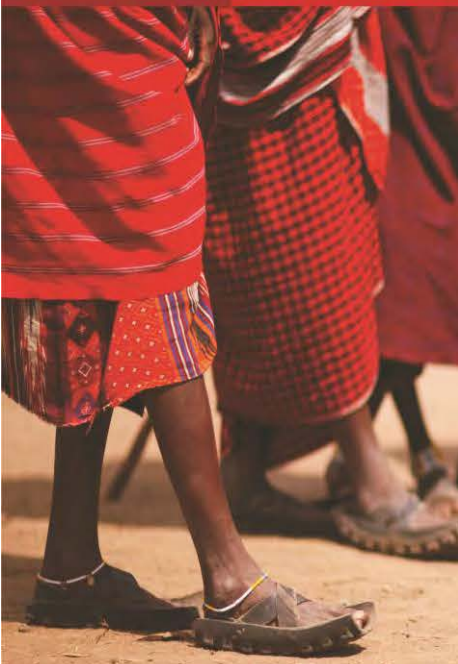


DIGBY WELLS

ENVIRONMENTAL



Environmental Authorisation for the Klipspruit Extension Weltevreden Project

Notification of Intent to Develop

Project Number:

BHP2690

Prepared for:

BHP Billiton Energy Coal South Africa (Pty) Limited

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



This document has been prepared by Digby Wells Environmental.

Report Type:	Notification of Intent to Develop
Project Name:	Environmental Authorisation for the Klipspruit Extension Weltevreden Project
Project Code:	BHP2690

Name	Responsibility	Signature	Date
Justin du Piesanie ASAPA Member: 270	Researcher Field Survey Report Writer Recommendations		September 2014
Johan Nel ASAPA Member: 095	Report Reviewer		

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Notification of Intent to Develop

Project Location

Province	Mpumalanga
Magisterial District	Witbank Magisterial District
District Municipality	Nkangala District Municipality
Local Municipality	eMalahleni Local Municipality
Nearest town	Ogies
Property	Hartebeestlaagte 325 JS Grootpan 7 IS Prinshof 2 IS Tweefontein 328 JS Weltevreden 324 JS Wildebeestfontein 327 JS
1:50 000 topographical map	2529CC; 2629AA
Relative centre coordinates of project area	South: 25° 59' 15.74" East: 29° 05' 06.60"
Recording method	ArcGIS 10.2
Rezoning requirements	The project area will require rezoning

Registered Owner/s of Property/ies



Farm Boundary	Farm Portion	Owner/Title Position	Contact Person	Telephone number	Cellphone Number	Email Address	Postal Address
GROOTPAN 7 IS	8/7	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
GROOTPAN 7 IS	37/7	South African National Roads Agency	Ms Victoria Bota	124266200		botav@nra.co.za	Private Bag X17, Lynnwood Ridge, 0040
GROOTPAN 7 IS	45/7	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
GROOTPAN 7 IS	44/7	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
GROOTPAN 7 IS	RE/32/7	Truter Boerdery Trust/Unknown				-	
GROOTPAN 7 IS	11/7	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
GROOTPAN 7 IS	15/7	Christina Maria Janse van Rensburg				-	PO Box 6144, Kanonkop, 1050
GROOTPAN 7 IS	33/7	Venaar Beleggings Pty Ltd		136432809		-	Anderson Street 11, Bethal Mpumalanga, 6270
GROOTPAN 7 IS	43/7	Unknown				-	
GROOTPAN DISTRIBUTION STATION 6 IS	RE/6	Eskom	Ms Ntombi Masango	136933640		ntombi.masango@eskom.co.za	PO Box 223, Witbank,1035
HARTEBEESTLAAGTE 325 JS	RE/325	Unknown				-	
HARTEBEESTLAAGTE 325 JS	8/325	Bezuidenhout Gert Petrus		136569431	828544694	-	PO Box 2862, Witbank, 1035
HARTEBEESTLAAGTE 325 JS	39/325	Ingwe Surface Holdings	BHP Billiton			-	
HARTEBEESTLAAGTE 325 JS	4/325	Sikhosana Thandi Joyce			839432554	-	P O Box 120, Nqutu, 3135
HARTEBEESTLAAGTE 325 JS	40/325	Lonerock Quarries CC		115402300		-	
OGGIESFONTEIN 4 IS	9/4	Sightfull Coal Pty Ltd		122501050		-	
PRINSHOF 2 IS	2/2	Ingwe Surface Holdings	BHP Billiton			-	
PRINSHOF 2 IS	RE/10/2	Ingwe Surface Holdings	BHP Billiton			-	
PRINSHOF 2 IS	14/2	Ingwe Surface Holdings	BHP Billiton			-	
TWEEFONTEIN 328 JS	1/328	Kernels Trust				-	
TWEEFONTEIN 328 JS	5/328	C H Truter Familie Trust				-	

Environmental Authorisation for the Klipspruit Extension Weltevreden Project

BHP2690



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Farm Boundary	Farm Portion	Owner/Title Position	Contact Person	Telephone number	Cellphone Number	Email Address	Postal Address
TWEEFFONTEIN 328 JS	8/328	C H Truter Familie Trust				-	
TWEEFFONTEIN 328 JS	RE/328	Truter Boerdery Trust				-	
TWEEFFONTEIN 328 JS	4/328	National Department of Land Affairs	Ms Phindi Sibanyoni	136551000		-	prsibanyoni@ruraldevelopment.gov.za
TWEEFFONTEIN 328 JS	6/328	Breet Cornelius Theunis Oosthuizen		136435015		-	
TWEEFFONTEIN 328 JS	9/328	Unknown				-	
TWEEFFONTEIN 328 JS	3/328	Truter Boerdery Trust				-	
TWEEFFONTEIN 328 JS	11/328	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
VLAGLAAGTE 330 IS	24/330	Unknown				-	
WELTEVREDEN 324 JS	2/324	Mahlangu Family Communal Prop Association				-	
WELTEVREDEN 324 JS	4/324	National Department of Land Affairs	Ms Phindi Sibanyoni	136551000		-	prsibanyoni@ruraldevelopment.gov.za
WELTEVREDEN 324 JS	8/324	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
WELTEVREDEN 324 JS	6/324	National Department of Land Affairs	Ms Phindi Sibanyoni	136551000		-	prsibanyoni@ruraldevelopment.gov.za
WELTEVREDEN 324 JS	3/324	National Department of Land Affairs	Ms Phindi Sibanyoni	136551000		-	prsibanyoni@ruraldevelopment.gov.za
WELTEVREDEN 324 JS	7/324	National Department of Land Affairs	Ms Phindi Sibanyoni	136551000		-	prsibanyoni@ruraldevelopment.gov.za
WILDEBEEFSFONTEIN 327 JS	9/327	Jacoba Smart Rachel				-	
	11/327	Petrus Johannes Prinsloo		136562347	826522135	henwi@wol.co.za	PO Box 225, Oogies, 2230 Die Heuwel, Klipportje 32IS, Witbank 1042
WILDEBEEFSFONTEIN 327 JS	12/327	Herver Arnold Petrus Du Toit van Den	Mr Christo Du Plessis - GM	136925010	136974370	christod@mccarthy.co.za	PO Box 14257, Leraatsfontein, 1038
WILDEBEEFSFONTEIN 327 JS	14/327	Gert Fredrick Meyer		135909065	829673597	-	PO Box 328, Ogies, 2230
WILDEBEEFSFONTEIN 327 JS	15/327	Ingwe Surface Holdings	BHP Billiton			-	
WILDEBEEFSFONTEIN 327 JS	17/327	Wentzel Allewyn Francois				-	
WILDEBEEFSFONTEIN 327	21/327	Herver Arnold Petrus Du Toit van Den		136925010	136974370	-	PO Box 14257, Leraatsfontein,

Environmental Authorisation for the Klipspruit Extension Weltevreden Project

BHP2690



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Farm Boundary	Farm Portion	Owner/Title Position	Contact Person	Telephone number	Cellphone Number	Email Address	Postal Address
JS							1038
WILDEBEEFSFONTEIN 327 JS	22/327	South African National Roads Agency	Ms Victoria Bota	124266200		botav@nra.co.za	Private Bag X17, Lynnwood Ridge, 0040
WILDEBEEFSFONTEIN 327 JS	16/327	Kirton Leslie Graham		136461267	737050429	-	PO Box 281, Ogies, 2230
WILDEBEEFSFONTEIN 327 JS	20/327	McLellan Edmund John		136928958	828750967	rina.mclellan@gmail.com	PO Box 1342, Witbank, 1035
WILDEBEEFSFONTEIN 327 JS	8/327	Ingwe Surface Holdings	BHP Billiton			-	
WILDEBEEFSFONTEIN 327 JS	10/327	Henwi Trust	Henriek Friederick Prinsloo		828910340	henwi@wol.co.za	
WILDEBEEFSFONTEIN 327 JS	13/327	Christoffel Marthinus Du Toit Van Rooyen		136431651	827838979	-	PO Box 2, Ogies, 2230
WILDEBEEFSFONTEIN 327 JS	37/327	Xstrata South Africa Pty Ltd	Ms Annalise Van Zyl- Environmental Supervisor	132448000	716891771	annalise.vanzyl@shandukacoal.com	
WILDEBEEFSFONTEIN 327 JS	38/327	Ingwe Surface Holdings	BHP Billiton			-	
WILDEBEEFSFONTEIN 327 JS	RE/327	Ingwe Surface Holdings	BHP Billiton			-	
ZAAIWATER 11 IS	RE/20/11	Glencore Operations South Africa Pty Ltd/Truter Boerdery Trust	Ms Annalise Van Zyl	132448000	716891771	annalise.vanzyl@shandukacoal.com	

Project / Development Details

BECSA is a 50% shareholder with Anglo American Thermal Coal in the Phola Coal Processing Plant (PCPP) Joint Venture (JV) in a take-or-pay agreement until 2028. Here, RoM coal from the Klipspruit Mine is processed and transported along the Richards Bay Coal Terminal (RBCT) railway line for export to international markets.

Currently, the life of asset plan has a sharp decline in export tonnes as the operations at the Klipspruit Mine ramp down. To maintain the current export volume profile and fulfil the take-or-pay agreement at PCPP JV, BECSA intend to implement the KPSX: Weltevreden Project.

BECSA is the holder of three prospecting rights in close proximity to the existing Klipspruit operations, containing coal resources of approximately 500 million ton (Mt). The KPSX: Weltevreden Project is positioned to leverage off the existing export infrastructure, and extend the LoM by 20 years or more.

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 type="checkbox"/>	a	Any linear development or barrier >300 m	
<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 checked="" type="checkbox"/>	i	≥5 000m ² in extent	Intend to conduct opencast mining activities
<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 checked="" type="checkbox"/>	d	Rezoning of a site ≥10 000m ² in extent.	From agriculture to mining
<input checked="" type="checkbox"/>	e	Other triggers, e.g.: in terms of other legislation, (i.e.: National Environment Management Act, etc.)	NEMA, MPRDA

Activities

The following activities will take place during the lifespan of the proposed project.

GNR	Activity No.	Description
GNR 544	1	The construction of facilities or infrastructure for the generation of electricity where: <ol style="list-style-type: none"> i. The electricity output is more than 10 MW but less than 20 MW; or ii. The output is 10 MW or less but the total extent of the facility covers an area of 1 ha

GNR	Activity No.	Description
	2	The construction of facilities or infrastructure for the storage of ore or coal that required an atmospheric emissions license in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).
	10	The construction of facilities or infrastructure exceeding 1 000 metres in length for the bulk transportation of water, sewage or storm water: <ol style="list-style-type: none"> i. With an internal diameter of 0.36 metres or more; or ii. With a peak throughput of 120 litres per second or more.
	11	The construction of facilities or infrastructure for the transmission and distribution of electricity: <ol style="list-style-type: none"> i. Outside urban areas or industrial complexes with a capacity of more than 33 kV but less than 275 kV; or ii. Inside urban areas or industrial complexes with a capacity of 275 kV or more.
	12	The construction of facilities or infrastructure for the off-stream storage of water including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 19 of Notice 545 of 2010.
	20	Any activity requiring a mining permit in terms of Section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) or renewal thereof.
	22	The construction of a road, outside urban areas: <ol style="list-style-type: none"> i. With a reserve wider than 13.5 metres; or ii. Where no reserve exist the road is wider than 8 metres; or iii. For which an environmental authorization was obtained for the route determination in terms of Activity 5 in GN 387 of 2006, or Activity 18 in Notice 545 of 2010.
	26	Any process or activity identified in terms of Section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
	37	The expansion of facilities or infrastructure for the bulk transportation of water, sewage or storm water where: <ol style="list-style-type: none"> a) The facility or infrastructure is expanded by more than 1 000 metres in length; or b) Where the throughput capacity of the facility or infrastructure will be increased by 10% or more – Excluding where such expansion: <ol style="list-style-type: none"> i. Relates to the transportation of water, sewage or storm water within a road reserve; or ii. Where such expansion will occur within the urban areas but further than 32 metres from a watercourse, measures from the edge of the watercourse.
	52	The expansion of facilities or infrastructure for the transfer of water from and to or between any combination of the following: <ol style="list-style-type: none"> i. Water catchments; ii. Water treatment works; or iii. Impoundments; Where the capacity will be increased by 50 000 cubic metres or more per day but excluding water treatment works where water is treated for drinking purposes.
GNR 546	2	The construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres.
	19	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre outside urban areas, in: <ol style="list-style-type: none"> i) A protected area identified in terms of NEMPAA, excluding conservancies; ii) National Protected Area Expansion Strategy Focus areas; iii) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; iv) Sites or areas identified in terms of an International Convention; v) Critical biodiversity areas as identified in systematic biodiversity plans adopted by

GNR	Activity No.	Description
		the competent authority or in bioregional plans; vi) Core areas in biosphere reserves; vii) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; viii) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; ix) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined.
	23	The expansion of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage facilities will be expanded by 30 cubic metres or more but less than 80 cubic metres.
GNR 545	3	The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres
	5	The construction of facilities or infrastructure for any purpose or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of Section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case that Act will apply.
	19	The construction of a dam, where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the high water mark of the dam covers an area of 10 hectares or more.
	20	Any Activity which requires a mining right or renewal thereof as contemplated in Sections 22 and 24 respectively of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
	21	Any Activity which requires an exploration right or renewal thereof, as contemplated in Sections 79 and 81 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
	26	Commencing of an Activity, which requires an atmospheric emissions license in terms of Section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), except where such commencement requires basic assessment in terms of Notice of No. R 544 of 2010.

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, MPRDA
Consenting Authority that has/will receive information	DMR
Present phase of process at Authority, e.g. Draft Scoping Report	Draft Scoping Report

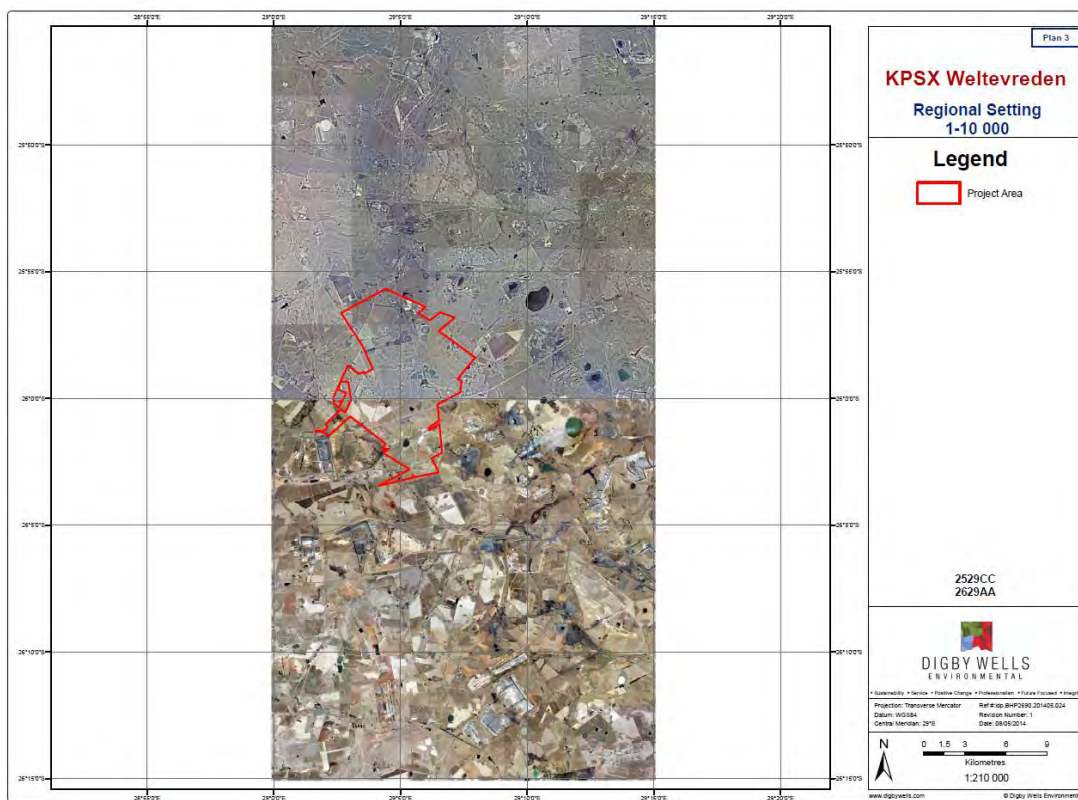
Identified / Known Heritage Resources and Potential Impacts

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

<input checked="" type="checkbox"/>	3(2)(a)	Places, buildings, structures and equipment of cultural significance
		Description of resource: Historical farmsteads
		Potential impact: Damage and/or destruction
<input type="checkbox"/>	3(2)(b)	Places to which oral traditions are attached or which are associated with living heritage
		Description of resource: None
		Potential impact: None
<input checked="" type="checkbox"/>	3(2)(c)	Historical settlements and townscapes
		Description of resource: Mining compounds associated with Minnaar Colliery
		Potential impact: Damage and/or destruction
<input type="checkbox"/>	3(2)(d)	Landscapes and natural features of cultural significance
		Description of resource:
		Potential impact:
<input checked="" type="checkbox"/>	3(2)(e)	Geological resources of scientific or cultural importance
		Description of resource: Vryheid Formation
		Potential impact: Damage and/or destruction of plant fossils associated with the Vryheid Formation
<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:
		Potential impact:
<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: Burial grounds associated with farmsteads
		Potential impact: Damage and/or destruction
<input type="checkbox"/>	3(2)(a)	Other human remains
		Description of resource:

		Potential impact:
<input type="checkbox"/>	3(2)(h)	Sites of significance relating to the history of slavery in South Africa
		Description of resource:
		Potential impact:
<input type="checkbox"/>	3(2)(i)	Movable objects
		Description of resource:
		Potential impact:

Illustrative Material



Recommendation

Is a Heritage Impact Assessment required?		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
If NO, provide motivation:			
If YES, provide suggested components that may be required or undertaken during HIA.			
<input type="checkbox"/>	Archaeology	<input type="checkbox"/>	Architecture

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

Considering the evidence for other heritage resources to occur in the project area, it is recommended that a HIA be undertaken that should include the following specialist heritage components:

- A palaeontological desktop assessment to determine the real potential of significant fossils based on available geological and geochemical data. This assessment should provide further recommended mitigation and management measures;
- An assessment of the built environment including a field reconnaissance survey to identify, record, and document all structures that may exist in the project area, in addition to those identified by Cultmatrix cc (De Jong, 2009). This assessment should provide an inventory of structures that may require permits or management plans to be integrated into the EMP;
- An assessment of burial grounds and graves including a field reconnaissance survey to identify, record and document all burials that may exist in the project area, in addition to those identified by Cultmatrix cc (De Jong, 2009);
- Results from other specialist studies should be integrated to determine any possible living heritage in the project area. Studies that may be considered for integration include Stakeholder Engagement, Socio-Economic Impact Assessment, Botanical Assessment and Visual Assessment;

Exemption from a comprehensive Archaeological Impact Assessment (AIA) based on the findings from the Cultmatrix cc (De Jong, 2009), and low distribution of identified s. 35 heritage resources throughout the region;

The HIA should include a register of heritage-specific authorisations that may be required if the project is awarded a mining right. This register should be included in the EIA and EMP.

