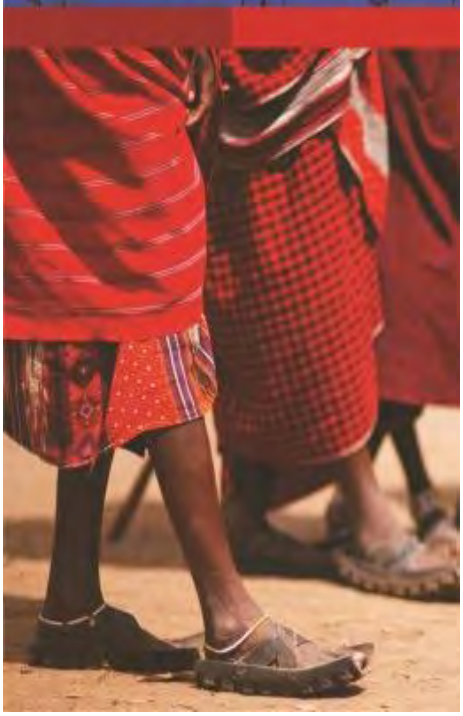


DIGBY WELLS
ENVIRONMENTAL

Eerstelingsfontein Coal Mine Project, Belfast, Mpumalanga

Notification of Intent to Develop

Project Number:

EXX2305

Prepared for:

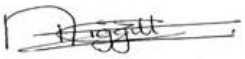
Exxaro Resources (Pty) Ltd

November 2014

Digby Wells and Associates (South Africa) (Pty) Ltd
(Subsidiary of Digby Wells & Associates (Pty) Ltd). Co. Reg. No. 2010/008577/07. Fern Isle, Section 10, 359 Pretoria Ave Randburg Private Bag X10046, Randburg, 2125, South Africa
Tel: +27 11 789 9495, Fax: +27 11 789 9498, info@digbywells.com, www.digbywells.com

This document has been prepared by Digby Wells Environmental.

Report Type:	**Notification of Intent to Develop**
Project Name:	**Eerstelingsfontein Coal Mine Project, Belfast, Mpumalanga**
Project Code:	**EXX2305**

Name	Responsibility	Signature	Date
Natasha Higgitt *Assistant Heritage Consultant: Archaeology Specialist* *ASAPA membership no: 335*	Overall report writer		November 2014
Justin du Piesanie *Heritage Consultant: Archaeology Specialist* *ASAPA membership no: 270*	1st Review		September 2014
Johan Nel *HRM Unit Manager* *ASAPA membership no: 95*	2nd Review		September 2014

EXECUTIVE SUMMARY

This Notification of Intent to Develop (NID) is submitted in accordance with subsections (2) and (8) of section 38 of the National Heritage Resources Act, 1999 (Act 25 of 1999) (NHRA).

Exxaro Coal (Pty) Ltd (hereafter Exxaro Coal) received a Mining Right (MR) (MP 30/1/2/2/19 MR) and subsequent renewal (MP 30/5/1/2/2/10068 MR) for the ECM project in 2008 under the Minerals and Petroleum Development Act, 2002 (Act 28 of 2002) (MPRDA) (Fincham & Konigkramer, 2012). In 2006 and 2010, new National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) Regulations were promulgated. In order to ensure compliance with the new regulations, Exxaro commissioned WSP Environmental (Pty) Ltd to conduct an Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) in 2011 for the Eerstelingsfontein Coal Mine (ECM). The EIA was done in accordance with the new NEMA regulations.

Environmental Authorisation (EA) for the ECM project was approved in 2013, based on the EIA/EMP submitted to the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) (Ref No. 17/2/3 C NK 31). Exxaro Coal has subsequently requested Digby Wells Environmental (hereafter Digby Wells) to develop and implement a Relocation Action Plan (RAP) and a Grave Relocation Process (GRP) for the Exxaro NBC Complex Project, which includes the Paardeplaats Project (the South African Heritage Resources Information System [SAHRIS] Case ID: 5699), the Belfast Project (SAHRIS Case ID: 6278) and the ECM Project (SAHRIS Case ID: 6357).

The EIA conducted for the ECM Project included a Heritage Impact Assessment (HIA), but this report was never submitted to the South African Heritage Resources Agency (SAHRA) or the Mpumalanga Provincial Heritage Resources Authority (MPHRA). Consequently, Statutory Comment on the HIA required under section (s.) 38 of the National Heritage Resources Act, 1999 (Act 25 of 1999) (NHRA) was not issued. Digby Wells was therefore requested to obtain this comment from SAHRA and MPRHA.

The project is located in the Nkangala District Municipality and the Emakhazeni Local Municipality on the farm Eerstelingsfontein 406JS Portions 2 R/E, 3-9. The proposed project area covers 314 ha, with an impact footprint of 227 ha.

The proposed coal mine will consist of:

- Open cast pit (± 110 ha)
- Buildings and plant equipment (± 64 ha)
- Other (± 53 ha), including:
  - Road infrastructure;
  - Stockpile areas (coal and overburden stockpiles); and
  - Pollution control infrastructure.

NEMA Activities

The following listed NEMA activities and project activities will take place during the lifespan of the proposed project

Identified Project Activity (including Listed Activities)	Description	Development as defined in NHRA	Trigger for HIA	Sources of risk to heritage resources	Project Phase
GN R546 No 4	Construction of roads wider than 4 m with a reserve less than 13.5 m	This activity constitutes development as defined in terms of NHRA Section 2(viii) (a) construction, alteration, demolition, removal or change of use of a place or a structure at a place.	NHRA 38 (1) c (i)	Potential destruction and damage to sub-surface heritage resources	Construction
GN R546 No 12	The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation	This activity constitutes development as defined in terms of NHRA Section 2 (viii) (e) and (f) 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.	NHRA (38) 1 c (i)	Potential destruction and damage to sub-surface heritage resources	Construction
GN R546 No 13	The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation	This activity constitutes development as defined in terms of NHRA Section 2 (viii) (e) and (f) 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.	NHRA (38) 1 c (i)	Potential destruction and damage to sub-surface heritage resources	Construction

Identified Project Activity (including Listed Activities)	Description	Development as defined in NHRA	Trigger for HIA	Sources of risk to heritage resources	Project Phase
Blasting	Blasting for open pit construction	This activity constitutes development as defined in terms of NHRA Section 2(viii) (a) construction, alteration, demolition, removal or change of use of a place or a structure at a place.	n/a	Potential destruction and damage to palaeontological resources; loss of access to burial grounds and graves	Construction and Operation

NHRA Section 38 Triggers

The following activities may require a HIA in terms of Section 38 of the NHRA.

NHRA Section 38 (1) Activities / Triggers				Summary description (E.g. 500 m conveyor belt, open cast pit, etc.)
☐	a	Any linear development or barrier >300 m		
☐	b	Any bridge or similar structure >50 m		
☐	c	Any development or activity that will change the character of a site:		
	☒	**i**	≥5 000m^2 in extent	Open pit (110 ha); buildings and plant equipment (64 ha) and associated infrastructure (53 ha)
	☐	**ii**	Involving ≥3 existing erven/ subdivisions	
	☐	**iii**	Involving ≥3 or more erven/ divisions consolidated within past 5 years.	
☒	d	Rezoning of a site ≥10 000m^2 in extent.		The site is currently zoned for agricultural use, and will be re-zoned for mining purposes
☒	8	Other triggers, e.g.: in terms of other legislation, (i.e.: National Environment Management Act, etc.)		NEMA

Additional Impact Assessment Process

The following impact assessment processes were undertaken for the proposed project.

Legislation, i.e. NEMA, MPRDA, etc.	MPRDA, NEMA
Consenting Authority that has/will receive information	Department of Mineral Resources (DMR) and MDEDET
Reference Number	MP 30/1/2/2/19 MR MP 30/5/1/2/2/10068 MR 17/2/3 C NK 31
Present phase of process at Authority, e.g. Draft Scoping Report	EIA/EMP (Approved)

Identified/known heritage resources and potential impacts

The following categories of heritage resources as defined in Section 3 of the NHRA are known to occur within the proposed project area.

☒	**3(2)(a)**	**Places, buildings, structures and equipment of cultural significance**
		Description of resource: On a site specific scale, a historical farmstead is located within the project area
		Potential impact: As the historical farmstead is not situated in the impact foot print, no direct impact is expected.
☒	**3(2)(b)**	**Places to which oral traditions are attached or which are associated with living heritage**
		Description of resource: On a local scale, there is the potential for initiation sites, ancestral graves and traditional medical plants in the project area
		Potential impact: Initiation sites and traditional medicinal plants may be damaged or destroyed due to construction activities
☒	**3(2)(c)**	**Historical settlements and townscapes**
		Description of resource: On a local scale, the Battle of Bergendal is located 13 km north-east from the project area and the town of Belfast is located 13 km north-north-east from the project area
		Potential impact: No impacts on the above heritage resources are to be expected as they are over 500 m from the impact area
☐	**3(2)(d)**	**Landscapes and natural features of cultural significance**
		Description of resource: None
		Potential impact: None
☐	**3(2)(e)**	**Geological resources of scientific or cultural importance**
		Description of resource: None
		Potential impact: None
☒	**3(2)(f)**	**Archaeology and/or palaeontology *(Including archaeological sites and material, fossils, rock art, battlefields & wrecks)***
		Description of resource: On a regional scale, Later Iron Age (LIA) sites have been identified. On a local scale, an Early Stone Age (ESA) site has been identified near the project area. On a site specific scale the Vryheid formation is present within the project area.
		Potential impact: LIA and ESA sites located in the region and local area respectively should experience no impacts. However there may be potential damage or destruction to sub-surface palaeontological heritage resources during mining
☒	**3(2)(g)**	**Graves and burial grounds *(e.g.: ancestral graves, graves of victims of conflict, historical graves & cemeteries)***
		Description of resource: Within the site specific project area, a single burial ground containing 13 graves
		Potential impact: As the burial ground is not situated in the impact foot print, no

		direct impact is expected.
☐	**3(2)(a)**	**Other human remains**
		Description of resource: None
		Potential impact: None
☐	**3(2)(h)**	**Sites of significance relating to the history of slavery in South Africa**
		Description of resource: None
		Potential impact: None
☐	**3(2)(i)**	**Movable objects**
		Description of resource: None
		Potential impact: None

Recommendations

Is a Heritage Impact Assessment required?	☐ Yes	☒ No
If NO, provide motivation: The identified heritage will not be impacted on by the mining activities as they are located over 500 m from the impact footprint.		

