HERITAGE IMPACT REPORT, FOR INCLUSION IN THE ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED LATRODEX (PTY) LTD WIND TURBINES

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Declaration of Independence

- I, Jessica Angel, declare that –
- General declaration:
- I act as the independent heritage practitioner 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 heritage impact assessments, 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 will take into account, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application;
- 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;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- All the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from a heritage practitioner in terms of the Act and the constitutions of my affiliated professional bodies; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the NEMA.

Disclosure of Vested Interest

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

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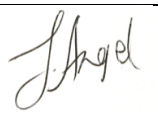
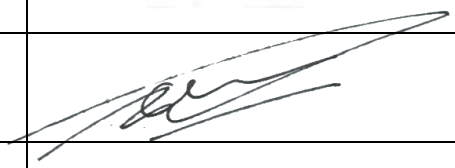
SIGNATURE:

ACKNOWLEDGEMENT OF RECEIPT

Report Title	*Heritage Impact Report for inclusion in the Environmental Impact report for the Proposed Latrodex Wind Turbines, Great Kei Local Municipality, located within the Amathole District Municipality, Eastern Cape Province.*		
Control	**Name**	**Signature**	**Designation**
Author	**J Angel**		**Heritage Specialist**
Author	**M Hutten**		**Heritage Specialist**
Reviewed	**W Fourie**		**Heritage Specialist/ Principal Investigator**
Reviewed			**CES**

CLIENT: CES Environmental and Social Advisory Service

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EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd was appointed by CES Environmental and Social Advisory Service (Pty) Ltd, to undertake a Heritage Impact Assessment (HIA) that forms part of the Environmental Impact Report as part of the planning to implementation process of the Proposed Latrodex Wind Turbines, Great Kei Local Municipality, located within the Amathole District Municipality, Eastern Cape Province.

The Heritage Impact Assessment has shown that the proposed project will have no impact on heritage resources within the proposed area.

Analysis of historical maps and aerial photography identified one farmstead.

The HIA ground survey identified the above-mentioned heritage resource within the study area. The identified farmstead is currently in use by the Abalone facility and will not be directly impacted by the turbine locations. If any intervention of the farmhouse is anticipated, a permit for alteration or destruction will be required by the Eastern Cape Provincial Heritage Authority (ECPHRA). From a Heritage Impact perspective, there is no reason why the project cannot continue.

1.1 Burial grounds and graves

No burial grounds are present on the property. Burial grounds and graves have high heritage significance and are given a Grade IIIA significance rating in accordance with the system described in Section 3.1 of this document.

1.2 Structures

One farmstead was identified. Structures older than 60 years are protected under Section 34 of the NHRA. This farmstead occurs of the 1964 first edition 1;50 000 topographic map and is potentially older than 60 years as the air photography for this map was done in 1959. If the farmstead is to be impacted, it will require a formal process of application for a destruction permit issued by the Eastern Cape Provincial Heritage Authority as required by s34 of the NHRA.

1.3 Palaeontology

A separate report will be provided for the palaeontological aspect of this project. However, the Paleontological Impact Assessment conducted by Prof B. D. Millsteed, has not identified any palaeontological reason to prejudice the progression of Wild Coast Abalone's wind turbine

project subject to the general damage mitigation protocols outlined within his report being implemented. The mitigation protocols include:

If The sandstones and shales of the Adelaide Subgroup rocks become exposed in any excavation within the area that excavation must be halted.

- The project management must appoint a palaeontologist to evaluate the excavation for the presence of fossil material and the scientific and cultural significance of the fossil material.
- If the fossil material is assessed as being scientifically and/or culturally significant it should be excavated (under permit from SAHRA) by a palaeontologist appointed by the project management.
- The resultant excavated fossil material must be lodged with an appropriately permitted institution.
- In the event that the fossil materials excavation is impossible or inappropriate the fossil or fossil locality could be protected and the site of any planned construction moved to an alternative location.

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A CV of Principal Investigator
B CV of Author

Archaeological resources

This includes:

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

- construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- carrying out any works on or over or under a place;
- subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- constructing or putting up for display signs or boards;
- any change to the natural or existing condition or topography of land; and
- any removal or destruction of trees, or removal of vegetation or topsoil

Early Stone Age

The archaeology of the Stone Age between 700 000 and 2 500 000 years ago.

Fossil

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

Heritage

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

Heritage resources

This means any place or object of cultural significance and can include (but not limited to) as stated under Section 3 of the NHRA,

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, and
- sites of significance relating to the history of slavery in South Africa;

Holocene

The most recent geological time period which commenced 20 000 years ago.

Late Stone Age

The archaeology of the last 30 000 years associated with fully modern people.

Late Iron Age (Early Farming Communities)

The archaeology of the last 1000 years up to the 1800's, associated with iron-working and farming activities such as herding and agriculture.

Middle Stone Age

The archaeology of the Stone Age between 20 000-300 000 years ago, associated with early modern humans.

Palaeontology

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

Abbreviations	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management

DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
ECO	Environmental Control Officer
EIA practitioner	Environmental Impact Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Authority
PSSA	Palaeontological Society of South Africa
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency

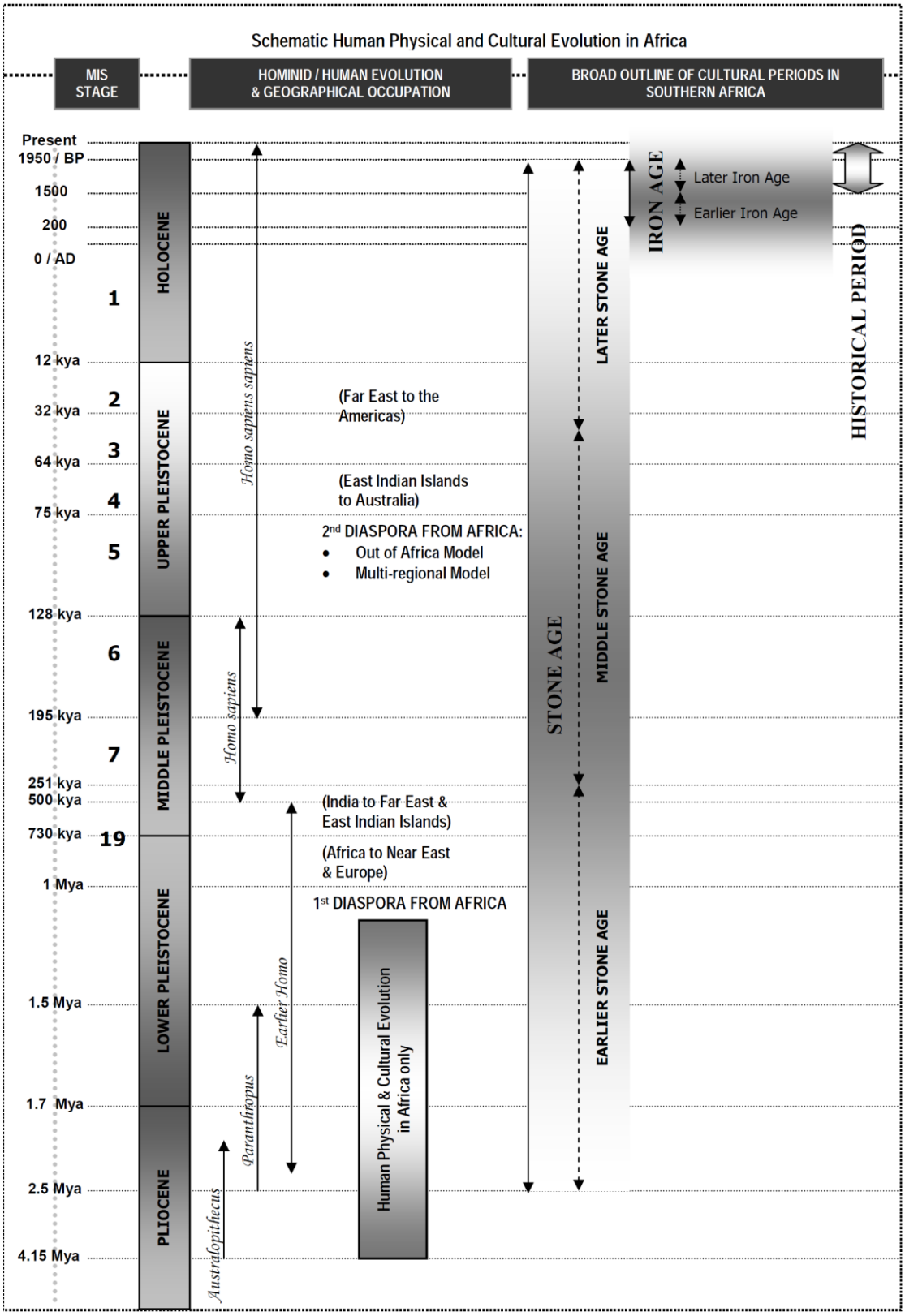

Figure 1 – Human and Cultural Timeline in Africa (Morris, 2008)

1 INTRODUCTION

PGS Heritage (Pty) Ltd (PGS) was appointed by CES Environmental and Social Advisory Service (Pty) Ltd, to undertake a Heritage Impact Assessment (HIA) that forms part of the Environmental Impact Report as part of the planning to implementation process of the Proposed Latrodex Wind Turbines, Great Kei Local Municipality, located within the Amathole District Municipality, Eastern Cape Province.

