

**Arcus GIBB (PTY) LTD**

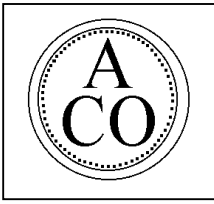
**Environmental Scoping Assessment  
Wolseley Wind Farm**

**Prepared by:** Lita Webley & David Halkett  
ACO Associates cc

**Prepared for:** Arcus GIBB Pty Ltd

**On behalf of:**

**Date:** 13 April 2012



13 April 2012

### **DECLARATION OF INDEPENDENCE**

We, Lita Webley & David Halkett, as duly authorised representatives of ACO Associates cc, hereby confirm our independence (as well as that of ACO Associates cc) as specialists and declare that neither we nor ACO Associates cc have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which Arcus GIBB was appointed as environmental assessment practitioner in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for worked performed, specifically in connection with the Environmental Impact Assessment for the proposed Wolseley Wind Farm, Western Cape Province. We further declare that we are confident in the results of the studies undertaken and conclusions drawn as a result of it – as is described in our attached report.

Handwritten signatures of Lita Webley and David Halkett in black ink.

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Full Name: Lita Webley & David Halkett

Title / Position: Principle Investigators: Heritage Impact Assessments

Qualification(s): PhD (Archaeology) & MA (Archaeology)

Experience (years/ months): 16 Years & 23 Years

Registration(s): Association of Southern African Professional Archaeologists

## EXECUTIVE SUMMARY

ACO Associates cc was appointed by Arcus Gibb (Pty) Ltd, on behalf of the client SAGIT, to undertake a Scoping Heritage Impact Assessment of the proposed Wolseley Wind Energy facility to the south of Wolseley in the Breede River valley, Worcester Magisterial District, Western Cape Province.

It is proposed to construct a wind energy facility of approximately 20-35 wind turbines and associated infrastructure. The facility will link to an existing sub-station.

Notice of Intent to Develop (NID) was submitted to Heritage Western Cape in February 2011, and the following Interim Comment received: "An HIA is required consisting of an Archaeological study; Palaeontological study, Visual Study with an integrated set of recommendations".

The key heritage indicators are:

- A letter of exemption from further palaeontological studies has been issued. It describes the Precambrian bedrocks of the Malmesbury Group as being highly deformed so that original fossil assemblages have been destroyed. The superficial sediments present at or near the surface are generally of low palaeontological sensitivity;
- The significance of pre-colonial archaeological remains of the valley floor is likely to be low due to the transformed, agricultural nature of the environment. Scatters of stone tools may be found but are unlikely to be in context. However, the rocky koppies and lower slopes of the mountains have been reported to contain in situ collections of artefacts as well as rock art sites;
- This section of the Breede River Valley (once known as the Land van Waveren) has been settled for 300 years and it is anticipated that there will be sub-surface remains of colonial settlement, ruins of historic settlements as well as farmsteads and structures which retain architectural elements of heritage significance;
- Farm graveyards have been reported from the study area and a survey is likely to identify further such graveyards of land owners and farm workers. These graveyards are considered to be of high significance;
- The Scoping Visual Impact Assessment considered the impact of the proposed development on the historic Bain's Kloof Pass (a Grade 2 site), the scenic R43 which travels through the valley and the scenic qualities of the valley.

During the EIA process, an HIA will be produced which will integrate the following specialist studies:

- A desktop palaeontological assessment;
- An archaeological study;
- A visual study.

To summarise the preliminary information presented in the palaeontology and archaeology reports, indications are that the proposed activity is viable and impacts are expected to be limited and controllable.

Recommendations with respect the placement of turbines and associated infrastructure are likely to include buffers of at least 500m around heritage sites (built environment and graveyards).

The visual impacts of the proposed wind energy facility on the scenic qualities of the valley, the R43 and the northern end of Bain's Kloof Pass however, are considered to be high, although there are factors on the landscape, and topography which may mitigate some visual impact. A preferred area for the location of turbines has been indicated following a site analysis. The Scoping VIA provides an outline of the nature of further studies required during the EIA process

The “Do-Nothing” alternative comprises the option of not establishing the wind energy facility on the farms. The turbines and associated infrastructure will not be constructed and farming activities will continue.

The cumulative impact of several wind energy facilities in a restricted area, such as the Breede River Valley, can be very high. However, at present no such facilities are proposed for the surrounding farms.

# Environmental Scoping Assessment for the Proposed Wolseley Wind Farm in the Western Cape

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## ABBREVIATIONS

<b>DEA&amp;DP</b>	<b>Department of Environmental Affairs and Development Planning</b>
<b>ESA</b>	<b>Early Stone Age</b>
<b>GPS</b>	<b>Global Positioning System</b>
<b>HIA</b>	<b>Heritage Impact Assessment</b>
<b>HWC</b>	<b>Heritage Western Cape</b>
<b>LSA</b>	<b>Late Stone Age</b>
<b>MSA</b>	<b>Middle Stone Age</b>
<b>NHRA</b>	<b>National Heritage Resources Act</b>
<b>SAHRA</b>	<b>South African Heritage Resources Agency</b>

## GLOSSARY

**Archaeology:** *Remains resulting from human activities which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.*

**Early Stone Age:** *The archaeology of the Stone Age between approximately 700 000 and 2500 000 years ago.*

**Fossil:** *Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.*

**Heritage:** *That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999.*

**Late Stone Age:** *The archaeology of approximately the last 20 000 years associated with fully modern people.*

**Middle Stone Age:** *The archaeology of the Stone Age between approximately 20 000-300 000 years ago associated with early modern humans.*