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LIST OF ABBREVIATIONS AND GLOSSARY OF TERMS

ASAPA	Association of Southern African Archaeologists
BA	Bachelor of Arts
CFP's	Chance Find Procedures
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ELM	Emakhazeni Local Municipality
EMP	Environmental Management Plan
ESA	Early Stone Age
GIS	Geographic Information System
GN	Government Notice
GRP	Grave Relocation Process
HIA	Heritage Impact Assessment
HRM	heritage resources management
IDP	Integrated Development Plan
LA's	Listed Activities
LIA	Late Iron Age
LSA	Later Stone Age
MDEDET	Mpumalanga Department of Economic Development, Environment and Tourism
MPHRA	Mpumalanga Provincial Heritage Resources Authority
MPRDA	Minerals and Petroleum Development Act, 2002 (Act 28 of 2002)
MR	Mining Right
MSA	Middle Stone Age
mtpa	million tons per annum
mya	million years ago
NAAIRS	National Automated Archival Information Retrieval System
NBC	North Block Complex
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act 25 of 1999)
NID	Notification of Intent to Develop
PCD	Pollution Control Dam

PIA	Palaeontological Impact Assessment
RAP	Relocation Action Plan
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SIA	Social Impact Assessment
Sow	Scope of Work
Stats SA	Statistics South Africa
ZARP	Zuid-Afrikaansche Republiek Politie

DECLARATION OF INDEPENDENCE

Digby Wells and Associates (Pty) Ltd

Contact person: Ms Natasha Higgitt

Fern Isle, Section 10	Tel:	011 789 9495
359 Pretoria Avenue	Fax:	011 789 9498
Randburg	E-mail:	natasha.higgitt@digbywells.com
2125		

I, Natasha Higgitt as duly authorised representative of Digby Wells and Associates (Pty) Ltd., hereby confirm my independence (as well as that of Digby Wells and Associates (Pty) Ltd.) and declare that neither I nor Digby Wells and Associates (Pty) Ltd. have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of Exxaro Resources (Pty) Ltd, other than fair remuneration for work performed, specifically in connection with the Heritage Impact Assessment for the proposed Eerstelingsfontein Project in the Emakhazeni Local Municipality, Mpumalanga Province.

_____

Full name: Natasha Higgitt

Title/ Position: Assistant Heritage Consultant: Archaeology Specialist

Qualification(s): BA Honours specialising in Archaeology

Experience (years): 3 years' experience

Registration: Association of Southern African Professional Archaeologists (ASAPA)

1 Project background

1.1 Introduction

Exxaro Coal (Pty) Ltd (hereafter Exxaro Coal) received a Mining Right (MR) (MP 30/1/2/2/19 MR) and subsequent renewal (MP 30/5/1/2/2/10068 MR) for the Eerstelingsfontein Coal Mine (ECM) project in 2008 under the Minerals and Petroleum Development Act, 2002 (Act 28 of 2002) (MPRDA) (Fincham & Konigkramer, 2012). In 2006 and 2010, new National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) Regulations were promulgated. In order to ensure compliance with the new regulations, Exxaro commissioned WSP Environmental (Pty) Ltd to conduct an Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) in 2011 for the ECM project. The EIA was done in accordance with the NEMA.

Environmental Authorisation (EA) for the project was approved in 2013, based on the EIA/EMP submitted to the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) (Ref No. 17/2/3 C NK 31). Exxaro Coal has subsequently requested Digby Wells Environmental (hereafter Digby Wells) to develop and implement a Relocation Action Plan (RAP) and a Grave Relocation Process (GRP) for the Exxaro North Block Complex (NBC) Complex Project, which includes the Paardeplaats Project (the South African Heritage Resources Information System [SAHRIS] Case ID: 5699), the Belfast Project (SAHRIS Case ID: 6278) and the ECM Project (SAHRIS Case ID: 6357).

The EIA conducted for the ECM Project included a Heritage Impact Assessment (HIA), but this report was never submitted to the South African Heritage Resources Agency (SAHRA) or the Mpumalanga Provincial Heritage Resources Authority (MPHRA). Consequently, Statutory Comment on the HIA required under section (s.) 38 of the National Heritage Resources Act, 1999 (Act 25 of 1999) (NHRA) was not issued. Digby Wells was therefore requested to obtain this comment from SAHRA and MPRHA.

1.2 Terms of Reference

Although a heritage resources management (HRM) process was completed as part of the EIA/EMP completed in 2011, this did not follow due process. Statutory Comment on the HIA is required from SAHRA and / or MPHRA that should inform decisions regarding the ECM. This Notification of Intent to Develop (NID) was therefore required to rectify the issue and provide SAHRA and/or MPRHA with sufficient information to make informed decisions regarding the need for ECM project. The NID is to a large extent based on the *un-submitted* HIA undertaken by Pelser & van Vollenhoven in 2011.

1.3 Scope of Work

The required HRM process was inclusive of a NID that was informed by baseline information. The Scope of Work (SoW) included:

- A gap analysis of the existing ECM HIA;
- Review of additional, available heritage studies completed in the study area;
- Completing historical layering for the project area;
- Collating information into an NID report including recommendations for any additional heritage studies, if deemed necessary.

1.4 Project Description

Exxaro currently operates the NBC, a mining complex in the Emakhazeni Local Municipality (ELM) of Mpumalanga. The NBC presently comprises the Glisa and Strathrae Coal Mines, and is planned to include the proposed Belfast Block Coal Mine and ECM. The NBC utilises both underground and opencast mining methods and produces approximately 2.5 million tons per annum (Mtpa) of coal product to Eskom's Arnot, Komati, Camden and Tutuka Power Stations (Fincham & Konigkramer, 2012; Michel, 2011).

Coal mined within the NBC is blended to meet quality specifications stipulated by Eskom. At present, the Glisa Coal Mine is extracting a coal reserve of deteriorating quality and is expected to be exhausted by 2014. In order to meet the contractual obligations with Eskom, and avoid substantial penalties that threaten the closure of the NBC, the ECM has been identified as a suitable source of high quality coal that can be blended with coal from current operations (Fincham & Konigkramer, 2012; Michel, 2011).

The ECM, with a total lifespan of 2 years, will provide a short term bridge supply of coal necessary to allow NBC to remain operational until the proposed Belfast Block project comes on line (Fincham & Konigkramer, 2012; Michel, 2011).

The ECM will be mined using open pit, strip mining. The coal reserve on site is a low sulphur coal with a single seam at a depth between 5 m and 19 m. It is estimated that a total of 2.4 million tons of coal will be mined during a period of approximately 2 years. Coal mined at Eerstelingsfontein will be transported to Glisa Colliery, where it will be processed (Fincham & Konigkramer, 2012; Michel, 2011).

The site covers an area of approximately 314 ha. Exxaro proposes to develop approximately 72% of the site, with the total footprint of the mining activities proposed to cover **227 ha** (see Table 1-1 and Table 1-2).

Table 1-1: Location Data

Province	Mpumalanga Province
Magisterial District / Local Authority	Belfast Magisterial District
District Municipality	Nkangala District Municipality
Local municipality	Emakhazeni Local Municipality
Nearest Town	Belfast
Property Name and Number	Eerstelingsfontein 406JS Portions 2 R/E, 3-9
1: 50 000 Map Sheet	2529DD Arnot and 2530CC Boshoek
GPS Co-ordinates (relative centre point of study area)	-25.857514
	30.017331

Table 1-2: List of proposed infrastructure

Planned infrastructure	Extent
Open Cast pit	110 ha
Building and plant equipment	64 ha
Other i.e. road infrastructure, stockpile areas etc.	53 ha
Coal stockpiles	No information
Overburden stockpiles	No information
Pollution Control Dam (PCD)	No information
Sewage septic tanks	No information
11 kv power line	No information

1.5 Project Activities

Expected properties activities associated with the development and operation of the proposed ECM Project are listed in Table 1-3 below.

Table 1-3: Expected project activities

No.	Activity
Rezoning	
NHRA 38 (1) d	The site is currently zoned for agricultural use, and will be re-zoned for mining purposes
Construction phase	
NEMA GN R546 No. 4	The construction of a road wider than 4 metres with a reserve less than 13.5 metres (a) In Mpumalanga, (ii) outside urban areas in: (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.
NEMA GN R546 No. 12	The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation. (b) Within critical biodiversity areas identified in bioregional plans.
NEMA GN R546 No. 13	The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, (a) In Mpumalanga, outside urban areas in (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans

1.6 Client, Consultant and Landowner Contact Details

Contact details for the ECM and Digby Wells project managers, and relevant landowners are provided in Table 1-4 to Table 1-6 below respectively.

Table 1-4: ECM project manager contact details

Company	Exxaro Resources (Pty) Ltd
Contact person	Tertius Kruger
Tel no	012 307 4697
Fax no	012 307 5851
E-mail address	Tertius.Kruger@exxaro.com
Postal address	P. O. Box 9229, Pretoria

Table 1-5: Digby Wells project manager contact details

Company	Digby Wells Environmental
Contact person	Jan Perold
Tel no	011 789 9495
Fax no	011 789 9498
E-mail address	jan.perold@digbywells.com
Postal address	Private Bag X10046, Randburg, 2125

Table 1-6: Landowner contact details (Owner of Eerstelingsfontein 406JS Portions 2 R/E, 3-9)

Contact person	Tertius Kruger
Tel no	012 307 4697
E-mail address	tertius.kruger@exxaro.com
Postal address	P. O. Box 9229, Pretoria

1.7 Expertise of Specialists

The following specialists provided input for the NID for the ECM Project:

Natasha Higgitt has obtained her Bachelor of Arts (BA) with majors in Archaeology and Geography in 2008, and a BA Honours degree in Archaeology in 2010 from the University of Pretoria. She currently holds the position of Assistant Heritage Consultant: Archaeology Specialist at Digby Wells. She has more than three years' experience in archaeological survey and gained further generalist heritage experience since her appointment at Digby Wells in South Africa and Liberia. Natasha is a professional member of the Association of Southern African Archaeologists (ASAPA).

The curricula vitae of the specialist are attached as Appendix A.

2 Policy and Legal Framework

The NHRA is the overarching legislation that protects heritage resources and regulates their management. The HRM process completed for the ECM Project was done in accordance with subsection 38(8), where impacts on heritage are assessed in terms of other legislation – the NEMA in this instance.

2.1 NHRA

The 2011 HIA completed for the ECM Project was done in accordance with Section (s) 38(8), where impacts on heritage are assessed in terms of other legislation such as the NEMA.

The HRM approach developed and implemented by Digby Wells is founded on s. 38(1) and 38(2) of the NHRA. These sections of the NHRA require that HRAs be notified as early as possible of any developments that may exceed certain minimum thresholds. The heritage specialist is required to provide the HRA with sufficient information regarding the proposed development in order for the HRA to determine whether a comprehensive HIA is required. The HRA should respond within 14 days whether or not a HIA is required, and if required should state which specialist studies should be included.

The NHRA furthermore affords general and formal protection of certain categories of heritage resources, including:

- Formal protection:
  - National and provincial heritage sites under s. 27;
  - Certain types of protected areas under s. 28; and
  - Heritage areas under s. 32.
- General protection:
  - Certain structures under s. 34;
  - Archaeological and palaeontological resources, and meteorites under s. 35;

- Certain categories of burial grounds and graves under s. 36; and
- All public monuments and memorial under s. 37.

Any activity that will result in the change of the status quo of any heritage resources protected in terms of the above sections of the Act may, must be considered as a *permitted activity.* Changes to such resources will therefore require authorisation through permits issued by either SAHRA or MPHRA.

2.2 National Environmental Management Act, 1998 (NEMA)

The NEMA requires, under s. 2, 23 and 24 that possible impacts resulting from certain Listed Activities (LAs) be assessed for their potential impact on heritage resources. LAs that are relevant in term of this NID report are listed in Table 1-3 above.