1.1 Scope of the Study

The aim of the study is to identify possible heritage sites and finds that may occur in the proposed development area. The HIA aims to assist the developer in managing the discovered heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act (Act 25 of 1999) (NHRA).

1.2 Specialist Qualifications

This HIA was compiled by PGS.

The staff at PGS has a combined experience of nearly 70 years in the heritage consulting industry. PGS and its staff have extensive experience in managing HIA processes. PGS will only undertake heritage assessment work where they have the relevant expertise and experience to undertake that work competently.

Jessica Angel, field archaeologist and author for the project, holds a Master's degree (MSc) and is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist.

Wouter Fourie, the Project Coordinator, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist and is accredited as a Principal Investigator; he is further an Accredited Professional Heritage Practitioner with the Association of Professional Heritage Practitioners (APHP).

Marko Hutten, heritage specialist and project archaeologist, has 18 years of experience in the industry and is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist and is accredited as a Field Director

Dr Millsteed holds a PhD in palaeontology and has previously been employed as a professional palaeontologist with the Council for Geoscience in South Africa. He is currently the principle of BM Geological Services and has sufficient knowledge of palaeontology and the relevant legislation

required to produce this Palaeontological Impact Assessment Report. Dr Millsteed is registered with the South African Council for Natural Scientific Professions (SACNASP), is a member of the Palaeontological Society of South African, a member of the Association of Australasian Palaeontologists and is a Fellow of the Geological Society of South Africa.

1.3 Assumptions and Limitations

Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted.

Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply as set out below.

1.4 Legislative Context

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

- Notice 648 of the Government Gazette 45421- general requirements for undertaking an initial site sensitivity verification where no specific assessment protocol has been identified
- National Environmental Management Act (NEMA), Act 107 of 1998 – Appendix 6
- National Heritage Resources Act (NHRA), Act 25 of 1999

1.4.1 Notice 648 of the Government Gazette 45421

Although minimum standard for archaeological (2007) and palaeontological (2012) assessments were published by SAHRA, GN.648 requires sensitivity verification for a site selected on the national web based environmental screening tool for which no specific assessment protocol related to any theme has been identified. The requirements for this GN is listed in **Table 1** and the applicable section in this report noted.

Table 1 - Reporting requirements for GN648

GN 648	Relevant section in report	Where not applicable in this report
2.2 (a) a desk top analysis, using satellite imagery;	section 4	
2.2 (b) a preliminary on-site inspection to identify if there are any discrepancies with the current use of land and environmental status quo versus the environmental sensitivity as identified on the national web based environmental screening tool, such as new developments, infrastructure, indigenous/pristine vegetation, etc.	section 4.3	-
2.3(a) confirms or disputes the current use of the land and environmental sensitivity as identified by the national web based environmental screening tool;	section 4.3	-
2.3(b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity;	section 4	-

1.4.2 NEMA – Appendix 6 requirements

The HIA report has been compiled considering the NEMA Appendix 6 requirements for specialist reports as indicated in the table below. For ease of reference the table below provides cross references to the report sections where these requirements have been addressed. It is important to note, that where something is not applicable to this HIA, this has been indicated in the table below.

Table 2 - Reporting requirements as per NEMA Appendix 6 for specialist reports

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Relevant section in report	Comment where not applicable.
1.(1) (a) (i) Details of the specialist who prepared the report	Page 2 of Report – Contact details and company	-
(ii) The expertise of that person to compile a specialist report including a curriculum vita	Section 1.2 – refer to Appendix A	-
(b) A declaration that the person is independent in a form as may be specified by the competent authority	Page ii of the report	-
(c) An indication of the scope of, and the purpose for which, the report was prepared	Section 1.1	-
(cA) An indication of the quality and age of base data used for the specialist report	Section 3	-
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 6	-
(d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3	The vegetation density doe influence visibility – however the vegetation cover for the area was consistent the same during both site visits
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3	-

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Relevant section in report	Comment where not applicable.
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 6	
(g) An identification of any areas to be avoided, including buffers	Section 4.1	No buffers or areas o sensitivity identified
(h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 4.3	No buffers or areas o sensitivity identified
(i) A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.3	-
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment	Section 4.3 and 6	
(k) Any mitigation measures for inclusion in the EMPr	Section 6	
(l) Any conditions for inclusion in the environmental authorisation		Non required
(m) Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 6	
(n)(i) A reasoned opinion as to whether the proposed activity, activities or portions thereof should be authorised and	Section 6	
(n)(iA) A reasoned opinion regarding the acceptability of the proposed activity or activities; and		
(n)(ii) If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 6	-
(o) A description of any consultation process that was undertaken during the course of carrying out the study		Not applicable. A public consultation process was handled as part of the EIA and EMP process.
(p) A summary and copies if any comments that were received during any consultation process		Not applicable. To date no comments regarding heritage resources that require input from a specialist have been raised.
(q) Any other information requested by the competent authority.		Not applicable.
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	NEMA Appendix 6 and GN648	

1.4.3 The National Heritage resources Act

- National Heritage Resources Act (NHRA) Act 25 of 1999

- Protection of Heritage Resources – Sections 34 to 36; and
- Heritage Resources Management – Section 38

The NHRA is utilized as the basis for the identification, evaluation and management of heritage resources and in the case of Cultural Resource Management (CRM) those resources specifically impacted on by development as stipulated in Section 38 of NHRA. This study falls under s38(8) and requires comment from the relevant heritage resources authority.

2 TECHNICAL DETAILS OF THE PROJECT

2.1 Site Location and Description

The Development of the Latrodex Wind Turbine facility is proposed on parts of the Remainder Portion of Farm 459, approximately 2km east of Haga-Haga town and approximately 60km east of the city of East London. The Latrodex Wind Turbine facility is situated in the Great Kei Local Municipality, in the Amathole District Municipality within the Eastern Cape Province. East London is the local administrative centre of the region and also serves as an economic and commercial hub of the region **Figure 2.**

The proposed development of the wind turbine facility and associated features will be situated on the northern extent of the property. A total number of 5 wind turbines will be situated on a ridge overlooking the coastline to the south-east. The ridge runs from east to west and is approximately 100m above sea level. The wind turbines will be situated between 1km and 1,5km from the coastline and will be placed in a line on the southern side of a gravel road which runs along the ridge and serves as an access road to some houses further to the east. The wind turbines will be situated approximately 250m from each other.

An open shed with some motor spares and parts is situated close to the first wind turbine on the western end. The third wind turbine will be situated right next to the gravel road and next to a cattle drinking facility. A farmstead with some sheds, storerooms and other associated infrastructure is situated directly to the north of the proposed fourth wind turbine.

The wind turbines will be located in a semi-wooded area which is currently being used as a grazing facility for cattle. The area shows some measure of pioneer growth and bush encroachment which is a result of overgrazing.

The prevailing vegetation type and landscape features of the area form part of the Albany Coastal Belt within the Albany Thicket Biome. It is found in the Eastern Cape Province within 15km (sometimes up to 30km) of the Indian Ocean coastline, from Kei Mouth to the Sundays River, interrupted by many valleys. It is described as gently to moderately undulating landscapes and dissected hilltop slopes close to the coast, dominated by short grasslands punctuated by scattered

bush clumps of solitary *Acacia natalitia* trees (Mucina & Rutherford, 2006). The proposed site for the wind turbines shows features of the described vegetation type.

Some farming infrastructure such as fences and a few buildings disturbed the natural landscape to some degree. The bush encroachment in some areas, as a result of overgrazing, also changed the natural landscape, but the proposed site seemed to be fairly undisturbed overall.

