

DIGBY WELLS

ENVIRONMENTAL



Basic Assessment for the Construction of a Pipeline Associated with the Rondebult Wastewater Treatment Plant

Notification of Intent to Develop

Project Number:

ERG2203

Prepared for:

Ergo Mining (Pty) Ltd

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Report Type:	Notification of Intent to Develop
Project Name:	Basic Assessment for the Construction of a Pipeline Associated with the Rondebult Wastewater Treatment Plant
Project Code:	ERG2203

Name	Responsibility	Signature	Date
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EXECUTIVE SUMMARY

Introduction

Ergo Mining (Pty) Ltd (Ergo) enlisted the services of Digby Wells Environmental (Digby Wells) as an independent environmental consultant. Digby Wells was contracted to complete a Basic Assessment (BA) in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) for the proposed construction of a water pipeline from the Rondebult Wastewater Treatment Plant (WTP) to the Elsburg reclamation site. Process water is intended for use at its Ergo plant.

Terms of Reference

In order to complete the Basic Assessment, a heritage specialist study in support of the following legislation was required:

- NEMA;
- National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)

Scope of Work

The construction of the proposed 8.5 km pipeline requires under section (ss.) 38 of the NHRA requires that the relevant heritage resources authority (HRA) be notified of the development with sufficient detail to determine whether a Heritage Impact Assessment (HIA) is deemed necessary. The Scope of Work for completion of the Notification of Intent to Develop (NID) included:

- Review of relevant previous heritage studies in the study area;
- Conducting historical layering of the project area;
- Reporting; and
- Providing recommendations for further heritage assessments.

Project Location

Province	Gauteng
Magisterial District	Germiston
District Municipality	Ekurhuleni Metropolitan Municipality
Local Municipality	Ekurhuleni Metropolitan Municipality
Nearest town	Germiston
Property	Klippoortjie 132 IR Klippoortjie 110 IR Leeuwpoot 113 IR Rondebult 136 IR

1:50 000 topographical map	2628AA /2628AC
Relative centre coordinates of project area	South: -26.27059916
	East: 28.21649998
Recording method	ArcGIS 10.2
Rezoning requirements	Not confirmed

Registered Owner/s of Property/ies

Farm	Portion	Owner	Contact Information
Klippoortjie 132 IR	6	Costa Farms	Manny Costa Manny1@pop.co.za
Klippoortjie 110 IR	10	Bold Props 1078 CC	Mario Goncalves anngoncalves@mweb.co.za
Klippoortjie 110 IR	32, 33, 44, 50, 51, 76, 97, 155, 170, Remaining Extent (RE)	East Rand Propriety Mines	Henry Gouws Henry.gouws@drdgold.com
Klippoortjie 110 IR	93	Ekurhuleni Metropolitan Municipality	Beryl Seleka Beryl.seleka@ekurhuleni.gov.za
Klippoortjie 110 IR	132	Ekurhuleni Metropolitan Municipality (Servitude)	
Klippoortjie 110 IR	473	Bold Props 1078 CC	Mario Goncalves anngoncalves@mweb.co.za
Klippoortjie 110 IR	475	Bold Props 1078 CC	
Leeuwpoot 113 IR	Remaining Extent (RE)	East Rand Propriety Mines	Henry Gouws Henry.gouws@drdgold.com
Rondebult 136 IR	27	Ekurhuleni Metropolitan Municipality	Beryl Seleka Beryl.seleka@ekurhuleni.gov.za

Project / Development Details

The Rondebult WTP serves Boksburg and Germiston on the East Rand. The plant consists of one bio filter module and one small nutrient removal module, where the treated water is released into the Natalspruit.

Table 1-1: Position, elevation and capacity of the Rondebult WTP

Co-Ordinates		Elevation
26° 17.632' S	28° 08.485' E	1 610 m
Capacity (Mℓ/day)		
Design	Operational	Spare
25	25	0

In order for Ergo to pump water from the Rondebult WTP to its Elsburg operations, a new pipeline and pump station will be required. Authorisation for the implementation of the pipeline along the route has been received from:

- Ekurhuleni Metropolitan Municipality;
- Gauteng Department of Roads and Transport; and
- Rand Water Board.

Subject to the approval of landowners, the Department of Water Affairs has approved the use of both treated sewage and AMD.

NHRA Section 38 Triggers

The following aspects of Section 38 of the NHRA may be triggered by the proposed project.

		NHRA Section 38 (1) Activities / Triggers	Summary description (e.g. 500 m conveyor belt, open cast pit, etc.)
<input checked="" type="checkbox"/>	a	Any linear development or barrier >300 m	Installation of a 8.5 km water pipeline
<input type="checkbox"/>	b	Any bridge or similar structure >50 m	
<input type="checkbox"/>	c	Any development or activity that will change the character of a site:	
	<input type="checkbox"/>	i	≥5 000m ² in extent
	<input type="checkbox"/>	ii	Involving ≥3 existing erven/ subdivisions
	<input type="checkbox"/>	iii	Involving ≥3 or more erven/ divisions consolidated within past 5 years.
<input type="checkbox"/>	d	Rezoning of a site ≥10 000m ² in extent.	
<input checked="" type="checkbox"/>	e	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 process/es are currently being undertaken for the proposed project.

Legislation, i.e. NEMA, MPRDA, etc.	NEMA
Consenting Authority that has/will receive information	GDARD
Present phase of process at Authority, e.g. Draft Scoping Report	BAR

Identified / Known Heritage Resources and Potential Impacts

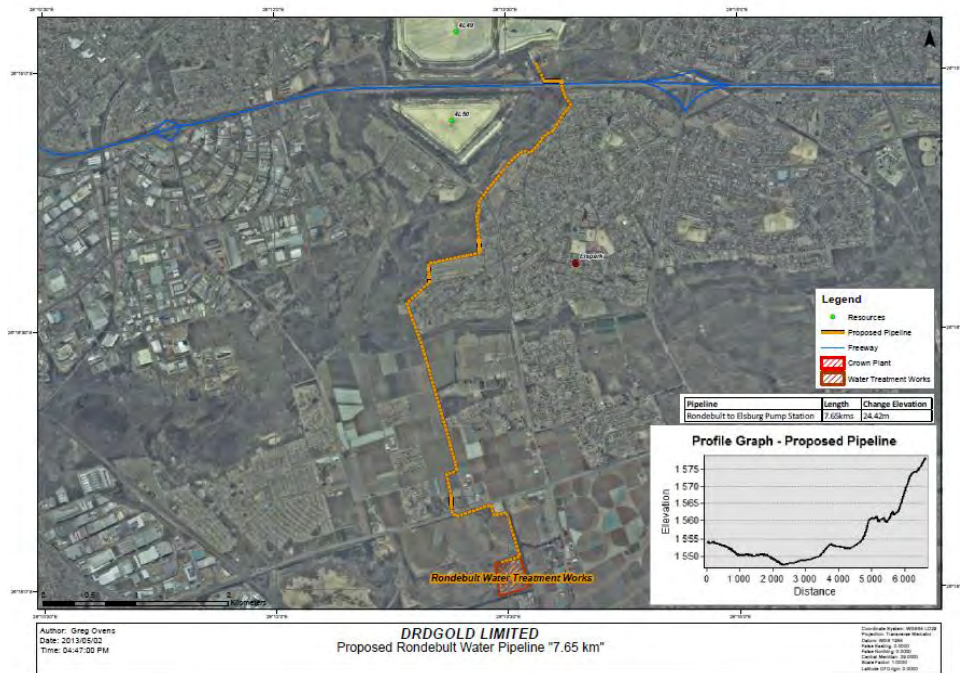
The following categories of heritage resources as defined in Section 3 of the NHRA are known to occur within the proposed project area.



<input type="checkbox"/>	3(2)(a)	Places, buildings, structures and equipment of cultural significance
		Description of resource: <i>None</i>
		Potential impact: <i>None</i>
<input type="checkbox"/>	3(2)(b)	Places to which oral traditions are attached or which are associated with living heritage
		Description of resource: <i>None</i>
		Potential impact: <i>None</i>
<input type="checkbox"/>	3(2)(c)	Historical settlements and townscapes
		Description of resource: <i>None</i>
		Potential impact: <i>None</i>
<input type="checkbox"/>	3(2)(d)	Landscapes and natural features of cultural significance
		Description of resource: <i>None</i>
		Potential impact: <i>None</i>
<input checked="" type="checkbox"/>	3(2)(e)	Geological resources of scientific or cultural importance
		Description of resource: <i>Malmani and Black Reef / Transvaal Formations</i>
		Potential impact: <i>None</i>
<input type="checkbox"/>	3(2)(f)	Archaeology and/or palaeontology (<i>Including archaeological sites and material, fossils, rock art, battlefields & wrecks</i>)
		Description of resource: <i>None</i>
		Potential impact: <i>None</i>
<input checked="" type="checkbox"/>	3(2)(g)	Graves and burial grounds (<i>eg: ancestral graves, graves of victims of conflict, historical graves & cemeteries</i>)
		Description of resource: <i>South Park Municipal Cemetery</i>
		Potential impact: <i>Potential damage of graves during construction</i>
<input type="checkbox"/>	3(2)(a)	Other human remains
		Description of resource: <i>None</i>

		Potential impact: <i>None</i>
<input type="checkbox"/>	3(2)(h)	Sites of significance relating to the history of slavery in South Africa
		Description of resource: <i>None</i>
		Potential impact: <i>None</i>
<input type="checkbox"/>	3(2)(i)	Movable objects
		Description of resource: <i>None</i>
		Potential impact: <i>None</i>

Illustrative Material



Recommendation

Is a Heritage Impact Assessment required?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p>If NO, provide motivation:</p> <p>The proposed pipeline will have limited and short-term impacts on the landscape. The landscape has been heavily disturbed through historic mining and agricultural activities, as well as urban development. No heritage resources were identified.</p> <p>Based on the findings from this study, it is unlikely that any heritage resources are to occur within the proposed routing of the pipeline. If and where these may occur, it is suspected that these will be far removed from the original context that no meaningful significance or</p>		

information potential will remain.

It is recommended that the proposed pipeline be exempt from any additional heritage studies with the following conditions:

- The proposed pipeline routing maintain a minimum of 50 m buffer from any identified burial ground or grave, including the identified South Park Cemetery;
- The EMP must include Chance Finds Procedures that in turn should include a register of applicable permits and Heritage authorisations that may be required in the event that any heritage resources protected in terms of ss. 27, 28, 29, 34, 35, 36 and 37 of the NHRA are impacted on..

If YES, provide suggested components that may be required or undertaken during HIA.

