UPGRADE OF AN EXISTING SECTION OF THE R103 AND THE CONSTRUCTION OF A NEW 1,6KM GREENFIELDS LINK ROAD BETWEEN THE CAMPERDOWN INTERCHANGE AND THE CAMPERDOWN OVERPASS, MKHAMBATHINI LOCAL MUNICIPALITY, KWAZULU-NATAL PROVINCE

Phase 1 – Heritage Impact Assessment – Final Report

Issue Date: 17 September 2021
Revision No.: 1
Project No.: 564HIA

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Declaration of Independence

I, Polke Birkholtz, 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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Report Title	Upgrade of an Existing Section of the R103 and the Construction of a New 1,6km Greenfields Link Road between the Camperdown Interchange and the Camperdown Overpass, Mkhambathini Local Municipality, KwaZulu-Natal Province		
Control	**Name**	**Signature**	**Designation**
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Co-Author	Polke Birkholtz		Archaeologist/Heritage Specialist/Project Manager – PGS Heritage
Fieldwork	Wouter Fourie		Archaeologist/Heritage Specialist/Project Manager – PGS Heritage

DETAILS OF CLIENT:

CLIENT: **QPoint Group (Pty) Ltd**

CONTACT PERSON: **Mr Norman Chetsanga**

EXECUTIVE SUMMARY

Introduction

PGS Heritage (Pty) Ltd was appointed by QPoint Group (Pty) Ltd to undertake a Phase 1 Heritage Impact Assessment (HIA) for the proposed upgrade of an existing section of the R103 and the construction of a new 1,6km Greenfields Link Road between the Camperdown interchange and the Camperdown overpass.

The proposed development project is located on erf 106 (Remaining Extent of Portions 0 and 2), erf 109 (Remaining Extent of Portions 0, 10 and 29), erf 115 (Portion 8) of Camperdown, and Portions 2, 45, 99 and 100 of the Farm Honig Krantz 945 FT. The study area is located in the Mkhambathini Local Municipality, Umgungundlovu District Municipality, KwaZulu-Natal.

General Desktop Study

An archival and historical desktop study was undertaken to provide a historic framework for the project area and surroundings. This was augmented by a study of available historical and archival maps and an assessment of previous archaeological and heritage studies completed for the area.

The desktop study revealed that the surroundings of the study area are characterised by a long and significant history, whereas previous studies from this area have revealed several archaeological and heritage sites from its surroundings.

Palaeontology

Banzai Environmental was appointed by PGS Heritage (Pty) Ltd to conduct the Palaeontological Desktop Assessment (PDA) to assess the proposed upgrade of an existing section of the R103 and the construction of a new 1,6 km Greenfields link road between the Camperdown interchange and the Camperdown overpass in the Mkhambathini Local Municipality in KwaZulu Natal. In accordance with the National Heritage Resources Act (No 25 of 1999, section 38) (NHRA), this PDA is necessary to confirm if fossil material could potentially be present in the planned development area and to evaluate the impact of the proposed development on the Palaeontological Heritage.

The eastern section of the proposed Camperdown Road development is underlain by dolerite while the western portion is underlain by the Dwyka Group (Karoo Supergroup). Dolerite is igneous in origin and does not contain fossils while the Dwyka Group is known for its track ways and coprolites. Body fossils consists of gastropods, invertebrates, and marine fish, as well as fossil plants. According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the dolerite is zero while that of the Dwyka Group is moderate (Almond

and Pether 2008, SAHRIS website). It is consequently recommended that no further palaeontological heritage studies, ground-truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils.

Fieldwork

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by an experienced professional archaeologist Wouter Fourie on Thursday, 5 August 2021 and Friday, 6 August 2021. Throughout the fieldwork, hand-held GPS devices were used to record the tracklogs. All sites identified during the fieldwork were photographically and qualitatively recorded, and their respective localities were documented using a hand-held GPS device.

One heritage site consisting of a cluster of two buildings was identified (refer site **CD001** below**).**

Impact Assessment and Mitigation

An overlay of all the archaeological and heritage sites identified during the fieldwork over the proposed development footprint areas was made to assess the impact of the proposed development on these identified archaeological and heritage sites. Using this information, impact assessments were undertaken. Please refer to **Chapter 8** for the impact assessment calculations. A series of site-specific mitigation measures are outlined in **Chapter 9** of this report.

General Recommendations

The following general recommendations are made:

- Should the development footprints change or be altered in any way, these changes must be assessed in the field by a heritage specialist/archaeologist before construction commences.

Conclusions

The impact of the proposed development on heritage, including palaeontology, is expected to be of low significance. As a result, and on the condition that the recommendations made in this report are adhered to, no heritage reasons can be given for the development not to continue.

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TERMINOLOGY AND ABBREVIATIONS

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) the following (refer 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 10 000 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 30 000-300 000 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.

Table 1 – List of abbreviations used in this report.

Abbreviations	Description
AIA	Archaeological Impact Assessment
AMAFA	The Kwazulu-Natal Amafa and Research Institute
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
ECO	Environmental Control Officer
EAP	Environmental Assessment Practitioner
EIA	Early Iron Age
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
IAP	Interested and Affected Party
KZNARIA	KwaZulu-Natal AMAFA and Research Institute Act, 5 of 2018
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
SAHRA	South African Heritage Resources Agency

SAHRIS	South African Heritage Resources Information System
SANRAL	South African National Roads Agency SOC Ltd

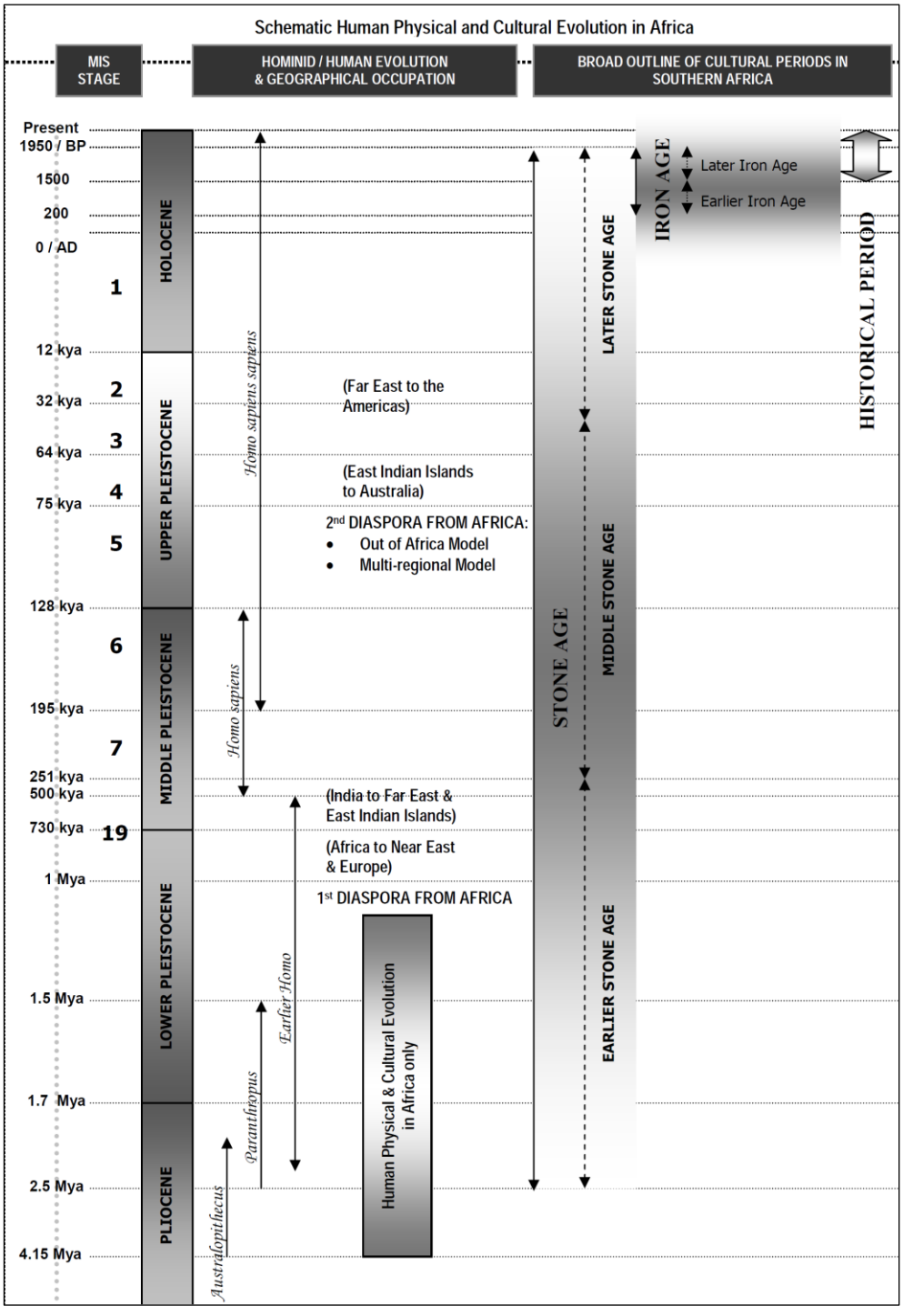

Figure 1 - Human and Cultural Timeline in Africa (Morris, 2008).

1 INTRODUCTION

PGS Heritage (Pty) Ltd was appointed by QPoint Group (Pty) Ltd to undertake a Phase 1 Heritage Impact Assessment (HIA) for the proposed upgrade of an existing section of the R103 and the construction of a new 1,6km Greenfields Link Road between the Camperdown interchange and the Camperdown overpass.

The proposed development project is located on erf 106 (Remaining Extent of Portions 0 and 2), erf 109 (Remaining Extent of Portions 0, 10 and 29), erf 115 (Portion 8) of Camperdown, and Portions 2, 45, 99 and 100 of the Farm Honig Krantz 945 FT. The study area is located in the Mkhambathini Local Municipality, Umgungundlovu District Municipality, KwaZulu-Natal.

1.1 Scope of the Study

The study aims to identify possible heritage sites and finds that may occur in the proposed study area. The HIA aims to inform the company in responsibly managing the discovered heritage resources, in order to protect, preserve, and develop them within the framework provided by the KwaZulu-Natal Amafa and Research Institute Act (5/2018) (KZNARIA) and National Heritage Resources Act of 1999 (Act 25 of 1999) (NHRA).

1.2 Specialist Qualifications

This HIA Report was compiled by PGS. The staff at PGS has a combined experience of nearly 90 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.

The following individuals were involved with this study:

- Polke Birkholtz, the project manager and principal heritage specialist, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist and is also accredited with the Cultural Resources Management (CRM) Section of the same association. He has 20 years of experience in the heritage assessment and management field and holds a B.A. (cum laude) from the University of Pretoria specialising in Archaeology, Anthropology and History and a B.A. (Hons.) in Archaeology (cum laude) from the same institution.

- Wouter Fourie, who was responsible for the fieldwork, is registered with the 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).

- Cherene de Bruyn, the author of this report is registered with ASAPA as a Professional Archaeologist and is accredited as a Principal Investigator and Field Director. She is also a member of the International Association for Impact Assessment South Africa (IAIASA). She holds an MA in Archaeology from University College London, and a BSc (Hons) in Physical Anthropology and a BA (Hons) in Archaeology from the University of Pretoria.

1.3 Assumptions and Limitations

The following assumptions and limitations regarding this study and report exist:

- 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. In fact, due to the dense vegetation and steep topographic gradients found within the study area, it is highly likely for the present identified heritage sites not be a complete record of all the archaeological and heritage resources located within the study area. 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 assess 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.

- Should the development footprints change or be altered in any way, these changes must be assessed in the field by a heritage specialist/archaeologist before construction commences.

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:

1.4.1 Statutory Framework: The National Heritage Resources (Act 25 of 1999)

The NHRA has applicability, as the study forms part of an overall HIA in terms of the provisions of Section 34, 35, 36 and 38 of the NHRA and forms part of a heritage scoping study that serves to identify key heritage resources, informants, and issues relating to the palaeontological, archaeological, built environment and cultural landscape, as well as the need to address such issues during the impact assessment phase of the HIA process.

1.4.1.1 Section 34 – Structures

According to Section 34 of the NHRA, no person may alter, damage or destroy any structure that is older than 60 years, and which forms part of the sites built environment, without the necessary permits from the relevant provincial heritage authority.

1.4.1.2 Section 35 – Archaeology, Palaeontology and Meteorites

According to Section 35 (Archaeology, Palaeontology and Meteorites) and Section 38 (Heritage Resources Management) of the NHRA, PIAs and AIAs are required by law in the case of developments in areas underlain by potentially fossiliferous (fossil-bearing) rocks, especially where substantial bedrock excavations are envisaged, and where human settlement is known to have occurred during prehistory and the historic period.

1.4.1.3 Section 36 – Burial Grounds & Graves

A section 36 permit application is made to the SAHRA or the competent provincial heritage authority which protects burial grounds and graves that are older than 60 years and must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit. SAHRA must also identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with these graves and must maintain such memorials. A permit is required under the following conditions:

Permit applications for burial grounds and graves older than 60 years should be submitted to the South African Heritage Resources Agency:

a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of the conflict, or any burial ground or part thereof which contains such graves.

b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

d) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant.

1.4.1.4 Section 38 - HIA as a Specialist Study within the EIA in Terms of Section 38(8)

A NHRA Section 38 (Heritage Impact Assessments) application is required when the proposed development triggers one or more of the following activities:

a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
b) the construction of a bridge or similar structure exceeding 50 m in length;
c) any development or other activity which will change the character of a site,
    i. exceeding 5 000 m2 in extent; or
    ii. involving three or more existing erven or subdivisions thereof; or
    iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or
    iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
d) the re-zoning of a site exceeding 10 000 m2 in extent; or
e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority

In this instance, the heritage assessment for the property is to be undertaken as a component of the EIA for the project. Provision is made for this in terms of Section 38(8) of the NHRA, which states that:

- An HIA report is required to identify, and assess archaeological resources as defined by the NHR Act, assess the impact of the proposal on the said archaeological resources, review alternatives and recommend mitigation (see methodology above).

Section 38 (3) Impact Assessments are required, in terms of the statutory framework, to conform to basic requirements as laid out in Section 38(3) of the NHRA. These are:

- The identification and mapping of heritage resources in the area affected;
- The assessment of the significance of such resources;
- The assessment of the impact of the development on the heritage resources;
- An evaluation of the impact on the heritage resources relative to sustainable socio/economic benefits;
- Consideration of alternatives if heritage resources are adversely impacted by the proposed development;
- Consideration of alternatives; and
- Plans for mitigation.

1.4.2 KwaZulu-Natal AMAFA and Research Institute Act (No 5 of 2018)

In terms of Section 23 of the NHRA 25 of 1999, the KwaZulu-Natal Amafa and Research Institute is the provincial heritage resources authority for the KwaZulu-Natal Province. In the province, the KwaZulu-Natal AMAFA and Research Institute Act, 5 of 2018 (KZNARIA) provides guidance regarding the identification, protection and management of heritage resources with the KwaZulu-Natal Province.

1.4.2.1 Section 37 General Protection: Structures

37 (1) (a) No structure which is, or which may reasonably be expected to be, older than 60 years, maybe demolished, altered or added to without the prior written approval of the Institute having been obtained on written application to the Institute.

1.4.2.2 Section 38 General Protection: Graves of victims of conflict

38. No person may damage, alter, exhume or remove from its original position –

(a) the grave of a victim of conflict;
(b) a cemetery made up of such graves; or
(c) any part of a cemetery containing such graves,

Without the prior written approval of the Institute having been obtained on written application to the Institute and in terms of the Regulations to this Act.

1.4.2.3 Section 39 General Protection: Informal and private burial grounds

39(1) No grave or burial ground older than 60 years, or deemed to be of heritage significance by a heritage authority –

(a) Not otherwise protected by this Act: and
(b) (b) not located in a formal cemetery managed or administered by a local authority, may be damaged, altered, exhumed, inundated, removed from its original position, or otherwise disturbed without the prior written approval of the Institute having been obtained on written application to the Institute.

1.4.2.4 Section 40 General Protection: Battlefield sites, archaeological sites, rock art sites, paleontological sites, historic fortifications or meteorite or meteorite impact sites

40. (1) No person may destroy, damage, excavate, alter, write or draw upon, or otherwise disturb any battlefield sites, archaeological sites, rock art sites, paleontological sites, historic fortifications or

meteorite or meteorite impact site without the prior written approval of the Institute having been obtained on written application to the Institute.

