

# Appendix G.6

## HERITAGE IMPACT ASSESSMENT



# SCOPING HERITAGE ASSESSMENT: PROPOSED IGOLIDE WIND ENERGY FACILITY NEAR FOCHVILLE, GAUTENG PROVINCE

Required under Section 38(8) of the National Heritage Resources Act (No. 25 of 1999)

SAHRA Case ID: TBC

*Report for:*

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## SUMMARY

ASHA Consulting (Pty) Ltd was appointed by WSP Group Africa (Pty) Ltd to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed development of the Igolide Wind Energy Facility (WEF), just northeast of Fochville, Gauteng Province. An approximate centre point for the project is at S26° 27' 02.44" E27° 30' 58.82".

The study area is an undulating landscape with the lowlands largely ploughed and the hills often covered in bush and rocks. Although no field survey has yet been conducted, aerial photography revealed the presence of Late Iron Age settlements amongst the bushy areas.

The present layout avoids all the archaeological sites and historical structures and it is anticipated that these will be fairly easily avoidable by the final layout that includes all ancillary infrastructure. Although there will be impacts to the cultural landscape, the presence of large industrial facilities (gold mines) scattered through the landscape means that the impacts will not be unacceptable.

The project is deemed feasible and may proceed to the EIA Phase.

## Glossary

**Early Stone Age:** Period of the Stone Age extending approximately between 2 million and 200 000 years ago.

**Holocene:** The geological period spanning the last approximately 10-12 000 years.

**Hominid:** a group consisting of all modern and extinct great apes (i.e. gorillas, chimpanzees, orangutans and humans) and their ancestors.

**Iron Age:** Period post-dating about AD 200 and occurring in Eastern South Africa and featuring farming communities who practised iron smelting. It is split into the Early Iron Age (AD 200 to AD 900), the Middle Iron Age (AD 900 to AD 1300) and the Late Iron Age (AD 1300 to AD 1840).

**Later Stone Age:** Period of the Stone Age extending over the last approximately 20 000 years.

**Middle Stone Age:** Period of the Stone Age extending approximately between 200 000 and 20 000 years ago.

## Abbreviations

**APHP:** Association of Professional Heritage Practitioners

**ASAPA:** Association of Southern African Professional Archaeologists

**CRM:** Cultural Resources Management

**DFFE:** Department of Forestry, Fisheries and the Environment

**EGI:** Electricity Grid Infrastructure

**EIA:** Environmental Impact Assessment

**EMPr:** Environmental Management Program

**ESA:** Early Stone Age

**GP:** General Protection

**GPS:** global positioning system

**HIA:** Heritage Impact Assessment

**LSA:** Later Stone Age

**MSA:** Middle Stone Age

**NEMA:** National Environmental Management Act (No. 107 of 1998)

**NHRA:** National Heritage Resources Act (No. 25) of 1999

**REDZ:** Renewable Energy Development Zone

**SAHRA:** South African Heritage Resources Agency

**SAHRIS:** South African Heritage Resources Information System

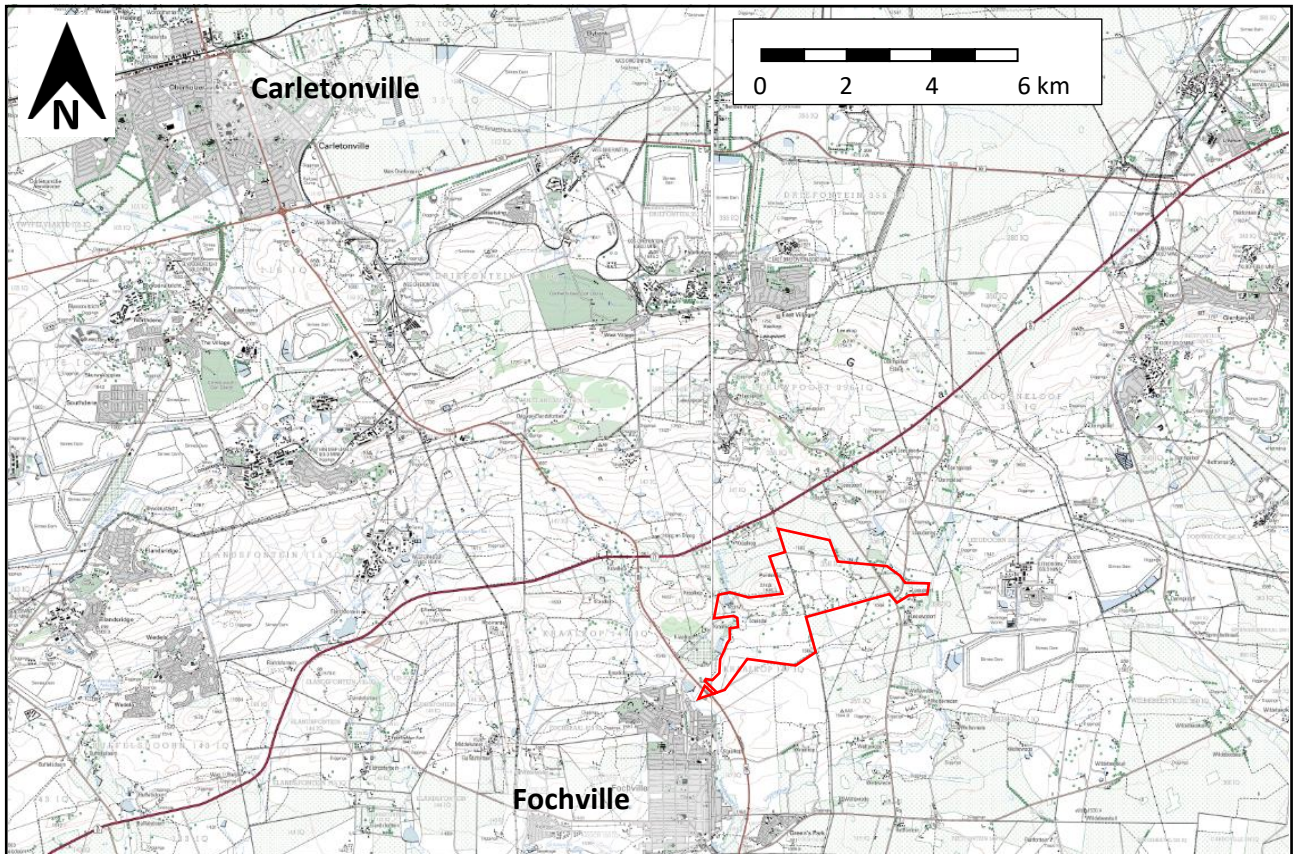
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# 1. INTRODUCTION

ASHA Consulting (Pty) Ltd was appointed by WSP Group Africa (Pty) Ltd to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed development of the Igolide Wind Energy Facility (WEF), just northeast of Fochville, Gauteng Province (Figures 1 & 2). An approximate centre point for the project is at S26° 27' 02.44" E27° 30' 58.82".



**Figure 1:** Extract from 1:50 000 topographic mapsheets 2627AD & 2627BC (dated 2010) showing the location of the site. Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: [www.ngi.gov.za](http://www.ngi.gov.za).

The proposed WEF will be developed within an overall project area measuring approximately 680 hectares (ha). Within this area, the extent of the project footprint will be approximately 130 ha, subject to finalization based on technical and environmental requirements.





**Figure 2:** Aerial view of the study area showing the surrounding context which includes Fochville to the southwest and various gold mines.

## 1.1. The proposed project

### 1.1.1. Project description

The project comprises a small WEF of approximately twelve turbines. Associated infrastructure would include – among other things – access roads, internal powerlines, a substation comprising an IPP portion and Eskom portion, battery energy storage system (BESS) and offices. Full details of the project are provided in Table 1.

**Table 1:** Summary of technical details for the Igolide WEF.

<b>Facility Name:</b>	Igolide Wind Energy Facility (WEF)
<b>Applicant:</b>	Igolide Wind (Pty) Ltd
<b>Municipalities:</b>	Merafong City Local Municipality in the Gauteng Province of South Africa
<b>Extent:</b>	680ha
<b>Capacity:</b>	Up to 100MW



<b>No. of turbines:</b>	12
<b>Turbine hub height:</b>	Up to 200m
<b>Rotor Diameter:</b>	Up to 200m
<b>Tip Height :</b>	Up to 300m
<b>Foundation:</b>	Approximately 25m diameter x 3m deep – 500 m <sup>3</sup> – 650m <sup>3</sup> concrete. Excavation approximately 2 200m <sup>3</sup> , in sandy soils due to access requirements and safe slope stability requirements.
<b>Turbine Hardstand:</b>	Hardstands do not require concrete. Area needed will be approximately 1ha per turbine.
<b>Tower Type</b>	Steel or concrete towers can be utilised at the site. Alternatively, the towers can be of a hybrid nature, comprising concrete towers and top steel sections.
<b>On-site IPP substation and battery energy storage system (BESS):</b>	<p>Total footprint will be up to 4ha in extent. The on-site IPP portion substation will have a footprint of approximately 2ha. The substation will consist of a high voltage substation yard to allow for multiple up to 132kV feeder bays and transformers, control building, telecommunication infrastructure, and other substation components, as required. A 500m buffer around the on-site IPP substation has been identified to ensure flexibility in routing the powerline.</p> <p>The Battery Energy Storage System (BESS) footprint will be up to 2ha. The BESS storage capacity will be up to 100MW/400 megawatt-hour (MWh) with up to four hours of storage. It is proposed that Lithium Battery Technologies, such as Lithium Iron Phosphate, Lithium Nickel Manganese Cobalt oxides or Vanadium Redox flow technologies will be considered as the preferred battery technology; however, the specific technology will only be determined following Engineering, Procurement, and Construction (“EPC”) procurement. The main components of the BESS include the batteries, power conversion system and transformer which will all be stored in various rows of containers. The BESS components will arrive on site pre-assembled.</p>
<b>Grid (to form part of a separate application for EA)</b>	<p>A single or double circuit 132kV overhead powerline and 132kV switching station (adjacent to the on-site IPP substation) to feed the electricity generated by the proposed WEF into Eskom’s Midas Main Transmission Substation via a 11km overhead line.</p> <p>A corridor of up to 250m in width (125m on either side of the centre line) has been identified for the placement of the up to 132kV single or double circuit power line to allow flexibility in the design of the final powerline route, and for the avoidance of sensitive environmental features (where possible).</p>
<b>Cables:</b>	The medium voltage collector system will comprise cables up to and including 33kV that run underground, except where a technical