<input type="checkbox"/>	Archaeology	<input type="checkbox"/>	Architecture
<input type="checkbox"/>	Built Environment	<input type="checkbox"/>	Burial Grounds and Graves
<input type="checkbox"/>	Palaeontology	<input type="checkbox"/>	Public Participation
<input type="checkbox"/>	Townscapes	<input type="checkbox"/>	Visual Impact
<input type="checkbox"/>	Other:		

Recommendation made by:

Name: Justin du Piesanie

Capacity: Heritage Management Consultant: Archaeologist

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LIST OF ABBREVIATIONS AND TERMS

AMD	Acid Mine Drainage
BA	Basic Assessment
DEA	Department of Environmental Affairs
Digby Wells	Disgby Wells Environmental
EMM	Ekurhuleni Metropolitan Municipality
EMP	Environmental Management Programme
Ergo	Ergo Mining (Pty) Ltd
ERPM	East Rand Proprietary Mines
ESA	Early Stone Age
GSSA	The Genealogical Society of South Africa
HIA	Heritage Impact Assessment
HRA	Heritage Resources Authority
IDP	integrated Development Plan
LIA	Late Iron Age
LSA	Late Stone Age
MSA	Middle Stone Age
Mt	Mega tonne
NASA	The National Archives of South Africa
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID	Notification of Intent to Develop
PSM	Palaeo-Sensitivity Map
s.	section
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
WTP	Water Treatment Plant
ZAR	Zuid Afrikaanse Republiek

1 Introduction

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- Providing recommendations for further heritage assessments.

2 Background Information of Project

Ergo's assets include access to some 750 Mt to 900 Mt of tailings deposited across the western, central and eastern Witwatersrand. These are currently in the process of reclamation where gold is recovered, and their footprints are rehabilitated where land can be utilised for development purposes.

Vast quantities of material are processed monthly through various plants, and water is central to these operations. Natural water sources within the region are in short supply, therefore requiring alternative sources where practical. Ergo has taken the initiative to identify such alternate sources, including final effluent from nearby municipal treatments works and acid mine drainage (AMD).

2.1 Project Details

The Rondebult WTP serves Boksburg and Germiston on the East Rand. The plant consists of one bio filter module and one small nutrient removal module, where the treated water is released into the Natalspruit.

Table 2-1: Position, elevation and capacity of the Rondebult WTP

Co-Ordinates		Elevation
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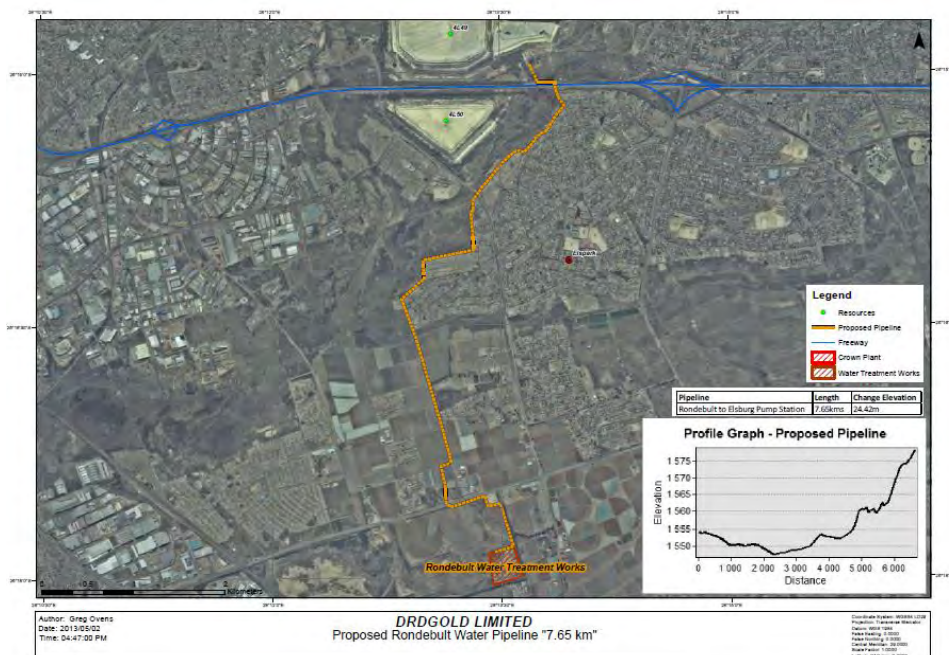


Figure 2-1: Proposed pipeline route from the Rondebult WTP to the Elsburg Operations (image © DRD Gold Limited)

2.2 Relevant Contact Details

The contact details of the developer, consultant and landowners are provided in Table 2-2, Table 2-3 and Table 2-4 respectively.

Table 2-2: Client contact details

ITEM	COMPANY CONTACT DETAILS
Company	Ergo Mining (Pty) Ltd
Contact person	Henry Gouws
Tel no	011 742 1003
Fax no	011 742 1044
Cell no	082 459 7825
E-mail address	Henry.gouws@drdgold.com
Postal address	P.O. Box 12442, Selcourt, Springs, 1667

Table 2-3: Consultant contact details

ITEM	COMPANY CONTACT DETAILS
Company	Digby Wells Environmental
Contact person	Grant Beringer
Tel no	011 789 9495
Fax no	011 789 9498
Cell no	082 906 6099
E-mail address	grant.beringer@digbywells.com
Postal address	Private Bag X10046, Randburg, 2125

Table 2-4: Land owner contact details

Farm	Portion	Owner	Contact Information
Klippoortjie 132 IR	6	Costa Farms	Manny Costa Manny1@pop.co.za
Klippoortjie 110 IR	10	Bold Props 1078 CC	Mario Goncalves anngoncalves@mweb.co.za
Klippoortjie 110 IR	32, 33, 44, 50, 51, 76, 97, 155, 170, Remaining Extent (RE)	East Rand Propriety Mines	Henry Gouws Henry.gouws@drdgold.com
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Klippoortjie 110 IR	473	Bold Props 1078 CC	Mario Goncalves

Farm	Portion	Owner	Contact Information
Klippoortjie 110 IR	475	Bold Props 1078 CC	anngoncalves@mweb.co.za
Leeuwoort 113 IR	Remaining Extent (RE)	East Rand Propriety Mines	Henry Gouws Henry.gouws@drdgold.com
Rondebult 136 IR	27	Ekurhuleni Metropolitan Municipality	Beryl Seleka Beryl.seleka@ekurhuleni.gov.za

3 Development Context of the Study Area

The proposed pipeline is situated in the Ekurhuleni Metropolitan Municipality (EMM) on the farms Klippoortjie 110 IR; Klippoortjie 132 IR, Leeuwoort 113 IR and Rondebult 136 IR. These properties are located within Wards 39, 41 and 42, which will be collectively referred to as the affected area. Detailed geographical information is provided under section 2 above.

The development and planning context within which the proposed pipeline is situated was summarised from:

- Statistics South Africa (Statistics SA, 2013); and
- Ekurhuleni Metropolitan Municipality Integrated Development Plan (IDP) 2013/14 (Ekurhuleni Metropolitan Municipality, 2013).

At the time of the 2011 census, EMM has a total population of 3 178 470 in an area covering 1 975 km². Of this population, 71.7% are of working age, of which there is a 28.8% unemployment rate.

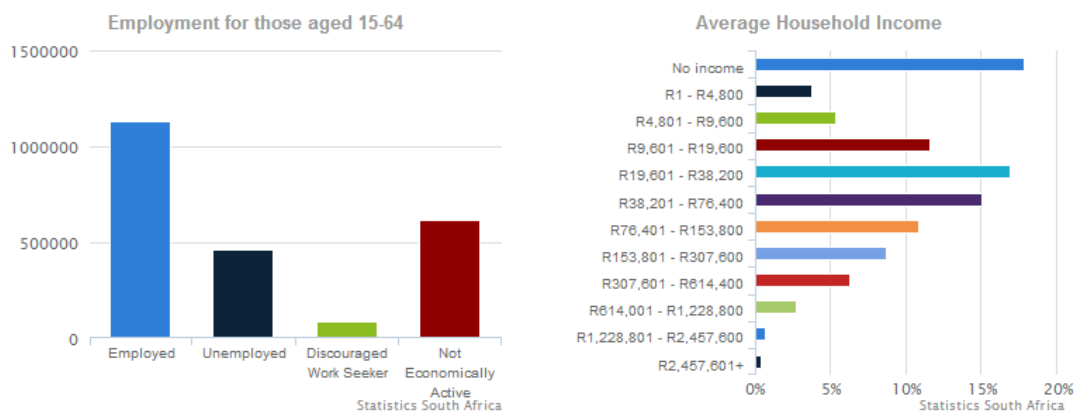


Figure 3-1: Employment and income information for the EMM (Statistics SA, 2013).

When considers information at a ward level for the affected area, discouraged work seekers constitute 48% of the working population. The average annual household income for the 38% of the population employed averages between R 19 601.00 to R 76 401.00. This amount equates to a monthly income of no more than R 6366.75.

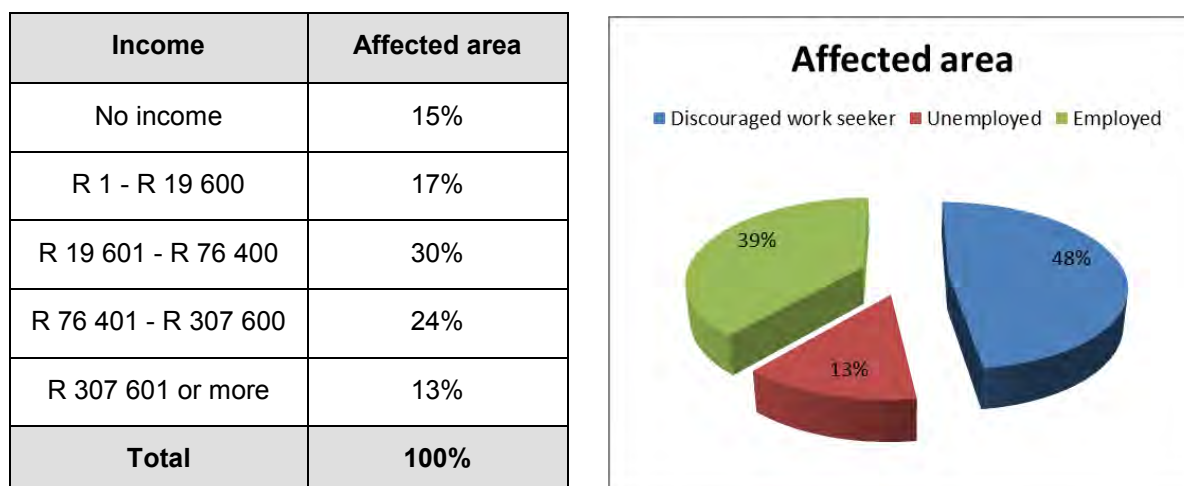


Figure 3-2: Employment and income information for the affected area (Statistics SA, 2013)

From an economic perspective, the EMM IDP recognises the development context of the city. First emerging from a single mining complex, an industrialisation programme shifted Ekurhuleni to a dual complex of industry and mining, receiving impetus during the Second World War when production had ceased in Europe. However, the de-industrialisation programme that defined the new phase of development perpetuated a cycle of poverty, unemployment and inequality (Ekurhuleni Metropolitan Municipality, 2013).

