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ENVIRONMENTAL

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## Proposed Weltevreden Coal Mining Project near Belfast, Mpumalanga Province

### Heritage Scoping Report

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**Project Number:**

MBU5710

**Prepared for:**

Mbuyelo Group (Pty) Ltd

July 2019

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<b>Report Type:</b>	<b>Heritage Scoping Report</b>
<b>Project Name:</b>	<b>Proposed Weltevreden Coal Mining Project near Belfast, Mpumalanga Province</b>
<b>Project Code:</b>	<b>MBU5710</b>

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## ABBREVIATIONS

Abbreviation	Meaning
<b>ASAPA</b>	Association of Southern African Professional Archaeologists
<b>BCE</b>	Before Common Era (also: Before Christ or BC)
<b>BID</b>	Background Information Document
<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>CS</b>	Cultural Significance
<b>Digby Wells</b>	Digby Wells Environmental
<b>DSR</b>	Draft Scoping Report
<b>EA</b>	Environmental Authorisation
<b>EAP</b>	Environmental Assessment Practitioner
<b>EFC</b>	Early Farming Community (also known as Early Iron Age)
<b>EIA</b>	Environmental Impact Assessment. 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'.
<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>HRAs</b>	Heritage Resources Authorities
<b>HRM</b>	Heritage Resources Management
<b>HSMP</b>	Heritage Site Management Plan
<b>HSR</b>	Heritage Scoping Report
<b>Kya</b>	Thousand years ago
<b>LFC</b>	Late Farming Community also known as Late Iron Age
<b>LSA</b>	Late Stone Age
<b>MPRHA</b>	Mpumalanga Provincial Heritage Resources Authority

<b>Abbreviation</b>	<b>Meaning</b>
<b>MPRDA</b>	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
<b>MSA</b>	Middle Stone Age
<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>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>SoW</b>	Scope of Work
<b>ToR</b>	Terms of Reference
<b>Wits</b>	University of the Witwatersrand



## GLOSSARY OF TERMS

Term	Definition
<b>Alter</b>	Any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or other decoration or any other means.
<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>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.

Term	Definition
<b>Ceramic classification</b>	<p>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. Huffman (1970) postulated that the migration of farming communities could be recognised via a technique of 'ceramic seriation'. Ceramic seriation is based on the premise that certain styles of ceramics, including vessel shape and decorative motifs, follow each other chronologically, and can be attributed to certain archaeological 'cultures' (Huffman, 1970; 1980).</p> <p>Huffman (1970) and Phillipson (1977) demonstrated that Bantu-speaking groups may have migrated southwards in three 'streams' from a possible central homeland, over different periods (See Figure 6 4). These streams are generally associated with diverse Eastern Bantu-speaking societies and various farming community periods. Although these hypotheses have since undergone meaningful reviews and received significant opposition, a general consensus remains that ceramic seriation can be used to reconstruct population movements.</p>
<b>Compulsory repair order</b>	<p>A heritage resources authority may serve on the owner of a heritage site an order to repair or maintain such site, to the satisfaction of the heritage resources authority, within a reasonable period of time as specified in the order where the heritage resources authority considers that such site:</p> <ul style="list-style-type: none"> <li>▪ Has been allowed to fall into disrepair for the purpose of effecting or enabling its destruction or demolition, enabling the development of the designated land, or enabling the development of any land adjoining the designated land.</li> <li>▪ Is neglected to such an extent that it will lose its potential for conservation.</li> </ul>
<b>Conservation</b>	<p>In relation to heritage resources includes the protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance.</p>

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>

Term	Definition
<b>Excavation</b>	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.
<b>Farming Community/ies</b>	Term signifying the appearance in the southern African archaeological of Bantu-speaking agriculturally 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>	<p>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:</p> <ul style="list-style-type: none"> <li>▪ Grade I: Heritage resources with qualities so exceptional that they are of special national significance.</li> <li>▪ 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.</li> <li>▪ Grade III: Other heritage resources worthy of conservation.</li> <li>▪ General Protected: i.e. generally protected in terms of Sections 33 to 37 of the NHRA.</li> </ul>
<b>General protection</b>	<p>General protections are afforded to:</p> <ul style="list-style-type: none"> <li>▪ Objects protected in terms of laws of foreign states.</li> <li>▪ Structures older than 60 years.</li> <li>▪ Archaeological and palaeontological sites and material and meteorites.</li> <li>▪ Burial grounds and graves.</li> <li>▪ Public monuments and memorials.</li> </ul>
<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 (HRM)</b>	<p>Process required when development is intended categorised as:</p> <ul style="list-style-type: none"> <li>▪ Any linear development exceeding 300m in length.</li> <li>▪ Construction of a bridge or similar structure exceeding 50 m in length.</li> <li>▪ 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.</li> <li>▪ Re-zoning of a site exceeding one hectare in extent.</li> <li>▪ Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.</li> </ul>
<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 cryptocrystalline, 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>	<p>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:</p> <ul style="list-style-type: none"> <li>▪ Places, buildings, structures and equipment of cultural significance.</li> <li>▪ Places to which oral traditions are attached or which are associated with living heritage.</li> <li>▪ Historical settlements and townscapes.</li> <li>▪ Landscapes and natural features of cultural significance.</li> <li>▪ Geological sites of scientific or cultural importance.</li> <li>▪ Archaeological and palaeontological sites.</li> <li>▪ 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 (Act No. 61 of 2003).</li> <li>▪ Sites of significance relating to the history of slavery in South Africa.</li> <li>▪ 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.</li> <li>▪ Books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those</li> </ul>

Term	Definition
	that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).
<b>Object</b>	Any movable property of cultural significance which may be protected in terms of any provisions of this Act, including: any archaeological artefact; palaeontological and rare geological specimens; meteorites; and other objects referred to in Section 3 of the NHRA.
<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) Also: Heritage Site Management Plan (HSMP)</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>Place</b>	A place includes: a site, area or region; a building or other structure which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure; a group of buildings or other structures which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures; an open space, including a public square, street or park; and in relation to the management of a place, includes the immediate surroundings of a place.
<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>Presentation</b>	In relation to a heritage resource, site or place includes: the exhibition or display of; the provision of access and guidance to; the provision, publication or display of information in relation to; and performances or oral presentations related to, heritage resources protected in terms of the NHRA.
<b>Provisional protection</b>	A protected area or heritage resource provisionally protected by SAHRA or a provincial heritage resources authority by a notice in the Gazette or Provincial Gazette.
<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. In terms of South African practice, reconnaissance during a so-called Phase 1 AIA never includes sampling as this is a permitted activity.
<b>Site</b>	Any area of land, including land covered by water, and including any structures or objects thereon.
<b>Stop work order</b>	An order served on a person by the Minister on advice of SAHRA or MEC to immediately cease all work in and around a heritage site for a period not exceeding 10 years. The order attaches to land is binding on the current owner and any future owner.
<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.
<b>Werf</b>	A farmstead or multiple outbuildings associated with a farmhouse or agricultural activities. Plural: <i>werwe</i> (Afrikaans).

## DECLARATION OF INDEPENDENCE

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I, Shannon Hardwick as duly authorised representative of Digby Wells and Associates (South Africa) (Pty) Ltd., hereby confirm my independence (as well as that of Digby Wells and Associates (South Africa) (Pty) Ltd.) and declare that neither I nor Digby Wells and Associates (South Africa) (Pty) Ltd. have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of Mbuyelo Group (Pty) Ltd, other than fair remuneration for work performed, specifically in connection with the Heritage Resources Management (HRM) Process for the Weltevrede Coal Mining Project.



<b>Full Name:</b>	Shannon Hardwick
<b>Title/ Position:</b>	Heritage Resources Management Consultant
<b>Qualification(s):</b>	MSc
<b>Experience (Years):</b>	2 years
<b>Registration(s):</b>	Association of Southern African Professional Archaeologists (ASAPA) International Council on Monuments and Sites (ICOMOS) South Africa

## DECLARATION OF INDEPENDENCE

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I, Justin du Piesanie as duly authorised representative of Digby Wells and Associates (South Africa) (Pty) Ltd., hereby confirm my independence (as well as that of Digby Wells and Associates (South Africa) (Pty) Ltd.) and declare that neither I nor Digby Wells and Associates (South Africa) (Pty) Ltd. have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of Mbuyelo Group (Pty) Ltd, other than fair remuneration for work performed, specifically in connection with the Heritage Resources Management (HRM) Process for the Weltevreden Coal Mining Project.



<b>Full Name:</b>	Justin du Piesanie
<b>Title/ Position:</b>	Divisional Manager: Social and Heritage Services
<b>Qualification(s):</b>	MSc
<b>Experience (Years):</b>	12 years
<b>Registration(s):</b>	Association of Southern African Professional Archaeologists (ASAPA) International Council on Monuments and Sites (ICOMOS) South Africa International Association for Impact Assessment South Africa (IAIAsa)

## EXECUTIVE SUMMARY

Mbuyelo Group (Pty) Ltd (hereinafter Mbuyelo) intend to establish an open-cast coal mine, the Weltevreden Mine, near Belfast in the Mpumalanga Province (“the Project”). Mbuyelo appointed Digby Wells Environmental (hereinafter Digby Wells) as the independent Environmental Assessment Practitioner (EAP) to undertake the necessary applications in compliance with the South African national legislative framework on Mbuyelo’s behalf.

Digby Wells is undertaking a Heritage Resources Management process in support of the Environmental Authorisation (EA) process required for the aforementioned applications and in compliance with Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA). This report constitutes the Heritage Scoping Report (HSR) for submission to the Heritage Resource Authorities (HRAs) for interim comment.

The Project area is underlain by geological strata of palaeontological sensitivity. Justin du Piesanie visited the Project area on 04 April 2019 and Shannon Hardwick undertook a pre-disturbance survey of the Project area on 2 to 03 and 06 to 07 May 2019. During these inspections, one burial ground and two historical *werwe* were identified within the Project area. The table below presents a summary of the Cultural Significance (CS) of these heritage resources.

### Summary of the CS of Identified Heritage Resources

Resource ID	Description	INTEGRITY	CS
<i>Vryheid Formation</i>	Geological Feature	4	Very High
BGG-001	Burial Grounds and Graves	4	Very High
Wf-001 and Wf-002	Historical Built Environment	4	Low

Based on the Project description, Digby Wells is of the opinion that there is potential to alter the current *status quo* of heritage resources identified within the site-specific study area. The table below presents a summary of the potential impacts that may occur.

Digby Wells will undertake full EIA for the Project, which will include an HIA and PIA process in compliance with Section 38(8) of the NHRA. Digby Wells proposes that the HIA focuses on the NHRA Section 34 and Section 36 heritage resources (i.e. historical structures and burial grounds and graves) as described in Section 5.3. The HIA report will consider impacts to cultural heritage resources. A PIA report will focus on Section 35 heritage resources and will consider impacts to the fossil heritage resources, which will be appended to the HIA.

### Summary of the potential risk to heritage resources

Unplanned event	Potential impact
Accidental exposure of fossil bearing material 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> archaeological material during the implementation of the Project.	
Accidental exposure of <i>in situ</i> historical built environment sites 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> 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 construction phase of the Project.	