3 HRM methodology

3.1 Gap Analysis

A gap analysis was conducted on the HIA conducted by Pelser and van Vollenhoven (2011). The HIA was analysed against s. 38 (3) of the NHRA.

3.2 Definition of the study areas

Given that no individual identified heritage resource can exist in isolation to the wider natural, social, cultural and heritage landscape, three concentric study areas were defined for the purposes of this study. Defining these ‘zones of influence’ had a two-fold purpose:

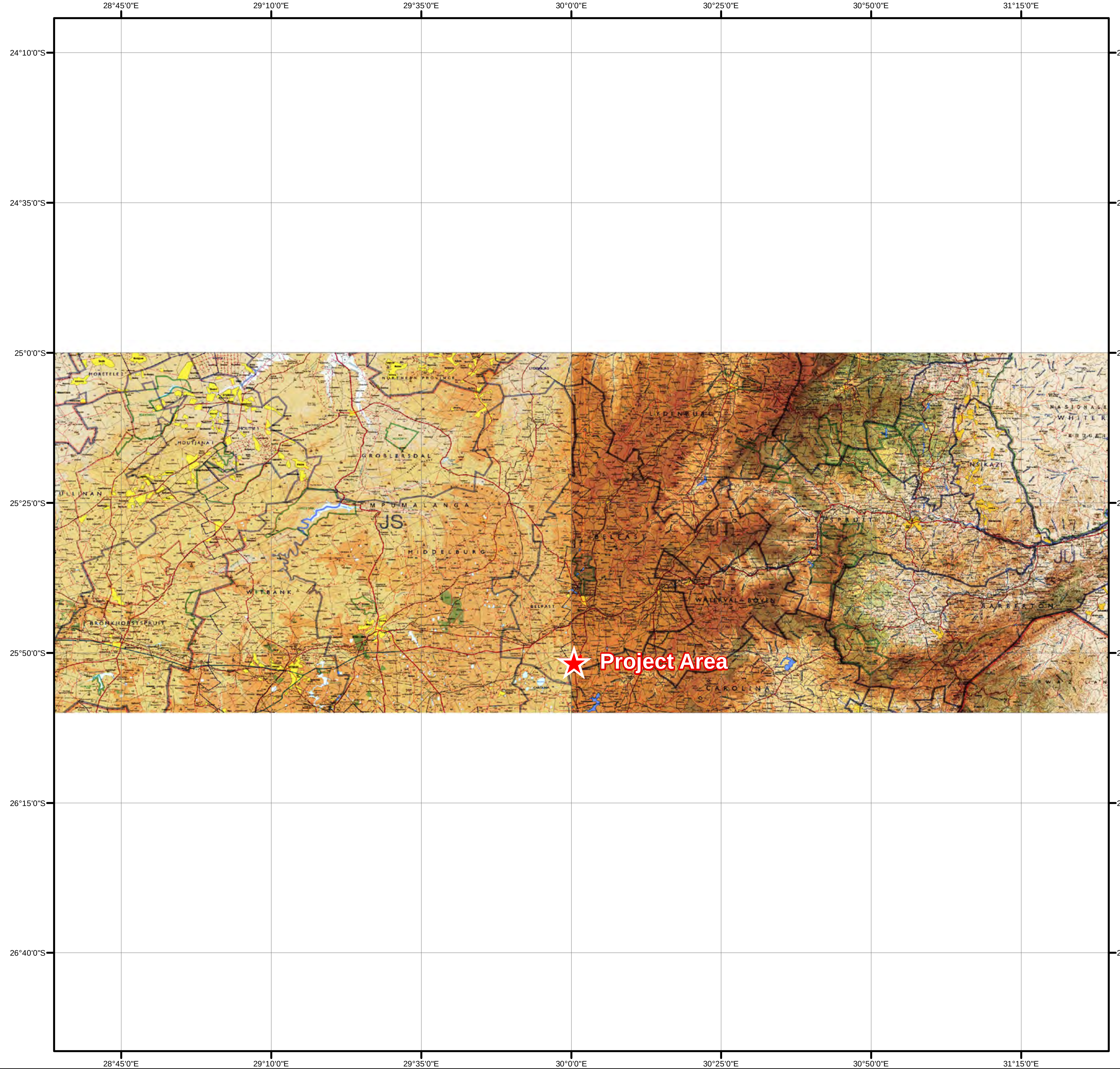
- First, it provided the context within which identified heritage resources need to be interpreted and understood to determine cultural significance; and
- Second, assessing the significance of impacts on heritage resources corresponding to the three impact categories listed above.

The three zones of influence are as follows:

The Tertiary Zone of Influence (also referred to as the *regional* study area): This area was defined as the district municipality. Where necessary, the regional study area was extended outside the boundaries of the district municipality to include much wider regional expressions of specific types of heritage resources and historical events. The regional study area, depicted in Figure 3-1 also provided the regional development and planning context that may contribute to cumulative impacts.

The Secondary Zone of Influence (also referred to as *local* study area): This area was defined as the immediate surrounding properties / farms, as well as the affected local municipality. The local study area was specifically examined to provide a backdrop to the socio-economic conditions within which the proposed development will occur. The local study area furthermore provided the local development and planning context that may contribute to cumulative impacts. The local study area is depicted in Figure 3-2.

Primary Zone of Influence (also referred to as the *site-specific* study area): This area was defined as the bounded project area i.e. the farm portions, within which the development will physically intrude through the construction of project infrastructure and project-related activities. The affected farm portions are listed in Table 1-1 and the site-specific study area depicted in Figure 3-3.



Plan 1

Eerstelingsfontein Project

Regional Setting
1:250 000

Legend

Eerstelingsfontien Project Area

2528 Pretoria
2530 Nelspruit

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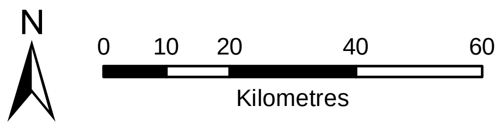
Projection: Transverse Mercator
Datum: WGS84
Central Meridian: 29°E

Ref #: idp.EXX2305.201407.170
Revision Number: 1
Date: 29/07/2014



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Plan 2

Eerstelingsfontein Project

Regional Setting 1-50 000

29°45'0"E 29°50'0"E 29°55'0"E 30°0'0"E 30°5'0"E 30°10'0"E 30°15'0"E

25°30'0"S
25°35'0"S
25°40'0"S
25°45'0"S
25°50'0"S
25°55'0"S
26°0'0"S

Legend

Eerstelingsfontien Project Area

2529DB Languitsig
2529DD Arnot
2530CA Sheba
2530CC Moedig

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Projection: Transverse Mercator
Datum: WGS84
Central Meridian: 29°E

Ref #: idp.EXX2305.201407.171
Revision Number: 1
Date: 29/07/2014

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Kilometres

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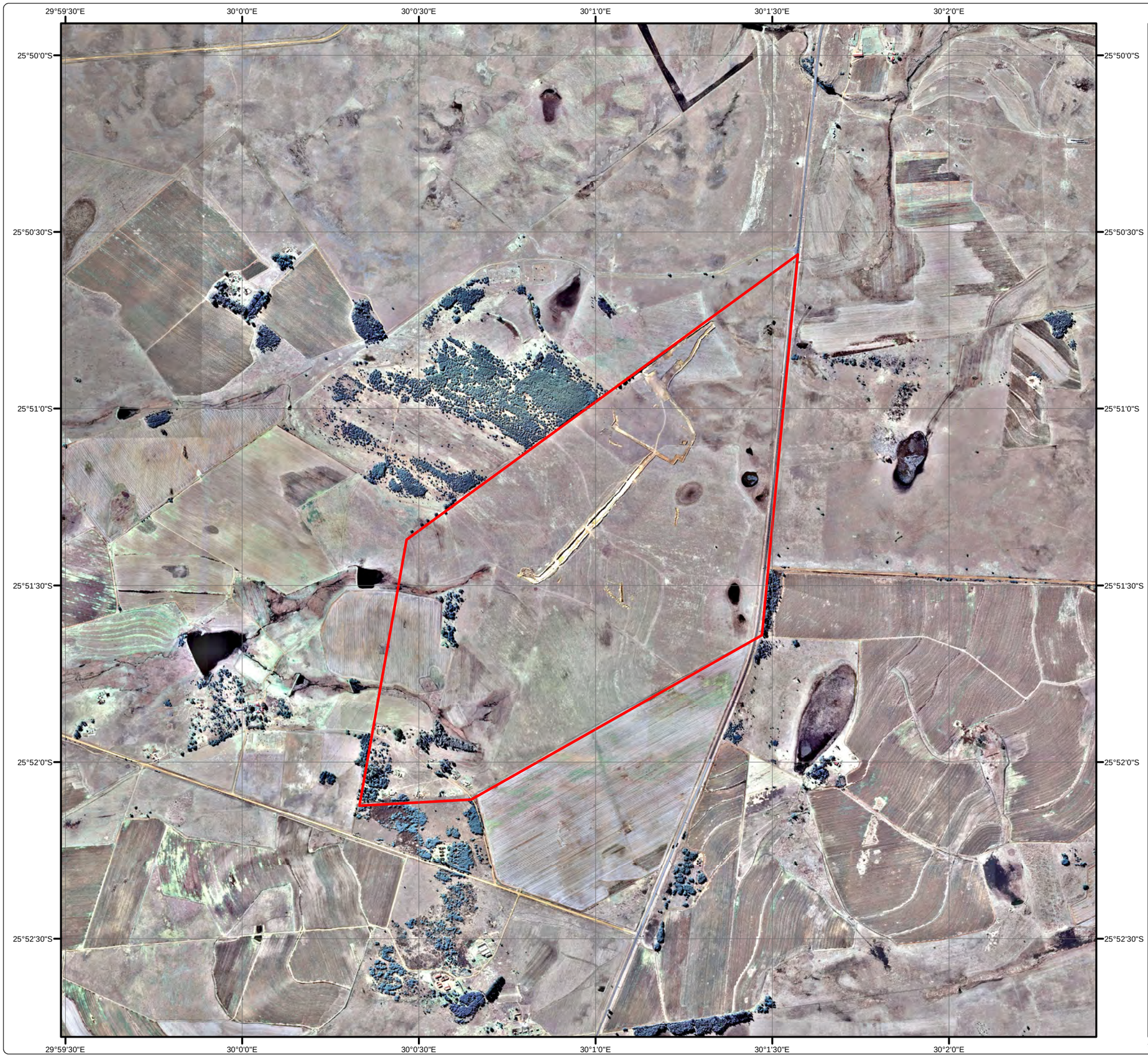

Plan 3

Eerstelingsfontein Project

Regional Setting
1-10 000

Legend

Eerstelingsfontien Project Area

2529DD Arnot
2530CC Moedig

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Projection: Transverse Mercator
Datum: WGS84
Central Meridian: 29°E

Ref #: idp.EXX2305.201407.172
Revision Number: 1
Date: 24/06/2014

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Kilometres

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3.3 Data Collection

3.3.1 Desktop and Text-Based Data Collection

Data collection was aimed at information gathering relating to known heritage resources within and surrounding the proposed area for development. Information was obtained through intensive research using a variety of primary and secondary sources such as academic journals, textbooks and records, national and provincial websites, archaeological field guides, national guidelines, maps, photographs and plans.

