HERITAGE CONSERVATION MANAGEMENT PLAN

for the approved Gunstfontein Wind Energy Facility near Sutherland in the Northern Cape

CTS HERITAGE

Prepared by CTS Heritage

December 2020

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CONTENTS

1. INTRODUCTION

Gunstfontein Wind Farm (Pty) Ltd proposes the development of a wind energy facility with a contracted capacity of up to 200MW and associated infrastructure including Wind turbines, concrete foundations to support the turbines, Cabling between the turbines, laydown areas, internal access roads, an on-site substation, buildings and dedicated areas for workshops, control systems, maintenance and storage with parking areas where required, and temporary construction compound and temporary site offices.

Project Location: The proposed site is located ~20km south of Sutherland within the Karoo Hoogland Local Municipality, of the Namakwa District Municipality.

The proposed Gunstfontein WEF was given Environmental Authorisation in 2016 (DEA Ref: 14/12/16/3/3/2/826) while the grid connection infrastructure received EA on 12 February 2017 (DEA Ref 14/12/16/3/3/3/1/1619), and an extension to the grid connection received EA on 28 May 2021 (DFFE Ref 14/12/16/3/3/1/2228). A BESS located within the WEF footprint received EA on 21 May 2021 (DFFE Ref 14/16/12/3/3/1/2236). The WEF EA was subsequently amended in 2019 to provide for the following:

- An increase in rotor diameter from 140 m up to 180 m;
- An increase in hub height from 120 m up to 150 m;
- The location, number and details of site access points have been altered;
- Several corrections to conditions;
- Amendment to the site layout

In their responses to various applications made regarding the proposed development, SAHRA has made the following requirements:

March 2016

- A bufferzone of 60 m must be maintained from all identified heritage and palaeontological resources. Micro adjustment of all relevant proposed infrastructure must occur in order to achieve this;
- The stone cairn/possible grave (Feature 4), should be demarcated and fenced off with a perimeter buffer zone of 60m;

- No turbines may be located within three (3) kilometers from the R354/R356. This is in line with comments issued on surrounding Wind Farm projects (*NB. This requirement was amended by SAHRA in a subsequent response from June 2016, see below*);
- A Conservation Management Plan must be developed to ensure the on-going conservation of identified heritage resources during the life of the development. The report must include a map of all identified heritage and palaeontological resources with buffer zones of 60 m in relation to the proposed development. This report must be submitted to SAHRA if the EA has been approved and must form part of the final EMPr; and
- On-site monitoring of excavations deeper than 1 m must be conducted by a qualified palaeontologist during the construction phase of any infrastructure located within the Abrahamskraal formation. Site monitoring reports must be submitted to SAHRA upon completion.

June 2016

- The closest two wind turbines (Turbine 1 and Turbine 2) to the R356 must be removed from the proposed layout in order to maintain a bufferzone of 1.6 km from the historical Verlatenkloof Pass (as proposed by ACED and agreed upon by SAHRA APM Unit through discussion);
- Should the two turbines be relocated to another area, the access route and location of the turbines must be subjected to a walk-down by a qualified archaeologist and palaeontologist to ensure that no heritage resources are impacted by construction activities. A Walk-Down report must be completed and submitted to SAHRA for comment prior to construction. No construction may occur without comments from SAHRA;
- Palaeontological Monitoring of the construction phase can be conducted by a suitable qualified Environmental Control Officer, punctuated by regular site visits by a qualified palaeontologist. Proof of training must be presented to SAHRA and regular monitoring reports must be submitted to SAHRA;
- Previous comments issued on the 18 March 2016 pertaining to the 60m bufferzone from identified heritage and palaeontological resources, feature 4 and the development of a Conservation Management Plan are still valid and must apply to the proposed WEF.

March 2019

The final layout of the development must be physically inspected by a qualified archaeologist and a report must be submitted to SAHRA for comment.

The following additional conditions must be included in the Environmental Management Programme (EMPr) and completed should the Amended EA be granted:

- The Final Amendment Report and EMPr must be uploaded to the SAHRIS application for record purposes;
- If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA;
- The decision regarding the Amended EA Application must be communicated to SAHRA and uploaded to the SAHRIS Case application.

This report is submitted in fulfillment of the requirement for a Conservation Management Plan.

1.1 Location of Site

The proposed site is located ~20km south of Sutherland within the Karoo Hoogland Local Municipality, of the Namakwa District Municipality. The Gunstfontein WEF is proposed for development on .the Remainder of Farm Gunstfontein 131, east of the R354 and south of the Klein Roggeveld Road.

1.2 Ownership and responsibility for site

Landowners

The land on which the WEF is located is privately owned:

Name: Andreas

Surname: Muller

Tell: 063 1190708

Cell: 083 692 9086

E-mail: gunstfontein@roggeveld.co.za

Environmental Authorisation (EA) Holder

The EA Holder would be the Project Company, Gunstfontein Wind Farm (Pty) Ltd, who, through the EA acquires the right to develop the project (considering all other permits and consents have been acquired from all other relevant competent authorities). The Project Company does not however own the land on which it intends to develop. Although the landowners benefit from the revenues generated by the Project Company and therefore by extension the EA, they do not form part of the Project Company's management structure. The benefit therefore remains financial/commercial rather than organisational.

Implementation of EA

The person responsible for the implementation of the conditions in the EA would be the contractors and Enel Green Power during the construction phase. However, any non-compliance would fall onto Gunstfontein Wind Farm (Pty) Ltd as the holder of the EA. All non-compliance would be audited by an independent ECO which would be appointed by Gunstfontein Wind Farm (Pty) Ltd. Gunstfontein Wind Farm (Pty) Ltd would operate the facility. For decommissioning, the responsible parties would again be the contractors and audited by ECO but overall compliance would fall on Gunstfontein Wind Farm (Pty) Ltd.

Heritage Authorities

The area proposed for development is located in the Northern Cape. As such, the area is subject to two different heritage management authorities. All impacts to archaeological and palaeontological heritage in the Northern Cape are managed by SAHRA. Any impacts to these resources are subject to the recommendations and best practice processes established by SAHRA for archaeology and palaeontology.

All impacts to structures that are older than 60 years in the Northern Cape are managed by Ngwao Boswa Kapa Bokoni - Northern Cape Provincial Heritage Resources Authority (NBKB). Any impacts to these resources are subject to the recommendations and best practice processes established by NBKB.

1.3 Site Description

The area proposed for development of the wind turbines is located within a relatively flat landscape. Two large perennial rivers cut through the area, these are the Boesmanshoek and Brandkloof rivers. There are also numerous smaller ephemeral streams and erosional gullies. The site is underlain by the Abrahamskraal Formation which is a unit within the Beaufort Group strata comprising siltstone, mudstone, and immature sandstones (greywacke).

The region is regarded as semi-arid as it receives limited precipitation. It is located on the border of the summer and winter rainfall regions. Precipitation is in the form of snow and rain in winter, with occasional thunderstorms during the summer. The vegetation cover falls within the Western Mountain Karoo subregion and comprises the typical Karoo grasses and scrubland, of varying densities. The area is traversed by tar and gravel roads with numerous jeep tracks. More recently, tracks and roads have been created to access construction sites for the wind turbines on neighbouring farms. Some sections of the proposed OHL were disturbed by heavy vehicles, sample pits and clearing.

The surrounding land is used predominantly for stock and game farming. Farming infrastructure comprises farm dwellings, dams, wind pumps and fenced stock camps.

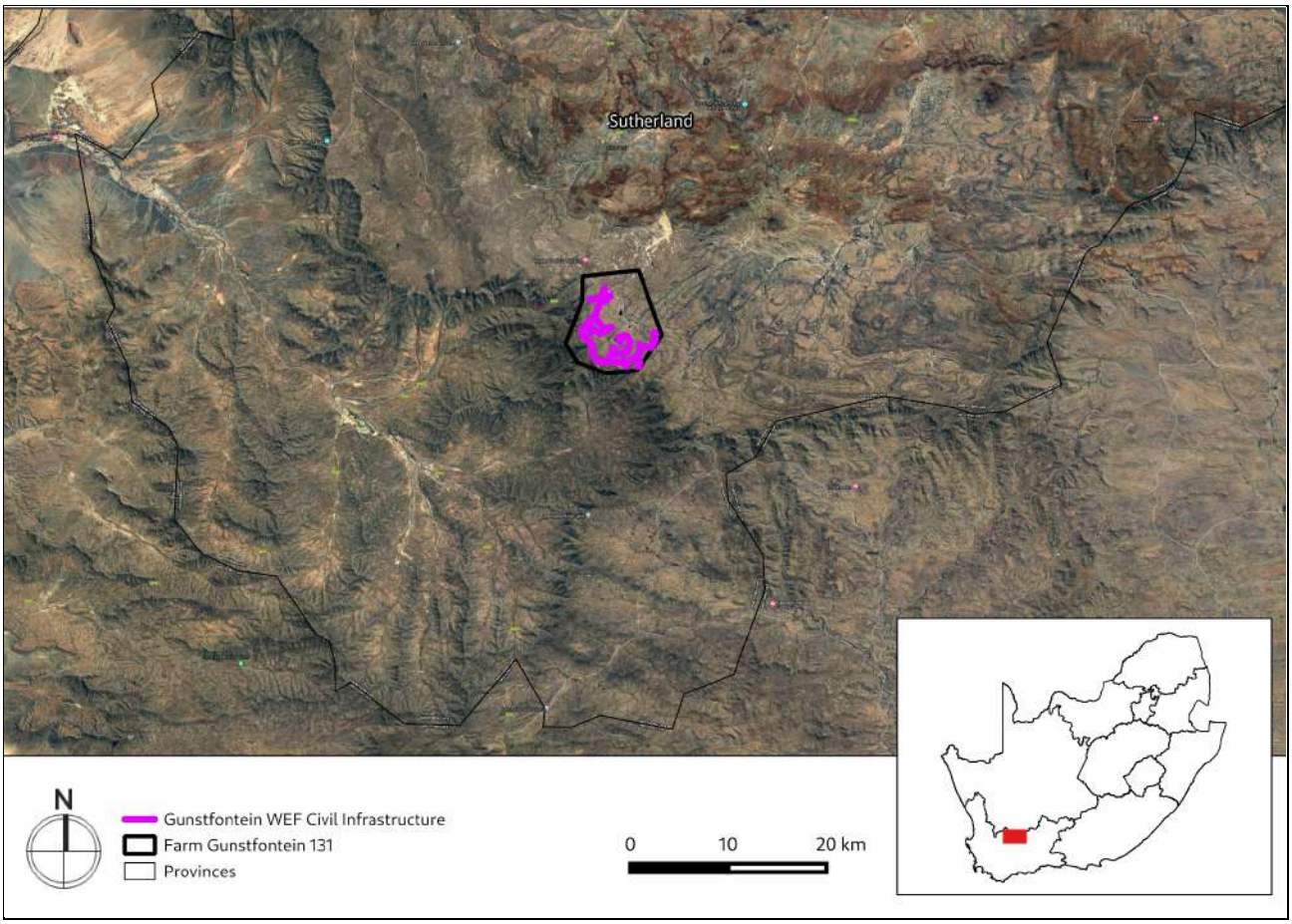


Figure 1: Location of Site

1.4 Statement of Site significance

General points on significance

The cultural significance of a site determines the appropriateness and extent to which protection measures are required. The value or importance of the site to society in general, to specific past and present groups, and to posterity, includes:

- Spiritual/social value - the traditional and consistent use of a site for religious, spiritual or social purposes, even if the religious use no longer continues
- Aesthetic/artistic value - the recognition by scholars and the general public that a cultural site represents a high point of creative achievement
- Historic value - the achievements and knowledge of the past as vehicles for enlightening the present and future
- Scientific/research value - the site, or feature within the site, providing a source of knowledge that is unobtainable elsewhere

Since cultural significance can be interpreted differently by different people, and evaluations can change with time and circumstances, it is important to assess the significance of a site in terms of:

- The importance of a particular site in relation to other sites so as to decide on the appropriate level of management
- Ascertaining what all these values are so as not to inadvertently damage one value that a site has, while preserving another.

Details of the grading system used are provided in section 3 of the NHRA. In addition, the system outlined in Heritage Western Cape's Guideline for Grading: Implications and Management was used. As per this system, heritage significance is indicated on a sliding scale:

- Grade I - National Significance
- Grade II - Regional/Provincial Significance
- Grade IIIA - High Local Significance
- Grade IIIB - Moderate Local Significance
- Grade IIIC - Low Local Significance
- NCW - Not Conservation-Worthy

Significance of Heritage Resources

A number of heritage resources located within the Gunstfontein WEF development area were identified through the initial Heritage Impact Assessment process and the subsequent walkdown of the final layout (November 2020 and May 2021). All of the identified heritage resources have been graded in terms of the provisions of section 3 of the National Heritage Resources Act and the HWC Guide on the Implications of Grading (2016). As such, the grading methodology is not repeated here. These resources are listed below in Table 1 in Appendix 2.