## TABLE OF CONTENTS

1	Introduction .....	1
1.1	Project Background and Description.....	1
1.2	Project Alternatives .....	6
1.3	Terms of Reference.....	6
1.4	Scope of Work.....	6
1.5	Expertise of the Specialist .....	6
1.6	Structure of the Report .....	8
2	Legislative and Policy Framework.....	9
3	Constraints and Limitations .....	12
4	Methodology.....	13
4.1	Defining the Study Area.....	13
4.2	Statement of Cultural Significance and Field Ratings .....	14
4.2.1	<i>Cultural Significance</i> .....	14
4.2.2	<i>Field Ratings</i> .....	15
4.3	Secondary Data Collection .....	15
4.4	Primary Data Collection.....	17
4.5	Site Naming Convention.....	17
5	Cultural Heritage Baseline Description .....	17
5.1	Archaeo-Historical Context.....	21
5.2	Existing Environment.....	24
5.3	Results from the Pre-Disturbance Survey and Historical Imagery.....	25
6	Cultural Significance of the Identified Landscape .....	29
7	Potential Heritage Risks.....	31
8	Predicted Heritage Impacts.....	32
9	Scoping Assessment.....	34
10	Proposed Way Forward .....	36
11	Conclusion .....	36

12 Works Cited.....37

## LIST OF TABLES

Table 1-1: Project Location Details.....	1
Table 1-2: Proposed Project Activities.....	3
Table 1-3: Expertise of the Specialists .....	7
Table 1-4: Structure of the report .....	8
Table 2-1: Applicable legislation considered in the HRM process .....	9
Table 2-2: Applicable policies considered in the HRM process .....	12
Table 3-1: Constraints and Limitations .....	12
Table 4-1: Secondary Data Sources .....	16
Table 4-2: Aerial Imagery Considered.....	16
Table 4-3: Feature and Period Codes Relevant to this HIA .....	17
Table 5-1: Periods in Mpumalanga.....	18
Table 5-2: Ceramic Facies Commonly Found in Mpumalanga .....	22
Table 5-3: Summary of the vegetation setting of the Project .....	24
Table 5-4: Heritage Resources identified through the pre-disturbance survey.....	26
Table 6-1: CS and Field Ratings of newly identified heritage resources within the Project Area .....	30
Table 7-1: Identified Heritage Risks That May Arise for Mbuyelo .....	31
Table 7-2: Potential heritage Resources and Risks.....	32
Table 8-1: Predicted Heritage Impacts .....	33
Table 9-1: Scoping assessment .....	35



## LIST OF FIGURES

Figure 5-1: Heritage Resources Identified Within the Greater Study Area .....	19
Figure 5-2: Photographs illustrating the current environment within the Project area .....	25
Figure 5-3: Photographs of select heritage resources identified during the pre-disturbance survey .....	27
Figure 5-4: Historical imagery from 1955 for the Project area, showing points of interest ....	29

## LIST OF PLANS

Plan 1: Regional Project Setting.....	4
Plan 2: Local Project Setting .....	5
Plan 3: Previously Identified Heritage Resources .....	20
Plan 4: Results of the Pre-disturbance Survey .....	28

## LIST OF APPENDICES

Appendix A: Specialist CVs	
Appendix B: HRM Methodology	

## 1 Introduction

Mbuyelo Group (Pty) Ltd (hereinafter Mbuyelo) intend to establish an open-cast coal mine, the Weltevreden Mine, near Belfast in the Mpumalanga Province (“the Project”). Mbuyelo appointed Digby Wells Environmental (hereinafter Digby Wells) as the independent Environmental Assessment Practitioner (EAP) to undertake the necessary applications on Mbuyelo’s behalf. These applications include a Mining Right Application (MRA), Environmental Authorisation (EA) and integrated Water Use Licence Application in compliance with the following legislation:

- The Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002);
- The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);
- The NEMA Regulations, 2017 (Government Notice Regulations [GN R] 982 as amended by GN R 326);
- The National Water Act, 1998 (Act No. 26 of 1998) (NWA); and
- The National Environmental Management: Waste Act, 2008 (Act No. 56 of 2008) (NEM: WA).

Digby Wells is undertaking a Heritage Resources Management process in support of the EA process required for the aforementioned applications and in compliance with Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).

This report constitutes the Heritage Scoping Report (HSR), the second deliverable in the HRM process, for submission to the South African Heritage Resources Agency (SAHRA) and the Mpumalanga Provincial Heritage Resources Agency (MPHRA).

### 1.1 Project Background and Description

The Project is located approximately 8 km south of Belfast in the Emakhazeni Local Municipality (ELM). This falls within the Nkangala District Municipality (NDM) of Mpumalanga. Table 1-1 presents an overview of the Project location details. Plan 1 and Plan 2 present a graphical summary of the location of the Project. The R33 road runs north to south through the property, creating an eastern portion and a western portion.

**Table 1-1: Project Location Details**

<b>Name of property</b>	Weltevreden
<b>Street address or location (e.g.: Off R44)</b>	East and west of the R33 south of the N4 and Belfast.
<b>Erf or farm number/s</b>	Farm Weltevreden 381 JS, Portions: 3 Remainder (Rem.), 9, 10, 11 (Rem), 21, 23, 24 and 381 and Remaining Extent (RE).
<b>Coordinates of approximate centre of project area</b>	25°45'56.07"S
	30°01'59.92"E

<b>Town or District</b>	Belfast (approx. 8 km to the north)
<b>Responsible Municipality</b>	ELM in NDM
<b>Extent of property</b>	1 550 ha (Prospecting area)
<b>Maximum extent of proposed development</b>	400 ha
<b>Current use</b>	Agricultural and plantation
<b>Predominant land use/s of surrounding properties</b>	Agricultural, plantation and mining

Mbuyelo presently hold a Prospecting Right for the portions of the farm Weltevreden 381 JS included in Table 1-1. The Project is planned to occupy only the western portion of the Prospecting Right Area, which covers approximately 800 ha. Mbuyelo will not conduct any mining activities or establish associated infrastructure on the eastern portion of the Prospecting Right Area.

Mbuyelo proposes to establish two open-cast (OC) pits: OC1 and OC2, with an aerial extent of 162 ha and 200 ha respectively. Surface infrastructure will include mine offices and workshops constructed using shipping containers, collectively encompassing a 300 m<sup>2</sup> (0.03 ha) area. Other surface infrastructure will include the following:

- A crushing and screening plant;
- Lined trenches;
- Overburden dump;
- Pipelines;
- A Pollution Control Dam (PCD);
- A Run of Mine (RoM) pad; and
- Stockpiles.

This surface infrastructure is not expected to exceed 1 ha in area; the exact extent is still to be confirmed. Plan 2 includes a potential infrastructure layout. Table 1-2 presents the proposed activities expected within each phase of the Project.

**Table 1-2: Proposed Project Activities<sup>1</sup>**

<b>Project Phase</b>	<b>Project Activity</b>
Construction Phase	Site/vegetation clearance
	Access and haul road construction
	Infrastructure construction
	Linear infrastructure (power line and water pipelines)
	Diesel storage and explosives magazine
	Topsoil stockpiling
Operational Phase	Open pit establishment
	Removal of rock (blasting)
	Stockpiling establishment and operation (rock dumps, soils, RoM, discard dump)
	Diesel storage and explosives magazine
	Operation of the underground workings
	Operating processing plant
	Operating sewage treatment plant
	Water use and storage on-site: during the operation water will be required for various domestic and industrial uses. Mbuyelo will construct a PCD to capture water from the mining area which will be stored and used as needed.
	Storage, handling and treatment of hazardous products and waste (including fuel, explosives and oil)
Maintenance activities: Mbuyelo will need to complete maintenance activities during operations to ensure that all infrastructure is operating optimally and does not pose a threat to human or environmental health. Mbuyelo will undertake maintenance activities on haul roads, pipelines, processing plant, machinery, water and stormwater management infrastructure and stockpile areas.	
Decommissioning Phase	Demolition and removal of infrastructure: once mining activities have been concluded, Mbuyelo will demolish infrastructure in preparation of the final land rehabilitation.
	Rehabilitation: Mbuyelo will undertake rehabilitation activities according to the Rehabilitation Plan that will be developed during the EA process.
	Post-closure monitoring and rehabilitation

<sup>1</sup> Refer to Section 4.2 of the Notification of Intent to Develop (NID) for a description of the Listed Activities triggered by the Project.







# Proposed Weltevreden Mine

## Local Setting

### Legend

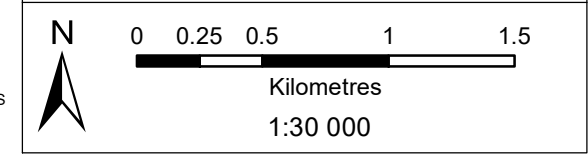
-  Project Area
-  National Route
-  Main Road
-  Secondary Road
-  Street
-  Dam/Lake
-  Marsh/Swamp
-  Non-perennial pan
-  Non-Perennial River/Stream
-  Perennial River/Stream
-  Pit Extent



**DIGBY WELLS**  
ENVIRONMENTAL

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

Projection: Transverse Mercator	Ref #: prv.MBU5710.201906.146
Datum: WGS 1984	Revision Number: 1
Central Meridian: 29°E	Date: 27/06/2019





## 1.2 Project Alternatives

The Project design and infrastructure layout is currently in development. The layout will be informed, in part, by the results of the Scoping Phase studies and will be presented in more detail in the Environmental Impact Assessment (EIA) phase reports.

An alternative that could be considered at this stage is the “no-go” alternative. Should the Project not obtain approval, or not go ahead for any reason, the potential environmental impacts associated with the development of the mine as described in Section 1.1 would not occur. However, the potential benefits associated with the Project would also not occur. These potential benefits will be explored in the Heritage Impact Assessment (HIA) report.

## 1.3 Terms of Reference

Mbuyelo appointed Digby Wells as the independent Environmental Assessment Practitioner (EAP) to complete an independent EIA process in accordance with the national regulatory framework. This included a specialist HRM process to comply with the requirements encapsulated in Section 38 of the NHRA.

## 1.4 Scope of Work

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

- Described the predominant cultural landscape, supported through primary and secondary data collection;
- Historical layering to identify potential tangible heritage resources;
- Cultural Significance (CS) Assessment of the identified resources;
- Identified the potential impacts to heritage resources, based on Project-related activities and sources of risk to the heritage resources or the Project; and
- Recommended the specific Terms of Reference (ToR) for the pending HIA.

## 1.5 Expertise of the Specialist

Table 1-3 presents a summary of the expertise of the specialists involved in the compilation of this HSR. The full CVs of these specialists are included in Appendix A.



**Table 1-3: Expertise of the Specialists**

Team Member	Bio Sketch
<p><b>Shannon Hardwick</b></p> <p>ASAPA Member: 451            ICOMOS Member            ZAF 38048            Years' Experience:            2</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>. Since joining Digby Wells, Shannon has gained generalist experience through the compilation of Notification of Intent to Develop (NID) applications as well as Heritage Scoping Reports (HSRs) and HIAs. Her other experience includes compiling a Community Health, Safety and Security Management Plan (CHSSMP). Shannon's experience in the field includes pre-disturbance surveys in South Africa and fieldwork in Malawi.</p>
<p><b>Justin du Piesanie</b></p> <p>ASAPA Member 270            ICOMOS Member            14274            IAIAAsa Member            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 experience since his 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, Justin has acted as a technical expert reviewer of HRM projects undertaken in Cameroon, Malawi, Mali 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>

## 1.6 Structure of the Report

Table 1-4 presents the structure for the remainder of the HSR and indicates where each section meets the information requirements encapsulated in the NHRA. The HIA report will include a detailed table indicating compliance with Appendix 6 of Government Notice Regulation (GN R) 326 of 07 April 2017.