Published literature including academic papers, books and planning documents were collated and analysed to determine their relevance to this NID. Sources that were used to inform the findings are fully referenced under Section 8 of this report, and are briefly listed in below.

Table 3-1: Relevant reviewed published sources

Palaeontology	■ Bamford, 2011 ■ Council for GeoScience, 2014 ■ Wilson & Anhaeusser, 1998
Stone Age	■ Deacon & Deacon, 1999 ■ Esterhuysen & Smith, 2007 ■ Korsman & Plug, 1994 ■ Plug, 1982 ■ Potgieter, 1955
Iron Age	■ African Farming Research Network, 2014 ■ Huffman, 2007 ■ Maggs, 1976 ■ Maggs, 2008 ■ Makhura, 2007
Historical and Colonial Period	■ Jooste, 2002 ■ South African History Online, 2014 ■ von der Heyde, 2013
Planning documents	■ Emakhazeni Local Municipality, 2014 ■ Nkangala District Municipality, 2013
General	■ Mucina & Rutherford, 2006 ■ Statistics South Africa, 2011

Previously completed heritage studies that were conducted in the surrounding areas were reviewed to expand on the background information discussed. The findings provide evidence-based inferences to be made with regard to the potential for, and description of heritage resources that are likely to occur in the project region. Heritage cases and reports found to be relevant are listed in Table 3-2 below, and fully referenced under Section 8.

Table 3-2: Relevant reviewed heritage studies

Author	Report type	Area / property / project
Kitto, 2012	HIA	Exxaro Paardeplaats Project
Pelser, 2013	HIA	Wonderfontein Colliery near Belfast in Mpumalanga
Pelser & van Vollenhoven , 2011	HIA	Eerstelingsfontein NDC Coal Mine near Belfast in Mpumalanga Province

An archive and database survey was conducted by consulting the following repositories:

- National Automated Archival Information Retrieval System (NAAIRS);
- Statistics South Africa (Stats SA)
- SAHRIS; and
- Wits Archaeology Site Database.

3.4 Historical Layering

Historical layering is a process whereby diverse cartographic sources from various time periods are layered chronologically using Geographic Information System (GIS). The rationale behind historical layering is threefold, as it:

- Enables a virtual representation of changes in the land use of a particular area over time;
- Provides relative dates based on the presence/absence of visible features; and
- Identifies potential locations where heritage resources may exist within an area.

Cartographic sources referred to in this report include are listed in Table 3-3.

Table 3-3: Cartographic sources relevant to the ECM project

Historical maps						
Map series		**Name / number**		**Date**		
Major Jackson		Machadodorp Sheet 21		June 1902		
Aerial photographs						
Job no.	**Flight plan**	**Photo no.**	**Map ref.**	**Area**	**Date**	**Reference**
352	010	02212	2529 2530	Belfast	1955	1955/352
	011	02246				
481	016	00452	2529 2530	Belfast	1965	1965/481
769	016	09616	2428 2429 2528 2529	Pretoria	1976	1976/769
951	012	05048	2528 2529	Pretoria	1991	1991/951

3.5 Site Naming

Sites may be identified based on previous relevant reports. The relevant SAHRA report number will be followed by the relevant NHRA section suffixed with the site name and / or number that was used in the original reports. For example, a heritage resource identified in Roodt (1999) described as an archaeological site and numbered Site 1 in that report will be: **1999-SAHRA-0021/S.36 Site 1**

This number may be shortened on any plans or maps to the site number used in that report.

If the SAHRA report number is unavailable, the author and date of the report will be followed by the reference to the relevant NHRA section suffixed with the site name and/or number that was used in the original reports. For example, **Roodt-1999/S.36 Site 1**

Sites identified during field surveys are prefixed by the SAHRIS case number assigned to the study followed by the map sheet number, relevant NHRA section and site number, i.e.

6357/2530CC/S.36-001

This number may be shortened on any plans or maps to the NHRA reference number suffixed with the site number used in that report. For example: **S.36-001**

3.6 Constraints and Limitations

The following restrictions and limitations were encountered during the heritage study:

- No site visit survey during the compilation of the NID could be conducted as Exxaro had requested that no site visits be take place before meetings with the local municipalities, local communities and stakeholders could be arranged. Data collected during the RAP survey was used to inform the site specific study area; and

- This NID report was compiled by an archaeologist / generalist heritage practitioner. Although the compiler relied extensively on credible published information to inform the findings of this report, it may contain some expert knowledge gaps.

4 Gap Analysis of the 2011 HIA

The HIA conducted by Pelser and van Vollenhoven (2011), identified two heritage resources, namely a NHRA s. 36 burial ground (Pelser & van Vollenhoven-2011 S.36-001) consisting of 13 graves with dates on the headstones ranging from 1907 to 1976; and a NHRA s. 34 historical farmyard (Pelser & van Vollenhoven-2011 S.34-002) dating to 1890-1910 (Pelser & van Vollenhoven , 2011).

Identified s. 34 heritage resources include a historic homestead located within the Zenzeleni community. The site will not be directly impacted on by any of the mining operations. Recommendations for the built heritage in the 2011 HIA include that the site may be destroyed once a destruction permit is applied for and issued by SAHRA (Pelser & van Vollenhoven, 2011: 21)

Identified s. 36 heritage resources include the burial ground with 13 graves located within the Zenzeleni community. Recommendations for the burial ground in the 2011 HIA included a management plan for the i*n situ* conservation of the burial ground as the site is not located in the impact area (Pelser & van Vollenhoven, 2011: 21).

The gap analysis conducted on the 2011 HIA is summarised in Table 4-1 below.

Table 4-1: Gap analysis of the HIA conducted by Pelser and van Vollenhoven (2011)

NHRA Section	NHRA s. 38(3) requirements	Addressed in HIA	HIA reference	Adequacy	Information required
38(3)(a)	Identification and mapping of heritage resources	Yes	Section 11, pg. 22	Inadequate	Sites were not shown in relation to project area and no track logs were included in the report.
38(3)(b)	Evaluation of significance	No	n/a	Inadequate	Assessment of significance is required.
38(3)(c)	Impact on resources	Yes	Section 9, pg. 20	Adequate	While the assessment of the impact is adequate, the assessment does not take into account the significance value of the site.

NHRA Section	NHRA s. 38(3) requirements	Addressed in HIA	HIA reference	Adequacy	Information required
38(3)(d)	Evaluation of impact relative to the sustainable social and economic benefits	No	n/a	Inadequate	An evaluation of the impact on identified heritage relative to the social and economic benefits should be conducted.
38(3)(e)	Results of consultation	Yes	Section 8.4, pg. 15	Inadequate	Consultation regarding oral histories and traditions within the community is required.
38(3)(f)	Consideration of alternatives	No	n/a	Inadequate	Project alternatives need to be considered
38(3)(g)	Mitigation plans	Yes	Section 10, pg. 20-21	Inadequate	A management plan should be recommended for the farmyard
38(4)	Submitted to HRA	No	n/a	Inadequate	HIA and NID to be submitted to SAHRA and MPHRA.
38(4)	Statutory Comment issued	No	n/a	Inadequate	Statutory Comment required from SAHRA and MPHRA for further ToR.

Additional to the gap analysis above the following knowledge gaps were identified:

- The HIA contained no discussion regarding the palaeontological sensitivity of the project area;
- The HIA contained no information regarding the natural vegetation or climate of the project area;
- The HIA did not take into account previous HIA's and heritage studies in the surrounding area; and
- The HIA did not contain a discussion regarding the local development context of the municipality.

5 Cultural Heritage Baseline Description

5.1 Introduction

The cultural heritage baseline consists of several periods in the history of the regional, local and site specific areas within and surrounding the ECM Project area. These periods are discussed to provide context for any identified heritage within and around the project so as to better assess their significance and the level of impact caused by the proposed project. The following time periods are discussed as part of this cultural heritage baseline (See Table 5-1).

Table 5-1: List of periods forming part of cultural heritage baseline

1 Palaeontological and geological
Precambrian to late Pleistocene (1.2 billion to late 20 000 years ago)
2 Indigenous
Early Stone Age (3 million to 300 00ya) (ESA)
Middle Stone Age (c 300 000 to 30 000 ya) (MSA)
Later Stone Age (c 30 000 to 2000 ya) (LSA)
Late Iron Age (1500's to 1850's) (LIA)
3 Colonial
British colony (1814 -1910)
4 Historical
Union of South Africa (1911-1961)

5.2 Regional Study Area

5.2.1 Stone Age

The Stone Age is represented by the presence of ESA, MSA and LSA sites throughout the Mpumalanga-Highveld region. The ESA is defined by the occurrence of large hand axes and cleavers, which can be found in layers dating between ± 2 Million years BP and 250 000 years BP (Esterhuysen & Smith, 2007). The MSA of Southern Africa is between ±250 000 years to ±20 000 years BP. This period can be defined by the occurrence of blades and points produced from good quality raw material. Bone tools, shell beads and pendants, as well as the use of ochre are also present in the MSA (Deacon & Deacon, 1999). The LSA is dated to approximately 20 000 years BP and can be characterized by the presence of microlithic technology and strong signs of ritual practises and complex societies, as well as rock art. Microlithics are produced from very fine-grained material such as quartz or chert, and often used as composite tools where they are hafted onto sticks for arrows. Herders or

pastoralists emerge towards the end of the LSA, with ceramics and domesticated stock (Deacon & Deacon, 1999).

Most recorded Stone Age sites in the Highveld region of Mpumalanga constitute surface scatters with no evidence of *in situ* deposit. The evidence that is mostly identified are LSA lithics and rock art found in shelters. Bushman Rock Shelter (150 km south-east from the project area) has a long occupation sequence that dates back to 26 000-14 000 years ago, where MSA and LSA tools are present, as well as bone tools and beads made from ostrich eggshell, land snail and bone (Plug 1981). Honingklip, located 75 km north-east from the project area has examples of rock art and LSA remains such as scrapers, adzes and awls, and other artefacts such as beads and Early Iron Age potsherds (Korsman & Plug, 1994). Some LSA remains have also been identified around pans. Bushmen have been recorded to have lived on and around pans in the Chrissiesmeer region, approximately 50 km north from the project area (Potgieter, 1955).

5.2.2 Iron Age

The Stone Age is followed by the Iron Age in southern Africa. This period is consists of the Early, Middle and Late Iron Ages (LIA) and follows the spread of Bantu speaking people.

Stone walling is a key identifier for LIA sites. Stone walling within the Central Cattle Pattern is divided into two primary clusters, the Moor Park and Ntsuanatsatsi, summarised in Table 5-2 below.

