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North West Provincial Government  
REPUBLIC OF SOUTH AFRICA



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**DETAILS AND EXPERTISE OF SPECIALIST AND DECLARATION OF INTEREST**

(For official use only)

File Reference Number:  
NEAS Reference Number:  
Date Received:


Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014

**PROJECT TITLE**

Rustenburg Base Metals Refinery Bulk Chemical Storage Facility Relocation Project

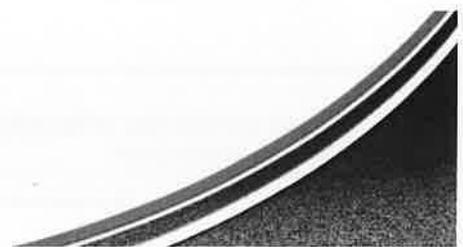
**1. Details of Specialist**

Type of Specialist:	Heritage Resources Management Consultant		
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Project Consultant:	SRK Consulting (Pty) Ltd		
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2. Expertise of the Specialist including Curriculum vitae (Appendix 6 (1)(a)(ii) of EIA Regulations, 2014)

Shannon joined the Digby Wells team in May 2017 as a Heritage Management Intern and has most recently been appointed as a Heritage Resources Management Consultant. Shannon is an archaeologist who obtained a Master of Science (MSc) degree from the University of the Witwatersrand in 2013, specialising in historical archaeobotany in the Limpopo Province. She is a published co-author of one paper in Journal of Ethnobiology.

Since joining Digby Wells, Shannon has gained generalist experience through the compilation of various heritage assessments, including Heritage Scoping Reports (HSRs), HIAs, Heritage Basic Assessment Reports (HBARs) and Section 34 permit applications. Her other experience includes compiling a Community Health, Safety and Security Management Plan (CHSSMP) and various social baselines. Shannon's experience in the field includes pre-disturbance surveys in South Africa, Malawi and the Democratic Republic of the Congo and fieldwork in Malawi.

CV attached



3. Declaration by Specialist

I, Shannon Hardwick ( Name of Specialist) of Digby Wells Environmental (name of company) declare that;

- I act as an independent specialist in this application.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant/ Environmental Assessment Practitioner appointed by applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of Section 48B(2) of the Act.

Shannon Hardwick

Signature of the specialist

Digby Wells Environmental

Name of company (if applicable)

07 December 2020

Date

[Signature]

Signature of the Commissioner of Oaths

08. December 2020

Date

Attorney

Designation

Official stamp:

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TEL: 011 789-9495**

*Details and Expertise of Specialist and Declaration of Interest  
EIA Regulations, 2014*





Miss Shannon Hardwick  
 Heritage Resources Management Consultant  
 Social and Heritage Services  
 Digby Wells Environmental

## 1 Education

Date	Degree(s) or Diploma(s) obtained	Institution
2013	MSc (Archaeology)	University of the Witwatersrand
2010	BSc (Honours) (Archaeology)	University of the Witwatersrand
2009	BSc	University of the Witwatersrand
2006	Matric	Rand Park High School

## 2 Language Skills

Language	Written	Spoken
English	Excellent	Excellent
Afrikaans	Fair	Basic

## 3 Employment

Period	Company	Title/position
2019 to Present	Digby Wells Environmental	Heritage Resources Management Consultant
2017 to 2019	Digby Wells Environmental	Assistant Heritage Resources Management Consultant
2017 to 2017	Digby Wells Environmental	Social and Heritage Services Intern
2016 to 2017	Tarsus Academy	Facilitator
2011 to 2016	University of the Witwatersrand	Teaching Assistant
2011	University of the Witwatersrand	Collections Assistant

## 4 Experience

I joined the Digby Wells team in May 2017 as a Heritage Management Intern and has most recently been appointed as a Heritage Resources Management Consultant. I am an archaeologist and obtained a Master of Science (MSc) degree from the University of the Witwatersrand in 2013, specialising in historical archaeobotany in the Limpopo Province. I am a published co-author of one paper in *Journal of Ethnobiology*.

Since joining Digby Wells, I have gained generalist experience through the compilation of various heritage assessments, including Notification of Intent to Develop (NIDs), Heritage Scoping Reports (HSRs), Heritage Impact Assessment (HIA) reports, Heritage Basic Assessment Reports (HBARs) and permit applications to undertake permitted activities in terms of Sections 34 and 35 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA). I have also obtained experience in compiling socio-economic documents, including a Community Health, Safety and Security Management Plan (CHSSMP) and social baselines and data analysis for Projects in South Africa, Malawi, Mali and Sierra Leone. My fieldwork experience includes heritage pre-disturbance surveys in South Africa, Malawi and the Democratic Republic of the Congo and social fieldwork in Malawi.

I am a registered member of the Association of Southern African Professional Archaeologists (ASAPA) and the International Council on Monuments and Sites (ICOMOS).

## 5 Project Experience

My project experience is listed in the table below.

**Project Experience**

Project Title	Name of Client	Project Location	Date of Completion	Project / Experience Description
Environmental Authorisation for the Dagsoom Coal Mining Project near Ermelo, Mpumalanga Province	Dagsoom Coal Mining (Pty) Ltd	Ermelo, Mpumalanga Province	Ongoing	Heritage Impact Assessment
Regional Tailings Storage Facility Heritage Mitigations	Ergo Mining (Pty) Ltd	Randfontein, Gauteng	Ongoing	Section 34 Permit Application Process
Weltervreden Mine Environmental Authorisation, Water Use Licence and Mining Right Application Project	Mbuyelo Group (Pty) Ltd	Belfast, Mpumalanga	Ongoing	Heritage Impact Assessment



<b>Project Title</b>	<b>Name of Client</b>	<b>Project Location</b>	<b>Date of Completion</b>	<b>Project / Experience Description</b>
Environmental Authorisation for the proposed Lephalale Pipeline Project, Limpopo Province	MDT Environmental (Pty) Ltd	Lephalale, Limpopo Province	2019	Notification of Intent to Develop
Heritage Resources Management Process Update for the Exxaro Matla Mine	Exxaro Coal Mpumalanga (Pty) Ltd	Kriel, Mpumalanga Province	2019	Heritage Site Management Plan Update
Environmental Authorisation for the proposed Musina-Makhado Special Economic Zone Development Project, Limpopo Province	Limpopo Economic Development Agency	Vhembe District Municipality, Limpopo Province	Ongoing	Heritage Impact Assessment Project Management
Songwe Hills Rare Earth Elements Project	Mkango Resources Limited	Phalombe District, Malawi	Ongoing	Heritage Impact Assessment
Elandsfontein Colliery Burial Grounds and Graves Chance Finds	Anker Coal and Mineral Holdings SA (Pty) Ltd Elandsfontein Colliery (Pty) Ltd	Clewer, Emalahleni, Mpumalanga Province	December 2018	Site Inspection Project Management
Environmental Authorisation Process to Decommission a Conveyor Belt Servitude, Road and Quarry at Twistdraai East Colliery	Sasol Mining (Pty) Ltd	Secunda, Mpumalanga Province	Ongoing	Notification of Intent to Develop
Environmental and Social Impact Assessment for the Bougouni Lithium Project, Mali	Future Minerals S.A.R.L.	Bougouni, Mali	Ongoing	Heritage Impact Assessment
Environmental Authorisation for the Nomalanga Estates Expansion Project, KwaZulu-Natal	Nomalanga Property Holdings (Pty) Ltd	Greytown, KwaZulu-Natal	Ongoing	Heritage Impact Assessment
Environmental Authorisation for the Temo Mine proposed Rail, Road and Pipeline Development, Limpopo Province	Temo Coal Mining (Pty) Ltd	Lephalale, Limpopo Province	Ongoing	Heritage Impact Assessment

<b>Project Title</b>	<b>Name of Client</b>	<b>Project Location</b>	<b>Date of Completion</b>	<b>Project / Experience Description</b>
Gorumbwa RAP Audit	Randgold Resources Limited	Kibali Sector, Democratic Republic of the Congo	December 2018	Resettlement Action Plan Audit
Sasol Sigma Defunct Colliery Surface Mitigation Project: Proposed Rover Diversion and Flood Protection Berms	Sasol Mining (Pty) Ltd	Sasolburg, Free State Province	November 2018	Notification of Intent to Develop
Basic Assessment and Regulation 31 Amendment / Consolidation for Sigma Colliery: Mooikraal and Sigma Colliery: 3 Shaft	Sasol Mining (Pty) Ltd	Sasolburg, Free State Province	Ongoing	Notification of Intent to Develop
Sasol Mining Sigma Colliery Ash Backfilling Project, Sasolburg, Free State Province	Sasol Mining (Pty) Ltd	Sasolburg, Free State Province	July 2018	Heritage Basic Assessment Report Update
Constructed Landfill Site for the Sierra Rutile Limited Mining Operation, Southern Province, Sierra Leone	Sierra Rutile Limited	Southern Province, Sierra Leone	May 2019	Social Impact Assessment
Environmental Impact Assessment for the Klipspruit Colliery Water Treatment Plant and associated pipeline, Mpumalanga	South32 SA Coal Holdings (Pty) Ltd	Ogies, Mpumalanga Province	Ongoing	Notification of Intent to Develop; Social baseline
Proposed construction of a Water Treatment Plant and associated infrastructure for the Treatment of Mine-Affected Water at the Kilbarchan Colliery	Eskom Holdings SOC Limited	Newcastle, KwaZulu-Natal Province	Ongoing	Heritage Impact Assessment
Belfast Implementation Project	Exxaro Coal Mpumalanga (Pty) Ltd	Belfast, Mpumalanga Province	Ongoing	Section 34 Permit Application

<b>Project Title</b>	<b>Name of Client</b>	<b>Project Location</b>	<b>Date of Completion</b>	<b>Project / Experience Description</b>
Newcastle Landfill Project	GCS Water and Environmental Consultants	Newcastle, KwaZulu-Natal	March 2019	Heritage Impact Assessment
NHRA Section 34 Permit Application process for the Davin and Queens Court Buildings on Erf 173 and 174, West Germiston, Gauteng Province	IDC Architects	Johannesburg, Gauteng Province	May 2018	Section 34 Permit Application Process
Basic Assessment and Environmental Management Plan for the Proposed pipeline from the Mballi Colliery to the Tweefontein Water Reclamation Plant, Mpumalanga Province	HCI Coal (Pty) Ltd Mballi Colliery	Ogies, Mpumalanga Province	February 2018	Heritage Basic Assessment Report
The South African Radio Astronomy Observatory Square Kilometre Array Heritage Impact Assessment and Conservation Management Plan Project	The South African Radio Astronomy Observatory (SARAO)	Carnarvon, Northern Cape Province	July 2018	Heritage Impact Assessment; Conservation Management Plan
Environmental Impact Assessment for the proposed Future Developments within the Sun City Resort Complex	Sun International (Pty) Ltd	Rustenburg, North West Province	Ongoing	Heritage Impact Assessment Conservation Management Plan Social Baseline
Environmental Fatal Flaw Analysis for the Mabula Filling Station	Mr van den Bergh	Waterberg, Limpopo Province	November 2017	Fatal Flaw Analysis
Environmental Impact Assessment for the Blyvoor Gold Mining Project near Carletonville, Gauteng Province	Blyvoor Gold Capital (Pty) Ltd	Carletonville, Gauteng	Ongoing	Notification of Intent to Develop; Social Baseline

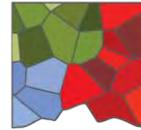
<b>Project Title</b>	<b>Name of Client</b>	<b>Project Location</b>	<b>Date of Completion</b>	<b>Project / Experience Description</b>
Heritage Resources Management Process for the Exxaro Matla Mine	Exxaro Coal Mpumalanga (Pty) Ltd	Kriel, Mpumalanga Province	October 2018	Heritage Impact Assessment
Liwonde Additional Studies	Mota-Engil Africa	Liwonde, Malawi	June 2018	Community Health, Safety and Security Management Plan
Environmental Impact Assessment for the Millsite TSF Complex	Sibanye-Stillwater	Randfontein, Gauteng	December 2017	Heritage Impact Assessment
Heritage Resources Management Process for the Portion 296 of the farm Zuurfontein 33 IR Proposed Residential Establishment Project	Shuma Africa Projects (Pty) Ltd	Ekurhuleni (Johannesburg), Gauteng	June 2017	Notification of Intent to Develop
NHRA Section 35 Archaeological Investigations, Lanxess Chrome Mine, North-West Province	Lanxess Chrome Mine (Pty) Ltd	Rustenburg, North West Province	August 2017	Archaeological Phase 2 Mitigation
Environmental and Social Input for the Pre-Feasibility Study	Birimium Gold	Bougouni, Mali	October 2018	Pre-Feasibility Study; Heritage Impact Assessment

## 6 Professional Registration

<b>Position</b>	<b>Professional Body</b>	<b>Member Number</b>
Member	Association of Southern African Professional Archaeologists (ASAPA)	451
Member	International Council on Monuments and Sites (ICOMOS)	38048

## 7 Publications

Esterhuysen, A.B. & Hardwick, S.K. 2017. Plant remains recovered from the 1854 siege of the Kekana Ndebele, Historic Cave, Makapan Valley, South Africa. *Journal of Ethnobiology* 37(1): 97-119.



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## Heritage Resources Management Process for the Rustenburg Base Metals Refinery Bulk Chemical Storage Facility Relocation Project, North West Province

### Heritage Impact Assessment

**Prepared for:**

SRK Consulting (South Africa) Pty Ltd

**Project Number:**

SRK6560

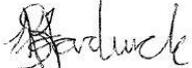
November 2020



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This document has been prepared by Digby Wells Environmental.

<b>Report Type:</b>	Heritage Impact Assessment
<b>Project Name:</b>	Heritage Resources Management Process for the Rustenburg Base Metals Refinery Bulk Chemical Storage Facility Relocation Project, North West Province
<b>Project Code:</b>	SRK6560

<b>Name</b>	<b>Responsibility</b>	<b>Signature</b>	<b>Date</b>
Shannon Hardwick HRM Consultant ASAPA Member: 451	Pre-disturbance Survey Report Compilation		November 2020
Justin du Piesanie Divisional Manager: Social and Heritage Services ASAPA Member 270	Technical Review		

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## DETAILS AND DECLARATION OF THE SPECIALIST

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<b>Full name:</b>	Shannon Hardwick
<b>Title/ Position:</b>	Heritage Resources Management Consultant
<b>Qualification(s):</b>	Master of Science (MSc) Archaeology
<b>Experience (years):</b>	3 years
<b>Registration(s):</b>	ASAPA, ICOMOS

I, Shannon Hardwick, declare that: –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
  - I declare that there are no circumstances that may compromise my objectivity in performing such work;
  - I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



November 2020

*Signature of the Specialist*

*Date*

*Findings, recommendations and conclusions provided in this report are based on the best available scientific methods and the author's professional knowledge and information at the time of compilation. Digby Wells employees involved in the compilation of this report, however, accept no liability for any actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, and by the use of the information contained in this document.*

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*Any recommendations, statements or conclusions drawn from or based on this report must clearly cite or make reference to this report. Whenever such recommendations, statements or conclusions form part of a main report relating to the current investigation, this report must be included in its entirety.*

## EXECUTIVE SUMMARY

Anglo American Platinum Limited (hereinafter Anglo) operates the Rustenburg Base Metals Refinery (RMBR) near Rustenburg in the North West Province. RMBR requires chemical reagents to undertake the current operations; these are received at, stored in and distributed from the existing centralised Bulk Chemical Storage Facility. Due to a decline in the structural integrity of the existing infrastructure, RMBR intend to relocate the facility within the property (the Project).

To this end, RMBR appointed SRK Consulting (South Africa) (Pty) Ltd (hereinafter SRK) to undertake the necessary Environmental Impact Assessment (EIA) process in support of the Environmental Authorisation (EA) required for the Project in compliance with the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the NEMA EIA Regulations, 2014 (Government Notice Regulation [GN R] 982 as amended by GN R 326).

In turn, SRK appointed Digby Wells Environmental (hereinafter Digby Wells) to undertake the Heritage Resources Management (HRM) process required in support of the EIA process and in compliance with the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA). This document constitutes the Heritage Impact Assessment (HIA) report and included the completion of the following activities:

- Description of the predominant cultural landscape supported through primary and secondary data collection;
- Assessment of the Cultural Significance (CS) of the identified heritage resources;
- Identification of potential impacts to heritage resources based on the Project description and Project activities;
- An evaluation of the potential impacts to heritage resources relative to the sustainable socio-economic benefits that may result from the Project;
- Recommending feasible management measures and/or mitigation strategies to avoid and/or minimise negative impacts and enhance potential benefits resulting from the Project; and
- Submission of the HIA report to the Heritage Resource Authorities (HRAs) for Statutory Comment as required under Section 38(8) of the NHRA.

Digby Wells undertook a pre-disturbance survey of the Project area on 05 August 2020. The survey considered only the area considered as part of the preferred location alternative. The two additional alternative location footprints described in Section 2.1 were not surveyed.

Digby Wells did not identify any heritage resources within the proposed Project layout. This notwithstanding and, given the nature of archaeological materials, there is potential for RMBR to encounter unidentified heritage resources during Project activities. These risks are summarised in the table below.

### Summary of the Potential Risk to Heritage Resources

Unplanned event	Potential impact
Encountering unidentified <i>in situ</i> remnants of historical built environment resources during the implementation of the Project.	Damage or destruction of heritage resources generally protected under Section 34 of the NHRA
Accidental exposure of <i>in situ</i> archaeological material during the implementation of the Project.	Damage or destruction of heritage resources generally protected under Section 35 of the NHRA
Accidental exposure of <i>in situ</i> burial grounds or graves during the implementation of the Project.	Damage or destruction of heritage resources generally protected under Section 36 of the NHRA.
Accidental exposure of human remains during the decommissioning and rehabilitation and closure phases of the Project.	

To mitigate against these risks, Digby Wells recommends that RBMR develop a Chance Finds Protocol (CFP<sup>1</sup>) which must be approved by the HRAs and implemented prior to the commencement of Project activities.

Based on Digby Wells' understanding of the Project, while considering the scope and location of the Project, defined cultural landscape and known heritage resources, Digby Wells does not object to the implementation of the Project from a heritage perspective, provided the recommendations described above and in Section 11 below.

<sup>1</sup> Anglo internal policy requires all Anglo projects conform to the requirements of the International Finance Corporation (IFC) Performance Standards of Environmental and Social Sustainability (PS). This recommendation also addresses the requirements of IFC PS 8: Cultural Heritage.

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## ACRONYMS, ABBREVIATIONS AND DEFINITIONS

Abbreviation	Meaning
<b>ASAPA</b>	Association of Southern African Professional Archaeologists
<b>BA</b>	Bachelor of Arts, or Basic Assessment ( <i>the applicable term will be defined in the report</i> )
<b>BCE</b>	Before Common Era (also: Before Christ or BC)
<b>BID</b>	Background Information Document
<b>BSc</b>	Bachelor of Science
<b>c.</b>	Circa, meaning approximately
<b>CE</b>	Common Era (also: <i>Anno Domini</i> or AD)
<b>CFP</b>	Chance Find Protocol
<b>CRR</b>	Comments and Response Report
<b>CS</b>	Cultural Significance
<b>Digby Wells</b>	Digby Wells Environmental
<b>EA</b>	Environmental Authorisation
<b>EAP</b>	Environmental Assessment Practitioner
<b>EFC</b>	Early Farming Community ( <i>also known as Early Iron Age, see below</i> )
<b>EIA</b>	Environmental Impact Assessment. <i>Please note that EIA can also refer to the 'Early Iron Age'; however, in this document, this time period is referred to as 'Early Farming Community'.</i>
<b>EMP</b>	Environmental Management Plan
<b>EMPr</b>	Environmental Management Programme
<b>ESA</b>	Early Stone Age
<b>GIS</b>	Geographical Information System
<b>GN R</b>	Government Notice Regulation
<b>GPS</b>	Global Positioning System
<b>HIA</b>	Heritage Impact Assessment
<b>Hons</b>	Honours degree
<b>HRAs</b>	Heritage Resources Authorities
<b>HRM</b>	Heritage Resources Management
<b>HSMP</b>	Heritage Site Management Plan
<b>ICOMOS</b>	International Council on Monuments and Sites

Abbreviation	Meaning
<b>Kya</b>	Thousand years ago
<b>LED</b>	Local Economic Development
<b>LFC</b>	Late Farming Community also known as Late Iron Age
<b>LSA</b>	Late Stone Age
<b>MIA</b>	Middle Iron Age
<b>MPRDA</b>	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
<b>MR</b>	Mining Right (boundary)
<b>MRA</b>	Mining Right Application
<b>MSA</b>	Middle Stone Age
<b>MSc</b>	Master of Science
<b>Mya</b>	Million years ago
<b>NEMA</b>	National Environmental Management Act, 1998 (Act No. 107 of 1998)
<b>NHRA</b>	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
<b>NID</b>	Notification of Intent to Develop
<b>NWPHRA</b>	North West Provincial Heritage Resources Authority
<b>PHRA</b>	Provincial Heritage Resources Authority
<b>RBMR</b>	Rustenburg Base Metals Refinery
<b>RoD</b>	Record of Decision
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SAHRIS</b>	South African Heritage Resources Information System
<b>SCF</b>	Statutory Comment Feedback
<b>SEP</b>	Stakeholder Engagement Process
<b>SoW</b>	Scope of Work
<b>ToR</b>	Terms of Reference
<b>Wits</b>	University of the Witwatersrand
<b>Werf</b>	A farmstead or multiple outbuildings associated with a farmhouse or agricultural activities. Plural: <i>werwe</i> (Afrikaans).