Recommendation made by:
Name: Justin du Piesanie
Capacity: Heritage Management Consultant

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Appendix B: Location and Site Maps

LIST OF ABBREVIATIONS AND TERMS

AIA	Archaeological Impact Assessment
BECSA	BHP Billiton Energy Coal South Africa (Pty) Limited
DEA	Department of Environmental Affairs
Digby Wells	Digby Wells Environmental
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ELM	eMalahleni Local Municipality
EMP	Environmental Management Programme
GSSA	Genealogical Society of South Africa
HIA	Heritage Impact Assessment
HRA	Heritage Resources Authority
IDP	Integrated Development Plan
JV	Joint Venture
KPSX	Klipspruit
LIA	Late Iron Age
LoM	Life of Mine
LSA	Late Stone Age
MSA	Middle Stone Age
Mt	Million ton
Mtpa	Million ton per annum
NASA	National Archives of South Africa
NDM	Nkangala District Municipality
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
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
NoK	Next-of-Kin
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PCPP	Phola Coal Processing Plant
RBCT	Richards Bay Coal Terminal
RoM	Run of Mine
s.	section
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

1 Introduction

Digby Wells Environmental (Digby Wells) was contracted by BHP Billiton Energy Coal South Africa (Pty) Limited (BECSA) as an independent Environmental Assessment Practitioner (EAP) to undertake an integrated regulatory process to enable BECSA to commence mining in the proposed area of the Klipspruit Extension.

1.1 Terms of Reference

In order to obtain environmental authorisation for the Klipspruit Extension: Weltevreden (KPSX: Weltevreden) Project, specialist studies in support of the following legislation were required:

- National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA);
- National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA); and
- National Water Act, 1998 (Act No. 36 of 1998) (NWA).

Several specialist studies were conducted during which baseline environmental information was obtained that assisted in decision-making regarding siting of infrastructure and other aspects.

Information contained within the Draft Heritage Impact Assessment (HIA) Report (De Jong, 2009) was reviewed and updated where necessary for incorporation.

1.2 Scope of Work

In order to comply with the legislative requirements, a heritage study for the KPSX: Weltevreden Project inclusive of a Notification of Intent to Develop (NID) for submission to the relevant Heritage Resources Authority (HRA) was required. The Scope of Work required to complete the NID included:

- Review of relevant previous heritage studies in the study area;
- Conducting historical layering for the project area;
- A screening survey to verify identified heritage resources and present condition of the project area;
- Reporting; and
- Providing recommendations for further heritage assessments.

2 Project Background Information

Currently, BECSA is the owner operator (90%) of the Klipspruit Mine. It lies within the Springs-Witbank Coalfield and produces a nominal 8 million ton per annum (Mtpa) Run of

Mine (RoM) of both high and low quality coal. Authorisation for the Klipspruit Mine was received in 2003 in terms of section (s.) 39 of the Minerals Act (Act No. 50 of 1991) (Ref: OT6/2/2/495 EM), with an expected Life of Mine (LoM) to the year 2020.

2.1 Project Description

BECSA is a 50% shareholder with Anglo American Thermal Coal in the Phola Coal Processing Plant (PCPP) Joint Venture (JV) in a take-or-pay agreement until 2028. Here, RoM coal from the Klipspruit Mine is processed and transported along the Richards Bay Coal Terminal (RBCT) railway line for export to international markets.

Currently, the life of asset plan has a sharp decline in export tonnes as the operations at the Klipspruit Mine ramp down. To maintain the current export volume profile and fulfil the take-or-pay agreement at PCPP JV, BECSA intend to implement the KPSX: Weltevreden Project.

BECSA is the holder of three prospecting rights in close proximity to the existing Klipspruit operations, containing coal resources of approximately 500 million ton (Mt). The KPSX: Weltevreden Project is positioned to leverage off the existing export infrastructure, and extend the LoM by 20 years or more.

2.2 Relevant Contact Details

The contact details of the developer, consultant and landowners are provided in Table 2-1, Table 2-2 and

Table 2-3 respectively.

Table 2-1: Client contact details

ITEM	COMPANY CONTACT DETAILS
Company	BHP Billiton Energy Coal South Africa (Pty) Limited (BECSA)
Contact person	Linde Moore
Tel no	013 643 3843
E-mail address	linde.moore@bhpbilliton.com
Postal address	P.O. Box 61820, Marshalltown, 2107

Table 2-2: Consultant contact details

ITEM	COMPANY CONTACT DETAILS
Company	Digby Wells Environmental
Contact person	Renee Van Aardt
Tel no	011 789 9495
Fax no	011 789 9498
Cell no	072 369 2339
E-mail address	renee.vanaardt@digbywells.com
Postal address	Private Bag X10046, Randburg, 2125


Table 2-3: Land owner contact details

Farm Boundary	Farm Portion	Owner/Title Position	Contact Person	Telephone number	Cellphone Number	Email Address	Postal Address
GROOTPAN 7 IS	8/7	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
GROOTPAN 7 IS	37/7	South African National Roads Agency	Ms Victoria Bota	124266200		botav@nra.co.za	Private Bag X17, Lynnwood Ridge, 0040
GROOTPAN 7 IS	45/7	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
GROOTPAN 7 IS	44/7	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
GROOTPAN 7 IS	RE/32/7	Truter Boerdery Trust/Unknown				-	
GROOTPAN 7 IS	11/7	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
GROOTPAN 7 IS	15/7	Christina Maria Janse van Rensburg				-	PO Box 6144, Kanonkop, 1050
GROOTPAN 7 IS	33/7	Venaar Beleggings Pty Ltd		136432809		-	Anderson Street 11, Bethal Mpumalanga, 6270
GROOTPAN 7 IS	43/7	Unknown				-	
GROOTPAN DISTRIBUTION STATION 6 IS	RE/6	Eskom	Ms Ntombi Masango	136933640		ntombi.masango@eskom.co.za	PO Box 223, Witbank, 1035
HARTEBEESTLAAGTE 325 JS	RE/325	Unknown				-	
HARTEBEESTLAAGTE 325 JS	8/325	Bezuidenhout Gert Petrus		136569431	828544694	-	PO Box 2862, Witbank, 1035
HARTEBEESTLAAGTE 325 JS	39/325	Ingwe Surface Holdings	BHP Billiton			-	
HARTEBEESTLAAGTE 325 JS	4/325	Sikhosana Thandi Joyce			839432554	-	P O Box 120, Nqutu, 3135
HARTEBEESTLAAGTE 325 JS	40/325	Lonerock Quarries CC		115402300		-	
OGGIESFONTEIN 4 IS	9/4	Sightfull Coal Pty Ltd		122501050		-	
PRINSHOF 2 IS	2/2	Ingwe Surface Holdings	BHP Billiton			-	
PRINSHOF 2 IS	RE/10/2	Ingwe Surface Holdings	BHP Billiton			-	
PRINSHOF 2 IS	14/2	Ingwe Surface Holdings	BHP Billiton			-	
TWEEFONTEIN 328 JS	1/328	Kernels Trust				-	
TWEEFONTEIN 328 JS	5/328	C H Truter Familie Trust				-	

Environmental Authorisation for the Klipspruit Extension Weltevreden Project

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ENVIRONMENTAL

Farm Boundary	Farm Portion	Owner/Title Position	Contact Person	Telephone number	Cellphone Number	Email Address	Postal Address
TWEEFONTEIN 328 JS	8/328	C H Truter Familie Trust				-	
TWEEFONTEIN 328 JS	RE/328	Truter Boerdery Trust				-	
TWEEFONTEIN 328 JS	4/328	National Department of Land Affairs	Ms Phindi Sibanyoni	136551000		-	prsibanyoni@ruraldevelopment.gov.za
TWEEFONTEIN 328 JS	6/328	Breet Cornelius Theunis Oosthuizen		136435015		-	
TWEEFONTEIN 328 JS	9/328	Unknown				-	
TWEEFONTEIN 328 JS	3/328	Truter Boerdery Trust				-	
TWEEFONTEIN 328 JS	11/328	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
VLAGLAAGTE 330 IS	24/330	Unknown				-	
WELTEVREDEN 324 JS	2/324	Mahlangu Family Communal Prop Association				-	
WELTEVREDEN 324 JS	4/324	National Department of Land Affairs	Ms Phindi Sibanyoni	136551000		-	prsibanyoni@ruraldevelopment.gov.za
WELTEVREDEN 324 JS	8/324	Transnet	Mr Phillip De Klerk	123152021	083 308 9669	philip.deklerk@transnet.net	Private Bag 637, Pretoria, 0001
WELTEVREDEN 324 JS	6/324	National Department of Land Affairs	Ms Phindi Sibanyoni	136551000		-	prsibanyoni@ruraldevelopment.gov.za
WELTEVREDEN 324 JS	3/324	National Department of Land Affairs	Ms Phindi Sibanyoni	136551000		-	prsibanyoni@ruraldevelopment.gov.za
WELTEVREDEN 324 JS	7/324	National Department of Land Affairs	Ms Phindi Sibanyoni	136551000		-	prsibanyoni@ruraldevelopment.gov.za
WILDEBEEFSFONTEIN 327 JS	9/327	Jacoba Smart Rachel				-	
	11/327	Petrus Johannes Prinsloo		136562347	826522135	henwi@wol.co.za	PO Box 225, Oogies, 2230 Die Heuwel, Klipportje 321S, Witbank 1042
WILDEBEEFSFONTEIN 327 JS	12/327	Herver Arnold Petrus Du Toit van Den	Mr Christo Du Plessis - GM	136925010	136974370	christod@mccarthy.co.za	PO Box 14257, Leraatsfontein, 1038
WILDEBEEFSFONTEIN 327 JS	14/327	Gert Fredrick Meyer		135909065	829673597	-	PO Box 328, Ogies, 2230
WILDEBEEFSFONTEIN 327 JS	15/327	Ingwe Surface Holdings	BHP Billiton			-	
WILDEBEEFSFONTEIN 327 JS	17/327	Wentzel Allewyn Francois				-	
WILDEBEEFSFONTEIN 327 JS	21/327	Herver Arnold Petrus Du Toit van Den		136925010	136974370	-	PO Box 14257, Leraatsfontein, 1038

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Farm Boundary	Farm Portion	Owner/Title Position	Contact Person	Telephone number	Cellphone Number	Email Address	Postal Address
WILDEBEEFONTEIN 327 JS	22/327	South African National Roads Agency	Ms Victoria Bota	124266200		botav@nra.co.za	Private Bag X17, Lynnwood Ridge, 0040
WILDEBEEFONTEIN 327 JS	16/327	Kirton Leslie Graham		136461267	737050429	-	PO Box 281, Ogies, 2230
WILDEBEEFONTEIN 327 JS	20/327	McLellan Edmund John		136928958	828750967	rina.mclellan@gmail.com	PO Box 1342, Witbank, 1035
WILDEBEEFONTEIN 327 JS	8/327	Ingwe Surface Holdings	BHP Billiton			-	
WILDEBEEFONTEIN 327 JS	10/327	Henwi Trust	Henriek Friederick Prinsloo		828910340	henwi@wol.co.za	
WILDEBEEFONTEIN 327 JS	13/327	Christoffel Marthinus Du Toit Van Rooyen		136431651	827838979	-	PO Box 2, Ogies, 2230
WILDEBEEFONTEIN 327 JS	37/327	Xstrata South Africa Pty Ltd	Ms Annalise Van Zyl- Environmental Supervisor	132448000	716891771	annalise.vanzyl@shandukacoal.com	
WILDEBEEFONTEIN 327 JS	38/327	Ingwe Surface Holdings	BHP Billiton			-	
WILDEBEEFONTEIN 327 JS	RE/327	Ingwe Surface Holdings	BHP Billiton			-	
ZAAIWATER 11 IS	RE/20/1 1	Glencore Operations South Africa Pty Ltd/Truter Boerdery Trust	Ms Annalise Van Zyl	132448000	716891771	annalise.vanzyl@shandukacoal.com	

3 Development context of Study Area

The KPSX: Weltevreden Project is located on portions of the farms Hartebeestlaagte 325 JS, Grootpan 7 IS, Prinshof 2 IS, Tweefontein 328 JS, Weltevreden 324 JS, and Wildebeestfontein 327 JS within the eMalahleni Local Municipality (ELM) of the Nkangala District Municipality in Mpumalanga. Detailed geographical information is provided within Table 3-1.

Table 3-1: Location details of the project

Province	Mpumalanga
Magisterial District	Witbank Magisterial District
District Municipality	Nkangala District Municipality
Local Municipality	eMalahleni Local Municipality
Nearest town	Ogies
Property	Hartebeestlaagte 325 JS Grootpan 7 IS Prinshof 2 IS Tweefontein 328 JS Weltevreden 324 JS Wildebeestfontein 327 JS
1:50 000 topographical map	2529CC; 2629AA
Relative centre coordinates of project area	South: 25° 59' 15.74" East: 29° 05' 06.60"
Recording method	ArcGIS 10.2
Rezoning requirements	The project area will require rezoning

Information pertaining to the development context of the project area was collated for the KPSX: South Project and is presented here again.

The development and planning context within which the KPSX: Weltevreden Project will operate was summarised from the following relevant sources:

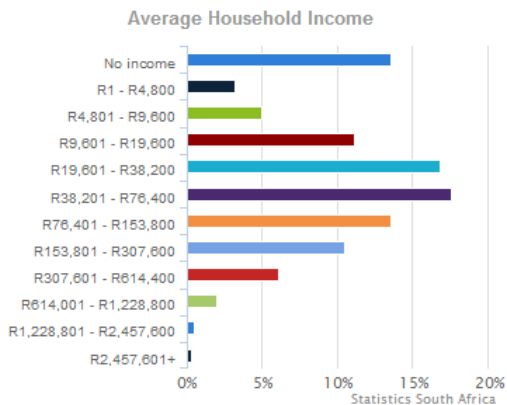
- Statistics South Africa (Statistics SA, 2011);
- eMalahleni Local Municipality Draft 2014/15 Integrated Development Plan (IDP) (eMalahleni Local Municipality, 2014); and
- Nkangala District Municipality 2013/14 IDP (Nkangala District Municipality, 2013)

Based on the 2011 census data, the ELM population stands at 395 466 with a population density of 148 persons/km². Of the total population, 190 662 people are considered economically active of which 27.3% are unemployed.

Economically, 13.5% of the population do not receive an income, where 36.1% receive less than R 3000.00 a month. This contributes to a dependency ratio of 40.4% for the ELM (Statistics SA, 2011).

Table 3-2: Summary of the employment status and household income of the eMalahleni Local Municipality population (Statistics SA, 2011)

Employment Status	Number	Income	Percentage
Employed	138548	No income	13,5%
Unemployed	52114	R1 - R4,800	3,2%
Discouraged Work Seeker	9612	R4,801 - R9,600	5%
Not Economically Active	81494	R9,601 - R19,600	11,1%
		R19,601 - R38,200	16,8%
		R38,201 - R76,4000	17,5%
		R76,401 - R153,800	13,5%
		R153,801 - R307,600	10,5%
		R307,601 - R614,400	6,1%
		R614,001 - R1,228,800	2%
		R1,228,801 - R2,457,600	0,5%
		R2,457,601+	0,3%



Industries leading employment growth include trade, mining and manufacturing. Comparing 2001 and 2011 statistics, indicates increased employment in the mining, construction, community services and finance sectors; trade decreased by 3% (eMalahleni Local Municipality, 2014).

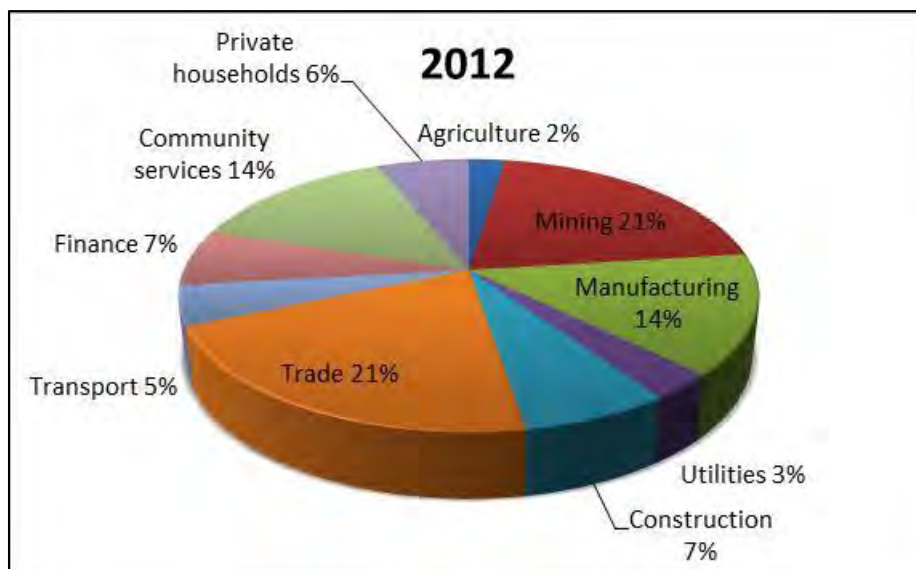


Figure 3-1: Employment sectors within the ELM (eMalahleni Local Municipality, 2014)

These dominant contributing sectors are reflected in the ELM IDP as the following key areas for economic development:

- Supporting industry to the mining sector;
- Diversification of the manufacturing sector;
- Establishing an Agriculture Development and Farmer Support Plan to stimulate the agricultural sector; and
- Facilitating the business tourism industry.

The Nkangala District Municipality (NDM) 2013/14 IDP identifies tourism growth promotion and the preservation and development of heritage sites as a “Programme of Action” within the Provincial Growth and Development Strategy (Nkangala District Municipality, 2013). Here, the primary corridors of the N4 and N12 routes present significant opportunities for economic spin-off and tourism potential, where it was noted that development opportunities in Ogies-Phola should be identified and developed (Nkangala District Municipality, 2013, p. 89). This has been done in part in the ELM IDP spatial and development plan (2014, p. 87), acknowledging the potential heritage significance in the study area.

In summary, the KPSX: Weltevreden Project is located within a planning context that will increase potential development. This may present cumulative impacts on heritage resources over time. Industrialisation and emphasis on agricultural development within the municipal area also increase risk to heritage. Considering potential positive impacts, sound heritage management practices that aim to promote preservation of heritage sites could contribute to sustainable employment in the tourism and heritage sectors.

4 Legislative Framework

The NID considered a legal framework that includes the NEMA, NEM:WA 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 NEM:WA

The NEM:WA stipulates under s. 48 that “when considering an application for a waste management licence, the licencing authority must take into account all relevant matters” that must include:

- The effect or likely effect of pollution on the environment, including cultural heritage;
- The best practicable environmental option available and alternatives that could be taken to protect the environment, including cultural heritage from harm as a result of the undertaking of the waste management activity.

4.3 NHRA

The NID was completed in terms of ss. 38(2) and 38(8) of the NHRA where:

- The responsible heritage resources authority must be notified of any development ...
- Impacts on potential heritage resources must be assessed as part of the EIA required under s. 23(2)(b); 24(1)(c) and 24(7)(b) of the NEMA; and
- 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.

4.4 BHP Billiton Sustainability Framework

The BHP Billiton Sustainability Framework acknowledges indigenous peoples’ culture, heritage and traditional rights as a human right and key focus area within the framework. It endeavours to identify, record, manage and protect indigenous cultural heritage.