While not exhaustive, the list of known heritage resources located within the Gunstfontein WEF development area provides insight into the nature and significance of the heritage resources common in the broader area.

As per the intentions of the NHRA, the grading of a heritage resource is indicative of its cultural significance and therefore informs its management and conservation strategies.

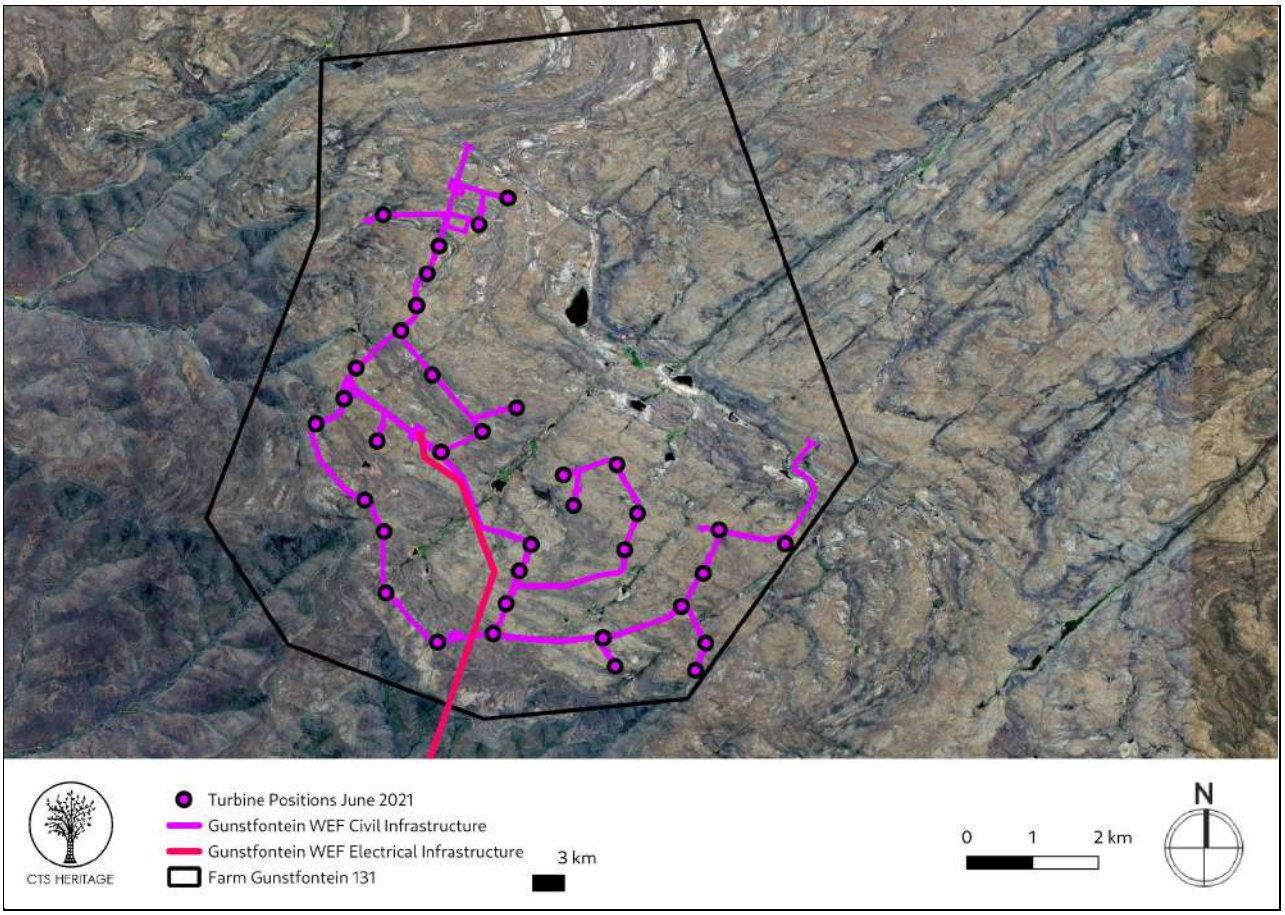


Figure 2: Final WEF Layout

1.5 Objectives of Management Plan

The purpose of this management plan is to guide the activities affecting the heritage resources to retain their significance by conserving it for future generations. A management plan is a living document in the sense that it can be updated as the situation changes and should therefore be reviewed regularly.

This management plan identifies:

- **what needs to be managed** - by surveying and recording the archaeological site in detail and summarising information on the location of sites and what they comprise;
- **who will manage the heritage resources** - by listing the people who have interests in the place and might be involved in its management;
- **the significance of the heritage** in relation to other local, provincial and national sites because the plan is designed to retain this significance;
- **key issues that must be addressed** to retain the significance through consultation with stakeholders;
- **the goals, objectives and strategies** for management and how they will be implemented; and
- **a documentation and monitoring plan** for the ruins so that any changes can be detected and the steps that have been taken can be documented.

1.6 Revision of Plan

The management plan should be reviewed every 5 years and revised as required, or as necessary when circumstances require it. Any revisions must be submitted to SAHRA for approval.

2. RECORDING AND RESEARCH

2.1 Objectives of Recording and Research

Thorough recording of archaeological sites allows site managers and heritage authorities to manage and identify the changes taking place at a site over time. The heritage resources located within this development have been previously recorded through the Heritage Impact Assessment conducted for the Gunstfontein WEF (Van der Walt, 2015) and through the Heritage Walk Down reports conducted for the Gunstfontein WEF (CTS Heritage, 2020). It is anticipated that proposed clearance of vegetation and excavation associated with the construction of the turbines and their associated infrastructure may reveal additional heritage resources that are currently hidden by the vegetation and surface soil.

The heritage resources identified within this site retain potential for further academic study and as such, must be conserved with this in mind. Further academic investigation could provide insight into the evolution of settlement of the Karoo that has not yet been thoroughly documented.

Detailed research on the intangible heritage resources of the study area has not been done as this falls outside the requirements of the approvals process. Notwithstanding these risks and limitations, the potential intangible resources, identified through the review of other reports and historical literature on the area, are likely to exist in the landscape, and should be explored within a different research context to determine their full significance in terms of the NHRA.

2.2 Background context

The creation of the Komsberg REDZ, and the ensuing applications for WEFs in this area (Fourie et. al. 2015) has resulted in several HIAs having been compiled for the region since 2010. All these reports have addressed the region's archaeological and palaeontological heritage, and some have assessed the rural cultural landscape as well (see the Reference List in Section 7). Van der Walt (2015) drafted a concise background of the broader context in his HIA originally drafted for the proposed WEF development. His background to the site is summarised here.

2.2.1 Palaeontological Background

The area proposed for development of the Gunstfontein WEF is underlain by sediments that have very high palaeontological sensitivity according to the SAHRIS Fossil Sensitivity Map (Figure 3). The geology map of the area (Council of GeoScience Map 3220 Sutherland, Figure 4) indicates that the area is underlain by sediments of the Karoo Supergroup assigned to the Beaufort group, within the Abrahamskraal Formation of the Adelaide Subgroup. This was confirmed by Rossouw (2012, SAHRIS

ID 44936) in the Desktop Palaeontological Impact Assessment conducted for the proposed Hidden Valley WEF which includes the area proposed for development.

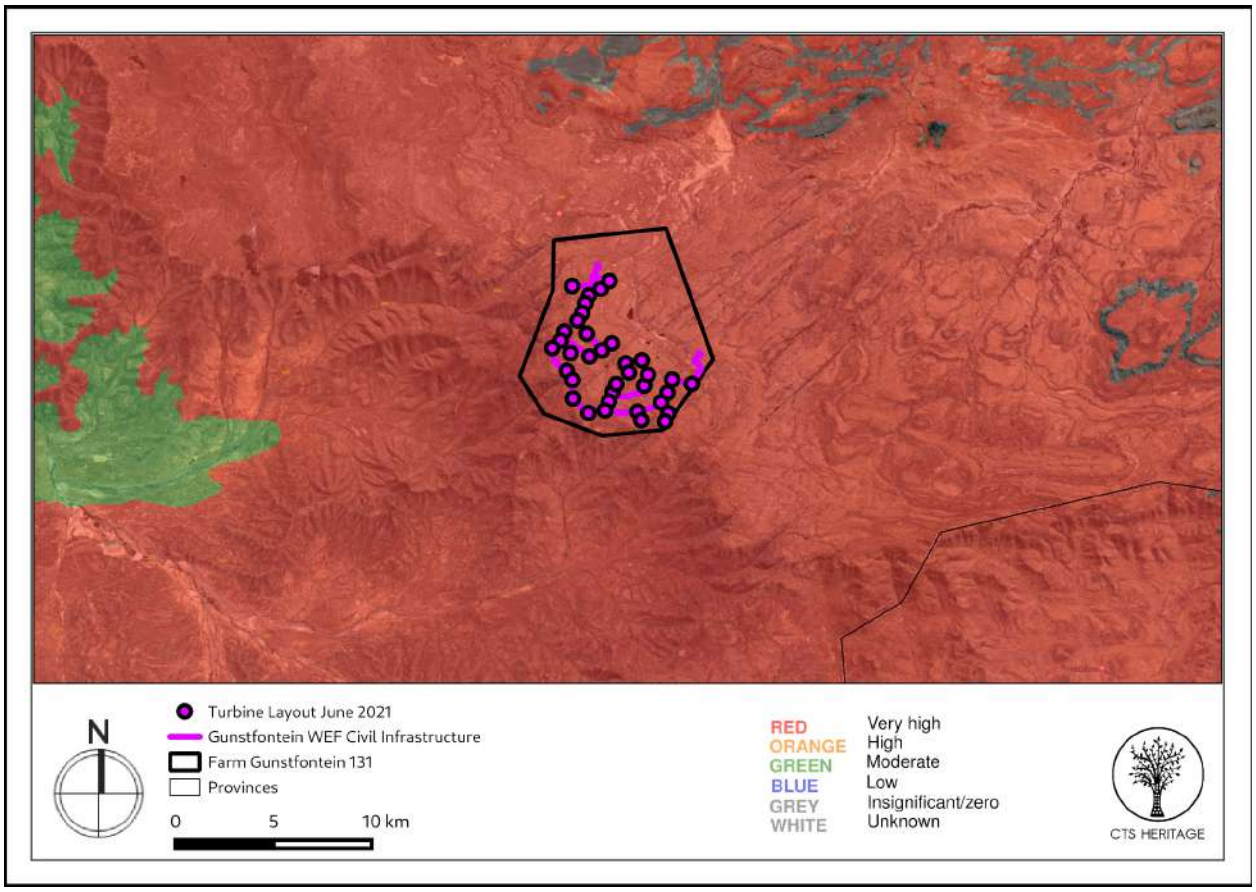


Figure 3.1: Palaeosensitivity Map. Indicating Moderate to High fossil sensitivity underlying the study area for the Gunstfontein WEF

The area proposed for development is located in the Southern Karoo. According to Van der Walt (2015) "Due to the geological nature of the Sutherland area, some early geologists, like E. J. Dunn and A. H. Green, suspected that coal could be found in the region. Two boreholes were dug in 1886 and 1887 respectively near the Kruidfontein Station at Sutherland, but nothing was found. Prospectors also dug for oil; three boreholes were constructed between 1939 and 1970. These endeavors were however equally unsuccessful. During the excavation for oil it was however discovered that uranium deposits were present in the area. These deposits were spread over a large area, but rewarding concentrations of uranium were in most cases only found in isolated patches." The Palaeontological assessment conducted by Almond (2015) identified some such uranium deposits.

According to Almond (2015, SAHRIS NID 357423):

"The main WEF project area on Farm Gunstfontein RE/131 comprises flat-lying to gently-hilly and rocky-ridged terrain on the Roggeveld Plateau that extends along the edge of the Roggeveld Escarpment some 20 km south of Sutherland, Northern Cape. The R356 Verlatekloof Pass tar road between Matjiesfontein and Sutherland runs just to the west while the dust road to the Komsberg Pass traverses the northern portion of the study area. Elevations are highest close to the escarpment edge (*c.* 1640 - 1600 m amsl) and the ground slopes gradually down to around *c.* 1560 m amsl in the northeast. The prominent *koppie* Verlatekop (1660 m amsl) lies just outside the western border of the area. The Roggeveld sandstone plateau in this area shows low relief and is transected by several subparallel, SW-NE trending drainage lines related to a set of major bedrock fractures in the region. These form part of the radial and tangential fracture network associated with crustal doming caused by late Cretaceous Salpeterkop igneous activity. The fractures may be intruded at depth by lamprophyre and breccia dykes of the Sutherland Suite (Cole & Vorster 1999, p. 9). The incised drainage lines are associated with intermittent-flowing streams and numerous pans or farm dams. A zone of pans / dams (*e.g.* the Wilgeboom Dam) also runs along the southwestern side of the Komsberg Pass road.