	assessment suggests that overhead lines are required, connecting the turbines to the on-site IPP substation.
<b>Operations and Maintenance (O&amp;M) building footprint:</b>	<p>Operations and Maintenance (“O&amp;M”) building footprint to be located near the on-site substation. Typical areas include: Conservancy tanks with portable toilets. Typical areas include:</p> <ul style="list-style-type: none"> <li>- Operations building – 20m x 10m = 200m<sup>2</sup></li> <li>- Workshop and stores area – of ~300m<sup>2</sup></li> <li>- Refuse area for temporary waste storage and conservancy tanks to service ablution facility.</li> </ul> <p>The total combined area of the buildings will not exceed 5 000m<sup>2</sup>.</p>
<b>Construction camps:</b>	Typical area of 0.5ha. Sewage typically septic tanks and portable toilets.
<b>Temporary laydown or staging areas:</b>	Typical area of 2ha. Could increase to 3ha for concrete towers, should they be required. Will include diesel, cement and chemical storage, as well as a small workshop area.
<b>Cement batching plant (temporary)</b>	Footprint of 1 – 3ha.
<b>Access and Internal Roads:</b>	<p>Internal roads will have a width of 8 - 10m, increasing up to 15m for turning circle/bypass areas to allow for larger component transport.</p> <p>Existing access roads will be used to minimise impact. Where required, the width of the existing roads will be widened to ensure the passage of vehicles.</p>
<b>Supporting Infrastructure:</b>	<ul style="list-style-type: none"> <li>- Fencing;</li> <li>- Lighting;</li> <li>- Lightning protection;</li> <li>- Telecommunication infrastructure;</li> <li>- Stormwater channels;</li> <li>- Water pipelines;</li> <li>- Offices;</li> <li>- Operational and control centre;</li> <li>- Operations and maintenance area / warehouse / workshop;</li> <li>- Ablution facilities;</li> <li>- Gatehouse;</li> <li>- Security building;</li> <li>- Visitor’s centre; and</li> <li>- Substation building.</li> </ul>
<b>Site coordinates (centre point)</b>	26°27'2.44"S / 27°30'58.82"E
<b>Affected farm portion/s</b>	<ul style="list-style-type: none"> <li>- Portion 14 of Farm 147 Kraalkop</li> <li>- Portion 20 of Farm 147 Kraalkop</li> <li>- Portion RE/22 of Farm 147 Kraalkop</li> <li>- Portion 8 of Farm 356 Leeuwpoort</li> <li>- Portion 57 of Farm 356 Leeuwpoort</li> </ul>

- |  |   |
|--|---|
|  | <ul style="list-style-type: none"><li>- Portion 65 of Farm 356 Leeuwpoot</li><li>- Portion 66 of Farm 356 Leeuwpoot</li></ul> |
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### 1.1.2. Identification of alternatives

No location alternatives are assessed, but the project design is iterative so that it can account for and avoid sensitive areas identified in the various specialist studies.

### 1.1.3. Aspects of the project relevant to the heritage study

All aspects of the proposed development are relevant, since excavations for foundations and/or services may impact on archaeological and/or palaeontological remains, while all above-ground aspects create potential visual (contextual) impacts to the cultural landscape and any significant heritage sites that might be visually sensitive.

## 1.2. Terms of reference

ASHA Consulting was asked to:

- Describe regional and local features of the receiving environment;
- Conduct desktop research to identify potentially sensitive areas;
- Conduct a field survey (to be done during the EIA Phase) to search for sensitive areas and sites of heritage significance;
- Map sensitive features and provide spatial data to inform the final project layout;
- Assess the potential impacts on identified heritage resources within a Heritage Impact Assessment (HIA) report that complied with the requirements of both the NHRA and Appendix 6 of the NEMA EIA regulations;
- Identify relevant legislation and legal requirements; and
- Provide recommendations on possible mitigation measures and management guidelines.

## 1.3. Scope and purpose of the report

A HIA is a means of identifying any significant heritage resources before development begins so that these can be managed in such a way as to allow the development to proceed (if appropriate) without undue negative impacts to the fragile heritage of South Africa. This HIA report aims to fulfil the requirements of the heritage authorities such that a comment can be issued by them for consideration by the National Department of Forestry, Fisheries and Environment (DFFE) who will review the Environmental Impact Assessment (EIA) and grant or refuse authorisation. The HIA report will outline any management and/or mitigation requirements that will need to be complied with from a heritage point of view and that should be included in the conditions of authorisation should this be granted.

## 1.4. The authors

Dr Jayson Orton has an MA (UCT, 2004) and a D.Phil (Oxford, UK, 2013), both in archaeology, and has been conducting Heritage Impact Assessments and archaeological specialist studies in South Africa (primarily in the Western Cape and Northern Cape provinces) since 2004 (please see curriculum vitae included as Appendix 1). He has also conducted research on aspects of the Later Stone Age in these provinces and published widely on the topic. He is an accredited heritage

practitioner with the Association of Professional Heritage Practitioners (APHP; Member #43) and also holds archaeological accreditation with the Association of Southern African Professional Archaeologists (ASAPA) CRM section (Member #233) as follows:

- Principal Investigator: Stone Age, Shell Middens & Grave Relocation; and
- Field Director: Colonial Period & Rock Art.

Jaco van der Walt has been practising as a CRM archaeologist for 20 years. He obtained an MA degree in Archaeology from the University of the Witwatersrand focussing on the Iron Age in 2012 and is a PhD candidate at the University of Johannesburg focusing on Stone Age Archaeology with specific interest in the Middle Stone Age (MSA) and Later Stone Age (LSA). Jaco is an accredited member of ASAPA (#159) and APHP (#114) and has conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, KZN as well as the Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, DRC, Zambia, Guinea, Tanzania as well as Afghanistan. Through this, he has a sound understanding of the IFC Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage.

### **1.5. Declaration of independence**

ASHA Consulting (Pty) Ltd and its consultants have no financial or other interest in the proposed development and will derive no benefits other than fair remuneration for consulting services provided.

## **2. LEGISLATIVE CONTEXT**

### **2.1. National Heritage Resources Act (NHRA) No. 25 of 1999**

The NHRA protects a variety of heritage resources as follows:

- Section 34: structures older than 60 years;
- Section 35: prehistoric and historical material (including ruins) more than 100 years old as well as military remains more than 75 years old, palaeontological material and meteorites;
- Section 36: graves and human remains older than 60 years and located outside of a formal cemetery administered by a local authority; and
- Section 37: public monuments and memorials.

Following Section 2, the definitions applicable to the above protections are as follows:

- Structures: “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”;
- Palaeontological material: “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”;
- Archaeological material: a) “material remains resulting from human activity 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”; b) “rock art, being any

form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation”; c) “wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation”; and d) “features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found”;

- Grave: “means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place”; and
- Public monuments and memorials: “all monuments and memorials a) “erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government”; or b) “which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.”

Section 3(3) describes the types of cultural significance that a place or object might have in order to be considered part of the national estate. These are as follows:

- 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.

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, some of the points in Section 3(3) speak directly to cultural landscapes.

## **2.2. Approvals and permits**

### **2.2.1. Assessment Phase**



Section 38(8) of the NHRA states that if an impact assessment is required under any legislation other than the NHRA then it must include a heritage component that satisfies the requirements of S.38(3). Furthermore, the comments of the relevant heritage authority must be sought and considered by the consenting authority prior to the issuing of a decision. Under the National Environmental Management Act (No. 107 of 1998; NEMA), as amended, the project is subject to an EIA. The present report provides the heritage component. The Development Applications Unit of the South African Heritage Resources Agency (SAHRA) is required to provide comment on the proposed project in order to facilitate final decision making by the DFFE.

### 2.2.2. Construction Phase

If archaeological or palaeontological mitigation is required prior to construction, then the appointed archaeologist or palaeontologist would need to obtain a permit from SAHRA. This would be issued in their name. This is so that the heritage authority can ensure that the appointed practitioner has proposed an appropriate methodology that will result in the mitigation being undertaken properly. A built environment permit, if required, would need to be obtained from the PHRA.

### 2.3. Guidelines

SAHRA have issued minimum standards documents for archaeological and palaeontological specialist studies. There is also a Western Cape Provincial guideline for heritage specialists working in an EIA context and which is generally useful. The reporting has been prepared in accordance with these guidelines. The relevant documents are as follows:

- SAHRA. 2007. Minimum Standards: archaeological and palaeontological components of impact assessment reports. Document produced by the South African Heritage Resources Agency, May 2007.
- Winter, S. & Baumann, N. 2005. Guideline for involving heritage specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 E. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.

## 3. METHODS

### 3.1. Literature survey and information sources

A survey of available literature was carried out to assess the general heritage context into which the development would be set. The information sources used in this report are presented in Table 1 with relevant dates of each source referenced in the text as needed. Data were also collected via a field survey. The data quality is suitable for the purpose of informing this report.

**Table 1: Information sources used in this assessment.**

Data / Information	Source	Date	Type	Description
Maps	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical and current 1:50 000 topographic maps of the study area and immediate surrounds
Aerial photographs	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical aerial photography of the study area and immediate surrounds
Aerial photographs	Google Earth	Various	Spatial	Recent and historical aerial photography of the study area and immediate surrounds
Cadastral data	Chief Directorate: National Geo-Spatial Information	Various	Survey diagrams	Historical and current survey diagrams, property survey and registration dates
Background data	South African Heritage Resources Information System (SAHRIS)	Various	Reports	Previous impact assessments for any developments in the vicinity of the study area
Palaeontological sensitivity	South African Heritage Resources Information System (SAHRIS)	Current	Spatial	Map showing palaeontological sensitivity and required actions based on the sensitivity.
Background data	Books, journals, websites	Various	Books, journals, websites	Historical and current literature describing the study area and any relevant aspects of cultural heritage.
Screening Tool maps	DFFE	Current	Spatial	Potential sensitivity of the study area

### 3.2. Field survey

No field survey was conducted at Scoping Phase, but the site will be surveyed during the EIA Phase.