Identified tensions associated with the economic perspective as discussed in the EMM IDP include:

- Unemployment; and
- Inadequate skills development.

The proposed project, on a small scale, could provide short term employment with the establishment of the proposed pipeline, and help facilitate skills transfer that can be utilised on similar projects within the greater region.

4 Legislative Framework

The NID considered a legal framework that includes the NEMA and NHRA. The applications of these Acts are discussed below.

4.1 NEMA

The NEMA stipulates under s. 2(4)(a) that sustainable development requires the consideration of all relevant factors including (iii) the disturbance of landscapes and sites that constitute the nation's cultural heritage must be avoided, or where it cannot be altogether avoided, is minimised and remedied.

Under s. 23(2)(b) it is required to “identify, predict and evaluate the actual and potential impact on the...cultural heritage... the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts, maximizing benefits and promoting compliance with the principles of environmental management set out in section 2”.

Sections 24(1)(c) and 24(7)(b) state “the potential impact on...the cultural heritage of activities that require authorisation or permission by law and which may significantly affect the environment, must be considered investigated and assessed prior to their implementation and reported to the organ of state charged by law with authorizing permitting, or otherwise allowing the implementation of an activity.”

4.2 NHRA

The NID was completed in terms of s. 38 of the NHRA where:

- Any person who intends to undertake a development characterised as... the construction of a... pipeline... exceeding 300 m in length must notify the responsible heritage resources authority at the earliest stages of initiating the development;
- To give effect to the requirement that the consenting authority – in this case the Department of Environmental Affairs (DEA) – consider any comments and recommendations of the relevant HRA prior to the granting of consent.

5 Methodology

A landscape approach was adopted employing a qualitative (text-based) methodology. To provide the appropriate context for the interpretation of identified heritage resources, the connection between material culture, the cultural landscape and natural environment was required. This was achieved by undertaking the following steps:

5.1 Background Information

Background information was identified and reviewed (analysed) to obtain salient information summarised in this NID. Information sources that were consulted are summarised below and listed in Section 9. Information sources included text-based and cartographic sources, and database information.

5.1.1 Literature review

Published literature that was found relevant included (full references are provided in Section 9):

- Brodie, 2008;
- Deacon & Deacon, 1999;
- Goodwin & Van Riet Lowe, 1929;

- Huffman, 2007;
- Lang, 1986;
- Lombard, et al., 2012; and
- von Ketelhodt, 2007

5.1.2 Reviewed Heritage Reports

Previously completed heritage studies in the region of the proposed pipeline were reviewed to expand on the background information discussed. Information contained within these studies provide context in regards to the potential for, and description of heritage resources that are likely to occur in the study area. The following cases and reports were found to be relevant:

- Birkholtz, P., 2011. *Phase 1 Heritage Impact Assessment: Proposed Development of Farrar Park Ext. 1 Boksburg, Ekurhuleni Metropolitan Municipality, Gauteng Province*. Unpublished report (SAHRIS Case ID: 361);
- Birkholtz, P., 2011. *Phase 1 Heritage Impact Assessment: Proposed Development of Farrar Park Ext. 2 Boksburg, Ekurhuleni Metropolitan Municipality, Gauteng Province*. Unpublished report (SAHRIS Case ID: 362);
- Birkholtz, P., 2011. *Phase 1 Heritage Impact Assessment: Proposed Development of Reiger Park Ext. 16 Boksburg, Ekurhuleni Metropolitan Municipality, Gauteng Province*. Unpublished report (SAHRIS Case ID: 363);
- Birkholtz, P., Naude, M., & van der Walt, J., 2012. *Phase 1 Heritage Impact Assessment for the Proposed Development of the ERPM Mine Village, Boksburg, Gauteng*. Unpublished report (SAHRIS Case ID: 945);
- Huffman, T. N., 2000. *Archaeology Survey of Roodepoort Extension 6(1), Germiston*. Unpublished report (SAHRIS Map ID: 00500);
- Huffman, T. N., 2005. *Archaeological Assessment of the Thubelisha Project, Boksburg*. Unpublished report (SAHRIS Map ID: 00574);
- Huffman, T. N., and van der Merwe, H. D., 1993. *Archaeological Survey of Witvoekspruit, Brakpan*. Unpublished report (SAHRIS Map ID: 00575);
- Karodia, S., & du Piesanie, J., 2012. *Heritage Statement for the Central Basin, Witwatersrand AMD Project*. Unpublished report (SAHRIS Case ID: 1221);
- Prins, F. E., 2008. *Cultural Heritage Impact Assessment of the Delmore Park, Ext. 7 Development*. Unpublished report (SAHRIS Case ID: 5026);
- Prins, F. E., 2008. *Cultural Heritage Impact Assessment of the Boksburg Mining Belt Development*. Unpublished report (SAHRIS Case ID: 5238);
- Thomas, G., 2012. *Heritage Statement for Lycaste Sand Dump 4/A/6 Dump*. Unpublished report (SAHRIS Case ID: 706);

- Van Schalkwyk, J. A., Naude, M. & Smith, S., 1995. *A Survey of Cultural Resources along the Proposed PWV 16 Road Corridor, Brakpan District*. Unpublished report (SAHRIS Map ID: 00479);
- Van Schalkwyk, J. A., 2005. *Heritage Impact Assessment: Leeupan*. Unpublished report (SAHRIS Map ID: 00560)

5.1.3 Databases

A review of relevant databases was completed to identify potential heritage resources that may be present in the project area. These included:

- The National Archives of South Africa (NASA);
- The Genealogical Society of South Africa (GSSA);
- The University of the Witwatersrand Archaeological Site Database;
- The South African Heritage Information System (SAHRIS); and
- The Artefacts Architectural Online Database.

5.1.4 Historical layering

Historical layering is a process whereby diverse cartographic sources from various time periods are layered chronologically using 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.

Historic cartographic sources reviewed in this report include:

- 1899 Jeppes Map of the Transvaal;
- 1900-1919 South Africa Imperial Series: 106 Heidelberg; and
- 1902-1909 Transvaal Sheet: 26 Heidelberg.

Table 5-1: Aerial Imagery reviewed

Aerial photographs						
Job no.	Flight plan	Photo no.	Map ref.	Area	Date	Reference
989	40	3600 - 3605	2526 / 2528 / 2626 / 2628	Rustenburg/Pretoria /Wes Rand/ East Rand	1996	989 / 1996
	41	3660 - 3665				

Aerial photographs						
Job no.	Flight plan	Photo no.	Map ref.	Area	Date	Reference
498_311	6	1040 - 1045	2628	East Rand	1993	498_311/1993
952	4	36 - 40	2628	East Rand	1991	952/1992
	5	30 - 35				
881	5	3060	2526 / 2528 / 2530 / 2626 / 2628 / 2630	Rustenburg/ Pretoria / Barberton / Wes Rand / East Rand / Mbabane	1984	881/1984
438	15	2869	2527 / 2627 2628	East Rand	1961	438/1961
498/15	2	6674 - 6609	2628	East Rand	1972	498/1972
273	3	7505	2526 / 2528 / 2626 / 2628	Rustenburg/Pretoria /Wes Rand/ East Rand	1969	273/1969
498_27	5	1630	2628	East Rand	1973	
133	16	7396	2628	East Rand	1938	133/1938
	17	7356				
	18	6629				
162/41	13	57718	2628	East Rand	1941	162/1941
	14	57771				
	15	57896				
314	7	44533	2628	East Rand	1941	314/1952
775	4	339	2628	East Rand	1976	775/1976

5.1.5 Heritage Screening Assessment

A screening assessment was conducted on 28 May 2014 by a qualified and accredited archaeologist, and junior social consultant. The proposed route and alternative was surveyed using a vehicular survey methodology to assess the current state of the environment. The present condition of the environment was recorded through photographs and descriptive notes.

5.2 Site Naming

For the purpose of this report, site naming employed the following conventions:

- Sites identified in previous assessments were referred to by their respective report site names and prefixed with the relevant South African Heritage Resources Agency (SAHRA) Case ID or report reference number;
- Sites identified in previous assessments without SAHRA references were referred to by their respective report site and prefixed with the report author and date;
- All newly identified sites were named using this heritage case ID, followed by the map sheet number and reference to the relevant NHRA section suffixed with the site number; and

- Reference to sites and resources that have been formally declared are made using the official gazetted names.

Sites discussed in the text of this report are summarised using only the site number, e.g. Site s.35-001.

6 Discussion

6.1 Geology and Palaeontology

Geologically, the proposed routing for the pipeline lies over formations associated with the *Klipriviersberg Group* and *Chuniespoort Group*. According to the Palaeo-Sensitivity Map (PSM) hosted on SAHRIS, these formations are considered to have low to high palaeontological potential.

Formations associated with the *Klipriviersberg Group* are considered to have negligible sensitivity and are not considered within this report. Those associated with the *Chuniespoort Group*, including the *Malmani* and *Black Reef / Transvaal Formations*, are reported to have a high sensitivity rating (SAHRIS, 2014).

Fossils associated with the *Malmani Formation* range from shallow marine to intertidal stromatolites, including organic walled microfossils. These are found in stromatolitic carbonates, minor secondary cherts, and mudrocks including carbonaceous shales. The *Transvaal Formation* contains stromatolitic carbonates that are found in Siliciclastic sediments – mature sandstone, minor mudrocks and conglomerates - deposited during a fluvial to shallow marine transition (SAHRIS, 2014).

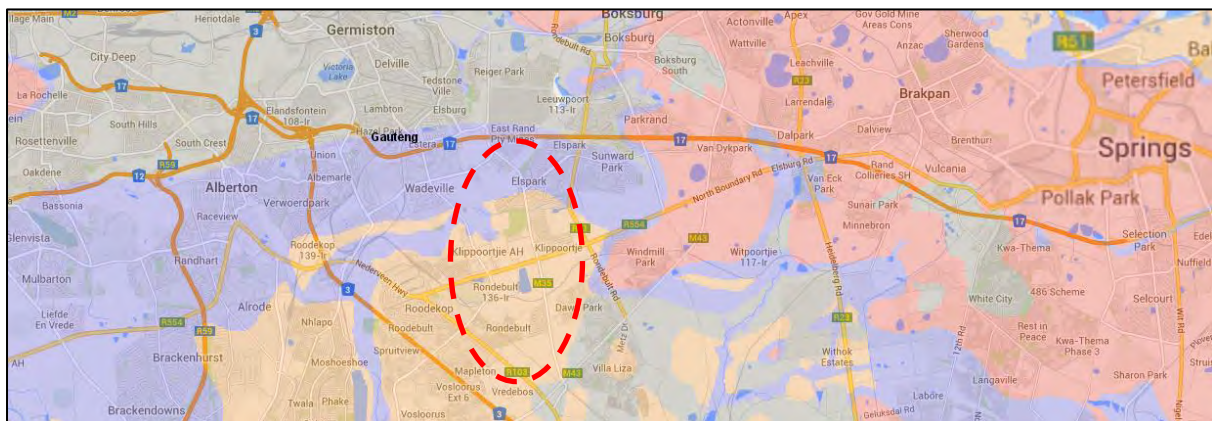


Figure 6-1: PSM with approximate location of proposed pipeline in red (SAHRIS, 2014).