Refer to Appendix A for a Glossary of Terms.



## NHRA and GN R 326 Appendix 6 Legislated Requirements

Description	App. 6	NHRA	Section
Declaration that the report author(s) is (are) independent.	1(b)	-	Page iii-iv
An indication of the scope of, and the purpose for which, the report was prepared.	1(c)	-	1.1 1.2
Details of the person who prepared the report and their expertise to carry out the specialist study.	1(a)	-	1.3
Outlines the legislative framework relevant to the specialist heritage study.	-	-	3
Identifies the specific constraints and limitations of the HIA, including any assumptions made and any uncertainties or gaps in knowledge.	1(i)	-	4
Describes the methodology employed in the compilation of this HIA.	1(e)	-	5
An indication of the quality and age of base data used for the specialist report.	1(cA)	-	5.4 14
The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment.	1(d)	-	5.5
Provides the baseline cultural landscape.	-	38(3)(a)	6
Motivates for the defined CS of the identified heritage resources and landscape.	-	38(3)(b)	7.1
A description of the potential impacts to heritage resources by project related activities, including: <ul style="list-style-type: none"> <li>- Existing impacts on the site;</li> <li>- Possible risks to heritage resources;</li> <li>- Cumulative impacts of the proposed development;</li> <li>- Acceptable levels of change; and</li> <li>- Heritage-related risks to the project.</li> </ul>	1(cB)	38(3)(c)-	7
A description of the findings and potential implications of such findings on the impact of the proposed activity or activities.	1(j)	38(3)(c)	
Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives.	1(f)	-	
Considers the development context to assess the socio-economic benefits of the project in relation to the presented impacts and risks.	-	38(3)(d)	6.3 12.1



Description	App. 6	NHRA	Section
A description of any consultation process that was undertaken during the course of preparing the specialist report and the results of such consultation.	1(o)	38(3)(e)	10
A summary and copies of any comments received during any consultation process and where applicable all responses thereto.	1(p)	38(3)(e)	
Details the specific recommendations based on the contents of the HIA.	-	38(3)(g)	11
An identification of any areas to be avoided, including buffers.	1(g)		8
Any mitigation measures for inclusion in the Environmental Management Programme (EMPr)	1(k)		11
Any conditions for inclusion in the environmental authorisation.	1(l)		9
Any monitoring requirements for inclusion in the EMPr or environmental authorisation.	1(m)		
A reasoned opinion— (i) whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	1(n)	38(3)(g)	12
Collates the most salient points of the HIA and concludes with the specific outcomes and recommendations of the study.	-	38(3)(f) 38(3)(g)	13
Lists the source material used in the development of the report.	1(cA)	-	14
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	1(h)	-	Plan 3
Any other information requested by the competent authority.	1(q)	-	N/A

## 1. Introduction

Anglo American Platinum Limited's (hereinafter Anglo) Rustenburg Base Metals Refinery (RBMR) requires chemical reagents to undertake operations presently underway at the refinery. RBMR have an established centralised Bulk Chemical Storage Facility but now intends to relocate this within the existing RBMR premises (the Project). The proposed relocation requires Environmental Authorisation (EA).

To this end, RBMR appointed SRK Consulting (South Africa) (Pty) Ltd (hereinafter SRK) to undertake the Environmental Impact Assessment (EIA) process in support of the EA and in compliance with the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the NEMA EIA Regulations, 2014 (Government Notice Regulation [GN R] 982 as amended by GN R 326).

SRK in turn appointed Digby Wells Environmental (hereinafter Digby Wells) to undertake the Heritage Resources Management (HRM) process required in support of the EIA process and in compliance with the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA). This document constitutes the specialist Heritage Impact Assessment (HIA) report for submission to the Heritage Resource Authorities (HRAs): the South African Heritage Resources Agency (SAHRA) and the North West Provincial Heritage Resources Authority (NWPHRA).

### 1.1. Terms of Reference

SRK appointed Digby Wells to undertake an HRM process in support of the EIA process necessary for the construction of a new Bulk Chemical Storage Facility within the RBMR, as well as the paving of an informal road and the installation of siding on the existing railway. Digby Wells undertook the HRM process in compliance with Section 38(8) of the NHRA.

### 1.2. Scope of Work

The Scope of Work (SoW) for the specialist HRM process included the compilation of an HIA report to comply with the requirements encapsulated in Section 38(3) of the NHRA. Digby Wells completed the following activities as part of the SoW:

- Description of the predominant cultural landscape supported through primary and secondary data collection;
- Assessment of the Cultural Significance (CS) of the identified heritage resources;
- Identification of potential impacts to heritage resources based on the Project description and Project activities;
- An evaluation of the potential impacts to heritage resources relative to the sustainable socio-economic benefits that may result from the Project;

- Recommending feasible management measures and/or mitigation strategies to avoid and/or minimise negative impacts and enhance potential benefits resulting from the Project; and
- Submission of the HIA report to the HRAs for Statutory Comment as required under Section 38(8) of the NHRA.

### 1.3. Expertise of the Specialist

Table 1-1 presents a summary of the expertise of the specialists involved in the compilation of this report. Appendix D includes the full CVs of these specialists.

**Table 1-1: Expertise of the specialists**

Team Member	Bio Sketch
<p><b>Shannon Hardwick</b></p> <p>ASAPA Member: 451</p> <p>ICOMOS Member 38048</p> <p>Years' Experience: 3</p>	<p>Shannon joined the Digby Wells team in May 2017 as a Heritage Management Intern and has most recently been appointed as a Heritage Resources Management Consultant. Shannon is an archaeologist who obtained a Master of Science (MSc) degree from the University of the Witwatersrand in 2013, specialising in historical archaeobotany in the Limpopo Province. She is a published co-author of one paper in <i>Journal of Ethnobiology</i>.</p> <p>Since joining Digby Wells, Shannon has gained generalist experience through the compilation of various heritage assessments, including Heritage Scoping Reports (HSRs), HIAs, Heritage Basic Assessment Reports (HBARs) and Section 34 permit applications. Her other experience includes compiling a Community Health, Safety and Security Management Plan (CHSSMP) and various social baselines. Shannon's experience in the field includes pre-disturbance surveys in South Africa, Malawi and the Democratic Republic of the Congo and fieldwork in Malawi.</p>
<p><b>Justin du Piesanie</b></p> <p>ASAPA Member 270</p> <p>ASAPA CRM Unit</p> <p>ICOMOS Member 14274</p> <p>IAIASa Member</p> <p>Years' Experience: 12</p>	<p>Justin is the Divisional Manager for Social and Heritage Services at Digby Wells. Justin joined the company in August 2011 as an archaeologist and was subsequently made HRM Manager in 2016 and Divisional Manager in 2018. He obtained his Master of Science (MSc) degree in Archaeology from the University of the Witwatersrand in 2008, specialising in the Southern African Iron Age. Justin also attended courses in architectural and urban conservation through the University of Cape Town's Faculty of Engineering and the Built Environment Continuing Professional Development Programme in 2013. Justin is a professional member of the Association of Southern African Professional Archaeologists (ASAPA) and accredited by the association's Cultural Resources Management (CRM) section. He is also a member of the International Council on Monuments and Sites (ICOMOS), an advisory body to the UNESCO World Heritage Convention. He has over 12 years combined experience in HRM in South Africa, including heritage assessments, archaeological mitigation, grave relocation, NHRA Section 34 application processes, and Conservation Management Plans (CMPs). Justin has gained further generalist</p>

Team Member	Bio Sketch
	<p>experience since his appointment at Digby Wells in Botswana, Burkina Faso, Cameroon, the Democratic Republic of Congo, Liberia, Malawi, Mali and Senegal on projects that have required compliance with IFC requirements such as Performance Standard 8: Cultural Heritage. Furthermore, Justin has acted as a technical expert reviewer of HRM projects undertaken in Cameroon, Malawi and Senegal. Justin's current focus at Digby Wells is to develop the HRM process as an integrated discipline following international HRM principles and standards. This approach aims to provide clients with comprehensive, project-specific solutions that promote ethical heritage management and assist in achieving strategic objectives.</p>

## 2. Project Description

The RBMR is located near Rustenburg within the Rustenburg Local Municipality (RLM) of the Bojanala District Municipality (BDM), North West Province. Plan 1 presents the geographical setting within which the Project is located.

The reagents required for the RBMR operations are received at, stored in and distributed from the current centralised Bulk Chemical Storage Facility. The existing infrastructure is now older than 30 years and is no longer suitable for the storage of the chemical reagents. The structural integrity of the facility is unsound and continuous leaks and the loss of bund integrity leading to the contamination of the substrate underlying and adjacent to the storage facility. This has resulted in the heaving of the foundations.

RBMR has implemented monitoring and preventative measures to avoid any further chemical spills and in addition, RBMR have undertaken repairs around the bund to contain any further spills or leaks. These measures are short-term mitigations and will not contain a catastrophic failure or major rain event. The heaving of the soils and further leaks are expected to continue and will be exacerbated by the onset of the rainy season. RBMR therefore require a new Bulk Chemical Storage Facility.

The unpredictable nature of the heaving soils and the condition of the steel and concrete infrastructure contribute to the urgency of the Project. Plan 2 presents the existing RBMR infrastructure and the preferred proposed location for the new Bulk Chemical Storage Facility. The Project also includes paving the dirt road to facilitate access to the facility and installing siding on the railway to decrease the potential for chemical release into the air. The access road and railway are indicated in Plan 2.

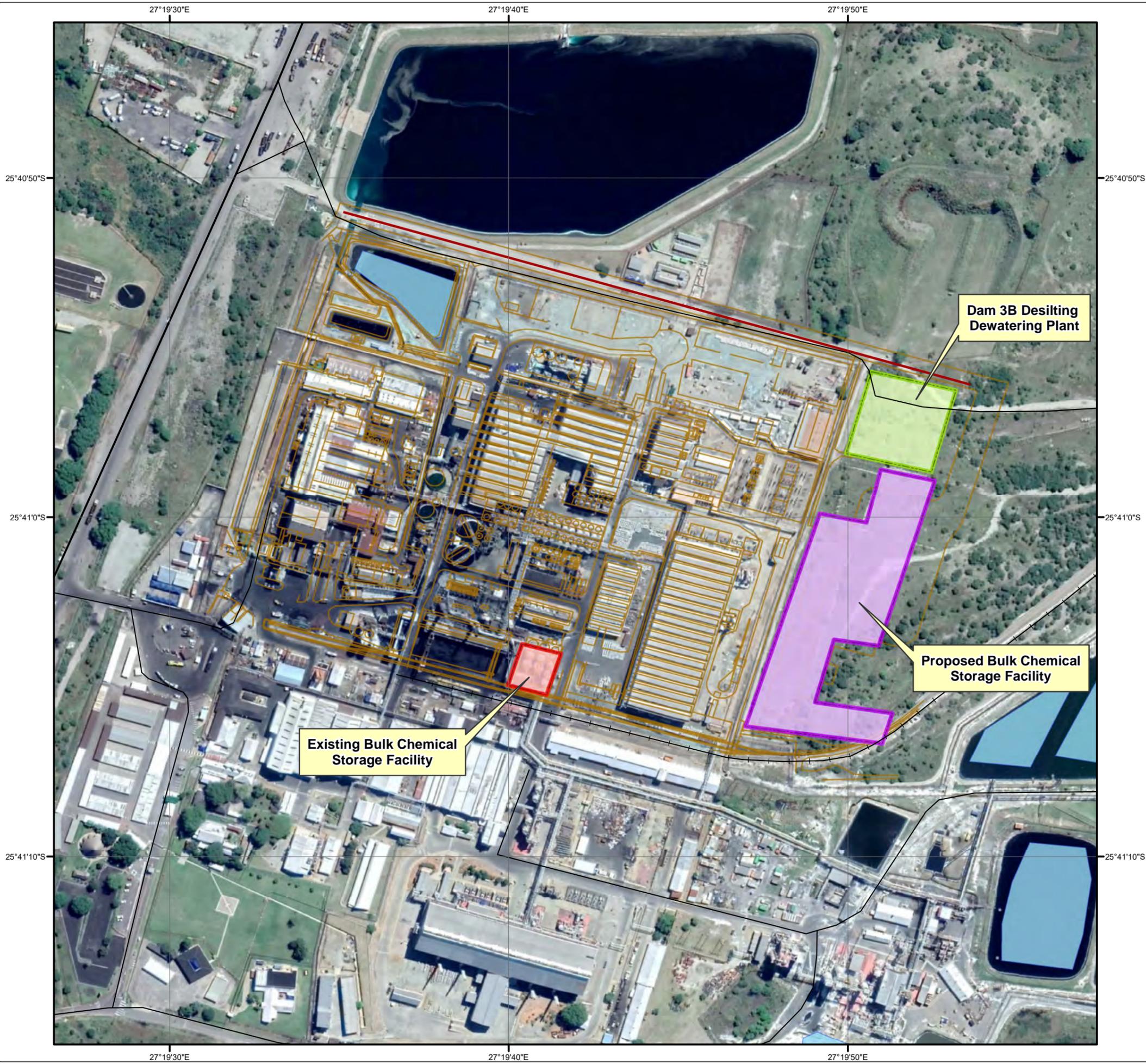


# Anglo Bulk Chemical Storage Facility Relocation

## Infrastructure Layout

### Legend

-  Secondary Road
-  Street
-  Access Road
-  Railway Line
-  Existing Infrastructure
-  Dam/Lake
-  Proposed Dam 3B Desilting Dewatering Plant
-  Proposed Bulk Chemical Storage Facility
-  Existing Bulk Chemical Storage Facility



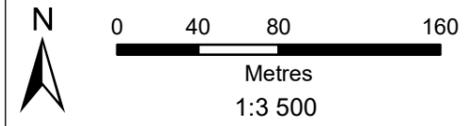
Existing Bulk Chemical Storage Facility

Proposed Bulk Chemical Storage Facility

Dam 3B Desilting Dewatering Plant



• Sustainability • Service • Positive Change • Professionalism • Future Focused • Integrity  
 Projection: Transverse Mercator Ref #: SRK6560\_H\_02\_AMT  
 Datum: WGS 1994 Revision Number: 1  
 Central Meridian: 27°E Date: 21/08/2020



## 2.1. Alternatives Considered

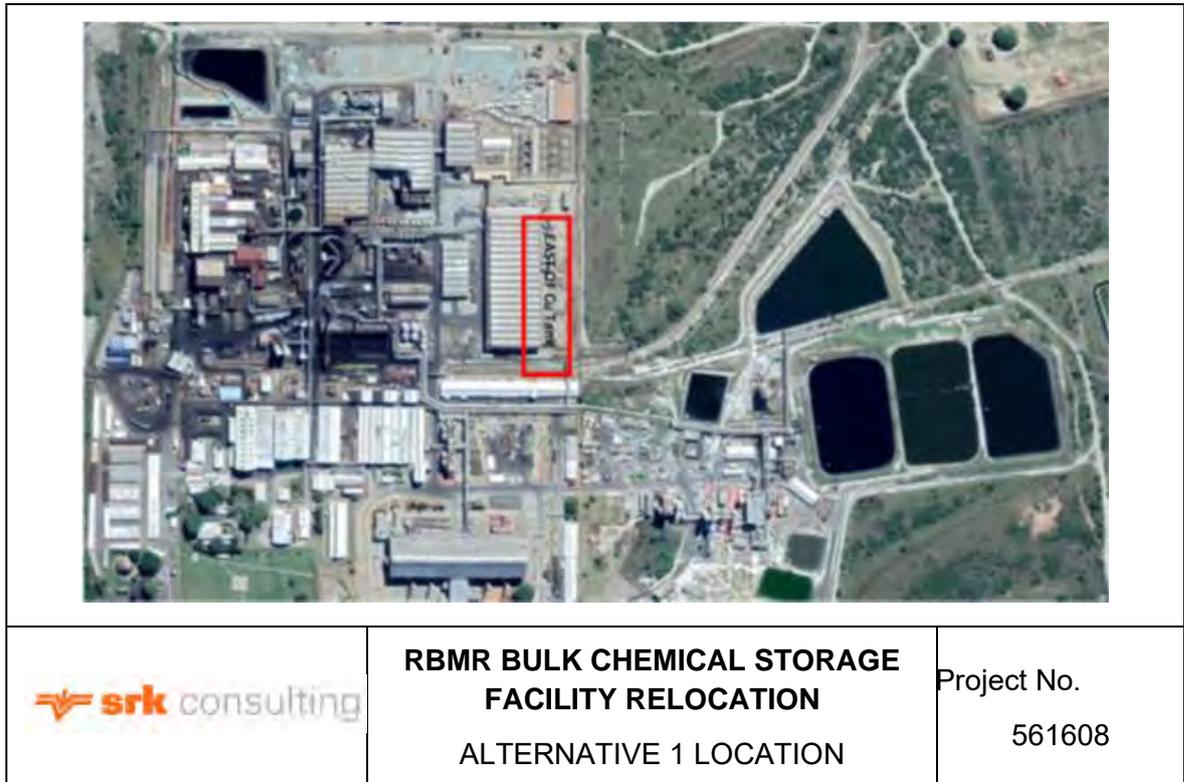
Three location alternatives were considered within the RBMR Boundary. RBMR undertook a location trade-off activity which considered the desirability of the locations and any technical issues presented by the alternatives. The details of the proposed alternatives and the location trade-off are presented in the Draft Scoping Report (DSR) compiled by SRK and will be included in the EIA report, also compiled by SRK.

The proposed location alternatives include:

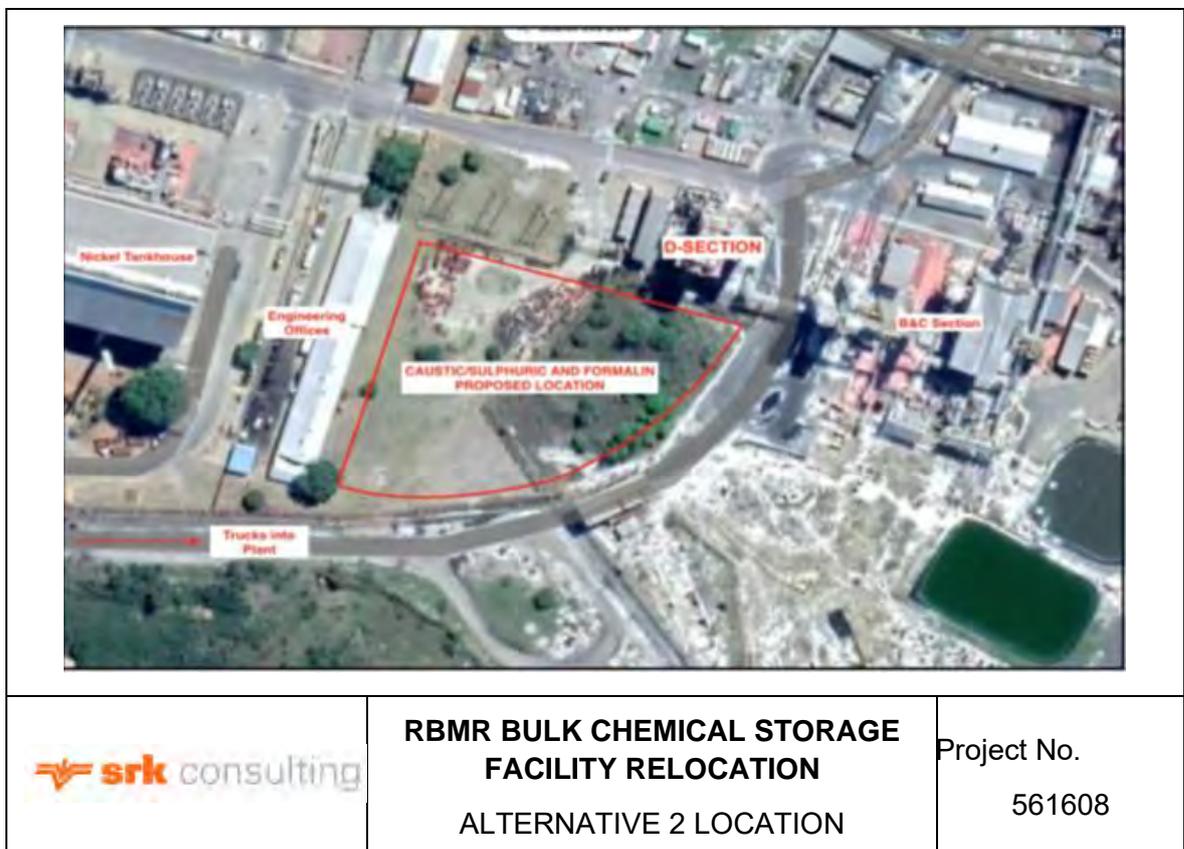
- A location in the brownfields area east of the copper tank house outside the RBMR boundary fence (*the preferred option*). Figure 2-1 presents this alternative (*image supplied by SRK*);
- A location within the brownfields area east of the copper tank house inside the RBMR boundary fence (*Alternative 1*). Figure 2-2 presents the location of this alternative (*image supplied by SRK*); and
- A location in the brownfields area east of the nickel tank house within the RBMR boundary fence (*Alternative 2*). Figure 2-3 presents the location of this alternative (*image supplied by SRK*).



**Figure 2-1: Location of the Preferred Option**



**Figure 2-2: Location of Alternative 1**



**Figure 2-3: Location of Alternative 2**

The preferred option (indicated in Plan 2) was chosen as it will:

- Reduce the interaction between vehicles and pedestrians by reducing the number of acid offloading trucks;
- Eliminate the traffic caused by rail deliveries within the RBMR facility; and
- Reduce congestion at the RBMR entrance gates and weighbridge.

