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

Heritage Scoping Input

Prepared for:

SRK Consulting (South Africa) Pty Ltd

Project Number:

SRK6560

August 2020



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1. Introduction

Anglo American Platinum's Rustenburg Base Metals Refiners (RBMR) requires reagents in support of processing operations at the Rustenburg Base Metals Refinery (RBMR). RBMR intends to relocate the existing centralised Bulk Chemical Storage Facility within the existing operations and requires Environmental Authorisation (EA) to do so.

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

SRK appointed Digby Wells Environmental (hereinafter Digby Wells) to undertake the necessary Heritage Resources Management (HRM) process in support of the EIA process and in compliance with the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA). This document constitutes the specialist heritage scoping input for the Draft Scoping Report (DSR) prepared by SRK.

2. Project Background Description

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

The reagents required for the RBMR operations are received at, stored in and distributed from the existing centralised Bulk Chemical Storage Facility. This facility is more than 30 years old and is no longer suitable for the storage of the chemical reagents as the structural integrity of the facility is no longer sound. Continuous leaks and the loss of bund integrity leading to the contamination of the area's substrate. This has resulted in the heaving of the foundations.

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

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

**SRK Consulting SA
(Pty) Ltd**
**Anglo Bulk Chemical
Storage Facility Relocation**
Regional Setting

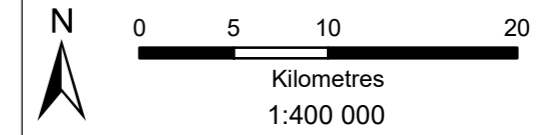
Legend

-  Project Location
-  Major Town
-  Secondary Town
-  Other Town
-  Settlement
-  National Route
-  Main Road
-  Railway Line
-  Perennial Stream
-  Dam/ Lake
-  Provincial Boundary
-  District Municipal Boundary (2016)
-  Local Municipal Boundary (2016)



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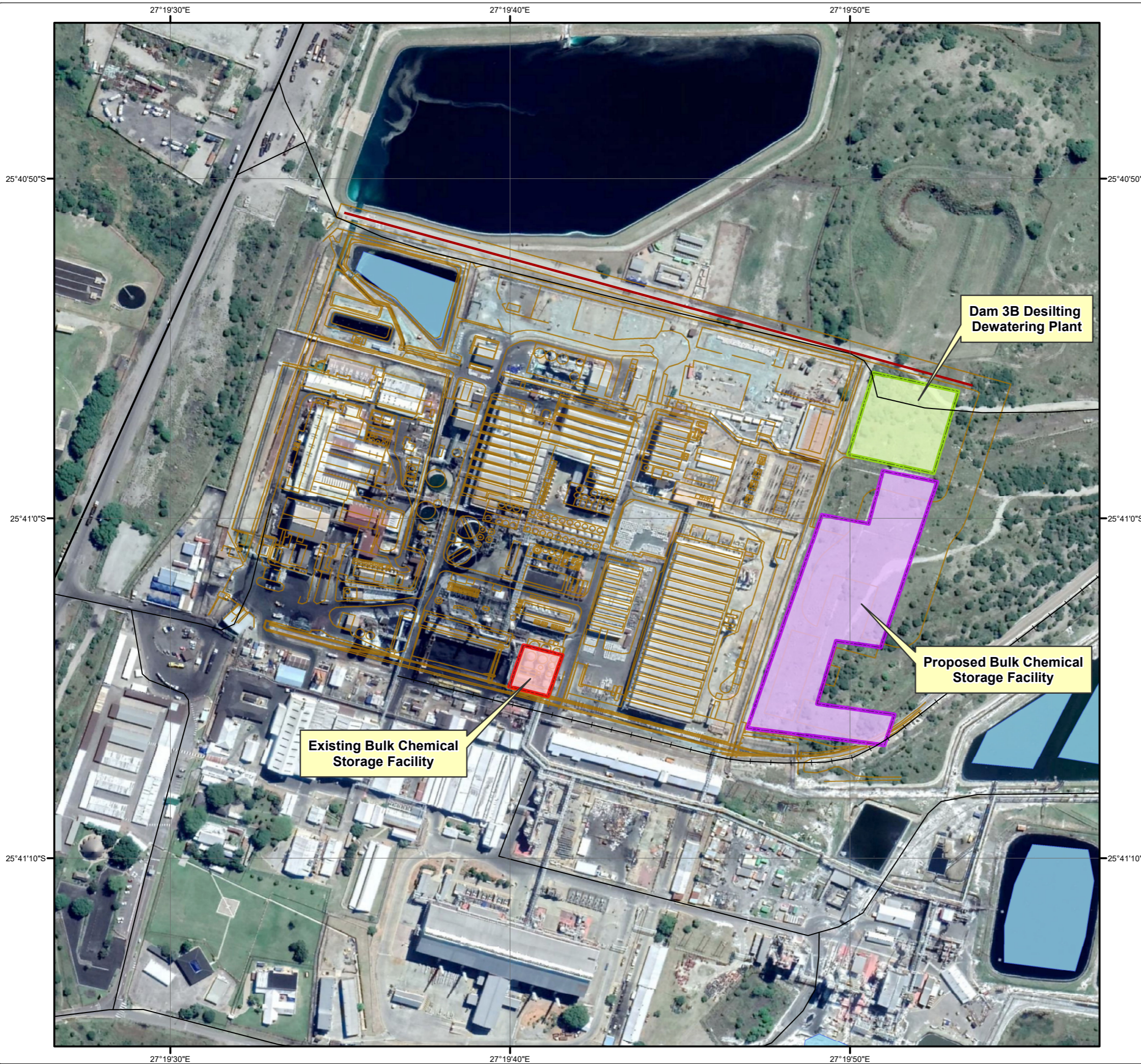