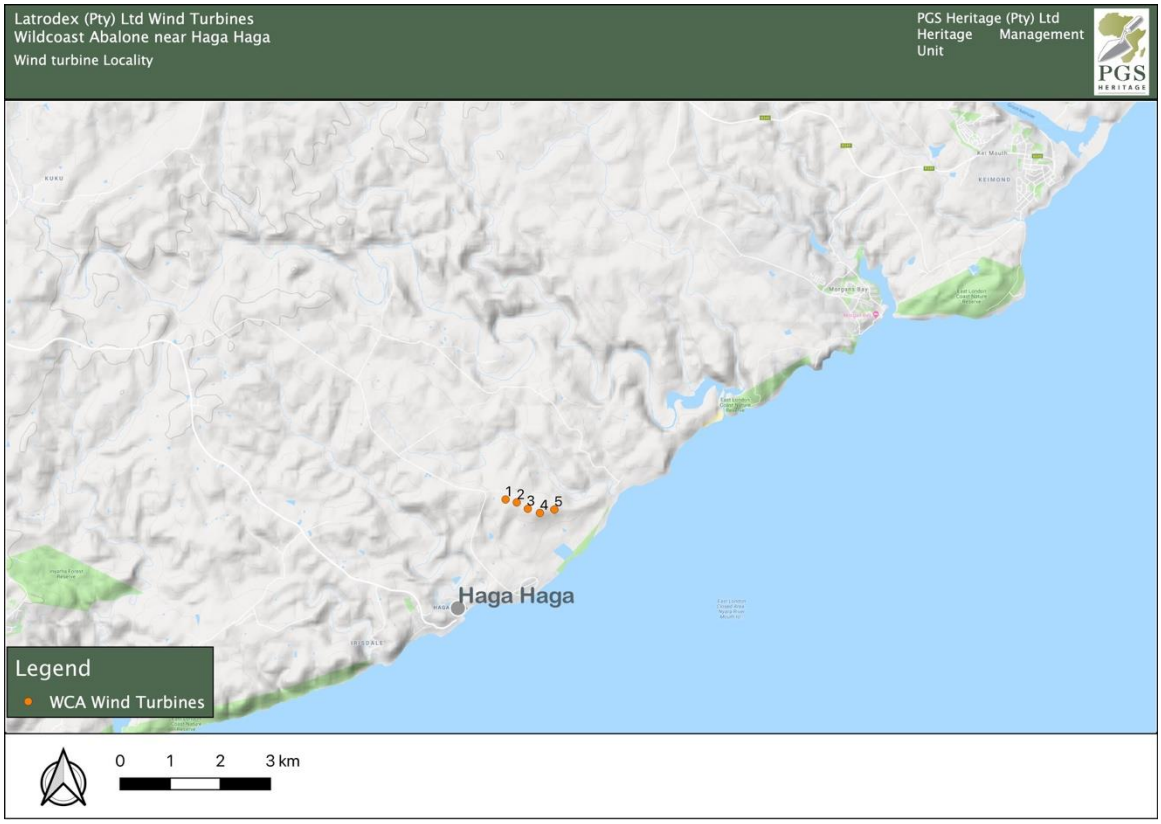

Figure 2 – Locality of the five proposed wind turbines, near Haga Haga.

Figure 3 - General vegetation by Turbine 1

Figure 4 - Location of Turbine 1

Figure 5 - General vegetation by Turbine 2

Figure 6 - Location of Turbine 2

Figure 7 - Shed by Turbine 2

Figure 8 - Location by Turbine 3

Figure 9 - Location by Turbine 4

Figure 10 - Location by Turbine 5

2.2 Technical Project Description

2.2.1 Background

Latrodex (Pty) Ltd is proposing the construction of 5 wind turbines to supply power to the adjacent Wild Coast Abalone Facility located in Marshstrand, Great Kei Local Municipality, Eastern Cape.

The proposed construction of the Latrodex Wind Energy Facility (WEF) is near Marshstrand and Fish Bay, within the Great Kei Local Municipality (GKLM) within the Amathole District Municipality (ADM), in the Eastern Cape Province. The proposed WEF is to be located on the ridge overlooking the existing Wild Coast Abalone Facility.

Latrodex (Pty) Ltd are proposing to construct a 10MW WEF consisting of five (5) 2MW turbines. The power generated from the WEF will be used to supplement the existing Wild Coast Abalone facility.

Other infrastructure associated with the proposed WEF will be:

- Concrete foundations to support the wind towers;
- Access roads to each turbine;
- Underground cables connecting each turbine to the other and to the mini substation;
- Control room and maintenance facilities; and
- An onsite mini substation to facilitate interconnection of the WEF with the Wild Coast Abalone Facility and/or Eskom grid.

3 ASSESSMENT METHODOLOGY

The section below outlines the assessment methodologies utilised in the study.

3.1 Methodology for Assessing Heritage Site significance

This HIA report was compiled by PGS for the proposed Latrodex Wind Turbine Development. The applicable maps, tables and figures, are included as stipulated in the NHRA (no 25 of 1999), the NEMA (no 107 of 1998). The HIA process consisted of three steps:

Step I – Literature Review: The background information to the field survey relies greatly on the Heritage Background Research.

Step II – Physical Survey: A physical survey was conducted on foot through the proposed project area by a qualified archaeologist (May 2019), aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.

Step III – The final step involved the recording and documentation of relevant archaeological resources, the assessment of resources in terms of the HIA criteria and report writing, as well as mapping and constructive recommendations.

The significance of heritage sites was based on four main criteria:

- Site integrity (i.e. primary vs. secondary context),

- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter)
    - Low - <10/50m2
    - Medium - 10-50/50m2
    - High - >50/50m2
- Uniqueness; and
- Potential to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

A - No further action necessary;

B - Mapping of the site and controlled sampling required;

C - No-go or relocate development activity position;

D - Preserve site, or extensive data collection and mapping of the site; and

E - Preserve site.

Impacts on these sites by the development will be evaluated as follows:

3.1.1 Site Significance

Site significance classification standards use is based on the heritage classification of s3 in the NHRA and developed for implementation keeping in mind the grading system approved by SAHRA for archaeological impact assessments. The update classification and rating system as developed by Heritage Western Cape (2016) is implemented in this report

Site significance classification standards prescribed by the Heritage Western Cape Guideline (2016), were used for the purpose of this report (Error! Reference source not found. and **Table 4**).

Table 3: Rating system for archaeological resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Langebaanweg (West Coast Fossil Park), Cradle of Humankind	May be declared as a National Heritage Site managed by SAHRA. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Highest Significance
II	Heritage resources with special qualities which make them significant, but do not fulfil the criteria for Grade I status. Current examples: Blombos, Paternoster Midden.	May be declared as a Provincial Heritage Site managed by HWC. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Exceptionally High Significance
III	Heritage resources that contribute to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. Current examples: Varschedrift; Peers Cave; Brobartia Road Midden at Bettys Bay	Resource must be retained. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree.	Resource must be retained where possible where not possible it must be fully investigated and/or mitigated.	Medium Significance
IIIC	Such a resource is of contributing significance.	Resource must be satisfactorily studied before impact. If the recording already done (such as in an HIA or permit application) is not sufficient, further recording or even mitigation may be required.	Low Significance
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant or the consultant and approved by the authority.	No research potential or other cultural significance

Table 4: Rating system for built environment resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Robben Island	May be declared as a National Heritage Site managed by SAHRA.	Highest Significance
II	Heritage resources with special qualities which make them significant in the context of a province or region, but do not fulfil the criteria for Grade I status. Current examples: St George's Cathedral, Community House	May be declared as a Provincial Heritage Site managed by HWC.	Exceptionally High Significance
II	Such a resource contributes to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfill the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. These are heritage resources which are significant in the context of an area.	This grading is applied to buildings and sites that have sufficient intrinsic significance to be regarded as local heritage resources; and are significant enough to warrant that any alteration, both internal and external, is regulated. Such buildings and sites may be representative, being excellent examples of their kind, or may be rare. In either case, they	High Significance

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
		should receive maximum protection at local level.	
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree. These are heritage resources which are significant in the context of a townscape, neighbourhood, settlement or community.	Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level.	Medium Significance
IIIC	Such a resource is of contributing significance to the environs These are heritage resources which are significant in the context of a streetscape or direct neighborhood.	This grading is applied to buildings and/or sites whose significance is contextual, i.e. in large part due to its contribution to the character or significance of the environs. These buildings and sites should, as a consequence, only be regulated if the significance of the environs is sufficient to warrant protective measures, regardless of whether the site falls within a Conservation or Heritage Area. Internal alterations should not necessarily be regulated.	Low Significance
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant and approved by the authority. Section 34 can even be lifted by HWC for structures in this category if they are older than 60 years.	No research potential or other cultural significance

3.2 Methodology for Impact Assessment

The impact assessment methodology is guided by the requirements of the NEMA EIA Regulations (2010). The broad approach to the significance rating methodology is to determine the environmental risk (ER) by considering the consequence (C) of each impact (comprising Nature, Extent, Duration, Magnitude, and Reversibility) and relate this to the probability/likelihood (P) of the impact occurring. This determines the environmental risk. In addition, other factors, including cumulative impacts, public concern, and potential for irreplaceable loss of resources, are used to determine a prioritisation factor (PF) which is applied to the ER to determine the overall significance

(S). Please note that the impact assessment must apply to the identified Sub Station alternatives as well as the identified Transmission line routes.