A key standard performance requirement identified within the framework requires the exclusion of World Heritage listed properties from exploration and mining, and where activities occur adjacent to such properties, the project activities are compatible with the outstanding universal values for which the properties have been listed.

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 Published Literature

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

- Acocks, 1988;
- Bergh, 1999;
- Deacon & Deacon, 1999;
- Delius & Cope, 2007;
- Esterhuysen & Smith, 2007;
- Falconer, 1990;
- Goodwin & Van Riet Lowe, 1929;
- Lombard, et al., 2012
- Low & Rebelo, 1996
- Maggs, 1974; and
- Mucina, et al., 2006.

5.1.2 Reviewed Heritage Reports

Previously completed heritage studies within the study area were reviewed to expand on the background information discussed. The findings provide for 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. The following heritage cases and reports were found to be relevant:

- Birkholtz, P., 2013. *Addcar Project: Proposed Coal Mining on Sections of the Farms Blesbokfontein 31 IS, Klippoortje 32 IS, Nooitgedacht 37 IS, Blesbokfontein 38 IS, Hartebeestfontein 39 IS, Roodepoort 40 IS, Frischgewaagd 60 IS and Vierfontein 61 IS, eMalahleni Local Municipality, Mpumalanga Province*. Unpublished report (SAHRIS Case ID: 2261);
- De Jong, R.C., 2007. *Archaeological and Heritage Impact Assessment Report: Proposed New Goedgevonden Colliery Expansion Project on the Farms Goedgevonden 10 IS, Zaaiwater 11 IS and Kleinzuikerboschplaat 5 IS near Ogies, eMalahleni Local Municipality, Mpumalanga*. Unpublished report (SAHRA: 2007-SAHRA-0344);
- De Jong, R.C., 2009. *Draft Heritage Impact Assessment Report: Weltevreden RDP Project*, Unpublished report by Cultmatrix cc;

- Fourie, W., Steyn, H.S., Birkholtz, P.D., and Salomon, A.P.R., 2000. *Phase 1 Archaeological Survey of the Impunzi Division of Duiker Mining – Witbank/Ogies Area*. Unpublished report (SAHRA: 2000-SAHRA-0057);
- Fourie, W., 2012. *ATCOM East Expansion of the Impunzi Colliery, on Portions of the Farms Steenkoolspruit 18 IS, Van Dyksdrift 19 IS and Kromfontein 30 IS, Emalahleni, Mpumalanga Province*. Unpublished report by PGS: Heritage and Grave Relocation Consultants;
- Murimbika, M., 2006. *Phase 1 Cultural and Archaeological Heritage Assessment Specialist Study for the Proposed Three Borrow Pits Sites associated with the Rehabilitation and Upgrading of Surfaced Road P52/3 between Kriel and Ogies in eMalahleni Local Municipality, Mpumalanga Province*. Unpublished report (SAHRA: 2006-SAHRA-0193);
- Murimbika, M., 2010. *Draft Amended Scoping Report for the Proposed Construction of the 16 km 132 kV Powerline, Mpumalanga Province*. Unpublished report (SAHRIS Case ID: 898);
- Pelser, A.J., and van Vollenhoven, A.C., 2008. *A Report on a Cultural Resources Survey on the Farms Kleinkopje 15 IS and Steenkoolspruit 18 IS, Douglas Collieries, eMalahleni District, Mpumalanga Province*. Unpublished report (SAHRA: 2008-SAHRA-0147);
- Pelser, A.J., 2014. *A Report on a Phase 1 AIA for the Proposed Township Establishment on Portion 55 of the Farm Naauwpoort 335 JS (Command Park Ext. 1), eMalahleni, Mpumalanga*. Unpublished report (SAHRIS Case ID: 320);
- Pistorius, J.C.C., 2008. *A Phase 1 Heritage Impact Assessment (HIA) Study for Keaton Mining's (Pty) Ltd Proposed New Opencast and Underground Mining Activities on the Farm Vanggatfontein 251 East of Delmas on the Eastern Highveld in the Mpumalanga Province of South Africa*. Unpublished report (SAHRIS Case ID: 738);
- Tomose, N., 2011. *Phase 1 Heritage Impact Assessment: Proposed Vlakvarkfontein Colliery Expansion Project*. Unpublished report (SAHRIS Case ID: 578);
- Van Schalkwyk, J., 2002. *A Survey of Cultural Resources in the Proposed Klipspruit Mining Area, Witbank District, Mpumalanga*. Unpublished report (SAHRA: 2002-SAHRA-0028);
- Van Schalkwyk, J., 2003. *A Survey of Cultural Resources in the Khutala Colliery Block A Mining Area, Witbank District, Mpumalanga Province*. Unpublished report (SAHRA 2003-SAHRA-0027);
- Van Schalkwyk, J., 2006. *Heritage Impact Assessment for the Proposed New Power Station, Witbank Area*. Unpublished report (SAHRA: 2006-SAHRA-0358);
- Van Vollenhoven, A.C., 2012. *A Report on a Heritage Impact Assessment for the Umthombo Schoongezicht Colliery, Close to Delmas in the Mpumalanga Province*. Unpublished report (SAHRIS Case ID: 106);

- Van Vollenhoven, A.C., 2012. *A Report on a Heritage Impact Assessment (HIA) for the Proposed Eyethu Kromdraaicoal Mine, Close to Delmas, Mpumalanga Province*. Unpublished report (SAHRIS Case ID: 2077); and
- Van Vollenhoven, A.C., 2013. *A Report on a Cultural Heritage impact Assessment for a Proposed Opencast Mining Application on the Farm Welgelegen 221 IR, Close to Kendal, Mpumalanga Province*. Unpublished report (SAHRIS Case ID: 1901).

5.1.3 Databases

A review of relevant databases was completed to identify potential heritage resources that may be present in the KPSX: Weltevreden 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

Table 5-1: Aerial photographs reviewed in this report

Aerial photographs						
Job no.	Flight plan	Photo no.	Map ref.	Area	Date	Reference
38	034	05885 - 05890	2529	Middleburg/Witbank	1943	38/1943
	035	05905 - 05915				
	036	06050 - 06060				
340	001	17580 – 17583	2629	Bethal	1954	340/1954

Aerial photographs						
	002	16689 – 16691				
	003	16729				
548	001	10 – 15	2629; 2630	Bethal	1968	548/1968
556	006	00122	2528; 2529	Bronkhorstspuit	1965	556/1965
	007	135 – 140				
750	001	30 – 35	2628; 2629	Bethal	1975	750/1975
498/137	005	410 – 420	2529; 2628; 2629	Middleburg/Witbank	1979	498/137/1979
	006	115 – 130				
951	None	0130 – 0133	2528; 2529	Pretoria	1991	941/1991
	014	2100 – 2105				
498/337	004	0532 – 0543	2529; 2628; 2629	Witbank	1997	498/337/1997
	005	0572 – 0582				

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

As indicated in the heritage assessment compiled for the BECSA KPSX: South Project, the study area is situated in a predominantly historical landscape. This is based on reviewed information sources (Refer to sections 5.1 and 9), and as such the discussion will focus on the Historical Period with nominal background to earlier periods.

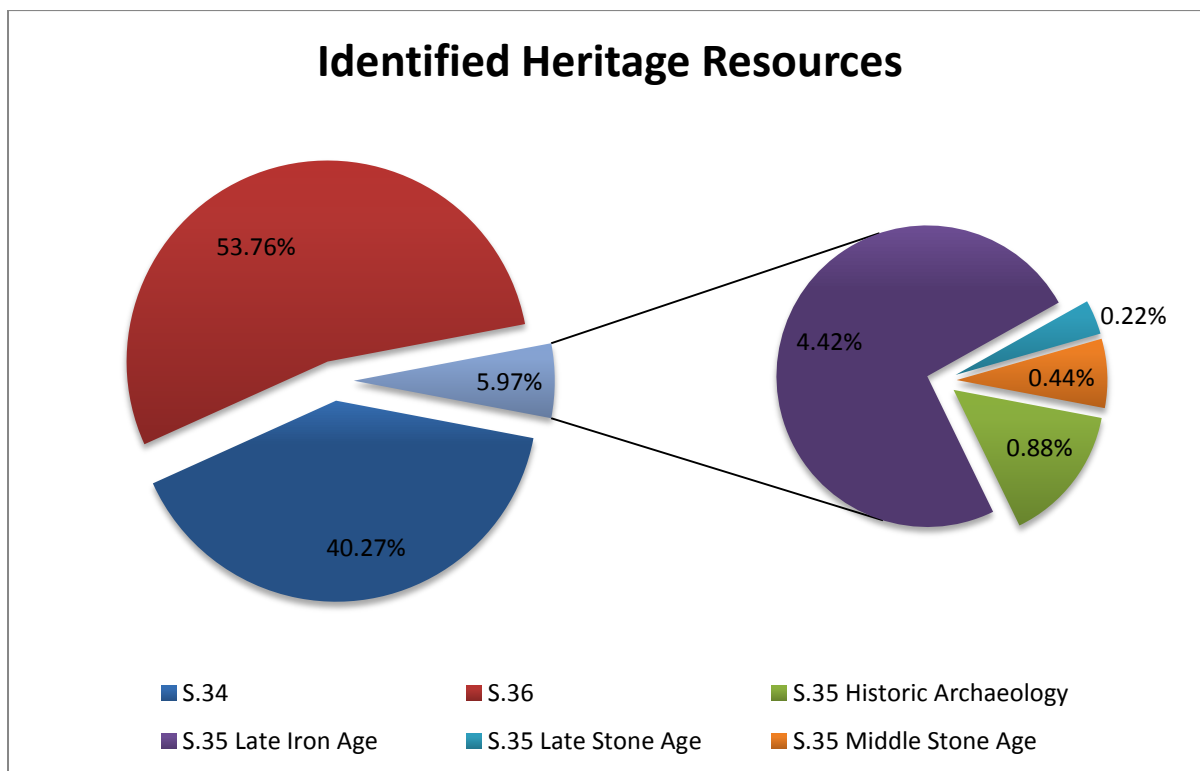


Figure 6-1: Identified heritage resources classification within the KPSX: Weltevreden study area

6.1 Geology and Palaeontology

Geologically, the KPSX: Weltevreden project area comprises of the coal-bearing Ecca Group of the Karoo Sequence, referred to as the greater Springs-Witbank Coalfield. A review of the assessment completed by van der Berg (2009) for the Klipspruit Colliery Project, revealed the stratigraphic composition to contain diamictite deposits (See Table 6-1).

Table 6-1: Stratigraphic composition of the KPSX: Weltevreden study area (Adapted from van der Berg, 2009)

Description	Stratigraphic Levels
Overburden	UPPER
Sandy gravel	
Sandstone	
Mudstone	
Fines	
Shale (Carbonaceous)	LOWER
Coal	
Diamictite	



Figure 6-2: Palaeo-Sensitivity Map of the study area, with the approximate extent of the KPSX: Weltevreden project area depicted in black (SAHRIS, 2014)

The diamictite deposits are overlain by rocks from the *Vryheid Formation* consisting mainly of shales alternating with coal seams. These coal seams developed through the deposition of plant materials over a long period of time. Palaeontologically¹, the deposition of organic material increases the likelihood of fossil remains and therefore this coal rich formation has a high sensitivity rating (See Figure 6-2).

Vertebrates that occurred at this time are seldom preserved with the plants, (Bamford, 2012; SAHRIS, 2014), and none have been recorded in the *Vryheid Formation*.

Plant fossils described by Bamford (2011) include; *Azanniodendron fertile*, *Cyclodendron leslii*, *sphenophyllum hammanskraalensis*, *Annularia sp.*, *Raniganjia sp.*, *Asterotheca spp*, *Liknopetalon enigmata*, *Glossopteris > 20 species*, *Hirsutum 4 spp.*, *Scutum 4 spp*, *Ottokaria 3 spp.*, *Estcourtia sp.*, *Arberia 4 spp.*, *Lidgettonia sp.*, *Noeggerathiopsis sp.* and *Podocarpidites sp.*

6.2 Soils, Climate and Vegetation

Based on the underlying geology, soils found within the project area are represented by the Ba4 (69.83%) and Bb13 (30.17%) Land Types of the 2528 and 2628 Pretoria and East Rand Land Types. The natural fertility of higher elevated soil on the hills is low because of the high sand content influenced by the weathering of quartz rich parent material, and the natural low

¹ Cf. NHRA Section 2(xxxi) "palaeontological" means any fossilised remains or fossil trace of animals or plants which lived in the geological past, **other than fossil fuels or fossiliferous rock intended for industrial use**, and any site which contains such fossilised remains or trace;

pH of the soil. Cultivation of these soils would require cognisance of the natural acidification process and act to neutralise it to prevent any further deterioration of the already low fertility status of the soil (Digby Wells, 2014). However, soils located in the smaller areas in the valley bottom positions may have higher fertility owing to the accumulation of nutrients leached from the sandy soil.

The study area lies within the Grassland Biome of the high central plateau of South Africa. The grasslands are dominated by a single layer of grasses maintained largely by the combination of high summer rainfall and fires, frost and grazing (Low & Rebelo, 1996; Mucina, Rutherford, & Powrie, 2006). The KPSX: Weltevreden project area specifically, is classified as Eastern Highveld Grassland according to the most recent vegetation classifications (Mucina, Rutherford, & Powrie, 2006) with a vegetation type that is predominantly sour (Acocks, 1988). This is consistent with the distribution of sour grasslands that occur in the high rainfall eastern grassland regions on relatively acidic (leached) soils of the project area.

From the summary of the geology, soils and vegetation, it is evident that sustainable pre-maize grain-based agriculture in the region would have been limited in the past, with prime locations being in the more fertile soils of the valley bottoms. The implications of this are discussed under the sections that follow.

6.3 The Cultural / Historical Record

6.3.1 The Archaeological Record

The archaeological record begins with the Stone Age. Artefacts associated with the Middle Stone Age (MSA) and Late Stone Age (LSA) have been identified in the study area (Fourie, Steyn, Birkholtz, & Salomon, 2000) some 10 km from the KPSX: Weltevreden project area. Briefly, this period is associated with the manipulation of stone to create tools, from both cores and flakes, which through time became more specialised and varied. The Stone Age dates from as early as 2.5 million years ago through to less than 150 years ago (Goodwin & Van Riet Lowe, 1929; Deacon & Deacon, 1999; Lombard, et al., 2012). During the MSA, commonly produced tools included long parallel-sided and triangular flakes. Delius and Cope (2007) notes that the MSA has not been extensively studied in the region.

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 for cutting meat and scraping hides (Delius & Cope, 2007).

Early Iron Age sites are underrepresented in the Mpumalanga Province. These groups moved into the eastern lowlands by the 5th century AD. Found in similar areas, most are located within close proximity to water courses to utilise nutrient rich alluvial soils for agriculture (Esterhuysen & Smith, 2007). Late Iron Age (LIA) stonewalling was also identified along the Olifants River (Fourie, Steyn, Birkholtz, & Salomon, 2000). As discussed in Delius & Cope (2007) and reproduced in De Jong (2009), the LIA in Mpumalanga dates to the 15th century onwards. These are commonly associated with the Sotho, Swazi and Ndebele in this

region of Mpumalanga, however the Eastern Highveld has not been extensively researched (Maggs, 1974). Characteristic of settlements of this time period are extensive stone walling.

Current understanding of the natural environment of the project area as discussed under section 6.2 suggest that the identification of archaeological remains associated with the Stone Age and Iron Age periods are exceptions rather than the rule. This is consistent with findings contained in heritage studies previously conducted in the region, where Stone Age and Iron Age finds only constitute 4.42% of the identified heritage resources (See Figure 6-1). Of the 27 identified s.35 sites, 20 are associated with the LIA, although none have been identified within the KPSX: Weltevreden project area.

6.3.2 The Historical Period

The historical period is primarily considered as recorded history through written text (Anonymous, 2004). It is therefore strongly associated with missionaries and/or European travellers. The earliest recorded date of European presence is 1836, when Robert Schoon and his party travelled to Lourenço Marques, followed closely by the Voortrekkers in 1840 (Bergh, 1999).

The establishment of a Boer settlement at Ohrigstad in 1845 marked the beginning of the phase of settlement in Mpumalanga. Delius and Cope (2007, p. 142) writes, *“Once the Trekkers had established what they saw as their right to the land they set about distributing it among themselves. The land was demarcated into large farms and title deeds were issued. ...Farms, which were not distributed, remained government property and the ZAR, which battled to raise revenue, increasingly fell back on its principal asset – land”*.

The dates, name origins and original farm ownership details of the farms within the KPSX: Weltevreden project area is provided in Table 6-2, providing information about past inhabitants and insight into how these groups interpreted the landscape.

**Table 6-2: Original details for farms within the KPSX: Weltevreden project area
(Adapted from De Jong, 2009)**

FARM	NAME ORIGIN	FIRST OWNER(S)	YEAR ALLOCATED
Hartebeestlaagte 325 JS	Low-lying place frequented by red hartebeest (<i>Alcelaphus buselaphus</i>)	MP Klaasse	1870
Weltevreden 324 JS	Very satisfied	NA Schalekamp	1870
Tweefontein 328 JS	Two springs	DJ Muller	1870
Wilbeestfontein 327 JS	Spring frequented by (black) wildebeest (<i>Connochaetes gnou</i>)	JP Botha	1870
Oogiesfontein 4 IS	Source of a spring	GW van Niekerk	1870
Grootpan 7 IS	Large pan on farm	J Kelly	1870
Zaaiwater 11 IS	Unknown	JP Joubert	1869

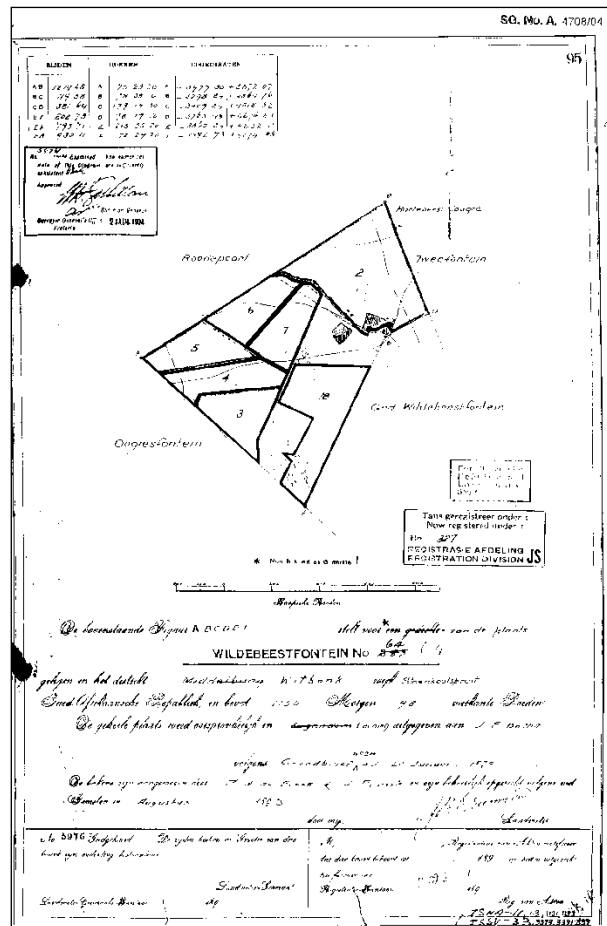


Figure 6-3: Cadastral diagram of Wildebeestfontein dated 1893 (De Jong, 2009)

Over the years these properties were divided and sub-divided many times, where in some cases each portion would have a separate farmstead. Black farm labourers, the most consistent form of farm labour were permitted to reside in homesteads away from the white farmers. Based on these historical settlements, there is a distribution of farmstead graves throughout the region (De Jong, 2009).