### 3.3. Specialist studies

A separate palaeontological study was commissioned. This was conducted by Prof. Marion Bamford and is submitted separately with this HIA.

### 3.4. Impact assessment

For consistency among specialist studies, the impact assessment was conducted through application of a methodology supplied by WSP. Please see the main Scoping Report for details.

### **3.5. Grading**

S.7(1) of the NHRA provides for the grading of heritage resources into those of National (Grade I), Provincial (Grade II) and Local (Grade III) significance. Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade I and II resources are intended to be managed by the national and provincial heritage resources authorities respectively, while Grade III resources would be managed by the relevant local planning authority. These bodies are responsible for grading, but anyone may make recommendations for grading.

It is intended under S.7(2) that the various provincial authorities formulate a system for the further detailed grading of heritage resources of local significance but this is generally yet to happen. SAHRA (2007) has formulated its own system<sup>1</sup> for use in provinces where it has commenting authority. In this system sites of high local significance are given Grade IIIA (with the implication that the site should be preserved in its entirety) and Grade IIIB (with the implication that part of the site could be mitigated and part preserved as appropriate) while sites of lesser significance are referred to as having 'General Protection' (GP) and rated as GP A (high/medium significance, requires mitigation), GP B (medium significance, requires recording) or GP C (low significance, requires no further action).

### **3.6. Consultation**

The NHRA requires consultation as part of an HIA but, since the present study falls within the context of an EIA which includes a public participation process (PPP), no dedicated consultation was undertaken as part of the HIA. Interested and affected parties would have the opportunity to provide comment on the heritage aspects of the project during the PPP.

### **3.7. Assumptions and limitations**

No field survey was carried out during the Scoping Phase but a detailed analysis of aerial photography was done. The study was thus slightly limited because smaller, less visible sites are unlikely to be documented from the aerial photography. While sites were clearly visible from the aerial photography, such identification does not allow for an accurate determination of cultural significance which thus needs to be assumed until confirmed on site.

Cumulative impacts are difficult to assess due to the variable site conditions that would have been experienced in different areas and in different seasons. Survey quality is thus likely to be variable. As such, some assumptions need to be made in terms of what and how much heritage might be impacted by other developments in the broader area.

## **4. PHYSICAL ENVIRONMENTAL CONTEXT**

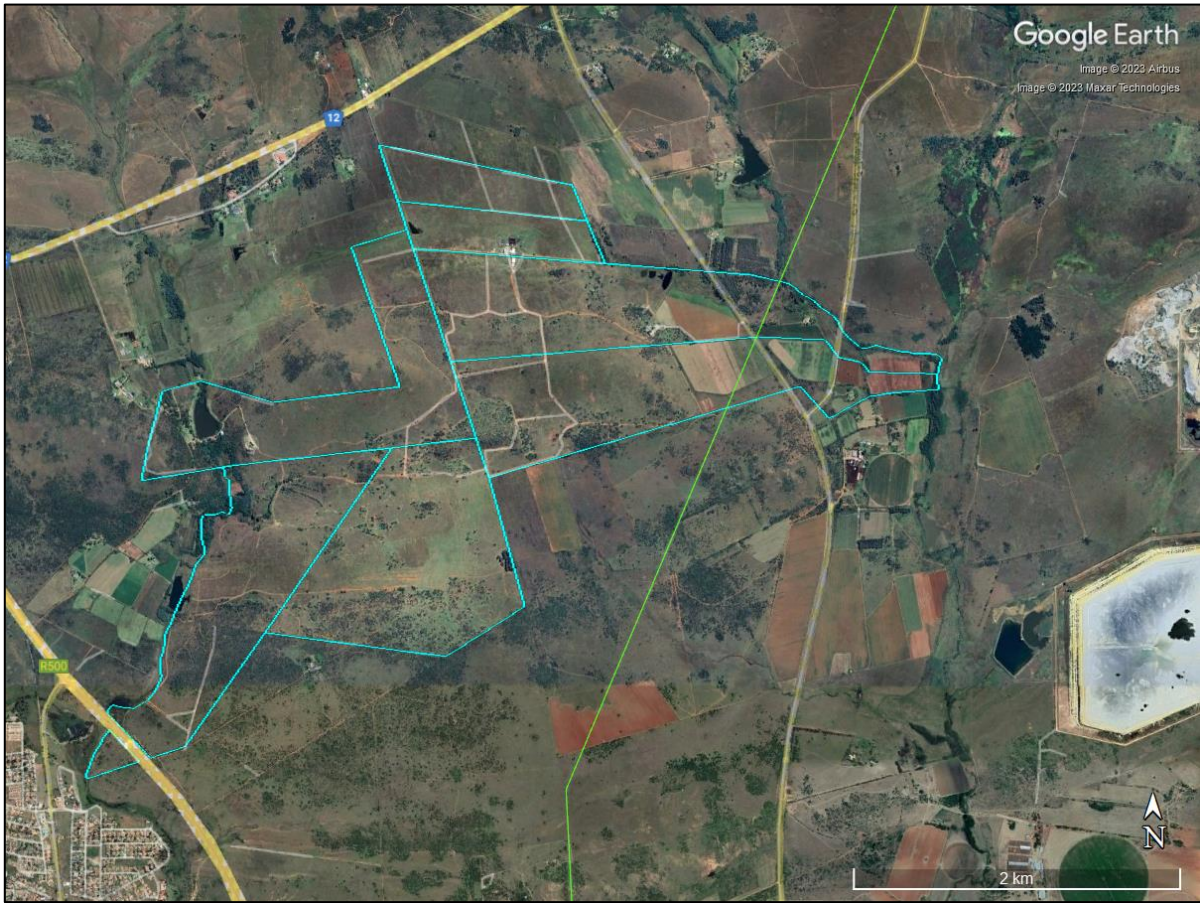
### **4.1. Site context**

An aerial view of the study area shows that the study area is farmland but that two major roads – the N12 and R500 – are close to the site, the town of Fochville lies just southwest of the site and various gold mines occur within a few kilometres of the site. One existing Eskom transmission line

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<sup>1</sup> The system is intended for use on archaeological and palaeontological sites only.

passes through the south-eastern part of the site and the entire study area falls within the Central Electricity Grid Infrastructure (EGFI) Corridor. The nearest Renewable Energy Development Zone (REDZ) is some 30 km southwest of the site.



**Figure 3:** Aerial view showing the immediate context of the study area.

#### 4.2. Site description

The site is an undulating landscape comprised of ploughed lands and grazing lands. Clumps of trees and bush are common, but most of the unploughed surface is grassed. Rocky outcrops occur in places but are largely level with the ground surface.



**Figure 4:** View towards the southwest through the eastern part of the study area showing the gently undulating topography.





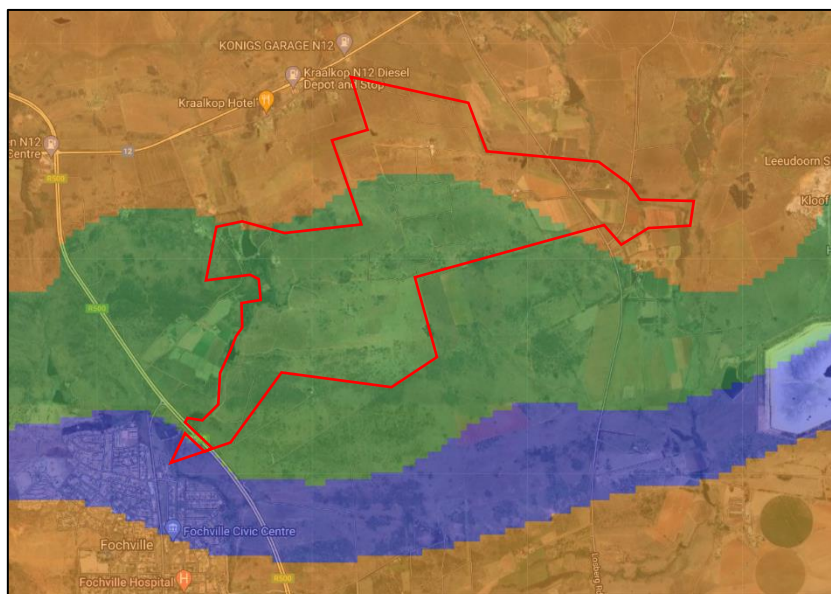
**Figure 5:** View towards the northeast from the R500 that runs through the south-western tip of the study area.

## 5. FINDINGS OF THE HERITAGE STUDY

This section describes the heritage resources recorded in the study area during the course of the project.

### 5.1. Palaeontology

The SAHRIS Palaeosensitivity Map (Figure 6) shows the site to be of moderate and high sensitivity with the former dominating. A very small area of low sensitivity occurs in the southwest. It is notable that the entirety of the high sensitivity area has been ploughed in the past which means that rock outcrops are absent from that area with the sensitive geology being deeply buried (as shown below, Iron Age stone-walled sites are also restricted to the areas of moderate palaeontological sensitivity because of the lack of stone to the north). For this reason, a desktop study was commissioned and is submitted separately with this HIA.



**Figure 6:** Extract from the SAHRIS Palaeosensitivity Map showing the site to be of low (blue) moderate (green) and high (orange) sensitivity.



## 5.2. Archaeology

### 5.2.1. Desktop study

Sections of the project area have been previously surveyed (see Huffman et al 1994, du Piesanie 2016) with Middle (MSA) and Later (LSA) Stone Age scatters, Iron Age sites, historic ruins, farmsteads, burial grounds, and potential British windbreaks all having been found. Other surveys in the surrounding areas found Stone Age scatters, Late Iron Age stone walled settlements, and historical ruins. The Cultural Resource Management (CRM) assessments conducted in the area and consulted for this report are listed in Table 2. A general discussion of local archaeology follows.