RBMR will engineer the design of the storage facility to mitigate many of the significant risks identified and associated with the preferred option.

Only the preferred option was considered in this assessment. The HRM process excluded Alternative 1 and Alternative 2.

The HRM process considered the 'no-go' alternative. Should the Project not obtain approval, or not go ahead for any reason, the potential negative environmental impacts associated with the construction and operation of the new Bulk Chemical Storage Facility, the paving of the access road and the installation of siding on the existing railway will not occur. However, the potential benefits associated with the Project would also not occur.

Given the current condition of the existing Bulk Chemical Storage Facility, the no-go option is not feasible as the results of the failure of the short-term mitigations will compromise the safety of the plant and will include far-reaching environmental and socio-economic impacts.

## 2.2. Proposed Infrastructure and Activities

Table 2-1 presents a summary of the Project-related activities to be considered in the impact assessment.

**Table 2-1: Project Phases and Associated Activities**

Project Phase	Project Activity
Construction Phase	Site and/or vegetation clearance
	Construction of infrastructure
	Installation of siding on railway line
	Upgrade (paving) of access road
Operational Phase	Receiving, storage and distribution of chemical reagents
	Transportation of chemical reagents (road and rail)
	Maintenance Activities and upkeep ( <i>where necessary</i> )
Decommissioning Phase	<u>Demolition and removal of infrastructure:</u> Once operational activities have been concluded, the infrastructure will be demolished in line with the RBMR requirements.
	<u>Rehabilitation:</u> Project infrastructure must be rehabilitated in line with the RBMR requirements.

Project Phase	Project Activity
	Post-closure monitoring and rehabilitation

### 3. Relevant Legislation, Standards and Guidelines

This section describes the international, national and regional legislative documents and policy documents that inform the legislative and policy framework of the HRM process. The objective is to ensure that the assessments meet all stipulated requirements to ensure legal compliance and successful integration into the regional planning context.

#### 3.1. International Conventions

Anglo internal policy requires all Anglo projects conform to the International Finance Corporation (IFC) Performance Standards of Environmental and Social Sustainability (PS). IFC PS 8: Cultural Heritage is of particular reference to this assessment. This HRM process considers the requirements of IFC PS 8 where applicable.

#### 3.2. National Legislation and Policy

Table 3-1 presents a summary of the national legislation applicable to this HRM process and illustrates how it will be considered in the HIA. Table 3-2 below presents the applicable policies considered in the HIA process.

**Table 3-1: Applicable legislation considered in the HRM process**

Applicable legislation used to compile the report	Reference where applied
<p><b><u>Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)</u></b></p> <p>Section 24 of the Constitution states that everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures, that –</p> <ol style="list-style-type: none"> <li>i. Prevent pollution and ecological degradation;</li> <li>ii. Promote conservation; and</li> <li>iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development</li> </ol>	<p>The HRM process was undertaken to identify heritage resources and determine heritage impacts associated with the Project.</p> <p>As part of the HRM process, applicable mitigation measures, monitoring plans and/or remediation were recommended to ensure that any potential impacts are managed to acceptable levels to support the rights as enshrined in the Constitution.</p>

Applicable legislation used to compile the report	Reference where applied
<p><b><u>National Environmental Management Act, 1998 (Act No. 107 of 1998)</u></b></p> <p>The NEMA, as amended, was set in place in accordance with section 24 of the Constitution of the Republic of South Africa. Certain environmental principles under NEMA have to be adhered to, to inform decision making on issues affecting the environment. Section 24 (1)(a), (b) and (c) of NEMA state that:</p> <p><i>The potential impact on the environment, socio-economic conditions and 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.</i></p> <p>The Environmental Impact Assessment (EIA) Regulations, Government Notice Regulation (GN) R.982 were published on 04 December 2014 and promulgated on 08 December 2014. Together with the EIA Regulations, the Minister also published GN R.983 (Listing Notice No. 1), GN R.984 (Listing Notice No. 2) and GN R.985 (Listing Notice No. 3) in terms of Sections 24(2) and 24D of the NEMA, as amended.</p>	<p>The application process was undertaken in accordance with the principles of Section 2 of NEMA as well as with the EIA 2017 Regulations, promulgated in terms of NEMA.</p>
<p><b><u>GN R. 982: Environmental Impact Assessment Regulations, 2014 (as amended by GN R 326 of 7 April 2017)</u></b></p> <p>These three listing notices set out a list of identified activities which may not commence without an Environmental Authorisation from the relevant Competent Authority through one of the following processes:</p> <ul style="list-style-type: none"> <li>▪ Regulation GN R. 983 (as amended by GN R 327) - Listing Notice 1: This listing notice provides a list of various activities which require environmental authorisation and which must follow a basic assessment process.</li> <li>▪ Regulation GN R. 984 (as amended by GN R 325) – Listing Notice 2: This listing notice provides a list of various activities which require environmental authorisation and which must follow an environmental impact assessment process.</li> </ul>	<p>Refer to the Notification of Intent to Develop (NID) or the EIA report for a full description of the Listed Activities triggered by the proposed Project.</p> <p>To comply with the regulations, an EIA process must be completed in support of the EA application. This HIA was completed to inform the EIA process to comply with Section 24 of the NEMA.</p>

Applicable legislation used to compile the report	Reference where applied
<ul style="list-style-type: none"> <li>▪ Regulation GN R. 985 (as amended by GN R 324) – Listing Notice 3: This notice provides a list of various environmental activities which have been identified by provincial governmental bodies which if undertaken within the stipulated provincial boundaries will require environmental authorisation. The basic assessment process will need to be followed.</li> </ul>	
<p><b><u>National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)</u></b></p> <p>The NHRA is the overarching legislation that protects and regulates the management of heritage resources in South Africa, with specific reference to the following Sections:</p> <ul style="list-style-type: none"> <li>▪ 5. General principles for HRM</li> <li>▪ 6. Principles for management of heritage resources</li> <li>▪ 7. Heritage assessment criteria and grading</li> <li>▪ 38. Heritage resources management</li> </ul> <p>The Act requires that Heritage Resources Authorities (HRAs), be notified as early as possible of any developments that may exceed certain minimum thresholds in terms of Section 38(1), or when assessments of impacts on heritage resources are required by other legislation in terms of Section 38(8) of the Act.</p>	<p>The HIA was compiled to comply with Section 5, 38(3), (4) and (8) of the NHRA. This HIA was submitted to the responsible HRAs, which in this instance is SAHRA and NWPHERA.</p>
<p><b><u>NHRA Regulations, 2000 (GN R 548)</u></b></p> <p>The NHRA Regulations regulate the general provisions and permit application process in respect of heritage resources included in the national estate. Applications must be made in accordance with these regulations. The following Chapters are applicable to this assessment:</p> <ul style="list-style-type: none"> <li>▪ II. Permit Applications and General Provisions for Permits;</li> <li>▪ III: Application for Permit: National Heritage Site, Provincial Heritage Site, Provisionally-Protected Place or Structure older than 60 years;</li> <li>▪ IV: Application for Permit: Archaeological or Palaeontological or Meteorite;</li> </ul>	<p>The HRM process was undertaken with cognisance of the applicable regulations. The proposed mitigation strategies and management measures must comply with these requirements.</p>

Applicable legislation used to compile the report	Reference where applied
<ul style="list-style-type: none"> <li>▪ IX: Application for Permit: Burial Grounds and Graves;</li> <li>▪ X: Procedure for Consultation regarding Protected Area;</li> <li>▪ XI: Procedure for Consultation regarding Burial Grounds and Graves; and</li> <li>▪ XII: Discovery of Previously Unknown Graves.</li> </ul>	

**Table 3-2: Applicable policies considered in the HRM process**

Applicable policies used to compile the report	Reference where applied
<p><b><u>SAHRA Archaeology, Palaeontology and Meteorites (APM) Guidelines: Minimum Standards for the Archaeological and Palaeontological Components of Impact Assessment Reports (2007)</u></b></p> <p>The guidelines provide the minimum standards that must be adhered to for the compilation of a HIA (2007). Chapter II Section 7 outlines the minimum requirements for inclusion in the heritage assessment as follows:</p> <ul style="list-style-type: none"> <li>▪ Background information on the Project;</li> <li>▪ Background information on the cultural baseline;</li> <li>▪ Description of the properties or affected environs;</li> <li>▪ Description of identified sites or resources;</li> <li>▪ Recommended field rating of the identified sites to comply with Section 38 of the NHRA;</li> <li>▪ A statement of Cultural Significance in terms of Section 3(3) of the NHRA; and</li> <li>▪ Recommendations for mitigation or management of identified heritage resources.</li> </ul>	<p>The HIA report was compiled to adhere to the minimum standards as defined by Chapter II of the SAHRA Minimum Standards (2007)</p>

### 3.3. Regional Regulatory Context

No applicable regional by-laws were identified or considered for this assessment. The HRM process was completed to comply with the requirements of the South African national legislative framework and IFC PS 8 as described above.

## 4. Assumptions, Limitations and Exclusions

Digby Wells encountered constraints and limitations during the compilation of this report. Table 4-1 presents an overview of these limitations and the consequences.


**Table 4-1: Constraints and Limitations**

Description	Consequence
<p>Whilst every attempt was made to obtain the latest available information, the reviewed literature does not represent an exhaustive list of information sources for the various study areas.</p>	<p>The cultural heritage baseline presented in Section 6.1 below is considered up to date and accurate.</p>
<p>Archaeological resources commonly occur at subsurface levels. These types of resources cannot be adequately recorded or documented by assessors without destructive and intrusive methodologies and without the correct permits issued in terms of Section 35 of the NHRA.</p>	<p>The reviewed literature, previously completed heritage assessments and the results of the field survey are in themselves limited to surface observations.</p> <p>Subsurface tangible heritage may be exposed during Project activities. Should this occur, RBMR must alert the HRAs of the find and may need to enlist the services of a suitably qualified archaeologist to advise them on the way forward.</p>
<p>Only the preferred infrastructure layout was assessed in the HRM process. The assessment included the proposed paving of the current gravel road to the Dam 3B Desilting Dewatering Plant and installation of siding on the existing railway line.</p> <p>Alternative options 1 and 2 were excluded from this process.</p>	<p>Where the preferred option is no longer feasible, or is not implemented for any reason, the selected alternative must be subject to in-field assessment prior to the commencement of the construction phase of the Project.</p> <p>Any new or additional proposed infrastructure must be assessed by a suitably qualified heritage practitioner prior to implementation or construction.</p>
<p>Whilst every attempt was made to survey the extent of the site-specific study area<sup>2</sup>, this report does not present an exhaustive list of identified heritage resources.</p>	<p>Every effort was made to cover the extent of the site-specific study area, however, as noted above, archaeological resources commonly occur at subsurface levels.</p> <p>Previously unidentified heritage resources may be encountered. Should this occur, RBMR must alert the HRAs of the find and may need to enlist the services of a suitably qualified archaeologist or palaeontologist to advise them on the way forward.</p>
<p>The railway line was not assessed in the field. This is an active railway line and was not deemed safe to inspect or survey.</p>	<p>The railway was constructed as part of the RBMR activities. No additional impacts to heritage resources are envisaged from the proposed installation of siding on the railway line.</p>

<sup>2</sup> Refer to Section 5.1 for a description of the study area.

## 5. Methodology

The following section presents a summary of the methodologies employed in the HRM process. Appendix C includes a more detailed description of the HRM process methodologies.

### 5.1. Defining the Study Area

Heritage resources do not exist in isolation to the greater natural and social environment, which includes the socio-economic, social-political and socio-cultural aspects. To develop an applicable cultural baseline for the Project, Digby Wells defined three nested study areas to be considered. These include:

- The *site-specific* study area: the farm portions extent associated with the proposed Project, including a 500 m buffer area;
- The *local* study area: the area most likely to be influenced by any changes to heritage resources in the Project area, or where project development could cause heritage impacts. The local study area is defined as the area bounded by the local municipality and includes particular reference to the immediate surrounding properties or farms. The local study area is specifically examined to offer a backdrop to the socio-economic conditions within which the proposed development will occur. The local study area furthermore provides the local development and planning context that may contribute to cumulative impacts. The Project is situated in the RLM; and
- The *regional* study area: the area bounded by the district municipality demarcation. In this case, the Project is located in the BDM. Where necessary, the regional study area may be extended outside the boundaries of the district municipality to include areas closest to the Project area. The aim of this is to include much wider expressions of specific types of heritage resources and historical events. The regional study area also provides the regional development and planning context that may contribute to cumulative impacts.

### 5.2. Statement of Cultural Significance

Digby Wells designed the significance rating process to provide a numerical rating of the CS of identified heritage resources. This process considers heritage resources assessment criteria set out in subsection 3(3) of the NHRA, which determines the intrinsic, comparative and contextual significance of identified heritage resources. A resource's importance rating is based on information obtained through review of available credible sources and representativity or uniqueness (i.e. known examples of similar resources to exist).

The rationale behind the heritage value matrix takes into account that a heritage resource's value is a direct indication of its sensitivity to change (i.e. impacts). Value, therefore, was determined prior to completing any assessment of impacts.

The matrix rated the potential, or importance, of an identified resource relative to its contribution to certain values – aesthetic, historical, scientific and social. Resource

significance is directly related to the impact on it that could result from Project activities, as it provided minimum accepted levels of change to the resource.

### 5.3. Definition of Heritage Impacts

Potential impacts to heritage resources may manifest differently across geographical areas or diverse communities when one considers the simultaneous effect to the tangible resource and social repercussions associated with the intangible aspects. Furthermore, potential impacts may concurrently influence the CS of heritage resources. This assessment therefore considers three broad categories adapted from Winter & Baumann (2005, p. 36). These are described in Table 5-1.

**Table 5-1: Impact definition**

Category	Description
Direct Impact	Affect the fabric or physical integrity of the heritage resource, for example destruction of an archaeological site or historical building. Direct impacts may be the most immediate and noticeable. Such impacts are usually ranked as the most intense but can often be erroneously assessed as high-ranking.
Indirect Impact	Occur later in time or at a different place from the causal activity, or as a result of a complex pathway. For example, restricted access to a heritage resource resulting in the gradual erosion of its CS that may be dependent on ritual patterns of access. Although the physical fabric of the resource is not affected through any direct impact, its significance is affected to the extent that it can ultimately result in the loss of the resource itself.
Cumulative Impact	<p>Result from in-combination effects on heritage resources acting within a host of processes that are insignificant when seen in isolation, but which collectively have a significant effect. Cumulative effects can be:</p> <ul style="list-style-type: none"> <li>● Additive: the simple sum of all the effects, e.g. the reclamation of a historical Tailings Storage Facility (TSF) will minimise the sense of the historic mining landscape.</li> <li>● Synergistic: effects interact to produce a total effect greater than the sum of the individual effects, e.g. the removal of all historical TSFs will sterilise the historic mining landscape.</li> <li>● Time crowding: frequent, repetitive impacts on a particular resource at the same time, e.g. the effect of regular blasting activities on a nearby rock art site or protected historical building could be high.</li> <li>● Neutralizing: where the effects may counteract each other to reduce the overall effect, e.g. the effect of changes from a historic to modern mining landscape could reduce the overall impact on the sense-of-place of the study area.</li> </ul>

Category	Description
	<ul style="list-style-type: none"> <li>Space crowding: high spatial density of impacts on a heritage resource, e.g. density of new buildings resulting in suburbanisation of a historical rural landscape.</li> </ul>

#### 5.4. Secondary Data Collection

Data collection assists in the development of a cultural heritage baseline profile of the study area under consideration. Qualitative data was collected to inform this HIA and was primarily obtained through secondary information sources, i.e. desktop literature review and historical layering.

A survey of diverse information repositories was made to identify appropriate relevant information sources. These sources were analysed for credibility and relevance. These credible, relevant sources were then critically reviewed. The objectives of the literature review include:

- Gaining an understanding of the cultural landscape within which the proposed Project is located; and
- Identify any potential fatal flaws, sensitive areas, current social complexities and issues and known or possible tangible heritage.

Repositories that were surveyed included the South African Heritage Resources Information System (SAHRIS), online/electronic journals and platforms and select internet sources. This HIA includes a summary and discussion of the most relevant findings. Table 5-2 lists the sources consulted in the literature review (refer to Section 14 for more detailed references).

**Table 5-2: Qualitative Data Sources**

Reviewed Secondary Data		
Databases		
Genealogical Society of South Africa (GSSA) database (2011)	University of the Witwatersrand (WITS) Archaeological Database (2010)	
SAHRIS	Wazimap (2017)	
Statistics South Africa (2011)		
SAHRIS Cases		
Map ID: 802 Map ID: 1200	Map ID: 772 Map ID: 2368	Case ID: 6688

Reviewed Secondary Data		
Cited Text		
Behrens & Swanepoel, 2008	Bojanala Platinum District Municipality, 2020	Clark, 1982
Coetzee, 2008	Deacon & Deacon, 1999	Esterhuysen & Smith, 2007
Huffman, 2007	Johnson, et al., 2006	Mitchell, 2002
Mucina & Rutherford, 2010	Open Up, 2017	RLM, 2020
Tourism North West, 2020	Winter & Baumann, 2005	

Table 5-3 below lists the sources of historical imagery. Historical layering is a process whereby diverse cartographic sources from various time periods are layered chronologically using Geographic Information Systems (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 or absence of visible features; and
- Identified potential locations where heritage resources may exist within the study area.

**Table 5-3: Aerial imagery considered**

Aerial photographs						
Job no.	Flight plan	Photo no.	Map ref.	Area	Date	Ref.
350	006	0555	2527	Rustenburg	1955	National Geographical Institute

## 5.5. Primary Data Collection

Shannon Hardwick undertook a pre-disturbance survey of the Project area (including only the preferred alternative) on 05 August 2020. The survey was pedestrian, although the access road was surveyed from the vehicle as it is an operational road used by vehicles. The existing railway line was not surveyed as it is also operational.

The survey was non-intrusive (i.e. no sampling was undertaken) and the aim of the surveys was to:

- Visually record the current state of the cultural landscape; and

- Record a representative sample of the visible, tangible heritage resources present within the development footprint area, site-specific study area and greater study area.

Identified heritage resources were recorded as waypoints using a handheld GPS device. The heritage resources were also recorded through written and photographic records. Plan 3 includes the results of the pre-disturbance survey.

## 5.6. Site Naming Convention

Heritage resources identified by Digby Wells during the field survey are prefixed by the SAHRIS case identification generated for this Project. Information on the relevant period or feature code and site number follows (e.g. 13794/BGG-001). The site name may be shortened on plans or figures to the period/feature code and site number (e.g. BGG-001). Table 5-4 presents a list of the relevant period and feature codes (refer to Section 6.1 for an explanation of what these terms mean).

**Table 5-4: Feature and period codes relevant to this HIA**

Feature or Period Code	Reference
BGG	Burial Grounds and Graves
STE	(Historical) Structure
HLP	Historical Layering Point
LFC	Late Farming Community site
Wf	(Historical) Werf

Heritage resources identified through secondary data collection were prefixed by the relevant SAHRIS case or map identification number (*where applicable*) and the original site name as used by the author of that assessment (e.g. 2881/Site 1).

## 6. Findings and Discussion

This section presents a description of the cultural heritage baseline informed through primary and secondary data collection. The section also includes a summary of the developmental context within which the Project is location and presents the potential socio-economic benefits anticipated to arise from the Project. As required by Section 38(3)(d) of the NHRA, the socio-economic benefits are compared to the heritage impacts is considered in Section 12.1.

### 6.1. Regional Cultural Heritage Baseline Description

The Project area is predominantly underlain by geological layers comprising the Bushveld Complex (Johnson, et al., 2006). These layers are comprised of intrusive igneous rocks and

are of zero or insignificant palaeontological sensitivity<sup>3</sup> (SAHRA, 2013). As such, these features are not considered further in this assessment.

The cultural heritage baseline description considered the predominant cultural landscape based on the identified heritage resources within the regional and local study area. Table 6-1 presents the broad timeframes for the major periods of the past in South Africa.

