

PHASE 1 ARCHAEOLOGICAL & HERITAGE IMPACT ASSESSMENT REPORT



THE PROPOSED ESTABLISHMENT OF HOPEFIELD GREEN HYDROGEN AND GREEN AMMONIA PROCESSING FACILITY AND ASSOCIATED INFRASTRUCTURE LOCATED APPROXIMATELY 3KM FROM THE TOWN OF HOPEFIELD IN THE WESTERN CAPE PROVINCE.

**PHELAN
GROUP**

ENERGY



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+27 813 717 993
tsimba-arch.co.za
rmuroyi23@gmail.com
74 Loveday Street, Johannesburg

ACKNOWLEDGEMENT

Tsimba would like to acknowledge the Traditional Chiefs, past and living as the Traditional custodians of this land we work in, the water and natural resources. We pay our respects and acknowledge their continuous role in preserving their cultural heritage for the benefit of the present and the future generation for posterity.

AUTHOR'S CREDENTIALS

A summary of their experience, qualifications, membership numbers and accreditation level.

The report was authored by Mr. Roy Muroyi, **Principal Heritage Specialist and Archaeologist** for **Tsimba Archaeological Footprints (Pty) Ltd.** Roy has over nine years' experience in conducting and compiling **Heritage Impact Assessments**, Conservation Management Plans and Eco-Tourism Impact Assessments in South Africa, Botswana and the Republic of Malawi.

The author is **PhD Candidate (Heritage Management)** from the University of Johannesburg – Specialising in Rock Art Management. Roy holds a **Masters Degree in Heritage Management** (University of Witwatersrand ,2022) with a research focus on transformational challenges at post-apartheid interpretation of Mapungubwe Interpretation Centre in Musina – Limpopo Province. He further holds another **Masters Degree in Diversity Studies** (University of Witwatersrand ,2021) focusing his research on Zulu Cultural Heritage Collections (in Kwa-Zulu Natal Province) interpretation using a decolonial lens.

Mr. Muroyi is also a holder of an **Honours Degree in Archaeology, Cultural Heritage and Museum Studies** (Midlands State University, 2014). His career in Cultural Resources

Management kicked off at the **Department of National Museums and Monuments of Botswana** where he worked as an Archaeological Impact Assessment adjudicating officer in 2013.

After leaving the **Department of National Museums and Monuments of Botswana** Mr. Muroyi moved to South Africa where he got involved with several **Cultural Resources Management** consulting firms before eventually settling at **Tsimba Archaeological Footprints (Pty) Ltd.** He has so far conducted over a 100-200 **Heritage Impact Assessment** reports for proposed Phase 1 and 2 **Heritage Impact Assessments** for:- Linear developments, Projects with an area over 5000m², Heritage buildings/Old buildings (demolitions and alterations), Old Bridges (demolitions) Water Pipelines, and etc .

He is accredited by **Association of Southern African Professional Archaeologists (ASAPA)** under the **Cultural Resources Management** section. He is also accredited by Association of **Professional Heritage Professionals (APHP)**. He further holds membership with the **International Association Impact Assessment South Africa (IAIAsa)** and **KwaZulu-Natal Amafa and Research Institute.**

SPECIALIST DECLARATION OF INDEPENDENCE

I, _____ Roy Muroyi _____, declare that –

- *I act as the independent specialist in this application;*
- *I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;*
- *I declare that there are no circumstances that may compromise my objectivity in performing such work;*
- *I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;*
- *I will comply with the Act, Regulations and all other applicable legislation;*
- *I have no, and will not engage in, conflicting interests in the undertaking of the activity;*
- *I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;*
- *all the particulars furnished by me in this form are true and correct; and*
- *I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.*

Signature of the Specialist



DOCUMENT INFORMATION

DOCUMENT INFORMATION ITEM	DESCRIPTION
Proposed development and location	Phase 1 Hertiage Impact Assessment for the proposed establishment of Hopefield green hydrogen and green ammonia processing facility and associated infrastructure located approximately 3km from the town of Hopefield and approximately 115km north of Cape Town city in the Western Cape province.
Purpose of the study	To carry out a Phase 1 Heritage Impact Assessment to determine the presence/absence of archaeological assess their archaeological significance in terms in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) and SAHRA guidelines as part of an EIA.
Municipalities	Saldanha Local Municipality, West Coast District Municipality
Applicant	Phelan Energy Group
Client Details	Beyond Green Environmental Services Pty Ltd Byls Bridge Office Park, Cnr Olievenhoutboch & Jean Ave, Centurion E-mail: nonkululeko@beyondges.co.za Phone: +27 12003 6593
Heritage Consultant	Tsimba Archaeological Footprints (Pty) Ltd 24 Lawson Mansions 74 Loveday Street, Johannesburg Gauteng, 2000 E-mail: rmuroyi23@gmail.com Phone : (+27) 813 717 993

EXECUTIVE SUMMARY

Heritage Impact Assessments (HIAs) are studies conducted by qualified heritage specialists that aim to identify heritage resources within a proposed development area, assess their significance, assess the impact of the development on the heritage resources and provide relevant mitigation measures to alleviate impacts to the heritage resources.

Tsimba Archaeological Footprints (Pty) Ltd was requested by **Beyond Green Environmental Services (Pty) Ltd** to conduct a **Phase 1 Heritage Impact Assessment (HIA)** for the proposed establishment of Hopefield green hydrogen and green ammonia processing facility and associated infrastructure located approximately 3km from the town of Hopefield and approximately 115km north of Cape Town city in the Western Cape Province.

The scope of work for this Heritage Impact Assessment was to assess the footprint of the proposed development footprint as well as assess the hostels for cultural heritage significance and architectural significance. The proposed development area exceeds 5000m² therefore it triggers section **38(1) (a) of the National Heritage Resources Act (NHRA-Act No. 25 of 1999)** (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—any development or other activity which will change the character of a site—(i) exceeding 5 000 m² in extent.

The objective of the report is to fulfil the requirements of **SAHRA** in the in terms of **Section 38(1) of the NHRA** as read together with the **National Environmental Management Act, 1998 (Act No. 107 of 1998)**, as amended (NEMA).

The development may also impact on Cultural Heritage Resources such as graves, structures, archaeological and paleontological resources that are protected in terms of **Sections 34, 35, and 36 of the NHRA**. The field assessment followed systematic accepted archaeological standards. The aim of the survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the proposed project area.

The survey aimed to;

- Examine the proposed site to identify any archaeological and cultural heritage sites, as defined by the **NHRA**
- Provide a recording of any sites identified to a standard consistent with a site identification level, including significance assessments, details of the locations and extents of each site; and

- Assist in the development of site avoidance and management strategies, where necessary.

During the survey, no heritage resources were identified. General site conditions and features on sites were recorded by means of photographs, GPS locations and site descriptions. Possible impacts were identified and mitigation measures are proposed in this report. The **South African Heritage Resources Agency (SAHRA)** and **Western Cape Provincial Heritage Authority** in Western Cape as a commenting authority under section 38(8) of NHRA require all environmental documents, compiled in support of an **Environmental Authorisation**

application as defined by **NEMA EIA Regulations** section 40 (1) and (2), to be submitted to **Western Cape Provincial Heritage Authority** for commenting. Upon submission to **Western Cape Provincial Heritage Authority** the project will be automatically given a case number as reference. As such the EIA report and its appendices must be submitted to the case as well as the EMPr, once it's completed by the **Environmental Assessment Practitioner (EAP)**.

Fatal Flaws

No fatal flaws are expected for this project.