The adjacent steep, southwest-facing sector of the Roggeveldberg Escarpment on Boschmans Hoek 177 - part of the Great Escarpment of South Africa – spans an elevation of *c.* 900 m amsl at the base (near Boesmanshoek farmstead) up to 1630 m along the escarpment edge. It is dissected by several dendritic stream gullies, including Boesmanshoek and Brandkloof, which are tributaries of the extensive Tanqua River drainage system. Numerous subhorizontal *kranse* or step-like ridges reflect the successive, prominent-weathering channel sandstone horizons exposed here. Away from the numerous drainage lines and sandstone ridges, bedrock exposure within the study area - notably that of the recessive-weathering mudrock facies - is generally very low. This is due to extensive cover by sandy alluvial and gravelly colluvial deposits as well as karroid *bossieveld* vegetation (Roggeveld Shale Renosterveld and Tanqua Escarpment Shrubland). The WEF development footprint does not extend onto Boschmans Hoek 177.

The geology of the Sutherland region is outlined on the 1: 250 000 scale geology sheet 3220 Sutherland (Theron 1983) (Fig. 4) as well as the updated 1: 250 000 Sutherland metallogenic map that includes important new stratigraphic detail for the Lower Beaufort Group succession (Cole & Vorster 1999) (Fig. 13). The study area is entirely underlain by Middle Permian continental sediments of the **Lower Beaufort Group** (Adelaide Subgroup, Karoo Supergroup), and in particular the **Abrahamskraal Formation** (Pa) at the base of the Lower Beaufort Group succession (Johnson *et al.*

2006 and references cited below). The Beaufort Group sediments here are folded along numerous west-east trending fold axes (Fig. 4). In the Sutherland area to the north of the Roggeveld Escarpment the Lower Beaufort Group sediments have been extensively intruded and thermally metamorphosed (baked) by dolerite sills and dykes of the **Karoo Dolerite Suite** of Early Jurassic age (*c.* 182 Ma = million years ago; Duncan & Marsh 2006). These igneous rocks were intruded during an interval of crustal uplift and stretching that preceded the break-up of the supercontinent Gondwana. They show up on satellite images as rusty-brown areas. No dolerite or younger (Cretaceous) intrusions are mapped within the present study region along the edge of the Roggeveld Escarpment, however; major dolerite bodies intrude the Lower Beaufort Group over 5 km to the north. The Palaeozoic bedrocks in the study area are extensively overlain by Late Caenozoic **superficial deposits** such as scree and other slope deposits (colluvium and hillwash), stream alluvium, down-wasted surface gravels, calcretes and various sandy to gravelly soils. These geologically youthful sediments are generally of low palaeontological sensitivity."

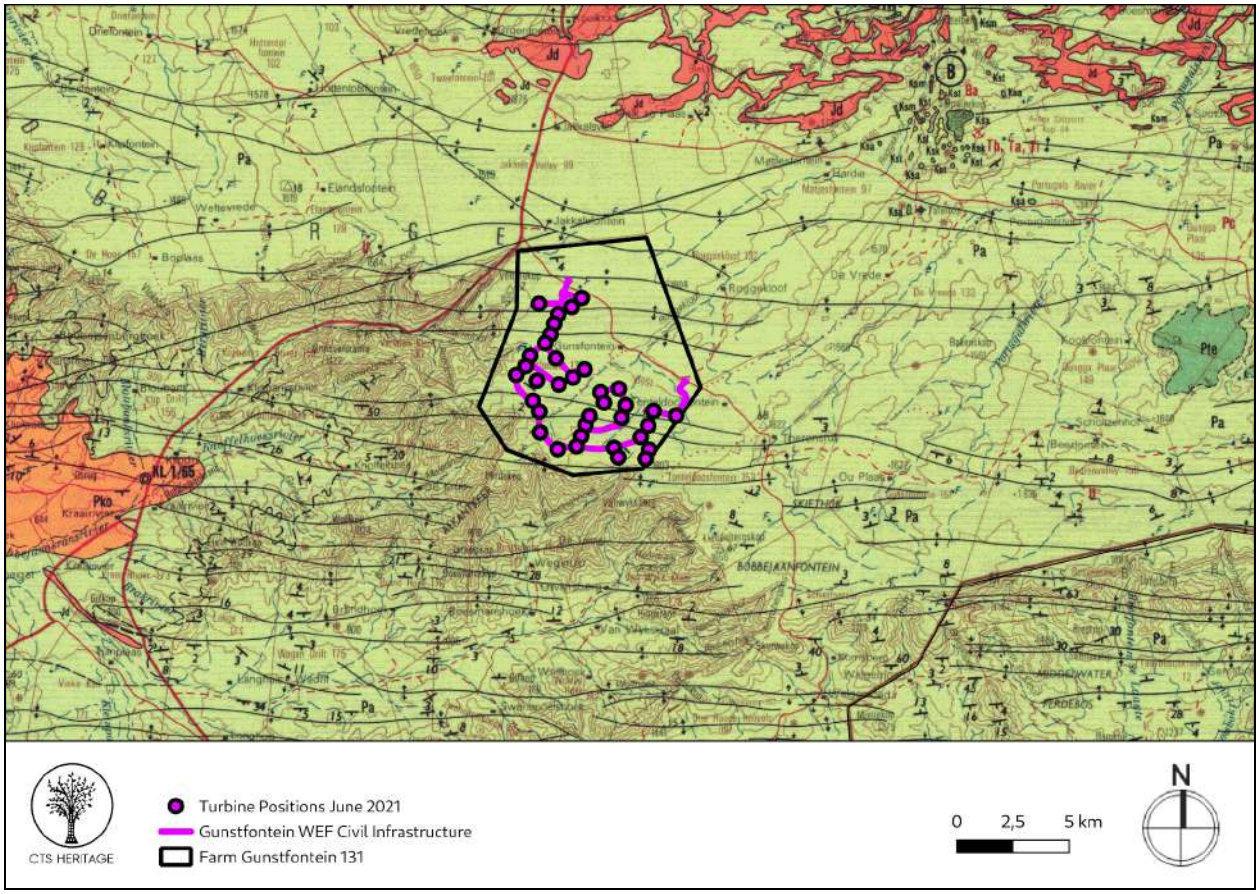


Figure 3.2. Geology Map. Extract from the CGS 3220 Sutherland Map indicating that the development area for the Gunstfontein WEF is underlain by sediments of the Karoo Supergroup including the Adelaide Subgroup (Pa)

2.2.2 Archaeological Background

Scattered throughout the Karoo is evidence of historic and prehistoric occupation in the form of Early, Middle and Later Stone Age lithics and other material remains. The descendents of the historic and prehistoric occupants of the region are found in the indigeous Khoe and San, the Griqua as well as modern inhabitants of the area. Furthermore, by the end of the 17th Century, the Trekboer movement had begun to cross this landscape. According to Van Der Walt (2015), "The first Europeans to settle in the Northern Cape were missionaries, but there was a larger influx of white men into the province during the 1860s and 1870s when diamonds were discovered in Griqualand." The discovery of diamonds in the Northern Cape eventually led to the Anglo-Boer War, which took place between 1899 and 1902 in South Africa.

The dry, fairly desolate ridges, which are subject to high winds and therefore the proposed locations for the turbines, are generally entirely devoid of Stone Age archaeological remains (Webley and Halkett, 2017). These findings were also supported by the Heritage Scoping Assessment Report (Fourie et. al. 2015) compiled as part of the Department of Environmental Affair's (DEA) Strategic Environmental Assessment (SEA) for wind and solar energy developments (DEA, 2015). A mitigation phase excavation (Evans et al. 1985) has been undertaken at two small rock shelters in the grounds of the South African Astronomical Observatory near Sutherland in the early 1980s. More recently, changing farming methods as represented by the distribution and variety of stone-built features (walls and kraals) was assessed as part of a Master's thesis (Regensberg, 2016).

The area is known to have been inhabited since the Early Stone Age (ESA) (Hart and Miller 2011) and throughout the Middle Stone Age (MSA) (Hart et al. 2010). Later Stone Age (LSA) scatters have also been documented throughout the region, although at remarkably low density (Booth 2012, 2016a and 2016b; Hart and Webley 2013; Hart and Kendrick 2014; Hart 2015; van der Walt 2015), although excavations at cave sites near Sutherland yielded significant LSA cultural material (Evan et. al. 1985). Most tools are made on hornfels, quartzite and chert, while quartz and Karoo shale were also utilised (Hart et. al. 2010). Within the last 2 000 years, pastoralists, the Khoekhoen, arrived in the area and, in this area, there is extensive evidence for the presence of these groups in the landscape. This evidence comes in the form of circular, stone-built enclosures constructed of piled stone up to half a metre high and from 3m to 4m to 9 m in diameter (Hart et. al. 2010). These enclosures represent living spaces, which contained grass huts or Matjieshuise (mat covered houses) and kraals. The kraals are generally situated on the leeward slopes of low ridges and likely date to between 300 and 1 000 years ago (Hart et. al. 2010). The kraals sometimes form complexes of as many as 13 interlocking enclosures, often with adjoining 'lammerkraals' (lamb pens). These sites can be found with fine, red burnished pottery and OES fragments. Other evidence for herders in this area has been identified in the form of

open camps situated along dry riverbeds in valley bottoms. These sites are large, measuring 80m x 80m, and are associated with fine, thin walled Cape Coastal pottery, frequent informal stone tools, stone features, grinding surfaces, ash middens, animal bone and several graves with broken grindstones atop them; colonial period artefacts have also been found in association with these sites (Ibid.).

Rock art, which can be attributed to the San hunter gatherers or the pastoralists, is known within the region, although it's not commonly identified, and more concentrated in the Cape Fold Mountains to the south of the project area (Booth, 2016a and 2016b; van der Walt, 2015). These paintings tend to be of the fine line tradition, attributed to hunter gatherers, or finger painting, which is attributed to the herders.

Early *Trekboere* entered the region in the late 1700s, moving their livestock down into the valleys and plains of the Karoo from the better watered escarpment to escape the harsh winters there. As a result of this pattern of seasonal movement of flocks the *Trekboere* usually had a loan farm on the plateau, and a stockpost (*legplaats*) in the Karoo. Conflict arose between the arriving *trekboere* and the indigenous San, which culminated in the massacre of San in the late 1770s by Boer *commandos* (Schoeman 1986; Hart and Webley 2011). These massacres are recorded archivally and in place names in the area, such as the farm Oorlogskloof near Sutherland where more than 30 stone cairn burials are to be found. There is purportedly also a cave where the San made a last stand against the *kommandos* (Ibid.). No evidence of such conflict has been identified on Farm Gunstfontein 131.

Sutherland was founded in 1855 as a church and market town to serve the area's sheep farmers. By 1872 the town had a population of 138 registered citizens living in 19 houses. During the Anglo-Boer War the church was used as a fort by garrisoned British soldiers. During the war a number of engagements between British and Boer forces occurred in the town and in its immediate surroundings. According to Van der Walt (2015), "Little evidence could be found of skirmishes or battles during the Anglo-Boer War (now referred to as the South African war) in the Sutherland area." Van der Walt further notes that "The Anglo Boer War left a wake of forts and blockhouses in the area. One such is Rebelskop, a hill topped by the ruins of a fort and named after a Boer division of 200 men that opposed the British forces. Under Commandant Abraham Louw, and reinforced by a further 50 men under the command of Albert Smith from Fraserburg, the rebels rained gunfire into the British-occupied town for 10 hours in a mini-siege. Other ruins are still visible on the road to Salpeterkop and on the farm Gunsfontein. Here two blockhouses stand on opposite sides of a cliff, guarding a pass (http://www.discoversutherland.co.za/)."

According to promotional information about the Gunsfontein farm, “Gunsfontein is the farm where poet NP van Wyk Louw was raised. The original farm dwelling was a corbelled house and dates back to +- 1756 . This house, still standing, has not been restored, but is still in a good condition. Other interesting historical remains are the ruins of old British forts with shooting holes – built during the Anglo-Boer War.” The corbelled house is mapped below as site 24959 and a number of stone structures ascribed to the Anglo-Boer War are mapped below and listed in Appendix 2.

Increasingly, as exploitation of the area became better established, and particularly after the Great Trek of the 1830s, their structures and imprint on the landscape became more permanent. The evidence for this early inhabitation of the region is to be found in historic farmhouses and associated buildings, stone cairns, stone walling, farm infrastructure such as reservoirs and, more recent wind pumps. Artefactual material from this period includes European ceramics, glass and iron fragments. The stone walling and kraals of this period are distinguished from the pre-colonial kraals as they are usually rectilinear and are faced on two sides with infill between the faces and are often mortared using locally derived clays.

The area was witness to a further period of military action during the South African War, with some skirmishes near Skietfontein in the KomsbergMountains (Hart and Webley, 2011). The threat of Boer guerrilla activities also prompted the British to build several defensive structures in the region, including redoubts, gun platforms and blockhouses (van der Walt, 2015; Hart and Webley, 2011; Orton and Halkett, 2011).