1.4.3 Notice 648 of the Government Gazette 45421

Although minimum standards for archaeological (2007) and palaeontological (2012) assessments were published by SAHRA (2016), Government Notice (GN) 648 of 2019 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 are listed in **Table 2** and the applicable section in this report noted.

Table 2 - Reporting requirements for GN 648 of 2019

GN 648	Relevant section in report	Where not applicable
2.2 (a) a desktop analysis, using satellite imagery	Section 4 and 5	-
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 and 5	-
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 1 and 5	-
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 provides a description of the current use and confirms the status in the screening report	-

An assessment of the Environmental Screening tool provides the following sensitivity ratings for archaeological resources that fall within the proposed project area rated as Low, with a small section in the eastern section falling in High sensitivity (**Figure 2**), while palaeontological resources are rated as Medium (**Figure 3).**

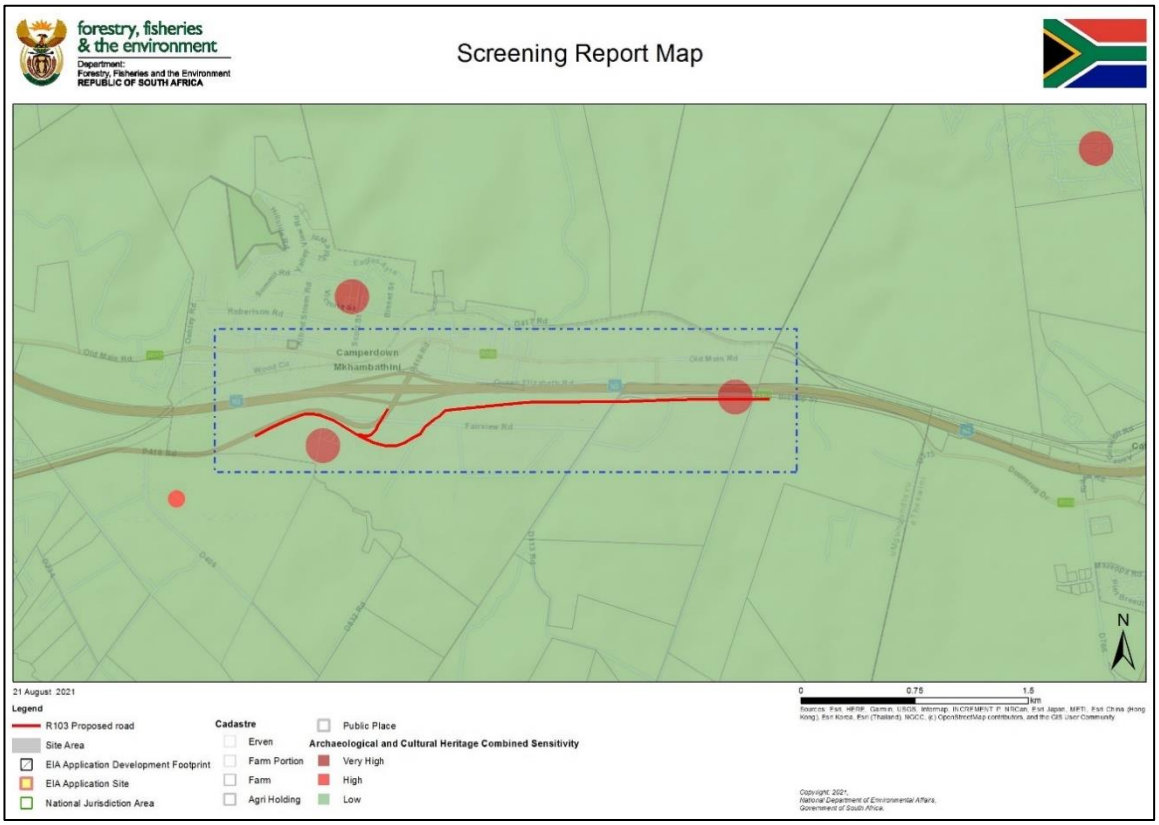

Figure 2 - Environmental screening tool's depiction of the archaeological and heritage sensitivity of the study area and surroundings.

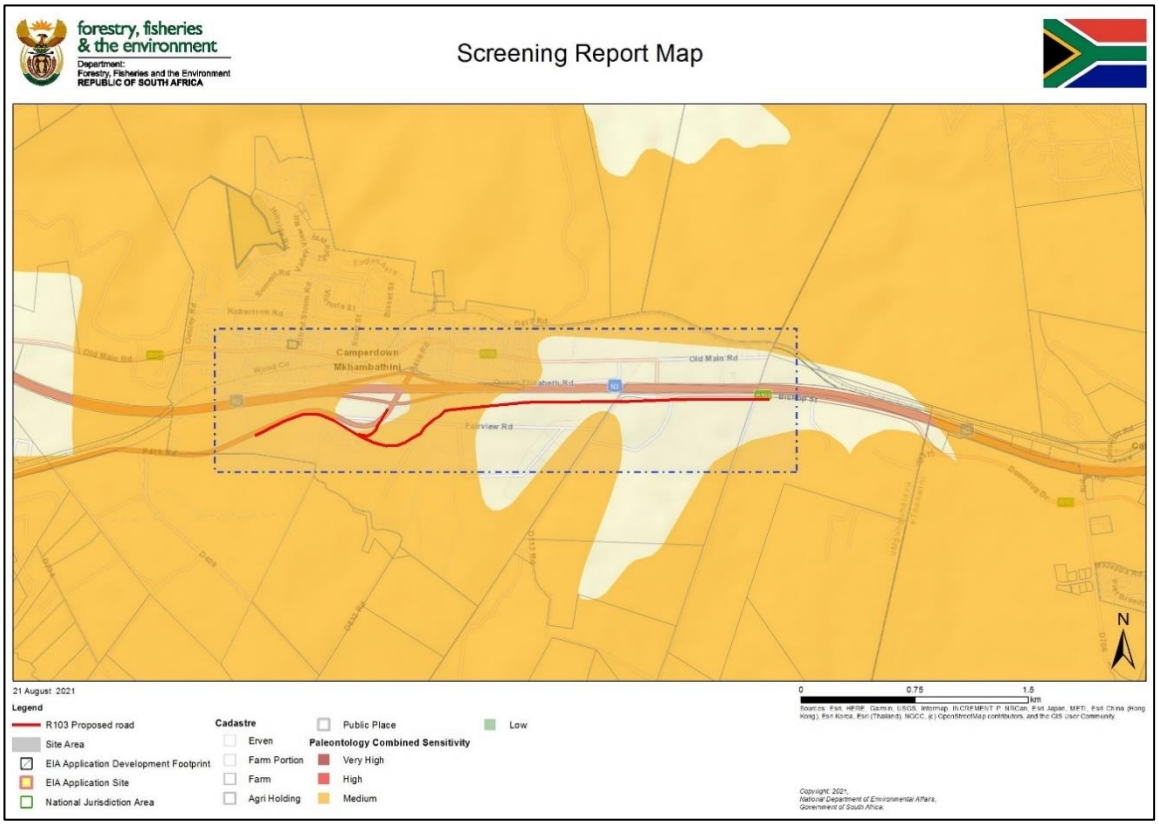

Figure 3 - Environmental screening tool's depiction of the palaeontological sensitivity of the study area and surroundings.

1.5 NEMA – Appendix 6 requirements

The HIA report has been compiled considering the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and Environmental Impact Assessment (EIA) Regulations (2014, and as amended in 2017). **Table 3** below sets out the relevant sections as listed in Appendix 6 of the EIA Regulations (2017), which describes the requirements for specialist reports. For ease of reference, **Table 3** 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 3 - Reporting requirements as per NEMA, as amended, 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 ii of Report – Contact details and company	-
(ii) The expertise of that person to compile a specialist report including a curriculum vita	Section 1 – refer to **Appendix B**	-
(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	Sections 1 and 2	-
(cA) An indication of the quality and age of base data used for the specialist report	Sections 3, 4 and 5	-
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Sections 6, 7 and 8	-
(d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3	-
(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 and **Appendix A**	-
(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;	Sections 5, 6, 7 and **Appendix C**	-
(g) An identification of any areas to be avoided, including buffers	Sections 6, 9 and 10	-
(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;	Figures 18 and 27	
(i) A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1	-
(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	Executive summary, Section 8 and Section 10	
(k) Any mitigation measures for inclusion in the EMPr	Sections 9 and 10	

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Relevant section in report	Comment where not applicable
(l) Any conditions for inclusion in the environmental authorisation	Sections 9 and 10	
(m) Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Sections 9 and 10	
(n)(i) A reasoned opinion as to whether the proposed activity, activities or portions thereof should be authorised and	Executive Summary and Section 10	
(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	Sections 9 and 10	-
(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 environmental 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 SAHRA guidelines on HIAs, PIAs and AIAs	

2 TECHNICAL DETAILS OF THE PROJECT

2.1 Locality

Study Area Coordinates	**Northernmost point:** S 29.730985 E 30.540502	**Easternmost point:** S 29.730984 E 30.562449
	Southernmost point: S 29.733811 E 30.538556	**Westernmost point:** S 29.733921 E 30.525891
Location	The proposed development is located immediately south of the town of Camperdown and is situated in the Mkhambathini Local Municipality, Umgungundlovu District Municipality, KwaZulu-Natal	
Property	Erf 106 (Remaining Extent of Portions 0 and 2), Erf 109 (Remaining Extent of Portions 0, 10 and 29), Erf 115 (Portion 8) Camperdown, and Portions 2, 45, 99 and 100 of the Farm Honig Krantz 945 FT	
Topographic Map	2930DA	
Study Area Extent	The study area is a linear development and is approximately 3,26 km in length.	

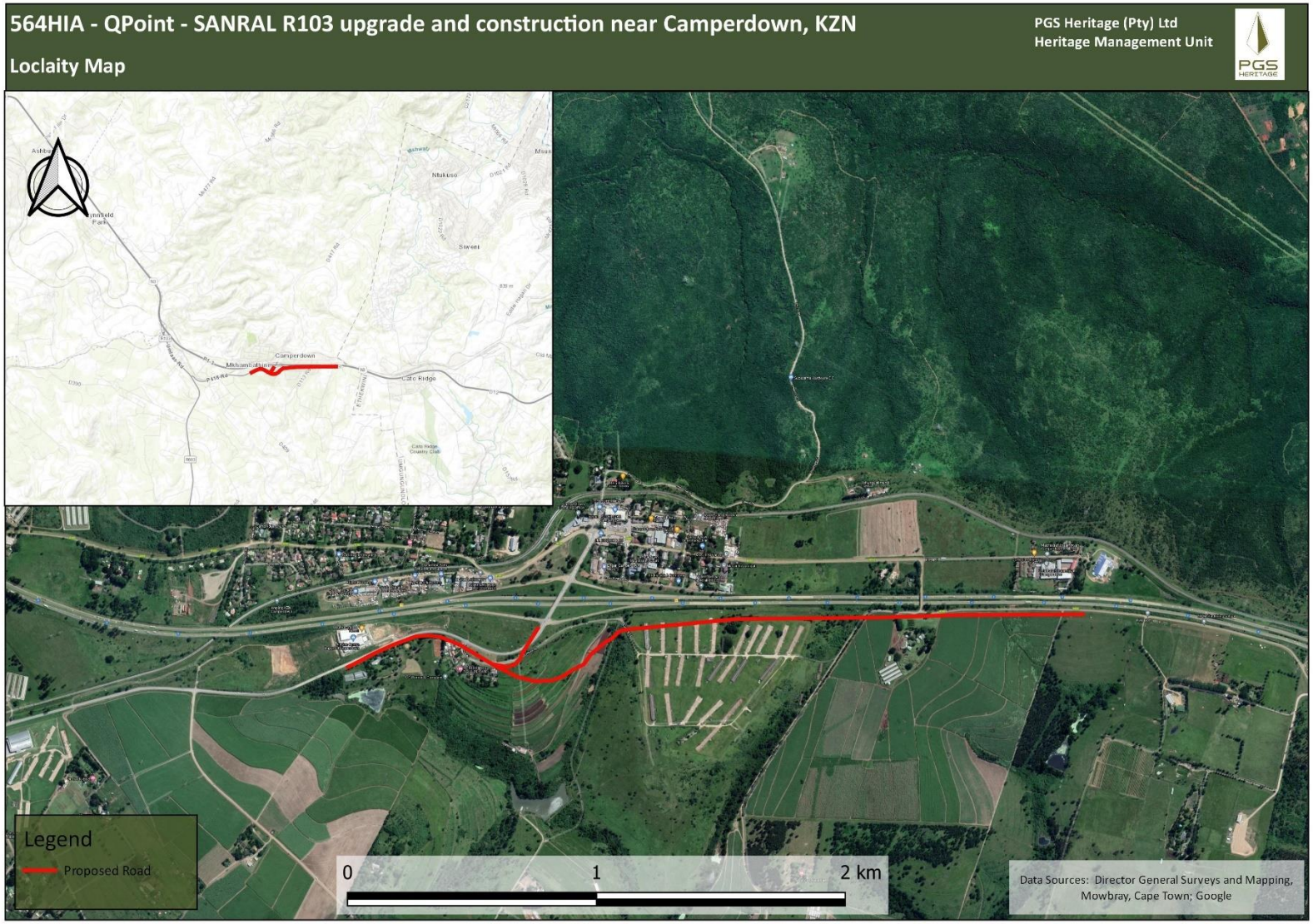

Figure 4 – Google Earth image depicting the proposed upgrade of an existing section of the R103 and the construction of a new 1,6km Greenfields Link Road between the Camperdown interchange and the Camperdown overpass, Mkhambathini Local Municipality, KwaZulu-Natal.

2.2 Technical Project Description

The project consists of the proposed upgrade of an existing section of the R103 and the construction of a new 1,6 km Greenfields link road between the Camperdown interchange and the Camperdown overpass. The study area is located in the Mkhambathini Local Municipality and the Umgungundlovu District Municipality, KwaZulu-Natal Province.

3 ASSESSMENT METHODOLOGY

3.1 Methodology for identification and assessing heritage sites

The applicable maps, tables and figures are included as stipulated in the KZNARIA and the NHRA and the NEMA . The HIA process consisted of three steps:

Step I – Desktop Study: A detailed archaeological and historical overview of the study area and surroundings were undertaken. This work was augmented by an assessment of reports and data contained on the South African Heritage Resources Information System (SAHRIS). Additionally, an assessment was made of the available historic topographic maps. All these desktop study components were undertaken to support the fieldwork.

Step II – Field Survey: The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by an experienced team comprising professional archaeologist Wouter Fourie. The fieldwork was undertaken on Thursday, 5 August 2021 and Friday, 6 August 2021. Throughout the fieldwork, hand-held GPS devices were used to record the tracklogs. All sites identified during the fieldwork were photographically and qualitatively recorded, and their respective localities were documented using a hand-held GPS device.

Step III – Report: The final step involved the recording and documentation of relevant heritage resources, as well as the assessment of resources regarding the heritage impact assessment criteria and report writing, as well as mapping and recommendations.

3.2. Cultural Site Significance Rating

Site significance classification standards prescribed by the SAHRA (2006) and approved by the ASAPA for the Southern African Development Community (SADC) region, were used for the purpose of this report for all sites identified (see **Table 4**). The field ratings assist the responsible heritage resources authority (Provincial or National) in the grading of identified heritage resources into national (Grade I), provincial (Grade II) or local (Grade III) categories. Field ratings are required under Chapter II Section 7(J) of the SAHRA Minimum Standards (2006).

The significance rating of a specific resource is based on information obtained through a review of available sources as well as its representativity or uniqueness within the specific cultural and natural landscape. This significance rating of an identified resource was also evaluated in terms of its contribution to aesthetic, historical, scientific and social values. In addition, the type of impact, the duration and extent of the impact, and the levels of change to the resource before mitigation was also taken into consideration.
The significance of heritage sites, was based on five 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.

If the significance rating was based on a different measurement scale by other authors, this is indicated separately. A new heritage rating based on the site significance classification as prescribed by SAHRA is included in brackets for these specific sites, to standardize all site ratings and significance as part of the audit and subsequent Management Process.