3.2.1 Determination of Environmental Risk

The significance (S) of an impact is determined by applying a prioritisation factor (PF) to the environmental risk (ER).

The environmental risk is dependent on the consequence (C) of the particular impact and the probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M), and reversibility (R) applicable to the specific impact.

For the purpose of this methodology the consequence of the impact is represented by:

$$C = \frac{(E+D+M+R)}{4} \times N$$

Each individual aspect in the determination of the consequence is represented by a rating scale as defined in Table 5.

Table 5: Criteria for Determining Impact Consequence

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property boundary),
	3	Local (i.e. the area within 5 km of the site),
	4	Regional (i.e. extends between 5 and 50 km from the site
	5	Provincial / National (i.e. extends beyond 50 km from the site)
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years),
	3	Medium term (6-15 years),
	4	Long term (the impact will cease after the operational life span of the project),
	5	Permanent (no mitigation measure of natural process will reduce the impact after construction).
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected),
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected),
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way),
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease), or
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease).
	1	Impact is reversible without any time and cost.

Aspect	Score	Definition
Reversibility	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring prohibitively high time and cost.
	5	Irreversible Impact

Once the C has been determined the ER is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/scored as per Table 6.

Table 6: Probability Scoring

Probability	1	Improbable (the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%),
	2	Low probability (there is a possibility that the impact will occur; >25% and <50%),
	3	Medium probability (the impact may occur; >50% and <75%),
	4	High probability (it is most likely that the impact will occur- > 75% probability), or
	5	Definite (the impact will occur),

The result is a qualitative representation of relative ER associated with the impact. ER is therefore calculated as follows:

ER= C x P

Table 7: Determination of Environmental Risk

Consequence	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		Probability				

The outcome of the environmental risk assessment will result in a range of scores, ranging from 1 through to 25. These ER scores are then grouped into respective classes as described in Table 8.

Table 8: Significance Classes

Environmental Risk Score	
Value	**Description**
< 9	Low (i.e. where this impact is unlikely to be a significant environmental risk),
≥9; <17	Medium (i.e. where the impact could have a significant environmental risk),
≥ 17	High (i.e. where the impact will have a significant environmental risk).

The impact ER will be determined for each impact without relevant management and mitigation measures (pre-mitigation), as well as post implementation of relevant management and mitigation

measures (post-mitigation). This allows for a prediction in the degree to which the impact can be managed/mitigated.

3.2.2 Impact Prioritisation:

In accordance with the requirements of Regulation 31 (2)(l) of the EIA Regulations (GNR 543), and further to the assessment criteria presented in the Section above it is necessary to assess each potentially significant impact in terms of:

- Cumulative impacts; and
- The degree to which the impact may cause irreplaceable loss of resources.

In addition, it is important that the public opinion and sentiment regarding a prospective development and consequent potential impacts is considered in the decision making process.
In an effort to ensure that these factors are considered, an impact prioritisation factor (PF) will be applied to each impact ER (post-mitigation). This prioritisation factor does not aim to detract from the risk ratings but rather to focus the attention of the decision-making authority on the higher priority/significance issues and impacts. The PF will be applied to the ER score based on the assumption that relevant suggested management/mitigation impacts are implemented.

Table 9: Criteria for Determining Prioritisation

Public response (PR)	Low (1)	Issue not raised in public response.
	Medium (2)	Issue has received a meaningful and justifiable public response.
	High (3)	Issue has received an intense meaningful and justifiable public response.
Cumulative Impact (CI)	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable loss of resources (LR)	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criteria represented in Table 11. The impact priority is therefore determined as follows:

Priority = PR + CI + LR

The result is a priority score which ranges from 3 to 9 and a consequent PF ranging from 1 to 2 (Refer to **Table 10**).

Table 10: Determination of Prioritisation Factor

Priority	Ranking	Prioritisation Factor
3	Low	1
4	Medium	1.17
5	Medium	1.33
6	Medium	1.5
7	Medium	1.67
8	Medium	1.83
9	High	2

In order to determine the final impact significance, the PF is multiplied by the ER of the post mitigation scoring. The ultimate aim of the PF is to be able to increase the post mitigation environmental risk rating by a full ranking class, if all the priority attributes are high (i.e. if an impact comes out with a medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential, significant public response, and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a high significance).

Table 11: Final Environmental Significance Rating

Environmental Significance Rating	
Value	**Description**
< 10	Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
≥10 <20	Medium (i.e. where the impact could influence the decision to develop in the area),
≥ 20	High (i.e. where the impact must have an influence on the decision process to develop in the area).

4 HERITAGE BACKGROUND

The high-level archival research focused on available information sources that were used to compile a general background history of the study area and surrounds.

4.1 Archival/historical maps

Historical topographic maps were available for utilisation in the screening and scoping:

- Topographical map 3228CB– First edition 1964. The aerial photography on which the map was based dates to 1959 and its survey work and drawings were undertaken in 1964 by the Trigonometrical Survey Office.

4.1.1 Topographical Maps 3228CB (First Edition)

The maps were utilised to identify structures that could possibly be older than 60 years and thus protected under Section 34 and 35 of the NHRA. Only the one farmstead (circled in blue) is located within the project footprint see **Figure 11**

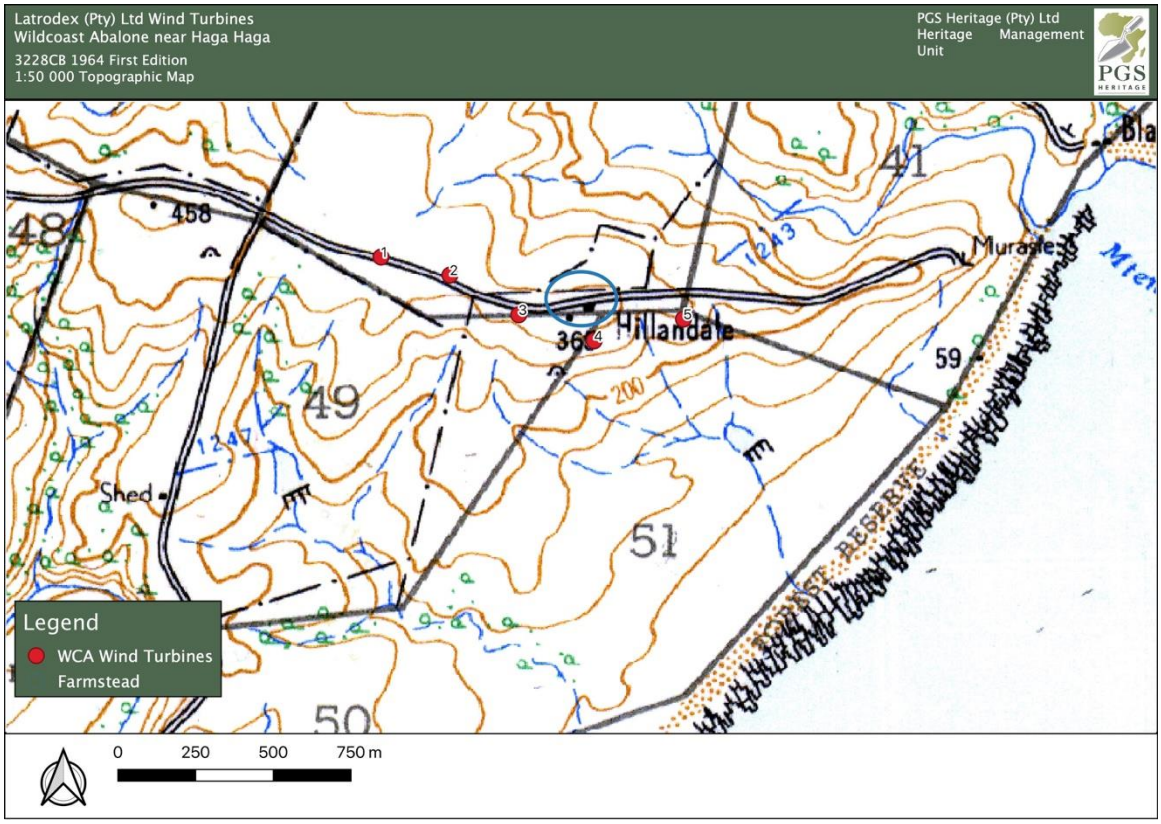

Figure 11 – 1964 map showing the one farmstead within the project footprint between turbines three and four – circled in blue.