**Table 2:** List of other CRM projects conducted in and around the present study area.

Author	Year	Project	Findings
Huffman, T.N., van der Merwe, H.D., Steel, R.	1994	Archaeological Survey of the East and West Driefontein Mines.	MSA and LSA scatters, Iron Age stone walled complexes, historic ruins, and potential British windbreaks.
Du Piesanie, J.	2016	Environmental Impact Assessment for Sibanye Gold Limited's West Rand Tailings Retreatment Project: Heritage Impact Assessment.	LIA site, nine structures, thirteen werfs, four burial grounds.
Van Schalkwyk, J.A.	2017	Phase 1 Cultural Heritage Impact Assessment: the Proposed Construction of the Fochville 132Kv Power Line, Gauteng Province.	LIA stone walled settlements, homestead ruins, a large formal cemetery.
Van Schalkwyk, J.A.	2022	Phase 1 Cultural Heritage Impact Assessment: The Proposed Expansion of the Existing Kokosi Cemetery, Located West of the Town of Fochville, Gauteng Province.	No sites
Van der Walt, J.	2017	Heritage Impact Assessment for the Proposed South Deep Solar PV Project, Westeronia, Gauteng Province.	MSA scatters, ruins, demolished farm house, cattle kraal, and a grave.
Küsel, U.	2008	Cultural Heritage Resources Impact Assessment of Portion 11 of the Farm Leeuspruit 184 IQ, Fochville, North West Province	No sites
Schoeman, M.H., Barry, L., Huffman, T.N.	2004	Archaeological Reconnaissance for the Proposed New South Deep Tailings Dam. A phase- report for Metago Environmental Engineers.	ESA scatter, MSA scatter, LSA scatters, Historic stonewall, Historic homestead.

## Stone Age

The region surrounding the study area lacks any significant Stone Age sites and finds in the area are limited to low significance surface scatters of artefacts. These scatters represent the movement of early humans within the landscape but, due to their poor context, do not represent definitive occupation sites. A survey conducted within sections of the current project area (Huffman *et al.* 1994) found multiple MSA and LSA scatters on sandy terraces. The MSA tools were made from red ironstone and the LSA lithics were made from fine grained cherts and chalcedonies. As such, Stone Age scatters are likely to occur within the project area. MSA and LSA sites are likely to be dominant since ESA finds within this region are rare. An ESA scatter was, however, identified during a survey around 15km east of the project area (Schoeman *et al.* 2004).

## Iron Age

Bantu-speaking people moved into Eastern and Southern Africa about 2000 years ago (Mitchell 2002). These people cultivated sorghum and millets, herded cattle and small stock and manufactured iron tools and copper ornaments. Because metalworking represents a new technology, archaeologists call this period the Iron Age. Characteristic ceramic styles help archaeologists to separate the sites into different groups and time periods. The Iron Age as a whole represents the spread of Bantu-speaking people and includes both the Pre-Historic and Historic periods. It can be divided into three distinct periods:

- » The Early Iron Age (EIA): Most of the first millennium AD.
- » The Middle Iron Age (MIA): 10th to 13th centuries AD.
- » The Late Iron Age (LSA): 14th century to colonial period.

The Iron Age is characterised by the ability of people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living.

Iron Age occupation in the vicinity of the study area only started during the LIA after climatic conditions became favourable in the region for LIA settlement and agricultural activities. Iron Age communities in the region are associated with Sotho and Tswana speaking people who entered and settled in the region. LIA stone-walled complexes can be found spread across the broader landscape with associated artefacts. These LIA settlements can be widely found on flat-topped ridges and hills throughout the landscape (Dreyer 2006). The hills surrounding Fochville are well known for the Tlokwe Ruins which are scattered throughout. The region surrounding the project area is known to have been inhabited by the Bakwena baMare-a-Phogole who are known to have settled south of Fochville during the LIA (Vorster 1969). Under the leadership of their chief, Kokosi, the baMare-a-Phogole are believed to have inhabited the region until the 1820s when Mzilikazi and his Matabele raided the interior of South Africa and killed and drove out many Iron Age communities (Sadr 2020). A township just west of Fochville was named Kokosi after the LIA chief. The stone walled settlements within the larger region were later classified as belonging to the Molokwane settlement type which is prevalent across this part of Gauteng (Huffman 2007).

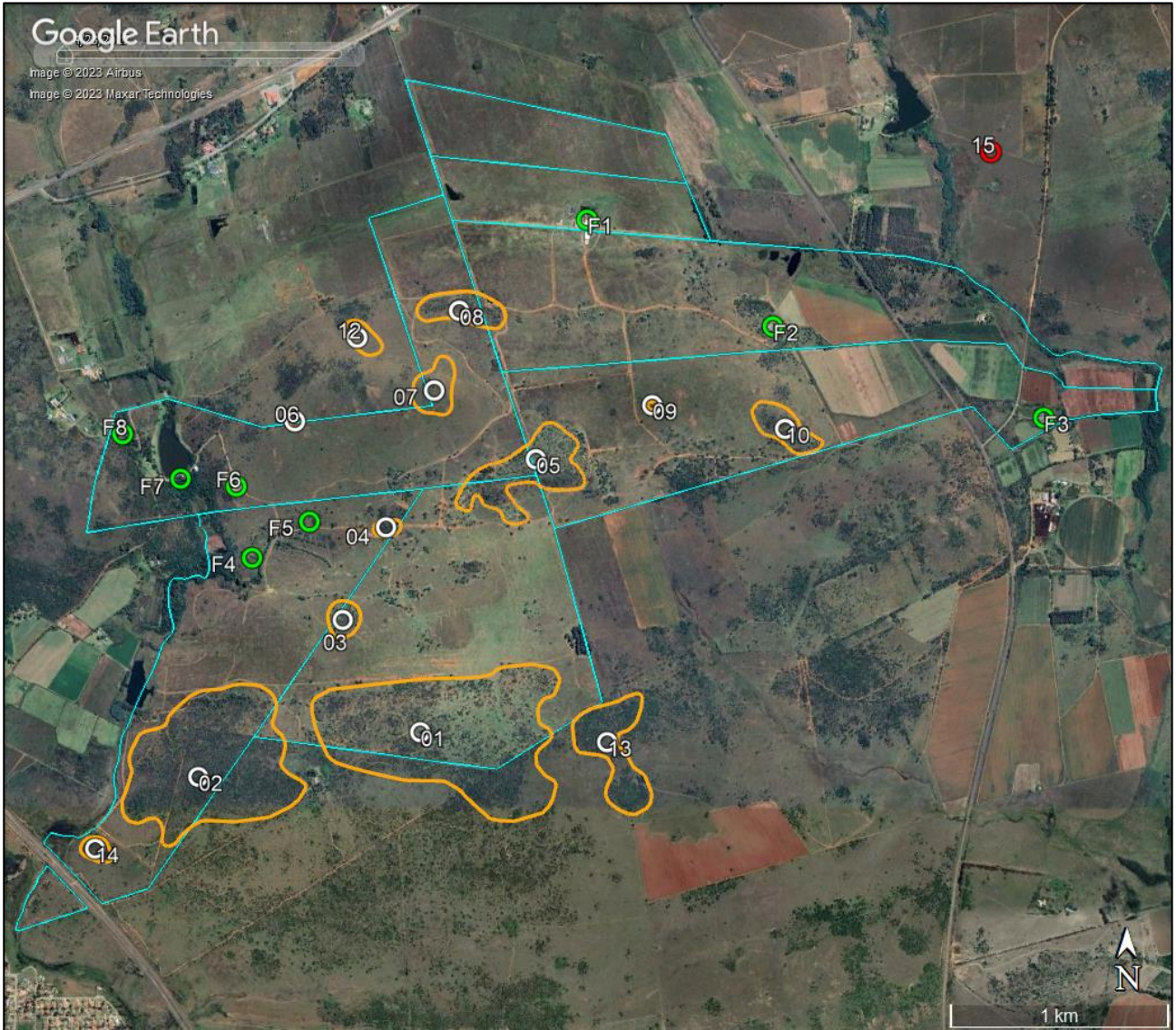
During the mid-17th century Europeans started to settle in modern-day Cape Town. During and after the conflict caused by the Mfecane (1820-1840), during the reign of king kaSenzangakhona Zulu, known as Shaka, Dutch-speaking farmers started to migrate to the interior regions of South Africa. This period is marked by various skirmishes and battles between the local inhabitants, Dutch settlers and the British (Giliomee & Mbenga 2007).

Large stone walled complexes can be clearly seen on Google Earth imagery within the project area (Table 2; Figure 7). A selection of these is shown in Figures 8 to 13, while Figures 14 and 15 show a likely more recent and probably historical stone-walled site. It is evident from the comparative views that vegetation cover makes a huge difference to the visibility of these sites from the air.