**Table 1-4: Structure of the report**

Section	Description	NHRA information requirements
2	Outlines the legislative framework relevant to the HRM process.	-
3	Identifies the specific constraints and limitations of the HSR.	-
4	Describes the methodology employed in the compilation of this HSR	-
5	Provides a description of the baseline cultural landscape.	38(3)(a)
0	Motivates for the defined CS of the identified heritage resources and landscape.	38(3)(b)
7	Considers the potential impacts to heritage resources by project related activities.	38(3)(c)
8	Outlines possible risks to heritage resources and heritage related risks to the project.	
9	Presents the results of the scoping assessment.	-
10	Outlines the proposed way forward for the pending HIA and the EIA.	-
11	Collates the most salient points of the HSR and concludes with the specific outcomes and recommendations of the study.	38(3)(f) 38(3)(g)
12	Lists the source material used in the development of the report.	-

## 2 Legislative and Policy Framework

The HRM process is governed by the national South African legislative framework. This section provides a brief summary of the relevant legislation pertaining to the conservation and responsible management of heritage resources.

**Table 2-1: 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> <ul 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> </ul>	<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>
<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</p>	<p>The application process is to be 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>



Applicable legislation used to compile the report	Reference where applied
<p>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><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 EA 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 EA and which must follow an environmental impact assessment process.</li> <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>Refer to the Notification of Intent to Develop (NID<sup>2</sup>) 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 EA in terms of Listing Notice 2. The HIA will be completed to inform the EIA process to comply with Section 24 of the NEMA.</p>
<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> </ul>	<p>The HSR was and the HIA will be compiled to comply with Section 5, 38(3), (4) and (8) of the NHRA. This HSR was submitted to the responsible HRAs, which in this instance is SAHRA and MPHRA.</p>

<sup>2</sup> Case ID 16164, accessible at: <https://sahris.sahra.org.za/cases/mbu5710-weltevreden-coal-mining-project>



Applicable legislation used to compile the report	Reference where applied
<ul style="list-style-type: none"> <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><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> <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>	<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>

**Table 2-2: 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 and/or Palaeontological Impact Assessment (PIA) report.</p> <p>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>Chapter II, Section 8 outlines the minimum requirements for a PIA report. The information requirements are similar as for the HIA report but must additionally include a 1:50 000 geological map showing the geological context of the Project.</p>	<p>The HIA and PIA reports will be compiled to adhere to the minimum standards as defined by Chapter II of the SAHRA APM Guidelines (2007)</p>

### 3 Constraints and Limitations

Digby Wells encountered constraints and limitations during the compilation of this HSR. Table 3-1 presents an overview of these limitations and the consequences.

**Table 3-1: 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 5 below is considered accurate but may not include new data or information which may not have been made available to the public.</p>



Description	Consequence
Results from previously-completed heritage assessments as sourced from SAHRIS, that may have formed part of the Project area were not verified in-field.	It is assumed the previously recorded heritage resources are accurate and true.
The final infrastructure design layout was not available at the time of the pre-disturbance survey.	<p>Every effort was made to cover the extent of the Project area<sup>3</sup>. Wetland areas were excluded from the survey as they would not have been suitable for historic occupation. The survey focused on the higher-lying areas that had greater possibilities of including tangible heritage resources.</p> <p>This notwithstanding, some heritage resources in the Project area may not have been identified.</p> <p>The infrastructure layout will be informed in part by the results of the heritage assessment.</p>
Whilst every attempt was made to survey the extent of the site-specific study area, this report does not present an exhaustive list of identified heritage resources.	Previously unidentified heritage resources may be encountered. Should this occur, Mbuyelo 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.
Archaeological and palaeontological 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>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, Mbuyelo 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>

## 4 Methodology

### 4.1 Defining the Study Area

Heritage resources do not exist in isolation to the greater natural and social environment, including the socio-cultural, socio-economic and socio-political environments. In addition, the

<sup>3</sup> Refer to Section 4.1 for a definition of the study areas.



NHRA requires the grading of heritage resources in terms of national, provincial and local concern based on their importance and consequent official (i.e. State) management effort required. The type and level of baseline information required to adequately predict heritage impacts varies between these categories. Digby Wells defined four nested study areas for the purposes of this study, which include:

- The *site-specific study area*: the farm portions extent associated with the proposed Project, including a 500 m buffer area. The site-specific study area may extend linearly, in which case the site-specific study area will include the linear development and a 200 m buffer on either side of the footprint;
- The *Prospecting Right area*: the farm portions included in the existing Prospecting Right held by Mbuyelo. This includes all farm portions described in Table 1-1 above;
- 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. Defined as the area bounded by the local municipality, in this instance ELM, with particular reference to the immediate surrounding properties and/or farms. The local study area was specifically examined to offer a backdrop to the socio-economic conditions within which the proposed development will occur. The local study area furthermore provided the local development and planning context that may contribute to cumulative impacts; and
- The *regional study area*: the area bounded by the district municipality, which here is NDM. Where necessary, the regional study area may be extended outside the boundaries of the district municipality to include much wider regional expressions of specific types of heritage resources and historical events. The regional study area also provided the regional development and planning context that may contribute to cumulative impacts.

## 4.2 Statement of Cultural Significance and Field Ratings

The following sub-sections provide a summary of the methodology employed in the assessment of the CS of the identified heritage resources. Appendix B includes a more detailed methodology statement.

### 4.2.1 Cultural Significance

Cultural heritage resources are intrinsic to the history and beliefs of communities and characterise community identity and cultures. Heritage resources are finite, non-renewable and irreplaceable. HRM acknowledges that such resources have lasting worth as evidence of the origins of life, humanity and society. It is incumbent of the assessor to determine the CS of cultural heritage resources to allow for the implementation of appropriate management.

To this end, Digby Wells has developed a CS Determination Methodology to assign cultural heritage resources a numerical CS rating in the most objective manner possible and that, should it be required, could be independently reproduced by another specialist with the same

information. Section 3(3) of the NHRA defines CS as the intrinsic “aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance” of a cultural heritage resource. The Digby Wells significance matrix combines these attributes into four themes: aesthetic, historical, scientific and social.

Heritage resources are assigned an importance rating, along a six-point scale against four criteria, and a rating of the physical integrity, on a five-point scale. These ratings consider the information obtained during the review of secondary data, the uniqueness of a resource and the observed *status quo*.

#### 4.2.2 Field Ratings

The grading of heritage resources is the responsibility of the HRAs. However, SAHRA requires heritage assessments include Field Ratings for identified heritage resources to comply with Section 38(8) of the NHRA. Section 7 of the NHRA provides for the system of grading heritage resources that form part of the national estate.

The field rating process is designed to provide numerical ratings of the identified heritage resources. These numerical ratings relate to the recommended grading of a heritage resource and distinguish between three categories. Field ratings guide decision-making in terms of the minimum required mitigation measures and the management responsibilities in terms of Section 8 of the NHRA.

### 4.3 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 HSR 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 HSR includes a summary and discussion of the most relevant findings. Table 4-1 lists the sources consulted in the literature review (refer to Section 12 for more detailed references).

**Table 4-1: Secondary Data Sources**

Reviewed Secondary Data		
Databases		
Genealogical Society of South Africa (2011)	University of the Witwatersrand (Wits) database (2010)	
SAHRIS Database	SAHRIS Palaeo-Sensitivity Map (SAHRA, 2017)	
SAHRIS Cases		
Case ID:102	Case ID: 11829	Case ID: 13002
Case ID: 13006	Case ID: 6278	Case ID: 5472
Cited Text		
Behrens & Swanepoel, 2008	Brodie, 2008	Clark, 1982
Deacon & Deacon, 1999	Delius, 2007	Delius & Cope, 2007
Delius, et al., 2014	Eastwood, et al., 2002	Esterhuysen & Smith, 2007
Huffman, 2007	Landau, 2010	Makhura, 2007
Mitchell, 2002	Mucina & Rutherford, 2010	Pistorious, 2008a, 2008b
Potgieter, 1955	Smith & Zubieta, 2007	Smith & Ouzman, 2004
Voortrekkers, 2014		

Table 4-2 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 an area.

**Table 4-2: Aerial Imagery Considered**

Aerial photographs						
Job no.	Flight plan	Photo no.	Map ref.	Area	Date	Ref.
352	1 of 1	2090 and 2092	2528	Belfast	1955	NGI

## 4.4 Primary Data Collection

Justin du Piesanie visited the Project area on 04 April 2019. Shannon Hardwick undertook a pre-disturbance survey of the Project area on 02 to 03 and 06 to 07 May 2019. This was a non-intrusive<sup>4</sup> pedestrian survey with the aim to:

- Visually record the current state of the cultural landscape; and
- Record a representative sample of the visible, tangible heritage resources present within the Project 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 4 presents the results of the pre-disturbance survey, including the tracklogs and waypoints.

## 4.5 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. 11829/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 4-3 presents a list of the relevant period and feature codes (refer to Section 5 for an explanation of what these terms mean).

**Table 4-3: Feature and Period Codes Relevant to this HIA**

Feature or Period Code	Reference
BGG	Burial Grounds and Graves
STE	Historical Structure
Wf	Werf
HLP	Historical Layering Point

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. 102/Site 1).

## 5 Cultural Heritage Baseline Description

The cultural heritage baseline description considered the predominant landscape based on the identified heritage resources within the regional and local study area. Table 5-1 presents the broad timeframes for the major periods of the past in Mpumalanga.

<sup>4</sup> No samples were taken during the pre-disturbance survey.

