment of an amended layout for the Proposed Witberg Wind Energy Facility (*Witberg Wind Energy Facility DEA ref. 12/12/20/1966*) to be situated on the Witberg Ridge in the Laingsburg Municipality of the Western Cape Province (Figure 1). The proponents (Witberg Wind Power) also wish to apply for an amendment of the authorised turbine specifications (increase in range of rotor diameter up to 136m, increase in range of hub height up to 120m and an increase of individual wind turbine output capacity up to 5MW, reduction from 27 to 25 turbines, relocation of the lay-down area, substation and associated powerline), and other non-spatial amendments (including but not limited to, an extension to the Environmental Authorisation (EA) for another 2 years etc.).

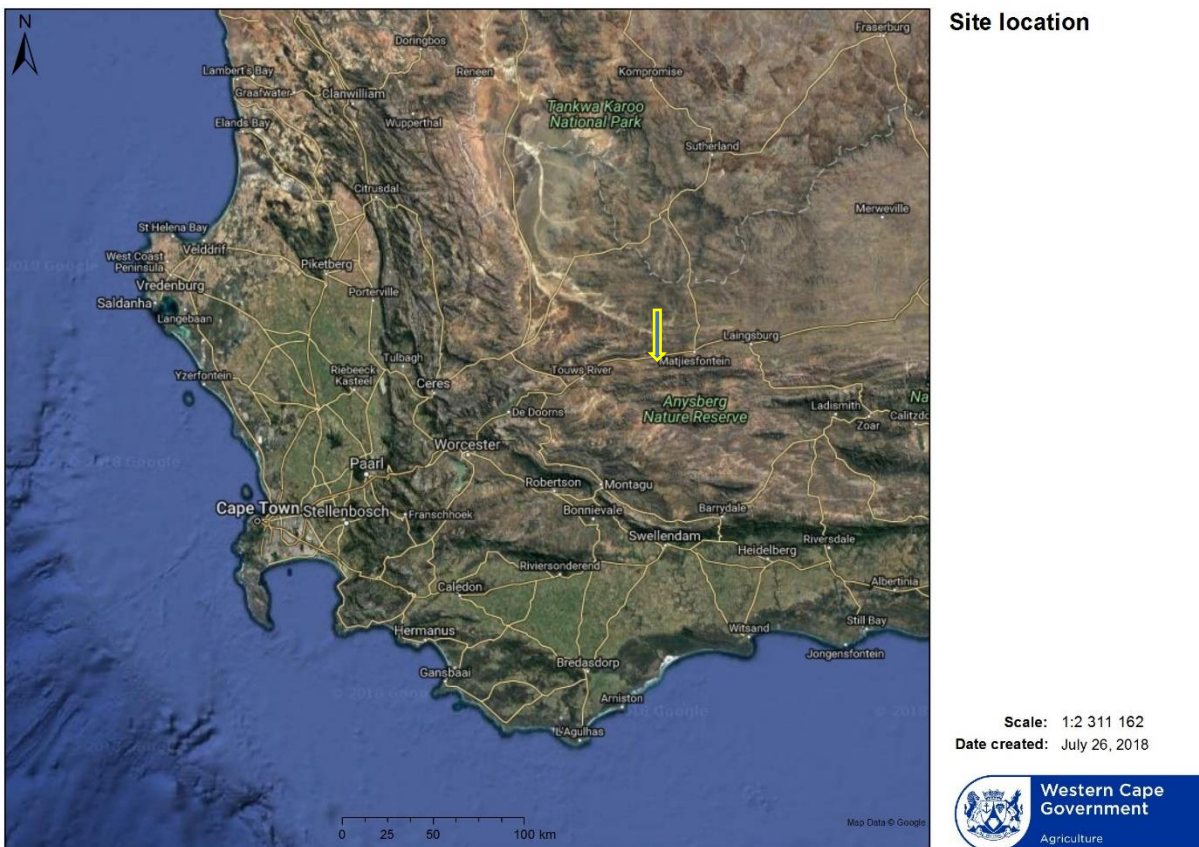


Figure 1 Site location

ACO Associates has had a long involvement with this project having subjected it to a Heritage Impact Assessment and survey for an Environmental Impact Assessment (EIA) process led by ERM Pty Ltd in 2012. At that time there was an extensive proposal for up to 70 turbines with a hub height of some 80m, along with the required associated infrastructure. After this, there were further assessments undertaken for the access road, as well as further comments solicited by the proponent for various layout changes, the latest one being in 2015. In 2011