Table 5-2: Stone walling clusters associated with the CCP

Central Cattle Pattern			
Moor Park Cluster		**Ntsuanatsatsi Cluster**	
Moor Park	14th-16th Century	Type N	15th-17th Century
Melora	16th Century - ?	Badfontein	16th Century
Kwamaza	18th Century – Historic	Doornspruit	19th Century
		Klipriviersberg	19th Century
		Type V	19th Century
		Molokwane	19th Century
		Type Z	19th Century
		Type B	19th Century
		Tukela	19th Century

KwaMaza found in Mpumalanga, follows a layout with beehive huts located at the back and the cattle kraals and central court built to look the same with two lobes, for cattle and calves, and a side chamber for a small court (Huffman, 2007). Type N (Maggs, 1976) dates to between the 15th and 17th centuries. During this period it spread across the Vaal and in the Free State it led to the development of Type V. Consisting of the standard core of cattle enclosures surrounded by beehive huts, it usually does lack the presence of an outer wall. Additionally, it is believed that it is also within this type corbelled huts evolved. Western Sotho-Tswana built Molokwane walling. Aerial views depict the style resembling a 'sunflower' (Huffman, 2007: 38) with multiple arcs in the households surrounding the core. Type Z walling, associated with Southwestern Sotho-Tswana is similar to that of Molokwane but differs in its configuration which is a loose circle of individual bilobial households (Huffman, 2007). The Koni, an Nguni group in Mpumalanga, have circular settlements that consist of cattle lanes and terrace walls. Usually the cattle lane leads into a central enclosure, an exit on the opposite side allowed access to kraals attached to the central wall. This organisation may represent a left / right division. Later, Ledwaba Ndbele built similar walling around Polokwane. Huffman (2007: 41) refers to this type as Badfontein.

Associated with the stone walled settlements is the material culture of the people who once occupied the site. The most common of these would be ceramics. Through a process of ceramic seriation, it is possible to trace Iron Age groups based on their decoration (Huffman, 2007). The more common ceramic facies found in Mpumalanga are summarised in Table 5-3.

Table 5-3: Common ceramic facies found in Mpumalanga

Facies	Period	Key Characteristics
Mzonjani	450 BC - 750 BC	Punctates on rim, spaced motif on shoulder
Uitkomst	1650 BC – 1820 BC	Stamped arcades, appliqué and blocks of parallel incisions, stamping and chord impressions
Rooiberg	1650 BC – 1750 BC	Stamped rim band, mixture of stamped and incised bands, arcades and triangles in the neck
Icon	1300 BC – 1500 BC	Multiple incised bands separated by colour and lip decorations on bowls
Madikwe	1500 BC – 1700 BC	Multiple bands of cord impressions, incisions, stabs and punctates separated by colour
Diamant	750 BC – 1000 BC	Tapered rims with broadly incised herringbone
Eiland	1000 BC – 1300 BC	Fine herringbone with ladder stamping
Letaba	1600 BC – 1840 BC	Hatched bands on shoulder, below black and red triangles
Doornkop	750 BC – 1000 BC	Multiple herringbone bands in neck
Klingbeil	1000 BC – 1200 BC	Triangles in neck bordered with slashes, punctates on shoulder

The LIA occurred between the 1500's and the 1850's. In Mpumalanga, the major group that was active during this period is the Bokoni. This chiefdom lies in a corridor that extends from Ohrigstad to Carolina with several branches heading out the Komati Valley and some sections of the Crocodile river, with a small cluster to the west fo the Steelpoort Valley (Maggs, 2008).

5.2.3 Colonial and Historical Period

During the 18th and 19th century, the Mpumalanga region experienced turmoil caused by the *Mfecane*. The *Mfecane* was a period of significant population movement and displacement of interior groups as the Zulu Kingdom expanded. The region is marked by unrest, resulting in 'refuge' sites. Due to this, large settlements are uncommon during this time as groups could not settle permanently (Makhura, 2007)

It was during this period of unrest that Boers (Voortrekkers) started to move into the interior during the latter part of the 19th century. As the *Mfecane* has pushed most groups out of the interior, the Boers believed they were moving into empty lands and began to claim areas for themselves and began to exploit the natural resources of the interior (Makhura, 2007).

Since gold was discovered in the Witwatersrand in 1886, there was a stream of foreigners into South Africa. The Boer Republics of the Orange Free State and the Transvaal were wary that the so-called "Uitlanders" may threaten their independence and control the goldfields. Tension arose between the Boer Republics (led by President Paul Kruger) and the British Cape Colony (led by Premier Cecil John Rhodes) during the 1890's. The Jameson Raid in Johannesburg (a failed attempt at an uprising by Uitlanders) saw Rhodes resign as Premier of the Cape Colony and tensions increase towards the Uitlanders. By 1899, after an ultimatum was issued to Britain, tensions had reached breaking point and the Second Anglo-Boer War was declared on the 11 October 1899 (South African History Online, 2014).

5.3 Local Study Area

5.3.1 Development Context

The development and planning context in which the proposed ECM Project will operate was summarised from the following sources:

- Stats SA (Statistics South Africa, 2011)
- ELM Draft Integrated Development Plan (IDP) 2011-2016. Third revision 2014/15 (Emakhazeni Local Municipality, 2014) and
- Nkangala District Municipality 2013-2014 IDP (Nkangala District Municipality, 2013).

The ELM covers an area of approximately 4 736 km^2.The total population is estimated at 47 216 with a density of ten persons per square kilometre (Statistics South Africa, 2011). A total of 39 % of the population is economically active and 25.9 % of the economically active

population is employed in the mining sector (Emakhazeni Local Municipality, 2014). Income levels of the economically active population are depicted in Table 5-4.

Table 5-4: Average monthly household income for the ELM (Statistics South Africa, 2011)

Income	Percentage
No income	12%
R1 - R4,800	3,4%
R4,801 - R9,600	5%
R9,601 - R19,600	21,1%
R19,601 - R38,200	22,1%
R38,201 - R76,4000	15,9%
R76,401 - R153,800	10,9%
R153,801 - R307,600	5,9%
R307,601 - R614,400	2,7%
R614,001 - R1,228,800	0,7%
R1,228,801 - R2,457,600	0,2%
R2,457,601+	0,2%

The average monthly household income in the ELM shows that the largest percentage of the economically active population (43.2 %) is earning between R 9 601.00 and R 38 200.00 per month, while 12 % of the population does not earn an income.

According to the ELM IDP, the mining sector is the largest potential contributor to of labour and capital to stimulate economic growth from 2011-2016 (Emakhazeni Local Municipality, 2014). However, though the sector provides the highest employment percentage in the ELM, agriculture, tourism and forestry are still the primary economic activities (Nkangala District Municipality, 2013). The municipality is ranked 88th in the country with a growth rate of 0.93 %, leaving much potential for future growth (Statistics South Africa, 2011).

The ELM IDP mentions that the need to enhance and promote the culture and heritage of the local municipality, noting several heritage sites in the local municipality which include the Bergendal Battle Monument and several large stone walled settlements (Emakhazeni Local Municipality, 2014). The ELM IDP further states the importance of enhancing the Machadodorp-Badplaas-Mkhondo tourism corridor which links to the Spatial Development Framework (SDF) of the neighbouring Gert Sibande Municipality (Emakhazeni Local Municipality, 2014).

While the majority of the economically active population earns a reasonable income, the amount of economically active individuals is low. The ELM IDP has placed much emphasis on the economic contribution of the growing mining sector in the province; however the primary economic focus of the municipality is linked to the agricultural and tourism industry. The increase in mining operations in the local municipality may have a cumulative impact on the preservation of heritage sites that may contribute to the ELM plans to strengthen their tourism sector which can provide long-term sustainable employment to the local population.

5.3.2 Geology and Palaeontology

A Palaeontological Impact Assessment (PIA) was conducted for the Paardeplaats Colliery approximately 10 km north from the ECM project area. The identified geological formation for the Paardeplaats project area was that of the *Vryheid Formation* (Kitto, 2012).

The predominant rocks are the sedimentary rocks of the Ecca Group (Karoo Basin). Theses layers, which contain arenaceous strata, were deposited during the Permian era about 280 million years ago (mya). This formation consists of sandstone, shale, mudstone and coal (Wilson & Anhaeusser, 1998). It also consists of dark coloured siltstone which a result of a high carbon content and the presence of coal beds (Lavin, 2013). The *Vryheid Formation* also consists of deltaic mudstones and sandstones with occasional coal seams (Lavin, 2013). Fossil plants are the predominant palaeontological resources that have been found in this region of South Africa. The fossil plants that have previously been recorded include lycopods, rare ferns and horsetails, abundant glossopterids, cordaitaleans, conifers and ginkgoaleans (Bamford, 2011). Other fossils that are expected to occur include trace fossils, rare insects, possible conchostracans, non-marine bivalves and fish scales (Lavin, 2013).

According to the PalaeoSensitivity map on SAHRIS, the majority of the project area falls within a high sensitivity zone (Council for GeoScience, 2014) (See Figure 5-1).

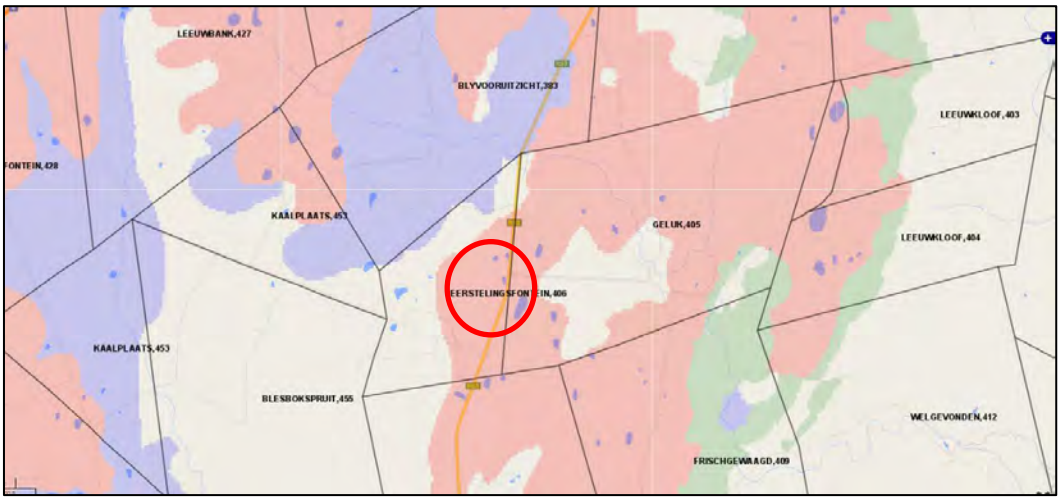

Figure 5-1: Palaeo-Sensitivity map of the study area, with the approximate extent of the ECM Project area (SAHRIS, 2014). Areas that are shaded pink indicate a high palaeo-sensitivity

5.3.3 Soils, Vegetation and Climate

The soils of the project area are shallow and display low to moderate natural fertility. The addition of nutrient and fertilizers would have been needed to achieve high crop yields (Fincham & Konigkramer, 2012).