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ABBREVIATIONS

Acronyms	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GIS	Geographic Information System
GPS	Global Positioning System
HIA	Heritage Impact Assessment
LSA	Late Stone Age
LIA	Late Iron Age
MIA	Middle Iron Age
MSA	Middle Stone Age
SAHRA	South African Heritage Resources Agency

GLOSSARY

Achievement	≠ Something accomplished, esp. by valour, boldness, or superior ability
Aesthetic	≠ Relating to the sense of the beautiful or the science of aesthetics.
Community	≠ All the people of a specific locality or country
Culture	≠ The sum total of ways of living built up by a group of human beings, which is transmitted from one generation to another.
Cultural	≠ Of or relating to culture or cultivation.
Diversity	≠ The state or fact of being diverse; difference; unlikeness.
Geological (geology)	≠ The science which treats of the earth, the rocks of which it is composed, and the changes which it has undergone or is undergoing.
High	≠ Intensified; exceeding the common degree or measure; strong; intense, energetic
Importance	≠ The quality or fact of being important.
influence	≠ Power of producing effects by invisible or insensible means.
Potential	≠ Possible as opposed to actual.
Integrity	≠ The state of being whole, entire, or undiminished.
Religious	≠ Of, relating to, or concerned with religion.
Significant	≠ important; of consequence
Social	≠ Living, or disposed to live, in companionship with others or in a community, rather than in isolation.
Spiritual	≠ Of, relating to, or consisting of spirit or incorporeal being.
Valued	≠ Highly regarded or esteemed

1.0 INTRODUCTION

Summary of project description and why the developer is proposing to construct and/or develop and how it will benefit local economic market needs. Also summarises the application for approvals process, the name of the local heritage authority and the name of the heritage specialist company who were appointed to conduct the survey.

Phelan Green Hydrogen South Africa is planning to establish the Hopefield green hydrogen and green ammonia processing facility and associated infrastructure located approximately 3km from the town of Hopefield and approximately 115km north of Cape Town city in the Western Cape Province. The proposed project site is located on Portuguese Fontyn 167 farm.

As part of the EIA process, **Heritage Impact Assessment** was requested by the **EAP (Beyond Green)** for the proposed project, **Beyond Green** an independent environmental consultant, has been appointed to undertake the Environmental Authorisation for the above mentioned proposed project.

-Background of the Project-

Green hydrogen is hydrogen produced through the process of electrolysis using renewable energy sources, such as solar, without emitting carbon. This makes it a clean and sustainable fuel that can be used in industries like transportation, energy storage, and manufacturing, helping to reduce global carbon emissions. Green ammonia is produced by combining green hydrogen with nitrogen (from

the air) using a carbon-free process powered by renewable energy. It serves as a zero-emission fuel, a fertilizer, and an energy carrier, playing a critical role in decarbonizing industries like agriculture and shipping. This project focuses on the production of green hydrogen (gH₂) and green ammonia (gNH₃) using renewable solar energy and advanced battery storage technology, eliminating reliance on grid electricity.

The plant will utilize state-of-the-art desalination and electrolysis to produce a maximum of 80,000 tons of green hydrogen a year which will be converted to 440,000 tons of green ammonia per year, stored and exported via Saldanha Port.

-Legislation-

The area of the farm is 797 Ha, but the area being considered for the hydrogen plant is 73 Ha therefore **Section 38(1) of the NHRA** is triggered. The objective of the report is to fulfil the requirements of **SAHRA** in the in terms of **Section 38(1) of the NHRA** as read together with the National **Environmental Management Act, 1998 (Act No. 107 of 1998)**, as amended (NEMA).

The development may also impact on Cultural Heritage Resources such as graves, structures, archaeological and paleontological resources that are protected in terms of **Sections 34, 35, and 36 of the NHRA**. The field assessment followed systematic accepted archaeological standards. The aim of the survey was to locate,

identify, evaluate and document sites, objects and structures of cultural significance found within the proposed project area.

-Aims of the Study -

- ✧ Fulfil the statutory requirements of the National Heritage Resources Act, Act 25 of 1999, section 38.
- ✧ To identify and describe, (in terms of their conservation and / or preservation importance) sites of cultural and archaeological importance that may be affected by the proposed development project.
- ✧ Identify and describe impacts to archaeological and cultural resources, including intangible heritage resources.
- ✧ Make recommendations on mitigation measures.
- ✧ Identify and describe management measures.

- ✧ Survey the project area to identify and describe sites of archaeological, historical or cultural interest affected by the proposed development.
- ✧ Liaise with the local communities and stakeholders (if applicable) with regards to the impact of the development on the heritage resources.
- ✧ Produce a detailed technical HIA report describing the importance or significance of known heritage resources and whether these resources need to be conserved/protected
- ✧ Describe, in an HIA report, the procedures for mitigation of sites and provide an indication of time required for these management measures to be implemented.

2.0 DESCRIPTION OF THE RECEIVING ENVIRONMENT

Description of soil typology, basic geology and settlement patterns, these may be used as an indicator for heritage sensitivity in specific cases or area

The proposed Hopefield green hydrogen and green ammonia processing facility and associated infrastructure located approximately 3km from the town of Hopefield and approximately 115km north of Cape Town city in the Western Cape province. The proposed project site is located on Portugeese Fontyn 167 farm.

The study area is located within the jurisdiction of the Saldanha Local Municipality. This area is underlain by sediments that are highly calcretised with an extensive limestone hard pan exposed at or near the surface throughout the area.

This is locally mantled by thin, unconsolidated quartzose sands and soils. Famous sites include the Elandsfontein (Hopefield) dune as well as Swartklip along the False Bay coast.

Importantly, fossil human skeletal remains such as Saldanha Man (*Homo heidelbergensis*) as well as early modern human trackways at Langebaan Lagoon and Acheulian to Middle Stone Age artefacts are also recorded from these ancient dune deposits. A range of terrestrial to freshwater gastropod molluscs (snails) are found within these beds as well as microfossils (e.g. foraminiferan protozoans) and plant root traces.

The Saldanha Bay Municipality is part of the West Coast Region, which is one of the Western Cape's primary regional cultural landscapes, along with the Swartland, Boland, and Overberg. At the subregional level, the West Coast Region is made up of seven smaller areas: the Koppiesveld, the Lagoon, the Swartland, the Wilderness, the Berg River floodplain, the Sandveld, and the Coastal Edge.