4.2 Aspects of the area's history

4.2.1 Previous Heritage Studies in area

Researching the SAHRA APM Report Mapping Project records and the SAHRIS online database (http://www.sahra.org.za/sahris), it was determined that a number of other archaeological or historical studies have been performed within the wider vicinity of the study area. Previous studies listed for the area in the APM Report Mapping Project included a number of surveys within the area listed in chronological order below. The findings can be compiled as follows:

The findings can be compiled as follows:

Binneman, J. 2002. **N2 Wild Coast Toll Road Project, Chapter 6 Archaeological Heritage Sensitivity Survey.** An unpublished report by the Albany Museum on file at SAHRA as 2002-SAHRA-0002.

Van Schalkwyk, L.O. 2007. **Heritage Impact Assessment of Xolobeni Mineral Sands Project, Eastern Cape Province, South Africa.** An unpublished report by eThembeni Cultural Heritage on file at SAHRA as 2007-SAHRA-0490.

Van Schalkwyk, L.O. 2008. **Heritage Impact Assessment of the Proposed N2 Wild Coast Toll Highway.** An unpublished report by eThembeni Cultural Heritage on file at SAHRA as 2008-SAHRA-0167

Van Schalkwyk, L.O. & Wahl, B. 2008. **Heritage Impact Assessment of Port Edward / Harding Power Lines, Kwazulu-Natal and Eastern Cape Provinces, South Africa.** An unpublished report by eThembeni Cultural Heritage on file at SAHRA as 2008-SAHRA-0462.

Researching the SAHRIS online database (http://www.sahra.org.za/sahris) further studies were identified in the wider vicinity of the study area:

SAHRIS case number 219. 2009. **Upgrade of the N2 from the Gonubie Interchange (East London) to the Isipingo Interchange (Durban), Eastern Cape and Kwa-Zulu Natal.**

SAHRIS case number 306. 2011. **Proposed Boat Launch Site at Mkambati Nature Reserve, Eastern Cape.**

SAHRIS case number 1105. 2012. **Consultation in terms of Section 40 of the MPRDA of 2002: Proposed Borrow Pits: DR08024, OR Tambo District Municipality, Eastern Cape.**

SAHRIS case number 1108. 2012. **Consultation in terms of Section 40 of the MPRDA of 2002: Proposed Borrow Pits: DR08147, OR Tambo District Municipality, Eastern Cape.**

SAHRIS case number 1666. 2013. **Consultation in terms of Section 40 of the Mineral and Petroleum Resources Development Act of 2002: Aggreagate Mining on Unregistered State Land Ingquza Hill Local Municipality, District of Qaukeni, Eastern Cape.**

SAHRIS case number 3191. 2013. **The development proposal for Khananda Interpretive Centre is to adapt the existing facility for interpretive material associated with the Pondo Revolt. The proposal is to retain the existing interpretive centre, enclosing it with glass to provide protection from the elements.**

Some of the SAHRIS and APM studies listed above located no heritage resources including one within the Mkhambathi [sic] Protected Area (SAHRIS case number 306), consisted of desktop studies (Van Schalkwyk & Wahl 2008), had no relevant documentation available (SAHRIS case number 1105) or simply stated that no archaeological sites of interest were located within the vicinity of that study area (SAHRIS case number 1666).

Upgrades to the N2 road, or portions of it, which passes to the north of the study area have been the reason for extensive archaeological surveys of the region (e.g. Binneman 2002; Van Schalkwyk 2008; SAHRIS case number 219). Due to its undeveloped nature the vicinity of the current study area received “the closest environmental scrutiny” during N2 road upgrade related surveys (Van Schalkwyk 2008). To the north and north east of the study area, a number of heritage sites are concentrated around the Mnyameni River including shelters characterised by pottery, stone tools and marine shells (including one with rock art) and stone cairns or ‘izivivane’ (Binneman 2002). These sites, which include both Stone Age and Iron Age sequences, were regarded as possibly the earliest records of the archaeological history of this area dating to at least 2000 B.P. (Binneman 2002). On the other hand a more recent survey for a mineral sands mining development to the north east of the study area located Early-, Middle- and Late Stone Age lithics within Aeolian-deflated areas in the dunes as well as fossilised wood and a shell midden. These sites would be destroyed by the proposed development, two of them rated by the specialist as being of moderate to high significance (Van Schalkwyk 2007).

A number of the studies referred to areas of oral historical and living cultural significance such as at Khananda Hill to the north of the study area, a feature associated with the Pondo Revolt of 1960 to 1962 and a traditional burial site pre-dating the burial there of 10 of those executed for their role in the revolt (SAHRIS case number 3191).

Parts of the area are potentially fossiliferous and studies for the N2 road projects (e.g. SAHRIS case number 219) and borrow pits (e.g. SAHRIS case number 1108) have included a Palaeontological Impact Assessment. The geology to the east of the study area includes fossiliferous Mzamba strata (Van Schalkwyk 2008) and abundant lycopod stems are known from the vicinity of Port St Johns to the south west (SAHRIS case number 219).

4.2.2 Archaeological Background

The historical background and timeframe of the study area and other areas in Southern Africa can be divided into the Stone Age, Iron Age and Historical period. These can be outlined as follows:

4.2.3 Stone Age

The Stone Age is divided into the Early; Middle and Late Stone Age. The **Early Stone Age** includes the period from 2.5 million years B.P. to 250 000 years B.P. and is associated with *Australopithecines* and early *Homo* species who practiced stone tool industries such as the Oldowan and Acheullian.

The **Middle Stone Age** covers various tool industries, for example the Howiesons Poort industry, in the period from 250 000 years B.P. to 25 000 years B.P. and is associated with archaic and modern *Homo sapiens*.

The **Late Stone Age** incorporates the period from 25 000 years B.P. up to the Iron Age and Historical Periods and contact between hunter-gatherers and Iron Age farmers or European colonists. This period is associated with modern humans and characterised by lithic tool industries such as Smithfield and Robberg.

In Southern Africa, excavations for example at Makapansgat in the Limpopo Province provided evidence of occupation by *Australopithecus africanus* from approximately 3.3 million years ago. There is evidence of long occupation from the Cave of Hearths with stone tools and associated debris from a date of 400,000 B.P while upper strata are characterised by Middle Stone Age assemblages of 110,000 to 50,000 B.P. and Late Stone Age assemblages dating from 10,000 to 5,000 years B.P. characterised by the Smithfield B industry. The site is one of the few to exhibit Acheulean assemblages in Southern Africa and also contains overlying Middle Stone Age Howiessonspoort industry tools and early evidence of fire use (Bergh, 1999; Mitchell, 2002).

The Wild Coast (Pondoland Coast) is an area that has seen very limited archaeological research (CEN 2004), remaining “inconspicuous” in research around early humans and coastal foraging (Fisher et. al. 2013) despite a few early excavations in the 1920s and 1930s by E.C. Chubb amongst others and which led to the recognition of a `Smithfield P (Pondoland)’ culture (Webley undated). More recently a survey for the then Eastern Cape Nature Conservation identified 11 shelters with evidence of Late Stone Age occupation within the Mkambati Protected Area and characterised by shell middens, stone tools, pottery and in some cases rock paintings (Archaeology and History Departments undated). The most comprehensive survey, focussing on the Middle Stone Age in the area, was published in 2013 (Fisher et. al.) and investigated 28 rock shelters, adding 20 new rock shelters and 5 open air sites to the database. Seven of these sites are located within the Mkambati Reserve and a number of others are within a short distance to the south west. Stone tools were attributable to Oakhurst and Wilton technologies dating respectively to the Terminal Pleistocene, and Early and Middle Holocene indicating occupation during these periods. The study also found Middle Stone Age tools associated with marine shell middens indicating occupation in the Pleistocene. Importantly the dating of sites in this study has pushed back the dates of Early Stone Age occupation of the Wild Coast (Pondoland Coast) to a minimum age of 300,000 B.P. predating the known origins of modern human lineages and the culture of coastal foraging (Fisher et. al. 2013). This dating includes the first direct ages for coastal red sands that contain Early Stone Age Acheulian and Middle Stone Age stone tools (Fisher et. al. 2013).