**Palaeontology:** *Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.*

**Pleistocene:** *A geological time period (of approximately 3 million – 20 000 years ago).*

**SAHRA:** *South African Heritage Resources Agency – the compliance authority which protects national heritage.*

**Structure (historic):** *Any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith. Protected structures are those which are over 60 years old.*



# 1 INTRODUCTION

## 1.1 Background

ACO Associates cc was requested by Arcus Gibb (Pty) Ltd, on behalf of the client, SAGIT Energy Ventures, to undertake a Heritage Scoping study to assess the impacts to heritage of a proposed wind farm consisting of approximately 20-35 wind turbines and associated infrastructure spread across a number of farms in the Breede River Valley, located to the south of Wolseley on the R43 in the Worcester Magisterial District (Figure 1).

A pre-feasibility study was conducted in January 2011 (Webley & Halkett 2011) and a Notice of Intent to Develop was submitted to Heritage Western Cape in February 2011. HWC issued an Interim Comment in July 2011, requesting:

“An HIA is required consisting of an Archaeological study; Palaeontological study, Visual Study with an integrated set of recommendations”.

This Scoping report encapsulates the heritage authority requirements and considers the key heritage indicators for the area and makes recommendations regarding the scope and nature of further specialist studies during the EIA/HIA process. The scoping study is required by the EIA process.

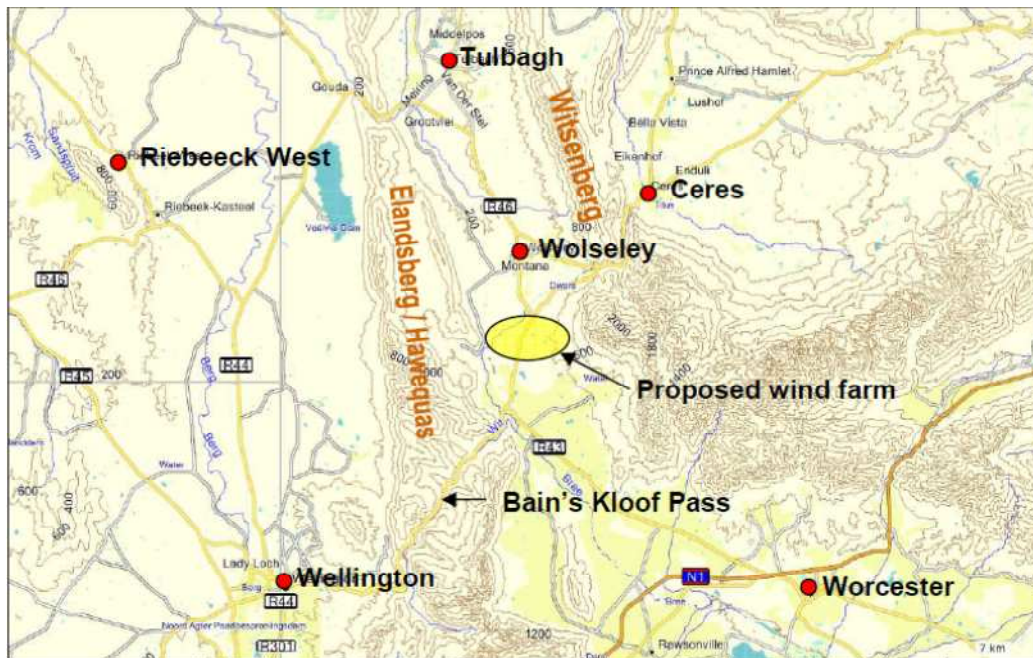


Figure 1: The location of the proposed wind farm near Wolseley. Map supplied by client.

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## 1.2 Project Description

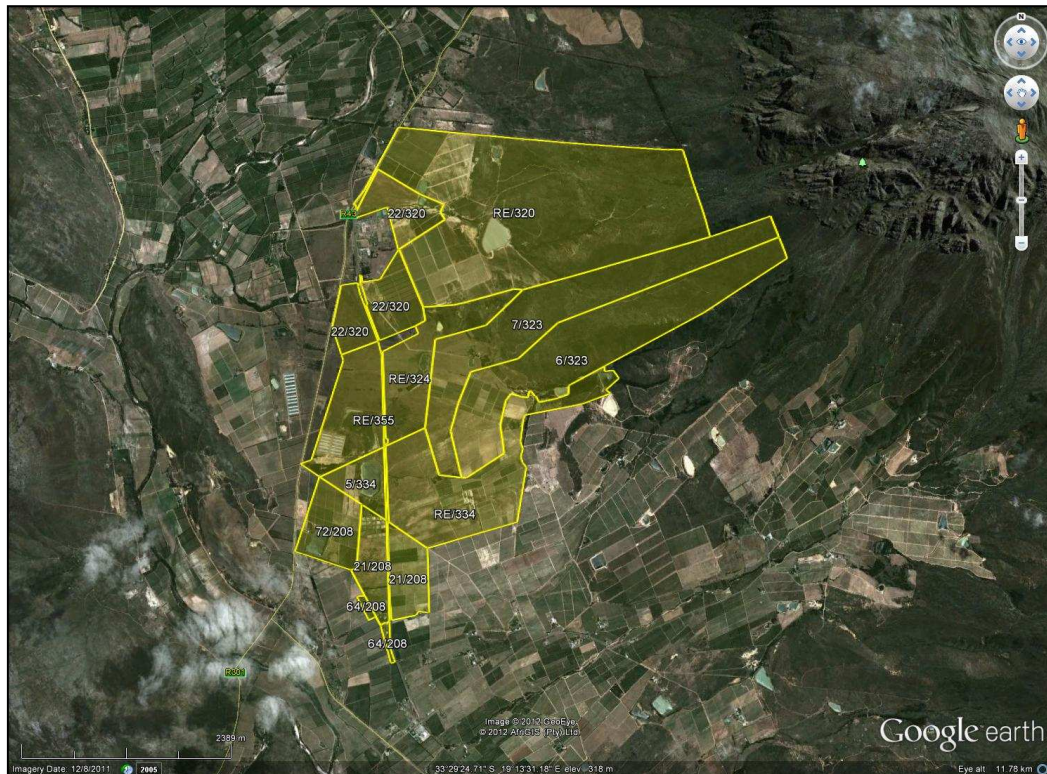
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The project will include:

- Approximately 20-35 wind turbines (hub height approx. 90m and blade length approx. 60m) with permanent red marker lights;
- 6m wide access roads to the site and turbines;
- Underground cabling between the turbines and to the substation;
- A control room;
- A temporary construction camp and lay down areas around each turbine;
- The existing substation will be used and there is no plan to build another.

The final positions of the turbines have not yet been determined but it is proposed that they should be placed as close as possible to the existing 400kV Eskom power line which crosses the valley from west to east. In order to minimise their visual impact it has been proposed that they should be grouped in a rough square of approximately 4km by 4km on either side of the power line.

The “Do-Nothing” alternative comprises the option of not establishing the wind energy facility on the farms. The turbines and associated infrastructure will not be constructed and farming activities will continue.



**Figure 2:** The boundaries of the farms discussed in the text. Map supplied by client.

The following farms form part of the proposed wind farm (Figure 2):

- RE of Romansrivier 320
  - Portion 22 of Romansrivier 320
  - Portions 5, 6 and RE of De Liefde 334
  - Portion 6 of De Liefde 323
  - Portion 7 of Koppies 323
  - Portions 64 and 72 of Kleineberg 208
  - Vaalvlei 324
  - RE of Vaalvlei 355
  - Portion 21 of Tevrede 280
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### **1.3 Terms of Reference**

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This report is a Scoping Level Assessment of the potential Heritage Impacts of the proposed development. According to the Guidelines for Determining the Scope of Specialist Involvement in EIA processes, the Scoping Assessment is defined as: “the process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addressed in an impact assessment. The main purpose is to focus the impact assessment on a manageable number of important questions on which decision-making is expected to focus and to ensure that only key issues and reasonable alternatives are examined. The outcome of the scoping process is a Scoping Report that includes issues raised during the scoping process, appropriate responses and, where required, terms of reference for specialist involvement”.

- More specifically, this report describes the baseline conditions that exist in the study area and identifies the sensitive areas that will need special consideration;
  - It considers this from an integrated perspective, namely taking into consideration the views of the palaeontological, archaeological and specialist studies;
  - It outlines the approach to be used during the Heritage Impact Assessment (HIA) process;
  - It also assess the “do nothing” or “no-go” alternative. The “do-nothing” alternative is the option of not establishing the Wolseley Wind Farm.
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### **1.4 Legislative and Policy Context**

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The basis for all heritage impact assessment is the National Heritage Resources Act 25 (NHRA) of 1999, which in turn prescribes the manner in which heritage is assessed and managed. In the case of Environmental Impact Assessments in the Western Cape, the guidelines published by the Provincial Department of Environment Affairs and Tourism are directly based on the provisions of the National Heritage Resources Act

The National Heritage Resources Act 25 of 1999 has defined certain kinds of heritage as being worthy of protection, by either specific or general protection mechanisms. In South Africa the law is directed towards the protection of human made heritage, although places and objects of scientific importance are also covered. The National

Heritage Resources Act also protects intangible heritage such as traditional activities, oral histories and places where significant events happened. Generally protected heritage which must be considered in any heritage assessment includes:

- cultural landscapes (described below),
- buildings and structures (older than 60 years of age),
- archaeological sites (older than 100 years of age),
- palaeontological sites and specimens,
- shipwrecks and aircraft wrecks,
- graves and grave yards.

The Interim Comment of Heritage Western Cape on the Notice of Intent to Develop the Wolseley Wind Farm (14-07-2011) called for:

“An HIA is required consisting of an Archaeological study, Palaeontological Study; Visual Study with an integrated set of recommendations”.

#### **1.4.1 Cultural Landscape**

*Section 3(3) of the NHRA, No 25 of 1999 defines the cultural significance of a place or objects with regard to the following criteria:*

- (a) its importance in the community or pattern of South Africa's history
- (b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage
- (c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage
- (d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects
- (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group
- (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period
- (g) its strong or special association with a particular community or cultural group for social cultural or spiritual reasons
- (h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- (i) sites of significance relating to the history of slavery in South Africa.

#### **1.4.2 Scenic Routes**

While not specifically mentioned in the NHRA, No 25 of 1999, Scenic Routes are recognised by DEA&DP as a category of heritage resources. In the DEA&DP Guidelines for involving heritage specialists in the EIA process, Baumann & Winter (2005) comment that the visual intrusion of development on a scenic route should be considered a heritage issue.