6.2 The Cultural / Historical Record

Through of a review of the literature, evidence for an archaeological record within the study area was identified. However, the proposed pipeline is situated in a predominantly historical landscape based on the number of sites associated with the mining history of Johannesburg

and the built environment. In order to place the project within a historical context, the archaeological and historical period are discussed separately below.

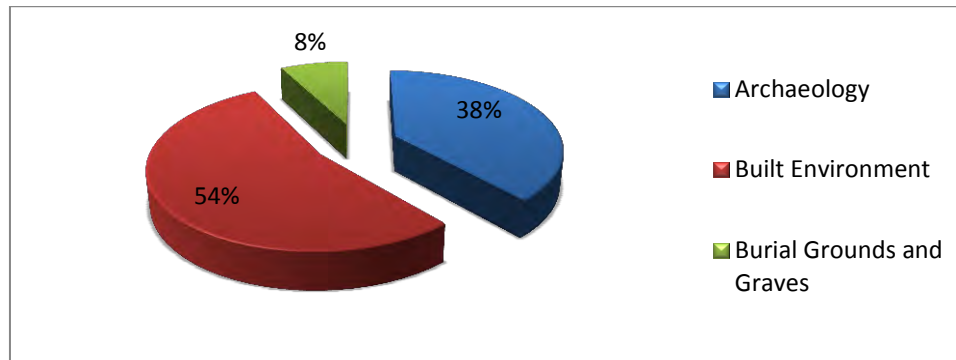


Figure 6-2: Distribution of identified sites in the study area

6.2.1 The Archaeological Record

A review of studies conducted in the vicinity of the proposed pipeline indicated that artefacts associated with the Early (ESA), Middle (MSA) and Late Stone Age (LSA) have been recorded within the study area (Huffman, 2000) some 6 km from the proposed pipeline. Briefly, this period is associated with the manipulation of stone to create tools. Over time, these tools become more refined, specialised and varied. This period dates from 2.5 million years ago through to less than 150 years ago (Goodwin & Van Riet Lowe, 1929; Deacon & Deacon, 1999; Lombard, et al., 2012).

Characteristic of the ESA were large numbers of irregularly shaped flakes with chunky cores associated with the Oldowan, and Acheulian handaxes, which were large bifacial shaped stone tools (Deacon & Deacon, 1999). The MSA is characterised by blade technologies, where long-parallel-sided and triangular flakes are common. As noted by Goodwin & Van Riet Lowe (1929), MSA assemblages lacked the large hand axes and cleavers characteristic of the ESA. The LSA is marked by a series of technological changes from approximately 20 000 years ago. These include the bow and link-shaft arrow, bored stones and small stone tools (microliths) for cutting meat and scraping hides, and polished bone tools (Deacon & Deacon, 1999).

Archaeological, this period is followed by the Early Iron Age. No sites associated with this period have been identified in the region. This is based on the review of available literature summarised under Section 5.1 and 9. However, Late Iron Age (LIA) movements associated with the *Fokeng* resulted in large settlement along the Klipriviersberg during the 17th century (Huffman, 2007). These sites are situated some 17 km west of the proposed pipeline. Klipriviersberg stone walling ended in Gauteng at approximately 1823 AD when Mzilikazi entered the area.

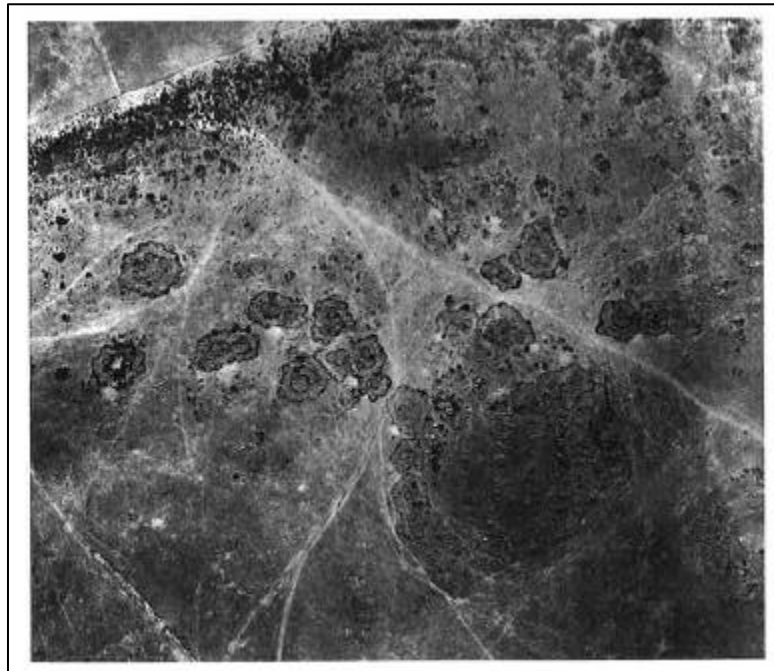


Figure 6-3: Example of Klipriviersberg Stone Walling (Huffman, 2007)

6.2.2 The Historical Period

European settlers first arrived on the Highveld as Voortrekkers associated with the Great Trek of 1838, seeking land outside of British rule. During this period farms were established (Brodie, 2008), but the Highveld was to a large extent sparsely inhabited as attested by J. B. Taylor who wrote in 1885 while camping on the farm Langlaagte (von Ketelhodt, 2007, p. 4):

“For miles there was no sign of habitation”.

Under the *Zuid Afrikaanse Republiek* (ZAR) Government, immigrant burghers were allotted two farms, a freehold farm and loan farm (Brodie, 2008). In 1886 gold was discovered on the Witwatersrand by George Harrison on the farm Langlaagte, owned by G. C. Oosthuizen. After the discovery, prospecting rights on the portion of Langlaagte where the reef was identified was granted, and as word spread, the explosive development of the Witwatersrand was set in motion (von Ketelhodt, 2007).

Soon, public diggings were declared along the Witwatersrand. The farm Dreifontein and Elandsfontein were declared public diggings on 20 September 1886. It is on Elandsfontein that the town of Germiston was established in 1905 (Lang, 1986). A summarised version of the history of the study area adapted from Birkholtz (2011) is presented in Table 6-1. Examples of archival records in support of historic activity in the area are presented in Table 6-2. When one considers this, in conjunction with the historical cartographic information available, it is evident that the study area is historically characterised as a mining landscape.

In the northern section of the proposed pipeline, the effects of the historic mining activities have impacted the landscape to the point that the identification of heritage resources is low. However, the remainder of the proposed routing is through historic agricultural fields and adjacent to urban development. Here, when one examines the available historic aerial imagery starting in 1938 (Figure 6-7), the project area consists of open highveld, and agricultural fields. Through time, an increase in agricultural activity and urban development disturbed the surface.

An increase in the number of field is evident from 1941 through 1961. After this period, the establishment of Elspark to the east of the proposed pipeline, first noted in 1969. Here, medium to high density urban development is clearly evident in the study area.

Table 6-1: Historical overview for the study area (Adapted from Birkholtz, 2011)

September 1886	Pieter J.J.D Killian discovered gold-bearing reefs on the farms Leeuwpoort and Vogelfontein
March 1887	Farms Leeuwpoort and Vogelsfontein declared public diggings
July 1887	Town established on Leeuwpoort and Vogelsfontein named Boksburg after Dr. W.E. Bok
December 1887	Coal discovered east of present day Boksburg
1889	Several mining companies established in study area, including: Blue Sky Gold Mining Company, Cinderella Gold Mining Company, Agnes Munro Gold Mining Company, Comet Main Reef Gold Mining Company, St. Angelo Gold Mining Company, Driefontein Gold Mining Company
November 1890	Boksburg Goldfield proclaimed
May 1893	Blue Sky, Cinderella, Agnes Munro, Comet, St. Angelo and Driefontein Gold Mining Companies taken over by the newly established East Rand Proprietary Mines (ERPM).
June 1904	Chinese labourers arrive to start working on ERPM (Lang, 1986; von Ketelhodt, 2007)
March 1910	Chinese labourers leave Witwatersrand to return to China
1915	ERPM came under the control of the Central Mining and Investment Corporation (Lang, 1986).
1948	ERPM's SEV shaft was established
1958	ERPM declared the deepest mine in the world

The disturbance of the project area throughout historical period, has decreased the likelihood of identifying potential heritage resources in the project area.

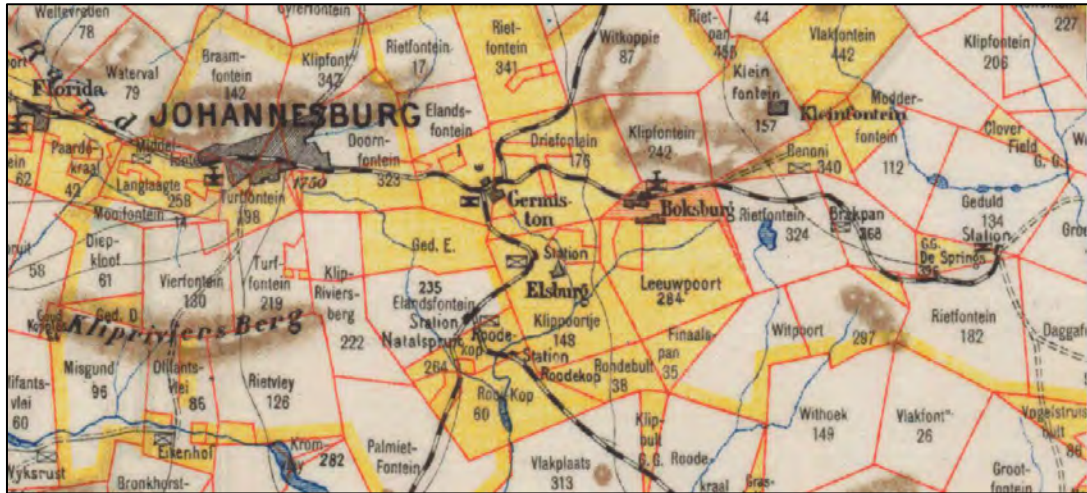


Figure 6-4: Extract of the 1899 Jeppes Map of the Transvaal depicting the study area



Figure 6-5: Extract of the 1900-1919 South Africa Imperial Map Series depicting the study area