2.2.3 Cultural Landscapes and Living Heritage Background

Cultural landscapes are the interface of culture and nature, tangible and intangible heritage, and biological and cultural diversity. In contemporary society, particular landscapes can be understood by taking into consideration the way in which they have been settled and modified including overall spatial organisation, settlement patterns, land uses, circulation networks, field layout, fencing, buildings, topography, vegetation, and structures.

Research done in the last decade on the surrounding area, for input into HIAs required for other proposed WEFs, has highlighted archaeological, palaeontological and cultural landscape resources that are significant.

Other cultural landscape research for HIAs in the area have noted the possible impacts and made recommendations on cultural landscapes for each of their study areas. The visibility of proposed

facilities from major transport routes and tertiary roads has been considered, particularly the R354, a scenic tourism route between Matjiesfontein and Sutherland (Hart and Webley 2011; Hart and Kendrick 2014). Predominantly, it is the negative impacts to the sense of wilderness that has been indicated as the greatest likely outcome of these developments (Hart and Webely 2011, 2013). The clustering of several proposed WEFs in the Sutherland area is considered to progressively and more negatively erode the cultural landscape (Hart and Webley 2013). Significant built environment features are variable across the landscape, and while some clusters of heritage buildings exist (Hart and Webley 2013), largely, there are few conservation-worthy buildings, and that places of celebrated heritage significance are limited (Hart and Webley 2011; Hart and Kendrick 2014). The remoteness of the area is noted, and the low visitor numbers also considered (Hart and Webley 2013; Booth 2016b). Where gradings have been proposed for the cultural landscape, these vary between Grade II and IIIa (Hart and Kendrick 2014; Booth 2016b). The changes to the character of the landscape, and negative impacts on sense of place and aesthetic value which result from WEF developments – and compounded by cumulative impacts – are seen to be largely unmitigatable, with only the effective rehabilitation of the landscape after decommissioning serving as effective remedial action (Booth 2016a).

The SEA for wind and solar photovoltaic energy in South Africa (DEA 2015) does not consider intangible heritage resources, identifying only areas with material remains and previously identified natural and cultural heritage sites or protected areas, such as Karoopoort, Matjiesfontein and Touw Local Nature Reserve, as cultural landscapes in the Komsberg REDZ 2. There has not been any investigation into the living heritage of the area or intangible resources attached to the landscape, such as language or oral history. Mitigation recommended for the impact of development on cultural landscapes in the Komsberg area is also limited to adjusting buffers and consideration of viewshed analysis, which considers only tangible heritage resources' and visual impacts.

Due to the infrequent signature of physical remains in this area, researchers in material culture tend to describe the landscape as sparse or barren, attributing lower gradings of heritage significance as a result, except where scenic value is ascribed. This low 'on the ground' visibility is however the direct result of the liminal and seasonal occupation of the area which in and of itself is part of the value and significance of the landscape, and can be considered the tangible evidence of the historic character of the landscape, a character of movement and habitation in very challenging conditions. Furthermore, the suggestion that intangible resources can be "rehabilitated after decommissioning" is unfounded: oral history, language, indigenous knowledge systems are by nature dynamic, living resources which will be impacted upon permanently by any new introductions to the landscape. While

introductions or change are not always a negative impact, the impacts of proposed development on intangible heritage should be investigated and considered at least as thoroughly as the tangible heritage resources.

2.3 Heritage Resources Identified

The Remainder of the farm Gunstfontein 131 has been thoroughly assessed by Van der Walt in his report dated December 2015. In his assessment, he identified 8 sites of heritage significance which needed to be considered for the development of the Gunstfontein WEF. These sites have been mapped in Figures 3, 3.1, 3.2 and 3.3 and documented in Appendix 1. Van der Walt (2015) recorded a few background scatters of isolated stone artefacts in rocky areas consisting of miscellaneous LSA flakes and flaked pieces, usually located near to large boulders. These observations were not considered to be conservation-worthy. He further identified one rock art site as well as historical structures including two types of block house, ruins of agricultural structures and a stone cairn feature.

The area proposed for development, including the existing Soetwater OHL, has been previously assessed for impacts to heritage resources (Case 218) including an Archaeological Field Assessment (Booth, 2012, SAHRIS ID 44935) and SAHRA's requested walk down of both the Soetwater and Karusa WEFs (Booth, 2015, SAHRIS ID 353706, 353709). In Booth's (2012) assessment, she identified no archaeological heritage remains within the areas proposed for the Soetwater turbines. Booth (2012) did identify a historical farm complex and associated infrastructure and a family graveyard. In addition, Booth (2012) identified a dry packed stone wall structure located along the farm road on Portion 1 of Farm Orange Fontein 203. Also on this farm were noted the ruins of a clay packed stone wall cottage and a dry packed stone wall kraal. No additional heritage resources were identified in the walk down assessment conducted by Booth in 2015.

Heritage resources identified within the proposed development area during the walkdown of the Final Layout of the WEF included archaeological and built environment features. Only a few lithics comprising patinated silcrete and hornfels were identified. Almost all built environment features were found along valley bottoms or on open plains or rock plateaus. No archaeological resources were identified on the steep scree slopes. Several stone ruins were the only significant findings in the region assigned for the development on the Gunstfontein farm. A rectangular, dry stacked stone-built kraal (likely historic in age) and a disused stone and mudbrick-built farm dwelling with associated stone outbuildings were identified during the OHL survey. The lack of natural shelters, in addition to the

extreme climate conditions and a lack of water throughout the areas of the proposed development most likely made the area unattractive for prehistoric occupation.

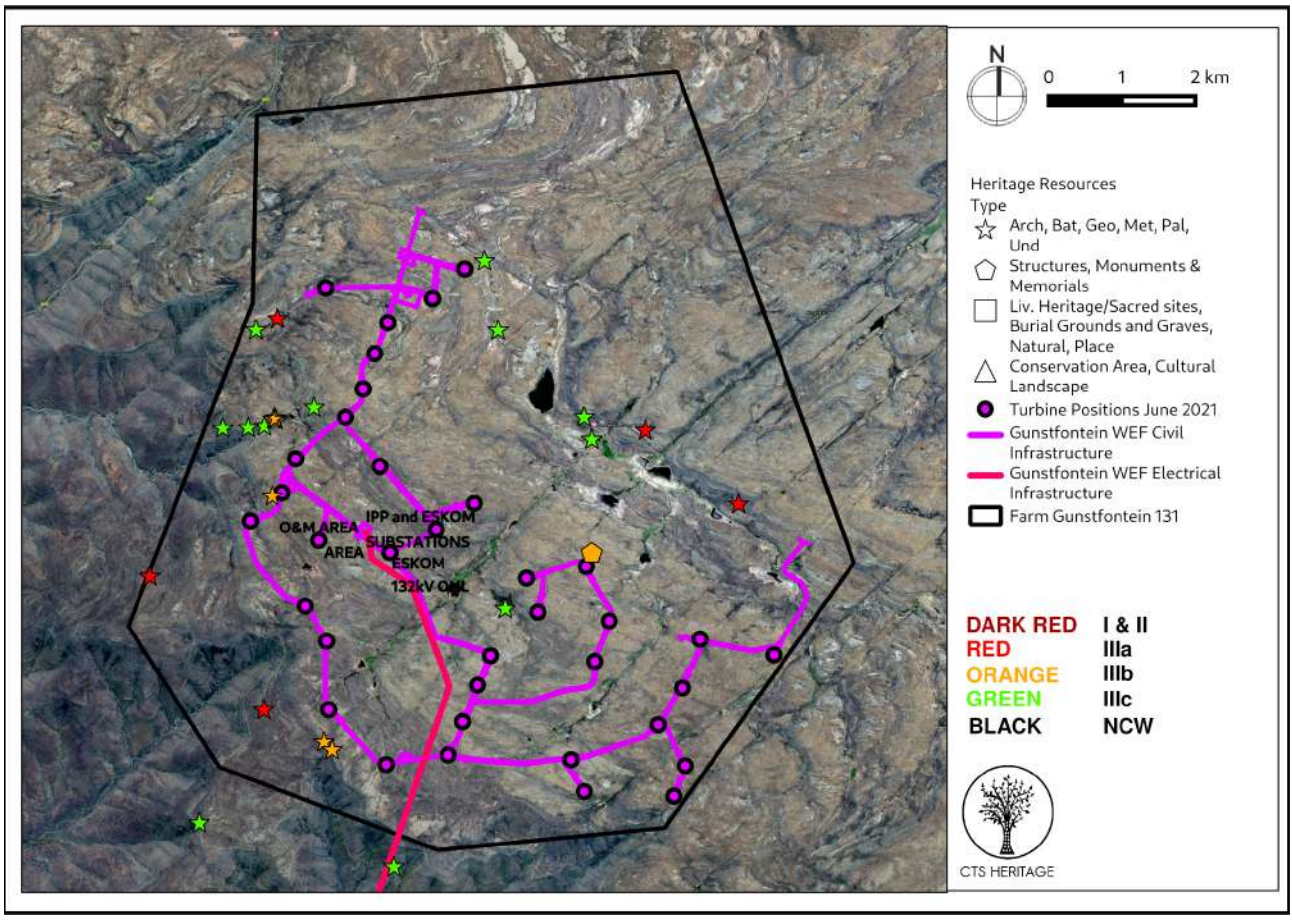


Figure 4.1. Map of all known heritage resources located within the Gunstfontein WEF Development area

3. SITE MANAGEMENT

3.1 Objectives of site management

The objectives of the heritage management plan for the Gunstfontein WEF are to ensure that the heritage resources identified within the area proposed for the WEF development are properly conserved and any further impacts to these heritage resources are appropriately managed.

The Heritage Management Plan identifies the steps required for the appropriate management of these heritage resources including:

- Regular monitoring of the physical integrity of the identified heritage resources
- Details regarding procedures and processes to follow in the event of negative impact to identified or new heritage resources during the construction or operational phases of the development
- Mitigation of potential impacts resulting from the construction, operational and decommissioning phases to the identified heritage resources

3.2 Potential Impacts to identified heritage resources

A. Construction Phase

- *Palaeontology*

The final layout does not impact any known palaeontological heritage resources. The construction of any infrastructure that requires excavation into bedrock or is located at sites of surface exposures of bedrock will have **high** impacts to fossil resources and as such, the attached Chance Fossil Finds Procedure must be implemented. However, due to the lack of irreplaceable, unique or rare fossils within the development footprint, and the extensive superficial deposit overlying the sensitive deposits, the significance of the overall impact of the development is expected to be **very low.**

- *Archaeology*

The final layout does not impact any known archaeological heritage resources of significance. Stone Age archaeology is very sparse in this area, with only a very few, isolated artefacts found in the development footprint. The preponderance of archaeological remains in the study area are the remains of built structures, likely of historic age, but some possibly pre-colonial. These structures are predominantly easy to identify and fairly robust, but several were located in very close proximity to proposed access roads however the final layout avoids any such impact.

- *Burial Grounds and Graves*

One burial has been identified within the OHL alignment and the recommendations pertaining to the management of impact to this site are included below. Other than this, the final layout does not impact any known burial grounds of graves. However, unknown or unmarked burial grounds and graves remain at risk during the construction phase and are likely to be subject to **very high** direct impacts without mitigation. Should any burial grounds or graves be accidentally uncovered during this phase, SAHRA must be contacted regarding a way forward. Contact details are provided in Appendix 1.

- *Built Environment*

The final layout does not impact any known structures directly. The significance of the built environment is moderate in this area, and it is likely that the significance of impacts to the built environment will be **low** provided that structures are avoided sufficiently not to cause structural damage to them.

- *Cultural Landscapes*

Impacts to the cultural landscape are likely through the introduction of new, industrial, and disproportionately large elements into the largely uninhabited and only marginally transformed cultural landscape. The turbines themselves, as well as the laydown areas, crane pads, construction camps, substations and access roads all serve to erode the aesthetic and scenic qualities of the cultural landscape. These new intrusions also represent a dramatically new way of using, interacting with and shaping the landscape in an area that has, until now, largely resisted or been impervious to, efforts to transform it.

- *Intangible Heritage*

Impacts to intangible heritage resources are predominantly indirect in nature, given that the resource is largely intangible. As such, no direct impacts are anticipated during the construction phase.

B. Operational Phase

- *Palaeontology*

Operational activities will not impact any known palaeontological heritage resources and impacts are unlikely during the operational phase. Should any palaeontological heritage be accidentally uncovered during this phase, the Chance Fossil Finds Procedure must be implemented.

- *Archaeology*

Operational activities will not impact any known archaeological heritage resources of significance and impacts are unlikely during the operational phase. Should any archaeological resources be accidentally uncovered during this phase, SAHRA must be contacted regarding a way forward. Contact details are provided in Appendix 1.

- *Burial Grounds and Graves*

One burial has been identified within the OHL alignment and the recommendations pertaining to the management of impact to this site are included below. Other than this, operational activities will not impact any known burial grounds of graves and impacts are unlikely during the operational phase. Should any burial grounds or graves be accidentally uncovered during this phase, SAHRA must be contacted regarding a way forward. Contact details are provided in Appendix 1.