**Table 5-1: Periods in Mpumalanga**

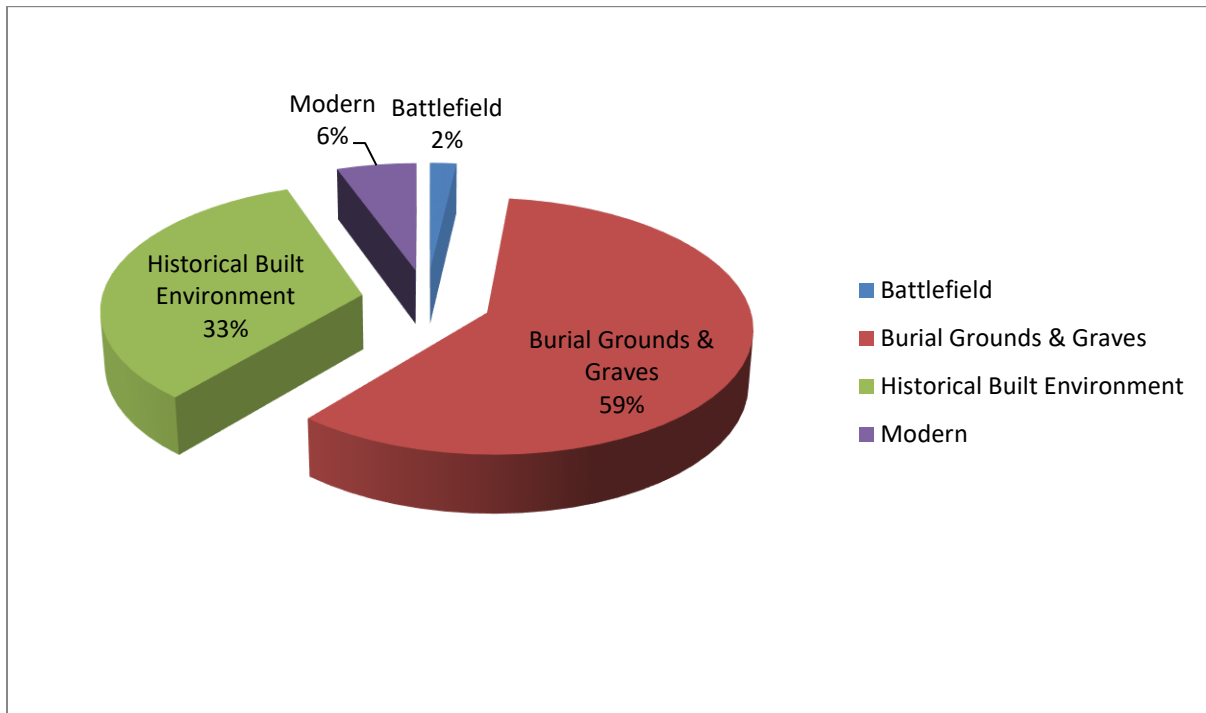
<b>The Stone Age</b>	Early Stone Age (ESA)	2 million years ago (mya) to 250 thousand years ago (kya)
	Middle Stone Age (MSA)	250 kya to 20 kya
	Later Stone Age (LSA)	20 kya to 500 CE (Common Era <sup>5</sup> )
There appears to be a gap in the record in Mpumalanga between approximately 7000 and 2000 BCE.		
<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 &amp; Smith (2007)

Figure 5-1 below presents the results of the review of previously-completed heritage assessments. In total, 54 heritage resources were identified within the regional, local and site-specific study areas. Plan 3 shows where such heritage resources have been recorded.

The predominant tangible heritage resources recorded in the area under consideration demonstrate affiliations with the historical period, dominated by the historical built environment and burial grounds and graves. This notwithstanding, modern heritage resources and a battlefield have been recorded in the greater study area.

<sup>5</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 5-1: Heritage Resources Identified Within the Greater Study Area**

The geological context and palaeontological sensitivities of the Project area will be described in the PIA report which will be appended to the HIA report.

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.







## 5.1 Archaeo-Historical Context

The Stone Age in southern Africa comprises three broad phases, which are described according to the lithic tools and material culture produced by the various hominid species through time. These phases are:

- The ESA;
- The MSA; and
- The LSA.

The survey of the previously-completed heritage assessments yielded no expressions of the Stone Age within the regional study area. This notwithstanding, material associated with the MSA and LSA has been recorded within the province and may potentially be uncovered during earth-moving activities. As such, a brief description of these resources follows.

The MSA dates from approximately 300 kya to 20 kya. High proportions of minimally modified blades, created using the Levallois technique, characterise the early MSA lithic industries (Clark, 1982; Deacon & Deacon, 1999). The use of good quality raw material as well as bone tools, ochre, beads and pendants also define this period. The LSA dates between 40 kya to the historical period. LSA lithics are specialised where specific tools have been created for specific tasks (Mitchell, 2002). LSA assemblages can also include bone points and commonly include diagnostic tools such as scrapers and segments.

In southern Africa, the LSA is closely associated with hunter-gatherers. The San (including hunter-gatherer, Basarwa and Bathwa groups) are generally accepted as the first inhabitants of southern Africa and Mpumalanga (Makhura, 2007). Regional hunter-gatherer occupation is well documented, although open sites are usually poorly preserved and difficult to identify because of the nomadic nature of these peoples. Potgeiter (1955) described the San as occupying rock shelters throughout the landscape and creating reed platforms in the Chrissiesmeer Lake.

The LSA, as alluded to above, is further defined by evidence of ritual practices and complex societies (Deacon & Deacon, 1999). Three rock art painting traditions occur within Mpumalanga and are widely dispersed, although they are most notably recorded in the northern and eastern regions. These traditions include fine-line paintings associated with LSA hunter-gatherer groups, finger paintings associated with pastoralists and other finger paintings associated with later, possibly historical, farming communities (Eastwood, et al., 2002; Smith & Ouzman, 2004; Smith & Zubieta, 2007).

The San were later followed by the various peoples of the Farming Community, including ancestors of modern Sotho-Tswana and Nguni peoples (Makhura, 2007). The farming community period correlates to the movements of Bantu-speaking agro-pastoralists moving into southern Africa. The review of previously-completed heritage assessments did not include the identification of farming community; however LFC material has been recorded in the Mpumalanga province.



The LFC is generally represented by stonewalling or secondary tangible surface indicators, such as ceramics and evidence for domesticated animals, i.e. dung deposits or faunal remains. No stonewalling was identified during the pre-disturbance survey; however, as with the MSA and LSA artefacts, ceramics may be uncovered during earthmoving activities.

Ceramics, among other material culture remains, provide motivation for settlement and possible trade networks (Delius, et al., 2014) and are distributed across the region. Huffman (2007) provides a reference for the possible distribution of ceramic facies within the regional study area. Table 5-2 provides a summary of the ceramic facies within the province.

**Table 5-2: Ceramic Facies Commonly Found in Mpumalanga**

Facies	Key Characteristics	Period
Uitkomst	Stamped arcades, appliqué and blocks of parallel incisions, stamping and chord impressions	1650 CE – 1820 CE
Rooiberg	Stamped rim band, mixture of stamped and incised bands, arcades and triangles in the neck	1650 CE – 1750 CE
Icon	Multiple incised bands separated by colour and lip decorations on bowls	1300 CE – 1500 CE
Madikwe	Multiple bands of cord impressions, incisions, stabs and punctates separated by colour	1500 CE – 1700 CE
Letaba	Hatched bands on shoulder, below black and red triangles	1600 CE – 1840 CE
Klingbeil	Triangles in neck bordered with slashes, punctates on shoulder	1000 CE – 1200 CE

After Huffman (2007)

The historical period<sup>6</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 largely artificial, and there is a large amount of overlap between the two.

Throughout the transitions between the LFC and the historical period (and through the historical period itself), migration, population growth, climatic variation and trade to the east significantly impacted the Pedi, Koni and other groups on the Mpumalanga Highveld. The rise of power blocs, including violent displacement and political centralisation, characterised this time (Makhura, 2007). The Pedi grew to become the strongest power in the north-east, amongst the escalating conflict and intensifying violence (Delius, et al., 2014).

<sup>6</sup> In southern Africa, especially in Mpumalanga, 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, as highlighted by the 500 year initiative (Swanepoel, et al., 2008).

In the Nguni region, similar processes played out, contributing to the rise of several large, aggressive states, including: the Ndwandwe, the Mthethwa, the Swazi and the Zulu Kingdom. Skirmishes between these groups resulted in several battles, the pillaging of settlements and the movement of various groups into the interior; both the Pedi and the Koni suffered the severe consequences. While the Ndwandwe, the Swazi and the Ndebele (led by Mzilikazi) were seen as the dominant forces on the landscape, smaller groups of invaders and raiders contributed to these events (Delius, et al., 2014).

An example of the overlap between the LFC and the historical period is the Mfecane or, north of the Orange River, the Difaqane. These terms refer to a period of violence and unrest between approximately 1817 to 1826 AD (Landau, 2010). Many aspects of the Mfecane/Difaqane have been debated and challenged. The traditional understanding of the period is that the Zulu group led by Shaka pushed Mzilikazi and his Ndebele group out of the latter's territory. This displacement had a knock-on effect, as multiple groups were subsequently displaced to the north and the west. A drought during this time worsened the instability and increased the pressure on the already low food supplies. European settlers, traders, missionaries and travellers moving into the interior further added to instability and resulting power struggles. The Mfecane/Difaqane was characterised by unprecedented (at least within the records of the Europeans travelling within southern Africa) social and political mobilisation and violence across the Highveld as individuals sought personal and food security.

As a result of social and political upheaval, the Mpumalanga Highveld was vulnerable to intrusive groups including the Swazi and the *Voortrekkers*. Groups of Afrikaaners initiated a move from the Cape to the interior to establish an independent state in approximately 1835, in reaction to increased British liberalism and the abolishment of slavery and pass laws. The migration of these *Voortrekkers* is commonly referred to as the Great Trek (or *Groot Trek*) and it started with the first group, the Robert Schoon Party, in 1836. The first permanent settlement that was established as a result of this movement was Ohrigstad<sup>7</sup> in 1845 – the *Voortrekkers* at this time were intruding into an already volatile interior and aggravated the strife in this area, frequently skirmishing with remnant Pedi, Nduzundza Ndebele and Kopa groups (Delius & Cope, 2007; Voortrekkers, 2014).

Following the settlement at Ohrigstad, internal tensions amongst the Trekkers, exacerbated by malaria and stock disease, resulted in the movement of people from the town (Delius, 2007). Farmers settled in the Belfast area from 1847, when they moved from the Lydenburg region looking for healthier environments for themselves and their cattle.

Soon after settling in the Mpumalanga Highveld area, the Trekboers (now farmers) discovered and exploited the Highveld Coalfields. The Boers originally used the coal as a domestic resource; however the discovery of gold in the Witwatersrand in 1886 created an enormous demand for this coal (Brodie, 2008; Pistorious, 2008a; 2008b). The increase in demand drove

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<sup>7</sup> Approximately 140 km north-east of Belfast.

the commercial exploitation of the coal, until the outbreak of war put a hold on the industry. A small colliery located on the farm Paardeplaats, west of Belfast, mined coal from the 1890s, until the colliery was abandoned in the 1920s.

The South African War of 1899-1902 (previously referred to as the Second Anglo-Boer War) officially started on October 9<sup>th</sup>, 1899. The war was the result of building tensions and conflicting political agendas between the Trekboers and the British. There are two notable battles associated with the South African War within the regional study area: the Battles of Lake Chrissie (February 6<sup>th</sup>, 190) and Bakenlaagte (October 30<sup>th</sup>, 1901), approximately 70 km southeast and 110 km southwest of the Project area respectively. The battlefield included in Figure 5-1 relates to the latter battle. No major military engagements related to the war are known for the Belfast area.

## 5.2 Existing Environment

The Project exists within the Mesic Highveld bio-region of the Grassland Biome. Table 5-3 presents a summary of the natural setting of the Project, as described by Mucina and Rutherford (2010).

**Table 5-3: Summary of the vegetation setting of the Project**

Biome	Bio-region	Vegetation Type
Grassland	Mesic Highveld Grassland	<p><u>Eastern Highveld Grassland (Gm12)</u></p> <p>This vegetation unit is located on slightly to moderately undulating plains, including low hills and pan depressions. This unit is usually found at altitudes between 1 520 m and 1 780 m but can also be found at altitudes of 1 300 m. This unit is associated with the shales and sandstones of the Madzaringwe Formation of the Karoo Supergroup. Vegetation consists of short, dense grassland dominated by typical Highveld grass species, with small, scattered rocky outcrops, patches of wiry sour grasses and some woody species.</p> <p>This unit type is considered endangered and small portions are conserved in statutory and private reserves. Cultivation has had the largest impact on transforming this vegetation type, but plantations, mines, urbanisation and the construction of dams have also contributed to this transformation. Erosion is low in this type.</p>

Adapted from Mucina & Rutherford (2010)

The natural vegetation has been disturbed to varying degrees by human activities. The land use is predominantly agriculture (primarily maize and cattle) and mining activities associated with the Matla and Kriel Power Stations near to the site-specific study area. A plantation has been established within and adjacent to the Project area. Figure 5-2 below presents the current environment at the time of the pre-disturbance survey.