**Table 6-1: Archaeological Periods in South Africa**

<b>The Stone Age</b>	Early Stone Age (ESA)	2 million years ago (mya) to 250 thousand years ago (kya)
	Middle Stone Age (MSA)	250 kya to 20 kya
	Later Stone Age (LSA)	20 kya to 500 CE (Common Era <sup>4</sup> )
<b>Farming Communities</b>	Early Farming communities (EFC)	500 to 1400 CE
	Late Farming Communities (LFC)	1100 to 1800 CE
<b>Historical Period</b>	-	1500 CE to 1994 (Behrens & Swanepoel, 2008)

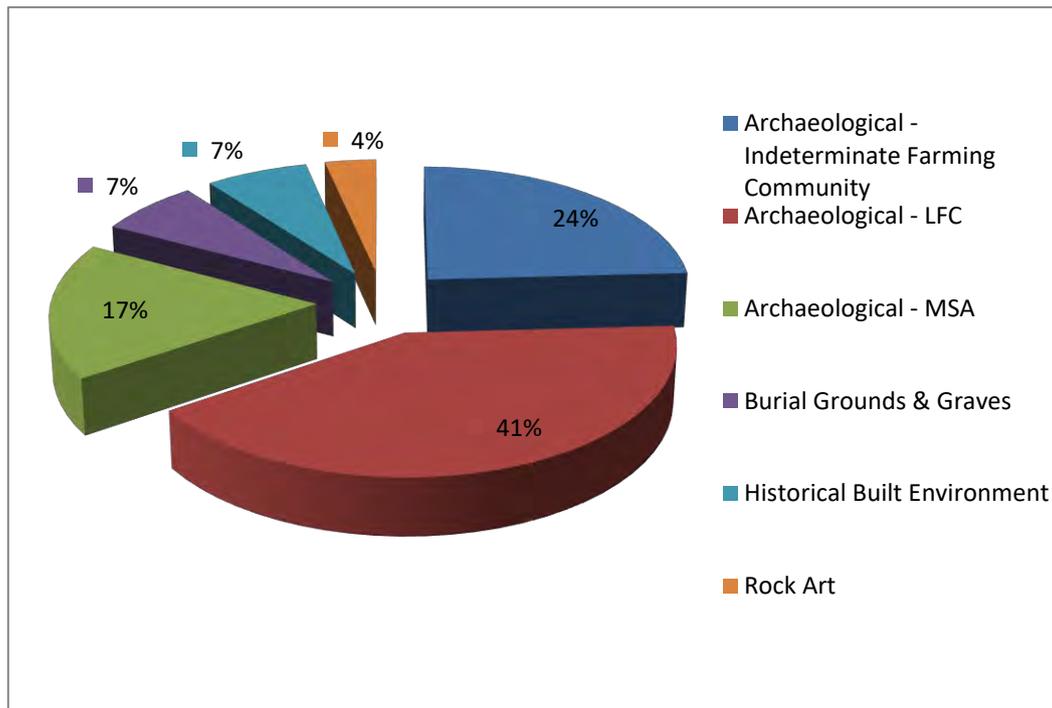
Adapted from Esterhuysen & Smith, (2007)

In total, 29 heritage resources were identified in the literature applicable to the regional, local and site-specific study areas. Figure 6-1 presents the breakdown of the identified heritage resources in terms of the archaeological periods. The predominant tangible heritage resources recorded in the area under consideration demonstrate affiliations with Farming Community Period, particularly the LFC and including one expression of rock art linked to this time period. This notwithstanding, expressions of the MSA and historical period (including burial grounds and graves and the historical built environment) have been recorded in the greater study area.

This section defines the cultural landscape through providing a brief description that offers the reader contextual information, as well as assists the identification of potential risks and impacts to the heritage resources.

<sup>3</sup> As per the SAHRIS PSM, developments in areas of zero or insignificant palaeosensitivity do not require any palaeontological assessment. As such, any specialist palaeontological assessment has been excluded from the HRM process.

<sup>4</sup> Common Era (CE) refers to the same period as *Anno Domini* ("In the year of our Lord", referred to as AD): i.e. the time after the accepted year of the birth of Jesus Christ and which forms the basis of the Julian and Gregorian calendars. Years before this time are referred to as 'Before Christ' (BC) or, here, BCE (Before Common Era).



**Figure 6-1: Heritage Resources Identified within the Regional Study Area**

The Stone Age in southern Africa comprises three broad periods, namely the ESA, MSA and LSA. These periods are characterised by the lithic tools and material culture produced by the various hominid species through time.

The ESA occurred between 2 mya and 250 kya. Lithics from this period comprise predominantly of large handaxes and cleavers made of coarse-grained materials (Esterhuysen & Smith, 2007). These tools are associated with *Australopithecus* and early *Homo* hominid species.

The MSA dates between approximately 300 kya and 20 kya. High proportions of minimally-modified blades, created using the Levallois technique, the use of good quality raw material and the use of bone tools, ochre and pendants characterise the early MSA lithic industries (Clark, 1982; Deacon & Deacon, 1999). These tools were made and used by archaic *Homo sapiens*.

The LSA dates from approximately 40 kya to the historical period. LSA lithics are specialised as specific tools each have specific uses (Mitchell, 2002). Assemblages from this period commonly include diagnostic tools such as scrapers and segments and may include bone points as well.

A review of the available literature demonstrated that the regional study area contains few expressions of the Stone Age (five records or 17% of the previously identified heritage resources). All these records represent the MSA and occur as scatters of artefacts and one isolated lithic (Huffman & Schoeman, 2002; Higgitt, et al., 2015).

The farming community period correlates to the movements of Bantu-speaking agro-pastoralists moving into southern Africa. Heritage resources associated with this period, specifically the LFC, were recorded in the regional study area. The 20 resources representing the LFC and indeterminate farming community period combined account for 69% of the identified heritage resources in the regional study area. These heritage resources occur as:

- Artefact scatters including decorated and undecorated pottery, grinding stones and hammer stones (van Schalkwyk & Pelsler, 1999; Higgitt, et al., 2015);
- One instance of Rock Art engravings (Huffman & Schoeman, 2002); and
- Stonewalling of varying complexity, both with and without additional archaeological artefacts (van Schalkwyk & Pelsler, 1999; 2001; Huffman & Schoeman, 2002; Coetzee, 2008; WITS, 2010; Higgitt, et al., 2015).

Archaeological material cultural remains serve as tangible markers of previous occupation. The most visible indicators include ceramics and stonewalling. Stonewalling is the most visible and easily identifiable indicator of occupation. Several variations based on construction technique, coursing, height, shape and internal divisions are known to occur within southern Africa (Huffman, 2007).

Molokwane type settlements are most commonly identified in the literature applicable to the area under consideration. These types of settlements are characterised by:

- Multiple arcs in the outer wall delineating the back courtyards of individual households surrounding a core;
- Small livestock kraals between cattle enclosures and front courtyards; and
- Daga houses in the centre establishing bilobial arrangement of households.

**Table 6-2: Stonewalling types within the regional study area**

Central Cattle Pattern			
Moor Park Cluster		Ntsuanatsatsi Cluster	
Moor Park	14 <sup>th</sup> to 16 <sup>th</sup> century	Type N	15 <sup>th</sup> to 17 <sup>th</sup> century
Melora	16 <sup>th</sup> century onwards	Badfontein / Bokoni	16 <sup>th</sup> century
Kwamaza	18 <sup>th</sup> century to historic period.	Doornspruit	19 <sup>th</sup> century
		Klipriviersberg	19 <sup>th</sup> century
		Type V	19 <sup>th</sup> century
		Molokwane	
		Type Z	19 <sup>th</sup> century
		Type B	19 <sup>th</sup> century
		Tukela	19 <sup>th</sup> century

After Huffman (2007)

Ceramics were an active part of cultural group dynamics, providing a social function through conveying symbols and metaphors. Because of this, archaeologists can use ceramics to show a relative cultural-historical temporal sequence to recognise ceramic users in the archaeological record (Huffman, 2007). Ceramic classification is universally used by archaeologists to establish relative cultural-historical temporal sequences within southern African Farming Communities. In this way, relative dates can be assigned to sites, as well as inferring tenuous cultural similarities or associations.

**Table 6-3: Ceramic facies within the local study area**

Facies	Period	Characteristics
Ntsuanatsatsi	1450 - 1650 CE	Broad stamping in the neck and stamped arcades on the shoulder. Appliqué.
Uitkomst	1650 – 1820 CE	Stamped arcades, appliqué and blocks of parallel incisions. Also includes stamping and chord impressions.
Rooiberg	1650 – 1750 CE	Stamped rim band and a mixture of stamped and incised bands with arcades and triangle in the neck.

After Huffman (2007)

The historical period<sup>5</sup> is commonly regarded as the period characterised by contact between Europeans and Bantu-speaking African groups and the written records associated with this interaction. However, the division between the LFC and historical period is artificial, as there is a large amount of overlap between the two.

The town of Kroondal is approximately 10 km away from the town of Rustenburg. Kroondal was established in 1843 on the farm Kronendal (which is now also known as Kroondal) (Tourism North West, 2020). The farm was registered in 1858 in the name Jan Michiel van Helsdingen. A German Lutheran mission was established on the farm. When the mission society could not afford to pay maintenance for anyone but the missionaries, workers left the mission station and settled nearby as independent farmers. The town was surveyed in 1889 and the school was established in 1892.

Rustenburg was originally settled in the 1840s by burghers led by Andries Pretorius (Tourism North West, 2020). The town was founded in 1851 and is the third oldest town within the former Transvaal Province.

Within the literature survey, four records of historical resources were identified. These resources account for 14% of the identified heritage resources. These resources occur as:

- Two instances of individual graves (van Schalkwyk & Pelser, 1999; 2001); and

<sup>5</sup> In southern Africa, the last 500 years represents a formative period that is marked by enormous internal economic invention and political experimentation that shaped the cultural contours and categories of modern identities outside of European contact. This period is currently not well documented but is being explored through the 500 year initiative (Swanepoel, et al., 2008).

- The historical built environment, including structural remains and the historical townscape of Kroondal (van Schalkwyk & Pelsler, 1999).

## 6.2. Results from the Verification Survey

Shannon Hardwick undertook a pre-disturbance survey of the preferred proposed Project footprint on 05 August 2020. The survey was pedestrian and non-intrusive. Neither the existing gravel access road or the railway line were surveyed, as both are operational and pose a safety risk should they be surveyed. This notwithstanding, the access road was used to travel to the preferred location alternative and was surveyed from the vehicle.

The survey was recorded as GPS tracks and identified heritage resources were marked as waypoints. Identified heritage resources were also recorded through written notes and photographs. The GPS data are provided in Plan 3.

The following sections describe the observations made during the survey and the outcomes of the survey.

### 6.2.1. Existing Environment

Table 6-4 presents a summary description of the natural environment for the Rustenburg area. Figure 6-2 below presents an overview of the environment at the time of the verification survey. The environment at the time of the verification survey was disturbed through anthropogenic and animal activities. There is evidence that cattle graze on the land within the proposed Project footprint.

Anthropogenic disturbances included the establishment of the existing RBMR infrastructure adjacent to the proposed Project footprint. Electric pylons have been constructed in and adjacent to the proposed Project footprint and large rocks have been deposited in the proposed footprint. It is assumed these rocks were encountered and relocated during the construction of the RBMR and/or electrical infrastructure. The elevated mound in Figure 6-2 is assumed to be natural, as RBMR have not used the location for the storage of waste rock or other material. Some areas of the footprint area are covered with loose gravel and there are vehicle tracks, indicating the establishment of informal roads in the proposed Project area.

**Table 6-4: Summary of the Vegetation Setting of the Project**

Biome	Bio-region	Vegetation Type
Savanna	Central Bushveld	<p><u>Zeerust Thornveld (SVcb3)</u></p> <p>Vegetation consists of deciduous, open to dense, short thorny woodland with an herbaceous layer of grasses. This vegetation is associated with the geological features of the Pretoria Group within the Transvaal Supergroup.</p> <p>The vegetation unit is considered least threatened. Most transformation of the vegetation unit has been through cultivation although some has also occurred through urban transformation and some alien species. Erosion in this unit is very low to low.</p>
		<p><u>Moot Plains Bushveld (SVcb8)</u></p> <p>Vegetation is characterised by open to closed, low and often thorny savanna and woodlands of varying height and density. The herbaceous layer is comprised of grasses. This unit occurs on geological layers associated with the Pretoria Group and the Malmani dolomites, both from the Transvaal Supergroup, and mafic Bushveld intrusions.</p> <p>The vegetation of this using is considered vulnerable. Cultivation, urban expansion and scattered occurrences of alien vegetation contribute to the transformation of this vegetation unit. Erosion in this unit ranges from very low to moderate.</p>
		<p><u>Gold Reef Mountain Bushveld (SVcb9)</u></p> <p>The tree and shrub layers in this vegetation type are continuous and the herbaceous layer is dominated by grasses. The woody vegetation differs according to the different orientations of the slopes covered by this unit. Vegetation is associated with geological features of the Pretoria Group as well as various subgroups in the Witwatersrand Subgroup.</p> <p>This vegetation type is considered least threatened and has been transformed through cultivation and urban expansion. Erosion in this unit is very low to low.</p>

Adapted from Mucina &amp; Rutherford (2010)



**Current Environment and Adjacent Infrastructure**



**Existing Railway and Gravel Access Road**

**Figure 6-2: Results of the Verification Survey showing the Existing Environment**

### **6.2.2. Newly Identified Heritage Resources**

A preliminary assessment of the Genealogical Society of South Africa (2011) database did not indicate any burial grounds are known to exist within the Project area.

No new heritage resources were identified during the pre-disturbance survey. This is most likely due to the disturbed nature of the proposed Project area, as described in Section 6.2.1 above.

### **6.2.3. Results of the Historical Layering**

Figure 6-3 presents an overview of the proposed Project area in 1955. The landscape shown in the historical imagery shows a landscape similar to the present-day environment, although it was not as built-up as today. The landscape is dominated by natural vegetation with a water course to the north and northeast of the RBMR. Parts of the areas comprise cultivated fields and roads were established within the area visible on the historical layering that do not follow the roads present in the area today.

There are two structural complexes adjacent to and overlapping with the current RBMR footprint. No structures were identified in the proposed Project footprint.

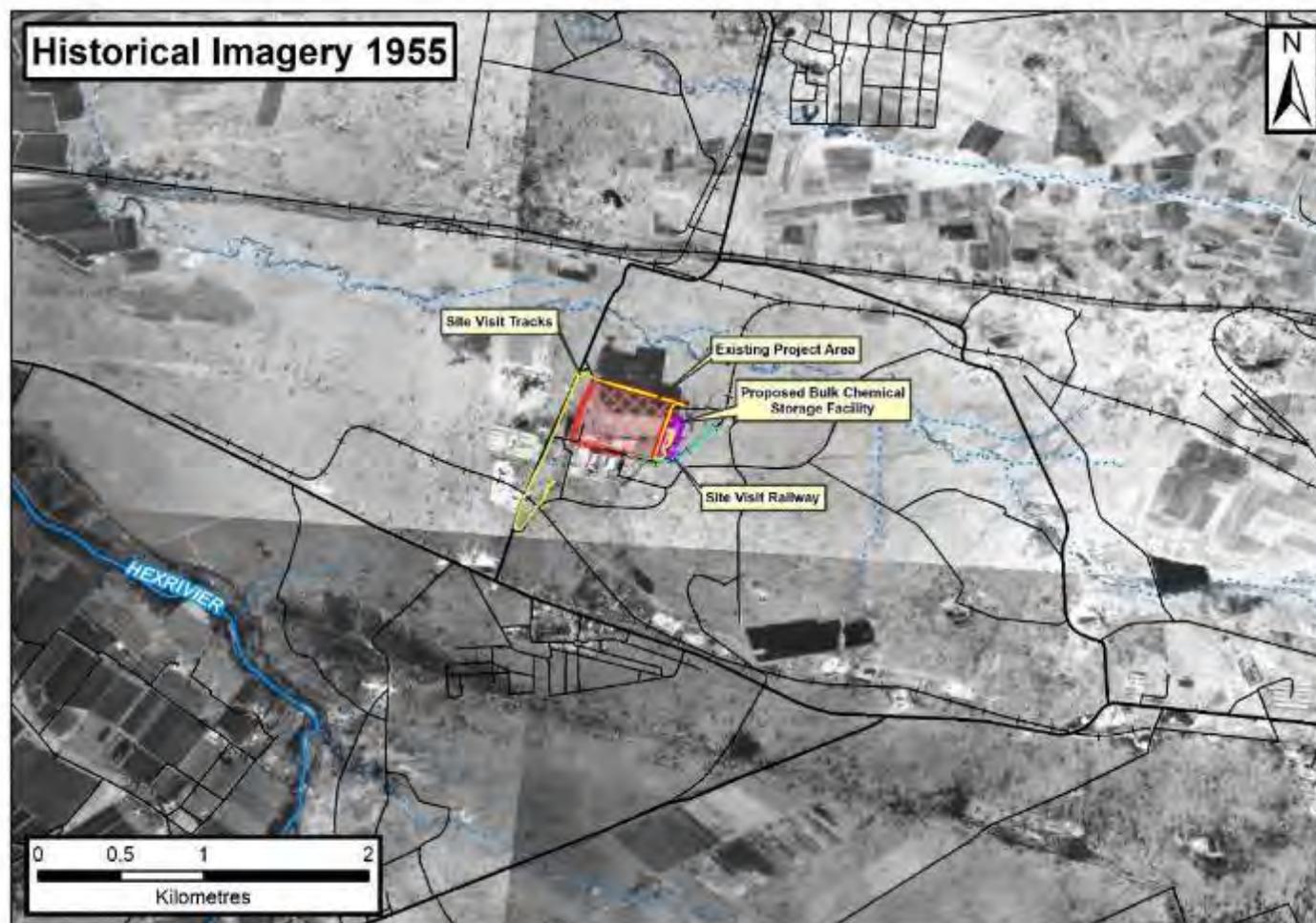
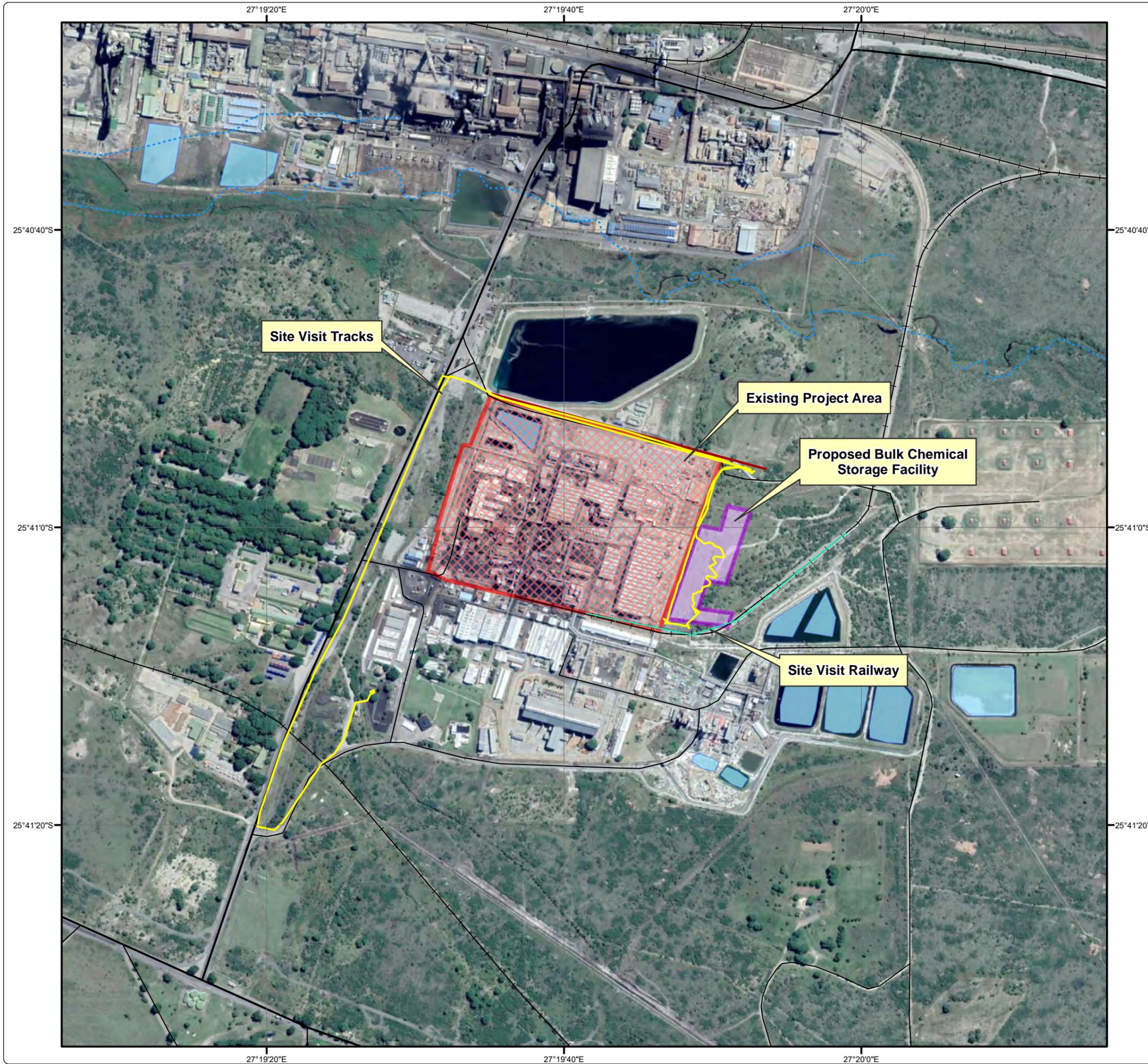


Figure 6-3: Results of the Historical Layering

# Anglo Bulk Chemical Storage Facility Relocation Proposed Infrastructure Layout

## Legend

-  Existing Project Area
-  Secondary Road
-  Street
-  Non-Perennial Rivers/Streams
-  Access Road
-  Railway Line
-  Site Railway Line
-  Site Visit Tracks
-  Proposed Bulk Chemical Storage Facility
-  Dam/Lake





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Metres  
1:8 000

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### 6.3. Developmental Context and Anticipated Socio-economic Benefits

This section provides a brief overview<sup>6</sup> of the socio-economic context within which the Project will be situated. This section presents a summary of the information included in the Integrated Development Plans (IDPs) for the local and district municipalities (Bojanala Platinum District Municipality, 2020; RLM, 2020). Information from Wazimap (2017) has been used to supplement the IDP data.<sup>7</sup>

The 2011 census registered 3 748 435 people living in the North West Province (Wazimap, 2017). The province includes four district municipalities, of which BDM is the largest in terms of population size. The BDM includes five local municipalities, of which RLM is the largest in terms of population size. As of the 2011 Census, 1 507 506 people were residing in the BDM and 549 575 people were living in the RLM.