- *Built Environment*

Operational activities will not impact any known structures directly and impacts are unlikely during the operational phase. Should it be necessary that structures that have been graded or structures that are older than 60 years require alteration or demolition during this phase, NBKB must be contacted regarding permission in terms of section 34 of the NHRA. Contact details are provided in Appendix 1.

- *Cultural Landscapes*

Impacts to the cultural landscape will be continuous throughout the operational phase as a result of the construction of the turbines along highly visible ridge lines as well as the presence of roads and associated infrastructure in the landscape. Contextual impacts will be experienced during all phases but are most problematic during the operational phase, and will be ongoing for the operational lifetime of the facility.

- *Intangible Heritage*

Impacts to sites of living heritage will be continuous throughout the operational phase as a result of vehicles and personnel on site for maintenance, and the presence of roads, turbines and associated infrastructure in the landscape.

C. Decommissioning Phase

- *Palaeontology*

Infrastructure removal should not impact any known palaeontological heritage resources and impacts are unlikely during the decommissioning phase. Should any palaeontological heritage be accidentally uncovered during this phase, the Chance Fossil Finds Procedure must be implemented.

- *Archaeology*

Infrastructure removal should not impact any known archaeological heritage resources of significance and impacts are unlikely during the decommissioning phase. Should any archaeological resources be accidentally uncovered during this phase, SAHRA must be contacted regarding a way forward. Contact details are provided in Appendix 1.

- *Burial Grounds and Graves*

Infrastructure removal should not impact any known burial grounds of graves and impacts are unlikely during the decommissioning phase. Should any burial grounds or graves be accidentally uncovered during this phase, SAHRA must be contacted regarding a way forward. Contact details are provided in Appendix 1.

- *Built Environment*

Infrastructure removal should not impact any known structures directly and impacts are unlikely during the decommissioning phase. Should it be necessary that structures that have been graded or structures that are older than 60 years require alteration or demolition during this phase, NBKB must be contacted regarding permission in terms of section 34 of the NHRA. Contact details are provided in Appendix 1.

- *Cultural Landscapes*

Impacts to significant cultural landscapes will be continuous throughout the decommissioning phase as a result of vehicles and personnel on site for turbine dismantling and removal, and the remnants of access roads, and locations of turbines and associated infrastructure in the landscape. It should be noted, however, that any resulting impacts will be of a short duration. Mitigation should only be to ensure that existing roads are used, and no previously undisturbed areas should be subject to disturbance.

- *Intangible Heritage*

Impacts to sites of living heritage will be continuous throughout the decommissioning phase as a result of vehicles and personnel on site for turbine dismantling and removal, and the remnants of access roads, and locations of turbines and associated infrastructure in the landscape. It should be noted, however, that any resulting impacts will be of a short duration.

3.3 Conservation and management requirements

Mitigation measures to reduce the anticipated negative impacts to heritage resources and the cultural landscape during the various phases of the development include:

- A bufferzone of 60 m must be maintained from all identified heritage and palaeontological resources. Micro adjustment of all relevant proposed infrastructure must occur in order to achieve this;
- The stone cairn/possible grave (Feature 4, SAHRIS ID 129288), should be demarcated and fenced off with a perimeter buffer zone of 60m;
- Palaeontological Monitoring of the construction phase can be conducted by a suitable qualified Environmental Control Officer, punctuated by regular site visits by a qualified palaeontologist. Proof of training must be presented to SAHRA and regular monitoring reports must be submitted to SAHRA;
- If concentrations of pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work must cease immediately and be reported to the archaeologist and/or the South African Heritage Resources Authority (SAHRA) (021 462 4502) for Northern Cape findings so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts may then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.

These mitigation measures are mapped below.

3.4 Consultation

The main stakeholders for the site currently are the owners of the property, the Local Authorities, the managers of the WEF and the heritage authority for the Northern Cape (SAHRA and NBKB).

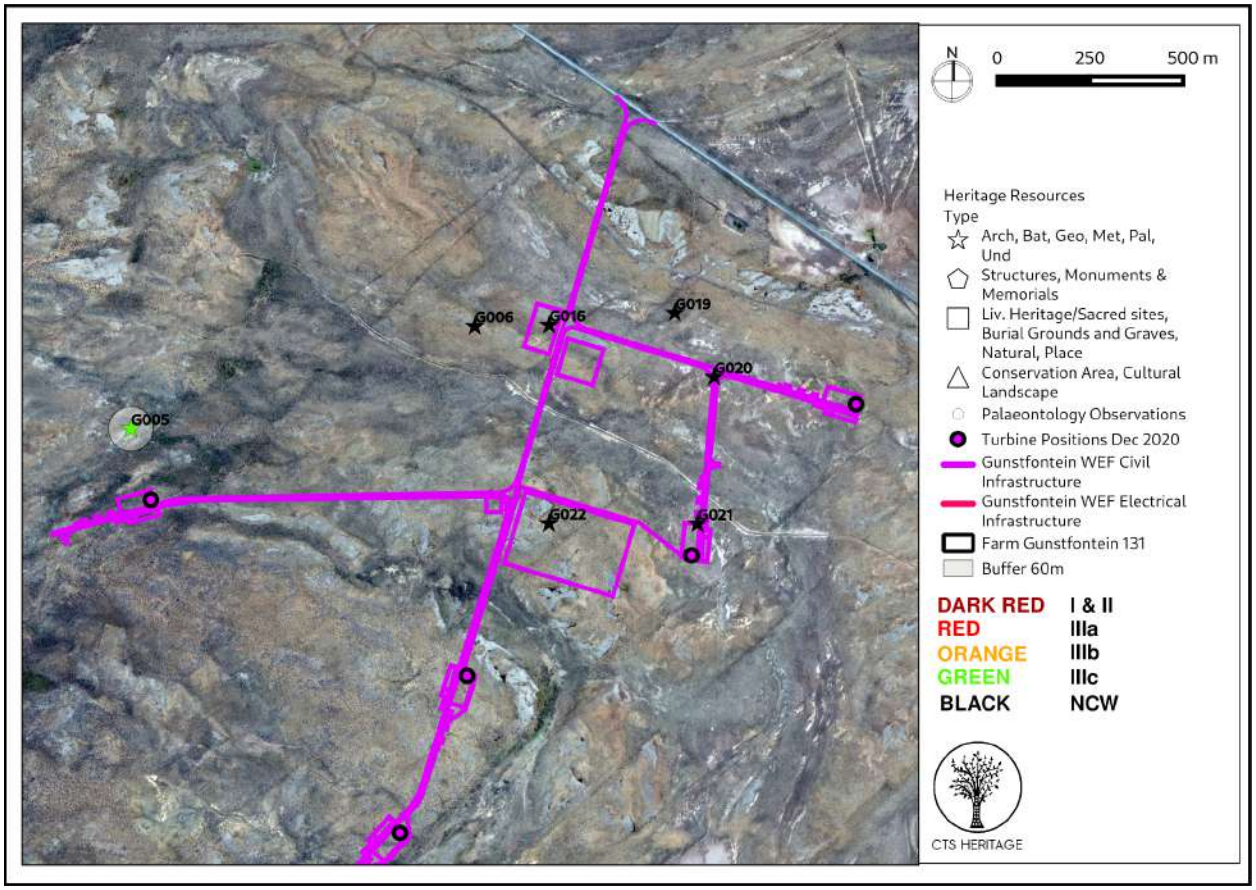


Figure 9.1: Map of all known heritage resources (with SAHRIS IDs and site IDs) relative to the final Gunstfontein WEF Layout

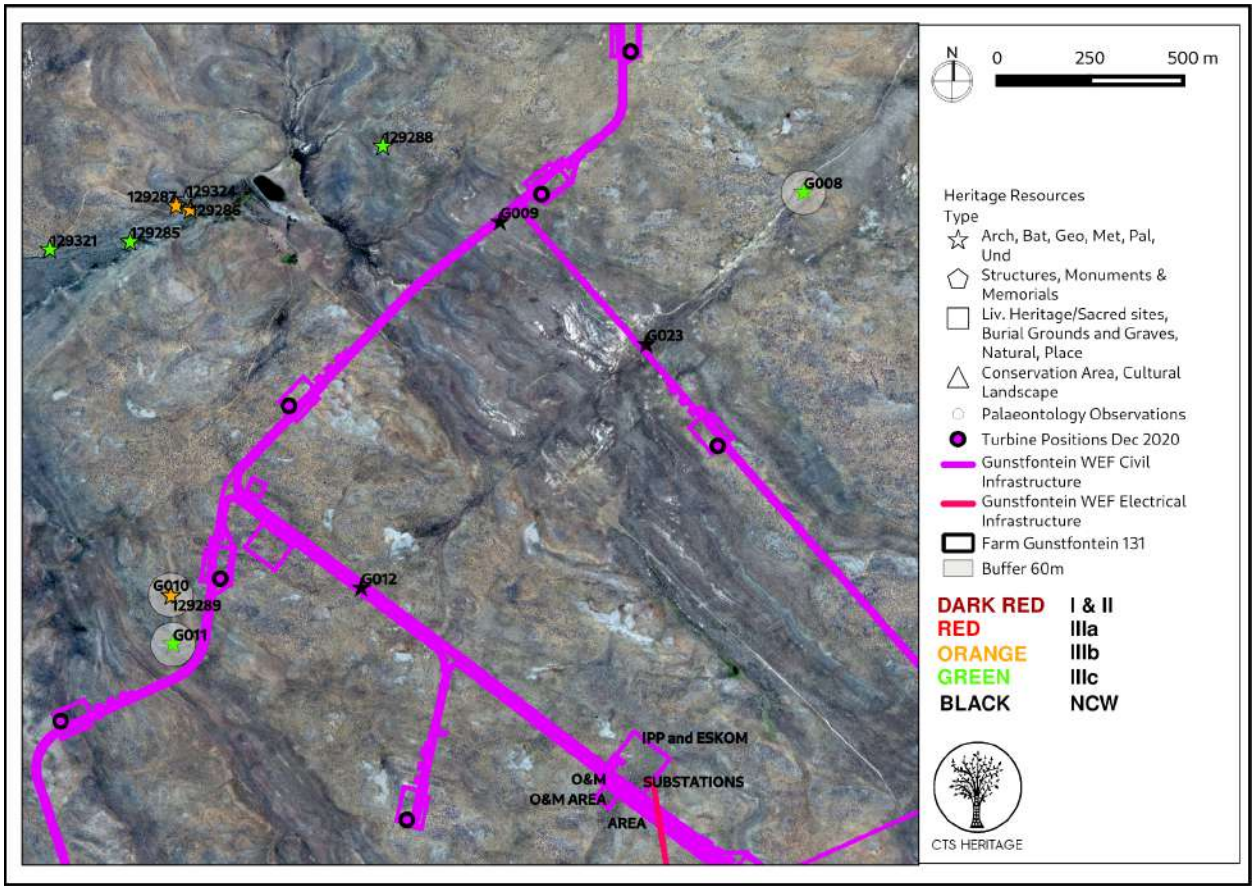


Figure 9.2: Map of all known heritage resources (with SAHRIS IDs and site IDs) relative to the final Gunstfontein WEF Layout