**Table 2:** List of finds. Significance and grading are provisional and need to be confirmed in the field.

Waypoint	Location	Description	Significance	Grade
01	S26 27 40.3 E27 30 52.2	An overgrown Late Iron Age stone-walled settlement measuring about 1050 m by 540 m.	Medium	GPA
02	S26 27 47.0 E27 30 15.7	An overgrown Late Iron Age stone-walled settlement measuring about 750 m by 500 m.	Medium	GPA
03	S26 27 24.0 E27 30 39.5	An overgrown Late Iron Age stone-walled settlement measuring about 110 m by 120 m.	Medium	GPA
04	S26 27 10.5 E27 30 46.6	An overgrown Late Iron Age stone-walled settlement measuring about 110 m by 60 m.	Medium	GPA
05	S26 27 00.6 E27 30 11.1	An overgrown Late Iron Age stone-walled settlement measuring about 590 m by 260 m.	Medium	GPA
06	S26 26 55.2 E27 30 32.3	A single circular overgrown Late Iron Age stone-walled feature of about 45 m diameter. The southern edge of it has been damaged by farm road construction along the northern edge of the study area with the preserved part being outside the study area.	Medium	GPA
07	S26 26 50.8 E27 30 54.8	An overgrown Late Iron Age stone-walled settlement measuring about 230 m by 150 m.	Medium	GPA
08	S26 26 39.2 E27 30 58.8	An overgrown Late Iron Age stone-walled settlement measuring about 390 m by 120 m.	Medium	GPA
09	S26 26 52.8 E27 30 30.0	An overgrown Late Iron Age stone-walled settlement measuring about 30 m by 30 m. Not readily visible on aerial photography.	Medium	GPA
10	S26 26 56.2 E27 30 51.5	An overgrown Late Iron Age stone-walled settlement measuring about 330 m by 100 m.	Medium	GPA
11	S26 24 54.2 E27 32 53.5	An overgrown Late Iron Age stone-walled settlement measuring about 500 m by 160 m. Outside study area.	Medium	GPA
12	S26 26 43.1 E27 30 42.4	An overgrown Late Iron Age stone-walled settlement measuring about 190 m by 80 m. Outside study area.	Medium	GPA
13	S26 27 41.7 E27 31 22.7	An overgrown Late Iron Age stone-walled settlement measuring about 510 m by 360 m. Outside study area.	Medium	GPA
14	S26 27 57.9 E27 29 58.3	An overgrown stone-walled complex measuring about 120 m by 80 m that includes a large, rectangular feature and that thus might be historical. It is not visible on the 1968 or 1934 aerial photography, presumably due to long disuse and seasonal vegetation cover.	Medium	GPA
15	S26 26 15.7 E27 32 25.2	Small, likely recent graveyard located beneath an existing Eskom powerline. Outside study area.	---	---
F1	S26 26 25.8 E27 31.19.4	Modern structures.	---	---
F2	S26 26 41.2 E27 31 49.6	Modern structures.	---	---
F3	S26 26 54.4 E27 32 34.1	Structures here are older than 1938 but look very much altered.	Medium	---
F4	S26 27 14.9 E27 30 24.6	Structures here are older than 1968 and probably also 1938.	Medium	---

Waypoint	Location	Description	Significance	Grade
F5	S27 27 09.7 E27 30 34.1	Structures here are older than 1938.	Medium	---
F6	S26 27 04.5 E27 30 22.3	Modern structures.	---	---
F7	S26 27 03.4 E27 30 12.9	Modern structures.	---	---
F8	S26 26 56.9 E27 30 03.6	Structures here are older than 1938.	Medium	---



**Figure 7:** Aerial view of the study area showing visible stone-walled archaeological sites (white symbols), farm buildings (green symbols) and a graveyard (red symbol). Stone-walled site 11 lies out of view towards the northeast and is not relevant to the WEF project.





**Figure 8:** Aerial view of Iron Age Complex 1 from 2011.



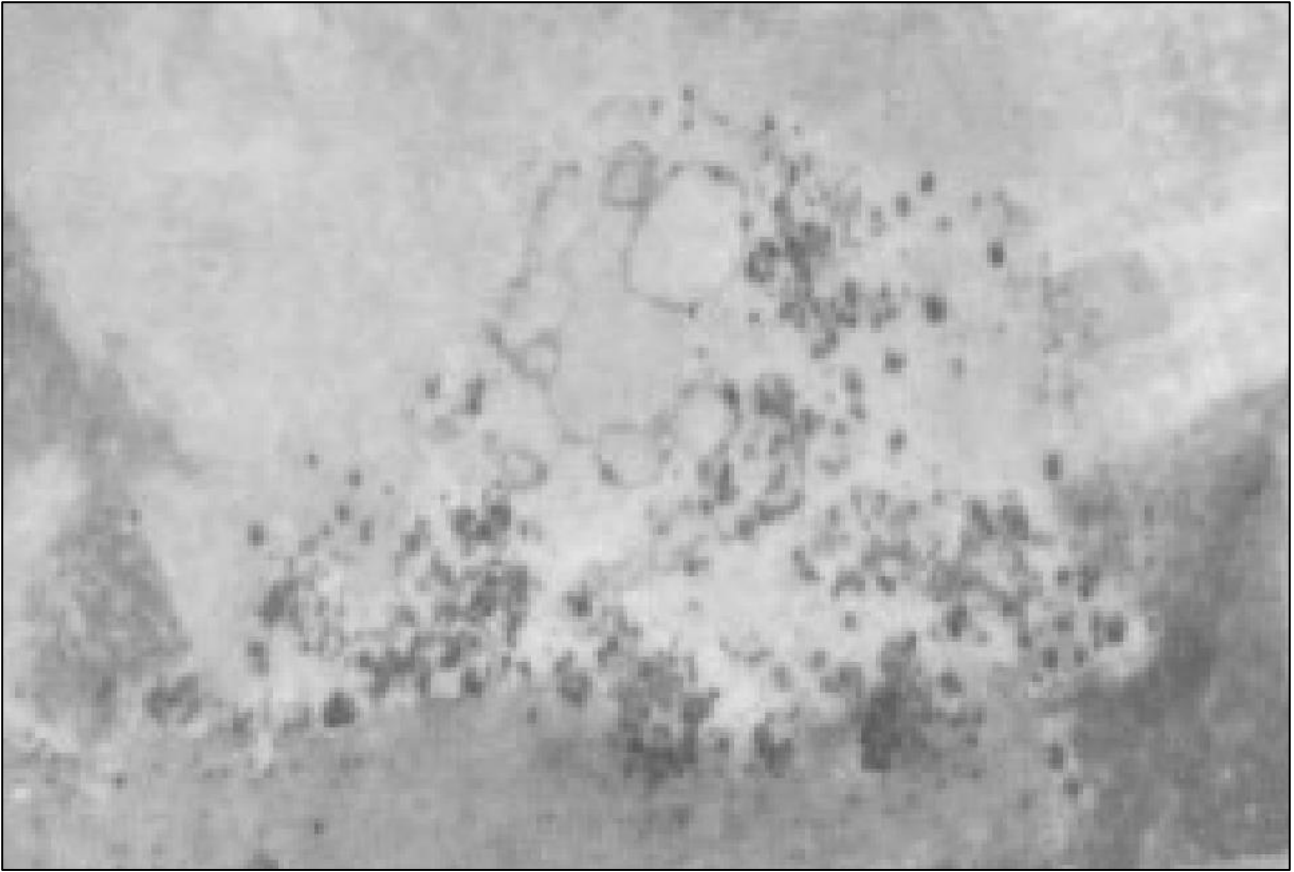


**Figure 9:** Aerial view of Iron Age Complex 2 from 2013.



**Figure 10:** Aerial view of Iron Age Complex 2 from 2023.





**Figure 11:** Aerial view of Iron Age Complex 5 from 1968 (603\_030\_09829).



**Figure 12:** Aerial view of Iron Age Complex 8 from 2014.



**Figure 13:** Aerial view of Iron Age Complex 8 from 2022.



**Figure 14:** Aerial view of a likely historical site from 2005.





*Figure 15: Aerial view of a likely historical site from 2023.*

### **5.3. Graves**

No graves are currently known within the WEF study area, but there is a possibility that graves, especially of still born babies, can be associated with the Iron Age settlements.

### **5.4. Historical aspects and the Built environment**

#### **5.4.1. Desktop study**

The Anglo-Boer War – or Second South African War – was an important aspect of local history in many parts of South Africa. In the vicinity of the present study area there were a few skirmishes. Most notably, in 1900, Boer military leader Daniel Theron was killed in action near present day Fochville. In present day Hillshaven, east of Fochville, a small battle was waged on the farm Modderfontien at the end of January 1901. Boer General Smuts defeated a small British force posted at Modderfontein. A few days later General Cunninghame arrived with his force and was unable to dislodge the Boers from their defensive position. On the 4<sup>th</sup> of February, however, he was successful, and the Boers retreated southwards (Conan Doyle 1901 in AngloBoerWar.com 2023).

Fochville was initially laid out on farms Kraalkop and Leeuspruit during World War I and was then only formally proclaimed as a town on 15 November 1920. The town is named after the commander-in-Chief of the Allied Forces in France during World War I, Ferdinand Foch (Raper 2004).

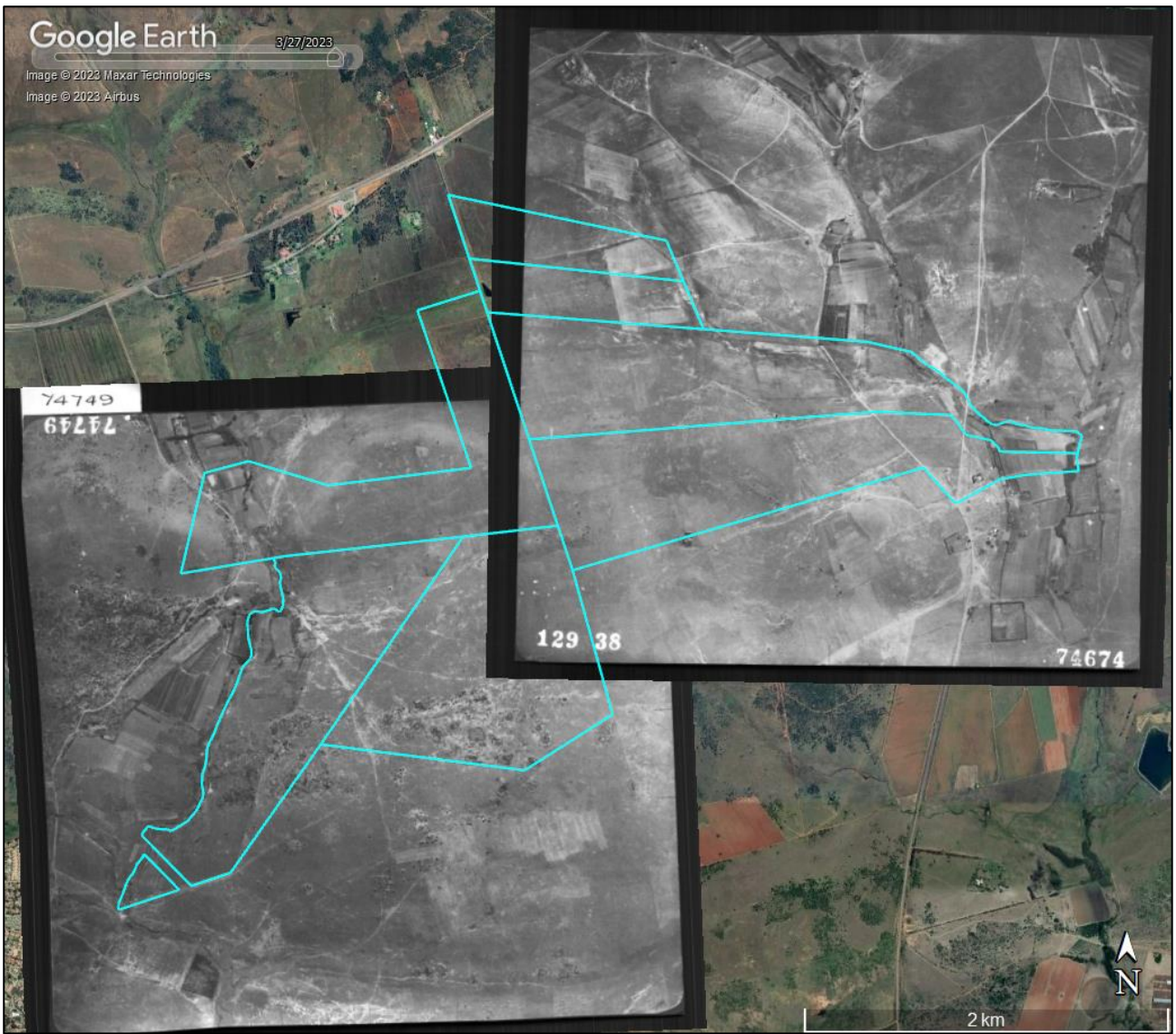
A number of buildings are visible in the study area with some of them being historical and legally protected.