Table 4 – Site significance classification as prescribed by SAHRA

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	Grade 4A	High/Medium	Mitigation before destruction
Generally Protected B (GP.B)	Grade 4B	Medium	Recording before destruction
Generally Protected C (GP.C)	Grade 4D	Low	Destruction

3.3 Methodology for Impact Assessment

The impact significance rating process serves two purposes: firstly, it helps to highlight the critical impacts requiring consideration in the management and approval process; secondly, it shows the primary impact characteristics, as defined above, used to evaluate impact significance.

The impacts will be ranked according to the methodology described below. Where possible, mitigation measures will be provided to manage impacts. In order to ensure uniformity, a standard impact assessment methodology will be utilised so that a wide range of impacts can be compared with each

other. The impact assessment methodology makes provision for the assessment of impacts against the following criteria:

- Significance;
- Spatial scale;
- Temporal scale;
- Probability; and
- Degree of certainty.

A combined quantitative and qualitative methodology was used to describe impacts for each of the aforementioned assessment criteria. A summary of each of the qualitative descriptors along with the equivalent quantitative rating scale for each of the aforementioned criteria is given in **Table 5**.

Table 5 - Quantitative rating and equivalent descriptors for the impact assessment criteria.

RATING	SIGNIFICANCE	EXTENT SCALE	TEMPORAL SCALE
1	VERY LOW	Proposed site	Incidental
2	LOW	Study area	Short-term
3	MODERATE	Local	Medium/High-term
4	HIGH	Regional / Provincial	Long-term
5	VERY HIGH	Global / National	Permanent

A more detailed description of each of the assessment criteria is given in the following sections.

3.3.1 Significance Assessment

Significance rating (importance) of the associated impacts embraces the notion of extent and magnitude, but does not always clearly define these since their importance in the rating scale is very relative. For example, the magnitude (i.e. the size) of area affected by atmospheric pollution may be extremely large (1 000 km2) but the significance of this effect is dependent on the concentration or level of pollution. If the concentration is great, the significance of the impact would be HIGH or VERY HIGH, but if it is diluted it would be VERY LOW or LOW. Similarly, if 60 ha of a grassland type are destroyed the impact would be VERY HIGH if only 100 ha of that grassland type were known. The impact would be VERY LOW if the grassland type was common. A more detailed description of the impact significance rating scale is given in **Table 6** below.

Table 6 - Description of the significance rating scale.

RATING		DESCRIPTION
5	Very high	Of the highest order possible within the bounds of impacts which could occur. In the case of adverse impacts: there is no possible mitigation and/or remedial

		activity which could offset the impact. In the case of beneficial impacts, there is no real alternative to achieving this benefit.
4	High	Impact is of substantial order within the bounds of impacts, which could occur. In the case of adverse impacts: mitigation and/or remedial activity is feasible but difficult, expensive, time-consuming or some combination of these. In the case of beneficial impacts, other means of achieving this benefit are feasible but they are more difficult, expensive, time-consuming or some combination of these.
3	Moderate	Impact is real but not substantial in relation to other impacts, which might take effect within the bounds of those which could occur. In the case of adverse impacts: mitigation and/or remedial activity are both feasible and fairly easily possible. In the case of beneficial impacts: other means of achieving this benefit are about equal in time, cost, effort, etc.
2	Low	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts: mitigation and/or remedial activity is either easily achieved or little will be required, or both. In the case of beneficial impacts, alternative means for achieving this benefit are likely to be easier, cheaper, more effective, less time consuming, or some combination of these.
1	Very low	Impact is negligible within the bounds of impacts which could occur. In the case of adverse impacts, almost no mitigation and/or remedial activity are needed, and any minor steps which might be needed are easy, cheap, and simple. In the case of beneficial impacts, alternative means are almost all likely to be better, in one or a number of ways, than this means of achieving the benefit. Three additional categories must also be used where relevant. They are in addition to the category represented on the scale, and if used, will replace the scale.
0	No impact	There is no impact at all - not even a very low impact on a party or system.

3.3.2 Spatial Scale

The spatial scale refers to the extent of the impact i.e. will the impact be felt at the local, regional, or global scale. The spatial assessment scale is described in more detail in **Table 7.**

Table 7 - Description of the significance rating scale.

RATING		DESCRIPTION
5	Global/National	The maximum extent of any impact.
4	Regional/Provincial	The spatial scale is moderate within the bounds of impacts possible, and will be felt at a regional scale (District Municipality to Provincial Level).
3	Local	The impact will affect an area up to 10 km from the proposed site.
2	Study Site	The impact will affect an area not exceeding the Eskom property.
1	Proposed site	The impact will affect an area no bigger than the ash disposal site.

3.3.3 Duration Scale

In order to accurately describe the impact it is necessary to understand the duration and persistence of an impact in the environment. The temporal scale is rated according to criteria set out in **Table 8**.

Table 8 - Description of the temporal rating scale.

RATING		DESCRIPTION
1	Incidental	The impact will be limited to isolated incidences that are expected to occur very sporadically.
2	Short-term	The environmental impact identified will operate for the duration of the construction phase or a period of less than 5 years, whichever is the greater.
3	Medium/High term	The environmental impact identified will operate for the duration of life of facility.
4	Long term	The environmental impact identified will operate beyond the life of operation.
5	Permanent	The environmental impact will be permanent.

3.3.4 Degree of Probability

Probability or likelihood of an impact occurring will be described as shown in **Table 9** below.

Table 9 - Description of the degree of probability of an impact occurring.

RATING	DESCRIPTION
1	Practically impossible
2	Unlikely
3	Could happen
4	Very Likely
5	It's going to happen / has occurred

3.3.5 Degree of Certainty

As with all studies, it is not possible to be 100% certain of all facts, and for this reason a standard "degree of certainty" scale is used as discussed in **Table 10**. The level of detail for specialist studies is determined according to the degree of certainty required for decision-making. The impacts are discussed in terms of affected parties or environmental components.

Table 10 - Description of the degree of certainty rating scale.

RATING	DESCRIPTION
Definite	More than 90% sure of a particular fact.
Probable	Between 70 and 90% sure of a particular fact, or of the likelihood of that impact occurring.

Possible	Between 40 and 70% sure of a particular fact or of the likelihood of an impact occurring.
Unsure	Less than 40% sure of a particular fact or the likelihood of an impact occurring.
Can't know	The consultant believes an assessment is not possible even with additional research.
Don't know	The consultant cannot, or is unwilling, to make an assessment given available information.

3.3.6 Quantitative Description of Impacts

To allow for impacts to be described in a quantitative manner in addition to the qualitative description given above, a rating scale of between 1 and 5 was used for each of the assessment criteria. Thus the total value of the impact is described as the function of significance, spatial and temporal scale as described below:

$$\textbf{Impact Risk} = \frac{(\text{Significance} + \text{Spatial} + \text{Temporal})}{3} \times \frac{\text{Probability}}{5}$$

An example of how this rating scale is applied is shown in **Table 11**.

Table 11 - Example of Rating Scale

Impact	Significance	Spatial Scale	Temporal Scale	Probability	Rating
	LOW	Local	Medium/High-term	Could Happen	
Impact to air	2	3	3	3	1.6

Note: The significance, spatial and temporal scales are added to give a total of 8, that is divided by 3 to give a criteria rating of 2,67. The probability (3) is divided by 5 to give a probability rating of 0,6. The criteria rating of 2,67 is then multiplied by the probability rating (0,6) to give the final rating of 1,6.

The impact risk is classified according to five classes as described in the **Table 12** below.

Table 12 - Impact Risk Classes

RATING	IMPACT CLASS	DESCRIPTION
0.1 – 1.0	1	**Very Low**
1.1 – 2.0	2	**Low**
2.1 – 3.0	3	**Moderate**

3.1 – 4.0	4	**High**
4.1 – 5.0	5	**Very High**

Therefore, with reference to the example used for air quality above, an impact rating of 1.6 will fall in the Impact Class 2, which will be considered to be a low impact.

4 CURRENT STATUS QUO

4.1 General Description of the Study Area

The study area is located immediately south of Camperdown and is approximately 4,5km west of Cato Ridge and approximately 10,8km southeast of Ashburton. It is situated in a semi-rural area and falls under the Mkhambathini Local Municipality. Almost the entire project footprint area is highly disturbed and includes a pre-existing road.

In terms of vegetation, the site is predominantly Dry Coast Hinterland Grassland. This vegetation type consists of "…*undulating plains and hilly landscape mainly associated with drier coast hinterland valleys in the rain-shadow of the rain-bearing frontal weather systems from the east coast. Sour sparse wiry grassland dominated by unpalatable Ngongoni grass (Aristida junciformis) with this monodominance associated with low species diversity. In good condition dominated by Themeda triandra and Tristachya leucothrix. Wooded areas are found in valleys at lower altitudes, where this vegetation unit grades into SVs 3 KwaZulu-Natal Hinterland Thornveld and SVs 7 Bisho Thornveld.*" (SANBI, 2020).

In terms of geology and soils, the site is characterised by *"acid, leached heavy soils…derived from Karoo Super group sediments"* (SANBI, 2020).

The N3 is located to the north of the R103, while several agricultural fields are located to the south of the road. The proposed alignment starts on the R103, roughly one kilometre west of the Bishop and Doornrug Road intersection (refer **Figure 5**). From here it continues in a western direction past the bridge that crosses over the N3 (**Figure 6**). From the bridge, the proposed road alignment continues straight and follows the northern edge of the old poultry farm boundary (**Figure 8**). To the west of the poultry farm, the alignment crosses a small drainage line before arching southwards and then north, traversing previously cultivated contoured fields (**Figure 9**). It joins the R103 around the intersection with Fairview Road (**Figure 11**).

Figure 5 - General view of the existing R103 road.

Figure 6 - The N3 (blue arrow) is located to the north of the R103, while several agricultural fields are located south of the road.

Figure 7 – Alignment towards the old poultry farm to the left of the pipeline servitude. The red line shown on this image indicates the approximate position of the road alignment.

Figure 8 – Alignment along the poultry farm boundary servitude. The red line shown on this image indicates the approximate position of the road alignment.

Figure 9 – Alignment continuing west of the poultry farm over cultivated fields.

Figure 10 - Section of the road where upgrades have already taken place.

Figure 11 – New alignment joining the R103 on the western side of the project area.

5 DESKTOP STUDY FINDINGS

5.1 Archaeological and Historical Overview of the Study Area and Surroundings

DATE	DESCRIPTION
THE STUDY AREA AND SURROUNDINGS DURING THE STONE AGE	
The South African Stone Age is the longest archaeologically-identified phase identified in human history and lasted for millions of years.	
2.5 million to 250 000 years ago	The Earlier Stone Age (ESA) is the first and oldest phase identified in South Africa's archaeological history and comprises two technological phases. The earliest of these is known as Oldowan and is associated with more robust flaked tools. It dates to approximately <2 million years ago. The second technological phase is the Acheulian and comprises more refined stone artefacts such as the cleaver and bifacial hand axe. The Acheulian dates back to approximately 1.5 million years ago. Prins (2016) mentions that a high number of Early Stone Age sites are known from the wider surroundings. These sites are primarily open air sites located close to water. One of these sites is located 4 km northwest of the study area.
>250 000 to 40 000 years ago	The Middle Stone Age (MSA) is associated with flakes, points and blades manufactured by means of the prepared core technique. This phase is also associated with modern humans and complex cognition (Wadley 2013). Several well-known MSA sites are located in the general region of the study area. Sibudu Cave, for example, is located roughly 56 km northeast of the present study area and has a deep, well-dated Middle Stone Age (MSA) sequence and good organic preservation (Wadley, 2004). The cave was first excavated in 1983 by Aron Mazel of the Natal Museum. Sibudu Cave excavations have yielded an Iron Age occupation directly overlying a long sequence of final Middle Stone Age (MSA) layers dating c. 61 000–26 000 years ago. Older, undated layers contain a Howiesons Poort Industry (Wadley & Jacobs, 2004). Another MSA site from the surrounding landscape is the Umhlatuzana Rock Shelter, which is located approximately 20 km southeast of the present study area (Kaplan, 1989). Furthermore, the study undertaken in 2009 for the proposed Camperdown Light Industrial Project identified a MSA site roughly 588 m southwest of the present study area (Anderson, 2009).
40 000 years ago to the historic past	The Later Stone Age (LSA) is the third archaeological phase identified and is associated with an abundance of very small stone tools known as microliths. One example of a Late Iron Age site in the general vicinity of the present study area is Umhlatuzana Rock Shelter, located roughly 20 km to the southeast. Rescue excavations during 1985 exposed an unexpectedly rich archaeological deposit which reached a depth of 2.5 m. Cultural assemblages from the MSA and LSA were recovered (Kaplan, 1989). Another significant LSA site from the surroundings include Shongweni, which is located approximately 21 km southeast of the study area (Davies, 1975)(Vogel et al., 1986)(Wadley, 1993).
THE STUDY AREA AND SURROUNDINGS DURING THE IRON AGE	
The arrival of early farming communities during the first Millenium heralded in the start of the Iron Age for South Africa. The Iron Age is that period in South Africa's archaeological history associated with pre-colonial farming communities who practised cultivation and pastoralist farming activities, metalworking, cultural customs such as lobola and whose settlement layouts show the tangible representation of the significance of cattle (known as the Central Cattle Pattern) (Huffman, 2007).	

AD 450 – AD 750	The Mzonjani facies of the Kwale Branch of the Urewe Tradition represents the earliest Iron Age phase which can be associated with the study area and its surroundings. The pottery of this facies is characterised by the occurrence of punctates on rim and spaced motifs on the shoulders of the clay vessels. This facies represents the oldest known Iron Age facies from Kwazulu-Natal (Huffman, 2007). The type site was identified during the commencement of road construction north-east of Durban (Maggs, 1980).
AD 650 – AD 750	The Msuluzi facies of the Happy Rest Sub-Branch of the Kalundu Tradition represents another Iron Age phase which can be associated with the study area and surrounding landscape. The pottery of this facies is characterised by broad cross-hatching, blocks of lines on rims as well as complex decoration on the neck and shoulder (Huffman, 2007).
AD 750 – AD 950	The Ndondondwane facies of the Kalundu Tradition is the next Iron Age facies to be identified within the general surroundings of the study area. The key features on the decoration of the ceramics comprise multiple bands of herringbone and cross-hatching in the neck (Huffman, 2007).
AD 950 – AD 1050	The Ntshekane facies of the Kalundu Tradition is the next Iron Age facies to be identified within the general surroundings of the study area. The key features on the decoration of the ceramics from this facies comprise multiple bands of herringbone on sloping necks (Huffman, 2007).
AD 1050 – AD 1500	The Blackburn facies of the Blackburn Branch of the Urewe Tradition represents the next Iron Age phase associated with the study area and surrounding landscape. The pottery of this facies is characterised by rim notching, spaced motifs, chevrons, punctates and appliqué (Huffman, 2007). The type site was excavated between 1968 and 1970 by Davies (1971) and is located northeast of the Durban.
AD 1350 – AD 1750	Ongoing research in KwaZulu-Natal has focused on the second phase of the Blackburn sequence, known as Moor Park. During the fourteenth century the Moor Park farmers were the first to colonize the higher altitude grasslands of South Africa's interior. In doing so they opened up possibilities for greater economic specialization and interdependence, not least because of the impossibility of smelting iron where suitable fuel was lacking. The same lack of timber also encouraged the adoption of stone as a building material (Mitchell and Whitelaw, 2005). The Moor Park facies of the Blackburn Branch of the Urewe Tradition is associated with pottery characterised by punctates, rim notching and appliqué (Huffman, 2007).
c. 1500	During this period the area today known as Kwazulu-Natal became increasingly populated by black people, and documents dating to as early as 1550 indicate that these residents had generally uniform customs and language (Van Jaarsveld, 1998). While they were not known as Zulu yet, these residents were certainly Nguni. In the words of John Laband: "*After about AD 1500 the evidence indicates that the Iron Age people of the Natal-Zululand region were culturally, linguistically and physically the direct ancestors of today's black population, and that their distinctive Nguni-speaking culture had developed within their own region*" (Laband, 1995:13).
Early 1700s	Oral history relates that approximately at the beginning of the eighteenth century a number of other Black groups were living in the Durban area, including the Khanyawo, Nqondo, Thembu and Mpofana. While the Mpofana settled in the present-day Bluff area, the Thembu lived in most of the area where present-day Durban is located today, but south of the uMngeni River. Both these groups were fishermen. However, the Khanyawo living on the northern

	side of the uMngeni River were metal workers and used to trade spears for fish with the neighbouring Thembu (Whitelaw, 1991).
1787 - 1828	Shaka kaSenzangakhona, born in 1787, became leader of the small subordinate clan named Zulu, and by the time of the assassination on 24 September 1828 (Laband, 1995), King Shaka had made the Zulu the most powerful kingdom in Africa, a kingdom and people synonymous with a vast piece of South Africa still known today as Zululand and Kwazulu-Natal.