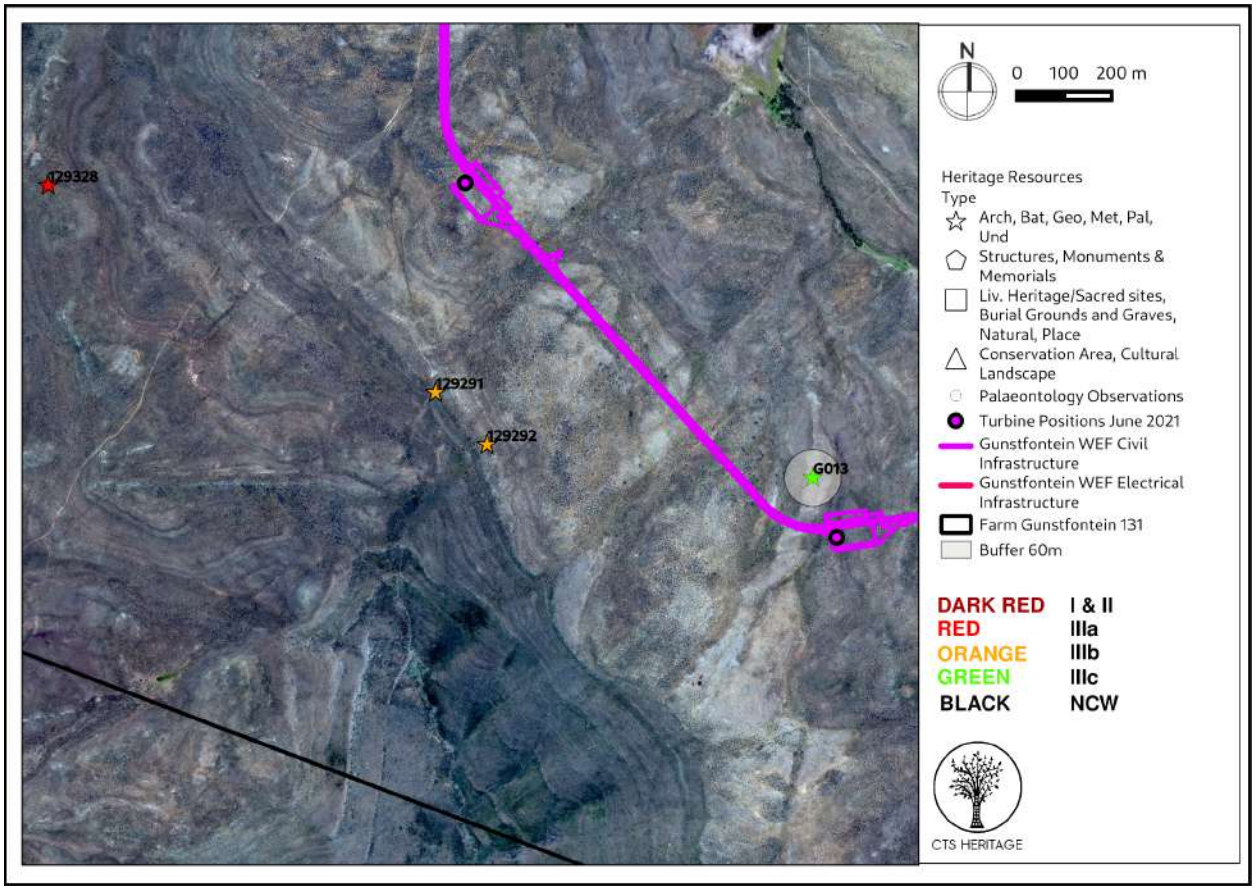


Figure 9.3: Map of all known heritage resources (with SAHRIS IDs and site IDs) relative to the final Gunstfontein WEF Layout

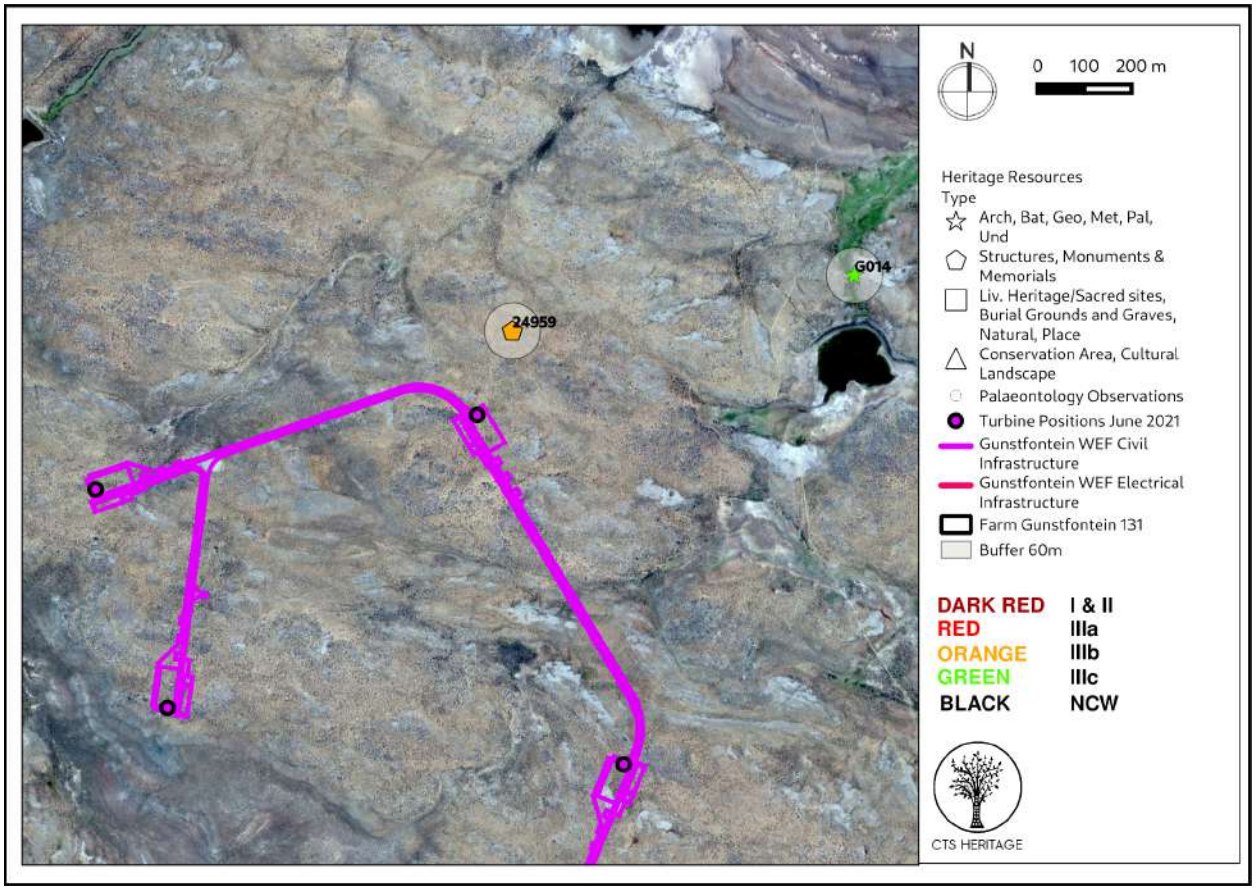


Figure 9.4: Map of all known heritage resources (with SAHRIS IDs and site IDs) relative to the final Gunstfontein WEF Layout

4. MONITORING

4.1 Objectives of Monitoring

The following recommendations are made for long-term management of the identified heritage resources to conserve the significance of the place as part of the irreplaceable history and shared cultural heritage of the landscape. The following management goals provide guidelines for use and maintenance of the heritage, acceptable physical protection and conservation, visitor education, monitoring and research.

4.2 Monitoring and Site Maintenance

Action	Responsible party	Performance Indicators	Evidence
CONSTRUCTION PHASE			
All site crew should be informed of the heritage significance of the resources in the study area	ECO	Once-off meeting held with site crew	Minutes of meeting
Sites near development infrastructure, or easily reached should be inspected by the ECO during the construction phase to ensure they are being respected	ECO	Site inspections conducted at all sites at regular intervals	Bi-Annual Site Inspection and Monitoring Report to be submitted to SAHRA
New construction work, construction camps, substations or access roads should not impact negatively or threaten any of the historic built form, which is part of the history and land use evolution of the cultural landscape by observing appropriate buffers around these features	ECO	No unplanned impact or unplanned impact halted within 4 hours	Bi-Annual Site Inspection and Monitoring Report to be submitted to SAHRA
Palaeontological Monitoring of the construction phase can be conducted by a suitable qualified Environmental Control Officer, punctuated by regular site visits (maximum once per month as needed during the construction phase) by a qualified palaeontologist. Proof of training must be presented to SAHRA and regular monitoring reports must be submitted to SAHRA;	ECO/ESO	No unplanned impact or unplanned impact halted within 4 hours	Proof of training of ECO Bi-Annual Site Inspection and Monitoring Reports to be submitted to SAHRA

Significant fossil finds to be reported to the South African Heritage Resources Agency (SAHRA) for recording and sampling by a professional palaeontologist;	ECO/ESO	Implementation of the HWC Chance Fossil Finds Procedure	Written correspondence with relevant heritage authority regarding the find and minutes of relevant meetings
Implementation of the Chance Fossil Finds Procedure	ECO	Implementation of the Chance Fossil Finds Procedure	Written correspondence with relevant heritage authority regarding the find and minutes of relevant meetings
Construction of the final approved layout including implementation and enforcement of the identified buffer areas and no-go areas: - A bufferzone of 60 m must be maintained from all identified heritage and palaeontological resources. Micro adjustment of all relevant proposed infrastructure has taken place in order to achieve this for known heritage resources; - The stone cairn/possible grave (Feature 4, SAHRIS ID 129288), should be demarcated and fenced off with a perimeter buffer zone of 60m;	ECO	Final layout adhered to in the final construction	Bi-Annual Site Inspection and Monitoring Report to be submitted to SAHRA and HWC
If any archaeological material or human burials are uncovered during the course of development, then work in the immediate area should be halted at once. The find should be reported to the heritage authorities (SAHRA) and may require inspection by an archaeologist to determine whether mitigation should take place and what form that mitigation should take.	ECO		Written correspondence with relevant heritage authority regarding and minutes of relevant meetings
OPERATIONAL PHASE			
Use existing roads for maintenance purposes	Site Manager	No unplanned impact or unplanned impact managed halted within 4 hours	Site Inspection every 5 years and Monitoring Report to be submitted to SAHRA

Keep all disturbance within existing development footprint and ensure identified buffers and no-go areas are adhered to	Site Manager	No unplanned impact or unplanned impact managed halted within 4 hours	Site Inspection every 5 years and Monitoring Report to be submitted to SAHRA
All site crew should be informed of the heritage significance of the resources in the study area	Site Manager	Meeting held with site crew	Minutes of meeting
Implementation of the Chance Fossil Finds Procedure	Site Manager	Implementation of the HWC Chance Fossil Finds Procedure	Written correspondence with relevant heritage authority regarding finds and minutes of relevant meetings
If any archaeological material or human burials are uncovered during the course of operations, then work in the immediate area should be halted at once. The find should be reported to the heritage authorities (SAHRA) and may require inspection by an archaeologist to determine whether mitigation should take place and what form that mitigation should take.	Site Manager	No unplanned impact or unplanned impact halted within 4 hours	Written correspondence with relevant heritage authority regarding finds and minutes of relevant meetings
Should it be necessary that structures that have been graded or structures that are older than 60 years require alteration or demolition during this phase, NBKB must be contacted regarding permission in terms of section 34 of the NHRA. Contact details are provided in Appendix 1.	Site Manager	Section 34 permit application to NBKB	Permit issued in terms of section 34 from the relevant heritage authority or correspondence in this regard.
DECOMMISSIONING PHASE			
Use existing roads for maintenance purposes	Site Manager/ECO	No unplanned impact or unplanned impact managed halted within 4 hours	Bi-Annual Site Inspection and Monitoring Report to be submitted to SAHRA
Keep all disturbance within existing development footprint and ensure identified buffers and no-go areas are adhered to	Site Manager/ECO	No unplanned impact or unplanned impact managed halted within 4 hours	Bi-Annual Site Inspection and Monitoring Report to be submitted to SAHRA
All site crew should be informed of the heritage significance of the resources in the study area	Site Manager/ECO	Meeting held with site crew	Minutes of meeting

Implementation of the Chance Fossil Finds Procedure	Site Manager/ECO	Implementation of the HWC Chance Fossil Finds Procedure	Written correspondence with relevant heritage authority regarding and minutes of relevant meetings
Establishment and management of a grievance mechanism for local inhabitants impacted by the WEF development	EA Holder	Grievance mechanism process in place with contact information easily available	Annual report on grievances received and how these were dealt with
If any archaeological material or human burials are uncovered during the course of operations, then work in the immediate area should be halted at once. The find should be reported to the heritage authorities (SAHRA) and may require inspection by an archaeologist to determine whether mitigation should take place and what form that mitigation should take.	Site Manager	No unplanned impact or unplanned impact halted within 4 hours	Written correspondence with relevant heritage authority regarding and minutes of relevant meetings
Should it be necessary that structures that have been graded or structures that are older than 60 years require alteration or demolition during this phase, NBKB (in the Northern Cape) must be contacted regarding permission in terms of section 34 of the NHRA. Contact details are provided in Appendix 1.	Site Manager	Section 34 permit application to NBKB	Permit issued in terms of section 34 from the relevant heritage authority or correspondence in this regard.

5. APPLICABLE LEGISLATION

The development of the Gunstfontein WEF triggers sections 38(1) and 38(8) of the National Heritage Resources Act (Act 25 of 1999) as this proposed development constitutes a change of character to a site exceeding 5000m^2. As such, this proposed development requires an evaluation of impacts to heritage resources in terms of other legislation (NEMA). This section states that the consenting authority (DENC in the Northern Cape) must ensure that the assessment completed for impacts to heritage satisfies the requirements of the relevant heritage authority in terms of section 38(3) of the NHRA (SAHRA in the Northern Cape), and that the recommendations of the relevant heritage authority must be taken into consideration prior to the granting of consent.

Section 38(3) of the NHRA details the information that MUST be included in a Heritage Impact Assessment drafted in terms of section 38 of the NHRA. Furthermore, SAHRA has published Minimum Standards for Archaeological and Palaeontological Impact Assessments. All such guidelines and minimum standards have been complied with in the HIA that was conducted for the Gunstfontein WEF development (Van der Walt 2015).