The RLM includes 45 wards and the Project is located in Ward 34. This ward is a combination of rural landscapes and urban settlements. The ward includes Entabeni, Mfidikoe and Bokamoso and a small portion of Rustenburg. As of the 2011 Census, Ward 34 had a population of 10 692, which is not the smallest of the wards in terms of population size, is one of the smaller wards in the RLM. Population sizes within the RLM vary from 3 112 to 25 299 residents (Wazimap, 2017).

Table 6-5 presents an overview of the employment status of the population. In this table, 'not applicable' refers to those who are not considered to be of working age (i.e. individuals younger than 18 and older than 65 years of age). Discouraged work-seekers refers to individuals who are unemployed but who are not actively seeking work.

**Table 6-5: Employment Statistics within the Regional Study Area**

Statistics (2011)	Ward 34		RLM		BDM	
	No.	%	No.	%	No.	%
Population	10 692	-	549 575	-	1 507 506	-
Working Age Population (18 to 64)	8 338	78%	375 961	68.4%	958 451	63.6%
Employed	3 873	36.2%	196 080	35.7%	436 692	29%
Unemployed	2 119	19.8%	70 391	12.8%	193 123	12.8%
Discouraged work-seeker	241	2.3%	11 265	2%	41 293	2.7%
Not applicable	2 102	19.7%	150 971	27.5%	478 117	31.7%

<sup>6</sup> Refer to the Social Impact Assessment (SIA) compiled in support of the EIA for a more detailed description of the current socio-economic baseline condition, the developmental context and the anticipated social benefits arising from the Project.

<sup>7</sup> These data were used because it realigns the 2011 Census data captured and presented by Statistics South Africa (2011) with new municipal boundaries used in the 2016 Municipal Elections (Open Up, 2017). This report uses the Census 2011 data the 2016 Community Survey data are not yet available at ward level.

Statistics (2011)	Ward 34		RLM		BDM	
	No.	%	No.	%	No.	%
Other not economically active	2 357	22%	120 867	22%	358 280	23.8%

Adapted from Statistics South Africa (2011) and Wazimap (2017)

The unemployment rate has been highlighted as an issue at the local municipality level as well as within several individual wards within the RLM. Ward 34 was not one of the wards within which unemployment was highlighted as a challenge or a need to be addressed by the community (RLM, 2020).

Within the BDM, the mining industry contributed the largest contribution to the Gross Value Added (GVA) to both the BDM and the North West economies (Bojanala Platinum District Municipality, 2020). In 2016, this contribution was 63.5% of the BDM economy and 77.3% of the provincial economy. The community services sector (which includes government services) and the finance sector are the second and third largest sectors respectively. The agriculture sector contributes the smallest portion.

The majority of the platinum mining activities within the BDM are located within the RLM (RLM, 2020). The mining belt runs parallel to the north of the Magaliesberg Mountains, extending from the Pilansberg to the City of Tshwane. The economic, social and physical characteristics of the RLM have largely been influenced by the mining activities established in the district and local municipality. Mining activities have influenced the settlement patterns by creating physical barriers and fragmenting settlements while simultaneously concentrating populations with the employment opportunities. Concentrations of informal settlements follow the mining belt, especially near the mine shafts.

The Executive Mayor in his foreword in the IDP noted a decline in productivity within the mining sector and related industries within the local municipality (RLM, 2020). As a result, the planning components of the RLM IDP have focused on developments in other sectors to reduce the unemployment levels in the municipality. This includes potential projects within the tourism sector linked to the mining heritage of the RLM.

The proposed Project is located in an area characterised by high unemployment levels. Mining is the largest contributor to the GVA for the BDM and the North West Province but is showing a decline in the RLM. As a result, the RLM intends to focus on the development of other sectors within the local municipality to address the high levels of unemployment.

## 7. Impact Assessment

This report considered the potential impacts that may be caused through the establishment and operation of the new Bulk Chemical Storage Facility, upgrade and operation of the existing access road and the installation of siding on the existing railway line as described in Section 2 above. No heritage resources were identified within the proposed development footprint area and therefore no direct impacts to heritage resources are envisaged. This notwithstanding,

the Project does pose the risk of cumulative impacts on the landscape and there is potential for low-risk and unplanned events to occur. These are discussed below.

## 7.1. Cultural Significance of the Identified Landscape

Heritage resources are intrinsic to the history and beliefs of communities. They characterise community identity and cultures and are finite, non-renewable and irreplaceable. Considering the innate value of heritage resources, HRM acknowledges that these have lasting worth as evidence of the origins of life, humanity and society. Notwithstanding the inherent value ascribed to heritage, it is incumbent on the assessor to determine the significance of these resources to allow for the implementation of appropriate management. This is achieved through assessing the value of heritage resources relative to the prescribed criteria encapsulated in policies and legal frameworks.

This section presents a statement of CS as is relevant to newly-identified heritage resources and the greater cultural landscape of the site-specific study area. The statement of significance considers the importance or the contribution of the identified heritage resources and the landscape to four broad value categories: aesthetic, historical, scientific and social, to summarise the CS and other values described in Section 3(3) of the NHRA.

No previously unknown heritage resources were identified in the proposed Project area and the CS of the cultural landscape within the site-specific area has not been assessed.

## 7.2. Heritage Impact Assessment

The assessment of potential heritage resources considers the aforementioned activities associated with the Project, specifically the construction and operation of the new Bulk Chemical Storage Facility, upgrade and operation of the existing access road and the installation of siding on the existing railway line. Potential impacts from these activities are discussed below, grouped according to the three phases of the Project lifecycle.

### 7.2.1. Construction Phase

Table 7-1 presents a summary of the activities comprising the construction phase of the Project (as described in Section 2.2) and summarises the potential risks of impacts to the heritage landscape posed by these activities.

**Table 7-1: Construction Phase Interactions and Impacts of Activity**

Interaction	Potential Impact
Site and/or vegetation clearance	Where Project infrastructure layouts occur on or in proximity to heritage resources, these Project-related activities present the risk of a direct negative impacts to heritage resources afforded
Construction of infrastructure	

Interaction	Potential Impact
Installation of siding on railway line	general protection under Sections 34, 35 and/or 36 of the NHRA (i.e. historical structure, archaeological and palaeontological resources and/or burial grounds and graves). Direct impacts can include damage to or destruction of the heritage resource.
Upgrade (paving) of access road	

No heritage resources were identified in proximity to or within the proposed Project layout. Digby Wells does not envisage any impact to the heritage resources of significance from the above-mentioned activities and has therefore not assessed these impacts further in this report.

### 7.2.2. Operational Phase

Table 7-2 presents a summary of the activities comprising the construction phase of the Project (as described in Section 2.2) and summarises the potential risks of impacts to the heritage landscape posed by these activities.

**Table 7-2: Operational Phase Interactions and Impacts of Activity**

Interaction	Potential Impact
Receiving, storage and distribution of chemical reagents	Where Project infrastructure layouts occur on or in proximity to heritage resources, these Project-related activities present the risk of a direct negative impacts to heritage resources afforded general protection under Sections 34, 35 and/or 36 of the NHRA (i.e. historical structure, archaeological and palaeontological resources and/or burial grounds and graves). Direct impacts can include damage to or destruction of the heritage resource.
Transportation of chemical reagents (road and rail)	
Maintenance Activities and upkeep ( <i>where necessary</i> )	

No heritage resources were identified in proximity to or within the proposed Project layout. Digby Wells does not envisage any impact to the heritage resources of significance from the above-mentioned activities and has therefore not assessed these impacts further in this report.

### 7.2.3. Decommissioning Phase

Table 7-3 presents a summary of the activities comprising the construction phase of the Project (as described in Section 2.2) and summarises the potential risks of impacts to the heritage landscape posed by these activities.

**Table 7-3: Decommissioning Phase Interactions and Impacts of Activity**

Interaction	Potential Impact
Demolition and removal of infrastructure	Where Project infrastructure layouts occur on or in proximity to heritage resources, these Project-related activities present the risk of a direct negative impacts to heritage resources afforded general protection under Sections 34, 35 and/or 36 of the NHRA (i.e. historical structure, archaeological and palaeontological resources and/or burial grounds and graves). Direct impacts can include damage to or destruction of the heritage resource.  Should any infrastructure intended for demolition increase in age to older than 60 years during the Project lifecycle, the structure must be considered a heritage structure. Any alterations to these structures will be subject to a NHRA Section 34 permit application process.
Rehabilitation activities	
Post-closure monitoring and rehabilitation	

No heritage resources were identified in proximity to or within the proposed Project layout. Digby Wells does not envisage any impact to the heritage resources of significance from the above-mentioned activities and has therefore not assessed these impacts further in this report.

### 7.3. Cumulative Impacts

Cumulative impacts occur from in-combination effects of various impacts on heritage resources acting within a host of processes that result in an incremental effect. The importance of identifying and assessing cumulative impacts is that the whole is often greater than the sum of its parts. This implies that the total effect of multiple stressors or change processes acting simultaneously on a system may be greater than the sum of their effects when acting in isolation.

This Project in conjunction with other planned developments in line with the strategic development plans for the North West Province requires consideration to identify the possible in-combination effects of various impacts to known heritage resources. Table 7-4 presents a summary of the possible cumulative impacts of the Project.

**Table 7-4: Summary of Potential Cumulative Impacts**

Type	Cumulative Impact	Direction of Impact	Extent of Impact
Space-Crowding	The establishment of the proposed Bulk Chemical Storage Facility adds to the existing infrastructure within the study area and, in so doing, decreases the area of open land on which heritage resources could potentially exist.	Negative	Site-specific

#### 7.4. Unplanned and Low Risk Events

This section considers the potential risks to protected heritage resources, as well as the potential heritage risks that could arise *for* RBMR in terms of implementation of the Project. These two aspects are discussed separately.

Section 6.2.2 describes the heritage resources identified during the pre-disturbance survey; however, this is not an exhaustive list of all heritage resources within the proposed Project area. Should heritage resources be identified during Project activities, and where RBMR knowingly does not take proactive management measures, potential risks to RBMR may include litigation in terms of Section 51 of the NHRA and social or reputational repercussions. Table 7-5 presents a summary of the primary risks that may arise for RBMR.

**Table 7-5: Identified Heritage Risks that may arise for RBMR**

Description	Primary Risk
Heritage resources with a high CS rating are inherently sensitive to any development in so far that the continued survival of the resource could be threatened. In addition to this, certain heritage resources are formally protected thereby restricting various development activities.	Negative Record of Decision (RoD) and/or development restrictions issued by NWPHERA and/or SAHRA in terms of Section 38(8) of the NHRA.
Impacting on heritage resources formally and generally protected by the NHRA without following due process. Due process may include social consultations and/or permit application processes to SAHRA and/or NWPHERA.	<ul style="list-style-type: none"> <li>• Fines;</li> <li>• Penalties;</li> <li>• Seizure of Equipment;</li> <li>• Compulsory Repair / Cease Work Orders; and</li> <li>• Imprisonment.</li> </ul>

If additional heritage resources are identified during Project-related activities, the potential risks to those heritage resources will need to be assessed. Table 7-6 provides an overview of

these potential unplanned events, the subsequent impact that may occur and mitigation measures and management strategies to remove or reduce these risks.

**Table 7-6: Identified Unplanned Events and Associated Impacts**

Unplanned event	Potential impact	Mitigation / Management / Monitoring
Encountering unidentified <i>in situ</i> remnants of historical built environment resources during the implementation of the Project.	Damage or destruction of heritage resources generally protected under Section 34 of the NHRA	Establish Chance Find Procedures (CFPs) as a condition of authorisation and in conformance with IFC PS 8. Refer to Section 11 for more detailed recommendations.
Accidental exposure of <i>in situ</i> archaeological material during the implementation of the Project.	Damage or destruction of heritage resources generally protected under Section 35 of the NHRA	
Accidental exposure of <i>in situ</i> burial grounds or graves during the implementation of the Project.	Damage or destruction of heritage resources generally protected under Section 36 of the NHRA.	
Accidental exposure of human remains during the decommissioning and rehabilitation and closure phases of the Project.		

## 8. Environmental Management Plan

Table 8-1 below summarises the outcomes of the HRM process that must be included in the Environmental Management Plan (EMP).


**Table 8-1: HRM Specialist Recommendations for the Environmental Management Plan**

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
<ul style="list-style-type: none"> <li>All Activities outlined Section 2.2</li> </ul>	Damage to or destruction of previously unidentified heritage resources.	Cultural Heritage	Construction Operation Decommissioning Closure	<ul style="list-style-type: none"> <li>Develop and implement CFP.</li> </ul>	Control	Before the commencement of the Project

## 9. Monitoring Programme

Section 11 includes recommended mitigation measures and management strategies. These recommendations do not include a monitoring programme.

## 10. Consultation and Stakeholder Comments

The formal consultation process affords Interested and Affected Parties (I&APs) opportunities to engage in the EIA process. The objectives of the Stakeholder Engagement Process (SEP) include the following:

- To ensure that I&APs are informed about the project;
- To provide I&APs with an opportunity to engage and provide comment on the project;
- To draw on local knowledge by identifying environmental and social concerns associated with the project;
- To involve I&APs in identifying methods in which concerns can be addressed;
- To verify that stakeholder comments have been accurately recorded; and
- To comply with the legal requirements.

The Public Participation Process (PPP) will be completed upon the distribution of the HIA as a process separate to the heritage specialist assessment. All formal consultation undertaken was associated with the PPP and the regulated 30-day public consultation period. Any relevant information or comments received during the are included in the Final Scoping Report (FSR) compiled by SRK. Should any I&AP comments be submitted in relevance to heritage resources during the SEP for the Draft EIA report, these will be considered in the final EIA Report.

Site surveys can often present an opportunity for informal consultation with specific stakeholders (usually farm owners, managers and employees). This consultation can result in the identification of burial grounds and graves – importantly, these could include formal burial grounds or graves, sometimes with no visible surface markers – or in the identification of sacred sites or other places of importance, which may not otherwise be identified. Digby Wells did not identify any opportunity for informal consultation during the pre-disturbance survey, as the Project area is located in an operational area which is not accessible to members of the public. The heritage consultant was accompanied by representatives from the RBMR.

## 11. Recommendations

No heritage resources were identified within the proposed Project area. This is most likely due to the disturbed nature of the existing environment. This notwithstanding, there is still potential for RBMR to encounter unidentified heritage resources during Project-related activities. To minimise unplanned direct impacts to unidentified heritage resources, and where no such procedure has been developed during previous activities at the site, RBMR must develop a

generic CFP which must be approved by the HRAs and which must be implemented prior to the commencement of the Project. Appendix B includes a generic CFP.

## 12. Reasoned Opinion Whether Project Should Proceed

Based on the understanding of the Project while considering the results of this assessment and the potential environmental impacts should the Project not go ahead, Digby Wells does not object to the Project from a heritage perspective provided the recommendations detailed above are adopted.

### 12.1. Socio-economic Benefit versus Heritage Impacts

Based on a review of the applicable planning documents and available socio-economic data detailed in Section 6.3 above, the potential socio-economic benefits that will arise from the Project outweigh the identified risks and impacts to the known heritage resources within the site-specific study area. This statement is supported by the following statements:

- No heritage resources were identified in the site-specific study area and potential risks to unidentified heritage resources can be managed through the recommendations included in Section 11 above;
- The Project seeks to proactively mitigate or prevent a significant negative impact to the environment, which is expected to occur should the Project not go ahead; and
- Although not directly contributing to long-term employment opportunities, the implementation of the Project will ensure that operations at the RBMR will continue. Should the Project not go ahead, this may jeopardise operations and, in turn, current employment at the RBMR.

## 13. Conclusion

The aim of the HRM process was to comply with regulatory requirements contained within Section 38 of the NHRA through the following:

- Defining the cultural landscape within which the Project is situated;
- Identifying, as far as is feasible, heritage resources that may be impacted upon by the project as well as define the CS;
- Assessing the possible impacts to the identified heritage resources;
- Considering the socio-economic benefits of the Project; and
- Providing feasible mitigation and management measures to avoid, remove or reduce perceived impacts and risks.

These objectives were met as presented in Sections 6 through 12 above. Based on the understanding of the Project while considering the results of this assessment, Digby Wells does not object to the Project provided the recommendations detailed above are adopted.

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## Appendix A: Glossary of Terms

## GLOSSARY OF TERMS

Term	Definition
<b>Archaeological</b>	Material remains resulting from human activity that are in a state of disuse and older than 100 years, including artefacts, human and hominid remains and artificial features and structures. Rock art created through human agency older than 100 years, including any area within 10 m of such representation. Wrecks older than 60 years - either vessels or aircraft - or any part thereof that was wrecked in South Africa on land, internal or territorial waters, and any cargo, debris or artefacts found or associated therewith. Features, structures and artefacts associated with military history that are older than 75 years and the sites on which they are found, e.g. battlefields.
<b>Archaeologist</b>	A trained professional who uses scientific methods to excavate, record and study archaeological sites and deposits.
<b>Artefact</b>	Any object manufactured or modified by human beings.
<b>Burial Grounds and Graves Consultation (BGGC)</b>	The regulated consultation process required in terms of Section 36 of the NHRA and Regulation GNR 548 to the Act when burial grounds and graves are identified within a project area.
<b>Ceramic (syn. pottery)</b>	In an archaeological context any vessel or other object produced from natural clay that has been fired. Indigenous ceramics associated with Farming Communities are low-fired wares, typically found as potsherds. Imported and more historic ceramics generally include high-fired wares such as porcelain, stoneware, etc.
<b>Ceramic facies / facies</b>	Subgroups of a primary ceramic tradition or sequence. Typically used in ceramic analyses. Various facies are attributed to different temporal periods based of radiometric dates obtained from archaeological contexts. Facies are often used to infer cultural identity of archaeological groups. However, in context of this study identified ceramic facies merely provide a relative temporal context for archaeological sites in the landscape.
<b>Ceramic tradition</b>	The sequence of ceramic styles that develop out of each other and form a continuum. A tradition is the primary group to which subsequent ceramic facies belong. A ceramic tradition can be broadly associated with various linguistic and cultural groups, but do not represent any given ethnic identity, especially during the LFC period.
<b>Conservation</b>	In relation to heritage resources includes the protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance.



Term	Definition
<b>Cultural significance (CS)</b>	<p>The aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. A heritage may have cultural significance or other special value because of its:</p> <ul style="list-style-type: none"> <li>Importance in the community, or pattern of South Africa's history.</li> <li>Possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage</li> <li>Potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage.</li> <li>Importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects.</li> <li>Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.</li> <li>Importance in demonstrating a high degree of creative or technical achievement at a particular period.</li> <li>Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.</li> <li>Strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.</li> <li>Significance relating to the history of slavery in South Africa.</li> </ul>
<b>Development</b>	<p>Any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of a heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including:</p> <ul style="list-style-type: none"> <li>Construction, alteration, demolition, removal or change of use of a place or a structure at a place.</li> <li>Carrying out any works on or over or under a place.</li> <li>Subdivision or consolidation of land comprising, a place, including the structures or airspace of a place.</li> <li>Constructing or putting up for display signs or hoardings.</li> <li>Any change to the natural or existing condition or topography of land.</li> <li>Any removal or destruction of trees, or removal of vegetation or topsoil.</li> </ul>
<b>Early Farming Community/ies</b>	<p>The first Farming Communities (also known as Early Iron Age) that appear in the southern archaeological record during the early first millennium CE. The EFC period is generally dated from c. 200 CE to 1000 CE.</p>
<b>Early Stone Age</b>	<p>The South African ESA dates from ~3 Mya to c. 250 Kya. This period is associated with later <i>Australopithecus</i> and early <i>Homo</i> species. The lithic industries that characterise the ESA include Oldowan and Early Acheulian, typically as simple core tools, choppers handaxes and cleavers.</p>
<b>Excavation</b>	<p>The scientific excavation, recording and retrieval of archaeological deposit and objects through the use of accepted archaeological procedures and methods, and excavate has a corresponding meaning.</p>

Term	Definition
<b>Farming Community/ies</b>	Term signifying the appearance in the southern African archaeological of Bantu-speaking agricultural based societies from the early first millennium CE. The term replaces the <i>Iron Age</i> as a more accurate description for groups who practiced agriculture and animal husbandry, extensive manufacture and use of ceramics, and metalworking. The Farming Community period is divided into an Early and Late phase. The use of Later Farming Communities especially removes the artificial boundary between archaeology and history.
<b>Field Rating</b>	SAHRA requires heritage resources to be provisionally rated in accordance with Section 7 of the NHRA that provides a three tier grading system of resources that form part of the national estate. The rating system distinguishes between four categories: Grade I: Heritage resources with qualities so exceptional that they are of special national significance. Grade II: Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region. Grade III: Other heritage resources worthy of conservation. General Protected: i.e. generally protected in terms of Sections 33 to 37 of the NHRA.
<b>Formal protection</b>	Places with qualities so exceptional that they are of special national significance as national heritage sites or that have special qualities as provincial heritage sites.
<b>General protection</b>	General protections are afforded to: Objects protected in terms of laws of foreign states. Structures older than 60 years. Archaeological and palaeontological sites and material and meteorites. Burial grounds and graves. Public monuments and memorials.
<b>Grave</b>	A place of interment and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such place.