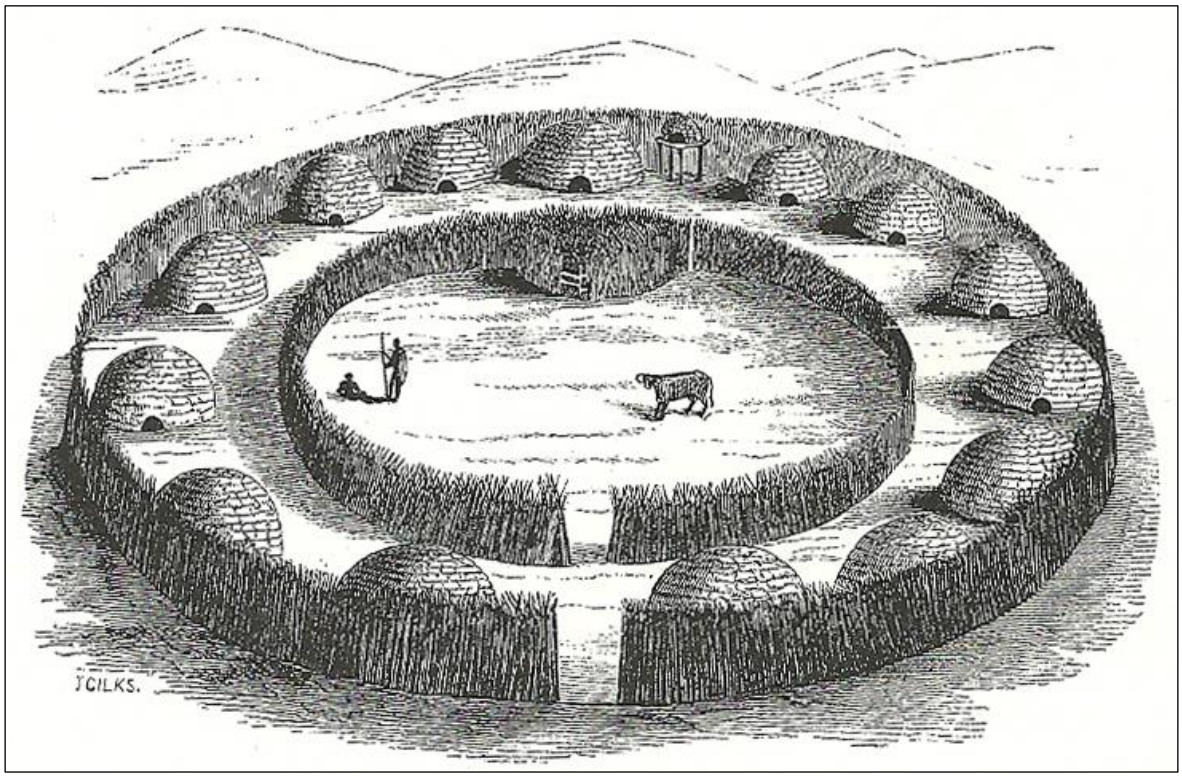

Figure 12 – A 19th century depiction of a typical Zulu umuzi (homestead) (Reader's Digest, 1994:81).

Early 1800s	Beater & Prins (2016) and Prins (2016) indicate that during the early nineteenth century the uMngeni River valley in the surroundings of Camperdown were inhabited by several Nguni-speaking groups such as the Dlanyawo, Nyavu and Njilo. These references indicate that while the Nyavu remained independent, both the Dlanyawo and Njilo were incorporated into the ever-growing Zulu Kingdom under King Shaka.

THE STUDY AREA AND SURROUNDINGS DURING THE HISTORIC PERIOD

The Historical Period within the surroundings of the study area commenced with the arrival of newcomers to this area. The first arrivals would almost certainly have been travellers, traders, missionaries, hunters and fortune seekers. However, with time, this initial trickle was replaced by a mass flood of white immigrants during the 1830s, when a mass migration of roughly 2 540 Afrikaner families (comprising approximately 12 000 individuals) from the frontier zone of the Cape Colony to the interior of Southern Africa took place. The people who took part in this Great Trek were later named Voortrekkers (Visagie, 2011).

1824	Six Englishmen, under the leadership of Henry Francis Fynn and Francis Farewell, established a trading post named Port Natal at present-day Durban. By 1838 the white population of the settlement reached thirty individuals,

	whereas a number of black refugees settled on a permanent basis at the village as well (Van Jaarsveld, 1998).

Figure 13 – Francis Farewell (left) and Henry Francis Fynn (right) (Reader's Digest, 1994:86).

1828	In 1828, King Shaka ceded to Nathaniel Isaacs the district comprising the site of Durban (Henderson & Pay, 1939).
1835	In 1835, the settlers decided to lay out the settlement in streets and named the town D'Urban, after Sir Benjamin Durban, the Governor of the Cape Colony (Henderson & Pay, 1939). In the same year the new king of the Zulu, Dingane, who succeeded after the assassination of Shaka, forbade any white person to cross over the Tugela River (Van Jaarsveld, 1998).
16 December 1837	After the arrival of Dutch speaking trek farmers (*Voortrekkers*) from British controlled Eastern Cape borderlands into the territory of the Zulu as part of the Great Trek, King Dingane attacked their laager at Blood (Ncome) River and was defeated (Laband, 1995).
24 April 1838	Fearing the increasing influence of the white traders at Port Natal, Dingane ordered his army to attack it. By chance the vessel *Comet* was at anchor of Port Natal, and most of the white families managed to flee to the safety of the ship from where they watched the settlement destroyed (Van Jaarsveld, 1998).
1839 – 1843	With the settlement of Port Natal in ruins, and the threat of Dingane for the time being averted, the Voortrekkers established the Republic of Natalia. Two towns were founded by them during this time as well, namely Pietermaritzburg (named after Piet Retief and Gert Maritz) and Congella (in the vicinity of the present-day Durban) (Laband, 1995). Port Natal was propertly surveyed for the first time by George Cato. The suburbs of Cato Manor and Cato Ridge were named in his honour (Erasmus, 2014).
1842 - 1845	In 1842, after short hostilities which included the Battle of Congella and the Siege of Durban, Captain Smith with a force of 300 men occupied Port Natal (Henderson & Pay, 1939). On 31 May 1844 the territory was formally annexed

	to the Cape Colony (Erasmus, 2014). In 1845, the first Lieutenant-Governor, Martin West, was appointed (Erasmus, 2014) (Henderson & Pay, 1939). It is interesting to note that newly appointed Lieutenant-Governor West, with his colonial administration, established themselves in Pietermaritzburg.
1848	The first sugar cultivars were imported from Mauritius, and proved to be very successful (www.sahistory.org.za). This resulted in the rapid growth of sugar cane farming, initially in the surroundings of Durban, and later also closer to the study area.
1879	During the Anglo-Zulu War of 1879, the Camperdown area would have seen a marked increase in movements of troops and supplies from the harbour of Durban to Pietermaritzburg. Apart from these troops providing for the defence of Pietermaritzburg, the town was also chosen by the British commander Lord Chelmsford as the staging point from where two of his three-columns for the invasion of Zululand would start (Lock & Quantrill, 2002). After the subsequent Zulu victory at Isandhlwana on 22 January 1879, the residents of Pietermaritzburg feared that the town would come under attack. The so-called Pietermaritzburg Laager was built and consisted of a "…*number of substantial buildings prepared for defence through the loopholing of walls and the fitting of reinforced and loopholed doors and shutters. These buildings were connected by barricades of sandbags and of boxes filled with earth*." (Laband and Thompson, 1983:115). However, no skirmishes or battles associated with the war took place anywhere close to the present study area.

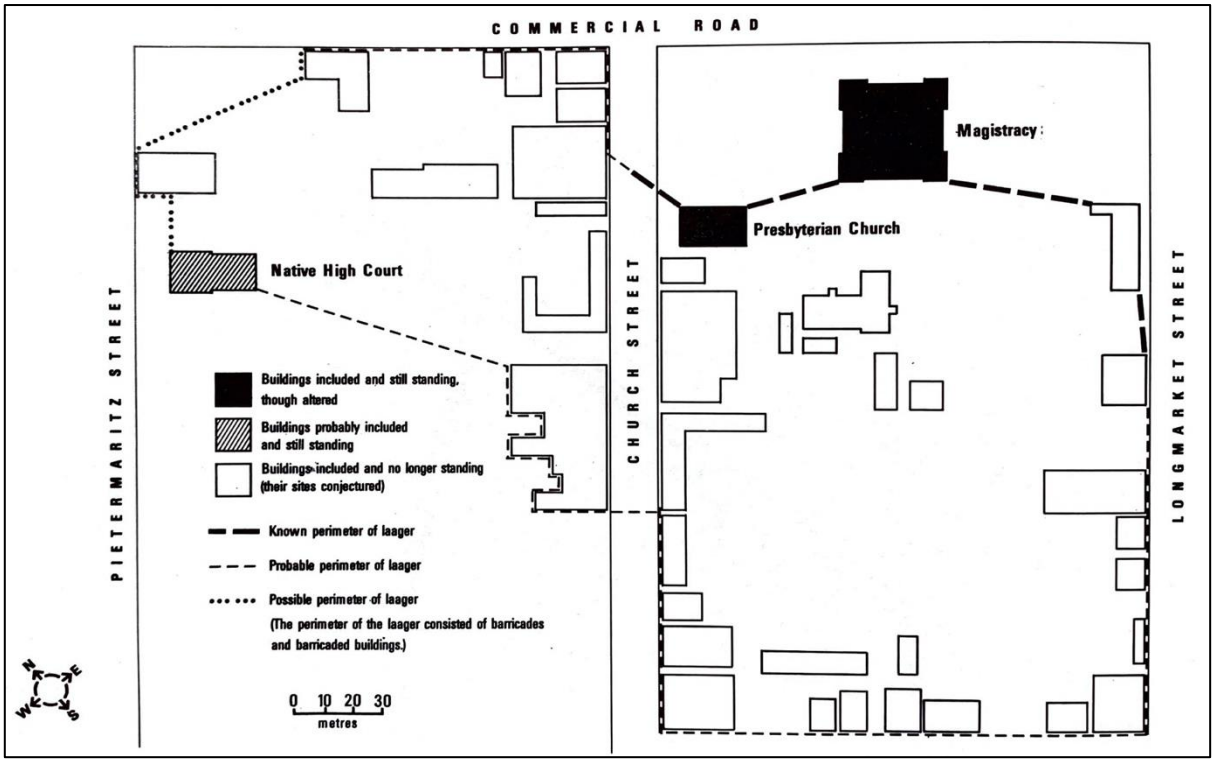

Figure 14 – The Pietermaritzburg Laager (Laband and Thompson, 1983:114).

October 1880	Since 1877 railway construction had been underway in Durban and surrounds, and over time slowly extended the line from Durban to Pietermaritzburg. In October 1880, the railway line from Botha's Hill to Camperdown was completed. This meant that the town of Camperdown was now directly linked by rail to Durban. The Camperdown to Pietermaritzburg section was completed in

	December 1880, thereby directly linking Durban with Pietermaritzburg (www.sahistory.org.za).
1899 – 1902	The South African War was fought between Great Britain and the Boer republics of the Zuid-Afrikaansche Republiek and Orange Free State. The surroundings of the study area were not directly affected by the war as some most of the battles which took place in Kwazulu-Natal occurred at towns such as Dundee, Ladysmith and Talana. The three attempted invasions of Natal by the Boer forces (at the beginning of 1900, in September 1901 and in March 1902) were all repulsed successfully by the British forces (Brookes & Webb, 1979).

5.2 History of Camperdown

The origins for the establishment of the town of Camperdown can be found in the arrival of John Vanderplank at Port Natal during the early 1840s. Vanderplank was en route to to Tasmania in Australia where he had aquired land. He had sailed from England in his own vessel named *Louisa* in honour of his fiancée who did not see a future for herself in Tasmania and remained behind in England. At Port Natal, which now fell briefly under the Voortrekker Republic of Natalia, Vanderplank was approached by the Voortrekkers and requested to sail to Lourenço Marques (present-day Maputo) to rescue survivors of Louis Trichardt's trek party (Erasmus, 2014).

After he returned to Port Natal with the survivors of Louis Trichardt's trek party, Vanderplank decided to stay behind and aquired a number of farms in present-day KwaZulu-Natal, including the farm Camperdown. The original survey diagram for the farm (see **Figure 15** below), indicates that the farm Camperdown was registered on 1 March 1853. This said, it is likely that Vanderplank already lived on the farm since the early 1840s before it was registered.

John Vanderplank acquired seeds of the black wattle shrub from his brother who was living in Australia, intending to plant these Australian shrubs as hedges and windbreaks on his farm. However, the black wattles he planted found the soil and climate of KwaZulu-Natal so favourable, that they rapidly grew into trees (Erasmus, 2014).

Camperdown was the first place in South Africa where black wattles had been planted, and Camperdown and its owner John Vanderplank are important in the origins of what was later to become South Africa's black wattle industry. This industry subsequently developed after the benefits of black wattles for tanning activites (due to the high tannic acid content in its bark) and the manufacture of paper were discovered (Erasmus, 2014).

The town of Camperdown was established in 1865. Its name commemorates the naval victory by the British fleet under Admiral Adam Duncan over the Dutch fleet under Admiral Jan Willem de Winter in October 1797 (Erasmus, 2014). The nearby Dutch town of Camperduin was translated to Camperdown by the British for the naming of the battle.

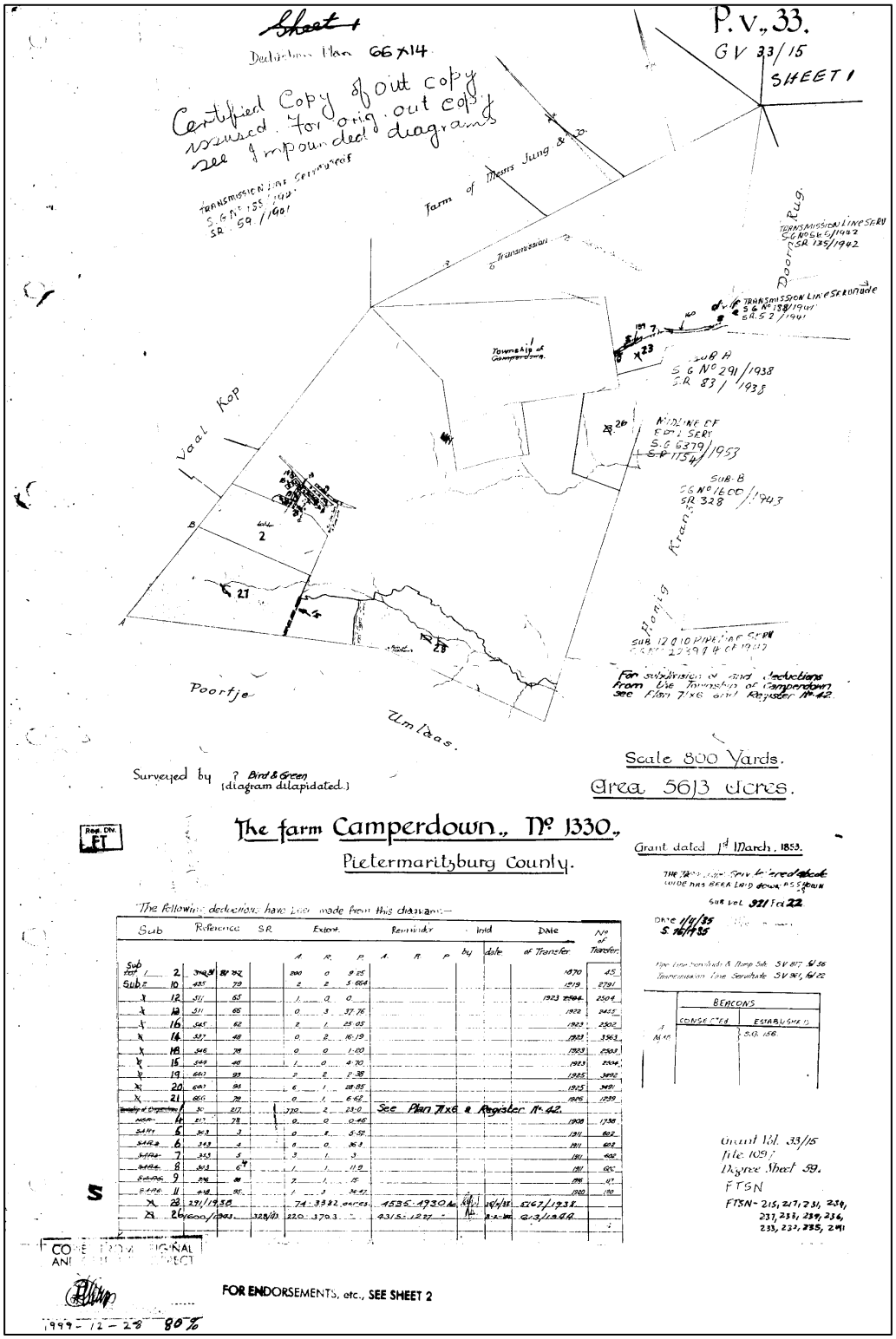

Figure 15 – Farm survey diagram for the farm Camperdown 1330. This diagram indicates that the farm was granted on 1 March 1853 (www.csg.dla.gov.za).