The project area falls within the Eastern Highveld Grassland sub-biome (Gm12). This sub-biome is characterised by the presence of undulating plains, low hills and pans (Mucina & Rutherford, 2006: 400). The vegetation is predominantly short dense grasslands comprising of grasses such as *Aristida, Digitaria, Eragrostis, Themeda* and *Tristachya* (Mucina & Rutherford, 2006: 400). Small pockets of rocky outcrops with trees such as *Acacia caffra* (Hook thorn), *Celtis Africana* (White Stinkwood), *Diospyros lycioides lycioides* (Star Apple), *Parinari capensis* (Sand Apple), *Protea caffra, P. welwitschii* (cluster-head sugarbush) and *Rhus magalismontanum* are also common in the region (Mucina & Rutherford, 2006: 400).

The climate of the sub-biome consists of a summer rainy season, with very dry winters. The project area has an average altitude of 1780 m and lies west of an escarpment (Mucina & Rutherford, 2006: 400). Desktop cartographic surveys show the project area is dominated by agricultural activities and no rocky outcrops were identified (See Figure 3-3).

The natural environment of the project area is not conducive to early cultivation as the soils are of poor quality and the less than ideal depth of the soil profile, but rather for grazing areas.

5.3.4 Stone Age

An ESA site has been recorded in the Wits site database, approximately 10 km west along the Wonderfontein Road (2529 DD1). A potential rock art site was identified 10 km north-west on the farm Paardeplaats where two faded red images were identified on a small rock outcrop (Kitto, 2012).

5.3.5 Iron Age

The project area falls approximately 17 km outside the 'Bokoni corridor'. The 'corridor' is typically situated at a lower altitude than that of the project area, such as the escarpment to the east of the project area. From the desktop survey of the aerial imagery, the closest identified stone walls are located 10 km east from the project area as shown in Figure 5-2.

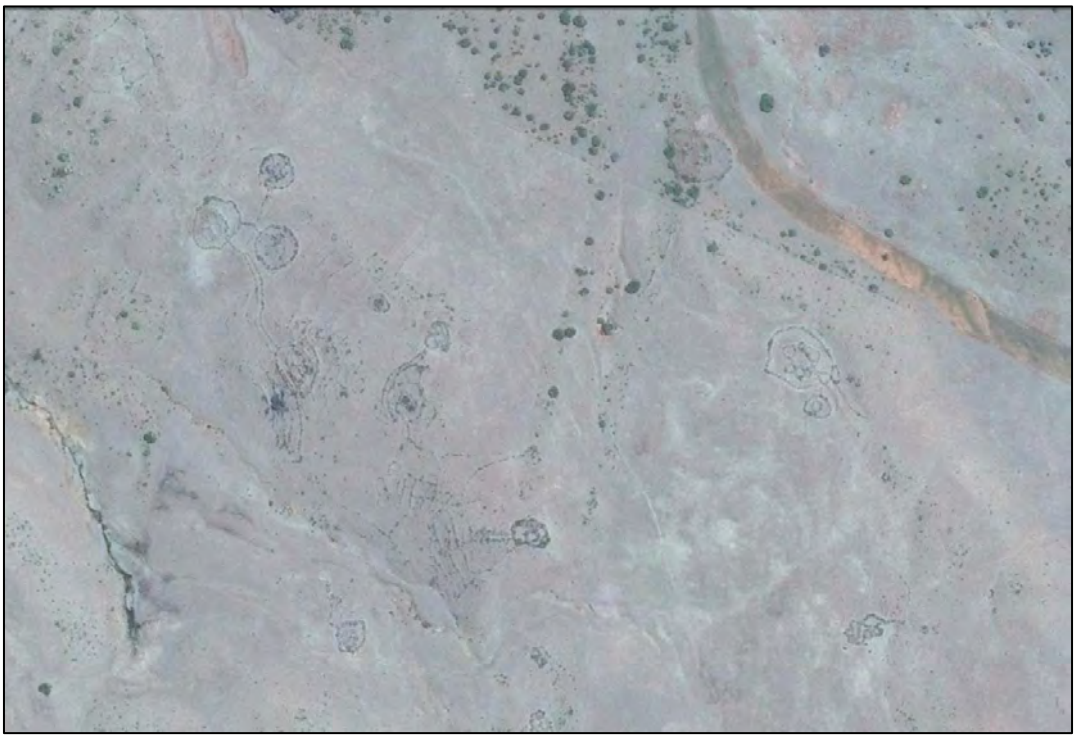

Figure 5-2: Example of Badfontein stone-walling approximately 17 km south-east from the project area (adapted from Google Earth)

5.3.6 Colonial and Historical Period

The Battle of Berg-en-Dal was fought on the outskirts of Belfast in 1900. In 1900, 20 000 British troops under command of General Sir Redvers Buller and 5 000 Boer commandos under General Louis Botha engaged in skirmishes. Botha established a defensive line spanning 80 km from Bothasberg to the farm Frischgewaagd in the Komati River valley with the main action occurring on the farm Bergendal (approximately 13 km north-east from the project area) (Jooste, 2002). The main battle on Bergendal occurred on 27th August 1900 with Buller concentrating the attack on the remaining Zuid-Afrikaansche Republiek Politie (ZARP) (von der Heyde, 2013). Artillery that was used in the battle included a 4.7 inch naval

gun. The British charged the hill with the rifles fixed with bayonets and the Boer defence was breached (see Figure 5-3) (Jooste, 2002). A total of 13 British soldiers were killed and 14 Boer commandos were killed. Following the battle, the British were able to occupy Waterval Boven while the Boers turned east to Nelspruit and also released 2 000 British prisoners from the camp in Barberton (von der Heyde, 2013). A monument honouring those who died during the battle was erected 1935 and is approximately 14 km north-east from the project area.

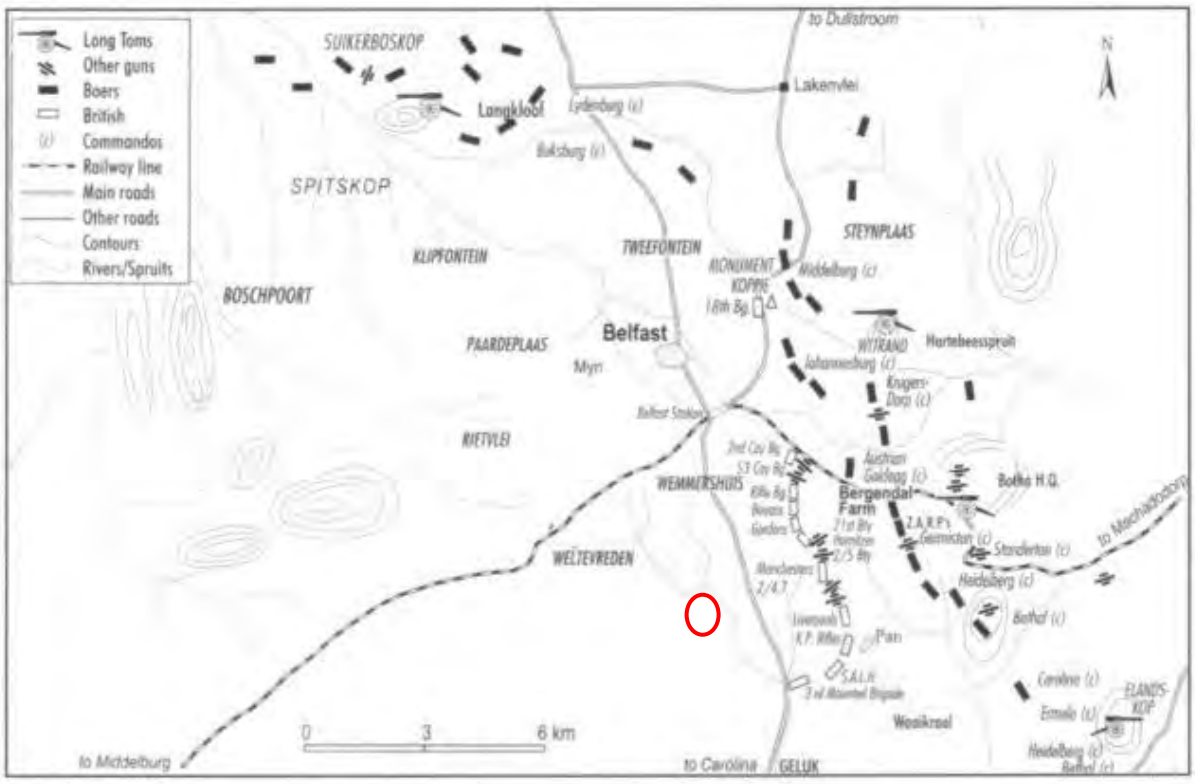

Figure 5-3: The Battle of Bergendal with approximate location of the ECM Project area indicated in red (Jooste, 2002)

5.4 Site-Specific Study Area

Historical layering indicated increased agricultural activities on the surrounding farms and in the south-west section of the project area since the 1950's, however the north-east corner of the mining right area has experienced the least amount of disturbance and therefore this area may have the potential for *in situ* archaeological resources including the pan where there is a potential for LSA remains.

Only a single household is visible (orange dot) with one possible watering point (yellow dot) on the 1955 aerial photograph depicted in Figure 5-4. In 1964, two more watering points are present (Figure 5-5) and in 1976 there is an increase in farming activities on the surrounding farms (Figure 5-6). Between 1976 and 1991 four more homestead were established. (Figure 5-6 and Figure 5-7).

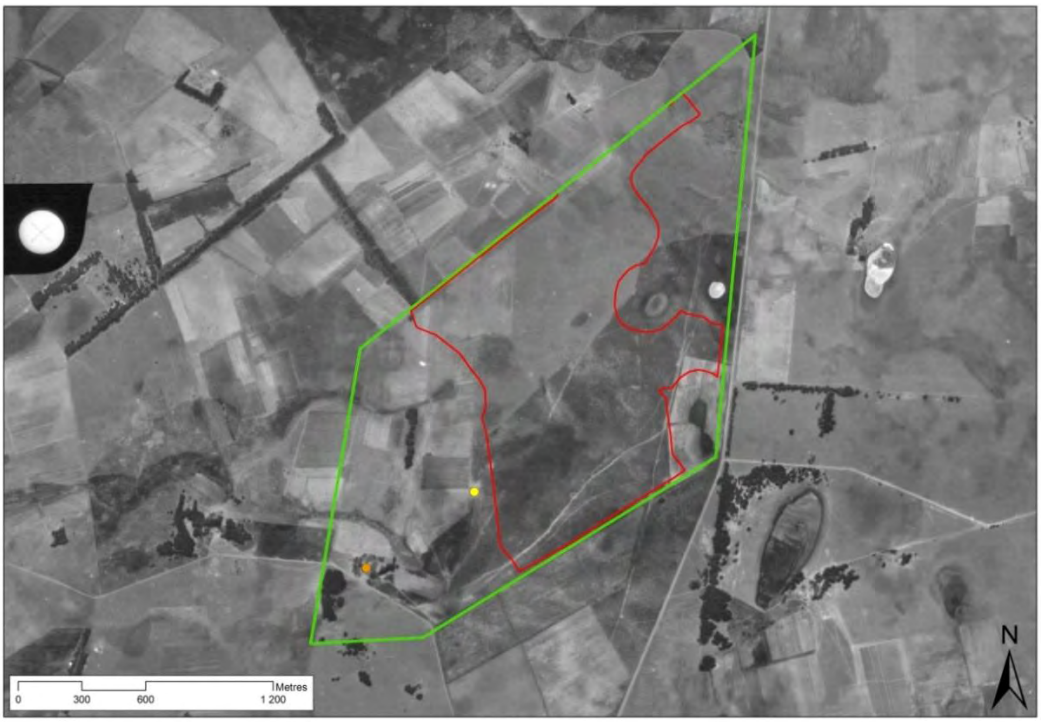

Figure 5-4: The ECM project area in a 1955 aerial photograph. The infrastructure area is outlined in red, while the green indicates the Mining Right area