Figure 6-4: Image of De Jong-2009/GY 8 as example of farmstead graves (De Jong, 2009)

The earliest aerial imagery for the KPSX: Weltevreden project area dates to 1943 (Figure 6-5). It is evident that impact on the natural landscape was limited, primarily associated with agriculture and plantations. This image also provided evidence of built structures associated with the various farmsteads.

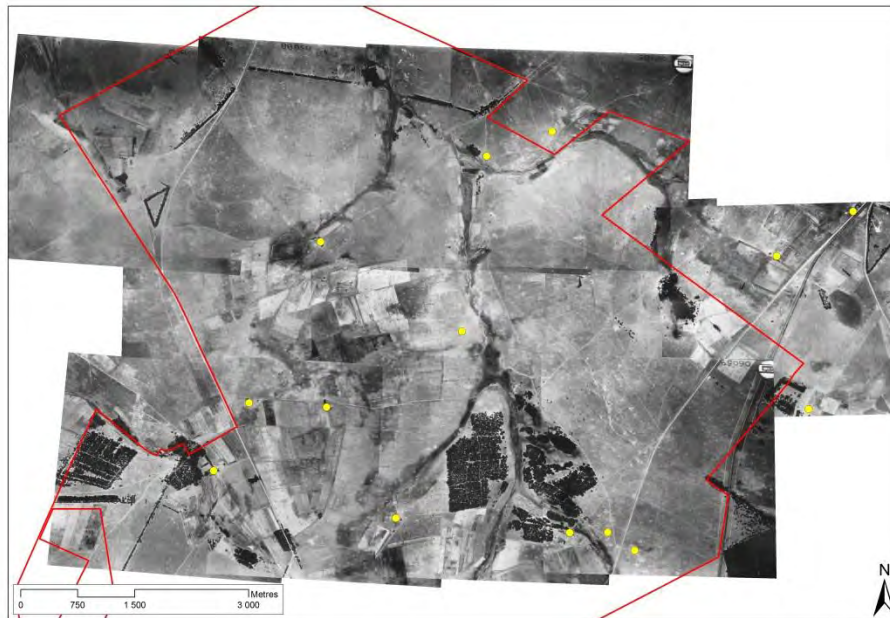


Figure 6-5: Aerial imagery of portions of the KPSX: Weltevreden project area dated 1943. Identified built structures indicated by yellow.

The region saw an increase in agriculture within 11 years, as indicated in a 1954 aerial image. Far larger portions of the current project area had been changed due to these activities. In addition, a significant increase in the number of structures within the project area is also evident. These structures may be inferred to be associated with the various farmsteads, as well as the established town of Ogies visible to the west of the project area in Figure 6-6.

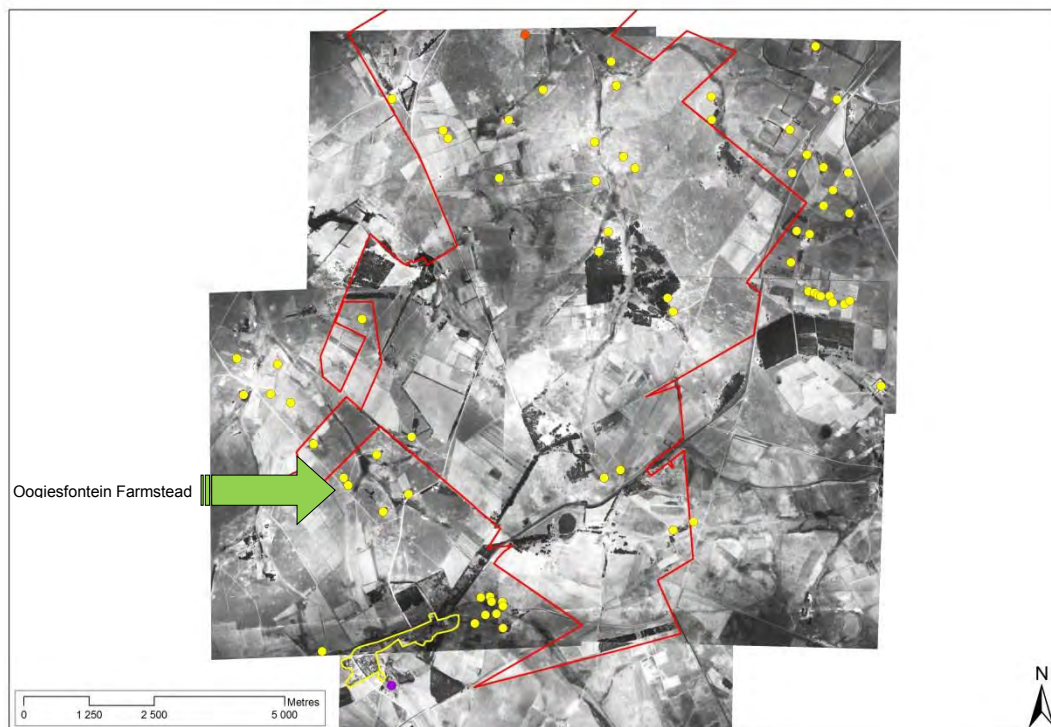


Figure 6-6: Aerial imagery of the KPSX: Weltevreden project area dated 1954. Identified built structures indicated in yellow, potential archaeological site in orange, and Ogies cemetery in purple.



Figure 6-7: Portion of 1954 aerial image showing sites De Jong-2009/FR 6 (top left), De Jong-2009/FR 5 (top right), De Jong-2009/GY 8 (centre) and the Oogiesfontein farmstead De Jong-2009/FR 7 (bottom and image on right © De Jong, 2009)

A reconnaissance field survey conducted by De Jong (2009) verified the existence of farmstead structures identified in the aerial imagery, as well as the associated burial grounds and graves (See Figure 6-4 and Figure 6-7).

Subsequent to the establishment of farms in the region, the discovery of coal and its exploitation has been a dominant activity in the area. Coal deposits in the study area have been exploited by European settlers since the 1860s. Early coal mining was reported by Thomas Baines in 1868, stating that farmers in the Middleburg district were extracting

outcropped coal for their own use (Delius & Cope, 2007). Driven by other industries associated with, first the discovery of diamonds in Kimberley in 1867, and later with the discovery of gold on the Witwatersrand (Pistorius, 2008), the coal mining industry in the study area reached large-scale production.

The town Ogies was established in 1885 on the farm Oogiesfontein as a direct result of the increasing coal mine industry as evident by the opening of the Steenkoolspruit Mine, Brugspruit Adit, Maggies Mine, and Douglas Mine (at Balmoral) in 1889 (Falconer, 1990). However, with the discovery of coal on the East Rand, and the lack of a cost-effective railway line, mining production on the Witbank halted. A railway line was constructed in 1894 to revive and service the several collieries in the area (See Figure 6-8), providing a viable supply of coal to the Witwatersrand. The town was established as a mining town to cater for the construction and subsequent operation of the Oogjes-Tweefontein Mine on the farm Klein Zuikerbosplaat. This mine was officially opened in 1903 (eMalahleni Local Municipality, 2014). Witbank (*today eMalahleni*) was established in 1903 as another coal mining town, mainly catering for the Neumann's Witbank Colliery. Commercial exploitation of the coal deposits were focused around present day eMalahleni (*approximately 15 km from the project area*), although from more recent aerial imagery dated to 1954, mining activities associated with the Minnaar Colliery can clearly be seen (Figure 6-9).

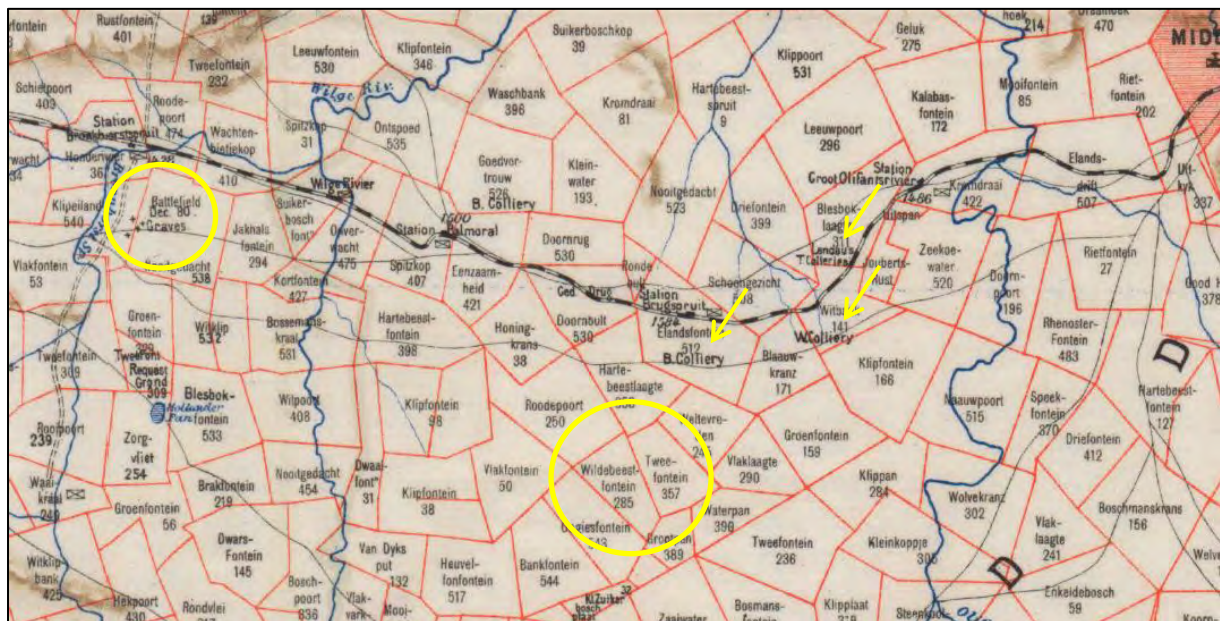


Figure 6-8: 1899 Jeppe Map with established collieries indicated. Also indicated are the locations of the Bronkhorstspruit Battle (c.1880) and the KPSX: Weltevreden Project Area



Figure 6-9: Minnaar Colliery with compound (Site M) on the left and the large Minnaar Location (Site L) on the right (c. 1954) (Adapted from De Jong, 2009)

From the above discussion, it has been demonstrated that the current cultural landscape is associated with the coal mining industry with limited evidence of any authentic pre-industrial occupation. The development is therefore a continuation of this industrial landscape and heritage that originated in the late 19th century.

7 Sources of Risk

Sources of risk were determined considering the potential Listed Activities for which BECSA is applying for environmental authorisation (listed in Table 7-1). At the time of compiling this report, clarification on proposed activities was still pending. As such, all envisaged activities have been included here to comprehensively identify all potential sources of risk to heritage resources within and surrounding the KPSX: Weltevreden project area.

Table 7-1: Listed Activities for which environmental authorisation are being applied

GNR	Activity No.	Description
GNR 544	1	The construction of facilities or infrastructure for the generation of electricity where: iii. The electricity output is more than 10 MW but less than 20 MW; or iv. The output is 10 MW or less but the total extent of the facility covers an area of 1 ha
	2	The construction of facilities or infrastructure for the storage of ore or coal that required an atmospheric emissions license in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).
	10	The construction of facilities or infrastructure exceeding 1 000 metres in length for the bulk transportation of water, sewage or storm water:

GNR	Activity No.	Description
		iii. With an internal diameter of 0.36 metres or more; or iv. With a peak throughput of 120 litres per second or more.
	11	The construction of facilities or infrastructure for the transmission and distribution of electricity: iii. Outside urban areas or industrial complexes with a capacity of more than 33 kV but less than 275 kV; or iv. Inside urban areas or industrial complexes with a capacity of 275 kV or more.
	12	The construction of facilities or infrastructure for the off-stream storage of water including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 19 of Notice 545 of 2010.
	20	Any activity requiring a mining permit in terms of Section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) or renewal thereof.
	22	The construction of a road, outside urban areas: iv. With a reserve wider than 13.5 metres; or v. Where no reserve exist the road is wider than 8 metres; or vi. For which an environmental authorization was obtained for the route determination in terms of Activity 5 in GN 387 of 2006, or Activity 18 in Notice 545 of 2010.
	26	Any process or activity identified in terms of Section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
	37	The expansion of facilities or infrastructure for the bulk transportation of water, sewage or storm water where: c) The facility or infrastructure is expanded by more than 1 000 metres in length; or d) Where the throughput capacity of the facility or infrastructure will be increased by 10% or more – Excluding where such expansion: iii. Relates to the transportation of water, sewage or storm water within a road reserve; or iv. Where such expansion will occur within the urban areas but further than 32 metres from a watercourse, measures from the edge of the watercourse.
	52	The expansion of facilities or infrastructure for the transfer of water from and to or between any combination of the following: iv. Water catchments; v. Water treatment works; or vi. Impoundments; Where the capacity will be increased by 50 000 cubic metres or more per day but excluding water treatment works where water is treated for drinking purposes.
GNR 546	2	The construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres.
	19	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre outside urban areas, in: x) A protected area identified in terms of NEMPAA, excluding conservancies; xi) National Protected Area Expansion Strategy Focus areas; xii) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; xiii) Sites or areas identified in terms of an International Convention; xiv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; xv) Core areas in biosphere reserves; xvi) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; xvii) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; xviii) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined.

GNR	Activity No.	Description
	23	The expansion of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage facilities will be expanded by 30 cubic metres or more but less than 80 cubic metres.
GNR 545	3	The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres
	5	The construction of facilities or infrastructure for any purpose or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of Section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case that Act will apply.
	19	The construction of a dam, where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the high water mark of the dam covers an area of 10 hectares or more.
	20	Any Activity which requires a mining right or renewal thereof as contemplated in Sections 22 and 24 respectively of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
	21	Any Activity which requires an exploration right or renewal thereof, as contemplated in Sections 79 and 81 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
	26	Commencing of an Activity, which requires an atmospheric emissions license in terms of Section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), except where such commencement requires basic assessment in terms of Notice of No. R 544 of 2010.

7.1 Construction Phase

The highest likelihood of changes to heritage resources is associated with activities that will be undertaken during the construction phase of the proposed KPSX: Weltevreden project. Here, the potential negative impacts, such as damage or destruction, is the greatest.

Activities identified as sources of risk during construction include:

- GN R 544 Activity 1, 2, 10, 11, and 12; GN R 546 Activity 2; and GN R 545 Activity 3, 5, and 19: Construction of facilities and infrastructure will cause damage to or destroy any physical heritage resources that may be present in the footprint areas;
- GN R 544 Activity 22 and GN R 546 Activity 19: The construction and/or widening of roads will cause damage to or destroy any physical heritage resources that may be present in the impact footprint; and
- GN R 544 Activity 37 and 52; and GN R Activity 23: Physical alteration of land in connection with the expansion of facilities will change the character of the land and possibly destroy *in situ* heritage resources.

7.2 Operational Phase

During the operation 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 alteration of

the sense-of-place of the project area. However, as identified in previous sections, the study area is predominantly associated with an industrial landscape, thus negating the intensity of this risk to heritage resources.

7.3 Decommissioning Phase

No sources of risk to heritage resources are envisaged for the decommissioning phase of the project at this stage. However, if structures older than 60 or 100 years at the time of decommissioning exist, these may be impacted upon by decommissioning of the KPSX: Weltevreden project.

7.4 Cumulative Impacts

Cumulative impacts on heritage resources have been identified in the discussion of the development context of the project under section 3. Additional cumulative impacts that may occur include:

- Enhancing of the industrial, mining sense-of-place ;
- Loss of identified heritage resources through the activities listed in Table 7-1 could decrease the significance of the landscape while increasing the significance of the remaining *in situ* heritage resources;
- Population increase through an influx of additional workers could potentially impact on tangible built environment and burial grounds and graves heritage resources in the surrounding study area, which if managed correctly in line with the development context, could be positive;
- Chance finds of palaeontological resources through extensive mining could contribute to the palaeontological record thereby enhancing both the cultural and natural significance of the landscape;
- Loss of access to burial grounds and graves and/or intangible heritage.

8 Conclusion and Recommendations

The proposed KPSX: Weltevreden Project is located in the Mpumalanga Province to the east of Ogies. A draft HIA was compiled by Cultmatrix cc (De Jong, 2009) in which the cultural landscape was described as a “Historical Farmland Context”. A review of the relevant literature and other reports for the study area confirm this classification when one considers the distribution of identified heritage resources.

As stated under Section 6.3, archaeological and palaeontological (s.35) heritage resources only constitute 6% of all identified heritage resources in the study area. The majority of resources identified are associated with burial grounds and graves (s.36), accounting for 54%. The remaining 40% of identified resources relate to the historic built environment (s.34).

Taking into consideration the past natural environment the lack of intensive occupation of the landscape prior to the 14th century may be explained. The climate and soils would not have

supported large farming communities without the ability to manipulate and neutralise soils to allow large-scale crop farming.

The discovery of coal in the region also spurred its commercial exploitation in support of the diamond and gold mining industries to the west. As evident in the Jeppes Map of the Transvaal (1899), several collieries and the railway were well established before the start of the 20th century.

These activities in the study area have extensively altered the cultural landscape to the point where the identification of significant pre-colonial archaeological resources is reduced. Conversely, the potential of more historical heritage, including resources protected in terms of s.34 (structures older than 60 years) and s.36 (burial grounds and graves) of the NHRA increases. Some of these resources have been identified within the KPSX: Weltevreden project area through the review of historical aerial imagery and through field reconnaissance by De Jong (2009).

8.1 Recommendations

Based on the findings contained within this report, and taking cognisance of the recommendations provided by Cultmatrix cc (De Jong, 2009), Digby Wells recommends the following:

- Considering the evidence for other heritage resources to occur in the project area, it is recommended that a HIA be undertaken that should include the following specialist heritage components:
 - A palaeontological desktop assessment to determine the real potential of significant fossils based on available geological and geochemical data. This assessment should provide further recommended mitigation and management measures;
 - An assessment of the built environment including a field reconnaissance survey to identify, record, and document all structures that may exist in the project area, in addition to those identified by Cultmatrix cc (De Jong, 2009). This assessment should provide an inventory of structures that may require permits or management plans to be integrated into the EMP;
 - An assessment of burial grounds and graves including a field reconnaissance survey to identify, record and document all burials that may exist in the project area, in addition to those identified by Cultmatrix cc (De Jong, 2009);
 - Results from other specialist studies should be integrated to determine any possible living heritage in the project area. Studies that may be considered for integration include Stakeholder Engagement, Socio-Economic Impact Assessment, Botanical Assessment and Visual Assessment;
- Exemption from a comprehensive Archaeological Impact Assessment (AIA) based on the findings from the Cultmatrix cc (De Jong, 2009), and low distribution of identified s. 35 heritage resources throughout the region;

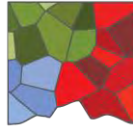
- The HIA should include a register of heritage-specific authorisations that may be required if the project is awarded a mining right. This register should be included in the EIA and EMP.