ACO Associates responded to the initial development proposal by conducting an extensive survey of the land parcels involved. The impact of greatest significance related to the visual changes that would be experienced from the Matjiesfontein grade 2 (Provincial) heritage site. The matter was extensively debated at Heritage Western Cape (HWC) with the result that the proposal was not supported. Mr Ashley Lillie was then appointed by the proponent to steer the proposal through HWC for a second time. After a site visit, HWC determined that the impacts were tolerable, and a positive comment resulted. **This approval does not have an expiry date and remains valid currently.** The access road, which had already been built in part, was subject to a 24G application which also received a positive comment (Figure 2)

### *1.1 The proposed amendment*

Witberg Wind Power (Pty) Ltd is proposing to amend the wind farm layout as well as the turbine specifications for the Witberg Wind Energy Facility (WEF). The intended wind turbine specification amendments include:

- Increase in hub height from the authorised 92m , to a hub height range of up to 120m;
- Increase the rotor diameter from the authorised 116m, to a rotor diameter range of up to 136m;
- Increase the output capacity for each wind turbine from 3MW, to up to 5MW.
- Reduction in the number of turbines from the authorised 27 to 25 and adjustment of layout to incorporate the changes (including the relocation of the lay-down area, substation and associated powerline).

Other non-spatial amendments being requested include the following:

- Change the details of the physical address and addition of the cell phone details of the holder of the environmental authorisation;
- Correction of details in the two (2) of the listed activities authorised in the original EA (dated 13 October 2011);
- Extend the validity period of the environmental authorisation by an additional 2 years;
- Consolidation of environmental authorisations and appeal decisions.

### *1.2 Terms of reference*

An assessment is required to assess the impacts associated with the proposed amendments to the wind farm layout and turbine specifications, and to conduct a comparative assessment between the impacts identified during the EIA process and the impacts associated with the amendment of the proposed wind farm layout and wind turbine specifications. The assessment must include:

- An assessment of all impacts related to the proposed changes;
- Advantages and disadvantages associated with the changes;

- Comparative assessment of the impacts before the changes and after the changes; and
- Measures to ensure avoidance, management and mitigation of impacts associated with such proposed changes, and any changes to the EMPr.
- The assessment must be clear on whether each of the proposed changes to the EA will:
  - Increase the significance of impacts originally identified in the EIA report or lead to any additional impacts; or
  - Have a zero or negligible effect on the significance of impacts identified in the EIA report; or
  - Lead to a reduction in any of the identified impacts in the EIA report.

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Date: 01 February 2012  
Case No: 120124JL18  
Auto IDs: 1719 - 1710



**FINAL COMMENT**  
In terms of section 38(8) of the National Heritage Resources Act (Act 25 of 1999)  
and the Western Cape Provincial Gazette 6061, Notice 298 of 2003

Attention: Arcus Gibb  
PO Box 3965  
Cape Town  
8000

**CASE NUMBER: 120124JL18**  
**NID AND S24G APPLICATION: WITBERG ACCESS ROAD**

The matter above has reference.

Your NID dated 24 January 2012 was tabled and the following was discussed;

1. The application is for the construction of a road exceeding 300m
2. This is a Section 24G application in terms of NEMA
3. The gravel road was constructed to service the proposed Witberg Wind Energy Facility without consent
4. The road is 12.7km long and covers 30 810m<sup>2</sup>
5. Limited Later Stone Age material has been found in this area
6. Fossils occur in the local geology but no significant fossils have been identified
7. An HIA has been conducted for the Witberg Wind Energy Facility

Decision;

1. No further heritage studies are required
2. HWC has no objection to the development.

**Terms and Conditions:**

1. This approval does not exonerate the applicant from obtaining local authority approval or any other necessary approval for the proposed work.
2. If any heritage resources, including graves or human remains, are encountered they must be reported to Heritage Western Cape immediately.
3. Heritage Western Cape reserves the right to request additional information as required.