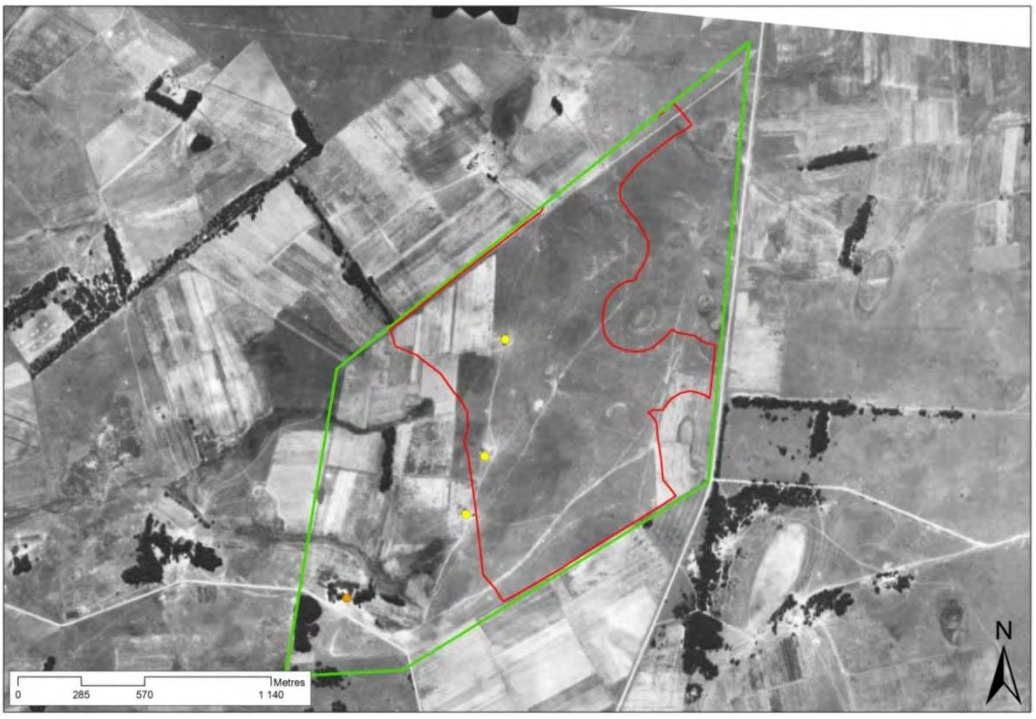

Figure 5-5: The ECM project area in a 1964 aerial photograph. The infrastructure area is outlined in red, while the green indicates the Mining Right area

Figure 5-6: The ECM project area in a 1976 aerial photograph. The infrastructure area is outlined in red, while the green indicates the Mining Right area

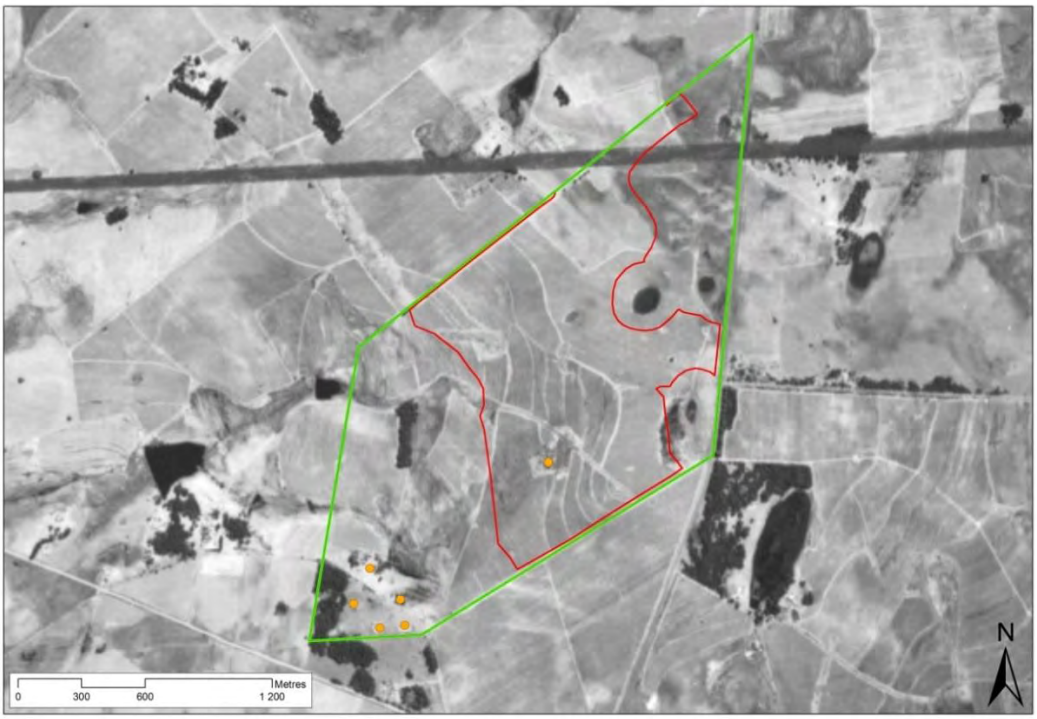

Figure 5-7: The ECM project area in a 1991 aerial photograph. The infrastructure area is outlined in red, while the green indicates the Mining Right area

5.4.1 Current state of cultural landscape

Currently, there are nine homesteads (Zenzeleni community) in the project area, as identified in the Social Impact Assessment (SIA) conducted for the project (Michel, 2011). According to social consultation conducted within the Zenzeleni community, one individual, who is 92 at the time of the SIA, claimed to have been born on the farm.

As stated in Section 4, the HIA conducted in 2011 identified a burial ground (Pelser & van Vollenhoven-2011 S.36-001) consisting of 13 graves with dates on the headstones ranging from 1907 to 1976; and a historical farmyard (Pelser & van Vollenhoven-2011 S.34-002) dating to 1890-1910 (Pelser & van Vollenhoven , 2011).

As a result of Asset Survey completed in August 2014, an additional burial ground (6357/2530CC/S.36-003) with approximately five graves was identified. No headstones were present for these graves, however according to the local community this burial ground was reserved for children under the age of five years old, and the graves are recent burials.

All identified heritage resources as a result of the 2011 HIA and the Asset survey are depicted in Figure 5-8 below. Please see Appendix B for the site list.

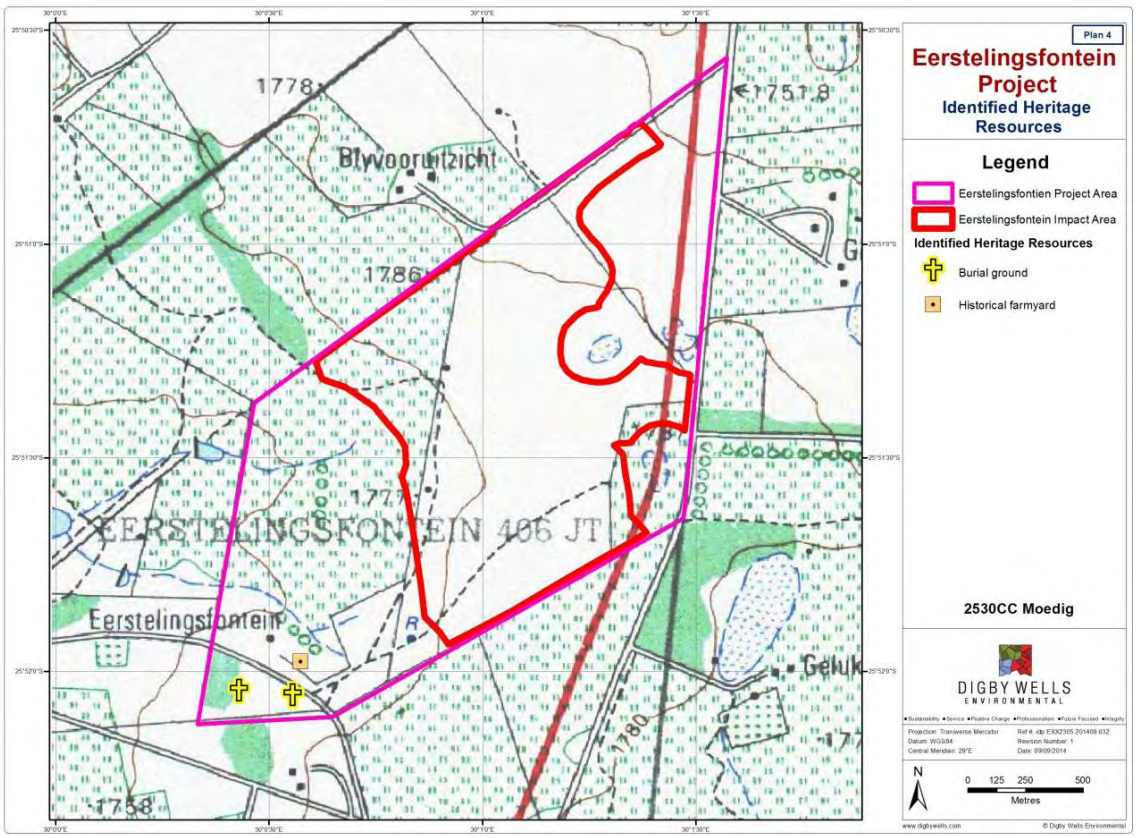

Figure 5-8: Identified Heritage Resources within the ECM project area

5.5 Stakeholder Perceptions and Concerns

An Introductory community meeting was held at the Zenzeleni Community on the 20 July 2014. Community members at the meeting raised concerns regarding the land claim that has been launched in the surrounding areas and are unsure if the ECM project will overlap with the claim. The graves located within the proposed ECM project area are an important piece of evidence in support of their land claim. The community members were concerned that if the graves are to be relocated, it may affect their land claim.

6 Sources of Risk

Sources of risk were determined considering the Listed Activities for which environmental authorisation was approved, to impact on heritage resources (See Table 6-1).