### **5.5. Cultural landscapes and scenic routes**

Cultural landscapes are the product of the interactions between humans and nature in a particular area. Sauer (1925) defined them thus: “The cultural landscape is fashioned from a natural landscape by a cultural group. Culture is the agent, the natural area is the medium, the cultural landscape the result”.

The landscape has several different land uses. The immediate on-site land use is agriculture which provides a rural context for the development. However, very nearby are various gold mines and the town of Fochville (the edge of the town is immediately adjacent to the study area but 1.5 km from the south-westernmost turbine). These other land uses alter the overall sense of place of the rural environment.

Figures 16 to 18 show a sequence of aerial photographs of the study area. It is evident that the amount of ploughed land increased dramatically between 1938 and 1968 but that subsequently a number of areas have been left fallow. Internal farm roads have also changed considerably over time as fields were reconfigured and new areas were ploughed. Although several farmsteads and/or buildings were present in 1938, a number of new complexes have been added after 1968. It is also evident that the N12 and R500 roads were built after 1968, partly following existing roads. The various gold mines and associated slimes dams scattered around the wider area have also all appeared post-1968 (these lie beyond the northern and western edges of the images in Figures 16 to 18). These observations show a continually evolving cultural landscape with modern industrial uses (i.e. mining) becoming visually prominent on the landscape.



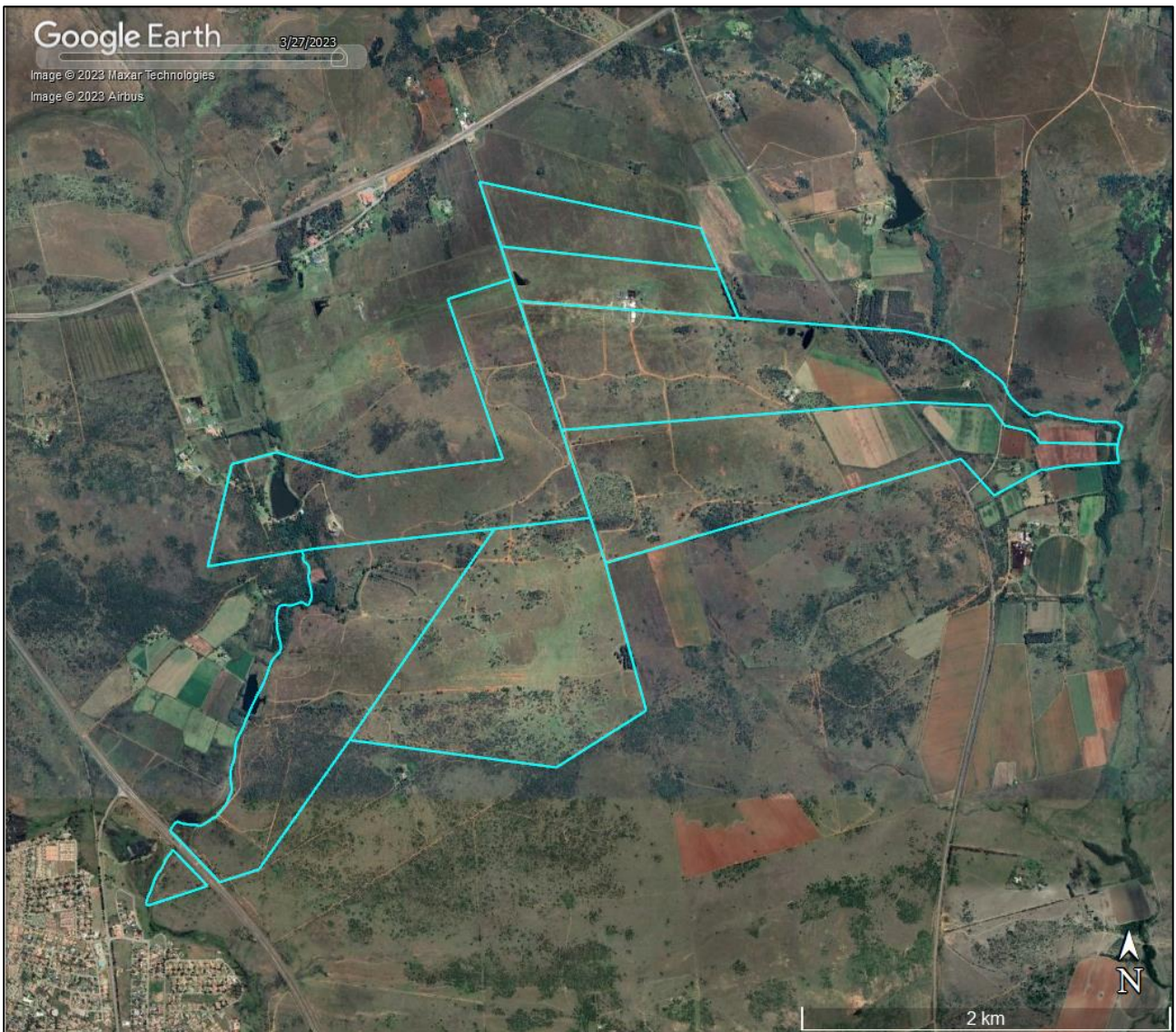
**Figure 16:** 1938 (129\_035\_74749) aerial photography overlaid on Google Earth





**Figure 17:** 1968 (603\_030\_09829) aerial photography overlaid on Google Earth





**Figure 18:** Modern aerial view of the study area.

## 5.6. Statement of significance and provisional grading

Section 38(3)(b) of the NHRA requires an assessment of the significance of all heritage resources. In terms of Section 2(vi), “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. The reasons that a place may have cultural significance are outlined in Section 3(3) of the NHRA (see Section 2 above).

The archaeological resources are deemed to have at least medium cultural significance with some sites expected to be of high cultural significance at the local level for their scientific value. They can be graded in the GPA to IIIB range, although some lower significance sites may well also occur.

Graves are deemed to have high cultural significance at the local level for their social value. They are allocated a grade of IIIA.

The cultural landscape is largely a rural landscape but with pockets of industrialisation (mines) and development (Fochville). It does still retain aesthetic value but is not an uncommon landscape type.

## 6. ASSESSMENT OF IMPACTS

The impacts identified for this project are shown in Table 3 and they are briefly discussed below.

<i>Phase</i>	<i>Impact</i>	<i>Assessment before mitigation</i>	<i>Assessment after mitigation</i>
<i>Construction</i>	Impacts to palaeontology	<ul style="list-style-type: none"> <li>○ Probability: 2</li> <li>○ Consequence: 2</li> <li>○ <b>Significance: low negative</b></li> </ul>	<ul style="list-style-type: none"> <li>○ Probability: 2</li> <li>○ Consequence: 1</li> <li>○ <b>Significance: very low positive</b></li> </ul>
	Impacts to archaeology	<ul style="list-style-type: none"> <li>○ Probability: 2</li> <li>○ Consequence: 2</li> <li>○ <b>Significance: low negative</b></li> </ul>	<ul style="list-style-type: none"> <li>○ Probability: 1</li> <li>○ Consequence: 2</li> <li>○ <b>Significance: very low negative</b></li> </ul>
	Impacts to graves	<ul style="list-style-type: none"> <li>○ Probability: 1</li> <li>○ Consequence: 3</li> <li>○ <b>Significance: low vegetive</b></li> </ul>	<ul style="list-style-type: none"> <li>○ Probability: 1</li> <li>○ Consequence: 3</li> <li>○ <b>Significance: low negative</b></li> </ul>
	Impacts to the cultural landscape	<ul style="list-style-type: none"> <li>○ Probability: 4</li> <li>○ Consequence: 2</li> <li>○ <b>Significance: medium negative</b></li> </ul>	<ul style="list-style-type: none"> <li>○ Probability: 3</li> <li>○ Consequence: 1</li> <li>○ <b>Significance: low negative</b></li> </ul>
<i>Operation</i>	Impacts to the cultural landscape	<ul style="list-style-type: none"> <li>○ Probability: 4</li> <li>○ Consequence: 2</li> <li>○ <b>Significance: medium negative</b></li> </ul>	<ul style="list-style-type: none"> <li>○ Probability: 3</li> <li>○ Consequence: 1</li> <li>○ <b>Significance: low negative</b></li> </ul>
<i>Decommissioning</i>	Impacts to the cultural landscape	<ul style="list-style-type: none"> <li>○ Probability: 4</li> <li>○ Consequence: 2</li> <li>○ <b>Significance: medium negative</b></li> </ul>	<ul style="list-style-type: none"> <li>○ Probability: 3</li> <li>○ Consequence: 1</li> <li>○ <b>Significance: low negative</b></li> </ul>

While palaeontological heritage is discussed in the separate specialist study, all the other impacts are considered here.