**Figure 5-2: Photographs illustrating the current environment within the Project area**

### **5.3 Results from the Pre-Disturbance Survey and Historical Imagery**

Shannon Hardwick undertook the pre-disturbance survey on 02 to 03 and 06 to 07 May 2019. Table 5-4 presents a description of the results identified during the survey. Figure 5-3 presents photographs of select heritage resources. Plan 4 presents the results of the pre-disturbance survey, including the geographical data.

Plan 4 also includes the results of the historical layering exercise. Historical layering was undertaken to identify potential structures that may be older than 60 years and would therefore

be protected under Section 34 of the NHRA and stonewalling which would be protected under Section 35 of the NHRA.

Figure 5-4 presents the results of the historical layering. No stonewalling is visible on the historical imagery. The points HLP-01 and HLP-02 refer to two dam walls visible in the 1955 imagery and which are still in use at present. No photographs were taken of these structures. Wf-001 refers to a werf which includes a mix of modern and historical structures, as described in Table 5-4 and presented in Figure 5-3. STE-001 was identified during the pre-disturbance survey and is visible on the 1955 imagery.

**Table 5-4: Heritage Resources identified through the pre-disturbance survey<sup>8</sup>**

Site Name	Description
BGG-001	<p>Burial ground demarcated by fencing – this fencing appears to have been erected in two phases, as there are two different styles and one type of fence has deteriorated. The burial ground includes ten visible graves, one of which is outside the fence perimeter. This appears to be a child grave.</p> <p>Of all the graves, seven were marked with stone and soil piles. One of these graves is marked with a white cross and marker and two are indicated by small metal markers. One had no headstone. No names or dates were visible on these markers. One grave was marked by brick fittings with a brick headstone (this may also be a child grave). Another grave was marked by brick fittings with no headstone. One grave had granite fittings, slab and headstone with a legible name and date. This grave belongs to the Mthimunye family and dates to 1990.</p>
Wf-001	<p>An extensive werf with a mix of historical and modern structures. The werf includes a farmhouse, animal pens, barns and several other structures, some of which appear to be housing. Some of these structures have thatched roofs, while others have tin. The barn appears in the historical imagery. Some of the modern structures appear in an area which appears to have been a dense treeline or windbreak in the historical imagery. These structures are presently in use.</p> <p>There is one ruined structure and one stone animal pen in proximity to the werf. These do not appear on the historical imagery, but this may be because of their size. The age of these structures has therefore not been verified.</p>
Wf-002	<p>A werf with a mix of historical and modern structures. One of the structures is visible on the historical layering – this is most likely the Zoekop farmhouse or barn. These structures are currently in use.</p>

<sup>8</sup> In accordance with new SAHRA procedures, the GPS co-ordinates of these heritage resources have not been included in documents available to the public.





**Figure 5-3: Photographs of select heritage resources identified during the pre-disturbance survey**

**A.) BGG-001; B.) and C.) Mix of historical and modern structures at Wf-001; D.) derelict structure in proximity to Wf-001; E.) and F.) Mix of historical and modern structures at Wf-002**

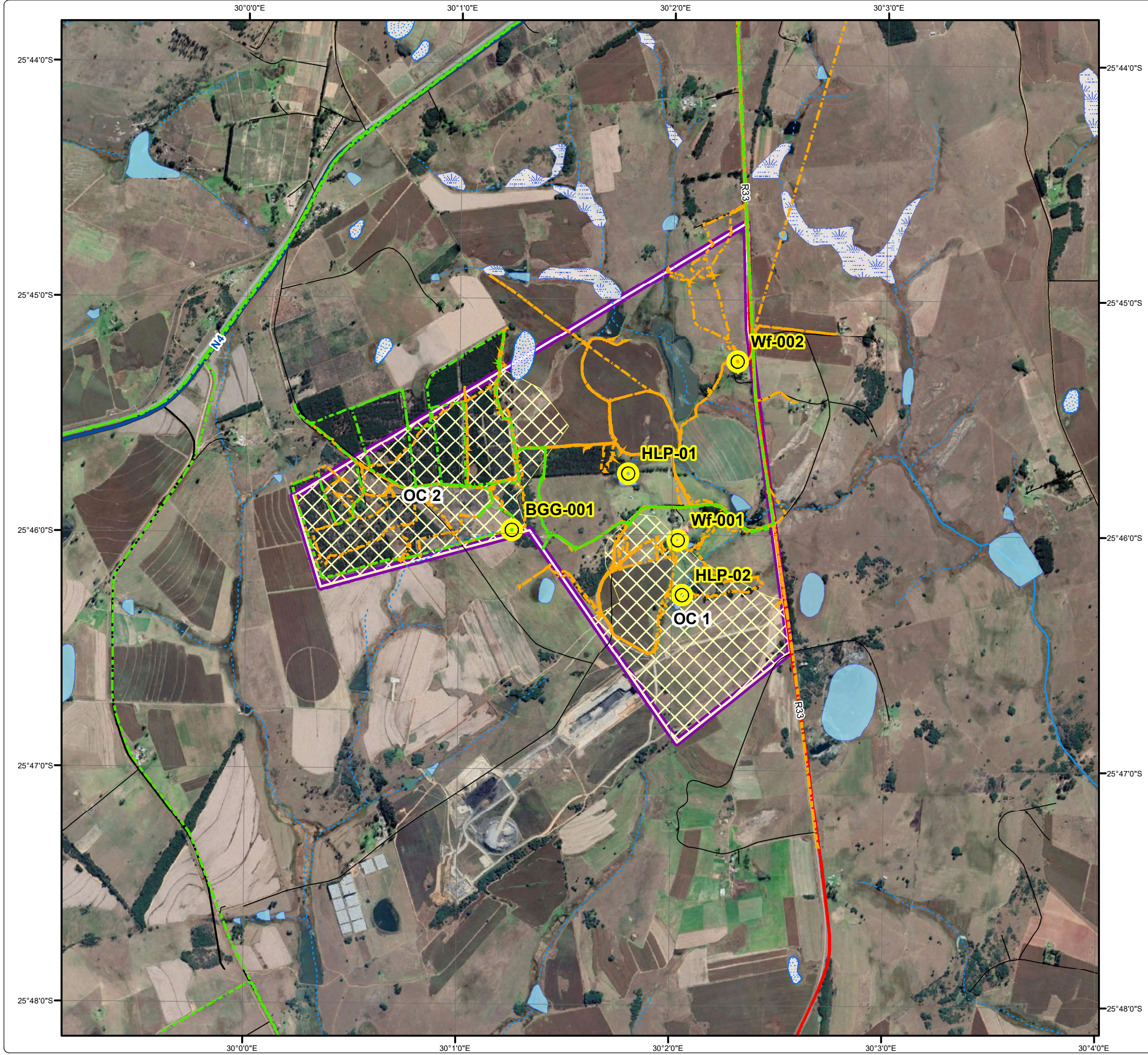


# Proposed Weltevreden Mine

## Identified Heritage Resources

### Legend

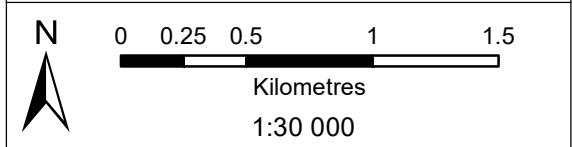
-  Project Area
-  Identified Heritage Resources
-  Pre Disturbance Survey
-  Site Inspection
-  National Route
-  Main Road
-  Secondary Road
-  Street
-  Dam/Lake
-  Marsh/Swamp
-  Non-perennial pan
-  Non-Perennial River/Stream
-  Perennial River/Stream
-  Pit Extent



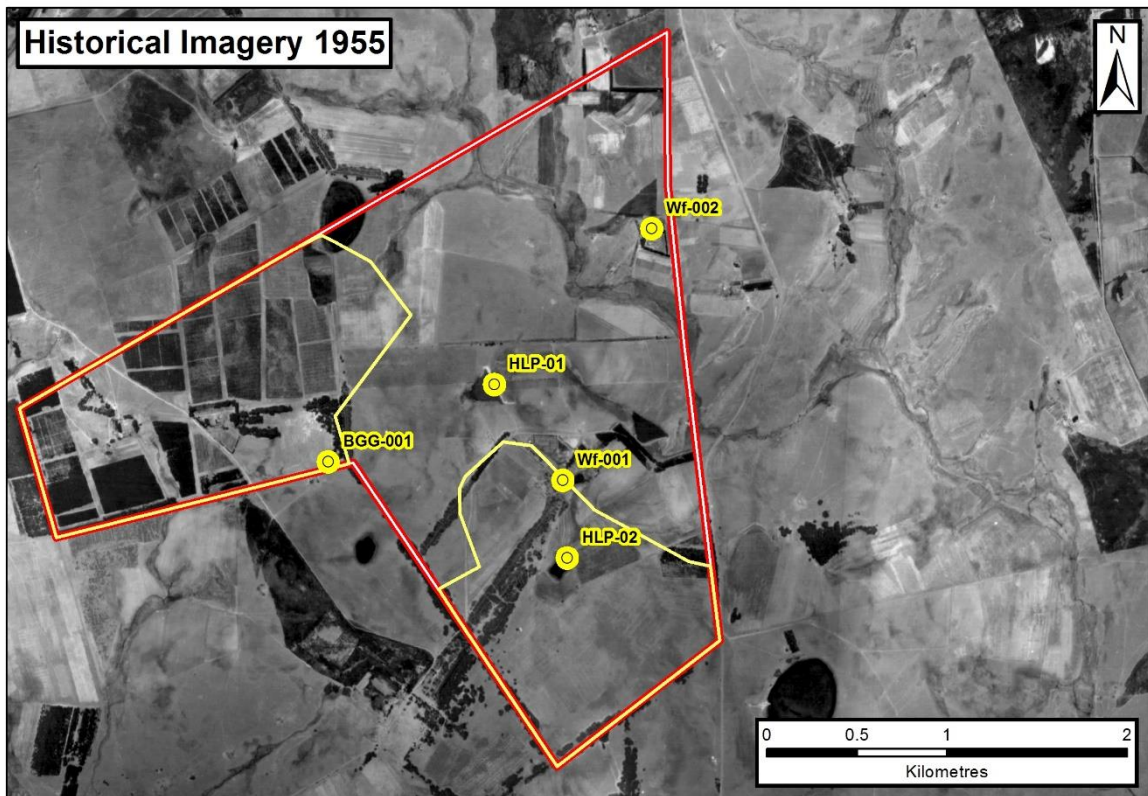
**DIGBY WELLS**  
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• Sustainability • Service • Positive Change • Professionalism • Future Focused • Integrity

Projection: Transverse Mercator	Ref #: prv.MBU5710.201907.012
Datum: WGS 1984	Revision Number: 1
Central Meridian: 29°E	Date: 03/07/2019







**Figure 5-4: Historical imagery from 1955 for the Project area, showing points of interest**

## 6 Cultural Significance of the Identified Landscape

This section presents a statement of significance as relevant to the greater cultural landscape within which the Project will be located. The provisional statement of significance considers the identified resources' importance or contribution to four broad value categories: aesthetic, historical, scientific and social values, based on collected secondary data presented in Section 5. These categories summarise the criteria described in Section 3(3) of the NHRA.