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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, Pilanesberg, North West Province, South Africa	2006 2006	Recording of an identified Late Iron Age stonewalled 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 Swartkop 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 Thohoyadou 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 Thohoyadou 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@atkinglobal.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
Exxaro Belfast, Paardeplaats and Eerstelingsfontein GRP	Belfast, Mpumalanga, South Africa	2013 2014	Grave Relocation Plan for the Belfast, Paardeplaats and Eerstelingsfontein GRP	GRP	Project Manager, Heritage Consultant	On-going	Exxaro	Project is on-going	Exxaro Johan van der Bijl Johan.vanderbijl@exxaro.com



Nzoro 2 Hydro Power Project	Orientele 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 Greg.ovens@drdgold.com
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: Weltevreden 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
Ergo Rondebult Pipeline Basic Assessment	Johannesburg, South Africa	2014 2014	NID and Heritage Statement for the construction of the Rondebult Pipeline	NID	Heritage Consultant	1 Week	ERGO	Completed screening assessment and NID	ERGO
Kibali ESIA Update Project	Orientele Province, Democratic Republic of Congo	2014 2014	Update of the Kibali ESIA for the inclusion of new open-cast pit areas	Heritage Impact Assessment	Heritage Consultant	On-going	Randgold Resources	Project is on-going	Randgold Resources Charles Wells Charles.wells@randgoldresources.com
GoldOne EMP Consolidation	Westonaria, Gauteng, South Africa	2014 2014	Gap analysis for the EMP consolidation of operations west of Johannesburg	Gap Analysis	Heritage Consultant	On-going	Gold One International	Project is on-going	Gold One International



DIGBY WELLS
ENVIRONMENTAL



JOHAN NEL

Mr Johan Nel

Unit manager: Heritage Resources Management

Social Sciences

Digby Wells Environmental

1 EDUCATION

Date	Degree(s) or Diploma(s) obtained	Institution
2014	Integrated Heritage Resources Management Certificate, NQF Level 6	Rhodes University
2002	BA (Honours) (Archaeology)	University of Pretoria
2001	BA	University of Pretoria
1997	Matric with exemption	Brandwag Hoërskool

2 LANGUAGE SKILLS

Language	Speaking	Writing	Reading
English	Excellent	Excellent	Excellent
Afrikaans	Excellent	Excellent	Excellent

3 EMPLOYMENT

Period	Company	Title/position
09/2011 to present	Digby Wells Environmental	Manager: Heritage Resources Management unit
05/2010-2011	Digby Wells Environmental	Archaeologist
10/2005-05/2010	Archaic Heritage Project Management	Manager and co-owner
2003-2007	Rock Art Mapping Project	Freelance archaeologist Resident archaeologist



2002-2003	Department of Anatomy, University of Pretoria	Special assistant: Anthropology
2001-2002	Department of Anatomy, University of Pretoria	Technical assistant
1999-2001	National Cultural History Museum & Department of Anthropology and Archaeology, UP	Assistant: Mapungubwe Project,

4 EXPERIENCE

Johan Nel has 13 years of combined experience in the field of cultural heritage resources management (HRM) including archaeological and heritage assessments, grave relocation, social consultation and mitigation of archaeological sites. I have gained experience both within urban settings and remote rural landscapes. Since 2010 I have been actively involved in environmental management that has allowed me to investigate and implement the integration of heritage resources management into environmental impact assessments (EIA). Many of the projects since have required compliance with International Finance Corporation (IFC) requirements and other World Bank standards. This exposure has allowed me to develop and implement a HRM approach that is founded on international best practice and leading international conservation bodies such as UNESCO and ICOMOS. I have worked in most South African Provinces, as well as Swaziland, the Democratic Republic of the Congo, Liberia and Sierra Leone. I am fluent in English and Afrikaans, with excellent writing and research skills.

5 PROFESSIONAL REGISTRATION

Position	Professional Body	Registration Number
Council member	Association for Southern African Professional Archaeologists (ASAPA); ASAPA Cultural Resources Management (CRM) section	095
Member	International Association of Impact Assessors (IAIA)	N/A
Member	International Council on Monuments and Sites (ICOMOS)	
Member	Society for Africanist Archaeologists (SAfA)	N/A



6 PUBLICATIONS AND CONFERENCE PAPERS

Authors and Year	Title	Published in/presented at
Nel, J. (2001)	Cycles of Initiation in Traditional South African Cultures.	South African Encyclopaedia (MWEB).
Nel, J. 2001.	Social Consultation: Networking Human Remains and a Social Consultation Case Study	Research poster presentations at the. Bi-annual Conference (SA3) Association of Southern African Professional Archaeologists the National Museum, Cape Town
Nel, J. 2002.	Collections policy for the WG de Haas Anatomy museum and associated Collections.	Unpublished. Department of Anatomy, School of Medicine: University of Pretoria.
Nel, J. 2004.	Research and design of exhibition for Eloff Belting and Equipment CC	Institute of Quarrying 35th Conference and Exhibition on 24 – 27 March 2004
Nel, J. 2004.	Ritual and Symbolism in Archaeology, Does it exist?	Research paper presented at the Bi-annual Conference (SA3) Association of Southern African Professional Archaeologists: Kimberley
Nel, J & Tiley, S. 2004.	The Archaeology of Mapungubwe: a World Heritage Site in the Central Limpopo Valley, Republic of South Africa.	Archaeology World Report, (1) United Kingdom p.14-22.
Nel, J. 2007.	The Railway Code: Gautrain, NZASM and Heritage.	Public lecture for the South African Archaeological Society, Transvaal Branch: Roedean School, Parktown.
Nel, J. 2009.	Un-archaeologically speaking: the use, abuse and misuse of archaeology in popular culture.	The Digging Stick. April 2009. 26(1): 11-13: Johannesburg: The South African Archaeological Society.
Nel, J. 2011.	'Gods, Graves and Scholars' returning Mapungubwe human remains to their resting place.' In: Mapungubwe Remembered.	University of Pretoria commemorative publication: Johannesburg: Chris van Rensburg Publishers.



Nel, J. 2012	HIAs for EAPs.	. Paper presented at IAIA annual conference: Somerset West.
Nel, J. 2013.	The Matrix: A proposed method to evaluate significance of, and change to, heritage resources.	Paper presented at the 2013 ASAPA Biennial conference: Gaborone, Botswana.
Nel, J. 2013	HRM and EMS: Uncomfortable fit or separate process.	. Paper presented at the 2013 ASAPA Biennial conference: Gaborone, Botswana.

7 PROJECT EXPERIENCE

7.1 Archaeological Surveys and Impact Assessments

- 2003-2004. Freelance consulting archaeologist. Roodt & Roodt CC. RSA. Archaeological surveys. Specialist.
- 2004-2005. Resident archaeologist Rock Art Mapping Project. University of KwaZulu-Natal. Kwazulu-Natal, RSA. Rock art mapping & recording. Specialist.

7.2 Archaeological Mitigation

- 2007. Archaeological investigation of Old Johannesburg Fort. Johannesburg Development Agency. Gauteng, RSA. Archaeological mitigation. Project manager.
- 2008. Final consolidated report: Watching Brief on Soutpansberg Road Site for the new Head Offices of the Department of Foreign Affairs, Pretoria Gauteng. Imbumba-Aganang D & C Joint Venture. Gauteng, RSA. Watching Brief. Project manager.
- 2011. Sessenge archaeological site mitigation. Randgold Resources. Doko, DRC. Archaeological mitigation. Specialist.
- 2011. Mitigation of three sites, Koidu Kimberlite Project. Koidu Holdings SA. Koidu, Sierra Leone. Archaeological mitigation. Project manager.
- 2012. Boikarabelo Phase 2 Mitigation of Archaeological Sites. Ledjadja Coal (Pty) Ltd. Limpopo, RSA. Archaeological permitting and mitigation. Project manager.
- 2012. Additional Archaeology Mitigation of Sites. Ledjadja Coal (Pty) Ltd. Limpopo, RSA. Archaeological permitting and mitigation. Project manager.
- 2013. Archaeological Excavations of Old Well, Rhodes University, Grahamstown. Rhodes University. Eastern Cape, RSA. Archaeological mitigation. Specialist.
- 2014. Archaeological Site Destruction. Ledjadja Coal (Pty) Ltd. Limpopo, RSA. Archaeological permitting and mitigation. Project manager.



7.3 Heritage Impact Assessments

- 2005. Final consolidated Heritage Impact Assessment report: Proposed development of high-cost housing and filling station, Portion of the farm Mooiplaats 147 JT. Go-Enviroscience. Mpumalanga, RSA. Heritage Impact Assessment. Project manager.
- 2006. Final report: Heritage resources Scoping survey and preliminary assessment for the Transnet Freight Line EIA, Eastern Cape and Northern Cape. ERM Southern Africa (Pty) Ltd. Northern & Eastern Cape, RSA. Heritage Scoping Assessment. Project manager.
- 2007. Proposed road upgrade of existing, and construction of new roads in Burgersfort, Limpopo Province. AGES South Africa (Polokwane). Limpopo, RSA. Heritage Impact Assessment. Project manager.
- 2007. Recommendation of Exemption: Above-ground SASOL fuel storage tanks located at grain silos in localities in the Eastern Free State. Sasol Group Services (Pty) Ltd. Free State, RSA. Letter of Exemption. Project manager.
- 2008. Summary report: Old dump on premises of the new Head Offices, Department of Foreign Affairs, Pretoria, Gauteng. Imbumba-Aganang D & C Joint Venture. Gauteng, RSA. Archaeological Impact Assessment. Project manager.
- 2008. Van Reenen Eco-Agri Development Project. Go-Enviroscience. Kwazulu-Natal & Free State, RSA. Heritage Impact Assessment. Project manager.
- 2008. Heritage Impact Assessment for proposed water pipeline routes, Mogalakwena District, Limpopo Province. AGES South Africa (Polokwane). Limpopo, RSA. Heritage Impact Assessment. Project manager.
- 2008. Phase 1 Heritage and Archaeological Impact Assessment: Proposed establishment of an access road between Sapekoe Drive and Koedoe Street, Erf 3366 (Extension 22) and the Remainder of Erf 430 (Extension 4). AGES South Africa (Polokwane). Limpopo, RSA. Heritage Impact Assessment. Project manager.
- 2008. Heritage resources scoping survey and preliminary assessment: Proposed establishment of township on Portion 28 of the farm Kennedy's Vale 362 KT, Steelpoort, Limpopo Province. AGES South Africa (Polokwane). Limpopo, RSA. Heritage Scoping Assessment. Project manager.
- 2008. Randwater Vlakfontein-Mamelodi water pipeline survey. Archaeology Africa CC. Gauteng, RSA. Heritage Impact Assessment. Specialist.
- 2010. Heritage Impact Assessment for conversion of PR to MRA. Georock Environmental. Northwest, RSA. Heritage Impact Assessment. Project manager.
- 2010. Temo Coal Project. Namane Commodities (Pty) Ltd. Limpopo, RSA. Heritage Impact Assessment. Specialist.
- 2011. Marapong Treatment Works. Ceenex (Pty) Ltd. Limpopo, RSA. Archaeological Impact Assessment. Project manager.



- 2011. Complete Environmental Authorisation. Rhodium Reefs Ltd. Limpopo, RSA. Archaeological Impact Assessment. Specialist.
- 2011. Big 5 PV Solar Plants. Orlight (Pty) Ltd. Western and Northern Cape, RSA. Heritage Impact Assessment. Specialist.
- 2011. Heritage Impact Assessment for Koidu Diamond Mine. Koidu Holdings SA. Koidu, Sierra Leone. Heritage Impact Assessment. Specialist.
- 2012. TSF and Pipeline. Gold One. Gauteng, RSA. Heritage Impact Assessment. Project manager.
- 2012. Kangra Coal Heritage Screening Assessment. ERM Southern Africa (Pty) Ltd. Mpumalanga, RSA. Heritage Screening Assessment. Project manager.
- 2012. Environmental and Social Studies. Platreef Resources (Pty) Ltd. Limpopo, RSA. Heritage specialist advice. Project manager.
- 2012. ESKOM Powerline EIA. Ledjadja Coal (Pty) Ltd. Limpopo, RSA. Notification of Intent to Develop. Project manager.
- 2012. Falea Project ESIA. Denison Mines Corp. (Rockgate Capital Corp). Falea, Mali. Heritage Impact Assessment. Specialist.
- 2012. EIA for Proposed Emergency Measures to Pump and Treat. AECOM SA (Pty) Ltd. Gauteng, RSA. Heritage Impact Assessment. Specialist.
- 2012. Tonguma Baseline Studies. Koidu Holdings SA. Tonguma, Sierra Leone. Heritage Impact Assessment. Specialist.
- 2012. Vedanta IPP. Black Mountain Mining (Pty) Ltd. Limpopo, RSA. Heritage Impact Assessment. Specialist.
- 2012. Boikarabelo Railway Realignment. Ledjadja Coal (Pty) Ltd. Limpopo, RSA. Heritage Impact Assessment. Specialist.
- 2012. Platreef ESIA. Platreef Resources (Pty) Ltd. Limpopo, RSA. Heritage Impact Assessment. Specialist.
- 2012. Roodekop EIA. Universal Coal Development 4 (Pty) Ltd. Mpumalanga, RSA. Heritage Impact Assessment. Specialist.
- 2012. Kangala HIA. Universal Coal Development 1 (Pty) Ltd. Mpumalanga, RSA. Heritage Impact Assessment and permitting. Specialist.
- 2012. Roodepoort Strengthening. Eskom Holdings SOC Ltd. Gauteng, RSA. Notification of Intent to Develop. Specialist.
- 2012. Trichardtsfontein EIA / EMP. Xstrata Coal South Africa. Limpopo, RSA. Heritage Impact Assessment. Specialist.
- 2012. Zandbaken EIA/EMPR. Xstrata Coal South Africa. Limpopo, RSA. Heritage Impact Assessment. Specialist.



- 2013. ATCOM Tweefontein NID. Jones & Wagener (Pty) Ltd. Mpumalanga, RSA. Burial grounds and graves consultation, permitting and relocation. Project manager.
- 2013. Roodepoort Heritage Impact Assessment. Fourth Element Consulting (Pty) Ltd. Gauteng, RSA. Heritage Impact Assessment. Project manager.
- 2013. JHB BRT Phase 2 Heritage Impact Assessment. Iliso Consulting (Pty) Ltd. Gauteng, RSA. Heritage Impact Assessment. Project manager.
- 2013. Kangra Coal HIA. ERM Southern Africa (Pty) Ltd. Mpumalanga, RSA. Heritage Impact Assessment. Project manager.
- 2013. Slypsteen Bulk Sample Application. Summer Season Trading (Pty) Limited. Northern Cape, RSA. Heritage Impact Assessment. Project manager.
- 2013. Kempton Park Heritage Statement and NID. ERM Southern Africa (Pty) Ltd. Gauteng, RSA. Notification of Intent to Develop. Project manager.
- 2013. Sasol Twistdraai CFD. ERM Southern Africa (Pty) Ltd. Gauteng, RSA. Notification of Intent to Develop. Project manager.
- 2013. HRS & NID - River Crossings Upgrade. Iliso Consulting (Pty) Ltd. Gauteng, RSA. Notification of Intent to Develop. Project manager.
- 2013. Waterberg Prospecting Right Applications. Platinum Group Metals (Pty) Ltd. Limpopo, RSA. Notification of Intent to Develop. Project manager.
- 2013. Landau Waste Licence Application. Anglo Operations (Pty) Limited. Mpumalanga, RSA. Notification of Intent to Develop. Reviewer / specialist.
- 2013. Prospecting Right Consultation Report. Rustenburg Platinum Mines Limited. Mpumalanga, RSA. Notification of Intent to Develop. Reviewer / specialist.
- 2013. Witrand Prospecting EMP. Rustenburg Platinum Mines Limited. Mpumalanga, RSA. Notification of Intent to Develop. Reviewer / specialist.
- 2013. EMP Amendment for CST. Copper Sunset Trading (Pty) Ltd. Mpumalanga, RSA. Notification of Intent to Develop. Reviewer / specialist.
- 2013. Maseve IFC ESHIA. Maseve Investment (Pty) Ltd. Mpumalanga, RSA. Notification of Intent to Develop. Reviewer / specialist.
- 2013. Dalyshope ESIA. Anglo Operations (Pty) Limited. Limpopo, RSA. Heritage Impact Assessment. Specialist.
- 2013. Klipfontein Opencast Project. Bokoni Platinum Mines (Pty) Ltd. Limpopo, RSA. Heritage Impact Assessment. Specialist.
- 2013. Consbrey and Harwar MPRDA EIA/EMP. Msobo Coal (Pty) Ltd. Mpumalanga, RSA. Heritage Impact Assessment. Specialist.
- 2013. Slypsteen 102 EMP Amendment. Summer Season Trading (Pty) Limited. Northern Cape, RSA. Heritage Impact Assessment. Specialist.



- 2013. Putu Iron Ore ESIA. Atkins Limited Incorporated. Putu, Liberia. Heritage Impact Assessment. Specialist.
- 2013. Ash backfilling at Sigma Colliery. Sasol Mining (Pty) Ltd. Gauteng, RSA. Notification of Intent to Develop. Specialist.
- 2013. Syferfontein Block 4 - Underground Coal Mining for Sasol. Sasol Mining (Pty) Ltd. Mpumalanga, RSA. Notification of Intent to Develop. Specialist.
- 2013. Prospecting Right Amendment to Include Bulk Sampling. Sikhuliso Resources (Pty) Ltd. Mpumalanga, RSA. Notification of Intent to Develop. Specialist.
- 2013. Nooitgedacht EIA, EMP Amendment & Gap Analysis. Xstrata Coal South Africa. Limpopo, RSA. Heritage Impact Assessment. Specialist.
- 2014. Gold One EMP Consolidation Phase 0. Gold One. Gauteng, RSA. Heritage Impact Assessment. Reviewer / specialist.
- 2014. Kilbarchan Audit and EIA. Eskom Holdings SOC Ltd. Kwazulu-Natal, RSA. Heritage Impact Assessment. Reviewer / specialist.
- 2014. Klipspruit Extension Environmental Assessment. BHP Billiton Energy Coal South Africa Limited. Mpumalanga, RSA. Heritage Impact Assessment. Reviewer / specialist.
- 2014. Klipspruit South BECSA EIA. BHP Billiton Energy Coal South Africa Limited. Mpumalanga, RSA. Heritage Impact Assessment. Reviewer / specialist.
- 2014. EIA/EMP Soweto Cluster. DRD GOLD ERGO (Ergo Mining (Pty) Ltd. Gauteng, RSA. Notification of Intent to Develop. Reviewer / specialist.
- 2014. London Road Heritage Statement. ERM Southern Africa (Pty) Ltd. Gauteng, RSA. Notification of Intent to Develop. Reviewer / specialist.
- 2014. Grootegeluk MPRDA, NEMA and IWULA. Exxaro Coal (Pty) Ltd. Limpopo, RSA. Notification of Intent to Develop. Reviewer / specialist.
- 2014. Kibali ESIA & EMP Update. Randgold Resources. Doko, DRC. Heritage Impact Assessment. Specialist.
- 2014. Nokuhle Colliery NEMA Process. HCI Coal (Pty) Ltd. Mpumalanga, RSA. Heritage Impact Assessment. Specialist.
- 2014. HRM Process for Hendrina Wet Ashing. Lidwala Consulting Engineers (Pty) Ltd. Mpumalanga, RSA. Heritage Impact Assessment. Specialist.
- 2014. Weltevreden NEMA. Northern Coal (Pty) Ltd. Mpumalanga, RSA. Heritage Impact Assessment. Specialist.
- 2014. Sasol Sigma Mooikraal Pipeline BA. Sasol Mining (Pty) Ltd. Mpumalanga, RSA. Notification of Intent to Develop. Specialist.