Figure 6-6: Extract of the 1902-1909 Transvaal Sheet depicting the study area

Table 6-2: Select records from the NASA for affected properties

Date	Depot	Source	Reference	Description
1906	TAB	MMB	DRK992/06	Renewal of licences of Diggers Claims 592/601, 1672/4 Vogelsfontein No. 155 & 3371, Leeuwpoot No. 154 and Prospecting Claims 7020 & 1739, Vogelsfontein No. 155 in the name of Boksburg Gold Mines Limited
1907	TAB	MMB	DRK125/07	Renewal of Licences of Prospecting Claims 17/39 etc (Total 583), Diggers Claims 592/601, 1672/4, Vogelsfontein No. 155 and Prospecting Claims 7020 etc (Total 520) and Diggers Claim 3371, Leeuwpoot in the name of the Boksburg Gold Mines Limited
1909	TAB	MMB	MCK1436/09	New Boksburg Gold Mines Limited re co-ordinates of claims 1245/80, Leeuwpoot 4
1909	TAB	MMB	MCK1719/09	Application by the New Boksburg Gold Mines Limited for Surface Rights on claims 1441/2, 1446, Vogelfontein No. 5 and Claims 3269/70, Leeuwpoot No. 4
1910	TAB	MMB	MCK179/10	Renewal of Licences, Leeuwpoot 4 and Vogelfontein 5 in the name of The New Boksburg Gold Mines Limited
1911	TAB	MMB	MCK357/11	Application by the Boksburg Municipality for Surface Rights for Sports Grounds on Claims 2301/9, 2328/36, 2357/65, Leeuwpoot 4
1918	TAB	MMB	MCK807/18	Agricultural area Farm Leeuwpoot No. 4 District Boksburg. Johannesburg Consolidated Investment Company Ltd
1928	TAB	TPB	TA3/1544	Germiston Municipality. Water supply Klippoortjie Township, Agricultural Lots
1929	TAB	TPB	TA27/15	Germiston Municipality Stands and Erven. Purchase of Stand Number 60 Klippoortjie by Mr. TS Van Heerden
1936	TAB	TPB	TA3/12994	Germiston Municipality. Wayleaves and Servitudes. Proposed servitude for sewerage contract on portions of Farms Klippoortjie and Rondebult.
1958	TAB	TPB	TALG11-1-126	Land Transactions Germiston Servitude over Portion 5 of Lots 27 Klippoortjie

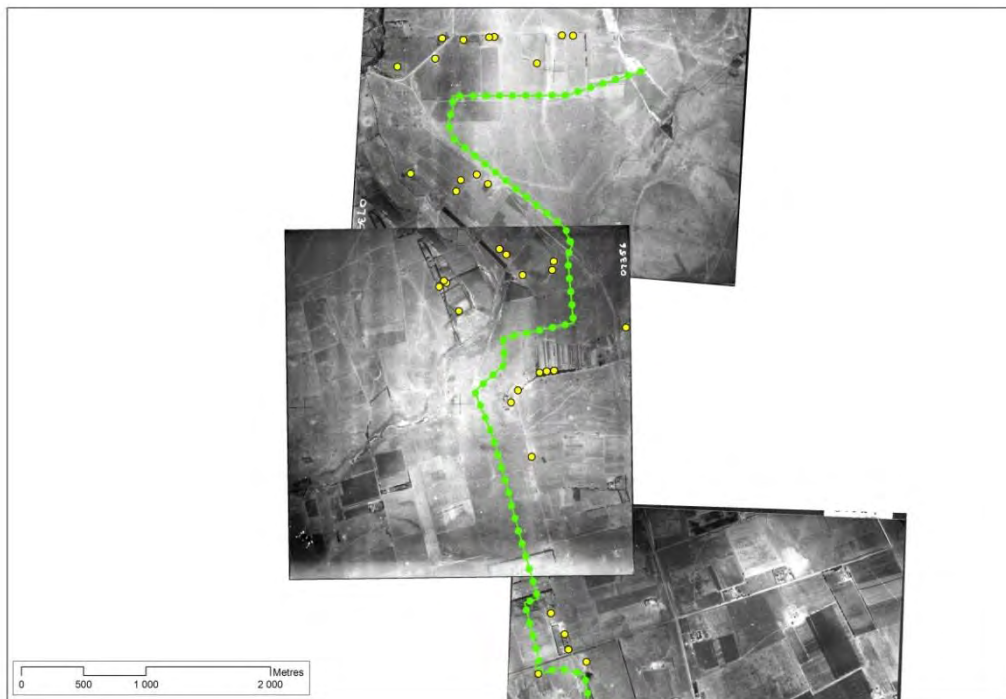


Figure 6-7: Historical aerial imagery dated 1938. Potential structures indicated in yellow.

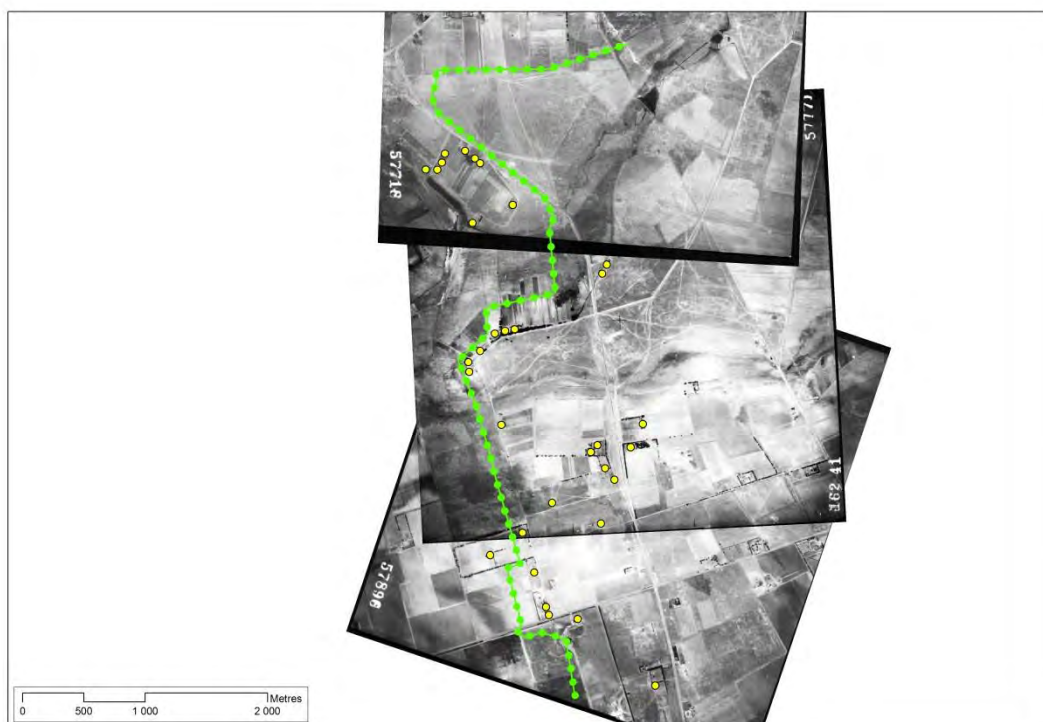


Figure 6-8: Historical aerial imagery dated 1941. Potential structures indicated in yellow.



Figure 6-9: Historical imagery dated 1961. Potential structures indicated in yellow



Figure 6-10: Historical aerial imagery dated 1976. Urban development clearly visible, municipal cemetery indicated in orange.

6.2.3 Summary of Discussion

Heritage resources associated with the Stone Age and Late Iron Age have been identified in the greater study area. However, the project area itself is to a greater degree affiliated with the historical period associated with the establishment of farms and discovery of gold on the Witwatersrand in 1886.

Early cartographic sources, presented in Figure 6-4 through Figure 6-6, clearly demonstrate that mining activities along the Witwatersrand influenced the landscape. When one considers historic aerial imagery (Figure 6-7 - Figure 6-10), it is evident that agricultural development along the proposed pipeline route increased over time. This activity altered the project area to the degree that the positive identification of *in situ* heritage resources is decreased significantly.

6.3 Heritage Screening Assessment Results

A vehicular survey of the routings for the proposed pipeline confirmed that the project area has been altered through historic mining activities, residential development, and agricultural activities. One municipal cemetery was identified in close proximity to the proposed routing. No additional heritage resources were identified.

7 Sources of Risk

Based on information received from Ergo, the proposed pipeline will have a 30 cm diameter, and be installed underground at a depth of 0.5 m. The highest potential for risk to heritage resources is associated with the construction phase of the project. The various phases of the project and the associated sources of risk are discussed below.

7.1 Construction Phase

As previously mentioned, the construction phase of the project will require earthworks and the use of machinery for the installation of the pipeline that could potentially damage or destroy s. 35 archaeological / palaeontological heritage resources, and s.36 burial grounds and graves. However, based on the review of the available literature discussed under Section 6 and given the type of development proposed, it is envisaged that there will be no / negligible risk to s. 35 archaeological / palaeontological heritage resources.

7.2 Operational Phase

During the operational phase, potential sources of risk are accidental spillages or burst whereby transported material may damage heritage resources.

7.3 Decommissioning Phase

The removal of infrastructure during the decommissioning phase of the project poses risk in that heritage resources in close proximity to the pipeline may be accidentally damaged.

7.4 Cumulative Impacts

No cumulative impacts are envisaged for the proposed pipeline.

8 Conclusion and Recommendations

Ergo is in the process of completing a BA for the linear development of a water pipeline from the Rondebult WTP to the Elsburg reclamation site where process water is intended for use at its Ergo plant. Based on the requirements for the BA as stipulated under the NEMA and NHRA, a heritage assessment of the proposed impacted area is required for submission to SAHRA in terms of ss. 38(8) of the NHRA.

Historically, the study area is associated with the discovery of gold and coal Witwatersrand, and the associated mining activities. A review of the available information indicated that s.34, s.35 and s.36 heritage resources occur within this greater study area. However, the proposed routing of the pipeline is in areas that have been heavily disturbed by not only historic mining activity, but by historic agricultural activities and urban development through time.

Based on the findings from this study, it is unlikely that any heritage resources are to occur within the proposed routing of the pipeline. If and where these may occur, it is suspected that these will be far removed from the original context that no meaningful significance or information potential will remain.

8.1 Recommendations

It is recommended that the proposed pipeline be exempt from any additional heritage studies with the following conditions:

- The proposed pipeline routing maintain a minimum of 50 m buffer from any identified burial ground or grave, including the identified South Park Cemetery; and
- The EMP must include Chance Finds Procedures that in turn should include a register of applicable permits and Heritage authorisations that may be required in the event that any heritage resources protected in terms of ss. 27, 28, 29, 34, 35, 36 and 37 of the NHRA are impacted on.