Taking these criteria into consideration, the assessment of CS of the greater cultural landscapes as represented by the recorded heritage resource types demonstrates a CS ranging from low to very-high. Table 6-1 presents the results of this analysis.



**Table 6-1: CS and Field Ratings of newly identified heritage resources within the Project Area**

Resource ID	Description	Aesthetic	Historic	Scientific	Social	INTEGRITY	Designation	Recommended Field Rating	Field Rating Description	Recommended Mitigation <sup>9</sup>
VRYH	<i>Vryheid Formation</i>	- This geological formation was not assessed against aesthetic criteria as defined in Section 3(3) of the NHRA.	- This geological formation was not assessed against historic criteria as defined in Section 3(3) of the NHRA.	5 The fossils within this palaeontologically sensitive formation potentially provide significant scientific information and are considered rare heritage resources.	- This geological formation was not assessed against social criteria as defined in Section 3(3) of the NHRA.	4 The integrity of the formation is considered to be excellent with both tangible and intangible fabric preserved.	Very High 20	Grade I	Heritage resources with qualities so exceptional that they are of special national significance.	Project design must change to avoid all change to resource; Conserved in entirety and included in Conservation Management Plan (CMP).
BGG-001	Burial Grounds & Graves	- Burial grounds and graves were not assessed against aesthetic criteria as defined in Section 3(3) of the NHRA.	- Burial grounds and graves were not assessed against historic criteria as defined in Section 3(3) of the NHRA.	- Burial grounds and graves were not assessed against scientific criteria as defined in Section 3(3) of the NHRA.	5 Burial grounds and graves have specific connections to communities or groups for spiritual reasons. The significance is universally accepted.	4 The integrity of burial grounds is considered to be excellent with both tangible and intangible fabric preserved.	Very High 20	Grade I	Heritage resources with qualities so exceptional that they are of special national significance.	Project design must change to avoid the resource completely and resources must be included in CMP. A Grave Relocation Process (GRP) may be necessary should the project design not be changed.
Wf-001	Historical Built Environment	1 The technical skill represented here is commonly represented in diverse cultural landscapes across South Africa.	2 This structure is an example of historical <i>werwe</i> which are commonly represented across South Africa.	2 These resources present more information potential than other examples common within the region.	2 This heritage resource may present specific value to certain members of the community	4 The fabric of the heritage resource is fairly well preserved and there is limited encroachment. The present-day land use matches the historical context.	Low 7	General Protection IV B	Resources under general protection in terms of NHRA sections 34 to 37 with Low significance	Resource must be recorded before destruction, including detailed site mapping, surface sampling may be required
Wf-002	Historical Built Environment									

<sup>9</sup> Please note: this recommended mitigation refers to the minimum mitigation requirements as encapsulated in the NHRA. Project-specific mitigation measures will be explored in further detail in the HIA report.

## 7 Potential Heritage Risks

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

Possible risks arising from the heritage resources, where Mbuyelo knowingly do not take proactive management measures against the potential impacts discussed below may manifest as:

- Litigation in respect of Section 51 of the NHRA;
- Social Repercussions; and
- Reputational risk.

Table 7-1 summarises the potential risks that may arise for Mbuyelo.

**Table 7-1: Identified Heritage Risks That May Arise for Mbuyelo**

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 the Institute 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 MPHRA.	Fines Penalties Seizure of Equipment Compulsory Repair / Cease Work Orders Imprisonment

Where heritage resources are identified during the assessment phase of the HRM process, the risks to such resources must be assessed. Table 7-2 provides an overview of these risks. This will be assessed in more detail during the assessment phase.

**Table 7-2: Potential heritage Resources and Risks**

Heritage Risks	Consequence of Identification
Impact to <i>in situ</i> historical built environment sites.	Digby Wells will assess the impact to these identified heritage resources. This assessment will be based on the proposed infrastructure layout design and will be informed by the CS of the heritage resources. Mbuyelo may need to implement mitigation measures in compliance with Sections 34, 35 and/or 36 of the NHRA, as may be applicable.
Impact to fossil-bearing material.	
Impact to <i>in situ</i> archaeological material.	
Impact to <i>in situ</i> burial grounds or graves.	

## 8 Predicted Heritage Impacts

Predicted heritage impacts are predominantly associated with Project-related activities and the assessment thereof is based on the Project description presented in Section 1.1. Table 8-1 presents a high-level overview of the predicted impacts to heritage resources.

**Table 8-1: Predicted Heritage Impacts**

Activities	Potential impacts	Mitigation type	Potential for residual risk
Surface or vegetation clearing ahead of construction	Damage to or destruction of heritage resources generally protected under Sections 34, 35 and 36 of the NHRA (i.e. historical structures, archaeological and fossiliferous material or burial grounds and graves respectively)	Amend the Project design to avoid potential impacts to heritage resources. Where avoidance is not possible, Mbuyelo must implement measures to minimise the potential impacts	Potential exposure of previously-identified heritage resources. There is a risk that such heritage resources may be damaged or destroyed when exposed. Negative Record of Decision (RoD) and/or development restrictions issued by the Heritage Resources Authorities <sup>10</sup> (HRAs) in terms of Section 38(8) of the NHRA.
Excavation for construction of infrastructure and establishment of pits			
Construction of infrastructure outlined in Section 1.1 above.	The establishment and operation of the OC pits may affect heritage resources afforded general protection under Sections 34, 35 and 36 of the NHRA (i.e. historical buildings, archaeological and palaeontological material and burial grounds and graves respectively)	Digby Wells will describe the mitigation measures following the assessment of the potential impacts to heritage resources.	
Open-cast Mining			

<sup>10</sup> In this instance, the HRAs include the the South African Heritage Resources Agency (SAHRA) and the Mpumalanga Provincial Heritage Resources Agency (MPHRA).

## 9 Scoping Assessment

The cultural landscape of the site-specific study area comprises historical structures and burial grounds and graves. These resources may, to lesser or greater extent, be directly, indirectly or cumulatively impacted on by development activities. A preliminary scoping assessment of the potential impacts to heritage resources as described in Table 8-1 is presented in Table 9-1.

Digby Wells will assess the impacts to the cultural heritage landscape in further detail in the impact assessment phase. Section 10 includes a description of the recommended way forward.

**Table 9-1: Scoping assessment**

Specific activity	Risk	Probability of impacts (0 - zero / negligible, 1 - low, 2 likely, 3 - certain)										
		National / Provincial heritage sites (S. 28)	Protected areas (S. 28)	Provisional protection (S. 28)	Heritage areas (S. 31)	Heritage objects (S. 32)	Structures (S. 34)	Archaeology (S. 35)	Palaeontology (S. 35)	Meteorites (S. 35)	Burial grounds and graves (S. 36)	Public monuments and memorials
Construction of infrastructure associated with Project activities described in Section 1.1	Damage to or destruction of the identified heritage resources	0	0	0	0	0	2	1	1	0	1	0
Operation and maintenance of proposed developments as presented in Section 1.1	Damage to identified heritage resources	0	0	0	0	0	1	1	3	0	1	0

## 10 Proposed Way Forward

Digby Wells will complete a full EIA for the Project and will submit this to the relevant competent authorities for adjudication. During this phase, Digby Wells will complete an HIA in compliance with Section 38(8) of the NHRA. Digby Wells proposes that the HIA focuses on the NHRA Section 34 and Section 36 heritage resources (i.e. historical structures and burial grounds and graves) as described in Section 5.3. The HIA report will also consider fossil heritage resources protected under Section 35 of the NHRA and will include a PIA report as an appendix, in compliance with the requirements of the SAHRIS Palaeo-sensitivity Map (PSM).

A full EIA will be completed for the Project and will be submitted for adjudication by the relevant competent authorities. An HIA will be completed during this phase, in compliance with Section 38(8) of the NHRA.

The HIA will include assessment of the potential impacts to the heritage resources by projected related activities and the development of reasonable and feasible management and mitigation measures.

## 11 Conclusion

The aim of the HSR was to develop a cultural heritage baseline of the site-specific study area while considering the larger local and regional context. The identified baseline was used to complete the primary assessment of the potential risks, possible impacts and high-level scoping assessment to inform the proposed way forward, which will include an EIA and HIA phase.

Based on the Project description, Digby Wells is of the opinion that there is potential to alter the current *status quo* of heritage resources identified within the site-specific study area. The potential impacts posed by Project activities to the heritage resources require an assessment to provide reasonable and feasible mitigation and management measures aimed at removing or reducing the intensity of the potential impacts. The HIA report will consider impacts to cultural heritage resources and a PIA report will consider impacts to the fossil heritage resources, which will be appended to the HIA.



## 12 Works Cited

- Behrens, J. & Swanepoel, N., 2008. Historical archaeologies of southern Africa: precedents and prospects. In: N. Swanepoel, A. Esterhuysen & P. Bonner, eds. *Five Hundred Years Rediscovered: South African precedents and prospects*. Johannesburg: Wits University Press, pp. 23-39.
- Brodie, N., 2008. *The Joburg Book: A guide to the city's history, people and places*. Johannesburg: Sharp Sharp Media.
- Clark, J., 1982. The Cultures of the Middle Palaeolithic/Middle Stone Age. In: R. Oliver, ed. *The Cambridge History of Africa*. Cambridge: Cambridge University Press.
- Deacon, H. & Deacon, J., 1999. *Human Beginnings in South Africa*. Johannesburg: David Phillip.
- Delius, P., 2007. *Mpumalanga: Reclaiming the Past, Defining the Future*. Scottsville: University of KwaZulu-Natal Press.
- Delius, P. & Cope, R., 2007. Hard-fought frontiers: 1845 - 1883. In: *Mpumalanga: History and Heritage*. Pietermaritzburg: University of KwaZulu-Natal Press, pp. 137-199.
- Delius, P., Maggs, T. & Schoeman, A., 2014. *Forgotten World: The Stone-Walled Settlements of the Mpumalanga Escarpment*. First ed. Johannesburg: Wits University Press.
- Eastwood, E., van Schalkwyk, J & Smith, B., 2002. Archaeological and rock art survey of the Makgabeng Plateau, Limpopo Basin. *The Digging Stick*, 19(1), pp. 1-3.
- Esterhuysen, A. & Smith, J., 2007. Stories in Stone. In: P. Delius, ed. *Mpumalanga: History and Heritage: reclaiming the past, defining the future*. Pietermatitzburg: University of KwaZulu-Natal Press, pp. 41-67.
- Genealogical Society of South Africa, 2011. *Google Earth Cemetery Initiative*. Google Earth Database: Genealogical Society of South Africa Database.
- Huffman, T., 2007. *Handbook to the Iron Age: the archaeology of Pre-colonial Farming Societies in Southern Africa*. Pietermaritzburg: University of KwaZulu-Natal Press.
- Landau, P. S., 2010. *Popular Politics in the History of South Africa, 1400-1948*. Cambridge: Cambridge University Press.
- Makhura, T., 2007. Early Inhabitants. In: *Mpumalanga: History and Heritage*. Pietermaritzburg: The University of KwaZulu-Natal Press, pp. 91-135.
- Mitchell, P., 2002. *The Archaeology of Southern Africa*. Cambridge: Cambridge University Press.
- Mucina, L. & Rutherford, M. C., 2010. *The Vegetation of South Africa, Lesotho and Swaziland*. CD Edition ed. Pretoria: South African National Biodiversity Insitute (SANBI).
- Pistorious, J., 2008a. *Phase 1 Heritage Impact Assessment (HIA) Study for the Total Coal South Africa's (TCSA) Proposed New Expansion of the Dorsfontein Coal Mine (DCM) near*



*Kriel on the Eastern Highveld in the Mpumalanga Province of South Africa*, Pretoria: Unpublished report prepared for Total Coal Ground Water Consulting Services.