The Sinqumeni Caves which contain San Rock art can be found within the Dutywa area to the north of the current study area. Unfortunately not many other resources can be found that mention these caves. The only information available was the short listing found in the Mbhashe municipality profile (EC21 Mbhashe local municipality Idutywa www.mbhashemun.gov.za).

4.2.4 Iron Age

The Iron Age incorporates the arrival and settlement of Bantu speaking people and overlaps the Pre-Historic and Historical Periods. It can be divided into three phases.

The **Early Iron Age** includes the majority of the first millennium A.D. and is characterised by traditions such as Happy Rest and Silver Leaves.

The **Middle Iron Age** spans the 10th to the 13th Centuries A.D. and includes such well known cultures as those at K2 and Mapungubwe.

The **Late Iron Age** is taken to stretch from the 14th Century up to the colonial period and includes traditions such as Icon and Letaba.

There are no recorded archaeological sites found near or in the immediate area of the study area during our literature survey. There are however several registered Early Iron Age sites east of the N2 highway near Elliotdale (Xhora) between the Mbhashe River and Mthatha River (Feely & Bell-Cross, 2011).

During the Early Iron Age, about 1000 years ago, another group of people began to move into the Eastern Cape, who unlike the Stone Age People, were skilled in metal work. The most southerly of these sites is at Canasta Place, about 20kms south of East London on the Port Alfred road (Mitchell & Whitelaw 2005).

Kulubele, near East London, is also of interest since it is the most southerly settlement of Iron Age peoples. Kulubele was partially excavated and reported on by John Steele (2006). It is believed that these peoples did not settle further south of Kulubele because their crops required summer rainfall and East London/ Port Elizabeth area is considered the most south eastern limits of summer rainfall region (Steele, 2006).

According to the studies consulted, historically, little archaeological excavations was undertaken on the Wild Coast (Pondoland Coast) apart from a few including the excavation of Umgazana Cave south west of Port St. Johns which provided a basis for what might be found in rock shelters in the area (Archaeology and History Departments undated). Feely (1987) stated that the *Mphondo* people have inhabited the Mkambati area since the 1680s following the arrival of early *Xhosa* people between 1100 and 1300 A.D. although his survey found very few historical farming settlements in the area. He presented the argument that the area was largely (not completely) avoided during the Iron Age, evidenced by the fact that the survivors of the 1554 Sao Bento shipwreck recorded no sign of farming settlements in the area (Feely 1986; Feely 1987). Further to the north in Kwa-Zulu Natal the beginning of Iron Age settlement is generally dated to between 450 and 500 A.D. while in the Eastern Cape the southernmost penetration of early farmers of the 8th

Century Ndondonwane and 10th Century Ntshekane phases can be found at sites like Canasta (Mitchell & Whitelaw 2005).

4.2.5 Tribes of the Area

A survey of the ethnic composition of the previous homelands of the Ciskei and the Transkei was conducted by A.O. Jackson in the early 1970's. The survey included a short and broad history of the settlement of tribes across the Ciskei and the Transkei (Jackson, 1975).

The two regions, the Transkei and Ciskei, were occupied largely by the *Cape Nguni* (to differentiate them from the *KZN Nguni* groups) and also to a lesser degree, occupied by some *Sotho* groups. The *Cape Nguni* included tribes such as the *Xhosa*-, *Thembu*-, *Mpondo*-, *Fingo*-tribes and various other *Nguni* groups. The *Sotho* group included the *Rolong*-, *Kwena*-, *Tlokwa*- and *Hlakwana*-tribes. These groups can be divided into various smaller groups and tribes who settled across the region (Jackson, 1975).

Jackson (1975) described the people who settled in and around the study area as mostly belonging to the *Xhosa* group. The *Xhosa* group can be subdivided into four branches which included the *Gcaleka*-tribes, *Rarabe*-tribes, the pre-*Gcaleka* or pre-*Rarabe* tribes and the *Gqunukhwebe*-tribes.

The first major migration of the *Xhosa* westwards across the Kei River happened around 1700AD. This was due to succession struggles within the tribe after the death of the *Xhosa* Chief Tshiwo (Theal, 1910). Several more divisions within the *Xhosa* group, as well as further migrations as a result of that, occurred in the following years (Jackson, 1975).

By 1775 most of the Xhosa were settled to the west of the Kei River. Their history up to 1857 is a tale of turmoil and migration from one area to another. This was due to a series of nine Frontier Wars from 1779 to 1878 between the Xhosa and the settlers from the Cape Colony (Jackson, 1975).

In 1856/57 the *Gcaleka* chief Sarili and other *Xhosa* chiefs ordered their subjects to kill all their livestock and to destroy all their crops and grain supplies. This was according to the prophecies of Nongqawuse, a young *Xhosa* girl, in an effort to overcome the powers of the Europeans. This had catastrophic effects on the survival of all the *Xhosa* groups. Colonial forces also conducted subsequent punitive actions to stop these chiefs and the cattle-killing (Jackson, 1975).

In the Ciskei the *Ngqika (Rarabe)* chief Sandile lost both his territory and his life during the war with Colonial forces in 1877/78. By this time most of the *Xhosa* tribes were weakened and defeated. His people were dispersed and some settled in the Kentani area in the Transkei to the north-east of the study area. A part of the *amaNdlambe*-, *amaNtinde*-, *amaGasela*- and *imiDushane*-tribes within

the *Rarabe* branch, retained their lands in the Ciskei after these catastrophic experiences (Jackson, 1975).

Jackson identified the tribes who settled in the area or Mdantsane District in the former Ciskei as part of the *Rarabe* branch within the *Xhosa* group. The people mostly belonged to the *amaNdlambe* and *imiDushane* tribes. Further to the north-east, across the Kei River, tribes such as the *imiNgcangathelo, amaJingqi, amaNgqika* and *amaGwelane* settled as well. These tribes also originated from the Ciskei and belonged to the *Rarabe* tribes.

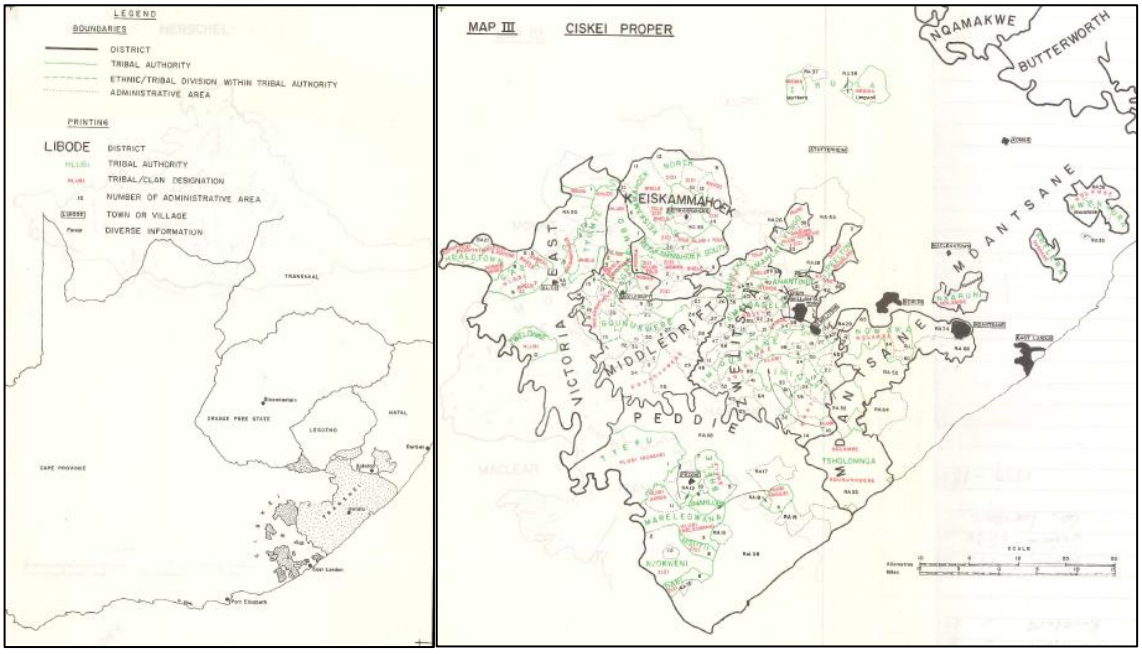

Figure 12 – Jackson (1975) Distribution maps showing tribal territories

4.2.6 Historical Period

The beginning of the Historical Period overlaps the demise of the late Stone and Iron Ages and is characterised by the first written accounts of the Southern African region from the 14th Century to the present. The history of the Eastern Cape is synonymous with British colonial expansion including the first attacks against the Xhosa in 1811, increasing settlement including the large settler influx of the 1820s, the Xhosa cattle killing and continuing border wars until the 1850s.