Term	Definition
<b>Heritage Impact Assessment (HIA)</b>	An assessment of the cultural significance of, and possible impacts on, diverse heritage resources that may be affected by a proposed development. A HIA may include several specialist elements such as archaeological, built environment and palaeontological studies. The HIA must supply the heritage authority with sufficient information about the sites to assess, with confidence, whether or not it has any objection to a development, indicate the conditions upon which such development might proceed and assess which sites require permits for destruction, which sites require mitigation and what measures should be put in place to protect sites that should be conserved. The content of HIA reports are clearly outlined in Section 38(3) of the NHRA and SAHRA Minimum Standards.
<b>Heritage resource</b>	Any place or object of cultural significance.
<b>Heritage resources management</b>	Process required when development is intended categorised as: Any linear development exceeding 300m in length. Construction of a bridge or similar structure exceeding 50 m in length. Any activity which will change the character of a site exceeding 0.5 hectares in extent or involving three or more existing erven or subdivisions thereof or that have been consolidated within the past five years or costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority. Re-zoning of a site exceeding one hectare in extent. Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.
<b>Heritage site</b>	Any place declared to be a national heritage site by SAHRA or a place declared to be a provincial heritage site by a provincial heritage resources authority.
<b>Late Farming Community/ies</b>	Farming Communities who either developed / evolved from EFC groups, or who migrated into southern African from the late first millennium / early second millennium CE. The LFC period evidences distinct changes in socio-political organisation, settlement patterns, trade and economic activities, including extensive trade routes. The LFC period is generally dated from c. 1000 CE well into the modern historical period of the nineteenth century.
<b>Late Stone Age</b>	The South African LSA dates from ~30 Kya. This period is associated with modern <i>Homo sapiens sapiens</i> and the complex hunter-gatherer societies, ancestral to the Bushmen / San and Khoi. The LSA lithic assemblage contains microlithic technology and composite tools such as arrows commonly produced from fine-grained cryptocrystallines, quartz and chert. The LSA is also associated with archaeological rock art including both paintings and engravings.



Term	Definition
<b>Living / intangible heritage</b>	The intangible aspects of inherited culture that could include cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems, the holistic approach to nature, society and social relationships.
<b>Management</b>	In relation to heritage resources, includes the conservation, presentation and improvement of a place protected in terms of the NHRA.
<b>Middle Stone Age</b>	The South African MSA dates from ~300 Kya to c. 30 Kya. This period is associated with the changing behavioural patterns and the emergence of modern cognitive abilities in early <i>Homo sapiens species</i> . The lithic industries that characterise the MSA are typically more complex tools with diagnostic identifiers, including convergent flake scars, multi-faceted platforms, retouch and backing. Assemblages are characterised as refined lithic technologies such as prepared core techniques, retouched blades and points manufactured from good quality raw material.
<b>National estate</b>	The national estate as defined in Section 3 of the NHRA, i.e. heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations. The national estate may include: Places, buildings, structures and equipment of cultural significance. Places to which oral traditions are attached or which are associated with living heritage. Historical settlements and townscapes. Landscapes and natural features of cultural significance. Geological sites of scientific or cultural importance. Archaeological and palaeontological sites. Graves and burial grounds, including ancestral graves, royal graves and graves of traditional leaders, graves of victims of conflict, graves of individuals designated by the Minister by notice in the Gazette, historical graves and cemeteries, and other human remains which are not covered in terms of the National Health Act, 2003. Sites of significance relating to the history of slavery in South Africa. Movable objects, including objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens; objects to which oral traditions are attached or which are associated with living heritage; ethnographic art and objects; military objects; objects of decorative or fine art; objects of scientific or technological interest. Books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).



Term	Definition
<b>Palaeontological</b>	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.
<b>Palaeontologist</b>	A trained professional who uses scientific methods to excavate, collect, record and study palaeontological sites and fossils.
<b>Pedestrian survey</b>	A method of examining a site in which surveyors, spaced at regular intervals, systematically walk over the area being investigated.
<b>Phase 1 Archaeological Impact Assessment (AIA)</b>	Phase 1 AIAs generally involve the identification and assessment of sites during a field survey of a portion of land that is going to be affected by a potentially destructive or landscape-altering activity.
<b>Phase 2 Archaeological Impact Assessment (AIA)</b>	Phase 2 AIAs are primarily based on salvage or mitigation excavations preceding development that will destroy or impact on a site. This may involve collecting of artefacts from the surface and / or excavation of representative samples of the artefactual material to allow characterisation of the site and the collection of suitable materials for dating the sites. Phase 2 AIAs aim to obtain a general idea of the age, significance and meaning of the site that is to be lost and to store a sample that can be consulted at a later date for research purposes. Phase 2 excavations can only be done under a permit issued by SAHRA, or other appropriate heritage agency, to the appointed archaeologist.
<b>Phase 3 Management Plan / Conservation Management Plan (CMP)</b>	On occasion, a site may require a Phase 3 programme involving the modification of the site or the incorporation of the site into the development itself as a site museum, a special conservation area or a display. Alternatively it is often possible to relocate or plan the development in such a way as to conserve the archaeological site or any other special heritage significance the place may have. For example, in a wilderness area or open space when sites are of public interest the development of interpretative material is recommended and adds value to the development. Permission for the development to proceed can be given only once the heritage resources authority is satisfied that measures are in place to ensure that the archaeological sites will not be damaged by the impact of the development or that they have been adequately recorded and sampled. Careful planning can minimise the impact of archaeological surveys on development projects by selecting options that cause the least amount of inconvenience and delay. The process as explained above allows the rescue and preservation of information relating to our past heritage for future generations. It balances the requirements of developers and the conservation and protection of our cultural heritage as required of SAHRA and the provincial heritage resources authorities (ASAPA).

<b>Term</b>	<b>Definition</b>
<b>Pre-disturbance survey (syn. reconnaissance)</b>	A survey to record a site as it exists, with all the topographical and other information that can be collected, without excavation or other disturbance of the site.
<b>Reconnaissance</b>	A broad range of techniques involved in the location of archaeological sites, e.g. surface survey and the recording of surface artefacts and features, the sampling of natural and mineral resources, and sometimes testing of an area to assess the number and extent of archaeological resources. However, in terms of South African practice, reconnaissance during a so-called Phase 1 AIA never includes sampling as this is a permitted activity, usually undertaken during so-called Phase 2 AIAs (ASAPA).
<b>Site</b>	Any area of land, including land covered by water, and including any structures or objects thereon.
<b>Structure</b>	Any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.
<b>Tangible heritage</b>	Physical heritage resources such as archaeological sites, historical buildings, burial grounds and graves, fossils, etc. Tangible heritage may be associated with intangible elements, e.g. the living cultural traditions, rituals and performances associated with burial grounds and graves and deceased persons.



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## Appendix B: Chance Find Procedure

## Chance Finds Protocol

### Archaeological Heritage

The regional cultural landscape includes archaeological resources and the RBMR may encounter such resources during Project activities. Should these heritage resources be encountered, all RBMR staff and contractors must implement the following steps:

1. All activities within the immediate vicinity must be halted and the archaeological heritage resource must be avoided;
2. The staff member or contractor who identified the Chance Find must inform the appropriate Responsible Person as to the find (Site Manager, Site Foreman or Environmental Control Officer [ECO]);
3. The Responsible Person, together with the person who identified the find, must record the details of the encounter. Such details include, but are not limited to, the time and date of the encounter, the context of the find and photographs indicating the scale of the find; and
4. The Responsible Person must contact a suitably qualified archaeologist to notify them of the find. The archaeologist will be able to advise RBMR on the significance of the find and the way forward. The way forward may require a site inspection and/or notification of the relevant Heritage Resource Authorities (HRAs).

### Burial Grounds and Graves

The RBMR may encounter previously unidentified burial grounds or individual graves during Project-related activities. Should these heritage resources be encountered, all RBMR staff and contractors must implement the following steps:

1. All activities within the immediate vicinity must be halted and the archaeological heritage resource must be avoided;
2. The staff member or contractor who identified the Chance Find must inform the appropriate Responsible Person as to the find (as with the archaeological resources);
3. The Responsible Person, together with the person who identified the find, must record the details of the encounter. Such details include, but are not limited to, the time and date of the encounter, the context of the find and photographs indicating the condition and (*where possible*) the age of the find;
4. RBMR must notify the South African Police Services (SAPS) of the find;
5. The Responsible Person must notify the Burial Grounds and Graves (BGG) Unit of the South African Heritage Resources Agency (SAHRA);

6. The SAPS and SAHRA BGG Unit<sup>8</sup> must undertake a site inspection to determine the temporal context of the grave(s) to confirm whether the grave(s) is (are) forensic, an authentic burial grave (i.e. a grave older than 60 years old) or archaeological (i.e. a grave older than 100 years). The SAPS and SAHRA BGG Unit will also determine whether additional graves or burials exist within the vicinity of the chance find; and
7. The SAPS and SAHRA BGG Unit will advise RBMR of any requirements RBMR must undertake to mitigate or avoid any impacts to the chance find.

Where necessary, the Digby Wells HRM Unit is available to assist with the recommendations for the mitigation of accidental discoveries or the exposure of chance finds.

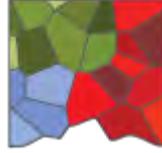
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<sup>8</sup> It must be noted, however, that SAHRA generally delegate their responsibility to archaeologists or heritage practitioners to inspect the grave site and submit a report on the findings to the SAHRA BGG Unit for consideration. Should this be required, RBMR must enlist the services of a suitably-qualified specialist to inspect the exposed grave(s) in consultation with the SAPS.

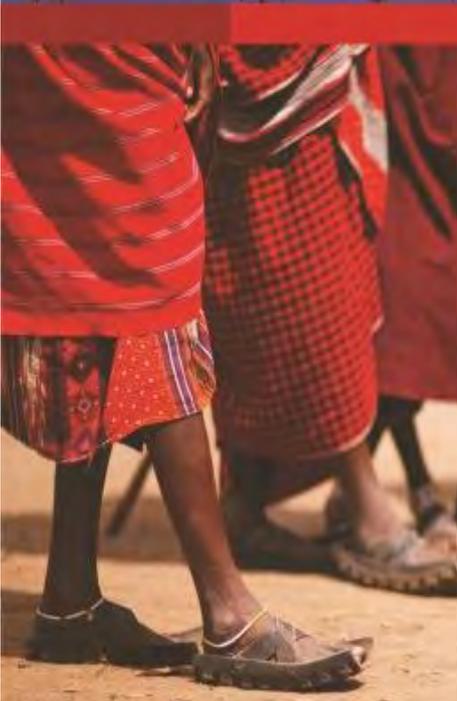


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## Appendix C: HRM Methodology



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## Cultural Significance, Field Rating and Impact Assessment

### Methodology Statement

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**Project Number:**

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This document has been prepared by Digby Wells Environmental.

<b>Report Type:</b>	<b>Methodology Statement</b>
<b>Project Name:</b>	<b>Cultural Significance, Field Rating and Impact Assessment</b>
<b>Project Code:</b>	<b>ZZZ9999</b>

#### Revision History

<b>Name</b>	<b>Responsibility</b>	<b>Version</b>	<b>Date</b>
Johan Nel ASAPA Member 095	HRM Unit Manager	Ver. 1	May 2014
		Ver. 2	October 2014
		Ver. 3	May 2015
Justin du Piesanie ASAPA Member 270	Divisional Manager: Social and Heritage Services	Ver. 4	January 2016
		Ver. 5	June 2016
		Ver. 6	June 2019

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## 1 Introduction

Cultural heritage resources are intrinsic to the history and beliefs of communities. They characterise community identity and cultures, are finite, non-renewable and irreplaceable. Considering the innate value of cultural heritage resources, Heritage Resources Management (HRM) acknowledges that these have lasting worth as evidence of the origins of life, humanity and society. It is incumbent of the assessor to determine the cultural significance<sup>1</sup> (CS) of cultural heritage resources to allow for the implementation of appropriate management. This is achieved through assessing cultural heritage resources' value relative to certain prescribed criteria encapsulated in policies and legal frameworks, such as the South African National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).

Commensurate to the NHRA, with specific reference to Section 38, this methodology aims to ensure that clients protect cultural heritage during implementation of project activities by either avoiding, removing or reducing the intensity of adverse impacts to tangible<sup>2</sup> and intangible<sup>3</sup> cultural heritage resources within the defined area of influence.

The methodology to define CS and assess the potential effects of a project is discussed separately in the sections below.

## 2 Evaluation of Cultural Significance and Field Ratings

### 2.1 Cultural Significance Determination

Digby Wells developed a CS Determination Methodology to assign identified cultural heritage resources with a numerical CS rating in an objective as possible way and that can be independently reproduced provided that the same information sources are used, should this be required.

This methodology determines the intrinsic, comparative and contextual significance of identified cultural heritage resources by considering their:

1. Importance rated on a six-point scale against four criteria; and
2. Physical integrity rated on a five-point scale.

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<sup>1</sup> Cultural significance is defined as the intrinsic "aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance" of a cultural heritage resource. These attributes are combined and reduced to four themes used in the Digby Wells significance matrix: aesthetic, historical, scientific and social.

<sup>2</sup> (i) Moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values; (ii) unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls.

<sup>3</sup> Cultural knowledge, innovations, and practices of communities embodying traditional lifestyles.

The assigned ratings consider information obtained through a review of available credible sources and representativity or uniqueness (i.e. known examples of similar resources to exist), as well as the current preservation *status-quo* as observed.

Figure 2-2 depicts the CS formula and importance criteria, and it describes ratings on the importance physical integrity scales

## 2.2 Field Rating Determination

Grading of heritage resources remains the responsibility of heritage resources authorities. However, the South African Heritage Resources Agency (SAHRA) Minimum Standards requires heritage reports include Field Ratings for identified resources to comply with section 38 of the NHRA. Section 7 of the NHRA provides for a system of grading of heritage resources that form part of the national estate and distinguishes between three categories.

The field rating process is designed to provide a numerical rating of the recommended grading of identified heritage resources. The evaluation is done as objectively as possible by integrating the field rating into the significance matrix.

Field ratings guide decision-making in terms of appropriate minimum required mitigation measures and consequent management responsibilities in accordance with Section 8 of the NHRA. Figure 2-1 presents the formula and the parameters used to determine the Field Ratings.

Field Rating = Average Sum of Aesthetic + Historic + Scientific + Social			
rated against			
Value	Field Rating	Designation	Authority
0	Resource not assessed	None	None
1	Resources afforded general protection in terms of Sections 34 to 37 of the NHRA and with negligible significance	Grade IV C	Local
2	Resources afforded general protection in terms of Sections 34 to 37 of the NHRA and with low significance	Grade IV B	
3	Resources afforded general protection in terms of Sections 34 to 37 of the NHRA and with medium-high significance	Grade IV A	
4	Resources afforded general protection in terms of Sections 34 to 37 of the NHRA and with high significance	Grade III B	
5	Resources afforded general protection in terms of Sections 34 to 37 of the NHRA and with very high significance	Grade II A	
6	Resources under formal protection that can be considered to have special qualities that make them significant within a province or region	Grade II	Provincial
7	Resources under formal protection that can be considered to have special qualities that make them significant within a national or international context	Grade I	National

**Figure 2-1: Field Ratings Methodology**

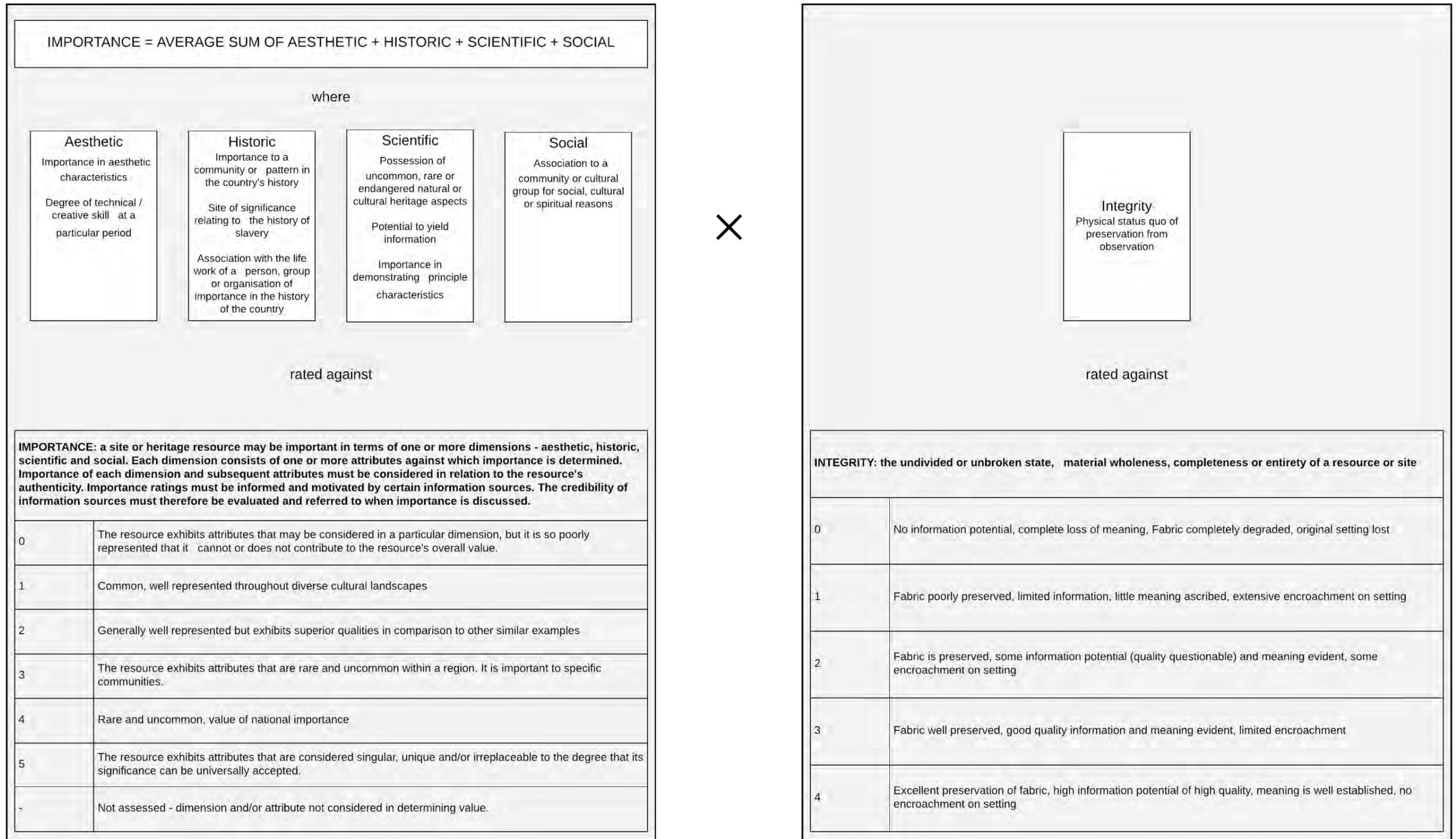


Figure 2-2: CS Determination Methodology

### 3 Impact Assessment Methodology

The rationale behind CS determination recognises that the value of a cultural heritage resource is a direct indication of its sensitivity to change (impacts) as well as the maximum acceptable levels of change to the resource. Therefore, the assessor must determine CS prior to the completion of any impact assessment.

These requirements in terms of international best practice standards are integrated into the impact assessment methodology to guide both assessments of impacts and recommendations for mitigation and management of resources.

The following are terms and definitions applicable to the Environmental Impact Assessment (EIA) concept (ISO 14001):

- **Project Activity:** Activities associated with the Project that result in an environmental interaction during various phases, i.e. construction, operation and decommissioning, e.g., new processing plant, new stockpiles, development of open pit, dewatering, water treatment plant;
- **Environmental Interaction:** An element or characteristic of an activity, product, or service that interacts or can interact with the environment. Environmental interactions can cause environmental impacts (but may not necessarily do so). They can have either beneficial impacts or adverse impacts and can have a direct and decisive impact on the environment or contribute only partially or indirectly to a larger environmental change;
- **Environmental Aspect:** Various natural and human environments that an activity may interact with. These environments extend from within the activity itself to the global system, and include air, water, land, flora, fauna (including people) and natural resources of all kinds; and
- **Environmental Impact:** A change to the environment that is caused either partly or entirely by one or more environmental interactions. An environmental interaction can have either a direct and decisive impact on the environment or contribute only partially or indirectly to a larger environmental change. In addition, it can have either a beneficial environmental impact or an adverse environmental impact.

The assessment process identified potential issues and impacts through examination of:

- Project phases and activities,
- Interactions between activities and the environmental aspect; and
- The interdependencies between environmental aspects.

Figure 3-1 presents a graphical summary of this concept and Figure 3-2 provides an example of the process.