In terms of section 38(10) of the NHRA, if the applicant complies with the recommendations and requirements of the relevant heritage authority issued in terms of section 38(8) of the NHRA, then the applicant MUST be exempted from compliance with all other (general) protections included in the NHRA. As such, as long as the requirements of the heritage authority are satisfied, no permit application is required for the destruction of or impact to any heritage resource ***that has been identified in the HIA.***

Should any heritage resources be newly uncovered during excavation activities ie. heritage resources that were not identified in the HIA, then as per the monitoring table above, work must cease in that area and the relevant heritage authority must be contacted regarding a way forward. Any alteration or destruction to or of heritage resources NOT anticipated in the HIA remains subject to the general protections and require permission from the relevant heritage authority.

- Impacts to any structures older than 60 years require a permit from NBKB (Northern Cape) in terms of section 34 of the NHRA
- Impacts to archaeological or palaeontological heritage not anticipated in the HIA requires a permit from SAHRA (Northern Cape) in terms of section 35 of the NHRA
- Impacts to burial grounds or graves that are older than 60 years requires a permit from SAHRA (Northern Cape) in terms of section 36 of the NHRA

6. DOCUMENTATION AND MONITORING

All site record sheets, digital photos and mapping have been loaded securely to SAHRIS so that the EA holder, site manager and ECO are able to access the information online. Access to the database is governed by SAHRA and certain categories of information are not freely available to the general public without special permission such as GPS coordinates of archaeological sites.

Please see the following links for information:

- Case Application on SAHRIS (Case ID 8383) https://sahris.sahra.org.za/cases/gunstfontein-wef
- Gunstfontein Switching Station and Powerline (Case ID 9908) https://sahris.sahra.org.za/cases/gunstfontein-switching-station-power-line
- BESS (Case ID 15616) https://sahris.sahra.org.za/cases/gunstfontein-battery-energy-storage-system-northern-cape-province
- OHL Extension (Case ID 15175) https://sahris.sahra.org.za/cases/proposed-grid-connection-extension-infrastructure-gunsfontein-wind-farm-northern-cape

It is important that any new or previously unrecorded heritage resources identified during the course of the Construction, Operational or Decommissioning Phases are recorded on SAHRIS.

7. REFERENCES

Heritage Impact Assessments				
Nid	**Report Type**	**Author/s**	**Date**	**Title**
53187	HIA Phase 1	Timothy Hart, Lita Webley	01/03/2011	HERITAGE IMPACT ASSESSMENT PROPOSED WIND ENERGY FACILITY
44935	AIA Phase 1	Celeste Booth	01/02/2012	A Phase 1 AIA for the proposed HIdden Valley Wind Energy Facility, near Sutherland, Northern cape Province
44936	PIA Phase 1	Lloyd Rossouw	01/03/2012	Palaeontological desktop assessment of the proposed Hidden Valley Wind Energy Facility near Sutherland, Northern Cape Province
183350	HIA Phase 1	Natalie Kendrick	27/10/2014	Heritage Impact Assessment for the Karreebosch Wind Farm (Phase 2 Roggevelt Wind Farm)
152531	HIA Phase 1	Timothy Hart, Lita Webley	20/12/2013	Heritage Impact Assessment Report for the Phase 1 Roggeveld Wind Farm
357422	AIA	Jaco van der Walt	21/12/2015	Archaeological Impact Assessment Report for the Proposed Gunstfontein WEF near Sutherland, Karoo Hoogland Local Municipality, NC Province
357423	PIA	John Almond	21/12/2015	Palaeontological Heritage Assessment: Combined Desktop and Field Based Report for the Proposed Gunstfontein WEF near Sutherland, Karoo Hoogland Local Municipality, NC Province
341109	AIA	Celeste Booth	03/08/2015	A Phase 1 Archaeological Impact Assessment for the Proposed Soetwater Substation, 132kvV Overhead Powerline and Ancillaries Soetwater Wind Energy Facility, Near Sutherland, Karoo Hoogland Local Municipality, Namakwa District Municipality, Northern Cape Province.
354172	PIA	John Almond	08/01/2016	Recommended Exemption from further Palaeontological studies: Proposed Construction of the Eskom SoetwaterSwitching Station Complex, 132kV Double Circuit Overhead Power Line, SoetwaterFacility Substation Complex and Ancillary Developments near Sutherland, NC Province
353706	AIA	Celeste Booth	03/08/2015	An Archaeological Walk-Through For The Proposed Soetwater Wind Energy Facility Situated On The Farms: The Remainder Of And Portion 1, 2 And 4 Of Farm Orange Fontein 203 And Annex Orange Fontein 185, Farm Leeuwe Hoek 183 And Farm Zwanepoelshoek 184, Near Sutherland, Karoo Hoogland Local Municipality, Namakwa District Municipality, Northern Cape Province.
353707	PIA	John Almond	12/10/2015	Palaeontological Heritage Assessment: Combined Desktop & Field-Based Study: Authorised Soetwater Wind Farm Near Sutherland, Northern Cape Province
364163	AIA Phase 1	Celeste Booth	01/04/2016	A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) FOR THE PROPOSED BRANDVALLEY WIND ENERGY FACILITY (WEF) SITUATED IN THE KAROO HOOGLAND LOCAL MUNICIPALITY (NAMAKWA DISTRICT MUNICIPALITY), THE WITZENBURG LOCAL

				MUNICIPALITY (CAPE WINELANDS DISTRICT MUNICIPALITY) AND LAINGSBURG LOCAL MUNICIPALITY (CENTRAL KAROO DISTRICT MUNICIPALITY).
514990	HIA Phase 1	Katie Smuts, Emmylou Bailey, Madelon Tusenius, John Almond	29/10/2018	HERITAGE IMPACT ASSESSMENT Basic Assessment for the Proposed Development of the 325MW Kudusberg Wind Energy Facility and associated infrastructure, between Matjiesfontein and Sutherland in the Western and Northern Cape Provinces: BA REPORT
375379	AIA Phase 1	Hugo Pinto, Katie Smuts	24/10/2011	Preliminary Archaeological Survey of Karoopoort Farm

Additional References:

Hart, T. et al. (2016). **HERITAGE IMPACT ASSESSMENT (SCOPING) FOR THE PROPOSED KOLKIES WIND ENERGY FACILITY AND ASSOCIATED GRID CONNECTION TO BE SITUATED IN THE SOUTHERN TANKWA KAROO.** (Assessment conducted under Section 38 (8) of the National Heritage Resources Act (No. 25 of 1999) as part of an EIA). For Arcus Consulting. Unpublished and not submitted.

Hart, T. et al. (2016). **HERITAGE IMPACT ASSESSMENT (SCOPING) FOR THE PROPOSED KAREE WIND ENERGY FACILITY AND ASSOCIATED GRID CONNECTION TO BE SITUATED IN THE SOUTHERN TANKWA KAROO.** (Assessment conducted under Section 38 (8) of the National Heritage Resources Act (No. 25 of 1999) as part of an EIA). For Arcus Consulting. Unpublished and not submitted.

Shaw, Matthew & Ames, Christopher & Phillips, Natasha & Chambers, Sherrie & Dosseto, Anthony & Douglas, Matthew & Goble, Ron & Jacobs, Zenobia & Jones, Brian & Lin, Sam & Low, Marika & Mcneil, Jessica-Louise & Nasoordeen, Shezani & O'driscoll, Corey & Saktura, Rosaria & Sumner, T. & Watson, Sara & Will, Manual & Mackay, Alex. (2020). **The Doring River Archaeology Project: Approaching the Evolution of Human Land Use Patterns in the Western Cape, South Africa.**

Smith, Andrew B., and Michael R. Ripp. "**An Archaeological Reconnaissance of the Doorn/Tanqua Karoo.**" The South African Archaeological Bulletin, vol. 33, no. 128, 1978, pp. 118–133

APPENDICES

APPENDIX 1:

A Summary of the SAHRA Minimum Standards for Archaeological Site Museums and Rock Art Sites open to the Public

The archaeological heritage of South Africa is unique and it is non-renewable. Archaeological sites, including those with rock paintings or rock engravings, are especially vulnerable to damage caused by visitors. All such sites are protected by the National Heritage Resources Act (Act No. 25 of 1999). Anyone opening a site to the public, either as a formal site museum or simply as a place of interest, must take basic precautions to ensure the safety of the site and its contents. This guide is also applicable to mitigate the negative impacts of increased human activity in proximity to significant archaeological sites.

Expert advice should be sought from the South African Heritage Resources Agency (SAHRA) or HWC and/or from one of the museums or university departments listed below. Interventions should be reversible and the integrity of the site should be maintained as far as possible. No site should be opened to the public without a prior professional investigation that includes a conservation management plan approved by the appropriate heritage agency and, for rock art sites, complete documentation in case of later damage.

Remember that a permit is required for ANY disturbance at an archaeological site for activities that fall outside of those activities assessed in a formal Heritage Impact Assessment process and this includes erecting noticeboards, boardwalks, fences, etc. Liaison with the local publicity office and regional services council is recommended.

THE FOLLOWING MINIMUM STANDARDS MUST FORM PART OF THE MANAGEMENT PLAN:

1. Notify HWC or SAHRA of intention to open site

2. Engage a professional with specialist knowledge to document the site, draw up a conservation management plan and advise on interpretation of the site.

3. Approach to the Site

3.1 Arrangements for visiting

* if the site is open at all times, there should be adequate signposting;

* if the site is kept locked, there should be clear arrangements for the collection and return of a key;
* if it is open only by appointment, there should be a specialist guide or a specially trained local guide who has had clear instructions on what to do and say.

3.2 Provision for vehicles

* there should be an adequate and well-maintained road, preferably paved to limit dust, with off-road parking;
* the parking should not encroach on the site: vehicles should not park closer than about 100 m from the edge of the site;
* the parking area should be marked by a barrier between it and the start of the path.

3.3 Facilities

* there should be a litter bin at the parking lot and it should he emptied regularly;
* consider the need for toilets and the supply of refreshments and other facilities such as a shop, public telephone, restroom, etc., depending on the number of visitors expected;
* consider the need to establish an interpretive centre separate from the site, where people can see displays and where you may be able to store material, provide accommodation, etc. Remember that a permit from HWC is required to collect any archaeological material and so displays are best done in collaboration with a professional or institution.

3.4 Design of the path

* make sure that the path to the site is distinct;
* the path should follow the contours to avoid unnecessary erosion of any hill slope;
* make sure there are discreet signs to indicate direction where the path crosses a rocky area;
* the path should not enter the site at a position where the deposits or the rock art can be damaged;
* the introductory notice board should be displayed at the end of the path and the beginning of the site, where it will not interfere with good photographic views.

4. Provision of Information

* at least an introductory notice board explaining that the site is protected by law;
* where appropriate, a display with more detailed information on what can be seen at the site and what it means;

* a visitors' book in a container to protect it from the weather, or at a farmhouse or other convenient place (copies of these can be sent to HWC for record purposes);
* a leaflet or pamphlet explaining visitor etiquette.
* an explanatory leaflet or pamphlet that is specific to the site.

5. Guides

* specialist guides or specially trained local guides ensure that the meaning of the rock art or, in the case of archaeological sites, the story of the people who used the site is interpreted and so enhance the experience for the visitor. They also teach appropriate visitor etiquette and contribute to the safety of the site.

6. Protection of the Site

* measures used to protect archaeological deposits should be effective, reversible and recognisable, yet harmonious. It is important that visitors appreciate that the site is being well looked after, so it should be clean and as natural as possible. Remember that a permit is required for any disturbance or intervention at a site.

7. Protection of the Art

* a psychological or physical barrier should be set up between the visitor and the rock art, or display area, in the form of anything from a low wooden railing to a fence that encloses the entire site, depending on the vulnerability of the site or precautions necessary for the safety of the visitor;
* boardwalks are recommended and may include railings. They must be of treated wood or non-flammable material,
* every effort should be made to remove graffiti from the site, as it attracts more graffiti. A permit is required to remove graffiti at a rock art site.

8. Protection of the Surface and Deposits

* an effective cover should be put on the floor of the site to prevent dust being kicked up and damaging rock art and to stop people picking up material on the surface. Cover can be provided by a boardwalk, geotextile, or medium to large slabs of natural rock from the surrounds of the site.
* excavated sections should be backfilled, in consultation with HWC

9. Regular Maintenance

* arrangements should be made with the appropriate heritage agency or museum for a monitoring programme.

* provision should be made for regular visits to the site by the manager or property owner to check on litter, damage, graffiti, etc., which should be reported to the heritage agency.
* there should be regular monitoring of vegetation around the site so that, if necessary:
    - measures can be taken to protect it against trampling,
    - potentially dangerous plants such as those with thorns can be controlled,
    - dead wood can be removed so that damage by veld fires can be avoided,
    - firebreaks can be maintained.

10. Avoid having:

* a litter bin on site unless very large groups are catered for;
* braai or picnic places on the site or right next to it;
* camping places within 500 m of an archaeological site;
* plastic sheeting or plastic bags exposed to view unless there is no other option;
* concrete barriers or surfaces;
* metal poles or wire in contact with rock shelter or cave walls as they rust and stain the rock;
* a sandy surface on the outer side of a fence as this will be eroded by people walking there and the fence will be under-cut.