#### **1.4.3 Heritage Grading or Sensitivity Analysis**

Heritage resources are graded following the system established by Baumann and Winter (2005) in the guidelines for involving heritage practitioners in EIA's (Table 1).

**Table 1:** Grading of heritage resources after Baumann and Winter (2005).

<b>Grade</b>	<b>Level of significance</b>	<b>Description</b>
1	National	Of high intrinsic, associational and contextual heritage value within a national context, i.e. formally declared or potential Grade 1 heritage resources.
2	Provincial	Of high intrinsic, associational and contextual heritage value within a provincial context, i.e. formally declared or potential Grade 2 heritage resources.
3A	Local	Of high intrinsic, associational and contextual heritage value within a local context, i.e. formally declared or potential Grade 3A heritage resources.
3B	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources.
3C	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources.

#### **1.4.4 Wind Energy Guidelines**

Wind energy facilities which require vast amounts of landscape pose significant impacts in terms of loss of iconic vistas, and landscape character change, especially in the Western Cape Province where the identity of the region is strongly linked to its spectacular landscape character.

A pilot study commissioned by the Provincial Government of the Western Cape “Towards a Regional Methodology for Wind Energy Site Selection in the West Cape region” is the only locally available policy guideline with respect to wind farms (CNdV 2006). The study looked at landscape character rather than at the “cultural landscape” or “heritage” but concluded that wind energy facilities can have a profound impact on the landscape in terms of quality of place. In general terms it recommends a buffer of at least 500 m between a wind turbine and heritage sites, although the latter are not defined.

Neither SAHRA nor HWC have developed policies with respect to heritage and renewable energy.

Recent environmental authorisations issued by the Department of Environmental Affairs with respect to Wind Energy Facilities indicate that the Department is likely to implement the following recommendations with respect to heritage:

- 2km buffer around the Provincial Heritage Sites (Grade 2 sites);
- 2km buffer along roads which have high scenic value.

As there is no fixed policy in this regard it is cannot be suggested that these will apply to this application, but nevertheless should be borne in mind.

### 1.4.5 Permit requirements

A permit, issued by Heritage Western Cape, will be required if:

- Any houses or structures such as barns, kraals, etc older than 60 years are intended to be altered or demolished (Section 34 (1) of the NHRA);
- Any archaeological or palaeontological sites are to be mitigated by excavation or destroyed during construction (Section 35 (4) of the NHRA).

Human remains from the colonial period are considered a national issue in terms of the National Heritage Resources Act 25 of 1999. Section 36 of the Act and the regulations attached thereto are implemented by the SAHRA Burials Unit in Pretoria. They are the permitting authority and are responsible for the issuing of exhumation/grave relocation permits. Control with respect to Pre-colonial human remains is devolved to the PHRA (HWC) and they oversee the process of either *in situ* conservation or exhumation.

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## 1.5 Methodology

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The pre-feasibility study comprised a short field trip undertaken in January 2011 and a brief desktop assessment. The desktop review summarised the background historical information on the study area as well as the archaeology of the valley.

A further short site visit was undertaken by Jayson Orton of ACO Associates cc in August 2011 to determine if there were any fatal flaws which might impede the development of the wind facility.

This was followed by a more detailed site visit on the 2 April 2012. During this visit, ACO Associates undertook foot surveys in the fields and against the lower slopes of the mountains and visited farmsteads. They spoke to farm owners about the heritage of the area.

The comments of the palaeontologist, archaeologist and visual impact specialist have been integrated into this Heritage Scoping Report and consider the most significant heritage indicators which might be negatively impacted by the proposed development.

The report makes recommendations with respect the scope and nature of further specialist studies with respect to Palaeontology, Archaeology and Visual Impacts during the EIA/HIA process.

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## 1.6 Scope and Limitations

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This report integrates the results of the general heritage desktop pre-feasibility study, undertaken in January 2011, and further specific field studies concentrating on archaeology, palaeontology and visual assessments as requested in the Interim Comment issued by Heritage Western Cape (July 2011).

This is not yet an integrated Heritage Impact Assessment. The HIA will be conducted as part of the EIA process.

- It includes a description of the affected environment – obtained from the Visual Impact Assessment and from various site visits;
- It provides a description of the heritage (palaeontology, archaeology and visual) background of the area;
- It provides an assessment of potential of the proposed development to impact negatively on the heritage resources of the area;
- It provides a description of the methodology that will be used in the Heritage Impact Assessment.

There were no significant limitations with regard to the study. The area/s identified for the placement of the turbines was accessible, although final placement of the turbines, as well as the location of the access roads, underground cabling, control room, laydown areas, etc will be determined, and assessed, during the EIA process.