Pistorius, J., 2008b. *Phase 1 Heritage Impact Assessment (HIA) Study for Sasols proposed new shaft complex on Strybult 542 and for the North Block on the Eastern Highveld in the Mpumalanga Province of South Africa*, Pretoria: Unpublished Report prepared for Clean Stream Environmental and Sasol Secunda.

Potgieter, E., 1955. *The disappearing Bushmen of Lake Chrissie: a preliminary survey*. Pretoria: Van Schaik.

SAHRA, 2017. *PalaeoSensitivity Map*. [Online] Available at: <http://www.sahra.org.za/sahris/map/palaeo> [Accessed 02 July 2018].

Smith, B. W. & Ouzman, S., 2004. Taking Stock: identifying Khoekhoen Herder Rock Art in Southern Africa. *Current Anthropology*, 45(4), pp. 499-526.

Smith, B. & Zubieta, L., 2007. The Power of Ancient Art. In: P. Delius, ed. *Mpumalanga: History and Heritage*. Pietermaritzburg: University of KwaZulu-Natal Press, pp. 69-90.

Voortrekkers, T., 2014. *The Great Trek - South Africa 1835 - 1845*. [Online] Available at: <http://www.voortrekker-history.co.za/index.php#.VOBq3a8cTIU> [Accessed 25 October 2017].

WITS, 2010. *Archaeological Site Database*, Johannesburg: Department of Geography, Archaeology and Environmental Science.

Heritage Scoping Report

Proposed Weltevreden Coal Mining Project near Belfast, Mpumalanga Province

MBU5710



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## Appendix A: Specialist CVs



# DIGBY WELLS

## ENVIRONMENTAL

Miss Shannon Hardwick  
Heritage Resources Management Consultant  
Social and Heritage Services Division  
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
2017 to present	Digby Wells Environmental	Junior Heritage Resources Management Consultant
2016-2017	Tarsus Academy	Facilitator
2011-2016	University of the Witwatersrand	Teaching Assistant
2011	University of the Witwatersrand	Collections Assistant

## 4 Experience

I joined the Digby Wells in April 2017 as an archaeologist and a Heritage Resources Management intern in the Social and Heritage Services Division and have most recently been promoted to a Junior Consultant. I received my Master of Science (MSc) degree in Archaeology from the University of the Witwatersrand in 2013, specialising in archaeobotany and historical archaeology. I have fieldwork experience in historical archaeology as well as in Stone Age archaeology in South Africa; since joining Digby Wells, this has been expanded to include pre-disturbance surveys across South Africa and fieldwork in Malawi.

Since joining Digby Wells, I have gained generalist experience through the compilation of various heritage assessment reports in South Africa, Malawi and Mali and Section 34 Permit Applications. 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 in South Africa, Malawi, Mali and Sierra Leone.

## 5 Project Experience

My project experience is listed in the table below.



Project Title	Name of Client	Project Location	Date:		Project / Experience Description
Environmental Authorisation for the Dagsoom Coal Mining Project near Ermelo, Mpumalanga Province	Dagsoom Coal Mining (Pty) Ltd	Ermelo, Mpumalanga Province	April 2019	Ongoing	Heritage Impact Assessment
Regional Tailings Storage Facility Heritage Mitigations	Ergo Mining (Pty) Ltd	Randfontein, Gauteng	April 2019	Ongoing	Section 34 Permit Application Process
Weltevreden Mine Environmental Authorisation, Water Use Licence and Mining Right Application Project	Mbuyelo Group (Pty) Ltd	Belfast, Mpumalanga	April 2019	Ongoing	Heritage Impact Assessment
Environmental Authorisation for the proposed Lephalale Pipeline Project, Limpopo Province	MDT Environmental (Pty) Ltd	Lephalale, Limpopo Province	April 2019	Ongoing	Notification of Intent to Develop
Heritage Resources Management Process Update for the Exxaro Matla Mine	Exxaro Coal Mpumalanga (Pty) Ltd	Kriel, Mpumalanga Province	February 2019	Ongoing	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	February 2019	Ongoing	Heritage Impact Assessment
Songwe Hills Rare Earth Elements Project	Mkango Resources Limited	Phalombe District, Malawi	February 2019	Ongoing	Heritage Impact Assessment

Project Title	Name of Client	Project Location	Date:		Project / Experience Description
Elandsfontein Colliery Burial Grounds and Graves Chance Finds	Anker Coal and Mineral Holdings SA (Pty) Ltd Elandsfontein Colliery (Pty) Ltd	Clewer, Emalahleni, Mpumalanga Province	November 2018	December 2018	Site Inspection
Environmental Authorisation Process to Decommission a Conveyor Belt Servitude, Road and Quarry at Twistdraai East Colliery	Sasol Mining (Pty) Ltd	Secunda, Mpumalanga Province	November 2018	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	October 2018	Ongoing	Heritage Impact Assessment
Environmental Authorisation for the Nomalanga Estates Expansion Project, KwaZulu-Natal	Nomalanga Property Holdings (Pty) Ltd	Greytown. KwaZulu-Natal	October 2018	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	August 2018	Ongoing	Heritage Impact Assessment
Gorumbwa RAP Audit	Randgold Resources Limited	Kibali Sector, Democratic Republic of the Congo	July 2018	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	June 2018	November 2018	Notification of Intent to Develop

<b>Project Title</b>	<b>Name of Client</b>	<b>Project Location</b>	<b>Date:</b>		<b>Project / Experience Description</b>
Basic Assessment and Regulation 31 Amendment / Consolidation for Sigma Colliery: Mooikraal and Sigma Colliery: 3 Shaft	Sasol Mining (Pty) Ltd	Sasolburg, Free State Province	April 2018	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	April 2018	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	April 2018	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	March 2018	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	February 2018	Ongoing	Heritage Impact Assessment
Belfast Implementation Project	Exxaro Coal Mpumalanga (Pty) Ltd	Belfast, Mpumalanga Province	February 2018	Ongoing	Section 34 Permit Application
Newcastle Landfill Project	GCS Water and Environmental Consultants	Newcastle, KwaZulu-Natal	January 2018	March 2019	Heritage Impact Assessment

<b>Project Title</b>	<b>Name of Client</b>	<b>Project Location</b>	<b>Date:</b>		<b>Project / Experience Description</b>
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	January 2018	May 2018	Section 34 Permit Application Process
Basic Assessment and Environmental Management Plan for the Proposed pipeline from the Mbali Colliery to the Tweefontein Water Reclamation Plant, Mpumalanga Province	HCI Coal (Pty) Ltd Mbali Colliery	Ogies, Mpumalanga Province	November 2017	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	November 2017	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	November 2017	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	November 2017	Fatal Flaw Analysis



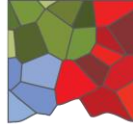
Project Title	Name of Client	Project Location	Date:		Project / Experience Description
Environmental Impact Assessment for the Blyvoor Gold Mining Project near Carletonville, Gauteng Province	Blyvoor Gold Capital (Pty) Ltd	Carletonville, Gauteng	October 2017	Ongoing	Notification of Intent to Develop; Social Baseline
Heritage Resources Management Process for the Exxaro Matla Mine	Exxaro Coal Mpumalanga (Pty) Ltd	Kriel, Mpumalanga Province	August 2017	October 2018	Heritage Impact Assessment
Liwonde Additional Studies	Mota-Engil Africa	Liwonde, Malawi	June 2017	June 2018	Community Health, Safety and Security Management Plan
Environmental Impact Assessment for the Millsite TSF Complex	Sibanye-Stillwater	Randfontein, Gauteng	June 2017	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	May 2017	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	March 2017	August 2017	Archaeological Phase 2 Mitigation
Environmental and Social Input for the Pre-Feasibility Study	Birimium Gold	Bougouni, Mali	January 2017	October 2018	Pre-Feasibility Study; Heritage Impact Assessment

## 6 Professional Registration

Position	Professional Body	Registration 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.



# DIGBY WELLS

## ENVIRONMENTAL

Mr. Justin du Piesanie

Divisional Manager: Social and Heritage Services

Social and Heritage Services Department

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

Period	Company	Title/position
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 and was subsequently made manager of the Heritage Unit and subsequently the 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
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 Applications	Permit	Ergo (Pty) Ltd
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 and	Exxaro Coal Mpumalanga (Pty) Ltd
Exxaro Belfast GRP	Belfast, Mpumalanga, South Africa	2013	-	Grave Relocation		Exxaro Coal Mpumalanga (Pty) Ltd
Eskom Northern 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

PROJECT	LOCATION	DATES		PROJECT TYPE	CLIENT
SKA HIA and CMP	Carnarvon, Northern Cape, South Africa	2017	2018	Heritage Impact Assessment and Conservation Management Plan	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 Site Management Plan	Exxaro Coal Mpumalanga (Pty) Ltd
Ledjadja Coal Borrow Pits	Lephalale, Limpopo Province, South Africa	2017	2017	Heritage Basic Assessment	Ledjadja Coal (Pty) Ltd
Exxaro Belfast Implementation Project PIA	Belfast, Mpumalanga, South Africa	2017	2017	Palaeontological Impact Assessment	Exxaro Coal Mpumalanga (Pty) Ltd
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 Impact Assessment	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 Impact Assessment	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	Oriental Province, Democratic Republic of Congo	2017	2017	Grave Relocation	Randgold Resources Limited
Massawa EIA	Senegal	2016	2017	Heritage Impact Assessment and Technical Reviewer	Randgold Resources Limited

PROJECT	LOCATION	DATES	PROJECT TYPE	CLIENT
Beatrix EIA and EMP	Welkom, Free State, South Africa	2016 2017	Heritage Impact Assessment	Sibanye Stillwater
Sun City Chair Lift	Pilanesberg, North-West Province, South Africa	2016 2017	Notification of Intent to Develop and Heritage Basic Assessment	Sun International
Hendrina Underground Coal Mine EIA	Hendrina, Mpumalanga, South Africa	2016 2017	Heritage Impact Assessment	Umcebo Mining (Pty) Ltd
Elandsfontein Update	EMP Clewer, Mpumalanga, South Africa	2016 2017	Heritage Impact Assessment	Anker Coal
Groningen and Inhambane PRA	Limpopo Province, South Africa	2016 2016	Heritage Basic Assessment	Rustenburg Platinum Mines Limited
Palmietkuilen MRA	Springs, Gauteng, South Africa	2016 2016	Heritage Impact Assessment	Canyon Resources (Pty) Ltd
Copper Sunset Sand Mining S.102	Free State, South Africa	2016 2016	Heritage Basic Assessment	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 Basic Assessment	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	2016 2016	Phase 2 Mapping	Sun International