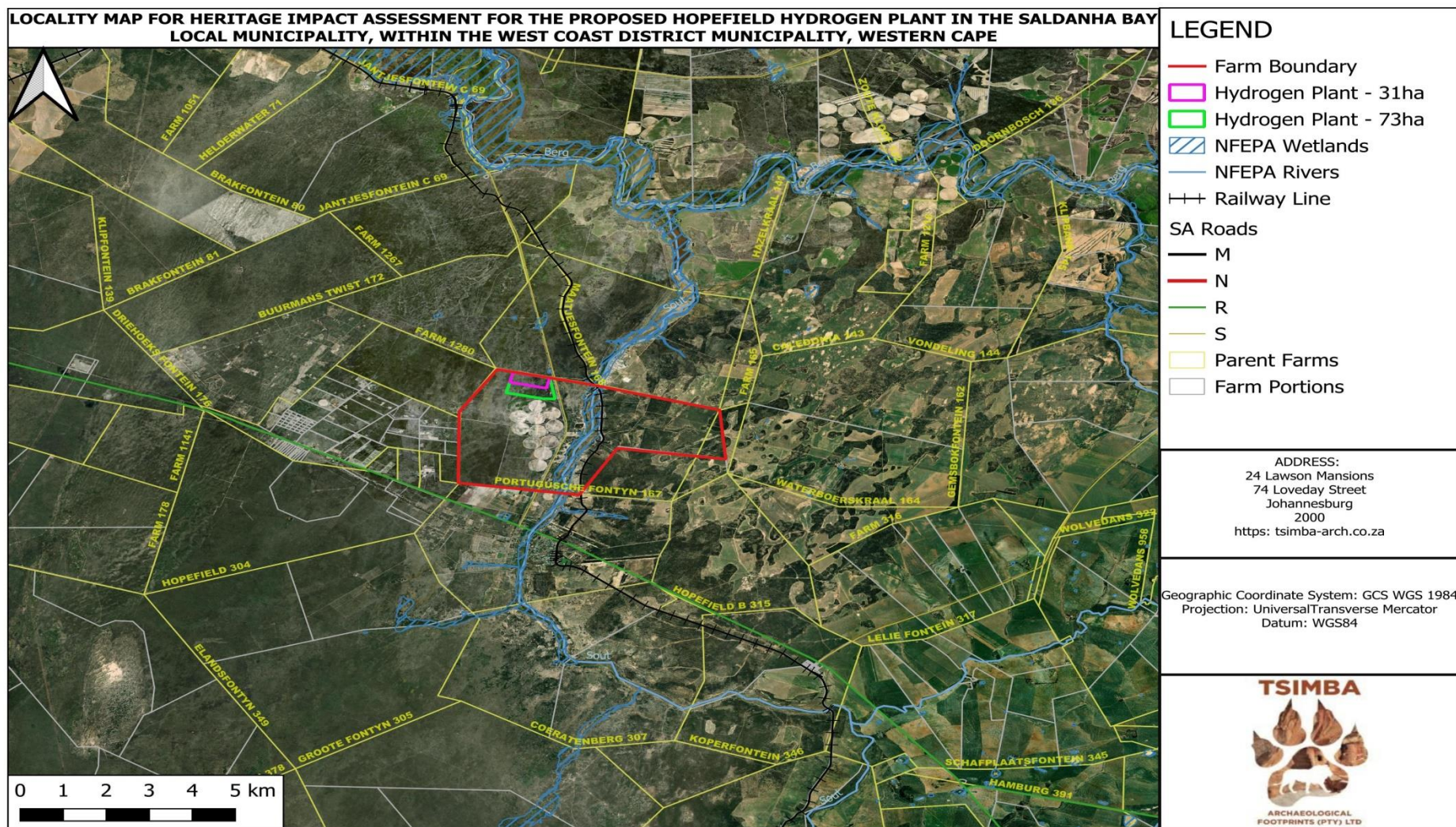


Figure 1: Locality Map of the proposed development site

3.0 METHODOLOGY

The methodology used to identify potential impacts and risks to heritage resources.

-Literature review-

The methodology used in this HIA is based on a comprehensive understanding of the current or baseline situation; the type, distribution and significance of heritage resources as revealed through desk-based study and additional data acquisition, such as archaeological investigations, built heritage surveys, and recording of crafts, skills and intangible heritage. This is systematically integrated using matrices with information on the nature and extent of the proposed engineering and other works to identify potential. The following tasks were also undertaken in relation to the cultural heritage and are described in this report:

The background information search of the proposed development area was conducted following the site maps from the client. Sources used in this study included:

- Published academic papers and HIA and **Palaeontological Impact Assessment (PIA)** studies conducted in and around the region where the proposed infrastructure development will take place;
- Available archaeological literature on the study area was consulted;
- The **South African Heritage Resources Information System (SAHRIS)** website and the National Data Base were consulted to obtain

background information on previous heritage surveys and assessments in the area; and other planning documents.

- Map Archives - Historical maps of the proposed area of development and its surrounds were assessed to aid information gathering of the proposed area of development and its surrounds.

-Field Survey-

The field survey for the proposed development was conducted in January of 2025. The survey was conducted by Archaeologists from Tsimba Archaeological Footprint through driving and walking. A ground survey, following standard and accepted archaeological procedures, was conducted. The survey also paid special attention to disturbed and exposed layers of soils such as eroded surfaces along the sugar cane fields and the canals. These areas are likely to exposed or yield archaeological and other heritage resources that may be buried underneath the soil and be brought to the surface by animal and human activities including animal barrow pits and human excavated grounds.

-Data Consolidation and Report Writing

Data captured on the development area (during the field survey) by means of a desktop study and physical survey is used as a basis for this

HIA. This data is also used to establish assessment for any possible current and future impacts within the development footprint. This includes the following:

- Assessment of the significance of the cultural resources in terms of their archaeological, built environment and landscape, historical, scientific, social, religious, aesthetic and tourism value;
- A description of possible impacts of the proposed development, especially during the construction phase, in accordance with the standards and conventions for the management of cultural environments;
- Proposal of suitable mitigation measures to minimise possible negative impacts on the cultural environment and resources that may result during construction;
- Review of applicable legislative requirements, that is, the **NEMA (read together with the 2014 EIA Regulations of 2014, as amended)** and the NHRA.
- The consolidation of the data collected using the various sources as described above;
- Acknowledgement of impacts on heritage resources (such as unearthed graves) predicted to occur during construction; and **Geographical Information Systems (GIS)** mapping of known archaeological sites and maps in the region.
- A discussion of the results of this study with conclusions and recommendations based on the available data and study findings.

4.0 LEGISLATIVE FRAMEWORK

Summary of which legislation (including the relevant NHRA section) and local by-laws are triggered by the proposed development, and those identified are subsequently outlined and quoted.

Beyond Green Environmental Services (Pty) Ltd has been appointed to obtain an **Environmental Authorization (EA)** in terms of the **National Environmental Management Act, 1998** (NEMA, Act No. 107 of 1998) which involves the submission of an Environmental Impact Assessment Report.

As part of the process **Beyond Green** also requested **Tsimba Archaeological Footprints** to conduct a **heritage impact assessment (HIA)** as part of the EA process.

The area of the farm is 797 Ha, but the area being considered for the hydrogen plant is 73 Ha therefore **Section 38(1) of the NHRA** is triggered. **Section 38 of the NHRA** requires that a **Heritage Impact Assessment (HIA)** is required for certain kinds of development such as rezoning of land greater than 10 000 sq m in extent or exceeding 3 or more sub-divisions, or for any activity that will alter the character of a site greater than **5000 sq m**.

The objective of the report is to fulfil the requirements of **SAHRA** in the in terms of **Section 38(1) of the NHRA** as read together with the **National Environmental Management Act, 1998 (Act No. 107 of 1998)**, as amended (NEMA).

The development may also impact on Cultural Heritage Resources such as graves, structures, archaeological and paleontological resources that are protected in terms of **Sections 34, 35, and 36 of the NHRA**. The field assessment followed systematic accepted archaeological standards. The aim of the survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the proposed project area.

A **Phase 1 HIA** is a pre-requisite for development in South Africa as prescribed by **SAHRA** and stipulated by legislation.

The overall purpose of heritage specialist input is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and

- Make recommendations for the appropriate heritage management of these impacts.

5.0 ARCHEOLOGICAL BACKGROUND OF THE STUDY AREA

Historical background of a place encompasses the intricate interplay of social, geographical, and cultural elements that shape its identity. This background is often reflected in the evolution of place names, which carry archaeological memories of communities, conflicts, beliefs, and policies

On the Elandsfontein Farm, some 10 kilometers west of the town of Hopefield, the renowned Hopefield skull of an early subspecies of human known as *Homo ergaster*—was discovered (Singer 1954). Extensive fossil bone fragments in deflations among the dunes were also found nearby. Numerous investigations of different parts of the bone assemblage have been drawn to the findings from this site, and the research is still ongoing today.

Evidence of contemporary human habitation on the west coast of the Cape dates back to the Middle Stone Age, which is usually accepted to have started about 250 000 years ago²⁴ and continued until the Late Stone Age. These people moved between the coast and the mountains in kin-related groups according to the seasons, subsisting on wild natural resources. The earliest evidence of domesticated animals, such as fat-tailed sheep and horned cattle, dates back approximately 2,000 years, and may be found in archeological sites like Kasteelberg on the Vredenburg peninsula. In 1639, German sailor Johan

Albrecht von Mandelso landed his ship in Table Bay and spoke of the Solthanimen, a herder clan in Saldanha Bay, as a "superior clan who possessed lovely cattle with... large humps."

Early Stone Age Acheulian hand-axes and artifacts from the Middle and Later Stone Ages were among the stone artifacts discovered at Elandsfontein. There isn't much more archeology from the nearby area. However, the Geelbek dunefields southeast of Langebaan Lagoon have been the subject of extensive archaeological research (Kandel et al. 2003).

Material from the Middle and Later Stone Ages was found there. On the Vredenburg and Churchhaven Peninsulas, where rocky shorelines offer a wealth of shellfish for food and where rocky outcrops create natural focal points on the landscape, there are extensive archeological deposits from the Later Stone Age.

Although there hasn't been much description of interior regions, it is anticipated that there won't be many archaeological sites there. Although the Salt River catchment's archaeological potential has never been investigated, it is

thought to have been a valuable resource for pre-colonial people, particularly the Late Stone Age Khoekhoen pastoralists. This was the forerunner of the hardy Afrikaner cattle.

Not long after the Cape was initially settled, European explorers made their way into the interior of the nation. Seeking chances to take advantage of mineral wealth or trips to barter for livestock from the indigenous "Saldanhars," or Khoekhoen communities that resided on the Vredenberg Peninsula, was the primary driving force behind this.