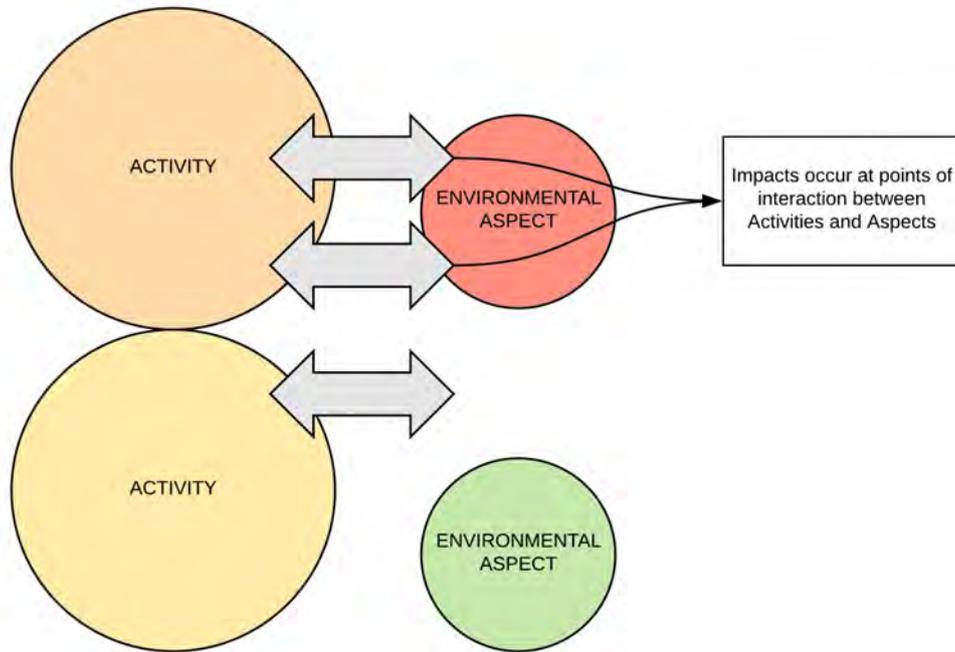


Figure 3-1: Graphical Representation of Impact Assessment Concept

Project Activity & Interaction		Environmental Aspect		Potential Environmental Impact	
Project Phase	Activity	Aspect	Interdependencies	Issue	Potential Impact
This relates to the consideration of the relevant phase of the project. <b>Example: Construction</b>	This refers to one or more of the activities that will be undertaken during the corresponding phase of the project. <b>Example: Topsoil clearing</b>	This identifies and considers the various aspects that will be affected by the project activity. <b>Example: Heritage, Biophysical, and Social</b>	This identifies and considers the interdependencies between the various aspects and how they may be impacted upon by the relevant activity. <b>Example: Removal of topsoil will impact on flora which may have heritage and social implications</b>	The issues considers the activity in relation to the identified aspects and interdependencies. Note: Activities and Aspects can have several issues resulting in various impacts. <b>Example: Physical alteration of the land</b>	Potential impacts are a culmination of the various categories evaluated as part of the impact assessment. <b>Example: Topsoil clearing will remove medicinal plants that will erode indigenous knowledge systems and cultural significance.</b>

Figure 3-2: Example of how Potential Impacts are considered



### 3.1 Categorising Impacts to Cultural Heritage

Impacts may manifest differently among geographical areas and diverse communities. For instance, impacts to cultural heritage resources can simultaneously affect the tangible cultural heritage resource and have social repercussions. The severity of the impact is compounded when the intensity of physical impacts and social repercussions differ significantly, e.g. removal of a grave surface dressings results in a minor physical impact but has a significant social impact. In addition, impacts to cultural heritage resources can influence the determined CS without a physical impact taking place. Given this reasoning, impacts as considered here are generally placed into three broad categories (adapted from Winter & Bauman 2005: 36):

- **Direct or primary impacts** affect the fabric or physical integrity of the cultural heritage resource, for example destruction of an archaeological site or historical building. Direct or primary impacts may be the most immediate and noticeable. Such impacts are usually ranked as the most intense, but can often be erroneously assessed as high-ranking. For example, the destruction of a low-density scatter of archaeological material culture may be assessed as a negatively high impact if CS is not considered;
- **Indirect, induced or secondary impacts** can occur later in time or at a different place from the causal activity, or because of a complex pathway. For example, restricted access to a cultural heritage resource resulting in the gradual erosion of its CS that may be dependent on ritual patterns of access. Although the physical fabric of the cultural heritage resource is not affected through any primary impact, its CS is affected, which can ultimately result in the loss of the resource itself; and
- **Cumulative impacts** result from in-combination effects on cultural heritage resources acting within a host of processes that are insignificant when seen in isolation, but which collectively have a significant effect. Cumulative effects can be:
  - **Additive:** the simple sum of all the effects, e.g. the total number of development activities that will occur within the study area;
  - **Synergistic:** effects interact to produce a total effect greater than the sum of the individual effects, e.g. the effect of each different activity on the archaeological landscape in the study area;
  - **Time crowding:** frequent, repetitive impacts on a cultural heritage resource at the same time, e.g. the effect of regular blasting activities on a nearby rock art site or protected historical building;
  - **Neutralizing:** where the effects may counteract each other to reduce the overall effect, e.g. the effect of changes in land use could reduce the overall impact on sites within the archaeological landscape of the study area; and/or

- **Space crowding:** high spatial density of impacts on a cultural heritage resource, e.g. density of new buildings resulting in suburbanisation of a historical rural landscape.

The fact that cultural heritage resources do not exist in isolation from the wider natural, social, cultural and heritage landscape demonstrates the relevance of the above distinctions: CS is therefore also linked to rarity / uniqueness, physical integrity and importance to diverse communities.

### 3.2 Impact Assessment

The impact assessment process is designed to provide a numerical rating of the identified potential impacts. This methodology follows the established impact assessment formula:

*Impact = consequence of an event x probability of the event occurring*

*where:*

*Consequence = type of impact x (Duration + Extent + Intensity)*

*and*

*Probability = Likelihood of an impact occurring*

*In the formula for calculating consequence:*

*Type of impact = +1 (positive) or -1 (negative)*

Table 3-1 presents a description of the duration, extent, intensity and probability ratings. The intensity rating definitions consider the determined CS of the identified cultural heritage resources. These criteria are used to determine the impact ratings as defined in Table 3-2 below. Table 3-3 represents the relationship between consequence, probability and significance.

The impact assessment process considers pre- and post-mitigation scenarios with the intention of managing and/or mitigating impacts in line with the EIA Mitigation Hierarchy, i.e. avoiding all impacts on cultural heritage resources. Where Project-related mitigation does not avoid or sufficiently minimise negative impacts on cultural heritage resources, mitigation of these resources may be required.

**Table 3-1: Description of Duration, Extent, Intensity and Probability Ratings Used in the Impact Assessment**

Value	CONSEQUENCE						PROBABILITY RATING - A measure of the chance that consequences of that selected level of severity could occur during the exposure window.	
	DURATION RATING - A measure of the lifespan of the impact		EXTENT RATING A measure of how wide the impact would occur		INTENSITY RATING- A measure of the degree of harm, injury or loss.		Probability	Description
	Probability	Description	Exposure	Description	Intensity	Description		
7	<b>Permanent</b>	Impact will permanently alter or change the heritage resource and/or value (Complete loss of information)	<b>International</b>	Impacts on heritage resources will have international repercussions, issues or effects, i.e. in context of international cultural significance, legislation, associations, etc.	<b>Extremely high</b>	Major change to Heritage Resource with High-Very High Value	<b>Certain/Definite</b>	Happens frequently. The impact will occur regardless of the implementation of any preventative or corrective actions.
6	<b>Beyond Project Life</b>	Impact will reduce over time after project life (Mainly renewable resources and indirect impacts)	<b>National</b>	Impacts on heritage resources will have national repercussions, issues or effects, i.e. in context of national cultural significance, legislation, associations, etc.	<b>Very high</b>	Moderate change to Heritage Resource with High-Very High Value	<b>High probability</b>	Happens often. It is most likely that the impact will occur.
5	<b>Project Life</b>	The impact will cease after project life.	<b>Region</b>	Impacts on heritage resources will have provincial repercussions, issues or effects, i.e. in context of provincial cultural significance, legislation, associations, etc.	<b>High</b>	Minor change to Heritage Resource with High-Very High Value	<b>Likely</b>	Could easily happen. The impact may occur.
4	<b>Long Term</b>	Impact will remain for >50% - Project Life	<b>Municipal area</b>	Impacts on heritage resources will have regional repercussions, issues or effects, i.e. in context of the regional study area.	<b>Moderately high</b>	Major change to Heritage Resource with Medium-Medium High Value	<b>Probable</b>	Could happen. Has occurred here or elsewhere
3	<b>Medium Term</b>	Impact will remain for >10% - 50% of Project Life	<b>Local</b>	Impacts on heritage resources will have local repercussions, issues or effects, i.e. in context of the local study area.	<b>Moderate</b>	Moderate change to Heritage Resource with Medium - Medium High Value	<b>Unlikely / Low probability</b>	Has not happened yet, but could happen once in a lifetime of the project. There is a possibility that the impact will occur.

Value	CONSEQUENCE						PROBABILITY RATING - A measure of the chance that consequences of that selected level of severity could occur during the exposure window.	
	DURATION RATING - A measure of the lifespan of the impact		EXTENT RATING A measure of how wide the impact would occur		INTENSITY RATING- A measure of the degree of harm, injury or loss.		Probability	Description
	Probability	Description	Exposure	Description	Intensity	Description		
2	<b>Short Term</b>	Impact will remain for <10% of Project Life	<b>Limited</b>	Impacts on heritage resources will have site specific repercussions, issues or effects, i.e. in context of the site-specific study area.	<b>Low</b>	Minor change to Heritage Resource with Medium - Medium High Value	<b>Rare / Improbable</b>	Conceivable, but only in extreme circumstances. Have not happened during the lifetime of the project, but has happened elsewhere. The possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate mitigation measures
1	<b>Transient</b>	Impact may be sporadic/limited duration and can occur at any time. E.g. Only during specific times of operation, and not affecting heritage value.	<b>Very Limited</b>	Impacts on heritage resources will be limited to the identified resource and its immediate surroundings, i.e. in context of the specific heritage site.	<b>Very low</b>	No change to Heritage Resource with values medium or higher, or Any change to Heritage Resource with Low Value	<b>Highly Unlikely /None</b>	Expected never to happen. Impact will not occur.

**Table 3-2: Impact Significance Scores, Descriptions and Ratings**

Score	Description	Rating
109 to 147	A very beneficial impact which may be sufficient by itself to justify implementation of the project. The impact may result in permanent positive change.	Major (positive)
73 to 108	A beneficial impact which may help to justify the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term positive change to the heritage resources.	Moderate (positive)
36 to 72	An important positive impact. The impact is insufficient by itself to justify the implementation of the project. These impacts will usually result in positive medium to long-term effect on the heritage resources.	Minor (positive)
3 to 35	A small positive impact. The impact will result in medium to short term effects on the heritage resources.	Negligible (positive)
-3 to -35	An acceptable negative impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in negative medium to short term effects on the heritage resources.	Negligible (negative)
-36 to -72	An important negative impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in negative medium to long-term effect on the heritage resources.	Minor (negative)
-73 to -108	A serious negative impact which may prevent the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term change to the heritage resources and result in severe effects.	Moderate (negative)
-109 to -147	A very serious negative impact which may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are immitigable and usually result in very severe effects.	Major (negative)

**Table 3-3 Relationship between Consequence, Probability and Significance**

Relationship between consequence, probability and significance ratings																																						
Probability	Significance																																					
	7	-147	-140	-133	-126	-119	-112	-105	-98	-91	-84	-77	-70	-63	-56	-49	-42	-35	-28	-21	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140
6	-126	-120	-114	-108	-102	-96	-90	-84	-78	-72	-66	-60	-54	-48	-42	-36	-30	-24	-18	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126
5	-105	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105
4	-84	-80	-76	-72	-68	-64	-60	-56	-52	-48	-44	-40	-36	-32	-28	-24	-20	-16	-12	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84
3	-63	-60	-57	-54	-51	-48	-45	-42	-39	-36	-33	-30	-27	-24	-21	-18	-15	-12	-9	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63
2	-42	-40	-38	-36	-34	-32	-30	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42
1	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	Consequence																																					

## 4 Recommended Management and Mitigation Measures

The CS of an identified heritage resource informs the level of the identified potential impact to that resource which in turn informs the recommended management and mitigation requirements. Table 4-1 presents an overview of the minimum recommended mitigation requirements considering the CS of the heritage resource.

**Table 4-1: Minimum Recommended Management or Mitigation Requirements Considering CS**

<b>Determined CS</b>	<b>Minimum Management / Mitigation Requirements<sup>4</sup></b>
Negligible	Sufficiently recorded through assessment, no mitigation required
Low	Resource must be recorded before destruction, may include detailed mapping or surface sampling
Medium	Mitigation of the resource to include detailed recording and limited test excavations
Medium-High	Project design must aim to minimise impacts; Mitigation of resources to include extensive sampling through test excavations and analysis
High	Project design must aim to avoid impacts; Cultural heritage resource to be partially conserved, must be managed by way of Conservation Management Plan
Very High	Project design must be amended to avoid all impacts; Cultural heritage resources to be conserved in entirety and conserved and managed by way of Conservation Management Plan

The desired outcome of an impact assessment is the avoidance of all negative impacts and enhancement of positive ones. While this is not always possible, the recommended management or mitigation measures must be reasonable and feasible taking into consideration the determined CS and nature of the Project.

Two categories of impact management options are considered: avoidance and mitigation.

Avoidance requires changes or amendments to Project design, planning and siting of infrastructure to avoid physical impacts on heritage resources. It is the preferred option, especially where cultural heritage resources with high – very-high CS will be impacted.

<sup>4</sup> Based on minimum requirements encapsulated in guidelines developed by SAHRA



Mitigation of cultural heritage resources may be necessary where avoidance is not possible, thus resulting in partial or complete changes (including destruction) to a resource. Such resources need to be protected until they are fully recorded, documented and researched before any negative impact occurs. Options for mitigating a negative impact can include minimization, offsets, and compensation. Examples of mitigation measures specific to cultural heritage include:

- Intensive detailed recording of sites through various non-intrusive techniques to create a documentary record of the site – “preservation by record”; and
- Intrusive recording and sampling such as shovel test pits (STPs) and excavations, relocation (usually burial grounds and graves, but certain types of sites may be relocated), restoration and alteration. Any form of intrusive mitigation is normally a regulated permitted activity for which permits<sup>5</sup> need to be issued by the Heritage Resource Authorities (HRAs). Such mitigation may result in a reassessment of the value of a cultural heritage resource that could require conservation measures to be implemented. Alternatively, an application for a destruction permit may be made if the resource has been sufficiently sampled.

Where resources have negligible CS, the specialist may recommend that no further mitigation is required, and the site may be destroyed where authorised.

Community consultation is an integral activity to all above-mentioned avoidance and mitigation measures.

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<sup>5</sup> Permit application processes must comply with the relevant Section of the NHRA and applicable Chapter(s) of the NHRA Regulations, 2000 (Government Notice Regulation [GN R] 548) and must be issued by SAHRA or the Provincial Heritage Resources Authority (PHRA) as is applicable.



DIGBY WELLS  
ENVIRONMENTAL

## Appendix D: Specialist CV



Miss Shannon Hardwick  
 Heritage Resources Management Consultant  
 Social and Heritage Services  
 Digby Wells Environmental

## 1 Education

Date	Degree(s) or Diploma(s) obtained	Institution
2013	MSc (Archaeology)	University of the Witwatersrand
2010	BSc (Honours) (Archaeology)	University of the Witwatersrand
2009	BSc	University of the Witwatersrand
2006	Matric	Rand Park High School

## 2 Language Skills

Language	Written	Spoken
English	Excellent	Excellent
Afrikaans	Fair	Basic

## 3 Employment

Period	Company	Title/position
2019 to Present	Digby Wells Environmental	Heritage Resources Management Consultant
2017 to 2019	Digby Wells Environmental	Assistant Heritage Resources Management Consultant
2017 to 2017	Digby Wells Environmental	Social and Heritage Services Intern
2016 to 2017	Tarsus Academy	Facilitator
2011 to 2016	University of the Witwatersrand	Teaching Assistant
2011	University of the Witwatersrand	Collections Assistant

## 4 Experience

I joined the Digby Wells team in May 2017 as a Heritage Management Intern and has most recently been appointed as a Heritage Resources Management Consultant. I am an archaeologist and obtained a Master of Science (MSc) degree from the University of the Witwatersrand in 2013, specialising in historical archaeobotany in the Limpopo Province. I am a published co-author of one paper in *Journal of Ethnobiology*.

Since joining Digby Wells, I have gained generalist experience through the compilation of various heritage assessments, including Notification of Intent to Develop (NIDs), Heritage Scoping Reports (HSRs), Heritage Impact Assessment (HIA) reports, Heritage Basic Assessment Reports (HBARs) and permit applications to undertake permitted activities in terms of Sections 34 and 35 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA). I have also obtained experience in compiling socio-economic documents, including a Community Health, Safety and Security Management Plan (CHSSMP) and social baselines and data analysis for Projects in South Africa, Malawi, Mali and Sierra Leone. My fieldwork experience includes heritage pre-disturbance surveys in South Africa, Malawi and the Democratic Republic of the Congo and social fieldwork in Malawi.

I am a registered member of the Association of Southern African Professional Archaeologists (ASAPA) and the International Council on Monuments and Sites (ICOMOS).

## 5 Project Experience

My project experience is listed in the table below.

**Project Experience**

Project Title	Name of Client	Project Location	Date of Completion	Project / Experience Description
Environmental Authorisation for the Dagsoom Coal Mining Project near Ermelo, Mpumalanga Province	Dagsoom Coal Mining (Pty) Ltd	Ermelo, Mpumalanga Province	Ongoing	Heritage Impact Assessment
Regional Tailings Storage Facility Heritage Mitigations	Ergo Mining (Pty) Ltd	Randfontein, Gauteng	Ongoing	Section 34 Permit Application Process
Weltervreden Mine Environmental Authorisation, Water Use Licence and Mining Right Application Project	Mbuyelo Group (Pty) Ltd	Belfast, Mpumalanga	Ongoing	Heritage Impact Assessment



<b>Project Title</b>	<b>Name of Client</b>	<b>Project Location</b>	<b>Date of Completion</b>	<b>Project / Experience Description</b>
Environmental Authorisation for the proposed Lephalale Pipeline Project, Limpopo Province	MDT Environmental (Pty) Ltd	Lephalale, Limpopo Province	2019	Notification of Intent to Develop
Heritage Resources Management Process Update for the Exxaro Matla Mine	Exxaro Coal Mpumalanga (Pty) Ltd	Kriel, Mpumalanga Province	2019	Heritage Site Management Plan Update
Environmental Authorisation for the proposed Musina-Makhado Special Economic Zone Development Project, Limpopo Province	Limpopo Economic Development Agency	Vhembe District Municipality, Limpopo Province	Ongoing	Heritage Impact Assessment Project Management
Songwe Hills Rare Earth Elements Project	Mkango Resources Limited	Phalombe District, Malawi	Ongoing	Heritage Impact Assessment
Elandsfontein Colliery Burial Grounds and Graves Chance Finds	Anker Coal and Mineral Holdings SA (Pty) Ltd Elandsfontein Colliery (Pty) Ltd	Clewer, Emalahleni, Mpumalanga Province	December 2018	Site Inspection Project Management
Environmental Authorisation Process to Decommission a Conveyor Belt Servitude, Road and Quarry at Twistdraai East Colliery	Sasol Mining (Pty) Ltd	Secunda, Mpumalanga Province	Ongoing	Notification of Intent to Develop
Environmental and Social Impact Assessment for the Bougouni Lithium Project, Mali	Future Minerals S.A.R.L.	Bougouni, Mali	Ongoing	Heritage Impact Assessment
Environmental Authorisation for the Nomalanga Estates Expansion Project, KwaZulu-Natal	Nomalanga Property Holdings (Pty) Ltd	Greytown, KwaZulu-Natal	Ongoing	Heritage Impact Assessment
Environmental Authorisation for the Temo Mine proposed Rail, Road and Pipeline Development, Limpopo Province	Temo Coal Mining (Pty) Ltd	Lephalale, Limpopo Province	Ongoing	Heritage Impact Assessment



Project Title	Name of Client	Project Location	Date of Completion	Project / Experience Description
Gorumbwa RAP Audit	Randgold Resources Limited	Kibali Sector, Democratic Republic of the Congo	December 2018	Resettlement Action Plan Audit
Sasol Sigma Defunct Colliery Surface Mitigation Project: Proposed Rover Diversion and Flood Protection Berms	Sasol Mining (Pty) Ltd	Sasolburg, Free State Province	November 2018	Notification of Intent to Develop
Basic Assessment and Regulation 31 Amendment / Consolidation for Sigma Colliery: Mooikraal and Sigma Colliery: 3 Shaft	Sasol Mining (Pty) Ltd	Sasolburg, Free State Province	Ongoing	Notification of Intent to Develop
Sasol Mining Sigma Colliery Ash Backfilling Project, Sasolburg, Free State Province	Sasol Mining (Pty) Ltd	Sasolburg, Free State Province	July 2018	Heritage Basic Assessment Report Update
Constructed Landfill Site for the Sierra Rutile Limited Mining Operation, Southern Province, Sierra Leone	Sierra Rutile Limited	Southern Province, Sierra Leone	May 2019	Social Impact Assessment
Environmental Impact Assessment for the Klipspruit Colliery Water Treatment Plant and associated pipeline, Mpumalanga	South32 SA Coal Holdings (Pty) Ltd	Ogies, Mpumalanga Province	Ongoing	Notification of Intent to Develop; Social baseline
Proposed construction of a Water Treatment Plant and associated infrastructure for the Treatment of Mine-Affected Water at the Kilbarchan Colliery	Eskom Holdings SOC Limited	Newcastle, KwaZulu-Natal Province	Ongoing	Heritage Impact Assessment
Belfast Implementation Project	Exxaro Coal Mpumalanga (Pty) Ltd	Belfast, Mpumalanga Province	Ongoing	Section 34 Permit Application