Kentani (Centani), to the north-east of the study area was the site of the final battle of the Frontier Wars between Xhosa and settler in 1878. With the onset of the battle the Xhosa warriors were informed by their witchdoctor Xito that he had made them impervious to bullets. The Kentani fort, manned by less than a thousand colonial troops, were stormed by nearly 5000 Xhosa warriors and three thousand warriors died, with a loss of only two on the colonial force's side. After this battle the Xhosa chief surrendered and the area became the nucleus of the Transkei area (http://www.wildcoast.co.za/node/112).

Under Apartheid the area formed part of the “independent homeland” of the Transkei, characterised by forced removals, migrant labour systems, underdevelopment and poverty. To the north-east of the study area a noteworthy event was the Pondo Revolt of 1960 and the subsequent crackdown by Apartheid security forces (Wahl & van Schalkwyk 2013).

The Wild Coast itself remained relatively unexplored until the third decade of the 18th Century and the beginning of mission work amongst the Mpondo in 1865 although the first Europeans to traverse the area were most likely the survivors of the wreck of the Sao Bento in 1554 (only a few of whom survived the subsequent trek to Delagoa Bay) followed by early pioneers such as Henry Fynn in the 18th Century (Archaeology and History Departments undated).

4.3 Field work findings[1]

During the field work a total of one potential heritage resource was identified. Farmstead WCA001. **Figure 13**

Figure 13 - Locality of heritage resources in relation to the planned Turbine positions

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
WCA001	-32.742760°	28.270602°	The site consists of a farmstead which is currently in use by the Abalone facility. **Site extent**:110x130m.	No research potential or other cultural significance	NCW

Figure 14 – View of Farmstead WCA001

Figure 15 – View of Farmstead WCA001

5 IMPACT ASSESSMENT

The following section provides an analysis of the of the Latrodex Wind Turbine Development on heritage resources within the expansion area.

5.1 Burial grounds and graves

No burial grounds were located on the property.

5.2 Structures

One farmstead was identified. Structures older than 60 years are protected under Section 34 of the NHRA. The identified farmstead is currently in use by the Abalone facility and will not be directly impacted by the turbine locations. If any intervention of the farmhouse is anticipated, a permit for alteration or destruction will be required by the Eastern Cape Provincial Heritage Authority (ECPHRA). From a Heritage Impact perspective, there is no reason why the project cannot continue.

5.3 Impact assessment tables

Implementing the impact assessment methodology as supplied by EIMS the following tables provide a quantative assessment of the impacts of the.

Table 12 - Projected impact on structures older than 60 years

Impact Name	**Impact on structures older than 60 years**				
Alternative	**Alternative 1**				
Phase	**Construction**				
Environmental Risk					
Attribute	**Pre-mitigation**	**Post-mitigation**	**Attribute**	**Pre-mitigation**	**Post-mitigation**
Nature of Impact	-1	-1	Magnitude of Impact	1	1
Extent of Impact	1	1	Reversibility of Impact	5	5
Duration of Impact	5	5	Probability	2	1
Environmental Risk (Pre-mitigation)					-6
Mitigation Measures					
The structure at WCA001 will require a destruction permit as required by s34 of the NHRA. A permit for alteration or destruction will be required by the Eastern Cape Provincial Heritage Authority (ECPHRA).					
Environmental Risk (Post-mitigation)					-3
Degree of confidence in impact prediction:					Low
Impact Prioritisation					
Public Response					1
Low: Issue not raised in public responses					
Cumulative Impacts					1
Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.					

Degree of potential irreplaceable loss of resources	2
The impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.	
Prioritisation Factor	1,17
Final Significance	-3,50

6 CONCLUSIONS AND RECOMMENDATIONS

The HIA identified one potential heritage resource within the study area which is rated as having a low heritage significance.

6.1 Burial grounds and graves

No burial grounds were located

6.2 Structures

One farmstead was located within the proposed turbine locations. Only if any intervention of the farmhouse is anticipated, would a permit for alteration or destruction be required by the Eastern Cape Provincial Heritage Authority (ECPHRA). From a Heritage Impact perspective, there is no reason why the project cannot continue.

6.3 Palaeontology

A separate report will be provided for the palaeontological aspect of this project.

7 REFERENCES

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Mucina, L. & Rutherford, M. C. (eds.) 2006. The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

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http://www.wildcoast.co.za/node/112

ANNEXURE A – CV

WOUTER FOURIE

Professional Heritage Specialist and Professional Archaeologist and Director PGS Heritage

Summary of Experience

Specialised expertise in Archaeological Mitigation and excavations, Cultural Resource Management and Heritage Impact Assessment Management, Archaeology, Anthropology, Applicable survey methods, Fieldwork and project management, Geographic Information Systems, including *inter alia* -

Involvement in various grave relocation projects (some of which relocated up to 1000 graves) and grave “rescue” excavations in the various provinces of South Africa

Involvement with various Heritage Impact Assessments, within South Africa, including -

- Archaeological Walkdowns for various projects
- Phase 2 Heritage Impact Assessments and EMPs for various projects
- Heritage Impact Assessments for various projects
- Iron Age Mitigation Work for various projects, including archaeological excavations and monitoring
- Involvement with various Heritage Impact Assessments, outside South Africa, including -
- Archaeological Studies in Democratic Republic of Congo
- Heritage Impact Assessments in Mozambique, Botswana and DRC
- Grave Relocation project in DRC

Key Qualifications

BA [Hons] (Cum laude) - Archaeology and Geography - 1997

BA - Archaeology, Geography and Anthropology - 1996

Professional Archaeologist - Association of Southern African Professional Archaeologists (ASAPA) - Professional Member

Accredited Professional Heritage Specialist – Association of Professional Heritage Practitioners (APHP)

CRM Accreditation (ASAPA) -

Principal Investigator - Grave Relocations

Field Director – Iron Age

Field Supervisor – Colonial Period and Stone Age

Accredited with Amafa KZN

Key Work Experience

2003- current - Director – Professional Grave Solutions (Pty) Ltd

2007 – 2008 - Project Manager – Matakoma-ARM, Heritage Contracts Unit, University of the Witwatersrand

2005-2007 - Director – Matakoma Heritage Consultants (Pty) Ltd

2000-2004 - CEO– Matakoma Consultants

1998-2000 - Environmental Coordinator – Randfontein Estates Limited. Randfontein, Gauteng

1997-1998 - Environmental Officer – Department of Minerals and Energy. Johannesburg, Gauteng

Worked on various heritage projects in the SADC region including, Botswana, Mozambique and the Democratic Republic of the Congo

ANNEXURE B – CV

JESSICA ANGEL

Professional Archaeologist

Education History

• 2005: Completed BA at University of the Witwatersrand with Geography and Archaeology Majors.

• 2006: Completed BSc Hons (Geography) at the University of the Witwatersrand with the following subjects: Environmental Management, Advanced Geographic Information Systems (GIS), Palaeogeomorphology and Globalisation and Agri Food Restructuring.

• 2009 – 2013: M.Sc Archaeology and Geography, with thesis title: Mpumalanga Late Iron Age: Incorporating Geographic Information Systems (GIS) and Archaeological Data to Better Understand Spatial and Temporal Distribution of Past Societies. (Graduated March 2014).

Supervisor: Dr Amanda Esterhuysen

Employment History

• 2011: Research Assistant: GIS work for Prof Karim Sadr. Duties include: Google Earth survey work and digitising. (Sadr, K & Rodier, X. 2012. Google Earth, GIS and stonewalled structures in southern Gauteng, South Africa. Journal of Archaeological Science xxx: 1-9)

• 2012-2013: Basic internship at PGS. Duties include gaining familiarity with gathering relevant background data, field surveys, exhumations and report writing.