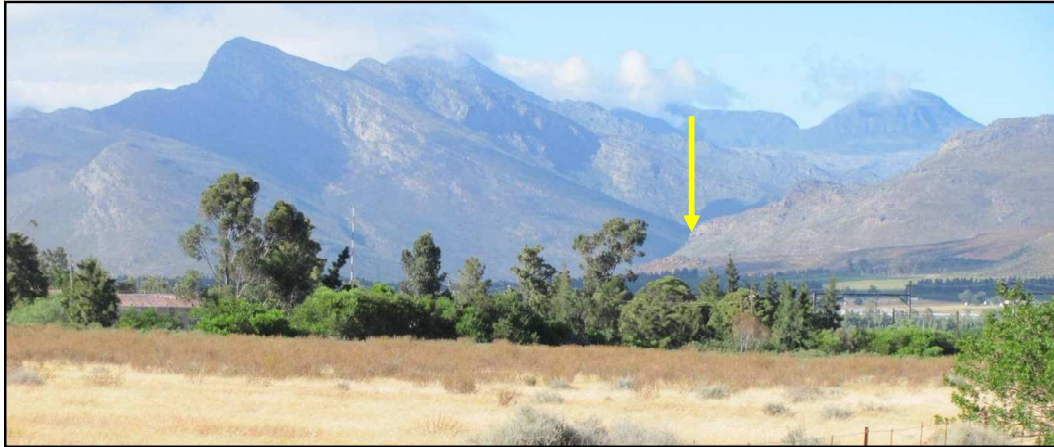
## 2 DESCRIPTION OF THE RECEIVING ENVIRONMENT

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The site for the proposed wind farm is located in the Breede River Valley some 9km south of the town of Wolseley and to the east of the R43.

The Breede River Valley is surrounded by high mountains. The Witzenberg range lies to the east and the Hawequas/Elandsberg to the west. There are two prominent mountain passes, Mitchell's Pass connecting Wolseley to Ceres, and Bain's Kloof Pass linking Wellington and Wolseley. Bain's Kloof Pass enters the Breede River valley about 4km south of the middle of the proposed wind farm.

The current landscape in the valley is a mix of vineyards, orchards, old agricultural lands and some indigenous vegetation along the railway lines. A large portion of the farm Romansrivier is under netting to protect fruit trees from the impact of the wind which blows through the valley. There are numerous blue gum and pine windbreaks in the valley which still protect crops from high winds though higher tech solutions are encroaching. Some of the trees are grouped into groves around homesteads.



**Plate 1:** View in south-westerly direction across the study area towards Bain's Kloof Pass, indicated by the yellow arrow.



**Plate 2:** View of the valley looking southward showing the patchwork of agricultural fields and tree lines in the central portion of the valley.





**Plate 3:** Existing transmission lines running more or less east west across the valley, cross the R45 in the area proposed for the wind farm.

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## 2.1 Palaeontological Background

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Dr John Almond of Natura Viva cc. notes that the proposed facility will be constructed on flat to undulating agricultural ground on the Tulbagh valley floor. The Breede River skirts the area to the north and west.

The study area is underlain by Late Precambrian meta-sediments of the Malmesbury Group, and in particular the Porterville Formation. The recessive weathering of the Malmesbury Group rocks results in a gently hilly topography with very few natural exposures of fresh bedrock. The Malmesbury Group rocks may contain trace fossils, stromatolites, microfossils, etc. However, extensive deformation of the rocks means that most of the organic fossils remains have been obliterated.

The Malmesbury Group bedrocks are covered by superficial sediments of Pleistocene to Recent age. These sandy soils and older alluvial gravels of the ancient Breede River system may reach depths of 20 to 40m. These sediments are only sparsely fossiliferous.

The foothills and lower slopes of the Waaihoeksberge are covered by colluvial sediments including rocky scree, hillwash and debris flow deposits.

A letter of exemption from further palaeontological studies and mitigation has been issued by Dr Almond.

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## 2.2 Archaeological Background

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Early Stone Age (ESA) artefacts are routinely found in proximity to old river terraces where the cobbles provided a good source of raw material for the manufacture of stone tools. Further down the Breede River valley, near Worcester, low density scatters of ESA artefacts have previously been reported (Orton 2008). Generally though, little archaeology is found on the fynbos-clad mountain slopes, outside of rare rock shelters. Kaplan (2006; 2009) found sporadic Early and Middle Stone Age artefacts close to Wolseley and also a rock art site some 13 km to the north of the current study area. In his survey for the realignment of the R43/R303 intersection,

Orton (2009) reported on Later Stone Age (LSA) artefacts around sandstone outcrops and boulders on the farm Kleineberg.

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### 2.3 Historical Background of the valley

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Prior to the arrival of the Dutch, the Breede River valley was occupied by hunter-gatherer groups (described in the literature as Ubiquas or Sonquas) and Khoekhoen pastoralists with sheep and cattle. Governor van der Stel visited the valley between the Witsenberg and the Elandskloof mountains in 1699 and as a result gave instructions for the establishment of a new outpost (Sleigh 1993). The aim of the outpost was to acquire cattle and sheep from the Khoekhoen groups living in the area and to protect the settlers from possible attack.

Early accounts are full of reports of attacks by the Ubiquas/Sonquas on the first freeburgers who settled in the valley (Sleigh 1993). Apparently, the first freeburgers were grazing their livestock in the valley by 1701 although it is not clear if there were permanent homesteads. By 1705 it appears there were no cohesive, indigenous groups left in the valley. Some Khoekhoen moved further into the interior, while others settled as indentured workers on farms.

Van der Sel named the valley, "Het Land van Waveren". Ideally suited for pasturage, agriculture and fruit orchards by the mid-1700's it had become a prosperous farming district known as Roodezand, after the red sandstone cliffs in the north-western corner of the valley (Ross 2003:2). From 1729 the valley was full of free burger livestock and the company outpost became less significant (Sleigh 1993).

Work began on the church town at Roodezand in Het Land van Waveren (Tulbagh) in 1743. Initially the area formed part of the district of Stellenbosch, but by 1804 it became a separate district with its headquarters at Tulbagh. The town of Tulbagh contains a very high percentage of Grade 2 heritage sites.