Should you have any further queries, please contact the official above and quote the case number above.

Yours faithfully

Andrew B Hall  
Chief Executive Officer  
Heritage Western Cape



Figure 2 The record of decision for the Access Road

## 2 Methodology

The 2011 study was commissioned as the heritage component of an EIA. The source of information that was used for this process is based on scientific publications related to archaeological work undertaken in the Study Area and other unpublished reports on the history of the region. A physical survey of heritage resources has been conducted on site and heritage indicators (conservation-worthy buildings, archaeological sites and places celebrated as heritage) identified and mapped where appropriate. This work was done by a team of 5 archaeologists and a palaeontologist who fanned out and walked the full length of the Witberg ridge as well as the agricultural land to the north. Heritage finds were mapped, photographed

and assessed. Cognisance was taken of the broader heritage issues including the impact on the proclaimed provincial heritage site of Matjiesfontein.

Definitions of heritage and criteria for assessment of heritage are indicated in the National Heritage Resources Act while the Provincial Guidelines for assessing heritage in the Western Cape are relevant (Buamann and Winter 2005). Both the national legislation and provincial guidelines require that cultural landscapes and areas of particular aesthetic and/or cultural heritage significance are included in the assessment. These definitions have not changed since 2011. This study is desktop based and relies on the information gathered for the 2011 assessment.

Please refer to Appendix 1 for the impact methodology used in this addendum report.

## 2.1 Limitations

Conditions under which the fieldwork took place were optimal, ground visibility was good and every turbine position was checked by the team which included 6 experienced archaeologists. Only those areas that were deemed to be vulnerable were checked for potential impacts – the entire study area as defined by the farms involved is extensive and would require several months to cover. Palaeontological material is not necessarily visible in weathered rock surfaces. New rock cuttings and erosion gullies provide optimum visibility which means that it is necessary to extrapolate findings based on the geology of the area and what is visible given the opportunities that the environment affords.

## **3 Findings of the Assessment**

### *3.1 Summary of findings of the 2011 study*

The 2011 search of the project area indicated that there were very few archaeological sites on the Witberg Ridge apart from 1 small rock shelter with 6 stone artefacts. It will not be impacted by turbine placement. Tweedside farm house and a number of other ruined structures were identified during the 2011 report, however none of these would suffer any direct impacts.

The Heritage Impact Assessment also determined that there was palaeontological sensitivity as fossiliferous material was identified in the cutting of the Witberg Ridge access road, and recommended monitoring during widening of the road, the ridgetop road and the excavation of turbine bases. During the 2011 assessment, it was determined that the main heritage impacts related to possible impacts to palaeontology and the setting or cultural landscape. Impacts to archaeology, built environment and graves were of low significance.

In terms of impacts to the cultural landscape or setting, the 2011 study found that there would be a high negative impact that could not be easily mitigated without reducing the



number of turbines (70 originally proposed) and placing them as far from Matjiesfontein as possible. At first HWC issued the project a negative comment however after argument by independent heritage assessor, Mr Ashley Lillie and a site visit by HWC, it was deemed that the proposal was acceptable and an official comment produced approving the project. HWC comments do not lapse and remain valid.

### *3.2 The impacts relating to the proposed amendments*

The August 2018 layout has proposed that the number of turbines will reduce from 27 turbines overall to 25. The reduction from the initially proposed 70 turbine layout to 27 turbines was deemed to carry a far less negative impact, while the latest 25 turbine layout is considered to be similar.

The proposed new layout will not change the impacts to paleontology which relates to the construction of the turbines bases in potentially sensitive rock formations, and particularly the access road where deep cuttings and incline changes will cause impacts. The significance of these impacts is moderate and negative without mitigation, however scientific benefit can be obtained if suitable mitigation is carried out (Hart 2011).