9 Bibliography

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Notification of Intent to Develop

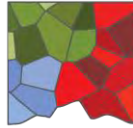
Basic Assessment for the Construction of a Pipeline Associated with the Rondebult
Wastewater Treatment Plant

ERG2203



DIGBY WELLS
ENVIRONMENTAL

Appendix A: Curriculum Vitae



DIGBY WELLS

ENVIRONMENTAL

Mr. Justin du Piesanie
Heritage Management Consultant: Archaeologist
Social Sciences Department
Digby Wells Environmental

1 Education

Date	Degree(s) or Diploma(s) obtained	Institution
2013	Continued Professional Development Programme, Architectural and Urban Conservation: Researching and Assessing Local Environments	University of Cape Town
2008	MSc	University of the Witwatersrand
2005	BA (Honours) (Archaeology)	University of the Witwatersrand
2004	BA	University of the Witwatersrand
2001	Matric	Norkem Park High School

2 Language Skills

Language	Written	Spoken
English	Excellent	Excellent
Afrikaans	Proficient	Good

3 Employment

Period	Company	Title/position
08/2011 to present	Digby Wells Environmental	Heritage Management Consultant: Archaeologist

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

Directors: A Sing*, AR Wilke, DJ Otto, GB Beringer, LF Koeslag, AJ Reynolds (Chairman) (British)*, J Leaver*, GE Trusler (C.E.O)
*Non-Executive

Period	Company	Title/position
2009-2011	University of the Witwatersrand	Archaeology Collections Manager
2009-2011	Independent	Archaeologist
2006-2007	Maropeng & Sterkfontein Caves UNESCO World Heritage Site	Tour guide

4 Professional Affiliations

Position	Professional Body	Registration Number
Member	Association for Southern African Professional Archaeologists (ASAPA); ASAPA Cultural Resources Management (CRM) section	270
Member	International Council on Monuments and Sites (ICOMOS)	14274
Member	Society for Africanist Archaeologists (SAfA)	N/A

5 Publications

- Huffman, T.N. & du Piesanie, J.J. 2011. Khami and the Venda in the Mapungubwe Landscape. *Journal of African Archaeology* 9(2): 189-206

6 Experience

I have 5 years experiences in the field of heritage resources management (HRM) including archaeological and heritage assessments, grave relocation, social consultation and mitigation of archaeological sites. During my studies I was involved in academic research projects associated with the Stone Age, Iron Age, and Rock Art. These are summarised below:

- Wits Fieldschool - Excavation at Meyersdal, Klipriviersberg Johannesburg (Late Iron Age Settlement).
- Wits Fieldschool - Phase 1 Survey of Prentjiesberg in Ugie / Maclear area, Eastern Cape.
- Wits Fieldschool – Excavation at Kudu Kopje, Mapungubwe National Park Limpopo Province.

- Wits Fieldschool – Excavation of Weipe 508 (2229 AB 508) on farm Weipe, Limpopo Province.
- Survey at Meyerdal, Klipriviersberg Johannesburg.
- Mapping of Rock Art Engravings at Klipbak 1 & 2, Kalahari.
- Survey at Sonop Mines, Windsorton Northern Cape (Vaal Archaeological Research Unit).
- Excavation of Kudu Kopje, Mapungubwe National Park Limpopo Province.
- Excavation of KK (2229 AD 110), VK (2229 AD 109), VK2 (2229 AD 108) & Weipe 508 (2229 AB 508) (Origins of Mapungubwe Project)
- Phase 1 Survey of farms Venetia, Hamilton, Den Staat and Little Muck, Limpopo Province (Origins of Mapungubwe Project)
- Excavation of Canteen Kopje Stone Age site, Barkley West, Northern Cape
- Excavation of Khami Period site AB32 (2229 AB 32), Den Staat Farm, Limpopo Province

Since 2011 I have been actively involved in environmental management throughout Africa, focusing on heritage assessments in compliance with International Finance Corporation (IFC) Performance Standards and other World Bank Standards and Equator Principles. This exposure to environmental, and specifically heritage management has allowed me to work to international best practice standards in accordance with international conservation bodies such as UNESCO and ICOMOS. In addition, I have also been involved in the collection of quantitative data for a Relocation Action Plan (RAP) in Burkina Faso. The exposure to this aspect of environmental management has afforded me the opportunity to understand the significance of integration of various studies in the assessment of heritage resources and recommendations for feasible mitigation measures. I have worked throughout South Africa, as well as Burkina Faso, the Democratic Republic of Congo, Liberia and Mali.

7 Project Experience

Please see the following table for relevant project experience:



Project Title	Project Location	Date:	Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Reference
Klipriviersberg Archaeological Survey	Meyersdal, Gauteng, South Africa	2005 2006	Survey of residential development in Meyersdal. This included the recording of identified stone walled settlements through detailed mapping and photographs. Included was the Phase 2 Mitigation of two stone walled settlements	Archaeological Impact Assessments	Researcher, Archaeological Assistant	2 months		Completed survey, excavations and reporting	Archaeological Resource Management (ARM) Prof T.N. Huffman thomas.huffman@wits.ac.za
Sun City Archaeological Site Mapping	Sun City, Planesberg, North West Province, South Africa	2006 2006	Recording of an identified Late Iron Age stone walled settlement through detailed mapping	Mapping	Archaeological Assistant, Mapper	1 month	Sun City	Completed mapping	Archaeological Resources Management (ARM) Prof T.N. Huffman thomas.huffman@wits.ac.za
Witbank Dam Archaeological Impact Assessment	Witbank, Mpumalanga, South Africa	2007 2007	Archaeological survey for proposed residential development at the Witbank dam	Archaeological Impact Assessment	Archaeological Assistant	1 week		Completed Archaeological Impact Assessment report	Archaeological Resources Management (ARM) Prof T.N. Huffman thomas.huffman@wits.ac.za
Archaeological Assessment of Modderfontein AH Holdings	Johannesburg, Gauteng, South Africa	2008 2008	Archaeological survey and basic assessment of Modderfontein Holdings	Archaeological Impact Assessment	Archaeologist	1 month		Completed the assessment of 13 properties	Heritage Contracts Unit Jaco van der Walt jaco.heritage@gmail.com
Heritage Assessment of Rhino Mines	Thabazimbi, Limpopo Province, South Africa	2008 2008	Heritage Assessment for expansion of mining area at Rhino Mines	Heritage Impact Assessment	Archaeologist	2 weeks	Rhino Mines	Completed the assessment	Archaeological Resources Management (ARM) Prof T.N. Huffman thomas.huffman@wits.ac.za
Cronimet Project	Thabazimbi, Limpopo Province, South Africa	2008 2008	Archaeological survey of Moddergat 389 KQ, Schilpadnest 385 KQ, and Swartkops 369 KQ,	Archaeological Impact Assessment	Archaeologist	1 weeks	Cronimet	Completed field survey and reporting	Heritage Contracts Unit Jaco van der Walt jaco.heritage@gmail.com



Eskom Thohoyandou SEA Project	Limpopo Province, South Africa	2008 2008	Heritage Statement defining the cultural landscape of the Limpopo Province to assist in establishing sensitive receptors for the Eskom Thohoyandou SEA Project	Heritage Statement	Archaeologist	2 months	Eskom	Completed Heritage Statement	Heritage Contracts Unit Jaco van der Walt jaco.heritage@gmail.com
Wenzelrust Excavations	Shoshanguve, Gauteng, South Africa	2009 2009	Contracted by the Heritage Contracts Unit to help facilitate the Phase 2 excavations of a Late Iron Age / historical site identified in Shoshanguve	Excavation and Mapping	Archaeologist	1 week	Heritage Contracts Unit	Completed excavations	Heritage Contracts Unit Jaco van der Walt jaco.heritage@gmail.com
University of the Witwatersrand Parys LIA Shelter Project	Parys, Free State, South Africa	2009 2009	Mapping of a Late Iron Age rock shelter being studied by the Archaeology Department of the University of the Witwatersrand	Mapping	Archaeologist	1 day	University of the Witwatersrand	Completed mapping of the shelter	University of the Witwatersrand Karim Sadr karim.sadr@wits.ac.za
Transnet NMPP Line	Kwa-Zulu Natal, South Africa	2010 2010	Heritage Survey of the Anglo-Boer War Vaalkrans Battlefield where the servitude of the NMP pipeline	Heritage Impact Assessment	Archaeologist	1 week	Umlando Consultants	Completed survey	Umlando Consultants Gavin Anderson umlando@gmail.com
Archaeological Impact Assessment – Witpoortjie Project	Johannesburg, Gauteng, South Africa	2010 2010	Heritage survey of Witpoortjie 254 IQ, Mindale Ext 7 and Nooitgedacht 534 IQ for residential development project	Archaeological Impact Assessment	Archaeologist	1 week	ARM	Completed survey for the AIA	Archaeological Resources Management (ARM) Prof T.N. Huffman thomas.huffman@wits.ac.za
Der Brochen Archaeological Excavations	Steelpoort, Mpumalanga, South Africa	2010 2010	Phase 2 archaeological excavations of Late Iron Age Site	Archaeological Excavation	Archaeologist	2 weeks	Heritage Contracts Unit	Completed excavations	Heritage Contracts Unit Jaco van der Walt jaco.heritage@gmail.com
De Brochen and Booyensdal Archaeology Project	Steelpoort, Mpumalanga, South Africa	2010 2010	Mapping of archaeological sites 23, 26, 27, 28a & b on the Anglo Platinum Mines De Brochen and Booyensdal	Mapping	Archaeologist	1 week	Heritage Contracts Unit	Completed Mapping	Heritage Contracts Unit Jaco van der Walt jaco.heritage@gmail.com
Eskom Thohoyandou Electricity Master Network	Limpopo Province, South Africa	2010 2010	Desktop study to identify heritage sensitivity of the Limpopo Province	Desktop Study	Archaeologist	1 Month	Strategic Environmental Focus	Completed Report	Strategic Environmental Focus (SEF) Vici Napier vici@sefsa.co.za



Bathhako Mine Expansion	North-West Province, South Africa	2010 2010	Mapping of historical sites located within the Bathhako Mine Expansion Area	Mapping	Archaeologist	1 week	Heritage Contracts Unit	Completed Mapping	Heritage Contracts Unit Jaco van der Walt jaco.heritage@gmail.com
Kibali Gold Project Grave Relocation Plan	Oriental Province, Democratic Republic of Congo	2011 2013	Implementation of the Grave Relocation Project for the Randgold Kibali Gold Project	Grave Relocation	Archaeologist	2 years	Randgold Resources	Successful relocation of approximately 3000 graves	Kibali Gold Mine Cyrille Mutombo Cyrille.c.mutombo@kibaligold.com
Kibali Gold Hydro-Power Project	Oriental Province, Democratic Republic of Congo	2012 2014	Assessment of 7 proposed hydro-power stations along the Kibali River	Heritage Impact Assessment	Heritage Consultant	2 years	Randgold Resources	Completed Heritage Impact Assessment	Randgold Resources Charles Wells Charles.wells@randgoldresources.com
Everest North Mining Project	Steelpoort, Mpumalanga, South Africa	2012 2012	Heritage Impact Assessment on the farm Vygenhoek	Heritage Impact Assessment	Heritage Consultant	6 months	Aquarius Resources	Completed Heritage Impact Assessment	Aquarius Resources
Environmental Authorisation for the Gold One Geluksdal TSF and Pipeline	Gauteng, South Africa	2012 2012	Heritage impact Assessment for the proposed TSF and Pipeline of Geluksdal Mine	Heritage Impact Assessment	Heritage Consultant	4 months	Gold One International	Completed Heritage Impact Assessment	Gold One International
Platreef Burial Grounds and Graves Survey	Mokopane, Limpopo Province, South Africa	2012 2012	Survey for Burial Grounds and Graves	Burial Grounds and Graves Management Plan	Heritage Consultant	4 months	Platreef Resources	Project closed by client due to safety risks	Platreef Resources Gerick Mouton
Resgen Boikarabelo Coal Mine	Limpopo Province, South Africa	2012 2012	Archaeological Excavation of identified sites	Archaeological Excavation	Heritage Consultant	4 months	Resources Generation	Completed excavation and reporting, destruction permits approved	Resources Generation Louise Nicolai
Bokoni Platinum Road Watching Brief	Burgersfort, Limpopo Province, South Africa	2012 2012	Watching brief for construction of new road	Watching Brief	Heritage Consultant	1 week	Bokoni Platinum Mine	Completed watching brief, reviewed report	Bokoni Platinum Mines (Pty) Ltd
SEGA Gold Mining Project	Burkina Faso	2012 2013	Socio Economic and Asset Survey	RAP	Social Consultant	3 months	Cluff Gold PLC	Completed field survey and data collection	Cluff Gold PLC