5.3 Archival and Historical Maps

An assessment of available archival and historical maps was undertaken as a way to establish a historic layering for the study area. These historic maps are also valuable resources in identifying possible heritage sites and features located within the study area.

5.3.1 First Edition of the 2930DA Topographic Sheet

The figure below depicts a section of the First Edition of the 1:50 000 2930DA Cato Ridge Topographical Sheet. This map sheet was surveyed in 1968 and drawn in 1969 by the Trigonometrical Survey Office. It was printed and published by the Government Printer in 1969.

Overlays of the study area over this map sheet are provided in the image below. The following observations can be made from this overlay:

- The town of Camperdown appears to have been fully established by 1969. Several buildings, most likely as part of residential areas, including a school and a church, are depicted north of the proposed road upgrade.
- Sections of the proposed R103 road already existed at the time.
- The eastern section of the project area was used as part of cultivated land.

A number of possible heritage features have been identified in proximity to the study area. These features are discussed in the table and are marked on the map below.

Table 13 - Features that were identified in proximity to the present study area on the First Edition of the 2930DA Cato Ridge Topographical sheet.

Feature	Coordinates	Description
Feature 1	S 29.732020 E 30.552760	Five buildings / structures forming part of the Lynton farm.
Feature 2	S 29.732249 E 30.544633	A cluster of large and small buildings / structures forming part of the Maxwelton farm. These structures appear to form part of a chichen farm.
Feature 3	S 29.731316 E 30.529933	Two structures forming part of the Chez Nous farmstead.
Feature 4	S 29.732613 E 30.525321	Two structures forming part of the Gelderstones farmstead.

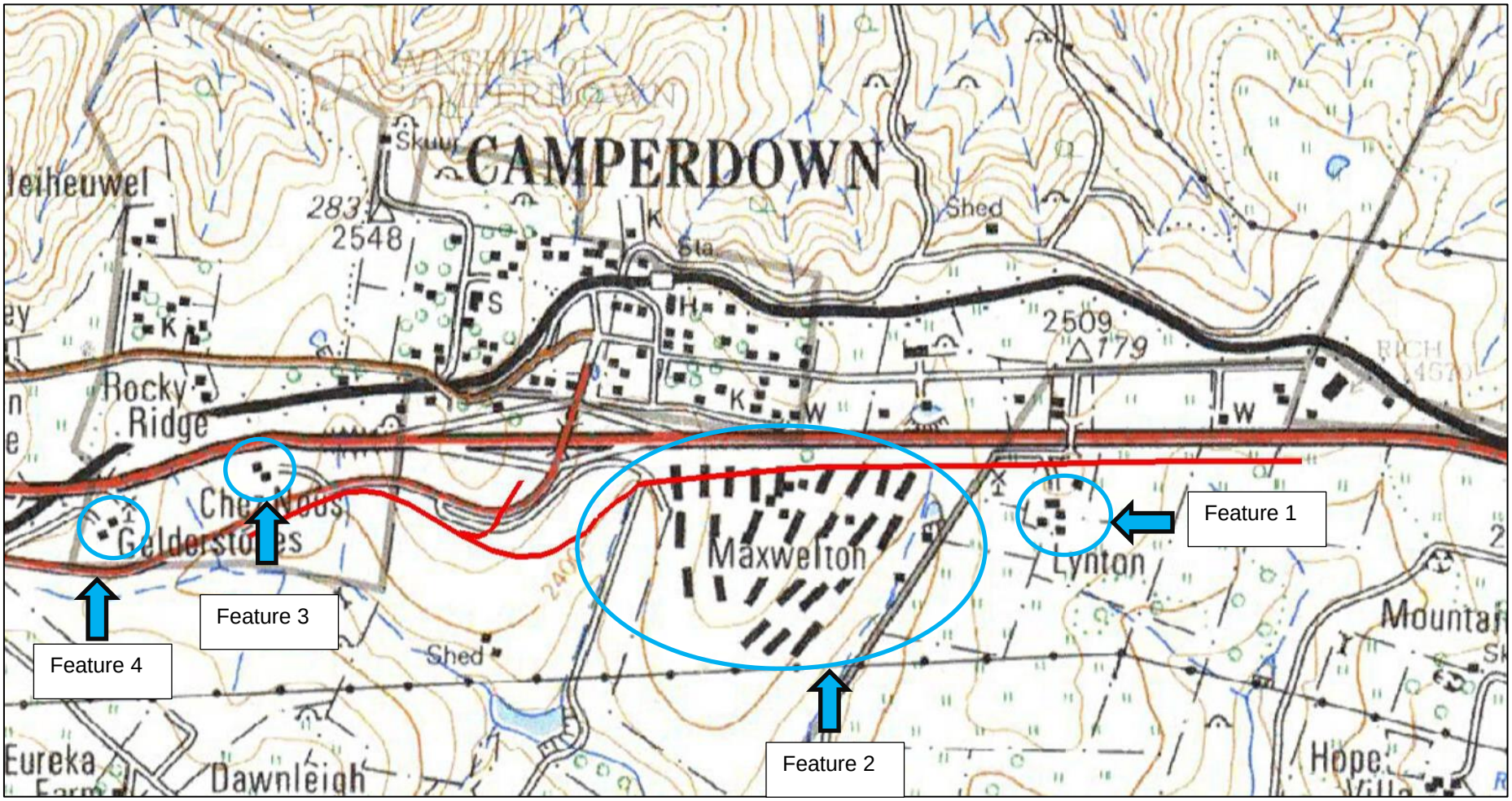

Figure 16 – View of a section of the First Edition of the 2930DA Cato Ridge Topographical Sheet, that was surveyed in 1968. The project area is shown in red with the identified map features marked in blue. Further information relating to these map features are provided in the text.

5.3.2 Second Edition of the 2382AC Topographic Sheet

This section deals with the Second Edition of the 2930DA Cato Ridge Topographical Sheet. This map sheet was published by the Chief-director of Surveys and Mapping. It was printed by the Government Printer in 1978.

Overlays of the study area over this map sheet are provided in the image below. The following observations can be made from this overlay:

- The town of Camperdown appears to have expanded to the north. Several formal roads have been developed.
- The eastern and western sections of the project area were used as part of cultivated land.

Table 14 - Features that were identified within the present study area from the Second Edition of the 2930DA Cato Ridge Topographical Sheet.

Feature	Coordinates	Description
Feature 1	S 29.731995 E 30.552513	Two buildings / structures forming part of the Lynton farm.
Feature 2	S 29.731514 E 30.545072°	A cluster of large and small buildings / structures forming part of the Maxwelton farm. Again, these structures appear to form part of a chichen farm.
Feature 3	S 29.731270 E 30.529810	Two structures as part of the Chez Nous farmstead.
Feature 4	S 29.732459 E 30.525242	Two structures as part of the Gelderstones farmstead.
Feature 5	S 29.732803 E 30.534308	Three structures located to the south of the project area.

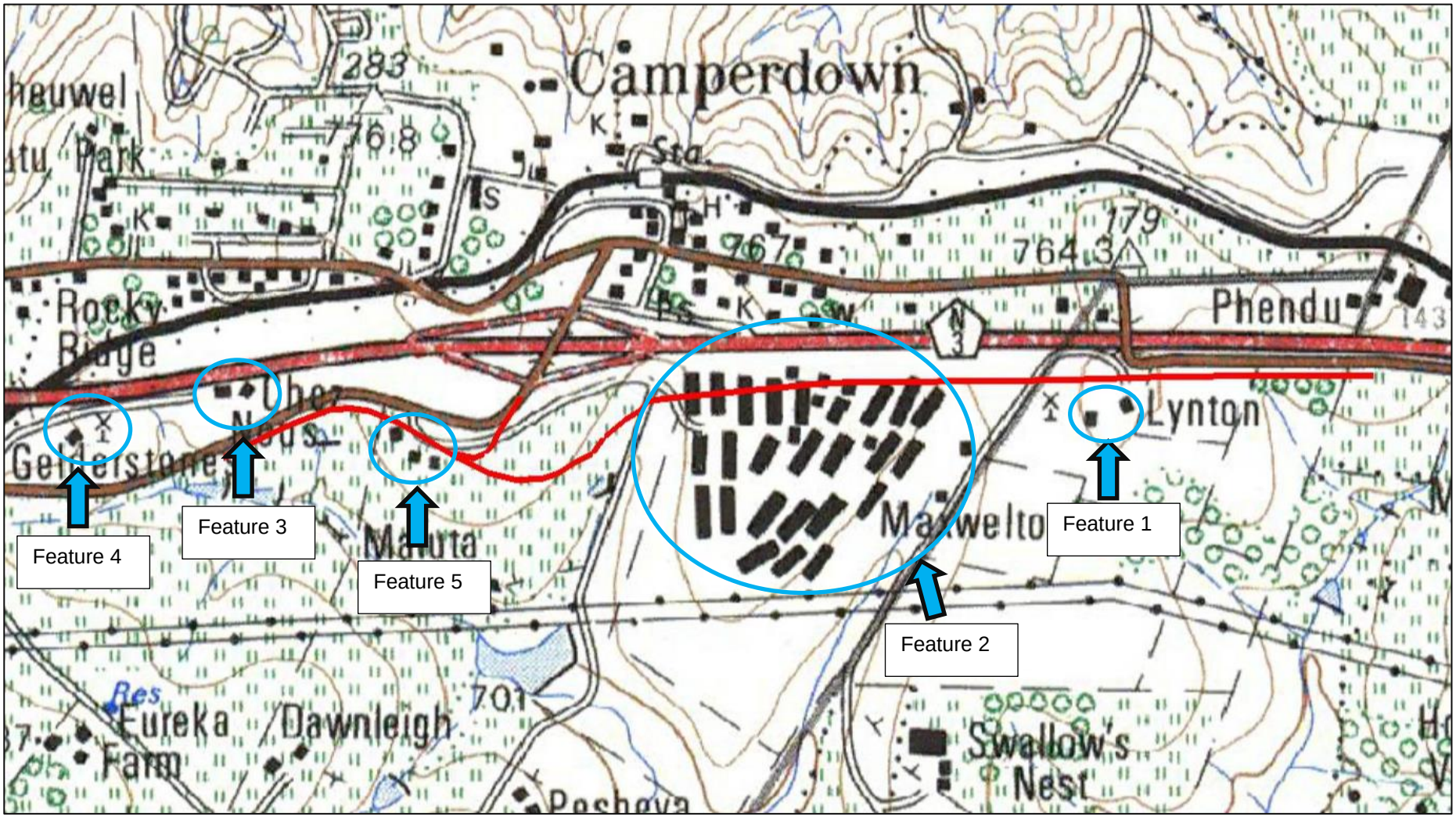

Figure 17 - Detailed view of the Second Edition of the 2930DA Topographic Sheet that was printed in 1978. The project area is shown in red with the identified map features marked in blue. Further information relating to these map features are provided in the text.

5.4 Previous Heritage Impact Assessment Reports from the Study Area and Surroundings

An assessment of the SAHRIS of SAHRA was undertaken to establish whether any previous archaeological and heritage impact assessments had revealed archaeological and heritage sites within, and near, to the present study area footprints.

This assessment has revealed that several previous studies had been undertaken in the surroundings of the study area, with various heritage and archaeological site types identified. All these previous studies located on the SAHRIS system will be briefly discussed in chronological order below. In each case, the results of each study are shown in bold.

- ANDERSON, G. 2009. Heritage survey of the proposed Camperdown Light Industrial Project. **A general Middle Stone Age site was recorded on the property. The site consists of several isolated stone tools**

- ANDERSON, G. 2010. Heritage survey of the proposed Rietvallei Low-Cost Housing Upgrade, Camperdown, Kwazulu-Natal. **No heritage sites were recorded during the survey.**

- WAHL, E. & VAN SCHALKWYK, L. 2014a. Phase 1 Heritage Impact Assessment Report: Proposed Subdivision for Lougot Logistics Industrial Park on Portion of the Remainder of a Portion of Portion 30 of The Farm Uitkomst and Doornrug No. 852, Cato Ridge, eThekwini Metropolitan Municipality, KwaZulu-Natal. **No heritage resources ere identified within the proposed development area.**

- WAHL, E. & VAN SCHALKWYK, L. 2014b. Phase 1 Heritage Impact Assessment Report: Proposed Subdivision for Engen Distribution Centre over Portion of Portion 26 of the Farm Uitkomst and Doornrug No. 852, Cato Ridge, eThekwini Metropolitan Municipality, KwaZulu-Natal**. Three buildings of heritage significance were observed.**

- PRINS, F. 2016. Cultural Heritage Impact Assessment of the Proposed Anniedale Quary Site adjacent to the R603, Camperdown. **No heritage sites or features were observed.**

- ANDERSON, G. 2017. Heritage survey of the proposed Cato Ridge/Inanda Filling Station and Shopping Centre. **During the survey, two old mango trees that could be remnants from the previous homestead, and thus could be indicative of graves, were observed. No grave features were noted due to the disturbed nature of the area. Five pottery sherds were noted and these date to the Early Iron Age.**

- VAN SCHALKWYK, L. 2017. Heritage Scoping Report LONZA Water Products and Wood Preservation Facility Cato Ridge, eThekweni Municipality, KwaZulu-Natal. **No heritage resources of any significance were observed on the site.**

6 FIELDWORK FINDINGS

6.1 Introduction

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance.

The fieldwork was undertaken by an experienced professional archaeologist Wouter Fourie. The fieldwork was undertaken on Thursday, 5 August 2021 and Friday, 6 August 2021. Throughout the fieldwork, a hand-held GPS device was used to record the tracklogs. All sites identified during the fieldwork were photographically and qualitatively recorded, and their respective localities were documented using the GPS device.

The sites identified during the fieldwork will be described below. A map depicting the distribution of the heritage sites is shown in **Figure 18** below. This map also depicts the track logs that were recorded during the fieldwork.