### 6.1. Construction Phase

#### 6.1.1. Impacts to archaeological resources

Direct impacts to archaeological resources would occur during the construction phase when equipment is brought onto site and grubbing and excavation begin. The current layout shows no turbines within known archaeological sites. This means that it is likely that roads would also be able to avoid the sites, but there is still the possibility that further sites exist. The potential significance is rated as **low negative** before mitigation and **very low negative** after mitigation. Mitigation would entail micrositing infrastructure to avoid impacts and, if necessary, sampling and recording parts of sites that might be directly impacted.

There are no fatal flaws in terms of construction phase impacts to archaeology.

#### 6.1.2. Impacts to graves

Direct impacts to graves would occur during the construction phase when equipment is brought onto site and grubbing and excavation begin. No graves are currently known in the WEF study area and the potential significance before mitigation is rated as **low negative**. Mitigation would act to reduce the probability but, because it is already rated low, the post-mitigation impact significance remains at the **low negative** level.

There are no fatal flaws in terms of construction phase impacts to graves.

#### 6.1.3. Impacts to the cultural landscape

Note that the Iron Age landscape is also significant as a cultural landscape but is included under impacts to archaeology above. Direct impacts to the cultural landscape would occur during the construction phase when equipment is brought onto site and work begins. Because the landscape already has industrial features related to gold mining and an existing transmission line crosses its eastern part, the consequence is low and, although an impact will definitely occur, it is only rated **medium negative** before mitigation. Mitigation will entail avoiding visually sensitive hilltops, placing ancillary infrastructure in visually secluded locations, and ensuring that all areas not required during operation are rehabilitated. The construction phase should be kept as short as possible.

There are no fatal flaws in terms of construction phase impacts to the cultural landscape.

### 6.2. Operation Phase

#### 6.2.1. Impacts to the cultural landscape

Direct impacts to the cultural landscape would occur during the operation phase through the presence of the facility in the landscape, as well as from the red aircraft navigation lights that would be lit at night. The impacts might be **medium negative** before mitigation and **low negative** afterwards. Mitigation would entail ensuring that all maintenance activities remain in designated and approved areas and making use of an early-warning system to switch the red lights on only when required. This latter measure may be less significant in the context of a landscape in which large industrial facilities occur and guidance should be sought from the visual consultant.

There are no fatal flaws in terms of operation phase impacts to the cultural landscape.

### 6.3. Decommissioning Phase

Impacts at decommissioning are similar to those occurring during construction except that the activities would largely be occurring in reverse. The impact significance before mitigation would be **medium negative**, while with mitigation they would reduce to **low negative**. The main mitigation concern here is rehabilitation and it will be important to have a rehabilitation plan in place to ensure

that the site is returned to its current condition. The decommissioning phase should be kept as short as possible.

#### **6.4. Cumulative impacts**

Cumulative impacts to archaeological resources could be of concern since there is no doubt that other archaeological sites have been lost due to agricultural activities and mining in the wider area. Some of these impacts are visible on aerial photography. Cumulative impacts to the landscape are not expected to be of much concern because of the many gold mines occurring in the area.

#### **6.5. Evaluation of impacts relative to sustainable social and economic benefits**

Section 38(3)(d) of the NHRA requires an evaluation of the impacts on heritage resources relative to the sustainable social and economic benefits to be derived from the development.

The proposed facility will be providing electricity to South Africa which will result in obvious benefits to society at many levels. There will be local job creation during construction and operation but, more widely, an improvement in electricity supply in South Africa will stimulate the economy and result in new job opportunities opening up and quality of life improving. These are clear economic and social benefits and, if mitigation is applied as suggested above, then the socio-economic benefits outweigh the residual impacts.

#### **6.6. Existing impacts to heritage resources**

There are currently no obvious threats to heritage resources on the site aside from the natural degradation, weathering and erosion that will affect archaeological materials. Trampling from grazing animals and/or farm/other vehicles could also occur. The cultural landscape has been impacted by the gold mining infrastructure in the wider area, although it is likely that much of this is not actually visible from on site. These impacts would be of **low negative** significance.

#### **6.7. The No-Go alternative**

If the project were not implemented then the site would stay as it currently is (impact significance of **neutral**). Although the heritage impacts with implementation would be greater than the existing impacts, the loss of socio-economic benefits is more significant and suggests that the No-Go option is less desirable in heritage terms.

#### **6.8. Levels of acceptable change**

Any impact to an archaeological or palaeontological resource or a grave is deemed unacceptable until such time as the resource has been inspected and studied further if necessary. Impacts to the landscape are difficult to quantify but in general a development that visually dominates the landscape from many publicly accessible vantage points is undesirable. Because of the height of the majority of the proposed development and the flatness of the landscape, such an impact to the landscape is envisaged but, despite the generally limited existing visual clutter in the immediate vicinity, it is not deemed unacceptable.

## 7. CONCLUSIONS

The main concerns for this project are impacts to archaeology and impacts to the cultural landscape. The former should be quite easily managed through appropriate design and impacts are expected to be fairly minimal. The landscape is generally rural but strong nodes of industrial activity occur and are expected in this landscape. These relate to gold mining. As such, although a local impact to the cultural landscape will occur if development proceeds, this is unlikely to be seen as unacceptable in this context.

It is concluded that the project is feasible from a heritage point of view and may proceed to the EIA Phase.

## 8. PLAN OF STUDY FOR EIA PHASE

The EIA Phase will include a field survey that focuses on the layout provided but also confirms the locations of archaeological sites mapped in this report. Importantly, the survey will allow an opportunity to locate any less visible and/or smaller sites whose locations are as yet unknown. The data gained will be used to refine the sensitivity mapping and will inform the impact assessment.

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## APPENDIX 1 – Curriculum Vitae



*Curriculum Vitae*

**Jayson David John Orton**

ARCHAEOLOGIST AND HERITAGE CONSULTANT

### Contact Details and personal information:

**Address:** 23 Dover Road, Muizenberg, 7945  
**Telephone:** (021) 788 1025  
**Cell Phone:** 083 272 3225  
**Email:** jayson@asha-consulting.co.za

**Birth date and place:** 22 June 1976, Cape Town, South Africa  
**Citizenship:** South African  
**ID no:** 760622 522 4085  
**Driver's License:** Code 08  
**Marital Status:** Married to Carol Orton  
**Languages spoken:** English and Afrikaans

### Education:

SA College High School	Matric	1994
University of Cape Town	B.A. (Archaeology, Environmental & Geographical Science) 1997	
University of Cape Town	B.A. (Honours) (Archaeology)*	1998
University of Cape Town	M.A. (Archaeology)	2004
University of Oxford	D.Phil. (Archaeology)	2013

\*Frank Schweitzer memorial book prize for an outstanding student and the degree in the First Class.

### Employment History:

Spatial Archaeology Research Unit, UCT	Research assistant	Jan 1996 – Dec 1998
Department of Archaeology, UCT	Field archaeologist	Jan 1998 – Dec 1998
UCT Archaeology Contracts Office	Field archaeologist	Jan 1999 – May 2004
UCT Archaeology Contracts Office	Heritage & archaeological consultant	Jun 2004 – May 2012
School of Archaeology, University of Oxford	Undergraduate Tutor	Oct 2008 – Dec 2008
ACO Associates cc	Associate, Heritage & archaeological consultant	Jan 2011 – Dec 2013
ASHA Consulting (Pty) Ltd	Director, Heritage & archaeological consultant	Jan 2014 –

### Professional Accreditation:

Association of Southern African Professional Archaeologists (ASAPA) membership number: 233

CRM Section member with the following accreditation:

- Principal Investigator: Coastal shell middens (awarded 2007)  
Stone Age archaeology (awarded 2007)  
Grave relocation (awarded 2014)
- Field Director: Rock art (awarded 2007)  
Colonial period archaeology (awarded 2007)

Association of Professional Heritage Practitioners (APHP) membership number: 43

- Accredited Professional Heritage Practitioner



### ➤ **Memberships and affiliations:**

South African Archaeological Society Council member	2004 – 2016
Assoc. Southern African Professional Archaeologists (ASAPA) member	2006 –
UCT Department of Archaeology Research Associate	2013 – 2017
Heritage Western Cape APM Committee member	2013 –
UNISA Department of Archaeology and Anthropology Research Fellow	2014 –
Fish Hoek Valley Historical Association	2014 –
Kalk Bay Historical Association	2016 –
Association of Professional Heritage Practitioners member	2016 –

### **Fieldwork and project experience:**

Extensive fieldwork and experience as both Field Director and Principle Investigator throughout the Western and Northern Cape, and also in the western parts of the Free State and Eastern Cape as follows:

#### Feasibility studies:

- Heritage feasibility studies examining all aspects of heritage from the desktop

#### Phase 1 surveys and impact assessments:

- Project types
  - Notification of Intent to Develop applications (for Heritage Western Cape)
  - Desktop-based Letter of Exemption (for the South African Heritage Resources Agency)
  - Heritage Impact Assessments (largely in the Environmental Impact Assessment or Basic Assessment context under NEMA and Section 38(8) of the NHRA, but also self-standing assessments under Section 38(1) of the NHRA)
  - Archaeological specialist studies
  - Phase 1 archaeological test excavations in historical and prehistoric sites
  - Archaeological research projects
- Development types
  - Mining and borrow pits
  - Roads (new and upgrades)
  - Residential, commercial and industrial development
  - Dams and pipe lines
  - Power lines and substations
  - Renewable energy facilities (wind energy, solar energy and hydro-electric facilities)

#### Phase 2 mitigation and research excavations:

- ESA open sites
  - Duinefontein, Gouda, Namaqualand
- MSA rock shelters
  - Fish Hoek, Yzerfontein, Cederberg, Namaqualand
- MSA open sites
  - Swartland, Bushmanland, Namaqualand
- LSA rock shelters
  - Cederberg, Namaqualand, Bushmanland
- LSA open sites (inland)
  - Swartland, Franschhoek, Namaqualand, Bushmanland
- LSA coastal shell middens
  - Melkbosstrand, Yzerfontein, Saldanha Bay, Paternoster, Dwarskersbos, Infanta, Knysna, Namaqualand
- LSA burials
  - Melkbosstrand, Saldanha Bay, Namaqualand, Knysna
- Historical sites
  - Franschhoek (farmstead and well), Waterfront (fort, dump and well), Noordhoek (cottage), variety of small excavations in central Cape Town and surrounding suburbs
- Historic burial grounds
  - Green Point (Prestwich Street), V&A Waterfront (Marina Residential), Paarl