The valley became more accessible with the completion of a number of passes through the mountains. Patrick (2009) points to the fact that many of the passes had their roots in the traditional Khoekhoen and San paths through the mountains. The first pass, known initially as Roodezand Pass, but subsequently renamed the Oudekloof pass (Ross 2003) crossed the mountains further to the north of the study area. A few years later, settlers attempted to open an easier pass through the mountains, on the eastern side of the Tulbagh Kloof which became known as the Nieuwekloof Pass (Ross 2003).

In 1849, Thomas Bain commenced in a new pass through the Limietberge further to the south of the Oudekloof and Nieuwekloof passes. It would provide a more direct route between Wellington and Ceres. Built primarily with convict labour, the pass eventually opened in 1853 and became known as Bain's Kloof Pass. It is regarded as a marvel of engineering and was declared a National Monument under the old National Monuments Council in 1980. With the subsequent introduction of the National Heritage Resources Act in 1999, all national monuments are automatically graded as Grade 2 (Provincial) heritage sites. Bain's Kloof Pass is located 4km south of the southern section of the proposed wind farm.

### 2.3.1 History of the farms

Survey diagrams are a valuable source of information on the history of farms as they indicate whether the farm has its origins as an earlier loan farm as well as showing the boundaries of the property and the owner at the time of the survey. Survey diagrams for Roomans Rivier, De Liefde and Kleineberg were examined in this desktop review.

The Surveyor General's survey diagram for Roomans Rivier 320 (SG 441/1817) dated 1817, shows that the property belonged to veldcornet G. Hugo and that it was an earlier loan farm. The "general wagon track" heading north (in the direction of the present town of Ceres) skirted the western border of the farm. The early house is indicated in the same location as the present main house on the property. The property has been significantly sub-divided since that time and today portions of the farm contain a railway siding named Romansrivier, as well as a correctional facility.

The farm De Liefde 323 (SG 1868/1883) was part of a freehold granted to Coenraad Scheepers in February 1723 and was lastly transferred to AJ Viljoen in 1851. Veldkornet Pieter Francois Hugo is reported to have lived on De Liefde at the Roodezand, south of the present Romansrivier railway station (de Kock 1965).

The survey diagrams for Kleineberg 208 (SG 437/1817) dated 1817 show that the farm belonged to Veldkornet G Hugo and is referred to as a loan farm. The diagram clearly shows the wagon route crossing the property from south-east to north.

The survey diagrams therefore suggest that these farms had their origins in the mid-18<sup>th</sup> century. A sketch map by Bain dated 1846 showing the route for the proposed pass (from Steytler & Nieuwmeyer 2003) indicates that a wagon track crossed the proposed study area and there are references to a Mr Viljoen and a Mr Conradie who lived in the approximate location of the proposed facility.

The history of the farms suggests that there will be historic buildings older than 60 years within the borders of the proposed facility and therefore protected by the National Heritage Resources Act of 1999. We know from Orton's (2009) survey of Kleineberg, that there are historic structures on this property. There is also a monument in front of the main farmhouse which commemorates the "Voortrekker Eeufees 1838 – 1938". Orton (2009) recorded historical archaeology in the form of fragments of glass and ceramics spread around boulders and in proximity to labourer's cottages. The ceramics included 19<sup>th</sup> century blue and white transfer ware as well as stone ware.

Historical sources refer to an overgrown graveyard on the farm Roomans Rivier with graves belonging to the Conradie family. Orton (2009) also reported on two graveyards on the farm Kleineberg.

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## 2.4 Visual Description of the Cultural Landscape

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The VIA describes the viewshed as being the northwest-southeast aligned valley of the Breede River. The viewshed is well defined by the roughly parallel mountain ranges on both sides of the Breede River Valley. The eastern side is formed by the Witzenberg Range and the western side by the north-south aligned parallel ridges of the Elandsberg/Hawequas range.

The floor of the Breede River Valley is intensively farmed, with the land use including vineyards, fruit orchards and other agricultural production contained in sheds that cover the valley floor. There are a number of rows of tall exotic trees that have been planted as windbreaks between the patches of agricultural land. Indigenous vegetation is restricted to the mountain slopes on both sides of the valley and wetland areas. The land use character, with the exception of the surrounding mountains that frame the valley, is characterised by a patchwork of densely packed agricultural fields.

The VIA report identifies Bains Kloof Pass as a significant heritage feature of the area of which a small section will have sight of the wind turbines, and observes that the Tulbagh Valley approximately 25km to the north of the proposed project, has a high number of heritage sites. As the Tulbagh valley is a tourist destination accessed along the R43 which is considered a scenic route on its own, some assessment of the visual from the R43 is warranted.

The lower end of Bain's Kloof Pass enters the Breede River Valley approximately 4km south of the middle of the proposed wind farm. Bain's Kloof Pass is a significant Grade 2 site, described in the VIA report as "a masterpiece of 19<sup>th</sup> century road engineering".

### 3 POTENTIAL IMPACTS AND ISSUES IDENTIFICATION

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The Scoping report has considered the findings of the Palaeontological, Archaeological and Visual Impact specialists as required by the Interim Comment issued by Heritage Western Cape.

Although the assessment of impacts has considered the entire area shown in Figure 2, it has concentrated on the farms to the north of the 400kV transmission line. The preliminary turbine layout has not placed any turbines to the south of this transmission line. Further, it is unlikely that turbines will be placed against the higher slopes of the mountain.