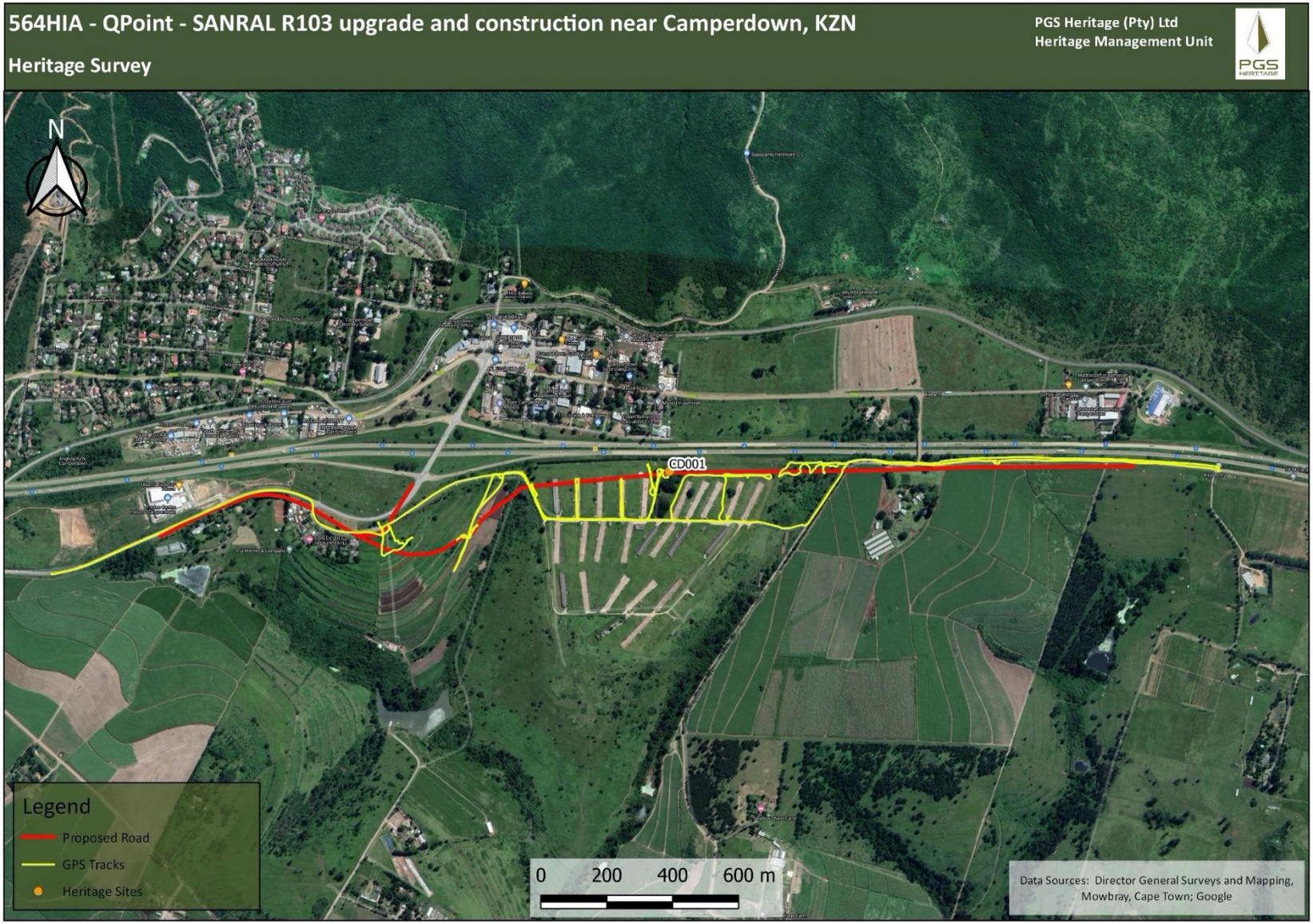

Figure 18 – This map depicts the tracklogs that were recorded during the fieldwork in yellow. The study area is shown in red. The identified site is marked.

6.2 Heritage Sites identified during the Fieldwork

6.2.1 CD001

GPS Coordinates:

S 29.73106274
E 30.54525295

Type: Historic / Recent structure

Description:

The site consists of a cement and brick multi-room house. The pitched roof consists of wooden trusses with asbestos roof sheeting (**Figure 19** to **Figure 21**). A single brick chimney is located on the northern side of the house. The only noteworthy architectural feature is the decorative brick and pilaster buttresses on the eastern and southern corners of the house. The windows and door frames are all steel. A decorative slate fireplace in the living room provides some interest to an otherwise ordinary house (refer **Figure 22**). A garage / storeroom in the same building style is situated to the west of the main house (**Figure 23**).

A structure, most likely the house, was already depicted in proximity to site **CD001** on the First Edition of the 2930DA Cato Ridge Topographical Sheet.. The building is located near Feature 2 on the Maxwelton Farm (**Figure 24**). This map sheet was surveyed in 1968, which means that if the building identified at site **CD001** is the same building as depicted on this map, it would be at least 53 years old.

An aerial photograph taken in 1944 (60_046_13064) was obtained from the CDNGI Geospatial Portal (http://www.cdngiportal.co.za/cdngiportal/). This aerial photograph depicts a farmstead consisting of a main house and various farm buildings located in proximity to site **CD001**. Further assessment of this and other aerial photographs indicates that the poultry farm was built between 1953 and 1967, with all the buildings from the original farmstead, barring two, already demolished by 1968. In **Figure 26** the new house and outbuilding show up as bright patches with a cluster of buildings with a much darker roofe (sections of the original farmstead) present just to the south of the newer buildings (**Figure 25**).

From the above-mentioned information it seems evident that the house and outbuilding identified at site **CD001** were constructed as part of the development of a poultry farm on the farm Maxwelton. While no aerial photographs from the early to mid-1960s are available, the general appearance and characteristics of the two buildings at site **CD001** as depicted on both the 1967 and 1968 aerial photographs, indicate that these buildings were built shortly before these photographs were taken. With this as background, it seems that the buildings from site **CD001** are both younger than 60 years.

Significance:

From the above information it seems that the main house and outbuilding were constructed as part of the poultry farm development shortly before the 1967 and 1968 aerial photographs were taken. As far as could be determined, the structure does not have a special relationship between the community and the surrounding environment.

The site and structures are therefore of low heritage significance and heritage rating of IIIC, with no historical value. As such the site is deemed to be of **Generally Protected C (GP. C)** or **Low Significance.**

Site Extent: 65m x 45m

Figure 19 - View of the eastern facade of the house.

Figure 20 - View of the northern facade of the house.

Figure 21 - View of the western facade of the house.

Figure 22 - View of the slate fireplace found in the living room.

Figure 23 - View of the garage.

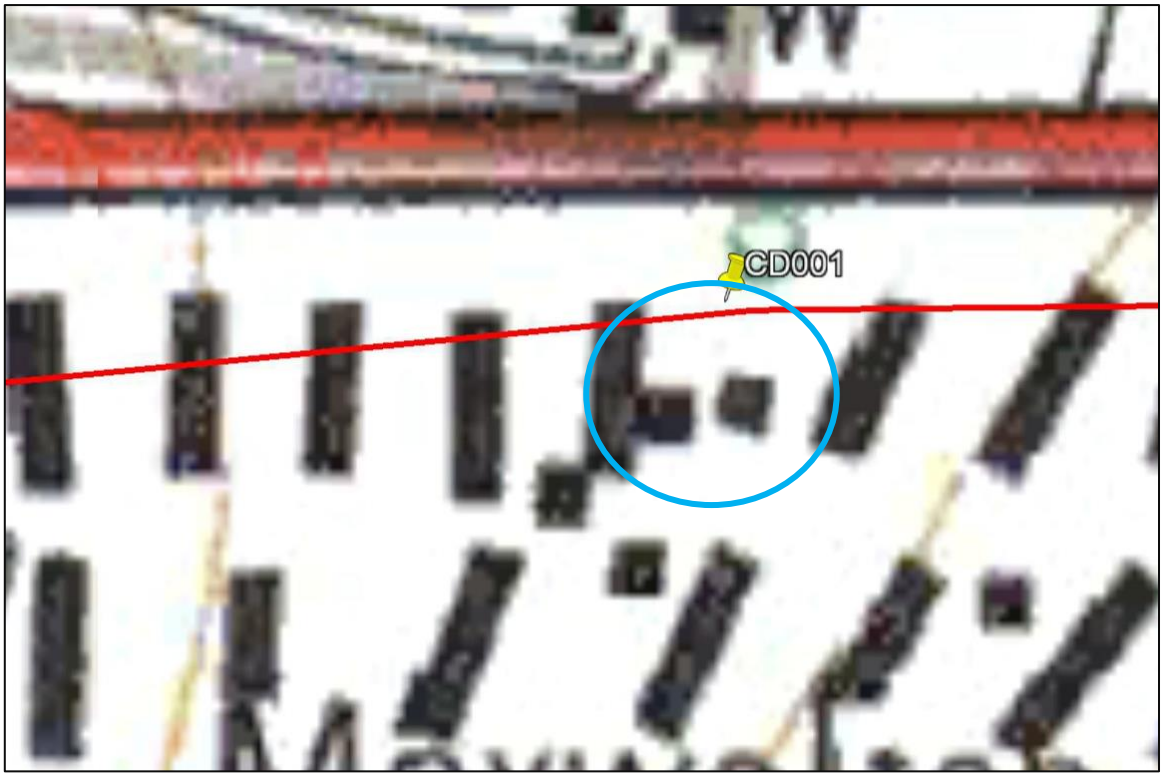

*Figure 24 – Section of the First Edition of the 1:50 000 2930DA Cato Ridge Topographical Sheet that was surveyed in 1968. The map depicts two structures (blue circle) near the location of **CD001**. It seems likely for these structures to be the two buildings identified at site **CD001**.*

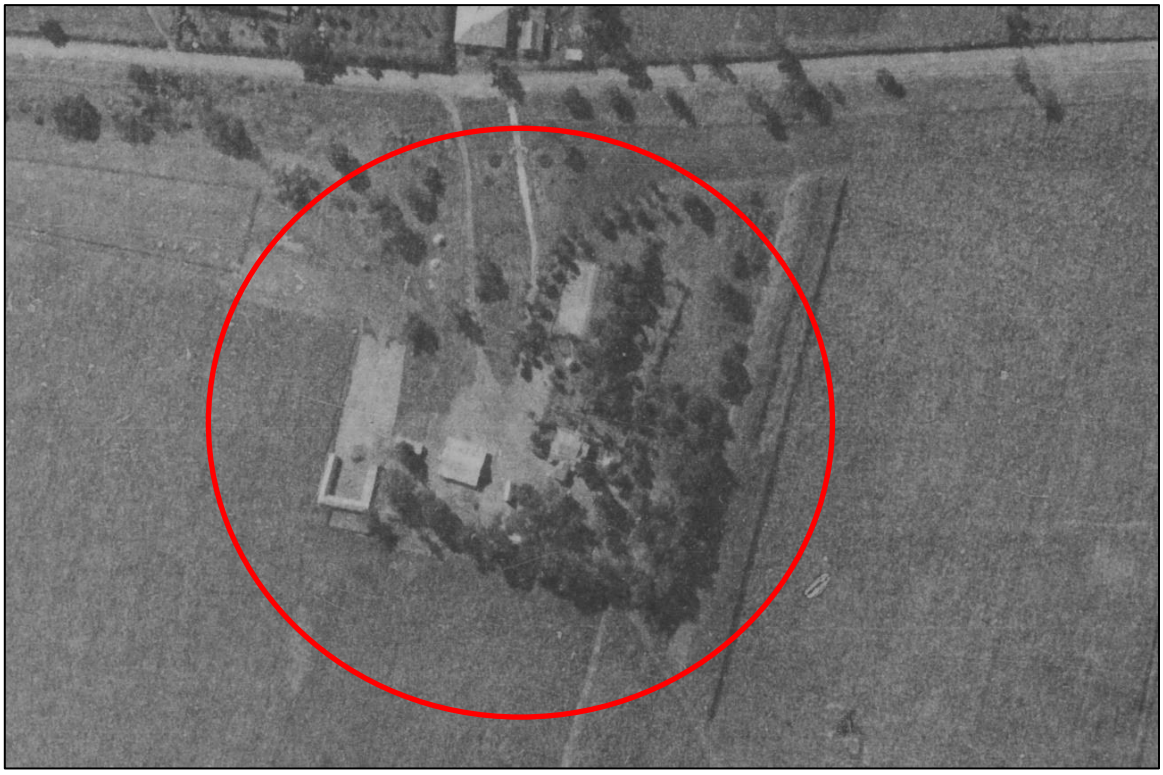

Figure 25 – Section of the aerial photograph that was taken in 1944 (60_046_13064), showing the original farmhouse, along with several other original farm buildings that have since been demolished

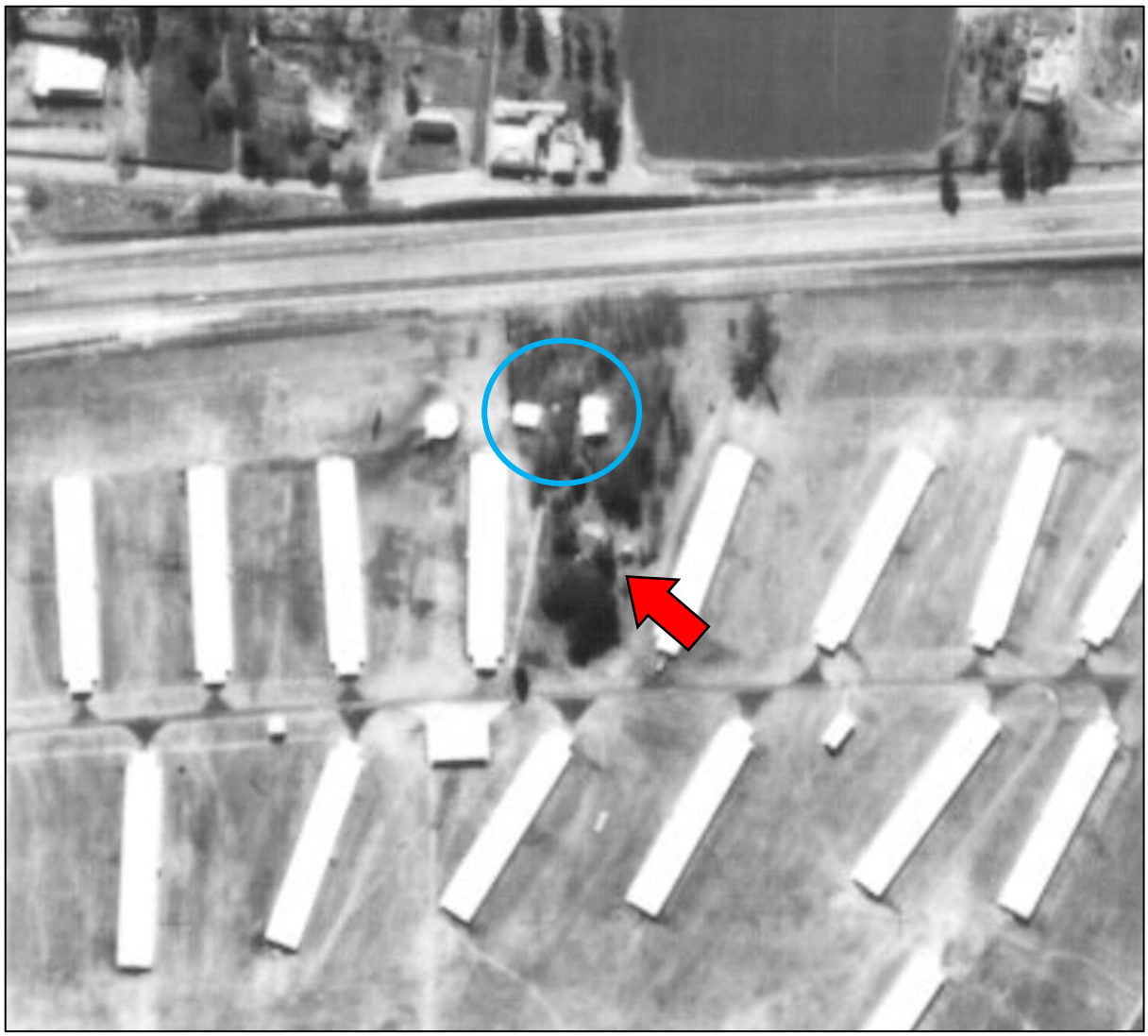

*Figure 26 – Section of the aerial photograph taken in 1968 (615_007_07707_68). It is clear from this image that the poultry farm had only recently been constructed. The two buildings identified at site **CD001** are marked with a blue circle. A cluster of older buildings, with darker roofs (see red arrow), is still present between the trees just south of the buildings at site **CD001**. From the assessment of aerial photographs, it is clear that these older buildings were already demolished by the time that the 1975 aerial photograph was taken.*

7 PALAEONTOLOGY

Banzai Environmental was appointed by PGS Heritage (Pty) Ltd to compile the Palaeontological Desktop Assessment (PDA) for the project. This PDA is necessary to confirm if fossil material could potentially be present in the planned development area and to evaluate the impact of the proposed development on the Palaeontological Heritage.