Transhumant Dutch farmers (trekboers) set up cattle stations well into the province's core after this trail of hunters and explorers. According to Fransen (2004) the farm Coenradenberg which lies several kilometers to the west of the study area was first granted as a loan farm in 1712 when a Freeburgher was permitted to use the area for grazing for a period of six months. It is unlikely that there were any formal structures on the landscape at that time, perhaps a temporary kraal and simple wattle and daub dwelling. In 1749 the farm was granted to Pieter Smit. Members of the same family reside on the property to this day.

Hopefield was founded in the middle of the 1800s. Zoute Rivier, named for the river that runs through the town, was a small, unofficial village prior to 1850, when it was surveyed and planned out by two British military engineers, Hope and Field. The church played a crucial

role in the mid-19th century development of this town, as it did in many other wheat-land communities.

The persistence of the riverine fields, which were formerly market gardens set up in the river's flood zone, has been noted by Hans Fransen. Hopefield was a major stop on the network of country roads that went to the Port of Saldanha prior to the R27's completion to Saldanha Bay in the 1970s, therefore it saw a fair amount of passing traffic.

A cattle-rich Khoi tribe in the Hopefield area was discovered and given the name Saldanhars by the DEIC when they arrived in the Cape in April 1652. Nonetheless, the Cochoqua tribe traveled through the region between modern-day Vredenburg and Malmesbury beneath the Berg River.

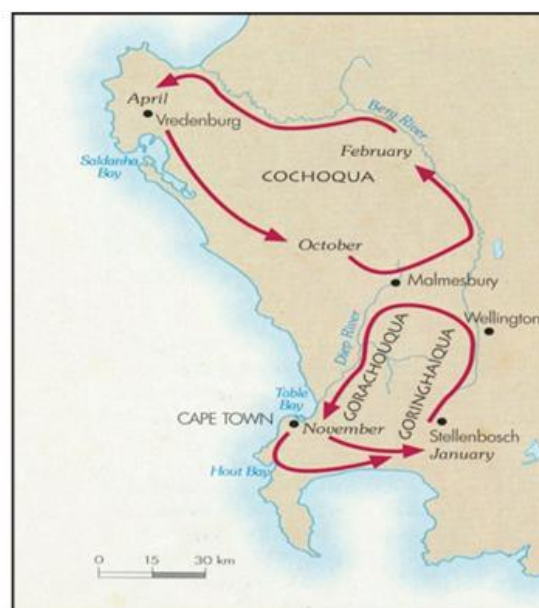


Figure 2: Map of the seasonal rounds of herder groups (Credit : Cleophas, 2023)

6.0 HISTORICAL BACKGROUND OF THE HOEPFIELD AREA

Historical background of a place encompasses the intricate interplay of social, geographical, and cultural elements that shape its identity. This background is often reflected in the evolution of place names, which carry archaeological memories of communities, conflicts, beliefs, and policies

The history of the west coast has been documented since November 1497, when Portuguese explorer Vasco da Gama arrived at what is now St Helena Bay to bring food and fresh water. Secondary stories claim that when Da Gama landed, his crew violently interacted with native people.

Hopefield, a typical kerkdorp (country community) from the middle of the nineteenth century, with a church, stores, a hotel, and a train station. It was home to a diversified population. It developed a bad reputation for treating persons of color, much like the majority of others. For instance, by 1972, Africans known as "Bantu" "were removed from the town after much struggle and it was decided in principle not to allow them back," and those classed as "colored" had to apply for a permit in order to live in districts designated as "white residential."

While the town of Hopefield is now a little off the beaten path, it's still a short drive from Cape Town. The town's vernacular architecture, including Langhuisies and

Hardebees Huisies, has been discussed by authors like Hans Fransen (2006) and James Walton (1995), but regrettably, a large portion of it was destroyed under the group areas legislation. The town has significance even though it does not have the same heritage status as the towns in the Cape Winelands. The town and the surrounding areas of the Sout Rivier valley still feature a large number of Victorian and some vernacular buildings. These give the location more personality and undoubtedly improve its aesthetics.

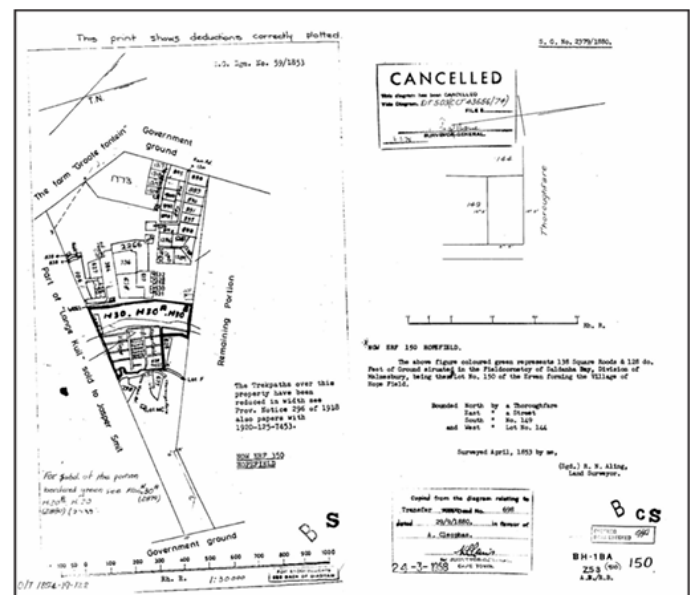


Figure 3: Survey diagram of Hopefield Village (Surveyor-General's Office –Credit: Cleophas, 2023)

7.0 BACKGROUND HISTORY OF PORTUGUESE FOUNTAIN

Archaeological background of a place encompasses the intricate interplay of social, geographical, and cultural elements that shape its identity. This background is often reflected in the evolution of place names, which carry archaeological memories of communities, conflicts, beliefs, and policies

Portuguese Fountain belonged to field cornet Johannes Barend Bester and was surveyed and registered as a quitrent in 1818. Baard claims that the Portuguese Fountain neighborhood got its name from a Portuguese colony who settled there. The surviving members of the "Portugies" tribe may have even once called it home. In 1698, two native

kraals near the Berg River were raided by a Khoi captain known as "Portugies," who sold sheep with the DEIC. He took some people hostage and plundered the animals. They were accused of cattle theft by local farmers and detained by the DEIC.⁶⁵ In 1701 there were only remnants of the Portugies clan left.

Table 1: Significance of Cultural Landscape Impacts

		Landscape receptor sensitivity		
		High	Medium	Low
Assessment of significance of the cultural landscape impacts ■ Red cells represent significant adverse impacts ■ Yellow cells represent significant beneficial impacts ■ Blue cells represent impacts that are not significant		Landscape with National heritage significance Status sites and cultural Landscapes with Provincial heritage Significance Status	Regional or Local Significance Heritage sites valued characteristics reasonably tolerant of changes of the type proposed.	A relatively unimportant cultural landscape with few features of value or interest, potentially tolerant of substantial change of the type proposed.
Major adverse	Significant adverse changes, over a significant area, to key characteristics or features or to the landscape's character or distinctiveness for more than 2 years	High adverse significance	High/Medium adverse significance	Medium adverse significance
Moderate adverse	Noticeable but not significant adverse changes for more than 2 years or significant adverse changes for more than 6 months but less than 2 years, over a significant area, to key characteristics or features or to the landscape's character or distinctiveness.	High/Medium adverse significance	Medium adverse significance	Low adverse significance
Slight adverse	Noticeable adverse changes for less than 2 years, significant adverse changes for less than 6 months, or barely discernible adverse changes for any length of time.	Medium adverse significance	Low adverse significance	Neutral
Neutral	Any change would be negligible, unnoticeable or there are no predicted changes.	Neutral	Neutral	Neutral
Slight benefit	Noticeable beneficial changes for less than 2 years, significant beneficial changes for less than 6 months, or barely discernible beneficial changes for any length of time.	Medium beneficial significance	Low beneficial significance	Neutral
Regional Cultural landscape		Regional or Local Significance Heritage sites valued characteristics reasonably tolerant of changes of the type proposed.		
Proposed Project Area		A relatively unimportant cultural landscape with few features of value or interest, potentially tolerant of substantial change of the type proposed.		