SEGA Gold Mining Project	Burkina Faso	2013 2013	Specialist Review of Heritage Impact Assessment	Reviewer	Heritage Consultant	1 week	Cluff Gold PLC	Reviewed specialist report and made appropriate recommendations	Cluff Gold PLC
Consbrey and Harwar Collieries Project	Breyton, Mpumalanga, South Africa	2013 2013	Heritage Impact Assessment for the proposed Consbrey and Harwar Collieries	Heritage Impact Assessment	Heritage Consultant	2 months	Msobo	Completed Heritage Impact Assessments	Msobo
New Liberty Gold Project	Liberia	2013 2014	Implementation of the Grave Relocation Project for the New Liberty Gold Project	Grave Relocation	Heritage Consultant	On-going	Aureus Mining	Project is on-going	Aureus Mining
Falea Uranium Mine Environmental Assessment	Falea, Mali	2013 2013	Heritage Scoping for the proposed Falea Uranium Mine	Heritage Scoping	Heritage Consultant	2 months	Rockgate Capital	Completed scoping report and recommended further studies	Rockgate Capital
Putu Iron Ore Mine Project	Petroken, Liberia	2013 2014	Heritage impact Assessment for the proposed Putu Iron Ore Mine, road extension and railway line	Heritage Impact Assessment	Heritage Consultant	6 months	Atkins Limited	Completed Heritage Impact Assessment and provided recommendations for further studies	Atkins Limited Irene Bopp Irene.Bopp@atkinsglobal.com
Sasol Twistdraai Project	Secunda, Mpumalanga, South Africa	2013 2014	Notification of intent to Develop and Heritage Statement for the Sasol Twistdraai Expansion	NID	Heritage Consultant	2 months	ERM Southern Africa	Completed NID and Heritage Statement	ERM Southern Africa Alan Cochran Alan.Cochran@erm.com
Daleside Acetylene Gas Production Facility	Gauteng, South Africa	2013 2013	Project Management of the heritage study	NID	Project Manager	3 months	ERM Southern Africa	Project completed	ERM Southern Africa Kasantha Moodley Kasantha.Moodley@erm.com
Nzoro 2 Hydro Power Project	Orientale Province, Democratic Republic of Congo	2014 2014	Social consultation for the Relocation Action Plan component of the Nzoro 2 Hydro Power Station	RAP	Social Consultant	On-going	Randgold Resources	Completed introductory meetings – project on-going	Kibali Gold Mine Cyrille Mutombo Cyrille.c.mutombo@kibaligold.com
Eastern Basin AMD Project	Springs, Gauteng, South Africa	2014 2014	Heritage Impact Assessment for the proposed new sludge storage facility and pipeline	Heritage Impact Assessment	Heritage Consultant	On-going	AECOM	Project is on-going	AECOM
Soweto Cluster Reclamation Project	Soweto, Gauteng, South Africa	2014 2014	Heritage Impact Assessment for reclamation activities associated with the Soweto Cluster Dumps	Heritage Impact Assessment	Heritage Consultant	On-going	ERGO	Project is on-going	ERGO Greg Ovens



Klipspruit South Project	Ogies, Mpumalanga, South Africa	2014 2014	NID and Heritage Statement for the Section 102 Amendment of the Klipspruit Mine EMP	NID	Heritage Consultant	On-going	BHP Billiton	Project is on-going	BHP Billiton
Klipspruit Extension Project	Ogies, Mpumalanga, South Africa	2014 2014	NID and Heritage Statement for the expansion of the Klipspruit Mine	NID	Heritage Consultant	On-going	BHP Billiton	Project is on-going	BHP Billiton



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Notification of Intent to Develop

Basic Assessment for the Construction of a Pipeline Associated with the Rondebult
Wastewater Treatment Plant

ERG2203



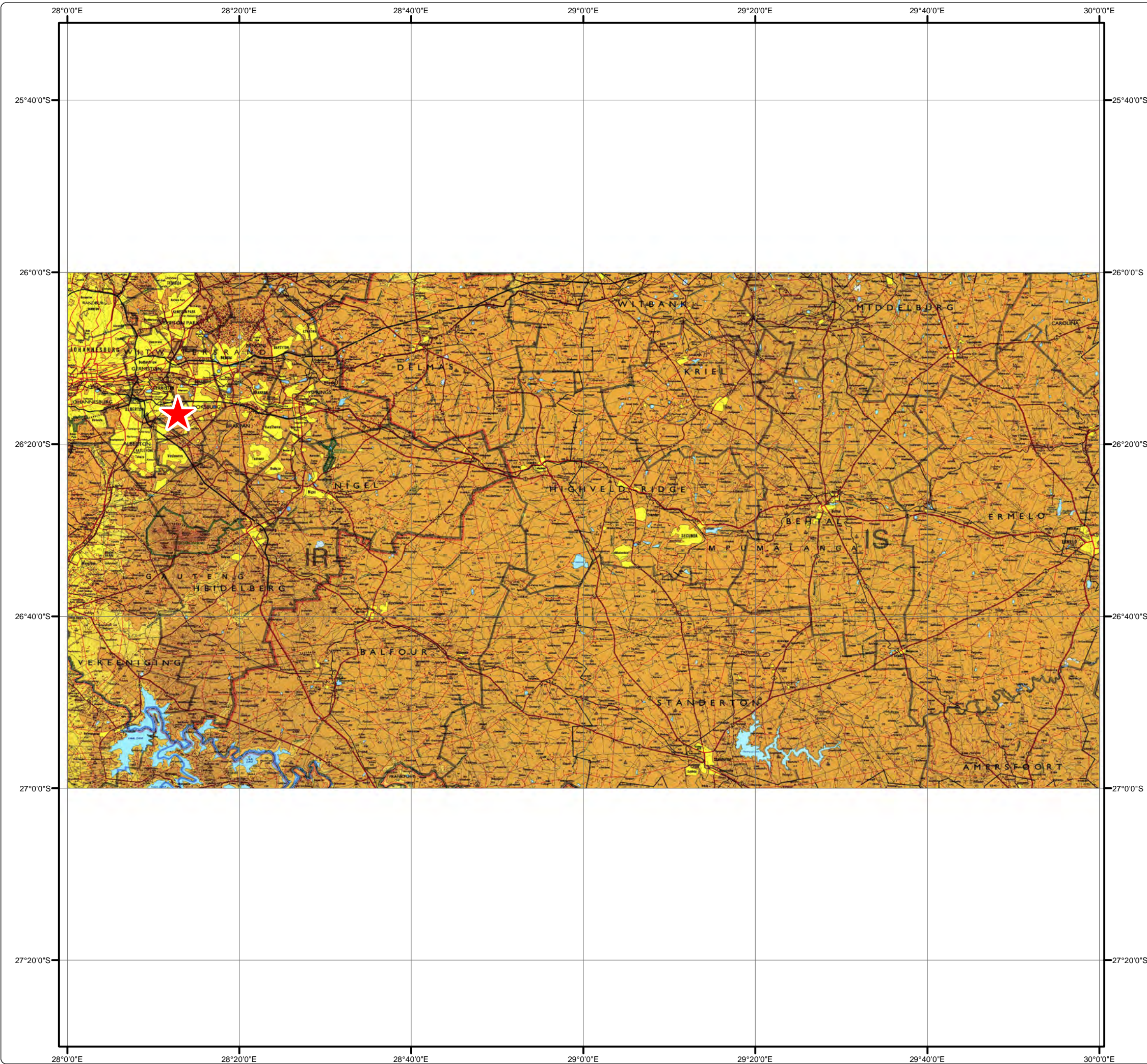
Appendix B: Location and Site Maps

Water Pipeline from Rondebult Waste Water Treatment Plant

Regional Setting 1-250 000

Legend

 Project Location



2628 East Rand



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Projection: Transverse Mercator	Ref #: idp.ERG2203.201406.095
Datum: WGS84	Revision Number: 1
Central Meridian: 27°E	Date: 27/05/2014