The eastern section of the proposed Camperdown Road development is underlain by dolerite while the western portion is underlain by the Dwyka Group (Karoo Supergroup). Dolerite is igneous in origin and does not contain fossils while the Dwyka Group is known for its trackways and coprolites. Body fossils consist of gastropods, invertebrates, and marine fish, as well as fossil plants. According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the dolerite is zero while that of the Dwyka Group is moderate (Almond and Pether 2008, SAHRIS website).

It is consequently recommended that no further palaeontological heritage studies, ground-truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils

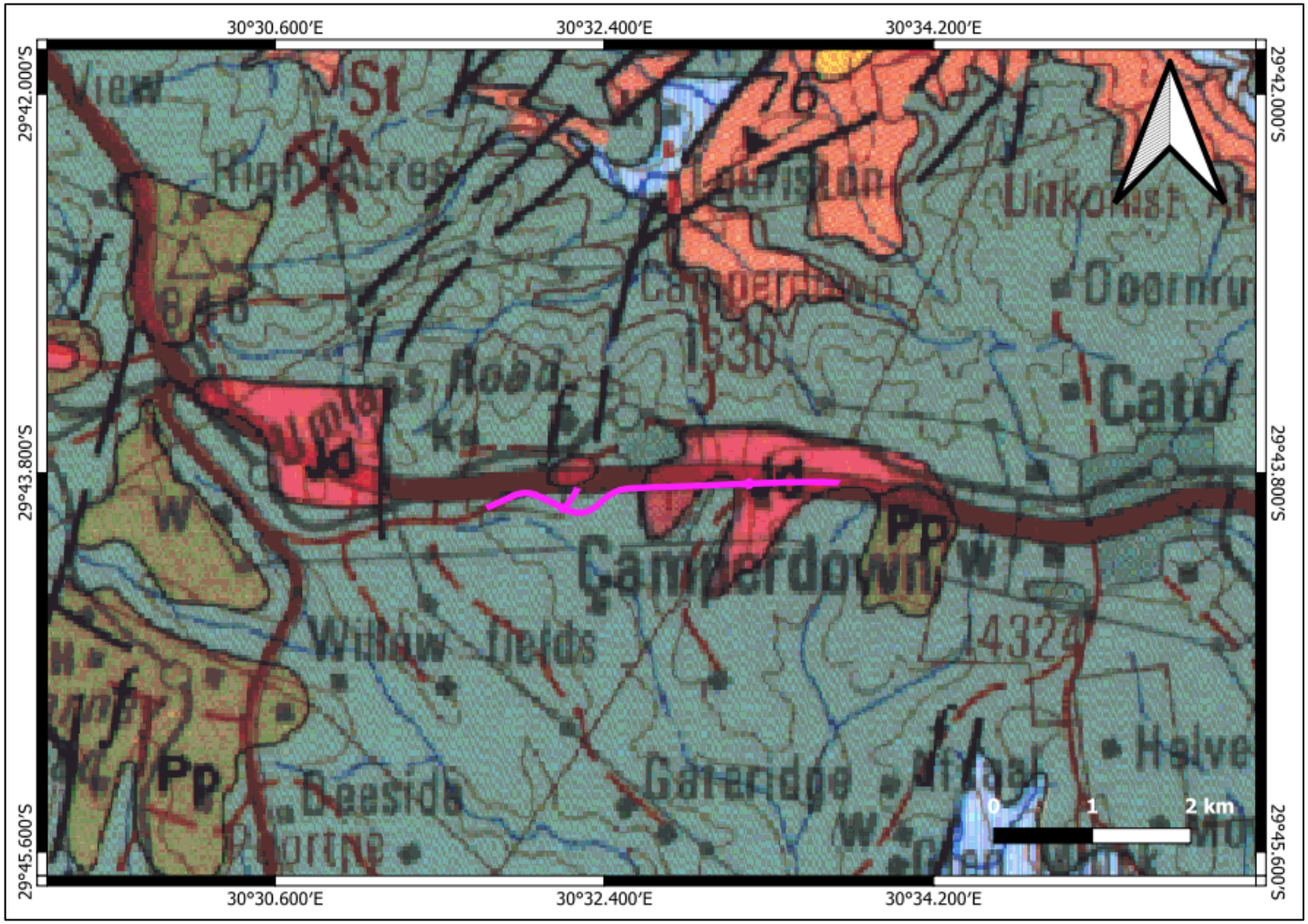

Figure 27 - Extract of the 1:250 000 2930 Durban Geological Map (Council of Geoscience, Pretoria) indicating the surface geology of the proposed development in purple. The development is underlain by the Dwyka Group (C-Pd- blue) and Jurassic dolerite (JD; red) (Butler, 2021).

Legend and short explanation of the 1:250 000 2930 Durban Geological Map (Council of Geoscience, Pretoria)

Abbreviation	Group/Formation (Fm)	Lithology
Q		Alluvium, landslip rubble
Jd	Jurassic Dolerite	Igneous rocks
Pp	Pietermaritzburg Formation, Ecca Group, Karoo Supergroup	Dark-grey shale, siltstone, subordinate sandstone
C-Pd	Dwyka Group, Karoo Supergroup	Diamictite, subordinate varved shale and boulder shale
Q-Sn	Natal Group	Red-brown coarse grained arkosic sandstone, quartz arenite micaceous sandstone, small pebble conglomerate, subordinate silt- and mudstone

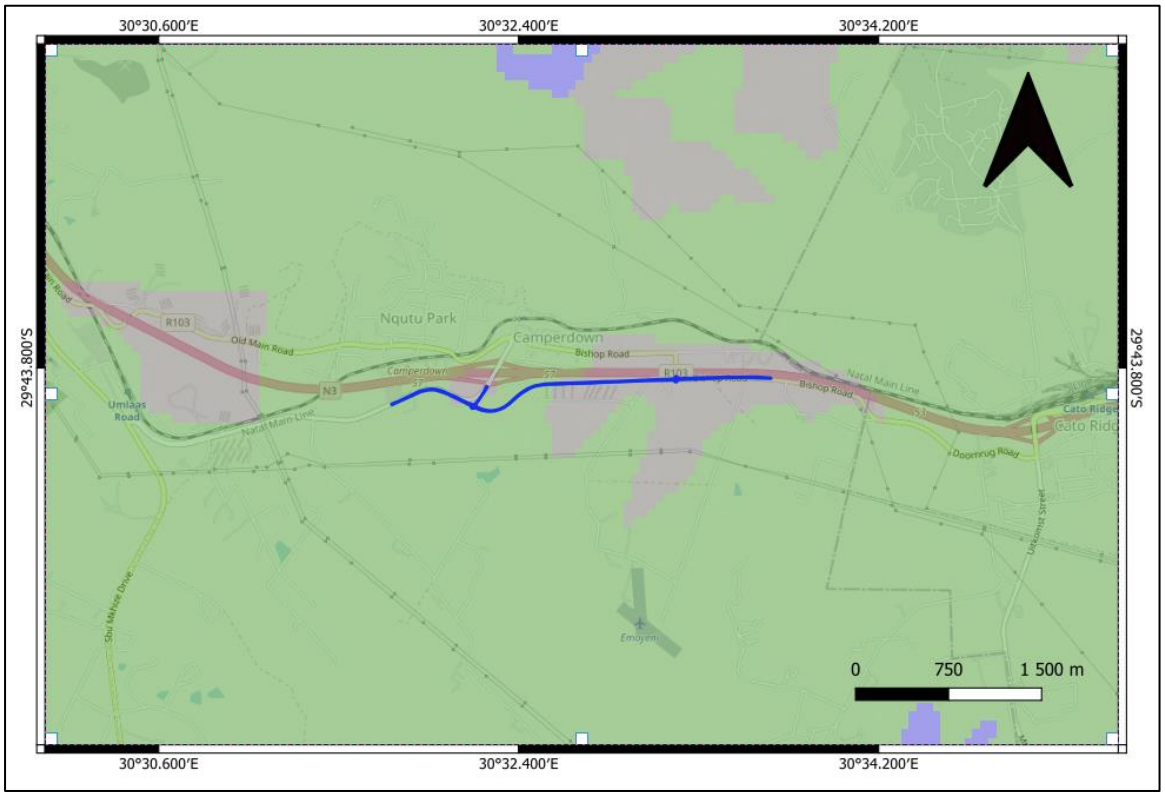

Figure 28 - Extract of the 1 in 250 000 SAHRIS PalaeoMap map (Council of Geosciences) indicating the proposed development in blue (Butler, 2021).

Table 15 - SAHRIS palaeosensitivity ratings table

Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study; a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

8 IMPACT ASSESSMENT

8.1 General Observations

In this section, an assessment will be made of the impact of the proposed development on the identified heritage sites. The impact assessment rating is based on the rating scale as contained in **Section 3.2** of this report

8.2 Assessment of the Impacts

8.2.1 Assessment of the Impact on Historical Structures

Site **CD001** was rated as low heritage significance with a heritage rating of IIIC. The site also has no historical value. As such, the site is deemed to be of **Generally Protected C (GP. C**).

The pre-mitigation impact assessment undertaken below (refer **Table 16**) indicates that the impact of the proposed development on the site will be LOW. As the site is of low heritage significance, no mitigation measures are required.

8.2.2 Assessment of the Impact on Palaeontology

The PDA for the project indicates that the eastern section of the proposed project area is underlain by dolerite while the western portion is underlain by the Dwyka Group (Karoo Supergroup). The palaeontological sensitivity of the dolerite is zero while that of the Dwyka Group is moderate. The palaeontological specialist also indicated that no mitigation would be required for palaeontology.

The pre-mitigation impact assessment undertaken below (refer **Table 16**) indicates that the impact of the proposed development on the site will be LOW. As no mitigation measures are required, only the pre-mitigation impact assessment was undertaken.

8.3 Impact Assessment Tables

Table 16 - Impact Assessment Table (Pre-Mitigation)

IMPACT	IMPACT DIRECTION	SIGNIFICANCE	SPATIAL SCALE	TEMPORAL SCALE	PROBABILITY	RATING
	Negative	Low	Proposed Site	Permanent	Very Likely	**Low**
Impact on **CD001** (Historical Structure)	-	2	1	4	4	1.87
	Negative	Moderate	Study Site	Permanent	Could Happen	**Low**
Impact on Paleontological Resources	-	3	2	5	3	1.98

9 REQUIRED MITIGATION MEASURES

9.1 Introduction

In this chapter, required mitigation measures affected by the proposed development will be outlined.

9.2 Mitigation Measures Required for the Buildings at site CD001

Site **CD001** was assessed to have a low heritage significance (**Generally Protected C (GP. C**). The pre-mitigation impact assessment on the site was also calculated to be low. As a result, no mitigation measures would be required for site **CD001.**

9.3 Mitigation Measures Required for Palaeontological Resources

The palaeontological specialist recommends that no further palaeontological heritage studies, ground-truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils. As a result, no mitigation is required for palaeontology.

10 CONCLUSION

10.1 Introduction

PGS Heritage (Pty) Ltd was appointed by QPoint Group (Pty) Ltd to undertake a Phase 1 Heritage Impact Assessment (HIA) for the proposed upgrade of an existing section of the R103 and the construction of a new 1,6km Greenfields Link Road between the Camperdown interchange and the Camperdown overpass.

The proposed development project is located on erf 106 (Remaining Extent of Portions 0 and 2), erf 109 (Remaining Extent of Portions 0, 10 and 29), erf 115 (Portion 8) of Camperdown, and Portions 2, 45, 99 and 100 of the Farm Honig Krantz 945 FT. The study area is located in the Mkhambathini Local Municipality, Umgungundlovu District Municipality, KwaZulu-Natal.

10.2 General Desktop Study

An archival and historical desktop study was undertaken to provide a historic framework for the project area and surroundings. This was augmented by a study of available historical and archival maps and an assessment of previous archaeological and heritage studies completed for the area.

The desktop study revealed that the surroundings of the study area are characterised by a long and significant history, whereas previous studies from this area have revealed several archaeological and heritage sites from its surroundings.

10.3 Palaeontology

Banzai Environmental was appointed by PGS Heritage (Pty) Ltd to conduct the Palaeontological Desktop Assessment (PDA) to assess the proposed upgrade of an existing section of the R103 and the construction of a new 1,6 km Greenfields link road between the Camperdown interchange and the Camperdown overpass in the Mkhambathini Local Municipality in KwaZulu Natal. In accordance with the National Heritage Resources Act (No 25 of 1999, section 38) (NHRA), this PDA is necessary to confirm if fossil material could potentially be present in the planned development area and to evaluate the impact of the proposed development on the Palaeontological Heritage.

The eastern section of the proposed Camperdown Road development is underlain by dolerite while the western portion is underlain by the Dwyka Group (Karoo Supergroup). Dolerite is igneous in origin and does not contain fossils while the Dwyka Group is known for its track ways and coprolites. Body fossils consists of gastropods, invertebrates, and marine fish, as well as fossil plants. According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the dolerite is zero while that of the Dwyka Group is moderate (Almond and Pether 2008, SAHRIS website). It is consequently recommended that no further palaeontological heritage studies, ground-truthing and/or specialist mitigation are required pending the discovery of

newly discovered fossils.

10.4 Fieldwork

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by an experienced professional archaeologist Wouter Fourie on Thursday, 5 August 2021 and Friday, 6 August 2021. Throughout the fieldwork, hand-held GPS devices were used to record the tracklogs. All sites identified during the fieldwork were photographically and qualitatively recorded, and their respective localities were documented using a hand-held GPS device.

One heritage site consisting of a cluster of two buildings was identified (refer site **CD001** below**).**

10.5 Impact Assessment and Mitigation

An overlay of all the archaeological and heritage sites identified during the fieldwork over the proposed development footprint areas was made to assess the impact of the proposed development on these identified archaeological and heritage sites. Using this information, impact assessments were undertaken. Please refer to **Chapter 8** for the impact assessment calculations. A series of site-specific mitigation measures are outlined in **Chapter 9** of this report.

General Recommendations

The following general recommendations are made:

- Should the development footprints change or be altered in any way, these changes must be assessed in the field by a heritage specialist/archaeologist before construction commences.

10.6 Conclusions

The impact of the proposed development on heritage, including palaeontology, is expected to be of low significance. As a result, and on the condition that the recommendations made in this report are adhered to, no heritage reasons can be given for the development not to continue.

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11.3 Historical Topographic Maps and Old Aerial Photographs

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Appendix A

HERITAGE MANAGEMENT GUIDELINES

1. General Management Guidelines

1. The National Heritage Resources Act (Act 25 of 1999) states that, any person who intends to undertake a development categorised as-

   (a) the construction of a road, wall, transmission line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
   (b) the construction of a bridge or similar structure exceeding 50m in length;
   (c) any development or other activity which will change the character of a site-

      (i) exceeding 5 000 m^2 in extent; or
      (ii) involving three or more existing erven or subdivisions thereof; or
      (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
      (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

   (d) the re-zoning of a site exceeding 10 000 m^2 in extent; or
   (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

In the event that an area previously not included in an archaeological or cultural resources survey is to be disturbed, the SAHRA needs to be contacted. An enquiry must be lodged with them into the necessity for a Heritage Impact Assessment.

2. In the event that an additional heritage assessment is required, it is advisable to utilise a qualified heritage practitioner, preferably registered with the Cultural Resources Management Section (CRM) of the Association of Southern African Professional Archaeologists (ASAPA). This survey and evaluation must include:

   (a) The identification and mapping of all heritage resources in the area affected;
   (b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6 (2) or prescribed under section 7 of the National Heritage Resources Act;
   (c) An assessment of the impact of the development on such heritage resources;
   (d) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
   (e) The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

(f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and

(g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.

3. In the event that a possible find is discovered during construction, the following steps must be taken:

(a) All activities must be halted in the area of the discovery and a qualified archaeologist contacted;

(b) The archaeologist needs to evaluate the finds on site and make recommendations towards possible mitigation measures;

(c) If mitigation is necessary, an application for a rescue permit must be lodged with SAHRA; and

(d) After mitigation, an application must be lodged with SAHRA for a destruction permit. This application must be supported by the mitigation report generated during the rescue excavation. Only after the permit is issued may such a site be destroyed.