The reduction of the number of turbines is likely to be an improvement with the significance of the impact shifting from high negative to medium negative. The Visual Impact Assessment (VIA) suggests that the overall impact of the turbines will remain largely unchanged from that already authorized. In heritage terms, an advantage of the amended layout, which now sees turbines less dominantly placed 11 km from Matjiesfontein as opposed to 9 km in the original proposal, will help alleviate visual impacts from the heritage town. Please see the impact table presented hereafter. From this perspective the amendment is supported.

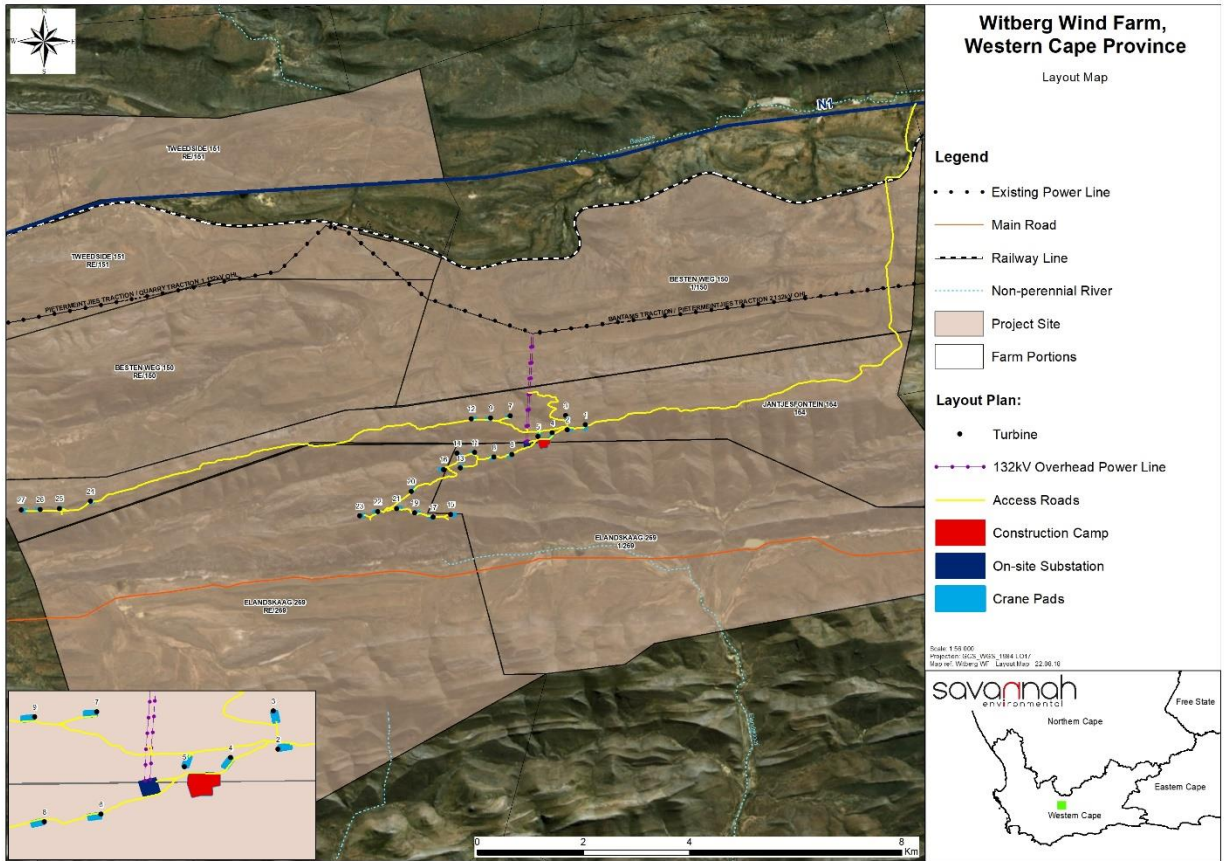


Figure 3 The amended layout (Savannah Environmental, 2018).

### 3.2.1 Impacts of power lines and other associated infrastructure.

The power lines, access road and substation sites are all situated within the already HWC approved envelope of land that was comprehensively surveyed in 2011. This survey, which in fact exceeded the study area of the 2018 amendment, established that the heritage sensitivity was related to palaeontology. The significance ratings and mitigation recommended remains unchanged for this component in terms of the proposed amended layout.