Water Pipeline from Rondebult Waste Water Treatment Plant

Regional Setting 1-250 000

Legend

 Pipeline Route

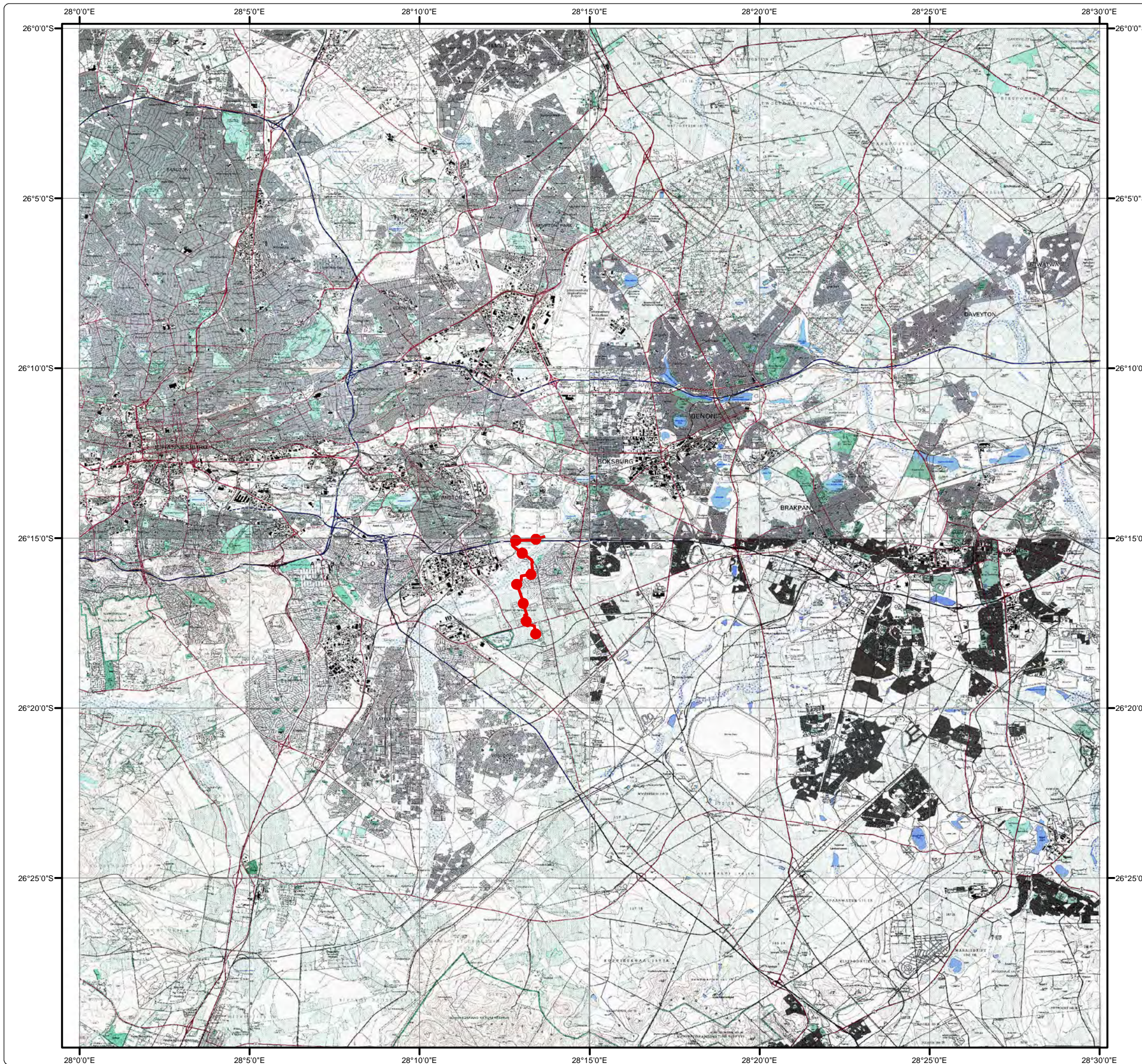
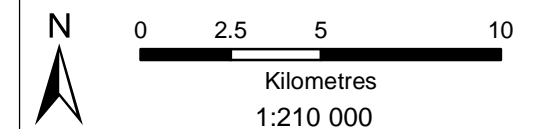
2628AA : Johannesburg
2628AB : Benoni
2628AC : Alberton
2628AD : Springs



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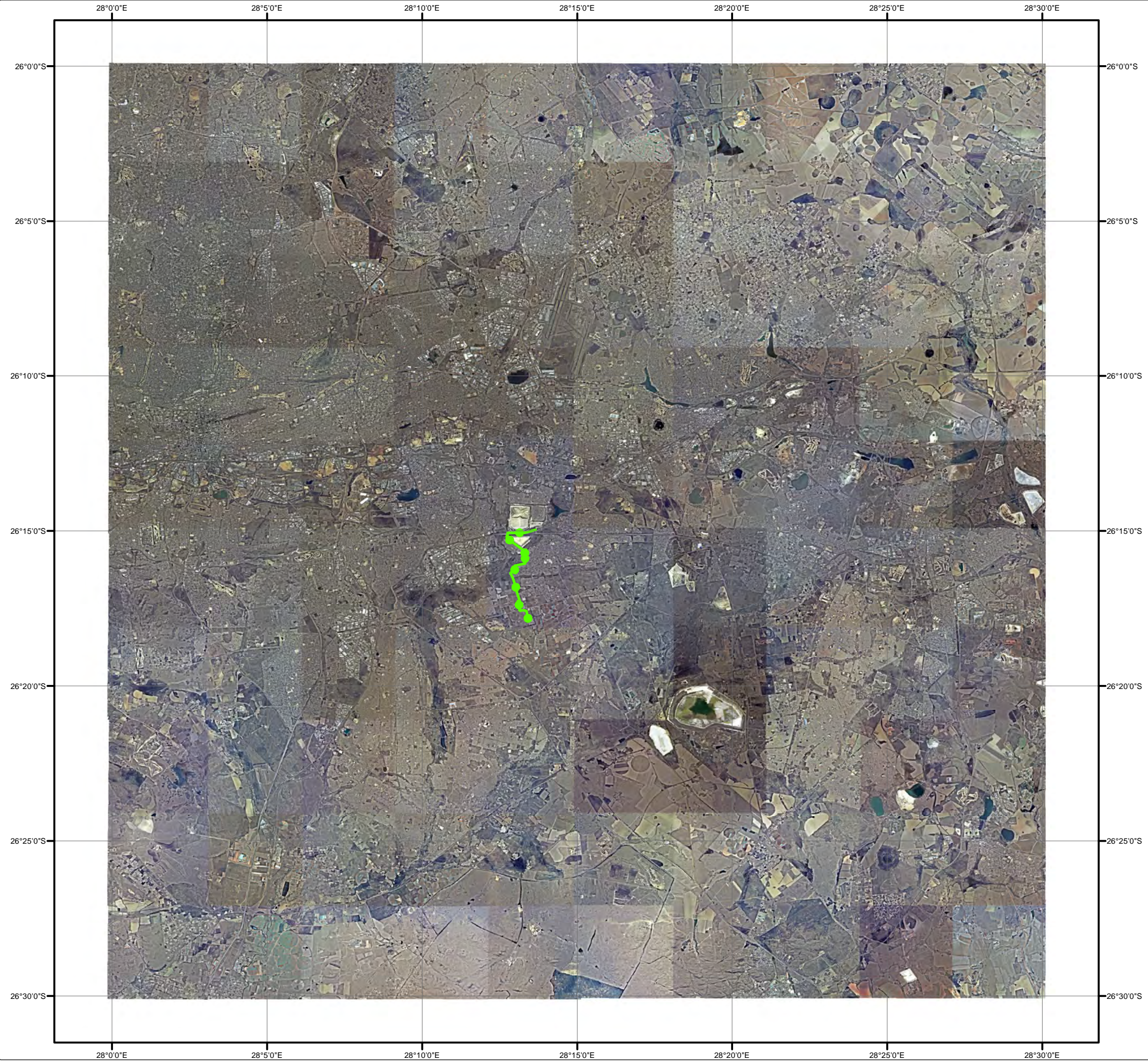


Water Pipeline from Rondebult Waste Water Treatment Plant

Regional Setting 1-10 000

Legend

 Pipeline Route



2628AA
2628AB
2628AC
2628AD



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Revision Number: 1
Date: 27/05/2014



0 2.75 5.5 11

Kilometres

1:230 000

Water Pipeline from Rondebult Waste Water Treatment Plant

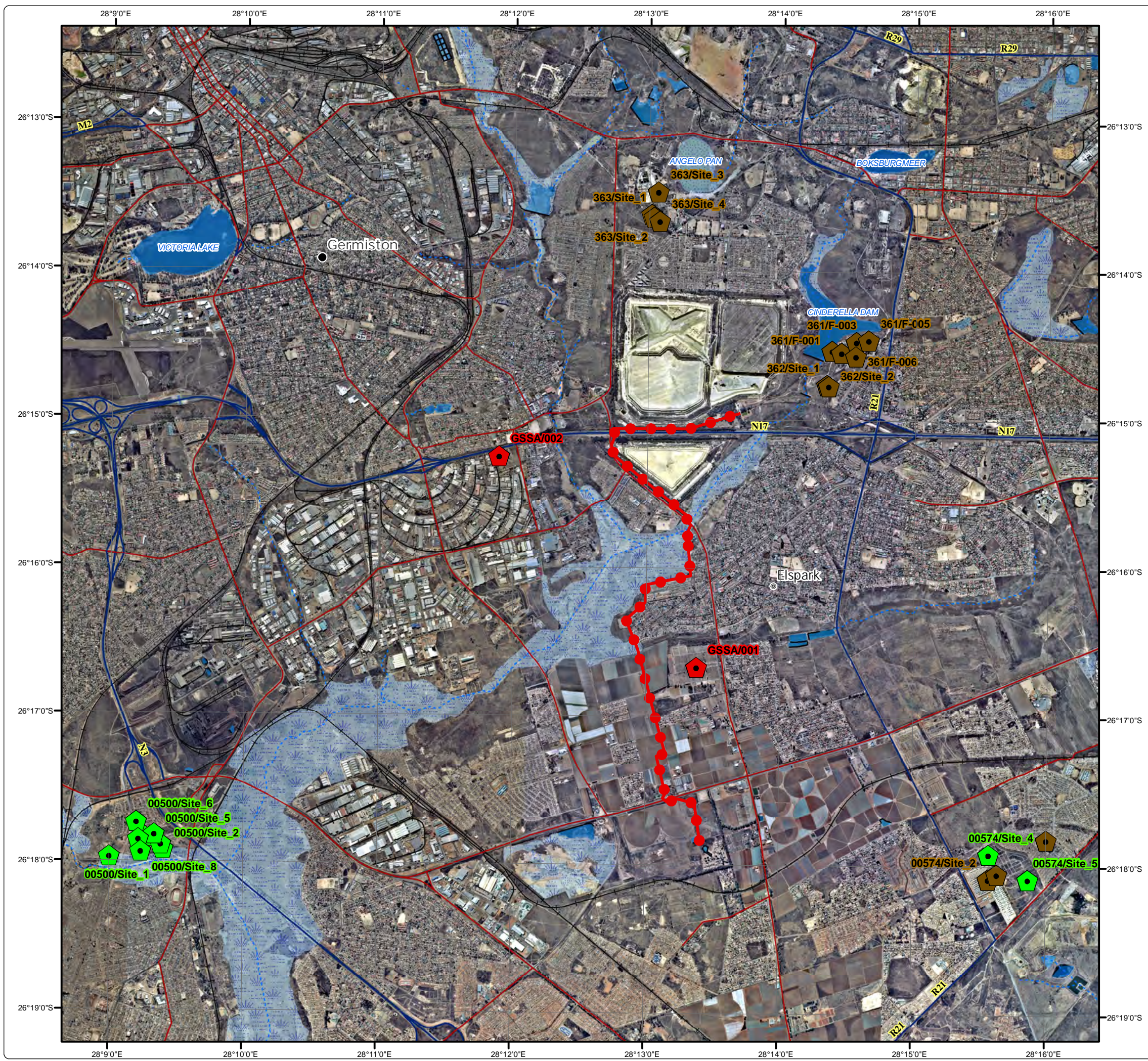
Identified Heritage Resources

Legend

- Pipeline Route
- Major Town
- Other Town
- Arterial / National Route
- Main Road
- Railway Line
- Dam Wall
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Non-Perennial Pan
- Perennial Pan
- Wetland

Identified Heritage Locations

- Archaeology
- Built Environment
- Burial Grounds and Graves



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