8.0 DISCUSSION OF FINDINGS

The discussion section is one of the final parts of this Report, in which an author describes, analyses, and interprets their findings.

The study area was surveyed on the 19th of January 2025 using standard archaeological surveying methods. The area was surveyed using directional parameters supplied by the GPS and surveyed by foot. This technique has proven to result in the maximum coverage of an area. A few members of the community were consulted to give an input regarding possible cultural heritage sites and graves within their area.

Hopefield is a town on the west coast of the southern Cape, 20 kilometers from Saldanha and 120 kilometers north of Cape Town. It is an area of rolling hills with scarce scrubby flora that is punctuated by solitary rocky mountains. It is located in a region that is not bounded by governmental boundaries but rather by the natural environment.

The Portugeese Fonty is located between a number of farms namely, the Hartebeesfontein, Hopefield Windfarm, Onder Waterpestraal, Driekuilen game farm and the town of Hopefield

to the south. The Sout Rivier and a railway line cuts through the farm from the West (see Figure 2 and 3). The proposed development site is located along the Oaks Street on the left hand side from the town of Hopefield. The site is located on the North West end of the farm towards the signage that points to Celendonia (see Figure 7).

Large tracts of the Saldanha Flats Strandveld's scrubby natural vegetation have been replaced by now-abandoned farmed fields. Located at or near the land surface, a white to cream calcareous hardpan or calcrete exhibits locally well-developed karstic (i.e., solution) weathering features including polygonal, flat-topped clints and intervening grikes or solution fissures. In some portions, there is gathered loose limestone surface rubble into a large number of stone heaps; the heaps are not very recent in origin because many of the blocks are covered in lichen.



Figure 4: View of the railway line that traverses through the farm.



Figure 5: View of the Sout Rivier also passing through the farm.



Figure 6: View of some electricity power lines traversing across the farm.



Figure 7: View of a fish pond on the farm.



Figure 8: An access gate to the proposed green hydrogen and green ammonia processing facility site.



Figure 9: Signage to Caledonia farm at the end of the proposed green hydrogen and green ammonia processing facility site.



Figure 10: Representative picture of the proposed green hydrogen and green ammonia processing facility site.



Figure 11: Another representative picture of the proposed green hydrogen and green ammonia processing facility site.

-Findings-

No sites of historic or archaeological significance were identified within the proposed green hydrogen and green ammonia processing facility site. The potential for stratified archaeological deposits was assessed as negligible given the local geology and predictive site patterning.

A total number of four buildings were assessed to be over the age of 60. The properties are located at Portuguese Fonty farm, the single storey buildings embodies a blend of architectural styles. From a distance, the most eye-catching features of these properties are hip and gable type roofs and chimneys (**see Figure 10**) that are a facet of the Edwardian type architecture.

The Edwardian type architecture emerged and gained prominence in the era of King Edward VII who took over from Queen Victoria of England. The prominence of the Edwardian style was rather short-lived, stretching only from 1901 to 1910. The presence of the hip and gable type roofs provides a good indication regarding when the properties were constructed. Western Architects in South Africa had a tendency of importing ideas from their home countries.

Given that the buildings have Edwardian elements, and that they area currently in a compromised shape, our position is that this properties is

undoubtedly over 60 years old. One of the building I scribed the year 1953 at the top of the front façade (**see Figure 13**). While we could not exactly get the age of the other buildings, from our literature review the Portuguese Fountain was surveyed and registered as quitrent in 1818, the buildings carry an Edwardian type architecture therefore the buildings must be way over 60 years old.

The properties must therefore be provisionally protected under the South African Heritage Resources Law. Efforts to determine the exact age of the other buildings besides the one with a date scribed on them were fruitless because the original plans could not be found at the City Council archives. In its classic appearance, the Edwardian style features elements of the Elizabethan or Tudor type architecture particularly “Half timbering”. Owing to the mixed style of architecture apparent on these properties, half-timbering is virtually absent. The walls of the properties were entirely constructed using bricks. With the progress of time, the interior of the Edwardian style architecture began to incorporate wood panelling where it was deemed practical.

More Edwardian influence on these properties is apparent on the wrap around veranda with inverted colonnades supporting the pillars (**see Figure 11**).

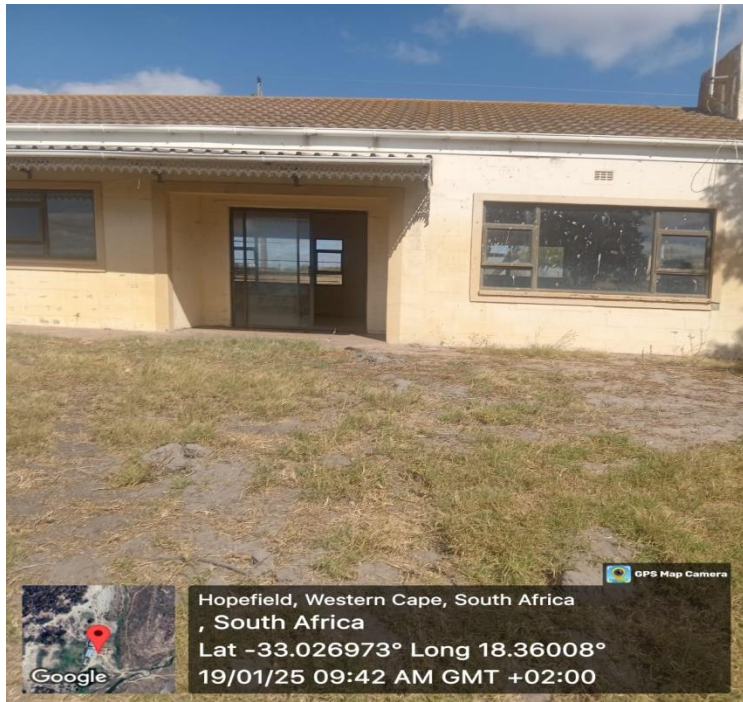


Figure 12: Modified structure assessed to be over 60 years old , pay attention to the decorative laces. These were a key facet of Victorian architecture and were intended for decorative purposes.

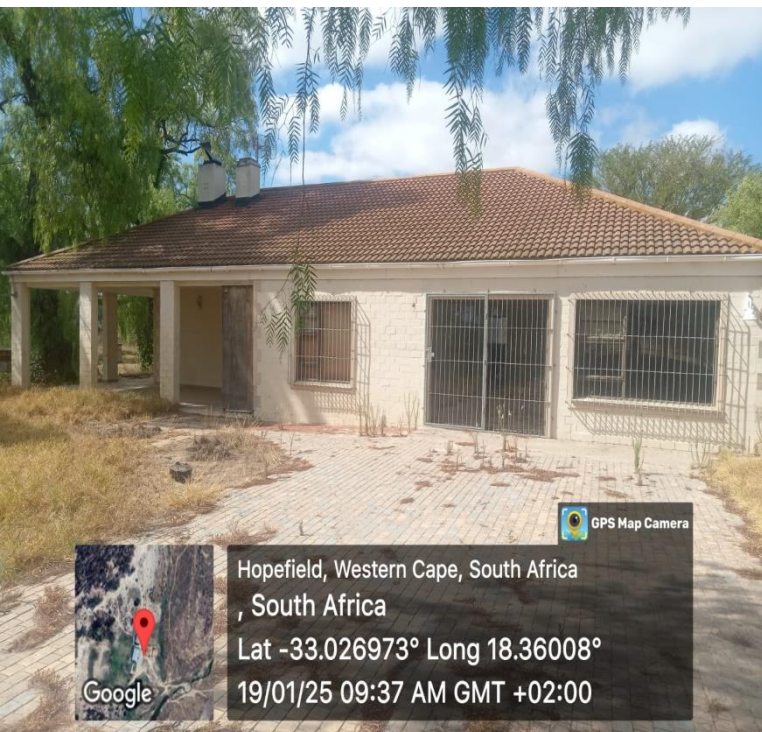


Figure 13: This property built of brick and mortar is shows signs of being older than 60 years old but has been modified a number of times.



Figure 14: This property does not show any feature of architectural significance. The timber additions suggest recent retouching of the property.