Project Title	Name of Client	Project Location	Date of Completion	Project / Experience Description
Newcastle Landfill Project	GCS Water and Environmental Consultants	Newcastle, KwaZulu-Natal	March 2019	Heritage Impact Assessment
NHRA Section 34 Permit Application process for the Davin and Queens Court Buildings on Erf 173 and 174, West Germiston, Gauteng Province	IDC Architects	Johannesburg, Gauteng Province	May 2018	Section 34 Permit Application Process
Basic Assessment and Environmental Management Plan for the Proposed pipeline from the Mballi Colliery to the Tweefontein Water Reclamation Plant, Mpumalanga Province	HCI Coal (Pty) Ltd Mballi Colliery	Ogies, Mpumalanga Province	February 2018	Heritage Basic Assessment Report
The South African Radio Astronomy Observatory Square Kilometre Array Heritage Impact Assessment and Conservation Management Plan Project	The South African Radio Astronomy Observatory (SARAO)	Carnarvon, Northern Cape Province	July 2018	Heritage Impact Assessment; Conservation Management Plan
Environmental Impact Assessment for the proposed Future Developments within the Sun City Resort Complex	Sun International (Pty) Ltd	Rustenburg, North West Province	Ongoing	Heritage Impact Assessment Conservation Management Plan Social Baseline
Environmental Fatal Flaw Analysis for the Mabula Filling Station	Mr van den Bergh	Waterberg, Limpopo Province	November 2017	Fatal Flaw Analysis
Environmental Impact Assessment for the Blyvoor Gold Mining Project near Carletonville, Gauteng Province	Blyvoor Gold Capital (Pty) Ltd	Carletonville, Gauteng	Ongoing	Notification of Intent to Develop; Social Baseline

Project Title	Name of Client	Project Location	Date of Completion	Project / Experience Description
Heritage Resources Management Process for the Exxaro Matla Mine	Exxaro Coal Mpumalanga (Pty) Ltd	Kriel, Mpumalanga Province	October 2018	Heritage Impact Assessment
Liwonde Additional Studies	Mota-Engil Africa	Liwonde, Malawi	June 2018	Community Health, Safety and Security Management Plan
Environmental Impact Assessment for the Millsite TSF Complex	Sibanye-Stillwater	Randfontein, Gauteng	December 2017	Heritage Impact Assessment
Heritage Resources Management Process for the Portion 296 of the farm Zuurfontein 33 IR Proposed Residential Establishment Project	Shuma Africa Projects (Pty) Ltd	Ekurhuleni (Johannesburg), Gauteng	June 2017	Notification of Intent to Develop
NHRA Section 35 Archaeological Investigations, Lanxess Chrome Mine, North-West Province	Lanxess Chrome Mine (Pty) Ltd	Rustenburg, North West Province	August 2017	Archaeological Phase 2 Mitigation
Environmental and Social Input for the Pre-Feasibility Study	Birimium Gold	Bougouni, Mali	October 2018	Pre-Feasibility Study; Heritage Impact Assessment

## 6 Professional Registration

Position	Professional Body	Member Number
Member	Association of Southern African Professional Archaeologists (ASAPA)	451
Member	International Council on Monuments and Sites (ICOMOS)	38048

## 7 Publications

Esterhuysen, A.B. & Hardwick, S.K. 2017. Plant remains recovered from the 1854 siege of the Kekana Ndebele, Historic Cave, Makapan Valley, South Africa. *Journal of Ethnobiology* 37(1): 97-119.



Mr. Justin du Piesanie  
 Divisional Manager  
 Social and Heritage Services  
 Digby Wells Environmental

## 1 Education

Date	Degree(s) or Diploma(s) obtained	Institution
2015	Continued Professional Development, Intermediate Project Management Course	PM.Ideas: A division of the Mindset Group
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

<b>Period</b>	<b>Company</b>	<b>Title/position</b>
2018 to present	Digby Wells Environmental	Divisional Manager: Social and Heritage Services
2016-2018	Digby Wells Environmental	Unit Manager: Heritage Resources Management
2011-2016	Digby Wells Environmental	Heritage Management Consultant: Archaeologist
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 Experience

I joined the company in August 2011 as an archaeologist. Subsequently, Digby Wells appointed me as the Heritage Unit Manager and Divisional Manager for Social and Heritage Services in 2016 and 2018 respectively. I obtained my Master of Science (MSc) degree in Archaeology from the University of the Witwatersrand in 2008, specialising in the Southern African Iron Age. I further attended courses in architectural and urban conservation through the University of Cape Town's Faculty of Engineering and the Built Environment Continuing Professional Development Programme in 2013. I am a professional member of the Association of Southern African Professional Archaeologists (ASAPA), and accredited by the association's Cultural Resources Management (CRM) section. I am also a member of the International Council on Monuments and Sites (ICOMOS), an advisory body to the UNESCO World Heritage Convention. I have over 10 years combined experience in HRM in South Africa, including heritage assessments, archaeological mitigation, grave relocation, and NHRA Section 34 application processes. I gained further generalist experience since my appointment at Digby Wells in Botswana, Burkina Faso, Cameroon, the Democratic Republic of Congo, Liberia, Malawi, Mali, Senegal and Tanzania on projects that have required compliance with IFC requirements such as Performance Standard 8: Cultural Heritage. Furthermore, I have acted as a technical expert reviewer of HRM projects undertaken in Cameroon and Senegal. As Divisional Manager for Social and Heritage Services at Digby Wells Environmental, I manage several large capital Projects and multidisciplinary teams placing me in the best position to identify and exploit points of integration between the HRM process and greater social landscape. This approach to HRM, as an integrated discipline, is grounded in

international HRM principles and standards that has allowed me to provide comprehensive, project-specific solutions that promote ethical heritage management and assist in achieving the strategic objectives of our clients, as well as maintain or enhance Cultural Significance of the relevant cultural heritage resources.

## 5 Project Experience

Please see the following table for relevant Project experience:

PROJECT		LOCATION	DATES		PROJECT TYPE		CLIENT		
LLWDP-II Process	HRM	Lesotho	2020	-	Heritage Assessment	Impact	Lesotho Lowlands Development Project II	Water	
Ergo City Heritage Mitigations	Deep	Johannesburg, Gauteng, South Africa	2020	-	Heritage Assessment, Rescue Permit Application and Monitoring	Impact	Ergo (Pty) Ltd		
Marshall Barracks Archaeological Monitoring	Street	Johannesburg, Gauteng, South Africa	2020	-	Archaeological Monitoring		GVK-Siya Zama Construction		
Exxaro Belfast Inspection	Site	Belfast, Mpumalanga, South Africa	2020	2020	Site Inspection		Exxaro Coal Mpumalanga (Pty) Ltd		
Matla Mine 1 GRP		Kriel, Mpumalanga, South Africa	2020	-	Grave Relocation		Exxaro Coal Mpumalanga (Pty) Ltd		
Mafube RAP and GRP		Middelburg, Mpumalanga, South Africa	2019	-	Grave Relocation		Mafube Coal		
SARAO SKA Project: Heritage Mitigations		Carnarvon, Northern Cape, South Africa	2019	-	Heritage Management and Mitigation		SARAO		
Kibali Kalimva & Ikamva Pit ESIA		Orientele Province, Democratic Republic of Congo	2019	2019	Heritage Assessment	Impact	Barrick Gold Corporation		
Ergo City Deep HSMP		Johannesburg, Gauteng, South Africa	2019	2019	Heritage Management Plan	Site	Ergo (Pty) Ltd		
Ergo RTSF Section 34 Process		Westonaria, Gauteng, South Africa	2019	-	Section 34 Destruction Permit Applications		Ergo (Pty) Ltd		

PROJECT	LOCATION	DATES		PROJECT TYPE		CLIENT
Twyfelaar EIA	Ermelo, Mpumalanga, South Africa	2019	2019	Heritage Assessment	Impact	Dagsoom Coal Mining (Pty) Ltd
Sasol River Diversion	Sasolburg, Free State, South Africa	2019	2019	Heritage Assessment	Impact	Sasol Mining
Sun City EIA and CMP	Pilanesberg, North-West Province, South Africa	2018	2019	Heritage Assessment and Conservation Management Plan	Impact and	Sun International
Exxaro Matla HRM	Kriel, Mpumalanga, South Africa	2017	2019	Heritage Assessment and Conservation Management Plan	Impact	Exxaro Coal Mpumalanga (Pty) Ltd
Exxaro Belfast GRP	Belfast, Mpumalanga, South Africa	2013	2019	Grave Relocation		Exxaro Coal Mpumalanga (Pty) Ltd
Eskom Northern KZN Strengthening	KwaZulu- Natal, South Africa	2016	2018	Heritage Assessment	Impact	ILISO Consulting
Thabametsi GRP	Lephalale, Limpopo Province, South Africa	2017	2018	Grave Relocation		Exxaro Resources Ltd
SKA HIA and CMP	Carnarvon, Northern Cape, South Africa	2017	2018	Heritage Assessment and Conservation Management Plan	Impact and	SARAO
Grootegeeluk Watching Brief	Lephalale, Limpopo Province, South Africa	2017	2017	Watching Brief		Exxaro Resources Ltd
Matla HSMP	Kriel, Mpumalanga Province, South Africa	2017	2017	Heritage Management Plan	Site	Exxaro Coal Mpumalanga (Pty) Ltd
Ledjadja Coal Borrow Pits	Lephalale, Limpopo Province, South Africa	2017	2017	Heritage Assessment	Basic	Ledjadja Coal (Pty) Ltd
Exxaro Belfast Implementation Project PIA	Belfast, Mpumalanga, South Africa	2017	2017	Palaeontological Impact Assessment		Exxaro Coal Mpumalanga (Pty) Ltd

PROJECT	LOCATION	DATES	PROJECT TYPE	CLIENT	
Lanxess Chrome Mine Archaeological Mitigation	Rustenburg, North West Province, South Africa	2017	2017	Phase 2 Excavations	Lanxess Chrome Mine (Pty) Ltd
Tharisa Apollo EIA Project	KwaZulu-Natal, South Africa	2017	2017	Heritage Assessment Impact	GCS (Pty) Ltd
Queen Street Section 34 Process	Germiston, Johannesburg, Gauteng, South Africa	2017	2017	Section 34 Destruction Permit Applications	IDC Architects
Goulamina EIA Project	Goulamina, Sikasso Region, Mali	2017	2017	Heritage Assessment Impact	Birimian Limited
Zuurfontein Residential Establishment Project	Ekurhuleni, Gauteng, South Africa	2017	2017	Notification of Intent to Develop	Shuma Africa Projects
Kibali Grave Relocation Training and Implementation	Orientale Province, Democratic Republic of Congo	2017	2017	Grave Relocation	Randgold Resources Limited
Massawa EIA	Senegal	2016	2017	Heritage Assessment and Technical Reviewer Impact	Randgold Resources Limited
Beatrix EIA and EMP	Welkom, Free State, South Africa	2016	2017	Heritage Assessment Impact	Sibanye Stillwater
Sun City Chair Lift	Pilanesberg, North-West Province, South Africa	2016	2017	Notification of Intent to Develop and Heritage Assessment Basic	Sun International
Hendrina Underground Coal Mine EIA	Hendrina, Mpumalanga, South Africa	2016	2017	Heritage Assessment Impact	Umcebo Mining (Pty) Ltd
Elandsfontein Update	Clewer, Mpumalanga, South Africa	2016	2017	Heritage Assessment Impact	Anker Coal
Groningen and Inhambane PRA	Limpopo Province, South Africa	2016	2016	Heritage Assessment Basic	Rustenburg Platinum Mines Limited

PROJECT	LOCATION	DATES		PROJECT TYPE		CLIENT
Palmietkuilen MRA	Springs, Gauteng, South Africa	2016	2016	Heritage Assessment	Impact	Canyon Resources (Pty) Ltd
Copper Sunset Sand Mining S.102	Free State, South Africa	2016	2016	Heritage Assessment	Basic	Copper Sunset Sand (Pty) Ltd
Grootvlei MRA	Springs, Gauteng, South Africa	2016	2016	Notification of Intent to Develop		Ergo (Pty) Ltd
Lambda EMP	Mpumalanga, South Africa	2016	2016	Palaeontological Impact Assessment		Eskom Holdings SOC Limited
Kilbarchan Basic Assessment and EMP	Newcastle, KwaZulu- Natal, South Africa	2016	2016	Heritage Assessment	Basic	Eskom Holdings SOC Limited
Grootegeeluk Amendment	Lephalale, Limpopo Province, South Africa	2016	2016	Notification of Intent to Develop		Exxaro Coal Resources (Pty) Ltd
Garsfontein Township Development	Pretoria, Gauteng, South Africa	2016	2016	Notification of Intent to Develop		Leungo Construction Enterprises
Louis Botha Phase 2	Johannesburg, Gauteng, South Africa	2016	2016	Phase 2 Excavations		Royal Haskoning DHV
Sun City Heritage Mapping	Pilanesberg, North-West Province, South Africa	2016	2016	Phase 2 Mapping		Sun International
Gino's Building Section 34 Destruction Permit Application	Johannesburg, Gauteng, South Africa	2015	2016	Heritage Assessment Section 34 Destruction Application	Impact and 34 Permit	Bigen Africa Services (Pty) Ltd
EDC Block Refurbishment Project	Johannesburg, Gauteng, South Africa	2015	2016	Heritage Assessment Section 34 Application	Impact and Permit	Bigen Africa Services (Pty) Ltd
Namane IPP and Transmission Line EIA	Steenbokpan, Limpopo Province, South Africa	2015	2016	Heritage Assessment	Impact	Namane Resources (Pty) Ltd

PROJECT	LOCATION	DATES	PROJECT TYPE	CLIENT
Temo Coal Road Diversion and Rail Loop EIA	Steenbokpan, Limpopo Province, South Africa	2015 2016	Heritage Assessment Impact	Namane Resources (Pty) Ltd
Sibanye WRTRP	Gauteng, South Africa	2014 2016	Heritage Assessment Impact	Sibanye Stillwater
NTEM Iron Ore Mine and Pipeline Project	Cameroon	2014 2016	Technical Review	IMIC plc
NLGM Constructed Wetlands Project	Liberia	2015 2015	Heritage Assessment Impact	Aureus Mining
ERPM Section 34 Destruction Permits Applications	Johannesburg, Gauteng, South Africa	2015 2015	Section 34 Destruction Permit Applications	Ergo (Pty) Ltd
JMEP II EIA	Botswana	2015 2015	Heritage Assessment Impact	Jindal
Oakleaf ESIA Project	Bronkhorstspuit, Gauteng, South Africa	2014 2015	Heritage Assessment Impact	Oakleaf Investment Holdings
Imvula Project	Kriel, Mpumalanga, South Africa	2014 2015	Heritage Assessment Impact	Ixia Coal
VMIC Vanadium EIA Project	Mokopane, Limpopo, South Africa	2014 2015	Heritage Assessment Impact	VM Investment Company
Everest North Mining Project	Steelpoort, Mpumalanga, South Africa	2012 2015	Heritage Assessment Impact	Aquarius Resources
Nzoro 2 Hydro Power Project	Orientele Province, Democratic Republic of Congo	2014 2014	Social consultation	Randgold Resources Limited
Eastern Basin AMD Project	Springs, Gauteng, South Africa	2014 2014	Heritage Assessment Impact	AECOM
Soweto Cluster Reclamation Project	Soweto, Gauteng, South Africa	2014 2014	Heritage Assessment Impact	Ergo (Pty) Ltd
Klipspruit South Project	Ogies, Mpumalanga, South Africa	2014 2014	Heritage Assessment Impact	BHP Billiton

PROJECT		LOCATION	DATES		PROJECT TYPE		CLIENT
Klipspruit Extension: Weltevreden Project		Ogies, Mpumalanga, South Africa	2014	2014	Heritage Assessment	Impact	BHP Billiton
Ergo Pipeline Assessment	Rondebult Basic	Johannesburg, South Africa	2014	2014	Heritage Assessment	Basic	Ergo (Pty) Ltd
Kibali Project	ESIA Update	Orientele Province, Democratic Republic of Congo	2014	2014	Heritage Assessment	Impact	Randgold Resources Limited
GoldOne Consolidation	EMP	Westonaria, Gauteng, South Africa	2014	2014	Gap analysis		Gold One International
Yzermite PIA		Wakkerstroom, Mpumalanga, South Africa	2014	2014	Palaeontological Impact Assessment		EcoPartners
Sasol Mooikraal Assessment	Basic	Sasolburg, Free State, South Africa	2014	2014	Heritage Assessment	Basic	Sasol Mining
Rea Vaya Project	Phase II C	Johannesburg, Gauteng, South Africa	2014	2014	Heritage Assessment	Impact	ILISO Consulting
New Project	Liberty Gold	Liberia	2013	2014	Grave Relocation		Aureus Mining
Putu Project	Iron Ore Mine	Petroken, Liberia	2013	2014	Heritage Assessment	Impact	Atkins Limited
Sasol Twistdraai Project		Secunda, Mpumalanga, South Africa	2013	2014	Notification of Intent to Develop		ERM Southern Africa
Kibali Project	Gold Hydro-Power	Orientele Province, Democratic Republic of Congo	2012	2014	Heritage Assessment	Impact	Randgold Resources Limited
SEGA Project	Gold Mining	Burkina Faso	2013	2013	Technical Reviewer		Cluff Gold PLC
Consbrey and Collieries Project	Harwar	Breyton, Mpumalanga, South Africa	2013	2013	Heritage Assessment	Impact	Msobo Coal
Falea Environmental Assessment	Uranium Mine	Falea, Mali	2013	2013	Heritage Scoping		Rockgate Capital

PROJECT	LOCATION	DATES		PROJECT TYPE	CLIENT
Daleside Acetylene Gas Production Facility	Gauteng, South Africa	2013	2013	Heritage Impact Assessment	ERM Southern Africa
SEGA Gold Mining Project	Burkina Faso	2012	2013	Socio Economic and Asset Survey	Cluff Gold PLC
Kibali Gold Project Grave Relocation Plan	Orientele Province, Democratic Republic of Congo	2011	2013	Grave Relocation	Randgold Resources Limited
Everest North Mining Project	Steelpoort, Mpumalanga, South Africa	2012	2012	Heritage Impact Assessment	Aquarius Resources
Environmental Authorisation for the Gold One Geluksdal TSF and Pipeline	Gauteng, South Africa	2012	2012	Heritage Impact Assessment	Gold One International
Platreef Burial Grounds and Graves Survey	Mokopane, Limpopo Province, South Africa	2012	2012	Burial Grounds and Graves Survey	Platreef Resources
Resgen Boikarabelo Coal Mine	Limpopo Province, South Africa	2012	2012	Phase 2 Excavations	Resources Generation
Bokoni Platinum Road Watching Brief	Burgersfort, Limpopo Province, South Africa	2012	2012	Watching Brief	Bokoni Platinum Mine
Transnet NMPP Line	Kwa-Zulu Natal, South Africa	2010	2010	Heritage survey	Umlando Consultants
Archaeological Impact Assessment – Witpoortjie Project	Johannesburg, Gauteng, South Africa	2010	2010	Archaeological Impact Assessment	ARM
Der Brochen Archaeological Excavations	Steelpoort, Mpumalanga, South Africa	2010	2010	Phase 2 Excavations	Heritage Contracts Unit
De Brochen and Booyesdal Archaeology Project	Steelpoort, Mpumalanga, South Africa	2010	2010	Site Mapping Recording:	Heritage Contracts Unit
Eskom Thohoyandou Electricity Master Network	Limpopo Province, South Africa	2010	2010	Heritage Statement	Strategic Environmental Focus

PROJECT		LOCATION	DATES		PROJECT TYPE		CLIENT
Bathako Expansion	Mine	North-West Province, South Africa	2010	2010	Phase 2 Mapping		Heritage Contracts Unit
Wenzelrust Excavations		Shoshanguve, Gauteng, South Africa	2009	2009	Phase 2 Excavations		Heritage Contracts Unit
University of the Witwatersrand LIA Shelter Project	Parys	Free State, South Africa	2009	2009	Phase 2 Mapping		University of the Witwatersrand
Archaeological Assessment of Modderfontein Holdings	of AH	Johannesburg, Gauteng, South Africa	2008	2008	Heritage Assessment	Basic	ARM
Heritage Assessment of Rhino Mines		Thabazimbi, Limpopo Province, South Africa	2008	2008	Heritage Assessment	Impact	Rhino Mines
Cronimet Project		Thabazimbi, Limpopo Province, South Africa	2008	2008	Archaeological surveys		Cronimet
Eskom Thohoyandou SEA Project		Limpopo Province, South Africa	2008	2008	Heritage Statement		Eskom
Witbank Archaeological Assessment	Dam Impact	Witbank, Mpumalanga, South Africa	2007	2007	Archaeological survey		ARM
Sun City Archaeological Site Mapping		Sun City, Pilanesberg, North West Province, South Africa	2006	2006	Site Mapping	Recording:	Sun International
Klipriviersberg Archaeological Survey		Meyersdal, Gauteng, South Africa	2005	2006	Archaeological surveys		ARM

## 6 Professional Registration

Position	Professional Body	Registration Number
Member	Association for Southern African Professional Archaeologists (ASAPA);	270

Position	Professional Body	Registration Number
	ASAPA Cultural Resources Management (CRM) section	
Member	International Council on Monuments and Sites (ICOMOS)	14274
Member	Society for Africanist Archaeologists (SAfA)	N/A
Member	International Association of Impact Assessors (IAIA) South Africa	5494

## 7 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

du Piesanie, J.J., 2017. Book Review: African Cultural Heritage Conservation and Management. *South African Archaeological Bulletin* 72(205)