It is anticipated that the impacts will therefore be restricted primarily to agricultural lands on the floor of the valley, in proximity to the existing transmission lines and the substation. This is an area which has been subjected to agricultural activities, including ploughing, over a period of two hundred years, resulting in significant transformation of the landscape. The valley floor is therefore the area best suited to the establishment of the wind energy facility. Specific issues are commented on below.

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#### 3.1 Palaeontology

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There is a small possibility that palaeontological resources will be negatively impacted. However, excavations for turbine footings, transmission pylons, roads and underground cabling are unlikely to penetrate through the thick superficial deposits into the Malmesbury Group bedrock unit. The impact will therefore be minor.

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#### 3.2 Archaeology

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The main cause of impacts to palaeontological and archaeological sites is physical disturbance of the material and its context. The heritage and scientific potential of archaeological sites is highly dependent on its geological and spatial context. This means that a deep excavation, for example, may expose archaeological artefacts. However, the artefacts are relatively meaningless once removed from the area in which they were found unless careful note is made of the find and associated information.

There is a small possibility that archaeological resources will be negatively impacted during the construction of the wind farm. However, the valley floor on either side of the Breede River has been subjected to numerous flood episodes in the prehistoric past and it is unlikely that any stone tools scatters will be in primary context. It is anticipated that Early Stone Age artefacts will be recovered but they will be of low significance.

There is a small possibility that rock shelters against the slopes of the mountain may contain rock art. These would be highly significant and for this reason the archaeological report supports the construction of the proposed wind energy facility on the valley floor, rather than on the slopes of the mountains.

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### 3.3 Built Environment

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Colonial period heritage is known to occur within the boundaries of the study area, and in view of the history of the farms, it seems highly likely that at least some structures will be older than 60 years and therefore protected in terms of the NHRA. Old houses, ruins, historical rubbish dumps are features commonly associated with farms.

However, the earthquake of 1969 which hit the Ceres – Tulbagh region also had an impact on buildings in the Wolseley area. For example, the farm buildings on Koppies were destroyed and replaced with modern buildings. It is possible that other farm buildings may similarly have been damaged or destroyed.

It is not expected that the built environment will be directly impacted by the proposal unless it becomes necessary to demolish structures (farm houses, sheds, etc) that are greater than 60 years of age. However, indirect impacts may result from turbines, access roads, underground cabling, etc which are constructed closer than 500 m to any heritage site. The pilot study commissioned by the Provincial Government of the Western Cape on Wind Energy Selection (2006) proposed a buffer of 500 m around a heritage site (although the term heritage site is not defined in this guideline document). Nevertheless, it seems likely that this may be a minimum distance and that Heritage Western Cape may propose a significantly greater buffer if they consider the site to be of Grade 2 or Grade 1 significance (Table 1).

Furthermore, historic buildings are often context sensitive and changes to the surrounding cultural landscape can affect their significance.

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### 3.4 Cemeteries and graves

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We know from the literature that there are several graveyards in the study area. Some are clearly marked and their location is known to local landowners. However, there is a small possibility that unmarked graves may be disturbed during the construction of the turbines, access roads, underground cabling, etc – especially if these are constructed close to farmsteads. The destruction of cemeteries or graves is potentially a serious matter since they are afforded specific protection under the NHRA. Mitigation in the form of exhumation and reburial is generally an option in cases such as these (where unmarked graves are discovered in the course of development). Known and/or identifiable graveyards and graves can only be moved under very compelling circumstances, and so are best avoided.

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### 3.5 Visual Impact

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Cultural landscapes are highly sensitive to cumulative impacts and large scale development activities that change the character and sense of place of the area. In terms of the National Heritage Resources Act, a cultural landscape may also include a natural landscape of high rarity value and scientific significance.

The Scoping VIA comments that the horizon line to the west and east of the valley is elevated well above the horizontal eye due to the mountains. The rows of trees forming windbreaks in the valley, the fruit orchards and vineyards create a setting with a relatively high visual absorption capacity which would allow for a structure of small to medium scale (3 storeys) to be absorbed into the setting. However, the turbines are up to 80m high, some 3 times the height of the tallest tree lines in the valley. The scale of the wind turbines is large and therefore, wherever they are located within the general site area, they will exert a high visual impact.

Further, the reports comments that with respect the observer's view from northern end of Bain's Kloof Pass, where the preferred location will be visible, that the wind turbines will be visible above the tree windbreaks in the valley. In view of the historical significance of Bain's Kloof Pass, the view of the proposed wind farm from the northern portion of the pass is an important issue that will need to be considered in the EIA phase.

The Scoping VIA proposes that the wind turbine locations should be far away from the R43 and on flat to gently sloping ground so as not to visually present the wind turbines on higher ground.

The preferred area (least visual intrusion) for the wind farm is identified as land between the 1km buffer east of the R43 and down slope of the contour that indicates a steepening of the landform to the east. The southern boundary is the area of seasonally wet soil and to the north, the boundary is the edge of the farm Romansrivier..

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### **3.6 The Cumulative Impact**

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The cumulative impact of several wind energy facilities in a restricted space, such as the Breede River Valley, can be very high. However, at present no other such facilities are known to have been proposed for the surrounding farms and thus have no bearing on the application.

## 4 TERMS OF REFERENCE FOR IMPACT ASSESSMENT PHASE

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The Interim Comment issued by Heritage Western Cape calls for an integrated HIA which would include specialist studies on: palaeontology, archaeology and the visual impact of the proposed development.