Figure 15: The property with a detail scribed 1-4-1953

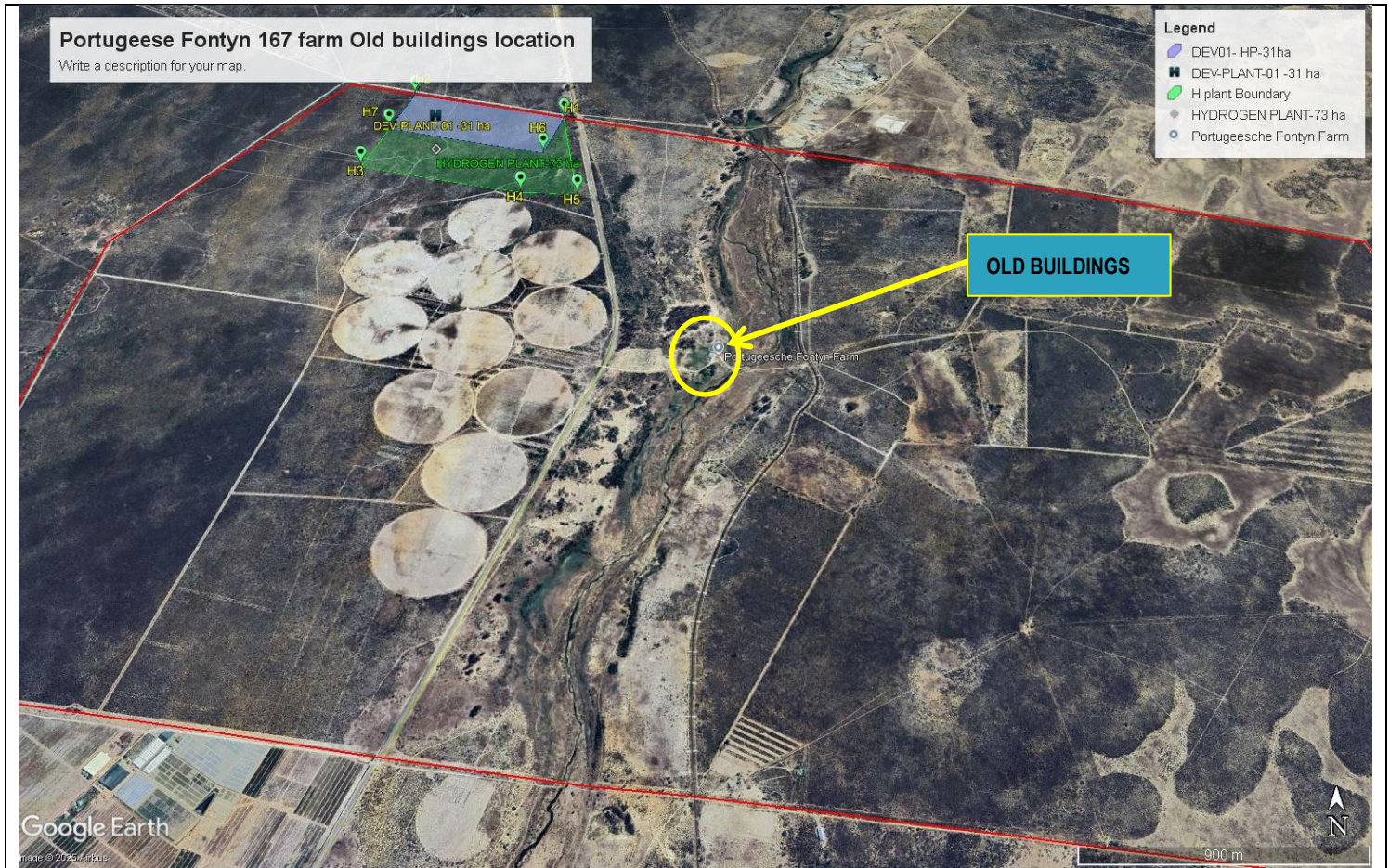


Figure 16: Google Earth image of the Portugeese Fontyn 167 farm showing the location of the old buildings referred to in the text in Yellow

9.0 ASSESSMENT OF SIGNIFICANCE

An impact can be defined as any change in the physical-chemical, biological, cultural and/or socio-economic environmental system that can be attributed to human activities related to alternatives under study for meeting a project need. The matrices use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

An impact can be defined as any change in the physical-chemical, biological, cultural and/or socio-economic environmental system that can be attributed to human activities related to alternatives under study for meeting a project need. The significance of the aspects/impacts of the process will be rated by using

a matrix adapted to some extent to fit this process. These matrices use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts. The significance of the impacts will be determined through a synthesis of the criteria below:

Table 2: Significance of impacts synthesis criteria

Nature of the impact (N)		
Positive	+	Impact will be beneficial to the environment (a benefit).
Negative	-	Impact will not be beneficial to the environment (a cost).
Neutral	0	Where a negative impact is offset by a positive impact, or mitigation measures, to have no overall effect.
Magnitude(M)		
Minor	2	Negligible effects on biophysical or social functions / processes. Includes areas / environmental aspects which have already been altered significantly and have little to no conservation importance (negligible sensitivity*).
Low	4	Minimal effects on biophysical or social functions / processes. Includes areas / environmental aspects which have been largely modified, and / or have a low conservation importance (low sensitivity*).
Moderate	6	Notable effects on biophysical or social functions / processes. Includes areas / environmental aspects which have already been moderately modified and have a medium conservation importance (medium sensitivity*).
High	8	Considerable effects on biophysical or social functions / processes. Includes areas / environmental aspects which have been slightly modified and have a high conservation importance (high sensitivity*).
Very high	10	Severe effects on biophysical or social functions / processes. Includes areas / environmental aspects which have not previously been impacted upon and are pristine, thus of very high conservation importance (very high sensitivity*).
Extent (E)		
Site only	1	Effect limited to the site and its immediate surroundings.
Local	2	Effect limited to within 3-5 km of the site.

Developed for Phelan Energy Group

Regional	3	Activity will have an impact on a regional scale.
National	4	Activity will have an impact on a national scale.
International	5	Activity will have an impact on an international scale.
Duration (D)		
Immediate	1	Effect occurs periodically throughout the life of the activity.
Short term	2	Effect lasts for a period 0 to 5 years.
Medium term	3	Effect continues for a period between 5 and 15 years.
Long term	4	Effect will cease after the operational life of the activity because of natural process or by human intervention.
Permanent	5	Where mitigation there by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.
Probability of occurrence (P)		
Improbable	1	Less than 30% chance of occurrence.
Low	2	Between 30 and 50% chance of occurrence
Medium	3	Between 50 and 70% chance of occurrence.
High	4	Greater than 70% chance of occurrence.
Definite	5	Will occur, or where applicable has occurred, regardless or in spite of any mitigation measures.

Once the impact criteria have been ranked for each impact, the significance of the impacts will be calculated using the following formula:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Extent}) \times \text{Probability}$$

The significance of the archaeological impact is therefore calculated by multiplying the severity rating with the probability rating. The maximum value that can be reached through this impact evaluation process is 100 SP (points). The significance for each impact is rated as High (SP ≥ 60), Medium (SP = 31-60) and Low (SP).

Table 3: Criteria for Rating of Classified Impacts

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Significance of predicted NEGATIVE impacts		
Low	0-30	Where the impact will have a relatively small effect on the environment and will require minimum or no mitigation and as such have a limited influence on the decision
Medium	31-60	Where the impact can have an influence on the environment and should be mitigated and as such could have an influence on the decision unless it is mitigated.
High	61-100	Where the impact will definitely have an influence on the environment and must be mitigated, where possible. This impact will influence the decision regardless of any possible mitigation.
Significance of predicted POSITIVE impacts		
Low	0-30	Where the impact will have a relatively small positive effect on the environment.
Medium	31-60	Where the positive impact will counteract an existing negative impact and result in an overall neutral effect on the environment.
High	61-100	Where the positive impact will improve the environment relative to baseline conditions.