7.4 Burial Grounds and Graves Consultation and Relocation

- 2005. Report on exhumation, relocation and re-internment of 49 graves on Portion 10 of the farm Tygervallei 334 JR, Kungwini Municipality, Gauteng D Georgiades East Farm (Pty) Ltd. Gauteng, RSA. Burial grounds and graves consultation, permitting and relocation. Project manager.
- 2005. Southstock Collieries Grave Relocation. Doves Funerals, Witbank. Mpumalanga, RSA. Burial grounds and graves consultation, permitting and relocation. Project manager.
- 2005. Social consultation for Smoky Hills Platinum Mine Grave Relocation. PGS (Pty) Ltd. Limpopo, RSA. Stakeholder consultation on burial grounds and graves. Social consultant.
- 2005. Social consultation for Elawini Lifestyle Estate Grave Relocation. PGS (Pty) Ltd. Mpumalanga, RSA. Stakeholder consultation on burial grounds and graves. Social consultant.
- 2006. Social consultation for Zonkezizwe Grave Relocation. PGS (Pty) Ltd. Gauteng, RSA. Stakeholder consultation on burial grounds and graves. Social consultant.
- 2006. Social consultation for Motaganeng Residential Development Grave Relocation. PGS (Pty) Ltd. Mpumalanga, RSA. Stakeholder consultation on burial grounds and graves. Social consultant.
- 2006. Social consultation for Zondagskraal Coal Mine Grave (Pty) Ltd. Mpumalanga, RSA. Stakeholder consultation on burial grounds and graves. Social consultant.
- 2007. Exploratory excavation of an unknown cemetery at Du Preezhoek, Fountains Valley, Portion 383 of the farm Elandspoort 357 JR, Pretoria, Gauteng. Bombela Civil Joint Venture. Gauteng, RSA. Burial grounds and graves consultation, permitting and relocation. Project manager.
- 2007. Final consolidated report: Phase 2 test excavations ascertaining the existence of alleged mass graves, Tlhabane West, Extension 2, Rustenburg, Northwest Province. Bigen Africa Consulting Engineers. Northwest, RSA. Burial grounds and graves consultation, permitting and relocation. Project manager.
- 2007. Repatriation of Mapungubwe Human Remains. Department of Environmental Affairs and Tourism. Limpopo, RSA. Repatriation. Project manager.
- 2008. Report on skeletal material found at Pier 30, R21 Jones Street off-ramp, Kempton Park. Bombela Civil Joint Venture. Gauteng, RSA. Heritage Scoping Assessment. Project manager.
- 2011. Kibali Grave Relocation. Randgold Resources. Doko, DRC. International grave relocation. Specialist.
- 2012. Platreef Platinum Mine Burial Grounds and Graves Census. Platreef Resources (Pty) Ltd. Limpopo, RSA. Stakeholder consultation on burial grounds and graves. Project manager.



- 2013. New Liberty Grave Relocation Process. Aureus Mining Inc. Kinjor, Liberia. International grave relocation. Project manager.
- 2013. Bokoni Burial Grounds and Grave Census and Grave Relocation Plan. Bokoni Platinum Mines (Pty) Ltd. Limpopo, RSA. Stakeholder consultation on burial grounds and graves. Project manager.
- 2014. Arnot Colliery Grave Relocation Project. Exxaro Coal (Pty) Ltd. Mpumalanga, RSA. Burial grounds and graves consultation, permitting and relocation. Project manager.
- 2014. Paardeplaats and Belfast RAPs. Exxaro Coal (Pty) Ltd. Mpumalanga, RSA. Burial grounds and graves consultation, permitting and relocation. Reviewer / specialist.
- 2014. Thabametsi EIA, EMP, IWULA, IWWMP and PPP. Exxaro Coal (Pty) Ltd. Limpopo, RSA. Stakeholder consultation on burial grounds and graves. Specialist.

7.5 Research Reports and Reviews

- 2007. Research report on cultural symbols. Ministry of Intelligence Services. RSA. Research report. Project manager.
- 2007. Research report on the remains of kings Mampuru I and Nyabela. National Department of Arts and Culture. RSA. Research report. Project manager.
- 2012. Baseline Scoping and Pre-feasibility Songwe Rare Earth Element Project. Mkango Resources Limited. Songwe, Malawi. Heritage Impact Assessment. Reviewer / specialist.
- 2013. Fatal Flaw Analysis and EIA Process for AMD Man in Eastern Basin. AECOM SA (Pty) Ltd. Gauteng, RSA. Heritage Impact Assessment. Reviewer / specialist.



Appendix B: Location and Site Maps

KPSX Weltevreden

Regional Setting 1-250 000

Legend

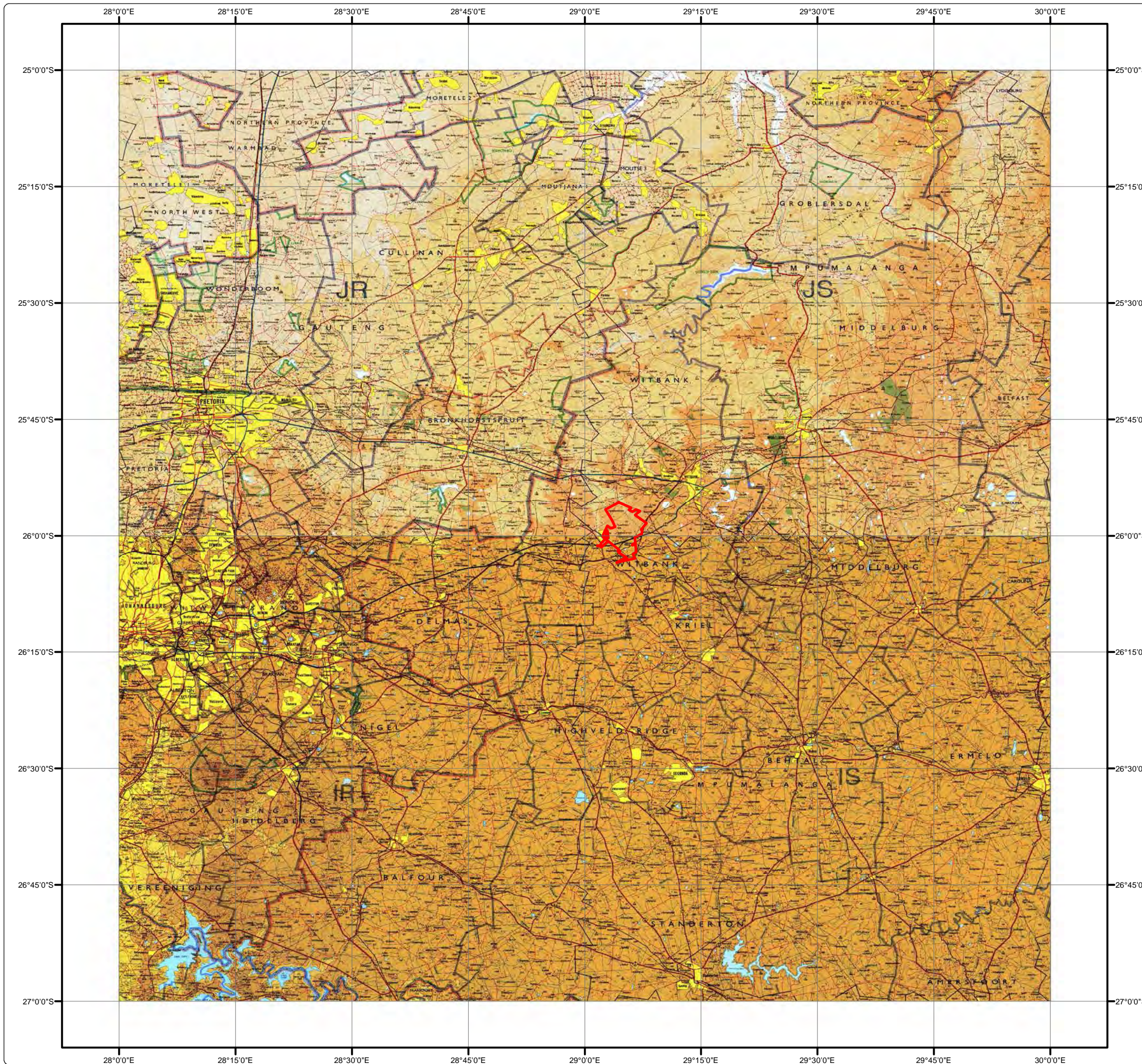
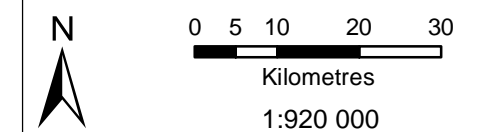
 Project Area

**2528 PRETORIA
2628 EAST RAND**



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

Projection: Transverse Mercator Ref #: idp.BHP2690.201405.022
Datum: WGS84 Revision Number: 1
Central Meridian: 29°E Date: 08/05/2014

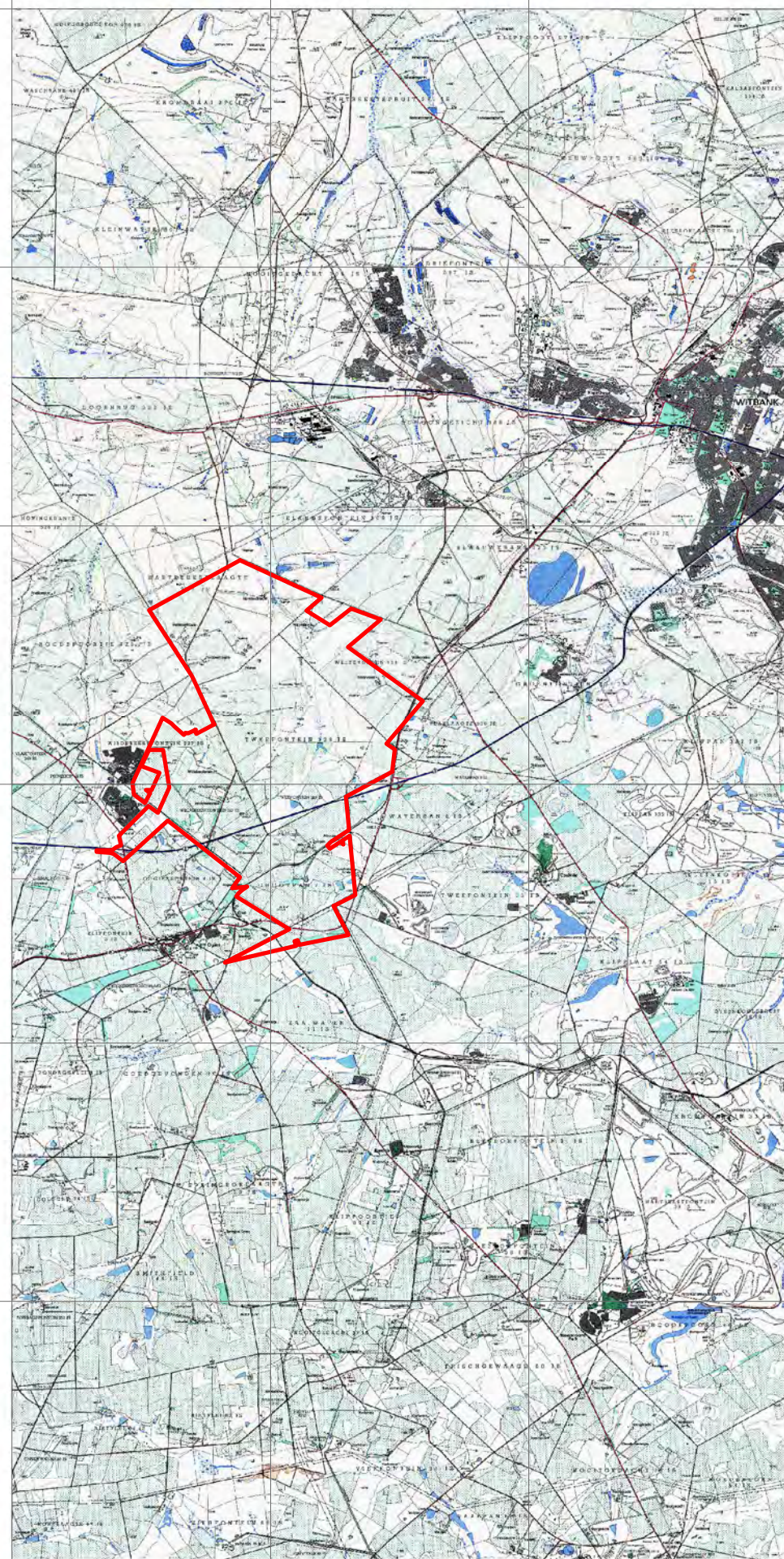


KPSX Weltevreden

Regional Setting 1-50 000

Legend

 Project Area



**2529CC WITBANK
2629AA OGIES**



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

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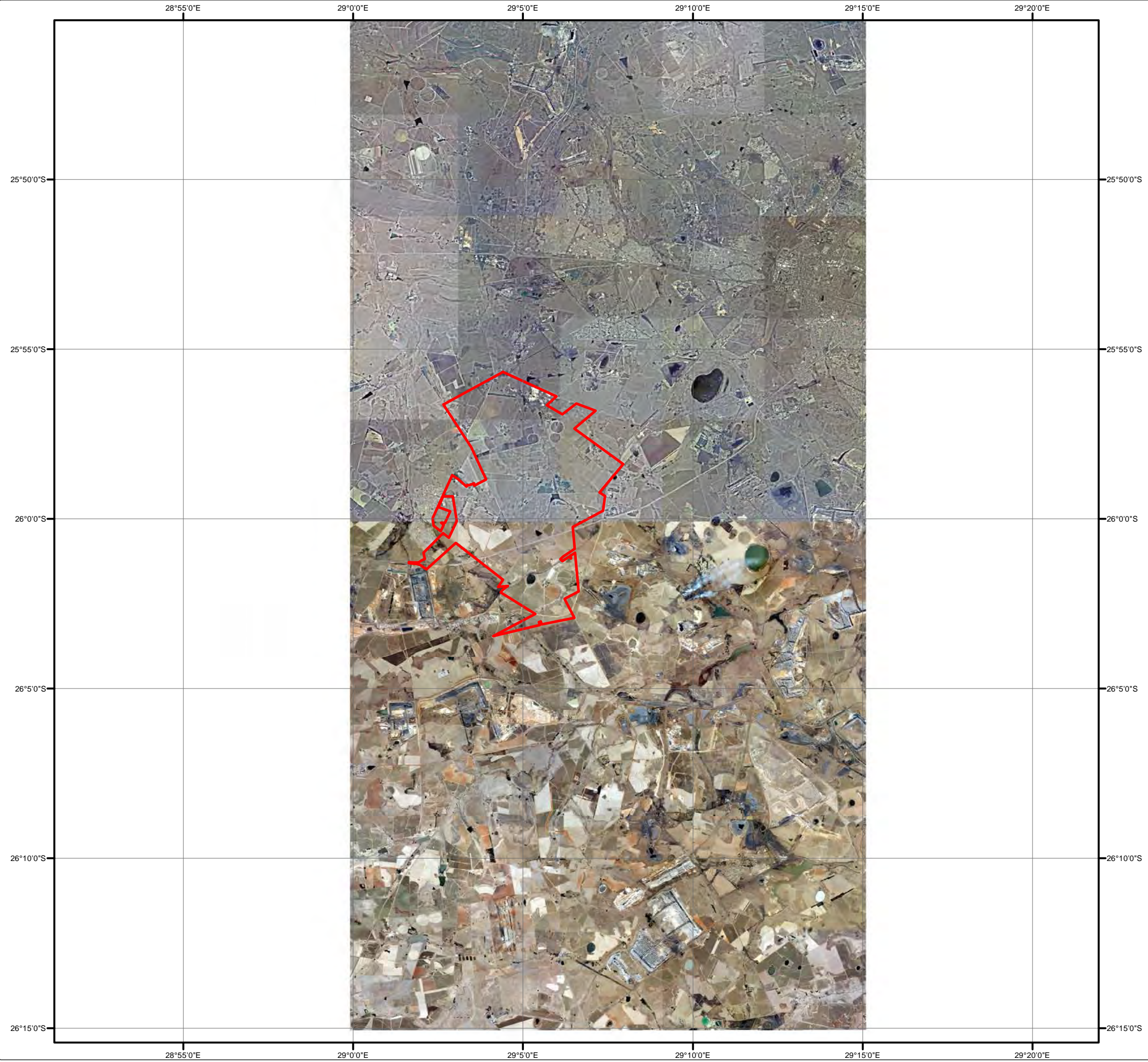
KPSX Weltevreden

Regional Setting

1-10 000

Legend

 Project Area

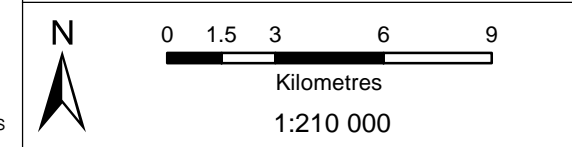


2529CC
2629AA



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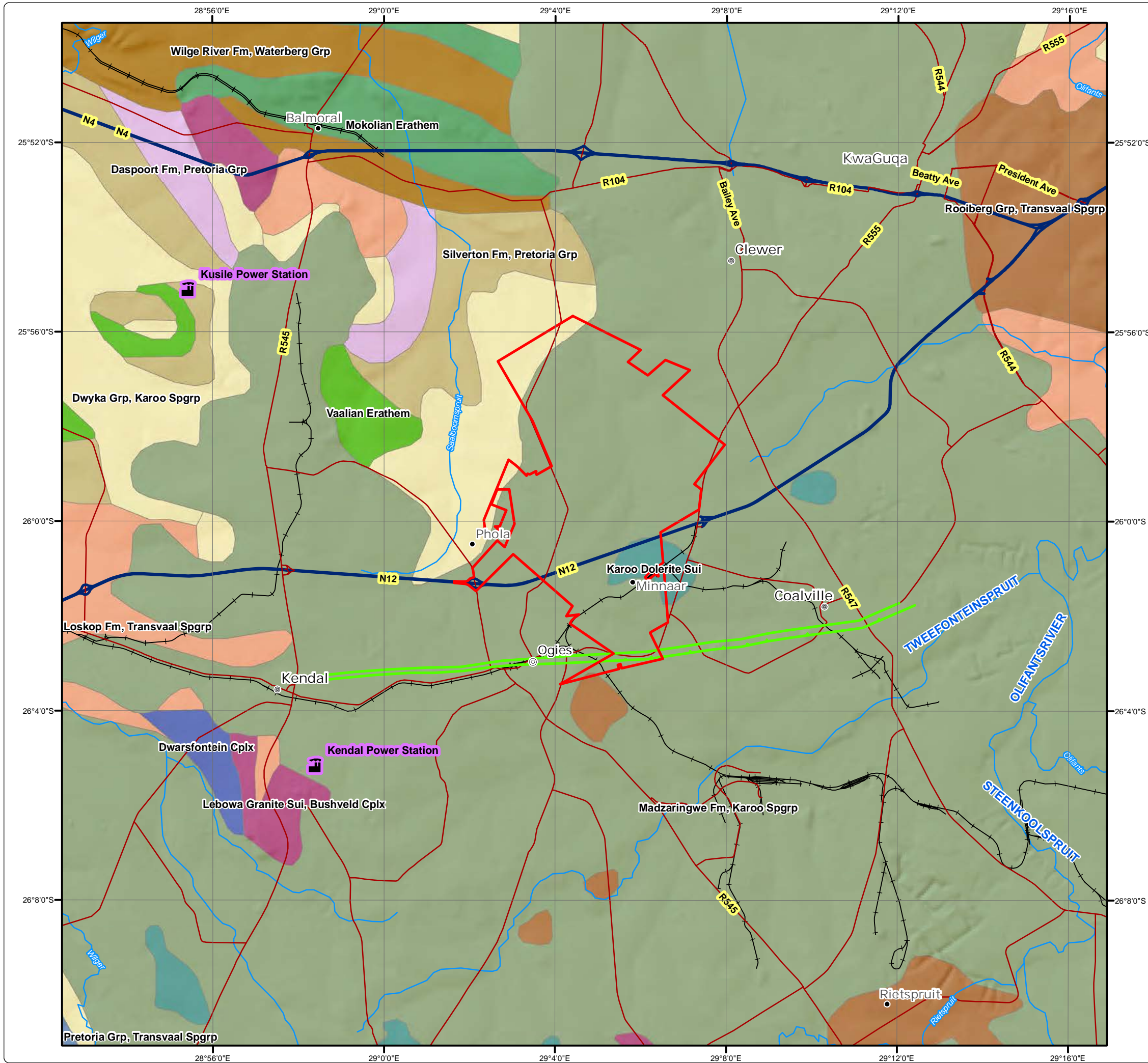
KPSX Weltevreden Regional Geology