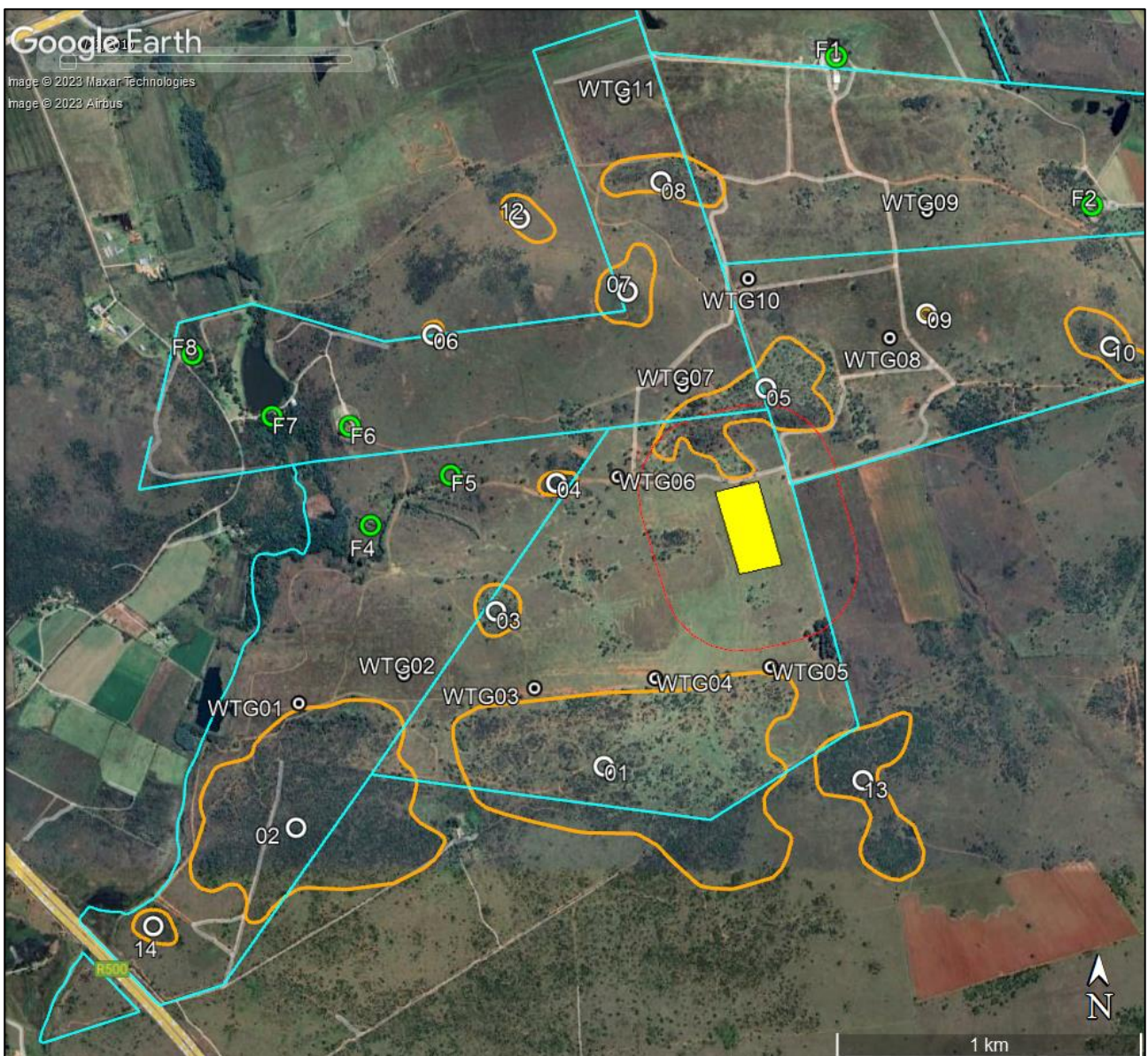
### **Awards:**

Western Cape Government Cultural Affairs Awards 2015/2016: Best Heritage Project.

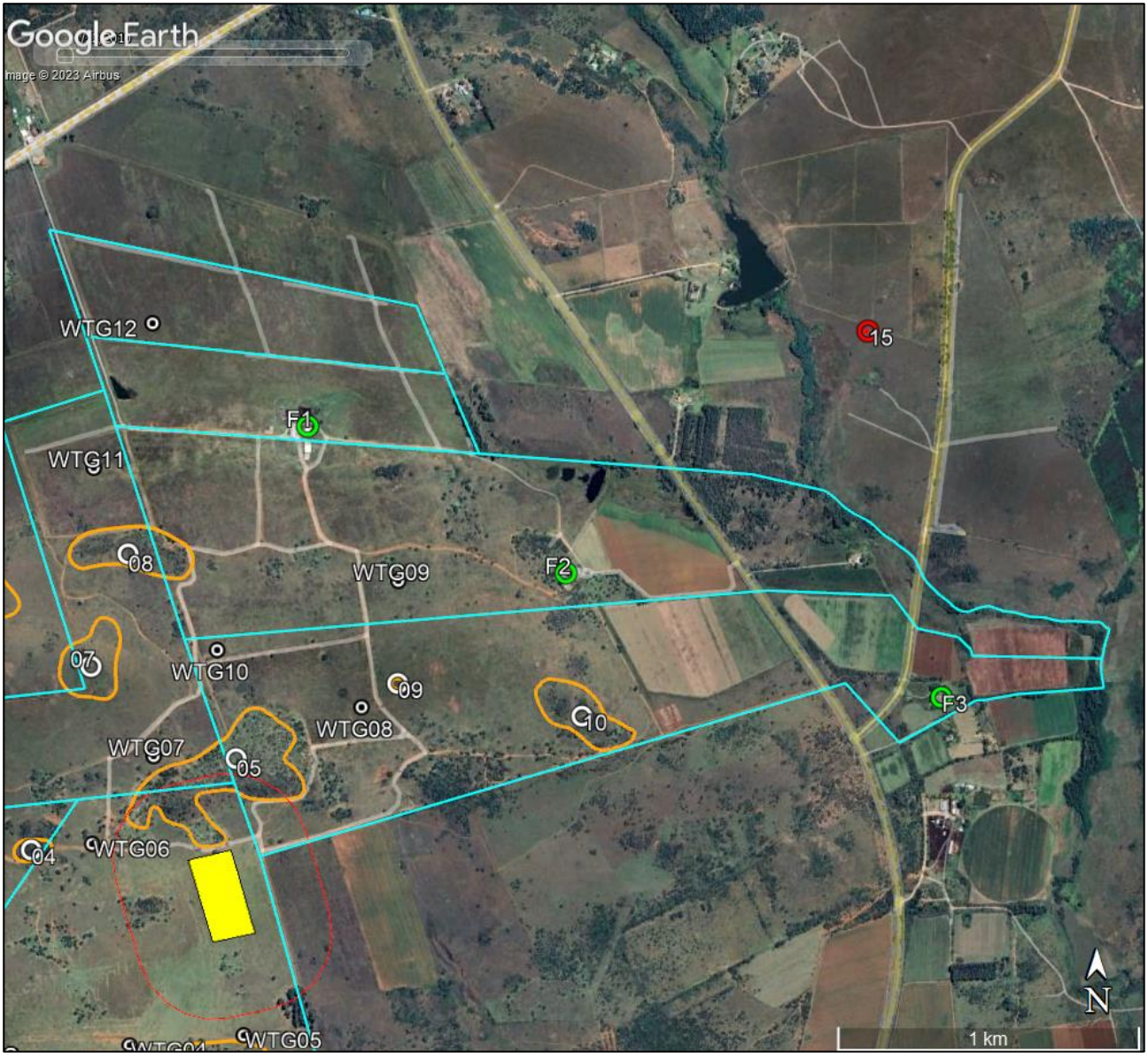
## APPENDIX 2 – Mapping

This appendix shows the locations of sites relative to the currently proposed turbine layout. Key as follows:

- Turquoise polygons = farm portions;
- Black/white numbered dots = wind turbine generators (WTG);
- Yellow polygon = substation complex (with red buffer area);
- Orange numbered polygons = known archaeological sites;
- Red numbered symbol = graveyard; and
- Green numbered symbols = farm buildings (both isolated and farm complexes).







## APPENDIX 4 – Site Sensitivity Verification

As required in Part A of the Government Gazette 43110, GN 320, a site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool. The details of the site sensitivity verification are noted below:

<b><i>Date of Site Visit</i></b>	Not yet conducted
<b><i>Specialist Name</i></b>	Dr Jayson Orton & Jaco van der Walt
<b><i>Professional Registration Number</i></b>	ASAPA: 233; APHP: 043 (JO) ASAPA: 159; APHP: 114 (JvdW)
<b><i>Specialist Affiliation / Company</i></b>	ASHA Consulting (Pty) Ltd

### Method of the Site Sensitivity Verification

Initial work was carried out using satellite aerial photography in combination with the author's accumulated knowledge of the local landscape and some desktop research. This was used to provide sensitivity data which informed this report. Subsequent fieldwork planned for the EIA Phase will to ground truth the site, including areas identified as potentially sensitive. This information is presented in the report.

### Outcome

The first map below is extracted from the screening tool report and shows the archaeological and heritage sensitivity to be low throughout the study area. The aerial photography survey showed very clearly that there are many archaeologically sensitive areas scattered across the study area. A number of farm buildings were also shown to pre-date 1938. The second map below shows the areas considered to be sensitive from a heritage point of view. All are assigned high sensitivity pending in-field assessment.

Sites of Grade IIIA (high cultural significance), IIIB (high cultural significance) and GPA (medium cultural significance) should be regarded as of high sensitivity. GPB sites (low cultural significance) can be seen as medium, while GPC (very low significance) are low sensitivity. It is unlikely that any of the sites and structures identified here as sensitive would be of less than medium cultural significance.