Table 4: Impact Assessment Matrix

Impacts and Mitigation measures relating to the proposed project during construction phase														
Activity/Aspect	Impact /	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance before mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance after mitigation
Clearing and Excavations	Destruction of archaeological remains	Cultural heritage	-	6	1	1	2	16	Use chance find procedure to cater for accidental finds	2	1	1	1	4
	Disturbance of graves	Cultural heritage	-	6	1	1	2	16	Chance finds procedure and heritage induction for workers	3	2	2	3	21
	Disturbance of buildings and structures older than 60 years old	Cultural heritage	-	4	2	2	4	16	Mitigations are given in the recommendations section	4	1	1	1	4
Operational	Destruction living heritage and public monuments	Cultural heritage	-	6	2	1	2	32	Mitigation is not required because there are no public monuments within the proposed development site	2	1	1	4	4

10.0 CONCLUSIONS

Brief summary of the findings and cultural heritage resources management goals that have been identified to guide the protection and public enjoyment of natural, cultural and recreational resources

The town of Hopefield is home to a facsimile of the hominid skull known as the Saldanha Skull or Elandsfontein Skull, which was used by the Saldanha Man. An interesting Hartebeeshuisie, one of the traditional reed dwellings for which the area is renowned, may be seen farther down the street. Hopefield's distinctive features include fynbos, fossils, honey, and traditional homesteads.

Beyond Green Environmental Services (Pty) Ltd is advised that no sites of historic or archaeological significance were identified within the proposed green hydrogen and green ammonia processing facility site. The potential for stratified archaeological deposits was assessed as negligible given the local geology and predictive

site patterning.

A total number of four buildings were assessed to be over the age of 60. The properties are located at Portuguese Fonty farm which was surveyed in 1818. The single storey building embodies a blend of architectural styles.

All four buildings were recorded within the Portuguese Fonty farmyard. The buildings are located about 1.3 kilometres away from the proposed green hydrogen and green ammonia processing facility site.

It is the reasoned opinion of the author of this report that the buildings will not be impacted on by the proposed development.

11.0 RECOMMENDATIONS

Description and discussion of any no-go areas that have already been identified at this stage and must be further examined during the HIA

REASONED OPINION: The heritage practitioner proposes that the development be approved to proceed subject to a Chance Finds Procedure (CFP) given in Appendix B and recommendations given below;

RECOMMENDATION 1: The developer is advised to keep the project area within the confines of the approved proposed project plans. If the developer wishes to extend the development site, a different permit should be sort from the **Western Cape Provincial Heritage Authority**.

RECOMMENDATION 3: Should the developer wish to demolish the buildings on the Portuguese Fonty farm yard to make more room for the project, a demolition permit should be sought from the **Western Cape Provincial Heritage Authority (Built Environment Unit)**.

RECOMMENDATION 4: Should chance archaeological materials or human burials remains be exposed during construction work on any section of the proposed development laydown sites, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made.

RECOMMENDATION 5: Should any unmarked

burials be exposed during construction, affected families must be tracked and consulted, relevant rescue/ relocation permits must be obtained from **Western Cape Provincial Heritage Authority** before any grave relocation can take place. Furthermore, a professional archaeologist must be retained to oversee the relocation process in accordance with the **Western Cape Provincial Heritage Authority**.

RECOMMENDATION 6: Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the **Western Cape Provincial Heritage Authority**.

RECOMMENDATION 7: Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by **Western Cape Provincial Heritage Authority**.

12.0 REFERENCES

All literature references used in the compilation of this report e.i common academic referencing convention; this must include newspapers, website links and archival documents.

Cleophas, F. J. (2023). Colonial Alienation, Resistance and Assimilation: A Hopefield History. *South African Journal of Cultural History*, 37(2), 1-26.

Hart, T (2013) Heritage Impact Assessment of a proposed Wind Energy Facility (Hopefield Community Wind Farm) to be situated on Farm Leliefontein 1/317 Hopefield District, South Western Cape.

Fransen, H., (2006). The old towns and buildings of the Cape. Johannesburg: Jonathan Ball

Kandel, A.W., Felix-Henningsen, P. & Conard, N.J. (2003). An overview of the spatial archaeology of the Geelbek Dunes, Western Cape, South Africa. In: G. Füleký (ed.) Papers of the first international conference on soils and archaeology, Százhalombatta, Hungary, 30 May-3 June 2001. Oxford: British Archaeological Reports International Series 1163: 37-44.

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APPENDIX A: DEFINITION OF TERMS ADOPTED IN THIS HIA

The terminology adopted in this document is mainly influenced by the NHRA of South Africa (1999) and the Burra Charter (1979).

Adaptation: Changes made to a place so that it can have different but reconcilable uses.

Artefact: Cultural object (made by humans).

Buffer Zone: Means an area surrounding a cultural heritage which has restrictions placed on its use or where collaborative projects and programs are undertaken to afford additional protection to the site.

Co-management: Managing in such a way as to consider the needs and desires of stakeholders, neighbours and partners, and incorporating these into decision making through, amongst others, the promulgation of a local board.

Conservation: In relation to heritage resources, includes protection, maintenance, preservation and sustainable use of places or objects to safeguard their cultural significance as defined. These processes include, but are not necessarily restricted to preservation, restoration, reconstruction and adaptation.

Contextual Paradigm: A scientific approach which places importance on the total context as catalyst for cultural change and which specifically studies the symbolic role of the individual and immediate historical context.

Cultural Resource: Any place or object of cultural significance

Cultural Significance: Means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance of a place or object for past, present and future generations.

Feature: A coincidental find of movable cultural objects.

Grading: The South African heritage resource management system is based on a grading system, which provides for assigning the appropriate level of management responsibility to a heritage resource.

Heritage Resources Management: The utilization of management techniques to protect and develop cultural resources so that these become long term cultural heritage which are of value to the general public.

Heritage Resources Management Paradigm: A scientific approach based on the Contextual paradigm but placing the emphasis on the cultural importance of archaeological (and historical) sites for the community.

Heritage Site Management: The control of the elements that make up the physical and social environment of a site, its physical condition, land use, human visitors, interpretation etc. Management may be aimed at preservation or, if necessary, at minimizing damage or destruction or at presentation of the site to the public.

Historic: Means significant in history, belonging to the past; of what is important or famous in the past.

Historical: Means belonging to the past or relating to the study of history.

Maintenance: Means the continuous protective care of the fabric, contents and setting of a place. It does not involve physical alteration.

Object: Artefact (cultural object)

Paradigm: Theories, laws, models, analogies, metaphors and the epistemological and methodological values used by researchers to solve a scientific problem.

Preservation: Refers to protecting and maintaining the fabric of a place in its existing state and retarding deterioration or change and may include stabilization where necessary. Preservation is appropriate where the existing state of the fabric itself constitutes evidence of specific cultural significance, or where insufficient evidence is available to allow other conservation processes to be carried out.

Protection: With reference to cultural heritage resources this includes the conservation, maintenance, preservation and sustainable

utilization of places or objects in order to maintain the cultural significance thereof.

Place: Means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions.

Reconstruction: To bring a place or object as close as possible to a specific known state by using old and new materials.

Rehabilitation: The repairing and/ or changing of a structure without necessarily taking the historical correctness thereof into account.

Restoration: To bring a place or object back as close as possible to a known state, without using any new materials.

Site: A large place with extensive structures and related cultural objects. It can also be a large assemblage of cultural artefacts, found on a single location.

Sustainable: Means the use of such resource in a way and at a rate that would not lead to its long-term decline, would not decrease its historical integrity or cultural significance and would ensure its continued use to meet the needs and aspirations of present and future generations of people.

APPENDIX B: CHANCE FINDS PROCEDURE

What is a Chance Finds Procedure?

The purpose of Archaeological Chance Find Procedure (CFP) is to address the possibility of cultural heritage resources and archaeological deposits becoming exposed during ground altering activities within the project area and to provide protocols to follow in the case of a chance archaeological find to ensure that archaeological sites are documented and protected as required. A CFP is a tool for the protection of previously unidentified cultural heritage resources during construction. The main purpose of a CFP is to raise awareness of all mine workers on site regarding the potential for accidental discovery of cultural heritage resources and establish a procedure for the protection of these resources.