### 3.2.2 Impacts on landscape and setting

The numerical reduction in wind turbines compared with the 13 October 2011 authorisation and amendments thereto, show a progression of improvement in terms of negative impacts to heritage. There has been general confinement of the turbines to the western side of the Witberg which is of benefit to the highly sensitive town of Matjiesfontein. The size of the turbines which will be increased in height, however the visual density of the facility will decrease which is desirable as far less of the landmark Witberg range will be utilised.

Table 1

| <b>Nature: Impact to overall landscape and setting of the proposed August 2018 amendment.</b>  |                           |                        |
|--|---------------------------|------------------------|
|  | <b>Without mitigation</b> | <b>With mitigation</b> |
| <b>Extent</b>  | Medium (3)                | Medium (3)             |
| <b>Duration</b>  | Long-term (4)             | Long-term (4)          |
| <b>Magnitude</b>   | Moderate (6)              | Moderate (6)           |
| <b>Probability</b>   | Probable (3)              | Probable (3)           |
| <b>Significance</b>  | <b>36 (Medium)</b>        | <b>36 (Medium)</b>     |
| <b>Status (positive or negative)</b>   | Negative                  | Negative               |
| <b>Reversibility</b>   | Low                       | Low                    |
| <b>Irreplaceable loss of resources?</b>  | No                        | No                     |
| <b>Can impacts be mitigated?</b>   | No                        | No                     |
| <b>Mitigation:</b><br>As per VIA   |                           |                        |
| <b>Cumulative impacts:</b><br>Since 2011 when the first EIA was completed, the amount of Wind Energy Facilities has increased. In particular on the Sutherland Escarpment and Moordenaars Karoo and Tanqua Karoo has seen a number of proposals. While these are not directly in sight of Witberg, there is a regional change of character in terms of loss of wilderness qualities and sense of place. Particular reference is made to the experience of driving between the popular tourism and heritage towns of Sutherland and Matjiesfontein, mostly situated within a REDZ area. |                           |                        |
| <b>Residual Impacts:</b><br>Residual Impacts could involve post-demolition landscape scarring.   |                           |                        |

### 3.2.3 Comparative impact assessment

The table (2) below contrasts overall the main impact identified in 2011 to that of the proposed amendment. The amendment has resulted in a decrease in the impacts to setting and landscape. The drop in the number of turbines from 27-25 as of August 2018 is of neutral significance in terms of impacts to setting.

Table 2

| <b>Comparative impacts.</b>   | <b>Authorised</b>         |                        | <b>Proposed amendment</b> |                        |
|---|---------------------------|------------------------|---------------------------|------------------------|
|   | <b>Without mitigation</b> | <b>With mitigation</b> | <b>Without mitigation</b> | <b>With mitigation</b> |
| <b>Extent</b>   | Low (1)                   | Low (1)                | Low (1)                   | Low (1)                |
| <b>Duration</b>   | Permanent (5)             | Permanent (5)          | Permanent (5)             | Permanent (5)          |
| <b>Magnitude</b>  | High (8)                  | High (8)               | Medium (5)                | Medium (5)             |
| <b>Probability</b>  | Definite (5)              | Definite (5)           | Probable (3)              | Probable (3)           |
| <b>Significance</b>   | <b>70 (high)</b>          | <b>70 (high)</b>       | <b>33 (Medium)</b>        | <b>33 (Medium)</b>     |
| <b>Status (positive or negative)</b>  | Negative                  | Negative               | Negative                  | Negative               |
| <b>Reversibility</b>  | Very low                  | Very low               | Very low                  | Very low               |
| <b>Irreplaceable loss of resources?</b>   | No                        | No                     | No                        | No                     |
| <b>Can impacts be mitigated?</b>  | No                        | No                     | No                        | No                     |
| Mitigation: No mitigation possible. Please refer to visual impact assessment.   |                           |                        |                           |                        |
| <p><b>Cumulative impacts:</b><br/>           Since 2011 when the first EIA was completed, the amount of Wind Energy Facilities has increased. In particular on the Sutherland Escarpment and Moordenaars Karoo and Tanqua Karoo has seen a number of proposals. While these are not directly in sight of Witberg, there is a regional change of character in terms of loss of wilderness qualities and sense of place. Particular reference is made to the experience of driving between the popular tourism and heritage towns of Sutherland and Matjiesfontein, mostly situated within a REDZ area. The proposed amendment represents an improvement in terms of regional cumulative impacts.</p> |                           |                        |                           |                        |
| <p><b>Residual Risks:</b><br/>           Residual risks are few and relate to chance encounters of archaeological and palaeontological material after the proposed development is in place.</p>   |                           |                        |                           |                        |