4. In the case where a grave is identified during construction, the following measures must be taken:

4.1 Upon the accidental discovery of graves, a buffer of at least 20 meters should be implemented;

4.2. If graves are accidentally discovered during construction, activities must cease in the area and a qualified archaeologist be contacted to evaluate the find;

4.3. To remove the remains, a permit must be applied for from SAHRA and other relevant authorities. The local South African Police Services must immediately be notified of the find; and

4.4. Where it is recommended that the graves be relocated, a full grave relocation process that includes a comprehensive social consultation must be followed. Such a grave relocation process must include the following:

(i) A detailed social consultation process that aims to trace the next-of-kin and obtain their consent for the relocation of the graves, that will be at least 60 days in length;

(ii) Site notices indicating the intent of the relocation;

(iii) Newspaper notices indicating the intent of the relocation;

(iv) Permits from the relevant permitting authorities, including the local authority; the Provincial Department of Health; the South African Heritage Resources Agency (SAHRA) (if the graves are older than 60 years or unidentified and thus presumed older than 60 years) etc.

(vii) An exhumation process that keeps the dignity of the remains intact;

(viii) The whole process must be done by a reputable company that is well versed in relocations; and

(ix) The exhumation process must be conducted in such a manner as to safeguard the legal rights of the families as well as that of the mining company.

PGS Heritage can be contacted on the way forward in this regard.

Table 17: Roles and responsibilities of archaeological and heritage management

ROLE	RESPONSIBILITY	IMPLEMENTATION
A responsible specialist needs to be allocated and should attend all relevant meetings, especially when changes in design are discussed, and liaise with the heritage authority.	The client	Archaeologist and a competent archaeological support team
If chance finds and/or graves or burial grounds are identified during construction or operational phases, a specialist must be contacted for evaluation.	The client	Archaeologist and a competent archaeological support team
Comply with defined national and local cultural heritage regulations on management plans for identified sites.	The client	Environmental Consultancy and the Archaeologist
Consult the managers, local communities and other key stakeholders on mitigation of archaeological sites.	The client	Environmental Consultancy and the Archaeologist
Implement additional programs, as appropriate, to promote the safeguarding of our cultural heritage.	The client	Environmental Consultancy and the Archaeologist
If required, conservation or relocation of burial grounds and/or graves according to the applicable regulations and legislation.	The client	Archaeologist, and/or competent authority for relocation services
Ensure that recommendations made in the Heritage Report are adhered to.	The client	The client
Provision of services and activities related to the management and monitoring of significant archaeological sites.	The client	Environmental Consultancy and the Archaeologist
After the specialist/archaeologist has been appointed, comprehensive feedback reports should be submitted to relevant authorities during each phase of development.	Client and Archaeologist	Archaeologist

Appendix B

Project team CV's

PROFESSIONAL CURRICULUM VITAE

FOR POLKE DOUSSY BIRKHOLTZ

Name: *Polke Doussy Birkholtz*

Date & Place of Birth: *9 February 1975 – Klerksdorp, North West Province, South Africa*

Place of Tertiary Education & Dates Associated:

Institution: University of Pretoria
Qualification: BA (Cum Laude) - Bachelor of Arts Specializing in Archaeology, History & Anthropology
Date: 1996

Institution: University of Pretoria
Qualification: BA Hons (Cum Laude) - Bachelor of Arts with Honours Degree Specializing in Archaeology
Date: 1997

Qualifications:

BA	-	Degree specialising in Archaeology, History and Anthropology
BA Hons	-	Professional Archaeologist

Memberships:

Association of Southern African Professional Archaeologists (ASAPA)
Professional Member of the CRM Section of ASAPA

Overview of Post Graduate Experience:

1997 – 2000 – Member/Archaeologist – Archaeo-Info
2001 – 2003 – Archaeologist/Heritage Specialist – Helio Alliance
2000 – 2008 – Member/Archaeologist/Heritage Specialist – Archaeology Africa
2003 - Present – Director / Archaeologist / Heritage Specialist – PGS Heritage

Languages: English: Speak, Read & Write & Afrikaans: Speak, Read & Write

Total Years' Experience: 19 Years

Experience Related to the Scope of Work:

- Polke has worked as a **HERITAGE SPECIALIST / ARCHAEOLOGIST / HISTORIAN** on more than 300 projects and acted as **PROJECT MANAGER** on almost all of these projects. His experience includes the following:

    - Development of New Sedimentation and Flocculation Tanks at Rand Water's Vereeniging Pumping Station, Vereeniging, Gauteng Province. Heritage Impact Assessment for *Greenline*.
    - EThekwini Northern Aqueduct Project, Durban, KwaZulu-Natal. Heritage Impact Assessment for *Strategic Environmental Focus*.
    - Johannesburg Union Observatory, Johannesburg, Gauteng Province. Heritage Inventory for *Holm Jordaan*.
    - Development at Rand Water's Vereeniging Pumping Station, Vereeniging, Gauteng Province. Heritage Impact Assessment for *Aurecon*.
    - Comet Ext. 8 Development, Boksburg, Gauteng Province. Phase 2 Heritage Impact Assessment for *Urban Dynamics*.
    - Randjesfontein Homestead, Midrand, Gauteng Province. Baseline Heritage Assessment with Nkosinathi Tomose for Johannesburg City Parks.
    - Rand Leases Ext. 13 Development, Roodepoort, Gauteng Province. Heritage Impact Assessment for *Marsh*.
    - Proposed Relocation of the Hillendale Heavy Minerals Plant (HHMP) from Hillendale to Fairbreeze, KwaZulu-Natal. Heritage Impact Assessment for *Goslar Environmental*.
    - Portion 80 of the farm Eikenhof 323 IQ, Johannesburg, Gauteng Province. Heritage Inventory for *Khare Incorporated*.
    - Comet Ext. 14 Development, Boksburg, Gauteng Province. Heritage Impact Assessment for *Marsh*.
    - Rand Steam Laundries, Johannesburg, Gauteng Province. Archival and Historical Study for *Impendulo* and *Imperial Properties*.
    - Mine Waste Solutions, near Klerksdorp, North West Province. Heritage Inventory for *AngloGold Ashanti*.
    - Consolidated EIA and EMP for the Kroondal and Marikana Mining Right Areas, North West Province. Heritage Impact Assessment for *Aquarius Platinum*.
    - Wilkoppies Shopping Mall, Klerksdorp, North West Province. Heritage Impact Assessment for the *Center for Environmental Management*.
    - Proposed Vosloorus Ext. 24, Vosloorus Ext. 41 and Vosloorus Ext. 43 Developments, Ekurhuleni District Municipality, Gauteng Province. Heritage Impact Assessment for *Enkanyini Projects*.
    - Proposed Development of Portions 3, 6, 7 and 9 of the farm Olievenhoutbosch 389 JR, City of Tshwane Metropolitan Municipality, Gauteng Province. Heritage Impact Assessment for *Marsh*.
    - Proposed Development of Lotus Gardens Ext. 18 to 27, City of Tshwane Metropolitan Municipality, Gauteng Province. Heritage Impact Assessment for *Pierre Joubert*.

- Proposed Development of the site of the old Vereeniging Hospital, Vereeniging, Gauteng Province. Heritage Scoping Assessment for *Lekwa*.
- Proposed Demolition of an Old Building, Kroonstad, Free State Province. Phase 2 Heritage Impact Assessment for *De Beers Consolidated Mines*.
- Proposed Development at Westdene Dam, Johannesburg, Gauteng Province. Heritage Impact Assessment for *Newtown*.
- West End, Central Johannesburg, Gauteng Province. Phase 1 Heritage Impact Assessment for the *Johannesburg Land Company*.
- Kathu Supplier Park, Kathu, Northern Cape Province. Heritage Impact Assessment for *Synergistics*.
- Matlosana 132 kV Line and Substation, Stilfontein, North West Province. Heritage Impact Assessment for *Anglo Saxon Group* and *Eskom*.
- Marakele National Park, Thabazimbi, Limpopo Province. Cultural Resources Management Plan for *SANParks*.
- Cullinan Diamond Mine, Cullinan, Gauteng Province. Heritage Inventory for *Petra Diamonds*.
- Highveld Mushrooms Project, Pretoria, Gauteng Province. Heritage Impact Assessment for *Mills & Otten*.
- Development at the Reserve Bank Governor's Residence, Pretoria, Gauteng Province. Archaeological Excavations and Mitigation for the *South African Reserve Bank*.
- Proposed Stones & Stones Recycling Plant, Johannesburg, Gauteng Province. Heritage Scoping Report for *KV3*.
- South East Vertical Shaft Section of ERPM, Boksburg, Gauteng Province. Heritage Scoping Report for *East Rand Proprietary Mines*.
- Proposed Development of the Top Star Mine Dump, Johannesburg, Gauteng Province. Detailed Archival and Historical Study for *Matakoma.*
- Soshanguve Bulk Water Replacement Project, Soshanguve, Gauteng Province. Heritage Impact Assessment for *KWP*.
- Biodiversity, Conservation and Participatory Development Project, Swaziland. Archaeological Component for *Africon*.
- Camdeboo National Park, Graaff-Reinet, Eastern Cape Province. Cultural Resources Management Plan for *SANParks*.
- Main Place, Central Johannesburg, Gauteng Province. Phase 1 Heritage Impact Assessment for the *Johannesburg Land Company*.
- Modderfontein Mine, Springs, Gauteng Province. Detailed Archival and Historical Study for *Consolidated Modderfontein Mines.*
- Proposed New Head Office for the Department of Foreign Affairs, Pretoria, Gauteng Province. Heritage Impact Assessment for *Holm Jordaan Group*.
- Proposed Modification of the Lukasrand Tower, Pretoria, Gauteng Province. Heritage Assessment for IEPM.

- Proposed Road between the Noupoort CBD and Kwazamukolo, Northern Cape Province. Heritage Impact Assessment for *Gill & Associates*.
- Proposed Development at the Johannesburg Zoological Gardens, Johannesburg, Gauteng Province. Detailed Archival and Historical Study for *Matakoma.*

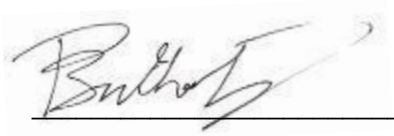
- Polke's **KEY QUALIFICATIONS:**

  - Project Management
  - Archaeological and Heritage Management
  - Archaeological and Heritage Impact Assessment
  - Archaeological and Heritage Fieldwork
  - Archival and Historical Research
  - Report Writing

- Polke's **INFORMATION TECHNOLOGY EXPERIENCE:**

  - *MS Office – Word, Excel, & Powerpoint*
  - *Google Earth*
  - *Garmin Mapsource*
  - *Adobe Photoshop*
  - *Corel Draw*

I, Polke Doussy Birkholtz, hereby confirm that the above information contained in my CV is true and correct.



PD Birkholtz

23 August 2021
Date

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, Malawi, Mauritius, Zimbabwe and the Democratic Republic of the Congo

CHERENE DE BRUYN

Professional Archaeologist for PGS Heritage

KEY QUALIFICATIONS

2016-2017	MA in Archaeology University College London, United Kingdom
2015	BSC Honours in Physical Anthropology, University of Pretoria, South Africa
2013	BA Honours in Archaeology University of Pretoria, South Africa
2010-2012	BA (General) University of Pretoria, South Africa Major subjects: Archaeology and Anthropology

PROFESSIONAL QUALIFICATIONS:

- Association of Southern African Professional Archaeologists - Professional Member (#432)
- International Association for Impact Assessment South Africa - Member (#6082)
- Association of Southern African Professional Archaeologists - CRM Accreditation
    - Principal Investigator: Grave relocation
    - Field Director: Colonial period archaeology, Iron Age archaeology
    - Field Supervisor: Rock art, Stone Age archaeology
    - Laboratory Specialist: Human Skeletal Remains
- KZN Amafa and Research Institute - Accredited Professional Heritage Practitioner

Languages:

Afrikaans & English

SUMMARY OF EXPERIENCE

Expertise in Heritage Impact Assessment Management, Historical and Archival Research, Archaeology, Physical Anthropology, Grave Relocations, Fieldwork, Geographic Information Systems and Project Management including *inter alia* -

Involvement in various grave relocation projects

- Grave exhumation, test excavations and grave “rescue” excavations in the various provinces of South Africa.
- Permit applications with SAHRA BGG and AMAFA, including relevant Munciplaities and Authorities for grave relocation projects.

Involvement with various Heritage Impact Assessments,

- Heritage Impact Assessments and Management for various projects within Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West and Western Cape Province.
- Archaeological Walkdowns for various projects.
- Instrument Survey and recording for various projects.
- Desktop, archival and heritage screening for projects.

Heritage Assessment Projects

Below a selected list of Heritage Impact Assessments (HIA) Projects involvement:

- Heritage Management Plan for the proposed development of the 305MW Oya solar photovoltaic (PV) facility and associated infrastructure near Matjiesfontein, Western Cape.

- Heritage Impact Assessment for the Proposed Township Establishment on the Remainder of Portion 8 of the Farm Boschoek 103 JQ, near Boschoek, North West Province.
- The Proposed Irenedale Water Pipeline Between Bosjesspruit Colliery And A Local Reservoir, Located In The Lekwa Local Municipality And The Govan Mbeki Local Municipality, Gert Sibande District Municipality, Mpumalanga Province.
- Heritage Impact Assessment for the proposed development of the Msobo Coal Tselentis Colliery: Albion Opencast project, Near Breyten, Mpumalanga Province.
- Heritage Impact Assessment for the Proposed Development Of An Airport For Kolomela Mine In Postmasburg, Northern Cape.
- Heritage Impact Assessment for the Proposed South African Coal Estates (SACE) Clydesdale Pit Project, near Emalahleni, Mpumalanga Province.
- Heritage Impact Assessment for the Amendment of the Mogalakwena Mine Expansion Project, near Mokopane, Limpopo Province.
- Heritage Impact Assessment for the Mogalakwena Mine Integrated Permitting Project near Mokopane, Limpopo Province.
- Heritage Impact Assessment for the Proposed Solar PV Plant at Armoede, near Mokopane, Limpopo Province.
- Heritage Impact Assessment for the Proposed New Cargo Precinct For The O.R. Tambo International Airport On The Farm Witkoppie 64, Gauteng Province.
- Heritage Impact Assessment for the upgrade of road d4407 between Hluvukani and Timbavati, road d4409 at Welverdiend and road d4416/2 between Welverdiend and road P194/1 in the Bohlabela region of the Mpumalanga Province.
- Heritage Impact Assessment for the proposed Piggery on Portion 46 of the farm Brakkefontien 416, within the Nelson Mandela Bay Municipality, Eastern Cape.
- Heritage Impact Assessment for proposed development On Erf 30, Letamo Town, Farm Honingklip 178 Iq, Mogale Local Municipality, Gauteng Province.
- Heritage Impact Assessment for the proposed Prospecting Right Application on the Farm Reserve No 4 15823 And 7638/1, near St Lucia, within the jurisdiction of the Mfolozi Local Municipality in the King Cetshwayo District Municipality, KwaZulu-Natal Province.

Grave Relocation Projects

Below, a selection of grave relocation projects involvement:

- Report On Test Excavations. Ivn_078 Maruma Graves, Farm Turfspruit 241 Kr, Mokopane, Limpopo Province. Test Excavation Of Possible Burial Ground As Identified By The Maruma Family.
- Relocation Of Two Infant Graves From The Farm Wonderfontein 428 Js, Belfast, Mpumalanga Province.
- Relocation Of Approximately 4 Stillborn Graves From Farm Wonderfontein 428 Js, Umsimbithi Mining (Pty) Ltd, Belfast, Chief Albert Luthuli Local Municipality, Mpumalanga Province.

EMPLOYMENT SUMMARY:

Positions Held

- 2020 – to date:Archaeologist - PGS Heritage (Pty) Ltd
- 2018 – 2019: Manager of the NGT ESHS Heritage Department – NGT Holdings (Pty) Ltd
  Archaeologist and Heritage Consultant – NGT Holdings (Pty) Ltd
- 2015-2016: Archaeological Contractor - BA3G, University of Pretoria
- 2014 – 2015:DST-NRF Archaeological Intern, Forensic Anthropological Research Cetre

APPENDIX C

Palaeontological Desktop Study