Chance finds are defined as potential cultural heritage (or paleontological) objects, features, or sites that are identified outside of or after Heritage Impact studies, normally as a result of construction monitoring. Archaeological sites are protected by The National Heritage Resources Act of 1999. They are non-renewable, very susceptible to disturbance and are finite in number. Archaeological sites are an important resource that is protected for their historical, cultural, scientific and educational value to the general public, local communities.

What are the objectives of the CFP?

The objectives of this “Chance Find Procedure” are to promote preservation of archaeological data while minimizing disruption of construction scheduling. It is recommended that due to the moderate to high archaeological potential of

some areas within the project area, all on site personnel and contractors be informed of the Archaeological Chance Find Procedure and have access to a copy while on site.

Where is a CFP applicable?

Developments that involve excavation, movement, or disturbance of soils have the potential to impact archaeological materials, if present. Activities such as road construction, land clearing, and excavation are all examples of activities that may adversely affect archaeological deposits. Chance finds may be made by any member of the project team who may not necessarily be an archaeologist or even visitors. Appropriate application of a CFP on development projects has led to discovery of cultural heritage resources that were not identified during archaeological and heritage impact assessments. As such, it is considered to be a valuable instrument when properly implemented. For the CFP to be effective, the mine manager must ensure that all personnel on the proposed mine site understand the CFP and the importance of adhering to it if cultural heritage resources are encountered. In addition, training or induction on cultural heritage resources that might potentially be found on site should be provided. In short, the Chance Find Procedure details the necessary steps to be taken if any culturally significant artefacts are found during construction.

What is the CF Procedure?

The following procedure is to be executed in the event that archaeological material is discovered:

- ⌘ All construction activity in the vicinity of the accidental find/feature/site must cease immediately to avoid further damage to the site.
- ⌘ Briefly note the type of archaeological materials you think you've encountered, its location, and if possible, the depth below surface of the find.
- ⌘ Report your discovery to your supervisor or if they are unavailable, report to the project Environmental

Control Officer (ECO) who will provide further instructions.

- ⌘ If the supervisor is not available, notify the ECO immediately. The ECO will then report the find to the Manager who will promptly notify the project archaeologist and SAHRA.
- ⌘ Delineate the discovered find/ feature/ site and provide a 25m buffer zone from all sides of the find.
- ⌘ An archaeologist should give recommendations on the cause of action to be taken.

APPENDIX C: HUMAN REMAINS AND BURIALS IN DEVELOPMENT

Developers, land use planners and professional specialist service providers often encounter difficult situations with regards to burial grounds, cemeteries and graves that may be encountered in development contexts. This may be before or during a development project. There are different procedures that need to be followed when a development is considered on an area that will impact upon or destroy existing burial grounds, cemeteries or individual graves. In contexts where human remains are accidentally found during development work such as road construction or building construction, there are different sets of intervention regulations that should be instigated. This brief is an attempt to highlight the relevant regulations with emphasis on procedures to be followed when burial grounds, cemeteries and graves are found in development planning and development work contexts. The applicable regulations operate within the national heritage and local government legislations and ordinances passed in this regard. These guidelines assist you to follow the legal pathway.

First, establish the context of the burial:

1. Are the remains less than 60 years old? If so, they may be subject to provisions of the Human Tissue Act,

Cemeteries Ordinance(s) and to local, regional, or municipal regulations, which vary from place to place. The finding of such remains must be reported to the police but are not automatically protected by the NHRA.

2. Is this the grave of a victim of conflict? If so, it is protected by the NHRA (Section 36(3a)). (Relevant extracts from the Act and Regulations are included below).
3. Is it a grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority? If so, it is protected by the NHRA (Section 36(3b)).
4. Are the human or hominid remains older than 100 years? If so, they are protected by the NHRA (Section 35(4), see also definition of “archaeological” in Section 2).

Second, refer to the terms of the NHRA most appropriate to the situation, or to other Acts and Ordinances:

1. Human remains that are NOT protected in terms of the NHRA (i.e. less than 60 years old and not a grave of a victim of conflict or of cultural significance) are subject to provisions of the Human Tissue Act and to local

and regional regulations, for example Cemeteries Ordinances applicable in different Provincial and local Authorities.

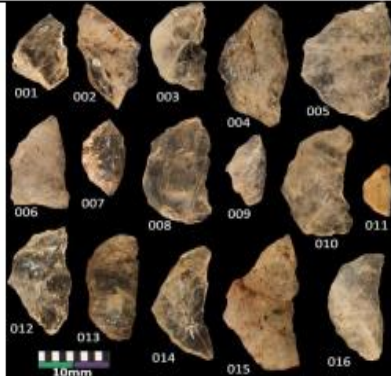
2. All finds of human remains must be reported to the nearest police station to ascertain whether or not a crime has been committed.
3. If there is no evidence for a crime having been committed, and if the person cannot be identified so that their relatives can be contacted, the remains may be kept in an institution where certain conditions are fulfilled. These conditions are laid down in the Human Tissue Act (Act No. 65 of 1983). In contexts where the local traditional authorities given their consent to the unknown remains to be re-buried in their area, such re-interment may be conducted under the same regulations as would apply for known human remains.

In the event that a graveyard is to be moved or developed for another purpose, it is incumbent on the local authority to publish a list of the names of all the persons buried in the graveyard if there are gravestones or simply a notification that graves in the relevant graveyard are to be disturbed. Such a list would have to be compiled from the names on the gravestones or from parish or other records. The published list

would call on the relatives of the deceased to react within a certain period to claim the remains for re-interment. If the relatives do not react to the advertisement, the remains may be re-interred at the discretion of the local authority.

1. However, it is the responsibility of the developer to ensure that none of the affected graves within the cemetery are burials of victims of conflict. The applicant is also required in line with the heritage legislation to verify that the graves have no social significance to the local communities.
2. It is illegal in terms of the Human Tissue Act for individuals to keep human remains, even if they have a permit, and even if the material was found on their own land.
3. The Exhumations Ordinance (Ordinance No. 12 of 1980 and as amended) is also relevant. Its purpose is "To prohibit the desecration, destruction and damaging of graves in cemeteries and receptacles containing bodies; to regulate the exhumation, disturbance, removal and reinterment of bodies, and to provide for matters incidental thereto". This ordinance is supplemented and support by local authorities regulations, municipality by-laws and ordinances.

APPENDIX D: ARCHEOLOGICAL TOOLS IN KWA-ZULU NATAL



Quartz tipped arrows over 60ka found at Sibidu cave



Marine shell beads from Sibidu cave



Early evidence of middle stone age at Umhlathuzana cave



Stone and bone technology used at Sibidu cave in the Middle Stone Age



Bone assemblage at Sibidu cave



Boulders from Umhlathuze cave

APPENDIX E: BRIEF RESUME OF THE AUTHOR

ROY MUROYI**ARCHAEOLOGY & HERITAGE
SPECIALIST****AREAS OF SPECIALITY**

- Iron Age archaeology
- Colonial archaeology
- Industrial Archaeology
- Grave relocations
- Human Skeletal remains analysis

WORK EXPERIENCE (NINE YEARS)

- **Tsimba Archaeological Footprints (Pty) Ltd | Current Director**

- Heritage Impact Assessment compilation
- Archaeological excavations
- Human Skeletal analysis
- Compliance with National Heritage & Environmental law
- Geological Information systems work

G& A Heritage Consultants | 2018 | Field Technician

Cape Archaeological Survey|2017|Field Technician

Vhubvo ArchaHeritageConsultantsArchaeologist|2017

NGT Holdings |Archaeologist |2016

Time Line Consulting Botswana |Field Technician

National Museums & Monuments of Botswana Salvage Archaeology| 2013



tsimba-arch.co.za

ACADEMIC ACHIEVEMENTSPHD Heritage (Candidate) -
University of WitwatersrandMasters Heritage - University of
WitwatersrandMasters Critical Diversity Studies
- University of Witwatersrand**BA.Hon. Archaeology, Cultural
Heritage and Museum Studies-
Midlands State University****CONTACT INFO**

Personal Phone: + (27) 813 717 993

Email: info@tsimba-arch.co.za

rmuroyi23@gmail.com

CHARACTER REFERENCESDr. Pheny.C. Thebe -
pcthebe2000@yahoo.comDr. Greer Valley-
Greer.Valley@Wits.ac.zaJean Beater -
Jean.Beater@gmail.com