Table 6-1: Identified sources of risk

Identified Project Activity (including Listed Activities)	Description	Development as defined in NHRA	Trigger for HIA	Sources of risk to heritage resources	Project Phase
GN R546 No 4	Construction of roads wider than 4 m with a reserve less than 13.5 m	This activity constitutes development as defined in terms of NHRA Section 2(viii) (a) construction, alteration, demolition, removal or change of use of a place or a structure at a place.	NHRA 38 (1) c (i)	Potential destruction and damage to sub-surface heritage resources	Construction
GN R546 No 12	The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation	This activity constitutes development as defined in terms of NHRA Section 2 (viii) (e) and (f) 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.	NHRA (38) 1 c (i)	Potential destruction and damage to sub-surface heritage resources	Construction
GN R546 No 13	The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation	This activity constitutes development as defined in terms of NHRA Section 2 (viii) (e) and (f) 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.	NHRA (38) 1 c (i)	Potential destruction and damage to sub-surface heritage resources	Construction

Identified Project Activity (including Listed Activities)	Description	Development as defined in NHRA	Trigger for HIA	Sources of risk to heritage resources	Project Phase
Blasting	Blasting for open pit construction	This activity constitutes development as defined in terms of NHRA Section 2(viii) (a) construction, alteration, demolition, removal or change of use of a place or a structure at a place.	n/a	Potential destruction and damage to palaeontological resources; loss of access to burial grounds and graves	Construction and Operation

6.1 Construction Phase

As the identified heritage resources fall outside of the impact footprint, no direct impact is expected during the construction phase. However, un-identified and sub-surface heritage resources may be directly impacted upon. The highest likelihood of negative impacts on un-identified and sub-surface heritage resources to occur is associated with activities that will be undertaken during construction phase of the proposed projects.

For the ECM Project, project activities identified as sources of risk during construction include:

- Ground clearance for the open pit and associated infrastructure; and
- Blasting for the open pit.

Ground clearance and excavation for the construction of the proposed infrastructure may disturb or damage any sub-surface heritage resources. However, excavations may uncover bedrock or rocky outcrops that may contain palaeontological resources. In this instance, they may be a positive impact as the excavation may identify unknown fossil heritage in the area.

6.2 Operational Phase

During the operational phase of the proposed project, sources of risk to heritage resources are limited. The primary risk during the operational phase will be associated with the indirect impacts that may occur due to operational blasting or vandalism.

6.3 Decommissioning Phase

No sources of risk to heritage resources are envisaged for the decommissioning phase of the project, unless any infrastructure at the time of decommission is protected in terms of s. 34 of the NHRA.

6.4 Cumulative Impacts

Cumulative impacts are expected to be low with regards to the identified heritage resources. Some cumulative impacts that may occur include:

- Damage to the burial grounds and farmyard caused by on-going blasting; and
- If the burial grounds are to remain *in situ*, there may be a decrease of the significance of the burial ground if access to the sites is to be limited due to mining activities.

7 Conclusion and Recommendations

Digby Wells was requested by Exxaro Coal to undertake the RAP and GRP for the greater NBC operations, with specific focus on Belfast and ECM Projects. A gap analysis of the initial HIA for the ECM Project revealed that submission of the report to SAHRA and MPRHA as required under s. 38(8) never occurred. As result, Statutory Comment for the ECM Project was not obtained prior to receiving environmental authorisation.

This NID was undertaken to update the cultural heritage baseline, address the significant gaps identified in the initial HIA and retrospectively submit the heritage assessments to SAHRA and MPRHA for Statutory Comment.

Based on the findings of this NID, Digby Wells requests SAHRA and MPRHA to consider the recommendations from both the initial HIA and this report. These include the following:

- From the initial HIA:
  - The identified burial grounds should be fenced off and a management plan should be written for the site; and
  - If the historical farm yard is to be demolished, an s. 34 destruction permit from MPHRA is required.
- For this NID:
  - A Watching Brief be implemented during initial ground clearing activities by a qualified archaeologist to identify, adequately document and record any sub-surface occurring heritage resources;
  - Chance Find Procedures (CFPs) for archaeological and palaeontological resources be drafted and included in the EMP;
  - A monitoring programme for identified burial grounds and graves and historic structures be drafted and included in the EMP; and
  - If these recommendations are implemented, Exxaro's ECM Project should be exempt from any additional heritage studies.

8 References

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Appendix A: CV of Specialists

NATASHA HIGGITT

Ms Natasha Higgitt

Assistant Heritage Consultant

Social Department

Digby Wells Environmental

1 EDUCATION

- University of Pretoria
- BA Degree (2008)
- Archaeology Honours (2010)
- Title of Dissertation- Pass the Salt: An Archaeological analysis of lithics and ceramics from Salt Pan Ledge, Soutpansberg, for evidence of salt working and interaction.

2 LANGUAGE SKILLS

- English - Excellent (read, write and speak)
- Afrikaans - Fair (read, write and speak)
- Italian – Poor (Speaking only)

3 EMPLOYMENT

- July 2011 to Present: Assistant Heritage Consultant at Digby Wells Environmental
- April 2011 to June 2011: Lab assistant at the Albany Museum Archaeology Department, Grahamstown, Eastern Cape
- April 2010 to March 2011: Intern at the Archaeology Department, Albany Museum, Grahamstown, Eastern Cape under the Department of Sports, Recreation, Arts and Culture, Eastern Cape Government, South Africa (DSRAC)

4 FIELD EXPERIENCE

- Human remains rescue excavation at St Francis Bay, Eastern Cape
- Human remains rescue excavation at Wolwefontein, Eastern Cape
- Recorded two rock art sites at Blaauwbosch Private Game Reserve, Eastern Cape

- Attended a 2 week excavation/study tour in the Friuli Region in Italy, organised by the *Società Friulana di Archeologia*, sponsored by *Ente Friuli nel Mondo*, and excavated a 12th century medieval castle
- Attended a 2 week excavation in Limpopo, Waterpoort Archaeological Project organised by Xander Antonites (Yale PhD Candidate)
- A total of 5 University of Pretoria Archaeology field schools in Limpopo and Gauteng spanning over 4 years

5 PROJECT EXPERIENCE

- Heritage Statement for a Proposed Acetylene Gas Production Facility, located near Witkopdorp, Daleside, south of Johannesburg, Gauteng Province for Erm Southern Africa (Pty) Ltd (Digby Wells Environmental)
- Heritage Impact Assessment for the Platreef Platinum Project, Mokopane, Limpopo for Platreef Resources (Digby Wells Environmental)
- Heritage Statement for ATCOM and Tweefontein Dragline Relocation Project, near Witbank, Mpumalanga Province for Jones and Wagner Consulting Civil Engineers (Digby Wells Environmental)
- Heritage Statement Report for the Wilgespruit Bridge Upgrade, Pretoria, Gauteng Province for Iliso Consulting (Pty) Ltd (Digby Wells Environmental)
- Heritage Statement Report for the Kosmosdal sewer pipe bridge upgrade, Pretoria, Gauteng Province for Iliso Consulting (Pty) Ltd (Digby Wells Environmental)
- Phase 1 Heritage Impact Assessment for the Thabametsi Coal Mine, Lephalale, Limpopo for Exxaro Coal (Digby Wells Environmental)
- Heritage Statement for the Zandbaken Coal Mine Project, Zandbaken 585 IR, Sandbaken 363 IR and Bosmans Spruit 364 IS, Standerton, Mpumalanga for Xtrata Coal South Africa (Digby Wells Environmental)
- Phase 1 Heritage Impact Assessment for the Brakfontein Thermal Coal Mine, Mpumalanga for Universal Coal (Digby Wells Environmental)
- Development of a RAP for Aureus Mining for the New Liberty Gold Mine Project, Liberia (Digby Wells Environmental)
- Phase 1 Archaeological Impact Assessment for the MBET Pipeline, Steenbokpan, Limpopo (Digby Wells Environmental)
- Notice of Intent to Develop and Cultural Resources Pre-Assessment for Orlight SA (PTY) Ltd Solar PV Project. 2012. (Digby Wells Environmental)
- Agricultural Survey for Platreef ESIA, Mokopane, Limpopo. 2011. (Digby Wells Environmental)

- Cultural Resources Pre-Assessment for the Proposed Sylvania Everest North Mining Development in Mpumalanga, near Lydenburg. 2011. (Digby Wells Environmental)
- Phase 2 Mitigation of Archaeological sites at Boikarabelo Coal Mine, Steenbokpan, Limpopo. 2011. (Digby Wells Environmental)
- Cultural Resources Pre-Assessment for Proposed Platinum Mine Prospecting in Mpumalanga, near Bethal for Anglo Platinum. 2011. (Digby Wells Environmental)
- Cultural Resources Pre-Assessment for proposed Platinum Mine at Mokopane, Limpopo for Ivanhoe Platinum. 2011. (Digby Wells Environmental)
- Phase 1 AIA Mixed-use housing Development, Kwanobuhle, Extension 11, Uitenhage, Eastern Cape. 2011.
- Phase 1 AIA Centane to Qholora and Kei River mouth road upgrade survey, Mnquma Municipality, Eastern Cape. 2011. (SRK Consulting)
- Phase 1 AIA Clidet Data Cable survey, Western Cape, Northern Cape, Free State and Eastern Cape. 2011. (SRK Consulting)
- Phase 1 AIA Karoo Renewable Energy Facility, Victoria West, Northern Cape. 2011. (Savannah Environmental)
- Phase 1 AIA Windfarm survey in Hamburg, Eastern Cape. 2010. (Savannah Environmental)
- Phase 1 AIA Windfarm survey in Molteno, Eastern Cape. 2010. (Savannah Environmental)
- Phase 1 AIA Housing Development at Motherwell, P.E. 2010. (SRK Consulting)
- Phase 1 AIA Sand quarry survey in Paterson, Eastern Cape. 2010. (SRK Consulting)
- Phase 1 AIA Quarry Survey at Victoria West. 2010. (Acer [Africa] Environmental Management Consultants)
- Phase 1 AIA Quarry Survey at Port Elizabeth. 2010. (E.P Brickfields)

6 PROFESSIONAL AFFILIATIONS

- Association of Southern African Professional Archaeologists (ASAPA): Professional member
- Association of Southern African Professional Archaeologists (ASAPA): CRM Practitioner (Field Supervisor: Stone Age, Iron Age and Rock Art)
- South African Museums Association (SAMA): Member

Appendix B: Site List

Site ID	Site name	Site type	Brief site description	Latitude	Longitude
S. 36-001	Pelser & van Vollenhoven-2011 S.36-001	Burial ground	A burial ground containing 13 graves with dates of death varying between 1907 and 2011.	-25.867588	30.009239
S. 34-002	Pelser & van Vollenhoven-2011 S.34-002	Historical farmyard	Historical farmyard consisting of the ruins of a house and some outbuildings, built from stone and dates to ca. 1890-1910.	-25.866288	30.009551
S. 36-003	6357/2530CC/S.36-003	Burial ground	Burial ground containing approximatley 5 childrens graves, no confirmed date	-25.8674	30.00715

Plan 4

Eerstelingsfontein Project

Identified Heritage Resources

Legend

- Eerstelingsfontien Project Area
- Eerstelingsfontein Impact Area

Identified Heritage Resources

- Burial ground
- Historical farmyard

2530CC Moedig

DIGBY WELLS ENVIRONMENTAL

• Sustainability • Service • Positive Change • Professionalism • Future Focused • Integrity

Projection: Transverse Mercator	Ref #: idp.EXX2305.201409.032
Datum: WGS84	Revision Number: 1
Central Meridian: 29°E	Date: 09/09/2014

N

0 125 250 500

Metres

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