### 3.2.4 Cumulative impacts

No impacts are expected to human generated heritage therefore there will be no contribution to cumulative impacts.

The paleontology of the site, and the region is not well known enough to make a statement on the cumulative impacts. The population of fossils is not known therefore the degree of cumulative impacts cannot be judged. There is a possibility of a positive impact to knowledge base, as the more opportunities that are presented to collect scientific specimens from below surface strata offer the opportunity to increase the accumulated knowledge of the area. Paleontologists rely greatly on quarries and excavations to make new observations.

Wind energy facilities have the potential to contribute to cumulative impacts on a regional and sub-regional scale. If all applications in the Sutherland REDZ zone are authorized there will be a tangible change to the regional scenery and landscape value. This will affect the experience of both visitors and resident in the area. The contribution of the Witberg WEF to such regional changes is decreased by the overall reduction in the amount of turbines – significant improvement on the original 70 turbines proposed.

Table 3

| <b>Nature: Contribution to cumulative impacts</b>  |                           |                        |
|--|---------------------------|------------------------|
|  | <b>Without mitigation</b> | <b>With mitigation</b> |
| <b>Extent</b>  | Medium (3)                | Medium (3)             |
| <b>Duration</b>  | Long-term (4)             | Long-term (4)          |
| <b>Magnitude</b>   | Low (4)                   | Low (4)                |
| <b>Probability</b>   | Probable (3)              | Probable (3)           |
| <b>Significance</b>  | <b>33 (Medium)</b>        | <b>33 (Medium)</b>     |
| <b>Status (positive or negative)</b>   | Negative                  | Negative               |
| <b>Reversibility</b>   | Low                       | Low                    |
| <b>Irreplaceable loss of resources?</b>  | No                        | No                     |
| <b>Can impacts be mitigated?</b>   | No                        | No                     |
| <b>Mitigation:</b> No mitigation.  |                           |                        |
| <b>Cumulative impacts:</b><br>Since 2011 when the first EIA was completed, the amount of Wind Energy Facilities has increased. In particular on the Sutherland Escarpment and Moordenaars Karoo and Tanqua Karoo has seen a number of proposals. While these are not directly in sight of Witberg, there is a regional change of character in terms of loss of wilderness qualities and sense of place. Particular reference is made to the experience of driving between the popular tourism and heritage towns of Sutherland and Matjiesfontein, mostly situated within a REDZ area. |                           |                        |
| <b>Residual Impacts:</b><br>Residual Impacts could involve post-demolition landscape scarring.   |                           |                        |

## 4 Conclusion

The assessment finds that the amended layout and turbine specifications along with the non-spatial amendments proposed should be supported. The amended layout is also an improvement with respect to cumulative regional impacts. No other potential impacts identified have changed and no new potential impacts have been identified.

**From a heritage perspective, the proposed amendments are considered acceptable.**

### 4.1 Mitigation

Mitigation measures remain unchanged.

For reference purposes the original recommendations (Hart 2011) for built environment, archaeology and paleontology are repeated below. In terms of heritage no further mitigation in terms of landscape impacts are offered.