11. Contact Information

South African Heritage Resources Agency (SAHRA)
Contact Person: Mr Phillip Hine
Tel: 021 462 4502
Email: phine@sahra.org.za
Website: www.sahra.org.za

Ngwao Boswa Kapa Bokoni - Northern Cape Provincial Heritage Resources Authority (NBKB)
Contact Person: Mr Ratha Timothy
Tel: 079 036 9695
Email: rtimothy@nbkb.org.za
Website: http://www.nbkb.org.za/

Iziko South African Museums
Contact Person: Dr Wendy Black
Tel: 021 481 3883

Email: wblack@iziko.org.za

Website: www.iziko.org.za

University of Cape Town: Archaeology Department

Contact Person: Prof. John Parkington

Tel: 021 650 2353

Email: john.parkington@uct.ac.za

Website: http://www.archaeology.uct.ac.za/

APPENDIX 2:

Known heritage resources within the Gunstfontein WEF Development Area

SAHRIS ID	Site No	Site Name	Description (Detailed descriptions on SAHRIS)	Co-ordinates		Grading
35230	HDV005	Hidden Valley 05	Stone walling	-32,759278	20,646889	Grade IIIb
129324	GFT 115	Gunstfontein 115	Geological	-32,565481	20,636328	
24959	Gunstfontein	Corbelled building at Gunstfontein	Structures	-32,582	20,682233	Grade IIIb
129285	GFT 01	Gunsfontein 01	Rock Art	-32,566487	20,634727	Grade IIIc
129286	GFT 02	Gunsfontein 02	Archaeological	-32,565721	20,636454	Grade IIIb
129287	GFT 03	Gunsfontein 03	Archaeological	-32,565619	20,636049	Grade IIIb
129288	GFT 04	Gunsfontein 04	Archaeological	-32,564183	20,641966	Grade IIIc
129289	GFT 05	Gunsfontein 05	Archaeological	-32,575016	20,635896	Grade IIIb
129291	GFT 07	Gunsfontein 07	Stone walling	-32,605091	20,643398	Grade IIIb
129292	GFT 08	Gunsfontein 08	Archaeological	-32,60608	20,644558	Grade IIIb
129307	GFT 098	Gunstfontein 098	Geological	-32,588806	20,669667	Grade IIIc
129310	GFT 101	Gunstfontein 101	Geological	-32,568111	20,68225	Grade IIIc
129311	GFT 102	Gunstfontein 102	Geological	-32,565361	20,681139	Grade IIIc
129313	GFT 104	Gunstfontein 104	Geological	-32,546289	20,666683	Grade IIIc
129314	GFT 105	Gunstfontein 105	Geological	-32,554747	20,668633	Grade IIIc
129315	GFT 106	Gunstfontein 106	Geological	-32,620358	20,653533	Grade IIIc
129316	GFT 107	Gunstfontein 107	Geological	-32,670081	20,642944	Grade IIIc
129321	GFT 112	Gunstfontein 112	Geological	-32,566675	20,632428	Grade IIIc
129322	GFT 113	Gunstfontein 113	Geological	-32,566714	20,628731	Grade IIIc
129323	GFT 114	Gunstfontein 114	Geological	-32,554714	20,633536	Grade IIIc
129326	GFT 169	Gunsfontein 169	Geological	-32,553333	20,636667	Grade IIIa
129327	GFT 170	Gunsfontein 170	Geological	-32,584833	20,618167	Grade IIIa
129328	GFT 171	Gunsfontein 171	Geological	-32,601167	20,634667	Grade IIIa

129329	GFT 172	Gunsfontein 172	Geological	-32,567	20,69	Grade IIIa
129330	GFT 173	Gunsfontein 173	Geological	-32,576	20,7035	Grade IIIa
131150	DHP001	De Hoop 001	Burial Grounds & Graves	-32,8045	20,629181	Grade IIIa
	G001	Gunstfontein 001	Greywacke fragments resembling flakes typically associated with natural exfoliation.	-32.757382°	20.644535°	NCW
	G002	Gunstfontein 002	Medium sized rectangular dry-stone wall kraal	-32.681117°	20.644240°	IIIb
	G003	Gunstfontein 003	Intensely patinated silcrete/hornfels flake located near ephemeral stream.	-32.679318°	20.644585°	NCW
	G004	Gunstfontein 004	Ruined stone and mudbrick structure comprising 3 rooms. 2 associated stone outbuildings.	-32.710843°	20.624805°	IIIc
	G005	Gunstfontein 005	Ruined rectangular stone structure with 3 rooms	-32.547828°	20.643053°	IIIc
	G006	Gunstfontein 006	Patinated hornfels flake	-32.545358°	20.652901°	NCW
	G007	Gunstfontein 007	Poorly constructed stone feature	-32.557432°	20.665633°	NCW
	G008	Gunstfontein 008	Stone farm beacon	-32.565295°	20.654017°	IIIc
	G009	Gunstfontein 009	Silcrete Flake	-32.566010°	20.645320°	NCW
	G010	Gunstfontein 010	Two roomed dry stone ruin (possible shepherd shelter) ***Same as SAHRIS Site ID 129289***	-32.574988°	20.635893°	IIIb
	G011	Gunstfontein 011	Two roomed dry stone ruin, collapsed (possible shepherd shelter)	-32.576176°	20.635954°	IIIc
	G012	Gunstfontein 012	Fossilised wood	-32.574824°	20.641345°	NCW
	G013	Gunstfontein 013	Rudimentary dry stone structure	-32.606707°	20.651903°	IIIc
	G014	Gunstfontein 014	Stone walling associated with dam	-32.580934°	20.690000°	IIIc
	G015	Gunstfontein 015	Fossilised wood	-32.607653°	20.673382°	NCW
	G016	Gunstfontein 016	Microlithic (ferricrete)	-32.545331°	20.655035°	NCW
	G017	Gunstfontein 017	Corbelled House	-32.568211°	20.682295°	IIIb
	G018	Gunstfontein 018	Stone farm beacon incorporated into fencing	-32.568003°	20.682430°	IIIc

APPENDIX 3:

Chance Fossil Finds Procedure

CTS HERITAGE

CHANCE FINDS OF PALAEONTOLOGICAL MATERIAL

(Adopted from the HWC Chance Fossils Finds Procedure: June 2016)

Introduction

This document is aimed to inform workmen and foremen working on a construction and/or mining site. It describes the procedure to follow in instances of accidental discovery of palaeontological material (please see attached poster with descriptions of palaeontological material) during construction/mining activities. This protocol does not apply to resources already identified under an assessment undertaken under s. 38 of the National Heritage Resources Act (no 25 of 1999).

Fossils are rare and irreplaceable. Fossils tell us about the environmental conditions that existed in a specific geographical area millions of years ago. As heritage resources that inform us of the history of a place, fossils are public property that the State is required to manage and conserve on behalf of all the citizens of South Africa. Fossils are therefore protected by the National Heritage Resources Act and are the property of the State. Ideally, a qualified person should be responsible for the recovery of fossils noticed during construction/mining to ensure that all relevant contextual information is recorded.

Heritage Authorities often rely on workmen and foremen to report finds, and thereby contribute to our knowledge of South Africa's past and contribute to its conservation for future generations.

Training

Workmen and foremen need to be trained in the procedure to follow in instances of accidental discovery of fossil material, in a similar way to the Health and Safety protocol. A brief introduction to the process to follow in the event of possible accidental discovery of fossils should be conducted by the designated Environmental Control Officer (ECO) for the project, or the foreman or site agent in the absence of the ECO It is recommended that copies of the attached poster and procedure are printed out and displayed at the site office so that workmen may familiarise themselves with them and are thereby prepared in the event that accidental discovery of fossil material takes place.

Actions to be taken

One person in the staff must be identified and appointed as responsible for the implementation of the attached protocol in instances of accidental fossil discovery and must report to the ECO or site agent. If the ECO or site agent is not present on site, then the responsible person on site should follow the protocol correctly in order to not jeopardize the conservation and well-being of the fossil material.

Once a workman notices possible fossil material, he/she should report this to the ECO or site agent.Procedure to follow if it is likely that the material identified is a fossil:

- The ECO or site agent must ensure that all work ceases immediately in the vicinity of the area where the fossil or fossils have been found;
- The ECO or site agent must inform SAHRA of the find immediately. This information must include photographs of the findings and GPS co-ordinates;
- The ECO or site agent must compile a Preliminary Report and fill in the attached Fossil Discoveries: Preliminary Record Form within 24 hours without removing the fossil from its original position. The Preliminary Report records basic information about the find including:
    - The date
    - A description of the discovery
    - A description of the fossil and its context (e.g. position and depth of find)
    - Where and how the find has been stored
    - Photographs to accompany the preliminary report (the more the better):
        - A scale must be used
        - Photos of location from several angles
        - Photos of vertical section should be provided
        - Digital images of hole showing vertical section (side);
        - Digital images of fossil or fossils.

Upon receipt of this Preliminary Report, SAHRA will inform the ECO or site agent whether or not a rescue excavation or rescue collection by a palaeontologist is necessary.

- Exposed finds must be stabilised where they are unstable and the site capped, e.g. with a plastic sheet or sand bags. This protection should allow for the later excavation of the finds with due scientific care and diligence. SAHRA can advise on the most appropriate method for stabilisation.
- If the find cannot be stabilised, the fossil may be collect with extreme care by the ECO or the site agent and put aside and protected until SAHRA advises on further action. Finds collected in this way must be safely and securely stored in tissue paper and an appropriate box. Care must be taken to remove the all fossil material and any breakage of fossil material must be avoided at all costs.

No work may continue in the vicinity of the find until SAHRA has indicated, in writing, that it is appropriate to proceed.

CTS HERITAGE

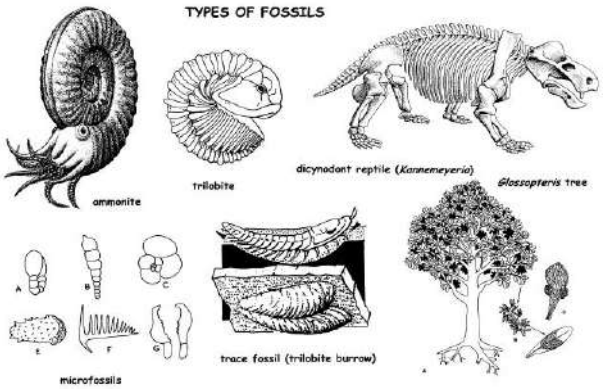
FOSSIL DISCOVERIES: PRELIMINARY RECORDING FORM		
Name of project:		
Name of fossil location:		
Date of discovery:		
Description of situation in which the fossil was found:		
Description of context in which the fossil was found:		
Description and condition of fossil identified:		
GPS coordinates:	*Lat:*	*Long:*
If no co-ordinates available then please describe the location:		
Time of discovery:		
Depth of find in hole		
Photographs (tick as appropriate and indicate number of the photograph)	*Digital image of vertical section (side)*	
	Fossil from different angles	
	Wider context of the find	
Temporary storage (where it is located and how it is conserved)		
Person identifying the fossil Name:		
Contact:		
Recorder Name:		
Contact:		
Photographer Name:		
Contact:		

CTS Heritage
34 Harries Street, Plumstead, Cape Town, 7800
Tel: +27 (0)87 073 5739 **Email:** info@ctsheritage.com **Web:** www.ctsheritage.com

Palaeontology: what is a fossil?

Fossils are the traces of ancient life (animal, plant or microbial) preserved within rocks and come in two forms:

- Body fossils preserve parts, casts or impressions of the original tissues of an organism (e.g. bones, teeth, wood, pollen grains); and
- Trace fossils such as trackways and burrows record ancient animal behaviour.



How to report chance fossil finds: What should I do if I find a fossil during construction/mining?

If you think you have identified a fossil:

Immediately inform the ECO or Site Agent. He/she will then contact HWC and write a report and if necessary operations will stop in that specific area until the fossil is recovered

Heritage Western Cape
ceoheritage@westerncape.gov.za
021 483 5959
www.hwc.org.za

Types of palaeontological finding - What does a fossil look like?

Fossils vary in size, from fossilised tree trunks and dinosaur bones down to very small animals or plants. Finds can be **individual fossils** (one isolated wood log or bone) or **clusters and beds** (several bones, teeth, animal or plant remains, trace fossils in close proximity or bones resembling part of a skeleton). A bed of fossils is a layer with many fossil remains.

Below there is a list of few examples of fossils which may be identified during excavations in the Western Cape.

Image	Description	Image	Description
	Leaves		Snail shells and other shells
	Fossil wood		Bones of larger animals
	The remains of fish and marine life (e.g. teeth, scales, starfish)		Large burrows made by moles and other animals
	Stromatolites		Traces made by burrowing insects (ants, wasps, dung-beetles etc.).
	Animal footprints		

Images provided by Dr John Almond

Text by HWC's Archaeology, Palaeontology & Meteorites Committee June 2016