Legend

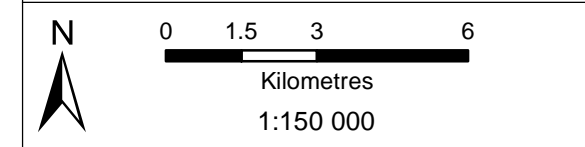
- Project Area
- Power Station
- Secondary Town
- Other Town
- Settlement
- Main Road
- National Road
- Railway Line
- River
- Estimated Ogies Dyke

Regional Geology

- Daspoort Fm, Pretoria Grp
- Dwarsfontein Cplx
- Dwyka Grp, Karoo Spgrp
- Karoo Dolerite Sui
- Lebowa Granite Sui, Bushveld Cplx
- Loskop Fm, Transvaal Spgrp
- Madzaringwe Fm, Karoo Spgrp
- Mokolian Erathem
- Pretoria Grp, Transvaal Spgrp
- Rooiberg Grp, Transvaal Spgrp
- Silverton Fm, Pretoria Grp
- Vaalian Erathem
- Wilge River Fm, Waterberg Grp














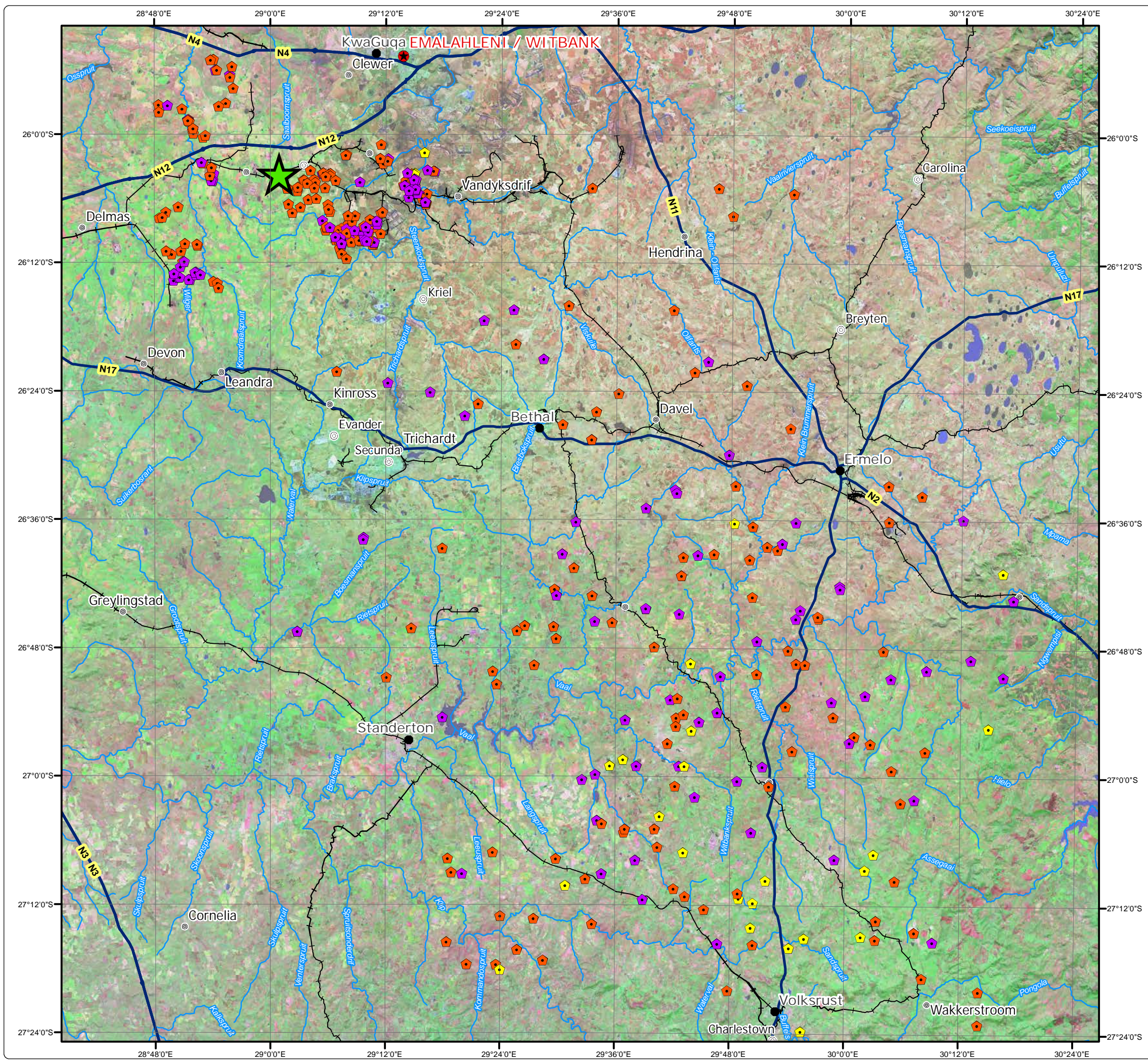
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KPSX Weltevreden Regional Heritage Resources

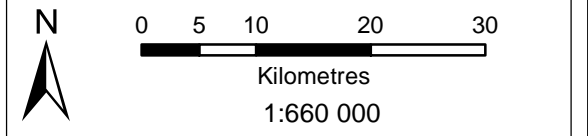
Legend

-  Project Location
 -  Capital City
 -  Major Town
 -  Secondary Town
 -  Other Town
 -  National Road
 -  Railway Line
 -  River
- ### Historical Heritage Site
-  Archaeological / Palaeontological
 -  Built Environment
 -  Burial Grounds and Graves



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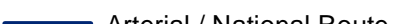





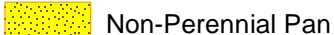


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 Datum: WGS 1994 Revision Number: 1
 Central Meridian: 29°E Date: 08/05/2014






KPSX Weltevreden

Project Area Heritage Resources

Legend

-  Project Area
-  Capital City
-  Secondary Town
-  Other Town
-  Settlement
-  Arterial / National Route
-  Main Road
-  Railway Line
-  Non-Perennial River
-  Perennial River
-  Perennial Pan
-  Non-Perennial Pan
-  Wetland
-  Dam

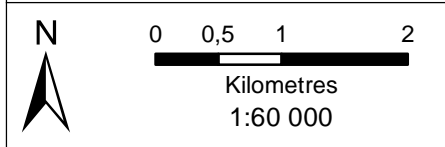
Historical Heritage Site

-  Archaeological / Palaeontological
-  Built Environment
-  Burial Grounds and Graves



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KPSX Weltevreden

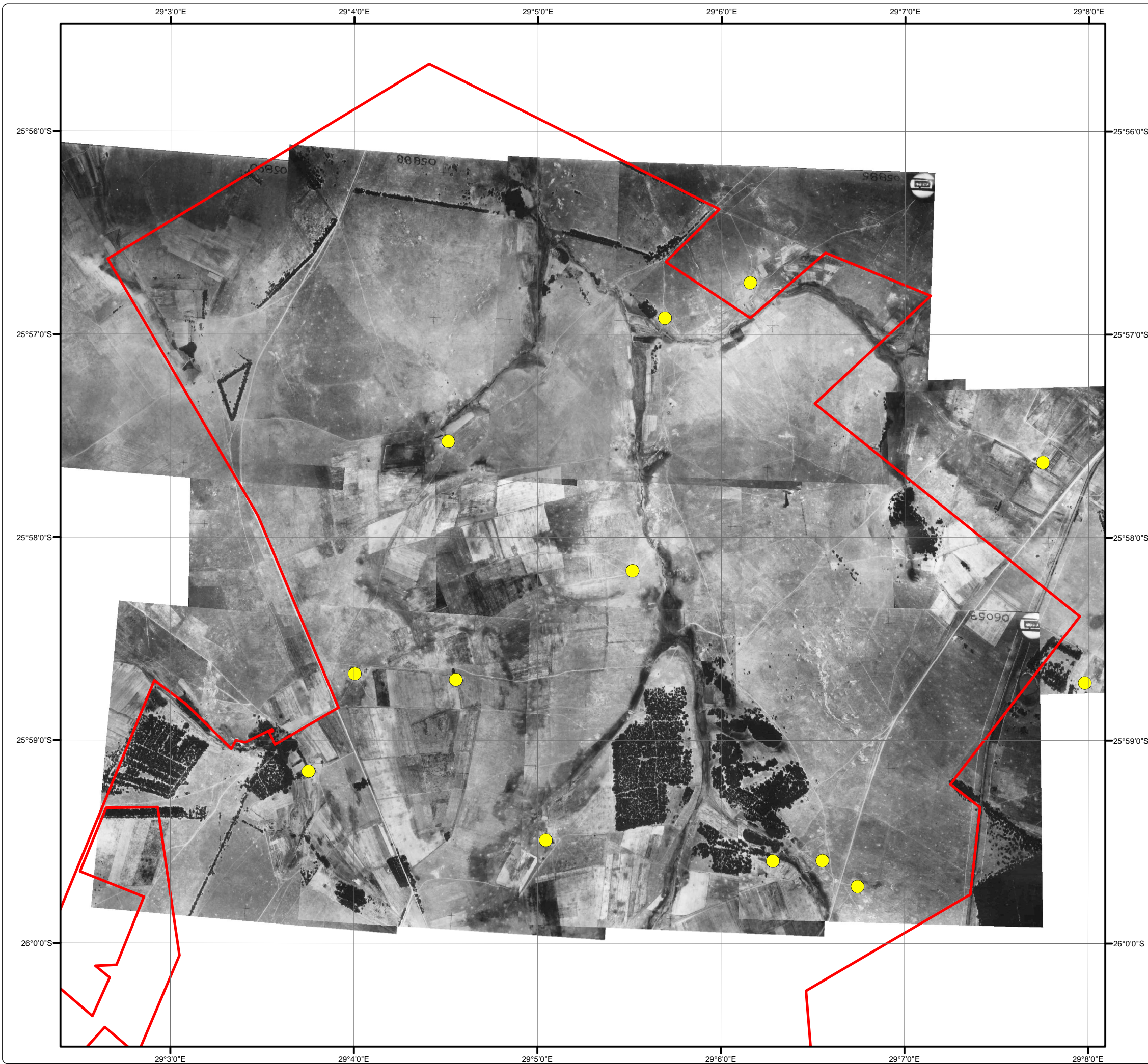
Historical Layering

1943

Legend

Historical Heritage Resources

- Built Structure
- Project Area

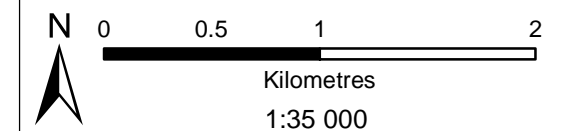


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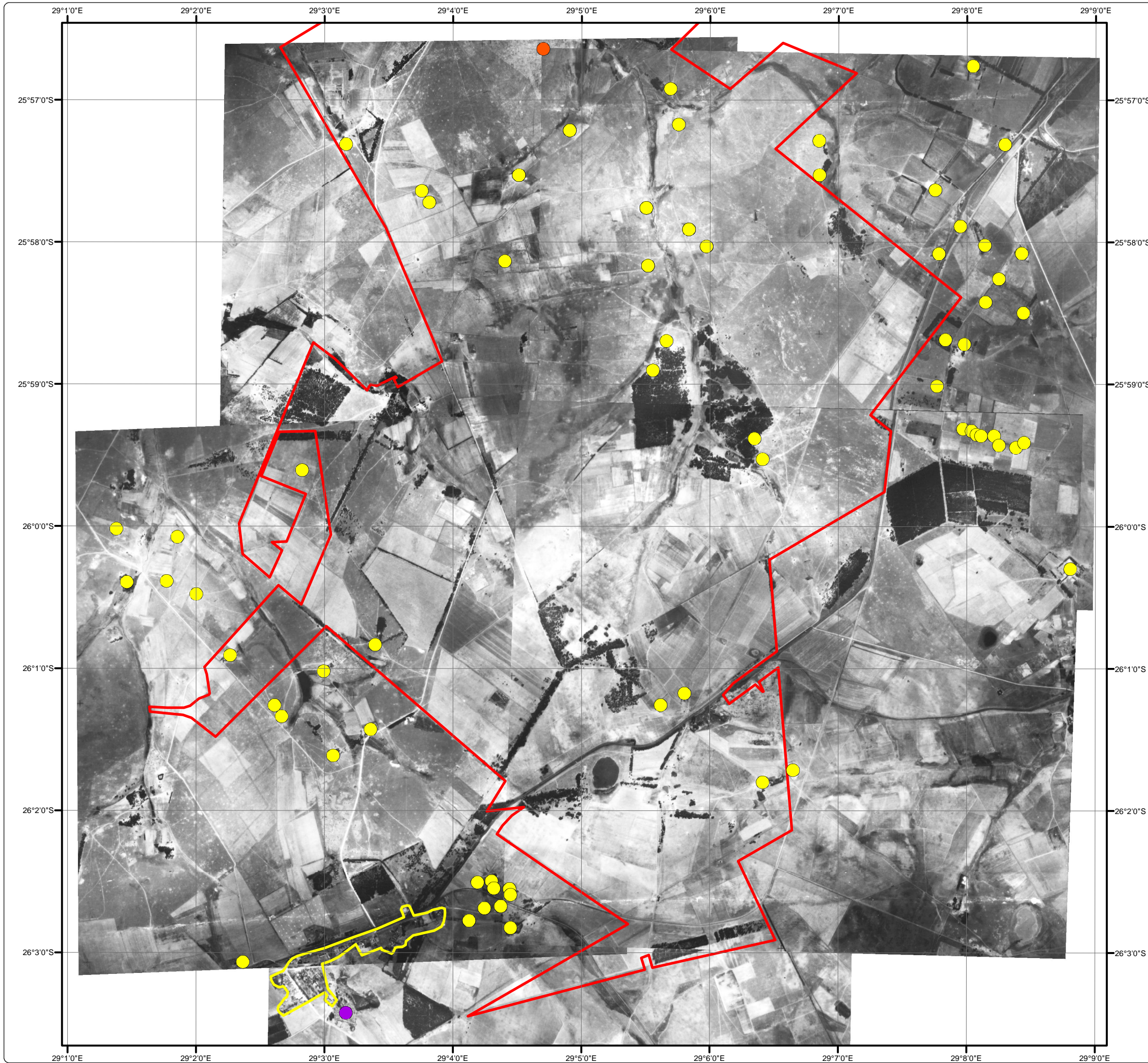


KPSX Weltevreden Historical Layering 1954

Legend

Historical Heritage Resources

- Built Structure
- Cemetery
- Stone Walling
- Built Structure Area
- Project Area

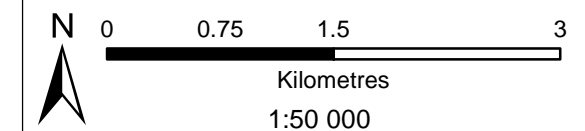


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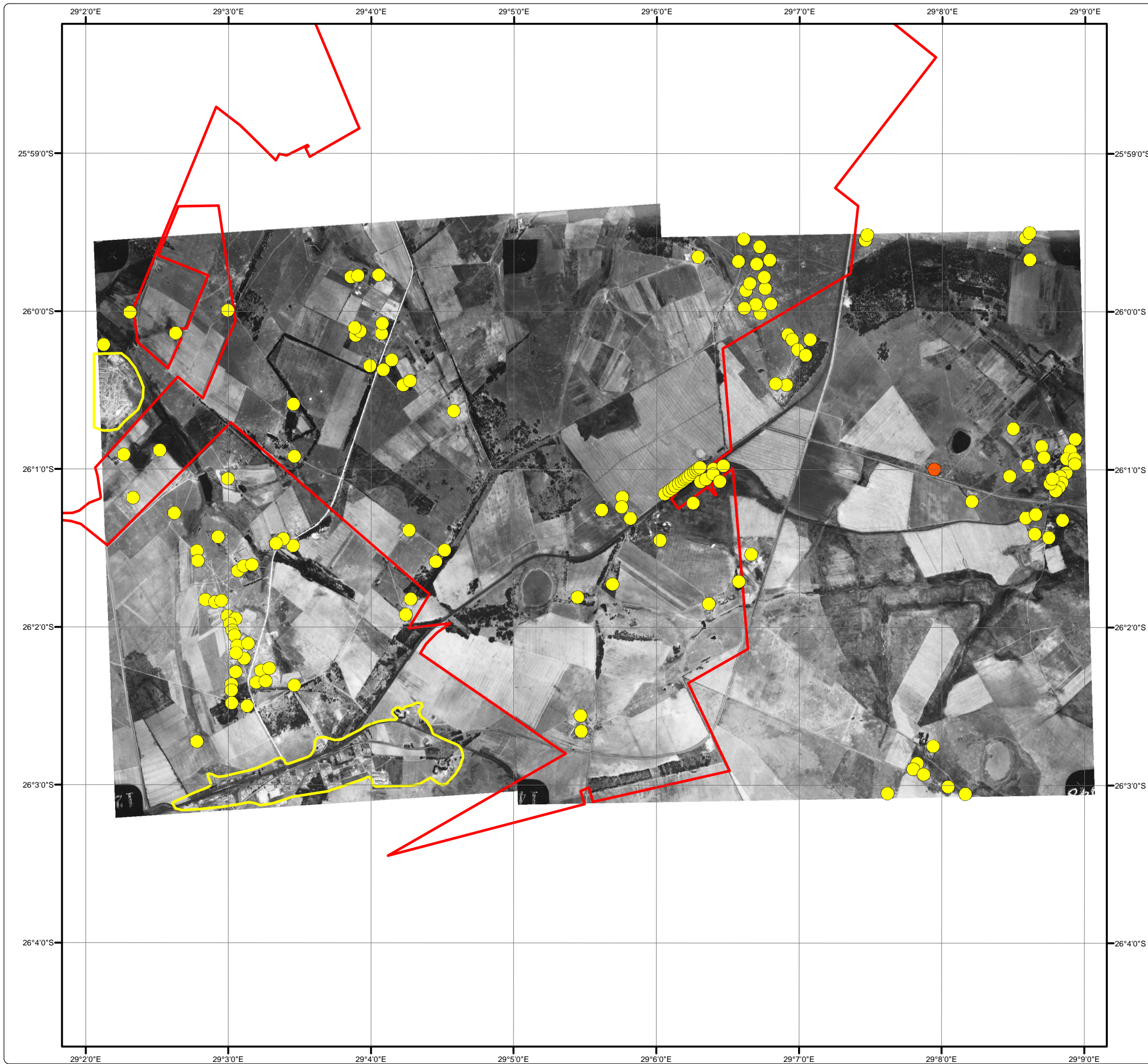
KPSX Welteveden