*All the geological horizons in the Study Area are potentially fossiliferous, and hence ideally all excavations for whatever purpose should be examined by a suitably qualified palaeontologist, with recording and sampling of fossil material. If this is not feasible, then at least all road cuttings and any large excavations like borrow pits should be examined palaeontologically. If fossil material is encountered, the palaeontologist must be given sufficient time and access to resources to recover at least a scientifically representative sample for further study. If this recommendation is followed, then from a palaeontological point of view, the development of the proposed Witberg wind farm will constitute a positive intervention, providing greater insight into the palaeontological heritage of South Africa. Successful mitigation may be seen as an overall positive impact.*

*It is not expected that there will be significant impacts to pre-colonial archaeological heritage. The summit of the Witberg is windy, exposed and not conducive to human settlement. There are no specific recommendations.*

*The built environment of the study area is limited to the Tweedside Farm complex and siding. While this is a historic precinct of high historic significance, it is located a long way from the main development areas. Re-establishing a rail siding at Tweedside will not have any impacts as long as existing structures are not damaged. It is best that the two abandoned farms that were identified are left well alone and made out of bounds.*

*Human remains can occur at any place on the landscape, but are particularly likely to be found on or close to archaeological sites. They are regularly exposed during construction activities. Such remains are protected by a plethora of legislation including the Human Tissues Act (Act No 65 of 1983), the Exhumation Ordinance of 1980 and the National Heritage Resources Act (Act No 25 of 1999). In the event of human bones being found on site, SAHRA must be informed immediately and the remains removed by an archaeologist under an emergency permit. This process will incur some expense as removal of human remains is at the cost of the developer. Time delays may result while application is made to the authorities and an archaeologist is appointed to do the work.*

## **5 References**

Baumann, N. & Winter, S. 2005. Guideline for involving heritage specialists in EIA process. Edition 1. CSIR report No ENV-S-C 2005 053E. Provincial Government of the Western Cape: Department of Environmental Affairs and Developmental Planning

Hart, T. 2011. Proposed Witberg Wind Farm. Jantjesfontein (Farm RE/164), Besten Weg (Farm 1/150 and Farm RE/150), Tweedside (Farm RE/151), and Elandskrag (Farm 1/269), Laingsburg, Western Cape Province. ACO Associates report prepared for ERM.

Lawson, Q and Oberholzer, B 2018. Witberg WEF Part 2 EA Ammedment. Visual statement.

### ***Assessment of Impacts***

Direct, indirect and cumulative impacts of the issues identified through the scoping study, as well as all other issues identified must be assessed in terms of the following criteria:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- » The **duration**, wherein it will be indicated whether:
  - \* the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - \* the lifetime of the impact will be of a short duration (2–5 years) - assigned a score of 2;
  - \* medium-term (5–15 years) – assigned a score of 3;
  - \* long term (> 15 years) - assigned a score of 4; or
  - \* permanent - assigned a score of 5;
- » The **magnitude**, quantified on a scale from 0–10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- » the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- » the **status**, which will be described as either positive, negative or neutral.
- » the degree to which the impact can be reversed.
- » the degree to which the impact may cause irreplaceable loss of resources.
- » the *degree* to which the impact can be *mitigated*.

The **significance** is calculated by combining the criteria in the following formula:



$$S=(E+D+M)P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

Assessment of impacts must be summarised in the following table format. The rating values as per the above criteria must also be included.

***Example of Impact table summarising the significance of impacts (with and without mitigation)***

| <b>Nature:</b>      |                           |                        |
|---------------------|---------------------------|------------------------|
|                     | <b>Without mitigation</b> | <b>With mitigation</b> |
| <b>Extent</b>       | High (3)                  | Low (1)                |
| <b>Duration</b>     | Medium-term (3)           | Medium-term (3)        |
| <b>Magnitude</b>    | Moderate (6)              | Low (4)                |
| <b>Probability</b>  | Probable (3)              | Probable (3)           |
| <b>Significance</b> | <b>36 (Medium)</b>        | <b>24 (Low)</b>        |

|  |          |          |
|--|----------|----------|
| <b>Status (positive or negative)</b>             | Negative | Negative |
| <b>Reversibility</b>                             | Low      | Low      |
| <b>Irreplaceable loss of resources?</b>          | Yes      | Yes      |
| <b>Can impacts be mitigated?</b>                 | Yes      |          |
| <b>Mitigation:</b><br>Mitigation Measures        |          |          |
| <b>Cumulative impacts:</b><br>Cumulative Impacts |          |          |
| <b>Residual Impacts:</b><br>Residual Impacts     |          |          |