PROJECT	LOCATION	DATES		PROJECT TYPE		CLIENT
	Province, South Africa					
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
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 Applications	34 Permit	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
Invula 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



PROJECT	LOCATION	DATES	PROJECT TYPE	CLIENT
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
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 ESIA Update Project	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 Basic Assessment	Sasolburg, Free State, South Africa	2014 2014	Heritage Assessment Basic	Sasol Mining
Rea Vaya Phase II C Project	Johannesburg, Gauteng, South Africa	2014 2014	Heritage Assessment Impact	ILISO Consulting
New Liberty Gold Project	Liberia	2013 2014	Grave Relocation	Aureus Mining
Putu Iron Ore Mine Project	Petroken, Liberia	2013 2014	Heritage Assessment Impact	Atkins Limited

PROJECT	LOCATION	DATES		PROJECT TYPE	CLIENT
Sasol Twistdraai Project	Secunda, Mpumalanga, South Africa	2013	2014	Notification of Intent to Develop	ERM Southern Africa
Kibali Gold Hydro- Power Project	Orientele Province, Democratic Republic of Congo	2012	2014	Heritage Impact Assessment	Randgold Resources Limited
SEGA Gold Mining Project	Burkina Faso	2013	2013	Technical Reviewer	Cluff Gold PLC
Consbrey and Harwar Collieries Project	Breyton, Mpumalanga, South Africa	2013	2013	Heritage Impact Assessment	Msobo Coal
Falea Uranium Mine Environmental Assessment	Falea, Mali	2013	2013	Heritage Scoping	Rockgate Capital
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

PROJECT	LOCATION	DATES	PROJECT TYPE	CLIENT	
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 Recording: Mapping	Heritage Contracts Unit
Eskom Thohoyandou Electricity Master Network	Limpopo Province, South Africa	2010	2010	Heritage Statement	Strategic Environmental Focus
Bathhako 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 Parys LIA Shelter Project	Parys, Free State, South Africa	2009	2009	Phase 2 Mapping	University of the Witwatersrand
Archaeological Assessment 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

PROJECT	LOCATION	DATES	PROJECT TYPE	CLIENT
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 Registrations

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



Heritage Scoping Report

Proposed Weltevreden Coal Mining Project near Belfast, Mpumalanga Province

MBU5710



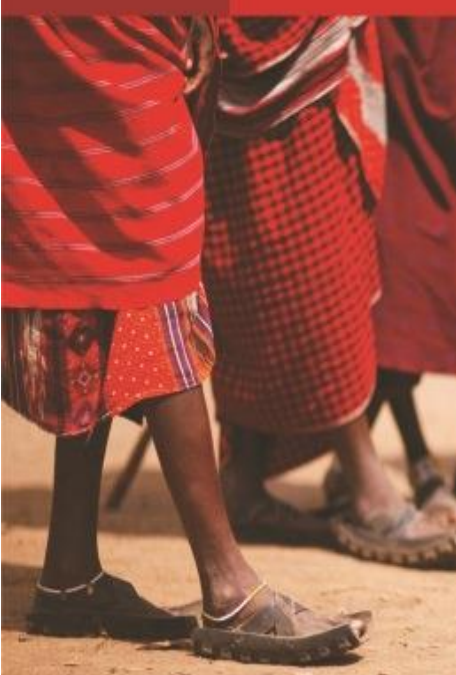
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## Appendix B: HRM Methodology



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## Cultural Significance, Field Rating and Impact Assessment

### Methodology Statement

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**Project Number:**

ZZZ9999

**Prepared for:**

Internal Document

June 2019

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Digby Wells and Associates (South Africa) (Pty) Ltd  
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Directors: GE Trusler (C.E.O), LF Stevens, J Leaver (Chairman)\*, NA Mehlomakulu\*, DJ Otto  
\*Non-Executive

---



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

*This report is provided solely for the purposes set out in it and may not, in whole or in part, be used for any other purpose without Digby Wells Environmental prior written consent.*

## TABLE OF CONTENTS

1	Introduction .....	1
2	Evaluation of Cultural Significance and Field Ratings.....	1
2.1	Cultural Significance Determination.....	1
2.2	Field Rating Determination .....	2
3	Impact Assessment Methodology .....	4
3.1	Categorising Impacts to Cultural Heritage .....	6
3.2	Impact Assessment.....	7
4	Recommended Management and Mitigation Measures .....	11

## LIST OF FIGURES

Figure 2-2: Field Ratings Methodology.....	2
Figure 2-1: CS Determination Methodology .....	3
Figure 3-1: Graphical Representation of Impact Assessment Concept.....	5
Figure 3-2: Example of how Potential Impacts are considered .....	5

## LIST OF TABLES

Table 3-1: Description of Duration, Extent, Intensity and Probability Ratings Used in the Impact Assessment.....	8
Table 3-2: Impact Significance Scores, Descriptions and Ratings.....	10
Table 3-3 Relationship between Consequence, Probability and Significance.....	10
Table 4-1: Minimum Recommended Management or Mitigation Requirements Considering CS.....	11



## 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**

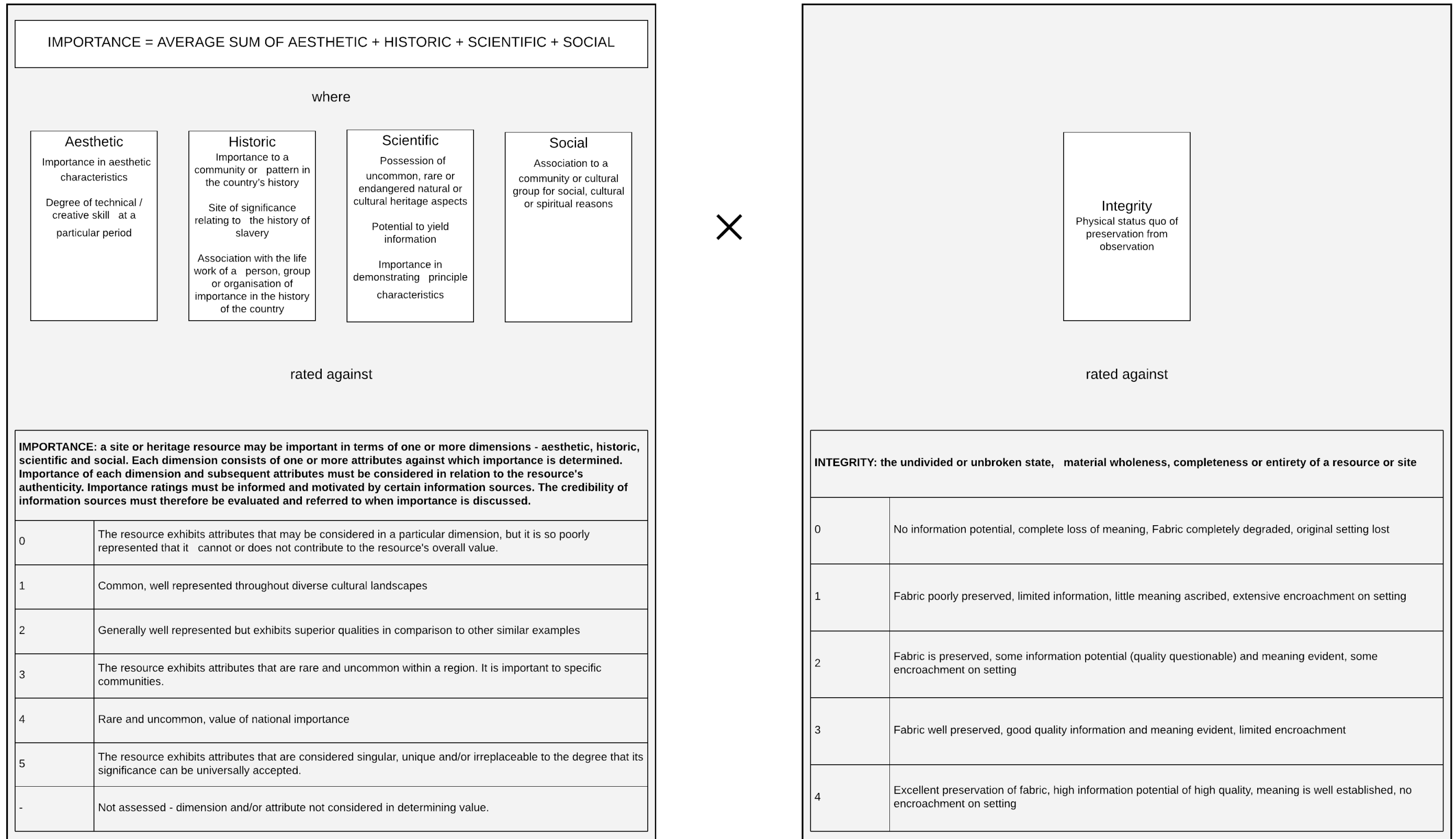


Figure 2-2: CS Determination Methodology

### 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.

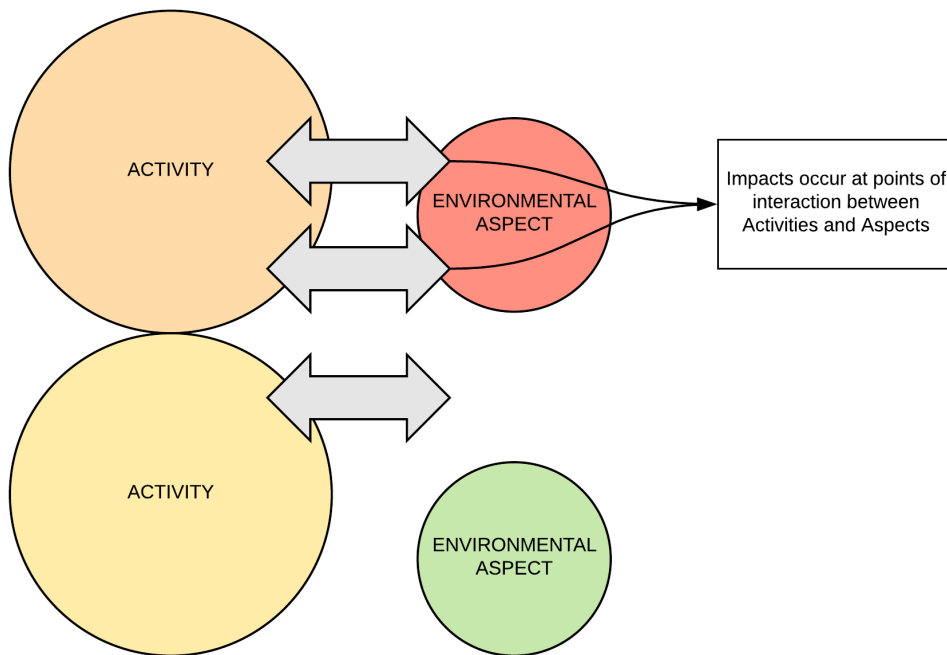


Figure 3-1: Graphical Representation of Impact Assessment Concept

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**

Determined CS	Minimum Management / Mitigation Requirements <sup>4</sup>
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.