ACO Associates cc has undertaken to complete the integrated Heritage Impact Assessment (HIA) as part of the EIA of the proposed wind energy facility. The Interim Comment of Heritage Western Cape forms the basis of the further HIA:

The following work needs to be done:

- A letter of exemption from further palaeontological studies has already been issued by the specialist, Dr John Almond of *Natura Viva* cc. Mitigation may only be necessary in the unlikely event of fossils being uncovered on the site;
- Preliminary positions for the turbines have been proposed for the scoping study and final positions need to be determined so that they can be tested. The final turbine positions as well as the proposed routes of linear infrastructure (access roads, underground cabling and power lines) will need to be ground-proofed to establish the impacts of the proposed activity and to determine where mitigation (if any) will be required;
- An archaeological field survey will be conducted at the EIA stage of the proposed farms or land (that has not already been inspected and if turbines or other infrastructure will be located there), to identify pre-colonial and colonial period archaeological sites, to assess their significance and to make recommendations for mitigation if required;
- Any heritage sites or objects protected by the National Heritage Resources Act or any other object or place considered significant by the ACO team will be mapped, recorded and photographed;
- An integrated report describing the findings, defining areas of sensitivity, any further work required and suggesting mitigation actions for reducing impacts to heritage resources will be produced;
- The Visual Impact Assessment will inter alia need to consider the visual impact of the proposed wind farm on the northern section of Bain's Kloof Pass where it enters the valley, and on the R43 and on the scenic qualities of the valley;
- More specifically, the following steps that must be applied in the case of a Level 4 VIA have been outlined in the Scoping Visual Assessment for inclusion in the EIA:
  - Identification of issues raised in the scoping phase, and site visit;
  - Description of the receiving environment and the proposed project;
  - Establishment of view catchment area, view corridors, viewpoints and receptors;
  - Indication of potential visual impacts using established criteria;
  - Inclusion of potential lighting impacts at night;
  - Description of alternatives, mitigation measures and monitoring programmes.
  - Review by independent, experienced visual specialist (if required);
  - Complete 3D modelling and simulations, with and without mitigation; and
  - Review by independent, experienced visual specialist (if required).



- The results of the report of the Visual Impact specialist will be integrated with those of archaeology and palaeontology into the HIA report;
- Establish the guidelines for the EMP (Heritage Management Planning). This could include implementing the recommendations for mitigation, such as monitoring during construction, the excavation or archaeological sampling of heritage sites, etc.

## 5 CONCLUSIONS AND RECOMMENDATIONS

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The EIA phase study needs to fulfil the requirements of heritage impact assessment as defined in section 38 of the NHRA. This means that the assessment has to cover the full range of potential cultural heritage as defined by the term “culture” contained in the National Heritage Resources Act 25 of 1999, with particular emphasis placed on the Interim Comments issued to the Notice of Intent to Develop (NID).

The construction of 20-35 wind turbines on the identified farms near Wolseley will require the excavation of deep foundation trenches. Heavy lift cranes will need to be brought on site, roads will need to be constructed and lay down areas will be required. This activity may have significant impacts on the above and below-ground heritage of the area.

No significant impacts are anticipated with respect to the palaeontological heritage of the area. The desktop study produced by the palaeontological specialist, Dr John Almond, indicates that no further specialist studies are required and a letter of exemption from further studies has been issued. If significant fossils are however encountered during development, they should be conserved in situ and reported to Heritage Western Cape for recording, sampling and further mitigation measures.

It is expected that much of the impacts to surface archaeological heritage (pre-colonial and colonial) will be controllable through avoidance of sensitive areas. Micro-adjustment of turbine footings, moderate deviations in service trenches, road alignments or power line towers are expected to be all that will be required in terms of mitigation of open pre-colonial/colonial sites. If for any reason mitigation by avoidance is not feasible, the usual process is to record and sample the archaeological site before its destruction is permitted.

Although Heritage Western Cape has not called for specialist studies of the Built Environment, these are part of the heritage of the area and will need to be addressed in the HIA report. It is likely that HWC will require a buffer of at least 500m around buildings and cemeteries.

Indications are that in terms of archaeological heritage and built environment the proposed activity is viable, impacts are expected to be limited and controllable.

The Scoping VIA measured the proposed development against the DEA&DP guidelines for VIAs and concluded that the wind energy facility is a Category 5 development that occurs in an area where visual impacts may be high, and as a result a Level 4 VIA would be required. The scoping VIA notes the sense of place of the valley as well as the presence of a Bain’s Kloof Pass, some 4-5 km to the south of the proposed site and the town of Tulbagh some 24 km to the north. It is considered that visitor and tourism perceptions of the impact of the wind farm will therefore have a role in determining the significance of the visual impact as the R43 is used to access both of these significant tourist resources. The valley is however constantly being modified to meet the requirements of agriculture and the very nature of the wind, that has drawn the attention of wind energy proponents, has given rise to numerous wind breaks in the form of tall trees which to some degree may mitigate visual impacts from the road.

A preferred area has been proposed which takes account of views from the R43 and Bain's Kloof Pass. However this will be tested in the EIA phase as more detailed information becomes available from the specialist studies

The cumulative impact of several wind energy facilities in a restricted area, such as the Breede River Valley, can be very high. However, at present, no other such facilities are proposed for the surrounding farms.

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