Historical Layering 1968

Legend

Historical Heritage Resources

- Built Structure
- Stone Walling
- Built Structure Area
- Project Area

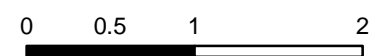


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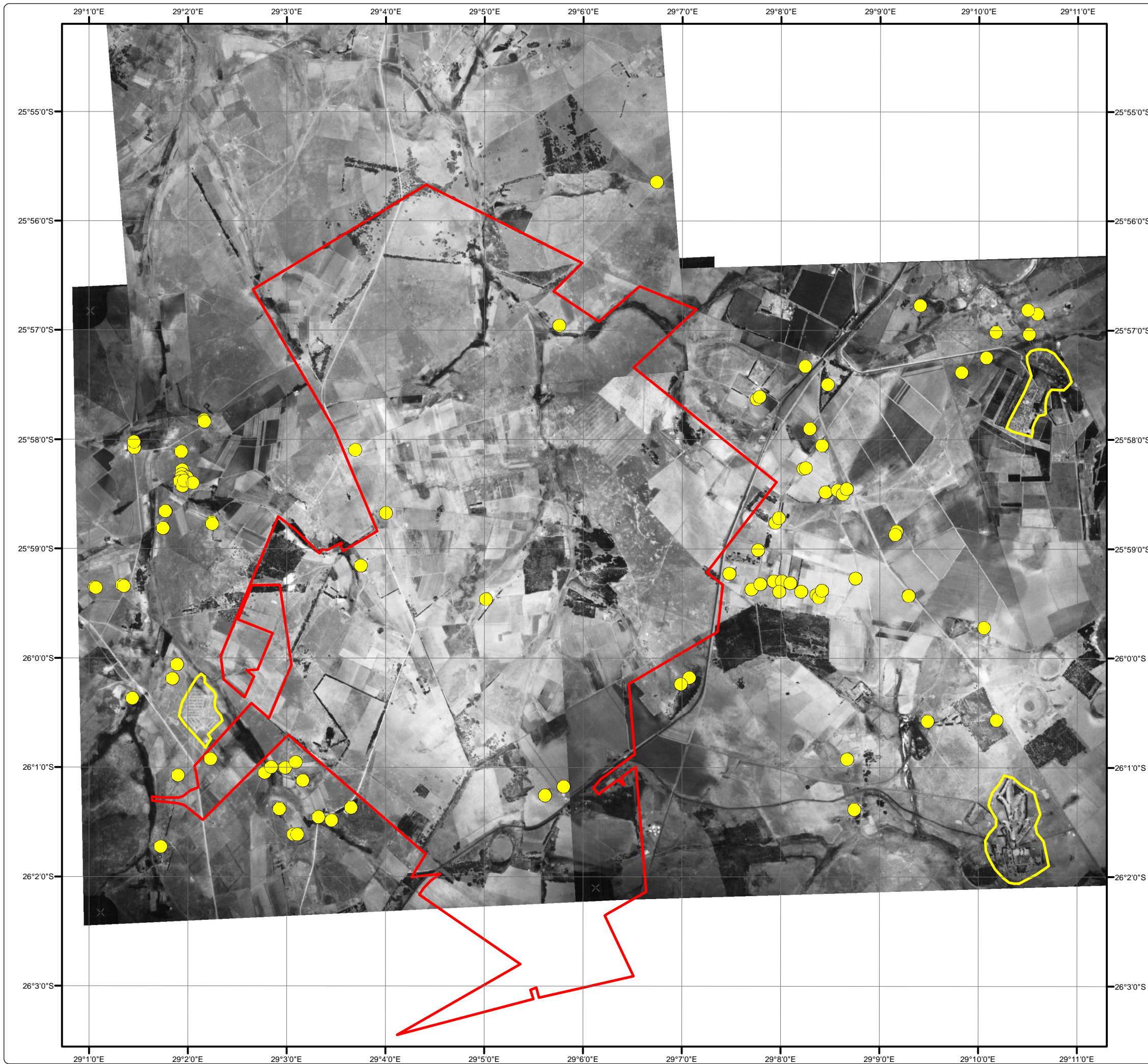
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KPSX Weltevreden Historical Layering 1965

Legend

Historical Heritage Resources

-  Built Structure
-  Built Structure Area
-  Project Area



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Central Meridian: 29°E

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Revision Number: 1
Date: 06/05/2014



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KPSX Weltevreden

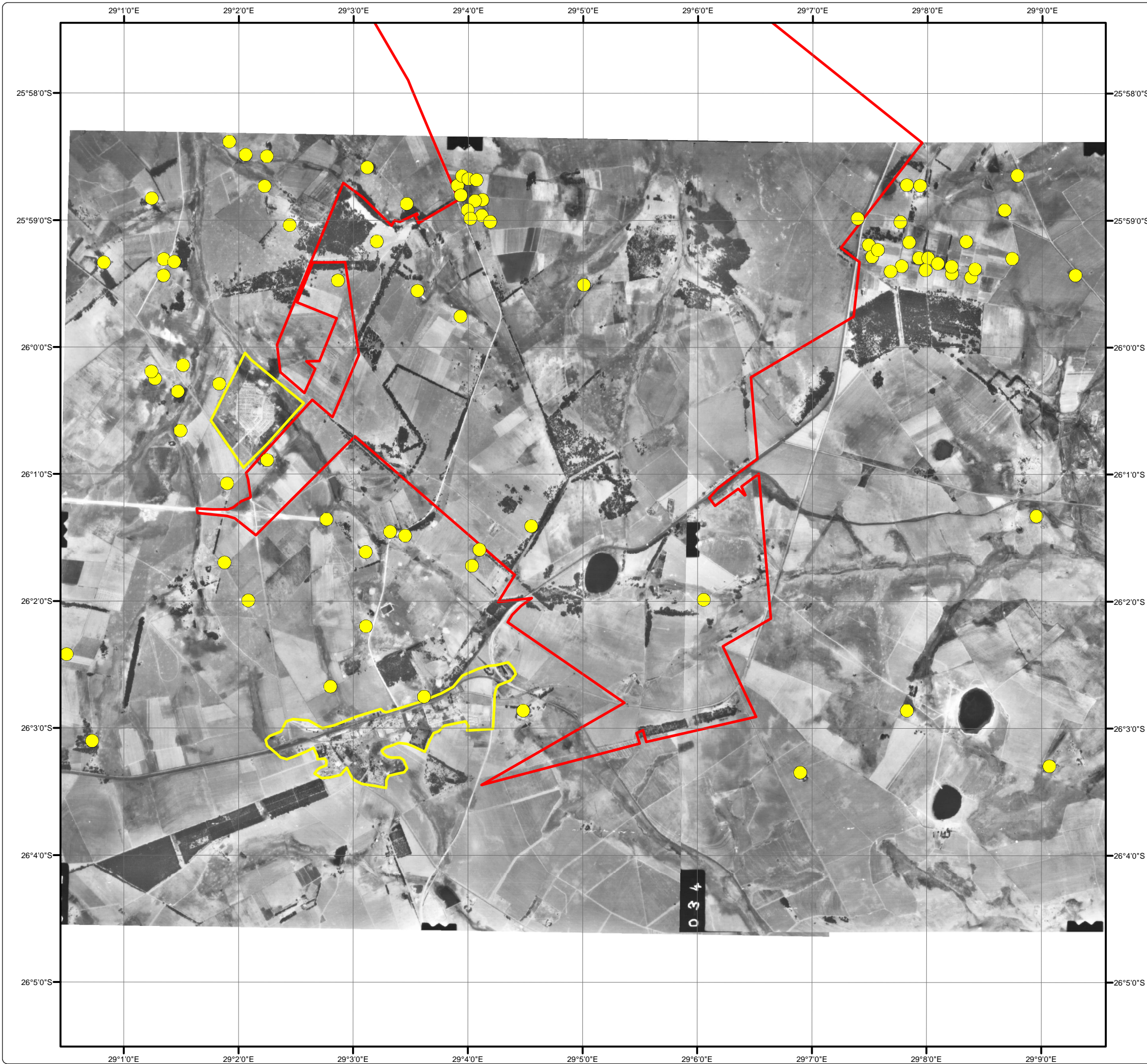
Historical Layering

1975

Legend

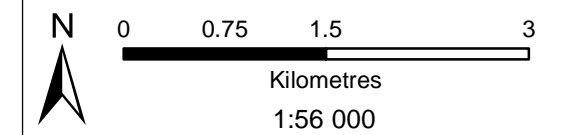
Historical Heritage Resources

-  Built Structure
-  Built Structure Area
-  Project Area



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Projection: Transverse Mercator Ref #: idp.BHP2690.201405.018
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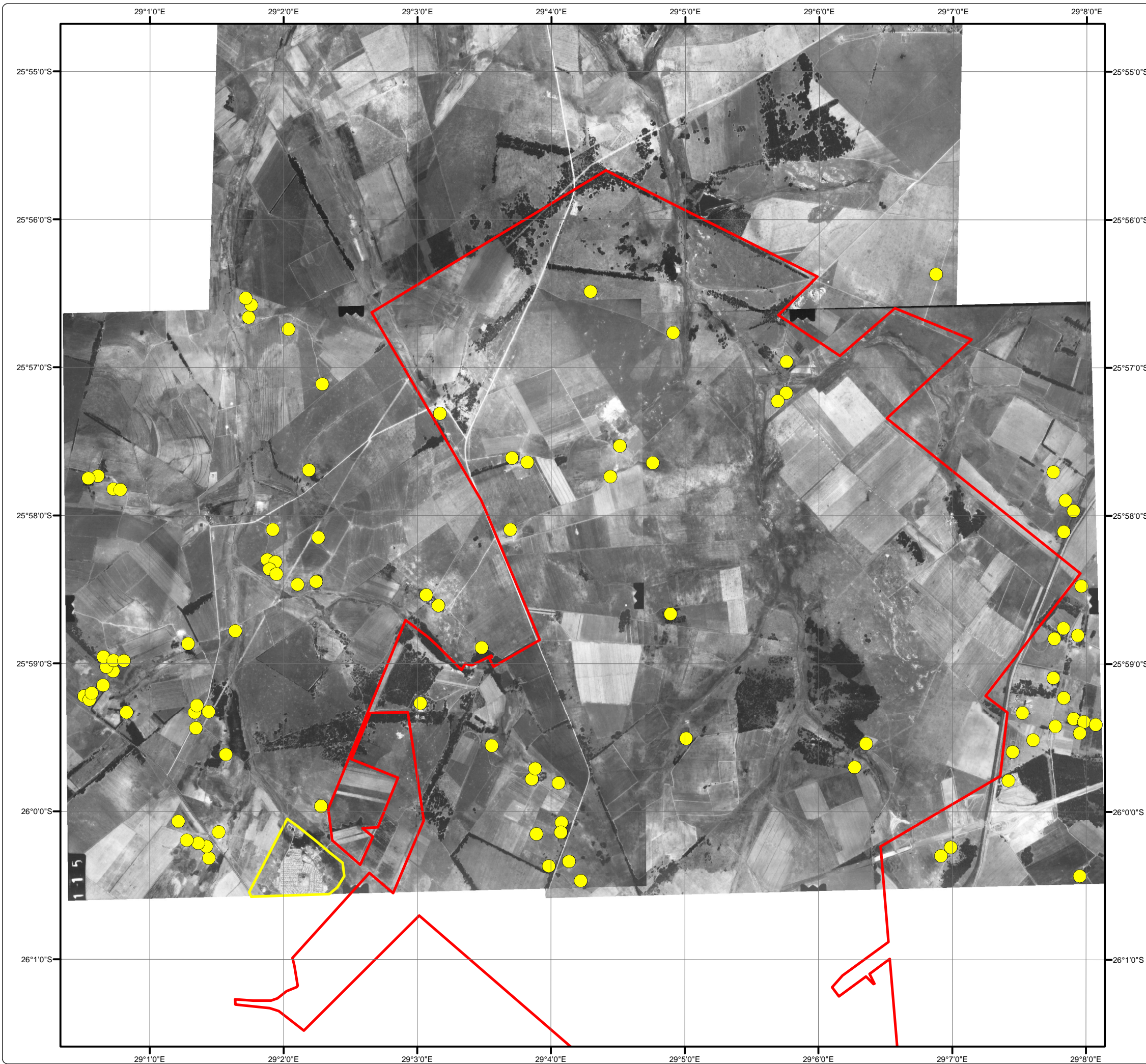


KPSX Weltevreden Historical Layering 1979

Legend

Historical Heritage Resources

-  Built Structure
-  Built Structure Area
-  Project Area



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Central Meridian: 29°E

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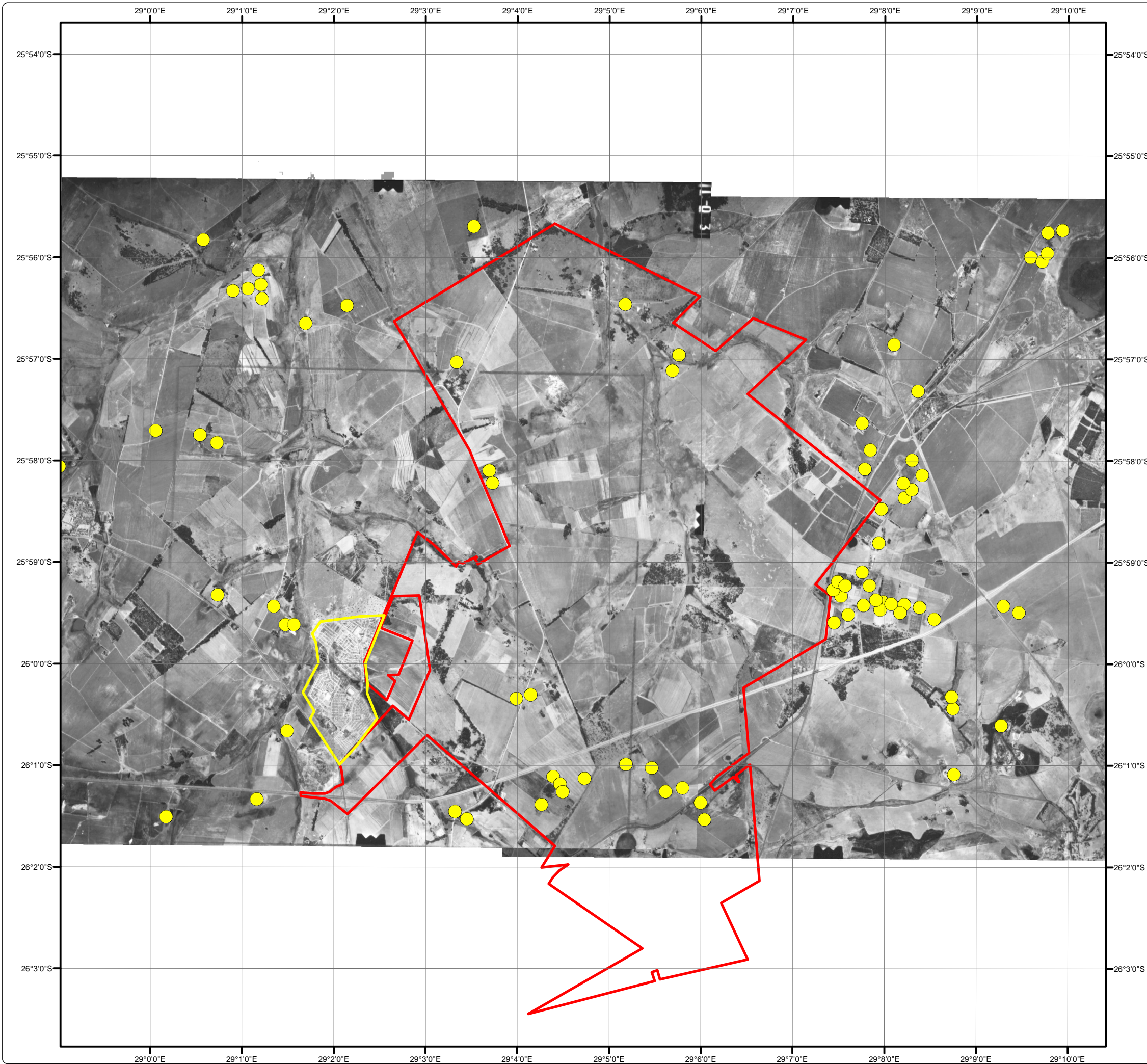
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KPSX Weltevreden Historical Layering 1991

Legend

Historical Heritage Resources

-  Built Structure
-  Built Structure Area
-  Project Area

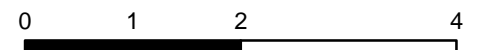


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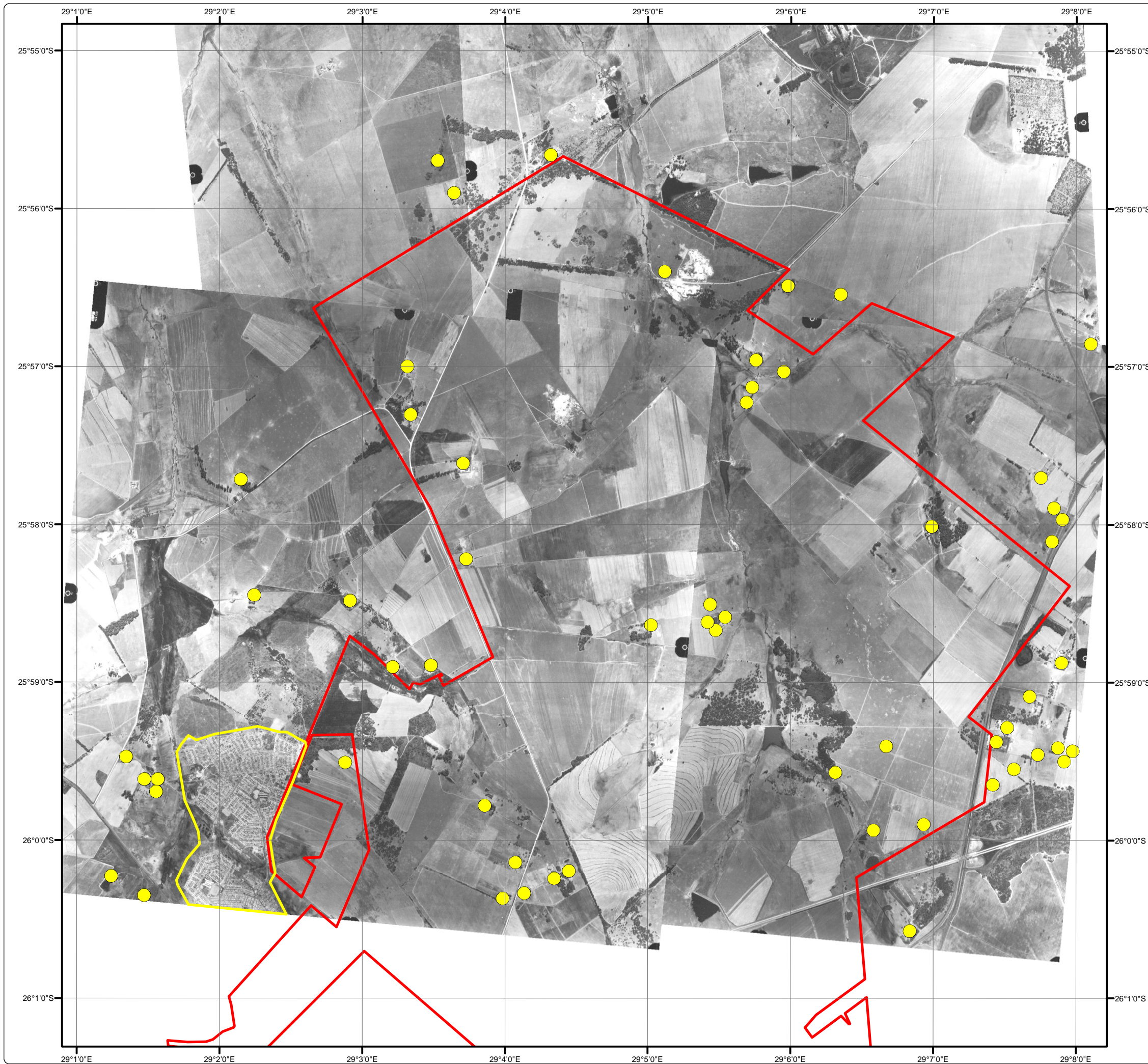
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KPSX Weltevreden Historical Layering 1997

Legend

Historical Heritage Resources

-  Built Structure
-  Built Structure Area
-  Project Area

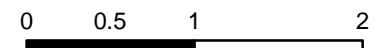


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Revision Number: 1
Date: 06/05/2014



Kilometres

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