• 2013: Heritage work at NGT. Background research, report writing and ground surveys.

• 2015 – present: Senior Archaeologist – PGS Heritage

Experience in the field of archaeology:

2012:

• First Phase Heritage Assessment. Belfast, Mpumalanga

• First Phase Heritage Assessment. Delareyville, Stone Age survey

• Heritage Assessment. Belfast Mpumalanga, Ndebele initiation site.

2013:

• Second Phase Impact Assessment. Pretoria East, Gauteng. Documentation and mapping the layout of an Iron Age site.

• Final Phase Impact Assessment. Grave Exhumation. Chlorkop, Gauteng

• First Phase Heritage Assessment. Belfast, Mpumalanga. Exxaro Paardeplaats Project.

• Grave Exhumation. Mafikeng. University of Pretoria research.

• First Phase Heritage Assessment. Port Nolloth, Namaqualand. Powerline.
2015
• Heritage inventory of the Ekuruleni area for Auracon
• Heritage Impact assessment, Heilbron, Freestate
• Second Phase Heritage Impact assessment. Documentation of an Iron age site, Rustenburg.
• Heritage Impact Assessment. Proposed Mining of the farm Zandvoort 10. Carolina, Mpumalanga. (SAHRIS CaseID:11952)
• Heritage Impact Assessment. The Rand en Dal Ext13 proposed development on Portion 29 of the Farm Paardeplaats117 IQ, Krugersdorp, Gauteng. (SAHRIS CaseID:7176)
• Heritage Impact Assessment. Proposed Jeanette Project. Welkom, Freestate.
• Heritage Impact Assessment. Proposed Sendawo 75MW Solar Photovoltaic (PV) Energy Facility. Vryburg, North West Province. (SAHRIS CaseID:9116)
• Heritage Impact Assessment. Proposed Tlisitseng 75MW Solar Photovoltaic (PV) Energy Facility. Lichtenburg, North West Province. (SAHRIS CaseID:9119)
• Second Phase Heritage Mitigation. Clanwilliam Dam Project. Clanwilliam, Western Cape. Heritage management and mitigation of 90 archaeological and historical sites that are to be impacted by the Raising of the Clanwilliam Dam wall. (Collections manager: three year contract).
My tasks include:
- Curation of findings from excavations, and first phase analysis of lithics and all other classes of cultural material residue.
- Site mapping.
- Generation of publication standard lithic photography.
- Management of the on-site field laboratory and curation store.
- Final curation and storage with Iziko Museums south Africa
- Final report writing.
2016
• Heritage Impact Assessment. Proposed Ngwedi Loop. Rustenburg, North West Province
• Heritage Impact Assessment. Proposed N2 Bypass. Butterworth, Eastern Cape
• Heritage Impact. Sibanye Gold Proposed PV Plant. Westonaria, Gauteng
• Heritage Impact Assessment. Proposed City Parks Wetlands. Middle Soweto, Gauteng.
• Heritage Impact Assessment. Proposed Newtown Development. Pilgrimsrest, Mpumalanga.
• Heritage Impact Assessment. Proposed development of the Platberg Wind Energy

Facility and supporting electrical infrastructure. Victoria West, Northern Cape. (SAHRIS CaseID:9301)

• Heritage Impact Assessment. Proposed Aletta and Eureka Wind Energy Facility (WEF). Copperton, Northern Cape. (SAHRIS CaseID:9810)

• Heritage Impact Assessment. Proposed upgrade of the Newlands Bulk Water Supply Scheme. East London, Eastern Cape.

• Heritage Impact Assessment, Leeuwbosch 44, Leeudoringstad, North West Province. Proposed construction of the 5MW Solar Photovoltic (PV) Power Plant. (SAHRIS CaseID:10407)

• Heritage Impact Assessment, Wildebeestkuil 59, Leeudoringstad, North West Province. Proposed construction of the 5MW Solar Photovoltic (PV) Power Plant.

• Heritage Impact Assessment. Proposed development of four Leeuwberg Wind Farms for the Associated Grid Connection near Loeriesfontein, Northern Cape Province. (SAHRIS CaseID:12081, 12082, 12078, 12077)

• Heritage Fatal Flaw Assessment, for the inclusion in the Environmental Screening Investigation for the Proposed Arnot New Ash Disposal Facility, Mpumalanga.

• Heritage Walk Down and Management Plan. Upgrading of the 66KV Network to a 132KV Network in the Hotazel, Kuruman and Kathu Area, Northern Cape Province. Post Authorisation Walkdown from Mothibistad Substation to Sekgame Switching Station. (SAHRIS CaseID:11967)

• Heritage Screening of Portion 9 of the Farm Grootfontein 394 JR, Tswane, Gauteng.

• Second Phase Heritage Mitigation. Mitigation work required with respect to the heritage find PGS06 on the remainder of the farm number 469, Hay District (Registration division), Tsantsabane Local Municipality, Northern Cape Province, in respect to the ACWA Power Solar reserve, Redstone Solar Thermal Power Plant. (SAHRIS CaseID:10081)

My tasks include:

- Site set up and Excavations
- Curation of findings from excavations
- Site mapping.
- Management of the on-site curation store.
- Final report writing.

• Second Phase Heritage Mitigation. Clanwilliam Dam Project. Continued from 2015 2017

• Heritage Impact Assessment for the Proposed Lanseria Outfall Sewer, Johannesburg. (SAHRIS CaseID:11397)

• Heritage Study. Proposed opencast Mining on the Farm Kwaggafontein 8 IT, near Carolina, Mpumalanga Province. (SAHRIS CaseID:11952)

• Heritage Impact Assessment for the Proposed K60 Road Development, Rabie Ridge Gauteng.
• Heritage Impact Assessment. Kimberly Ekapa Mining Joint Venture 2.8 Slimes Pipeline Project, Kimberly, Northern Cape Province.
• Heritage Screening and Site Assessment. MTK 39/2015/16 Mintek Derelict and Ownerless Mines Rehabilitation Programme 2016-2019. Msauli Mine, Steelpoort Mine, Penge Mine, Langerdraai Mine and Uitkuik Mine.
• Heritage Impact Assessment. Proposed Phalandwa Extension Mine, Delmas, Mpumalanga.
• Site Assessment and Heritage Screening. Wadeville Extension 51. Township establishment and associated infrastructure development on Portion 273 and the remaining extent of Portion 267 on the Farm Klippoortjie 110 – IR. Ekurhuleni, Gauteng.
• Site assessment and Heritage Scoping. Proposed eMakhazeni Project near Belfast, Mpumalanga. (SAHRIS CaseID:12316)
• Heritage Impact Assessment. Proposed extension of the mining operations at the existing Ilima Colliery (Old Pembani Colliery), Near Carolina, Mpumalanga. (SAHRIS CaseID:12793)
• Heritage Impact Assessment. Proposed Mlonzi Golf Estate and Hotel, near Lusikisiki, Eastern Cape.
• Second Phase Heritage Mitigation. Clanwilliam Dam Project. Continued from 2015 2018
• Heritage Impact Assessment. Proposed Extension of the Mining Operations at the Existing Manungu Colliery, near Delmas, Mpumalanga.
• Heritage Impact Assessment. Proposed Mashishing Housing Development, Lydenburg, Mpumalanga. (SAHRIS CaseID:12999)
• Heritage Impact Assessment. Phase 1B1 Thornhill Housing Development, Port Alfred, Eastern Cape Province.
• Heritage Impact Assessment. Target to Freddies Pipeline, Allanridge, Freestate.
• Heritage Impact Assessment. Proposed Leslie Coal Mine near Leandra, Mpumalanga. (SAHRIS CaseID:12399)

2018 to Present

• Presently employed on the Polihali Dam Project in Lesotho as Collections Manager (4 year contract).

The Polihali Dam Project is a 2nd Phase CRM operation in mitigation of total inundation of a range of cultural sites, including extant, historical and Stone Age sites. Nine (9) APC and thirty one (31) LSA sites are earmarked for detailed survey and excavation.

My tasks include:

• Curation of findings from excavations, and first phase analysis of lithics and all other classes of cultural material residue.
• Site mapping and profile drawings.
• Generation of publication standard site maps, drawings and figures.
• Input to the project GIS data base
• Management of the on-site field laboratory and curation store.
• Final curation and storage with the National Museum of Lesotho.

Testimonials and References

The following people may be contacted for references:

Prof. John Parkington (UCT) retd.: john.parkington@uct.ac.za

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