Anglo Bulk Chemical Storage Facility Relocation

Infrastructure Layout

Legend

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

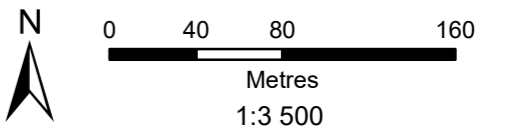




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2.1. Project Alternatives

The DSR includes a detailed description of the alternatives considered for the Project. Three location alternatives were considered within the RBMR Boundary. These alternatives include:

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

RBMR undertook a location trade-off activity which considered the desirability of the locations and any technical issues presented by the alternatives. This is presented in the DSR compiled by SRK.

The preferred option was chosen as the proposed design will:

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

RBMR will engineer the design of the storage facility to mitigate many of the significant risks identified and associated with the preferred option. Only the preferred option was considered in this assessment. The HRM process excluded Alternative 1 and Alternative 2.

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

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



Figure 2-1: Location of the Preferred Option

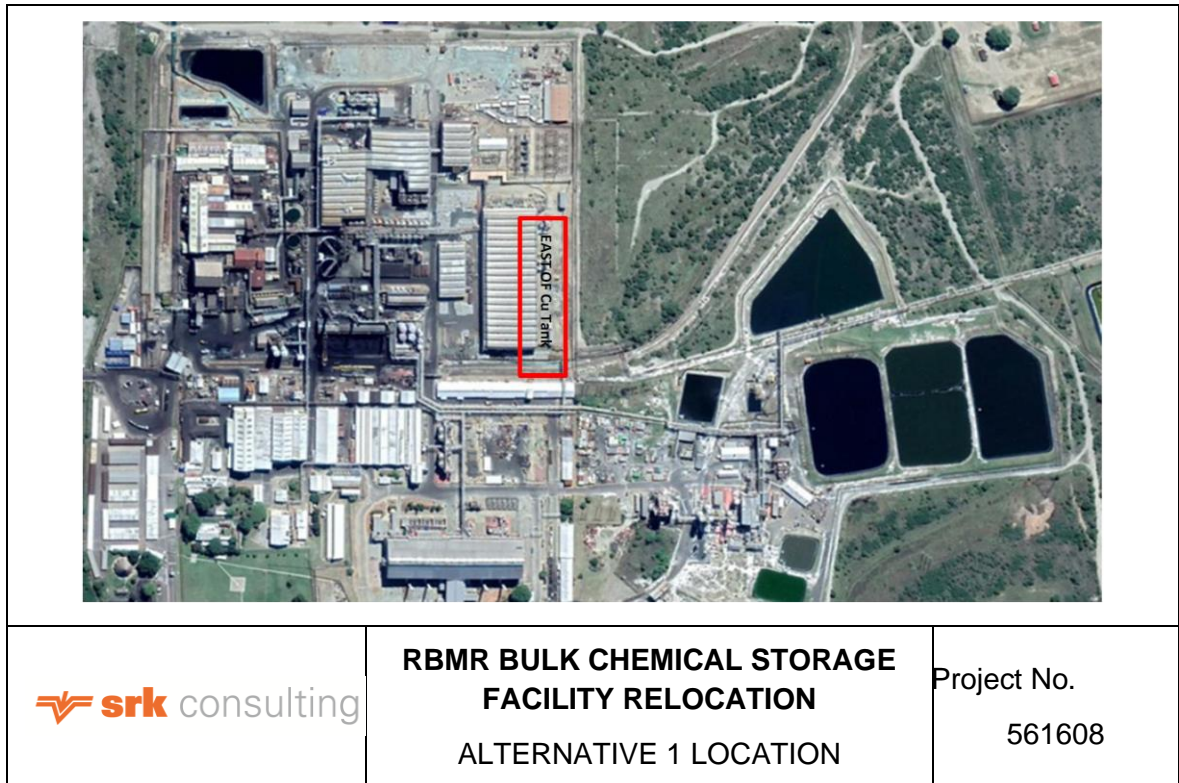


Figure 2-2: Location of Alternative 1

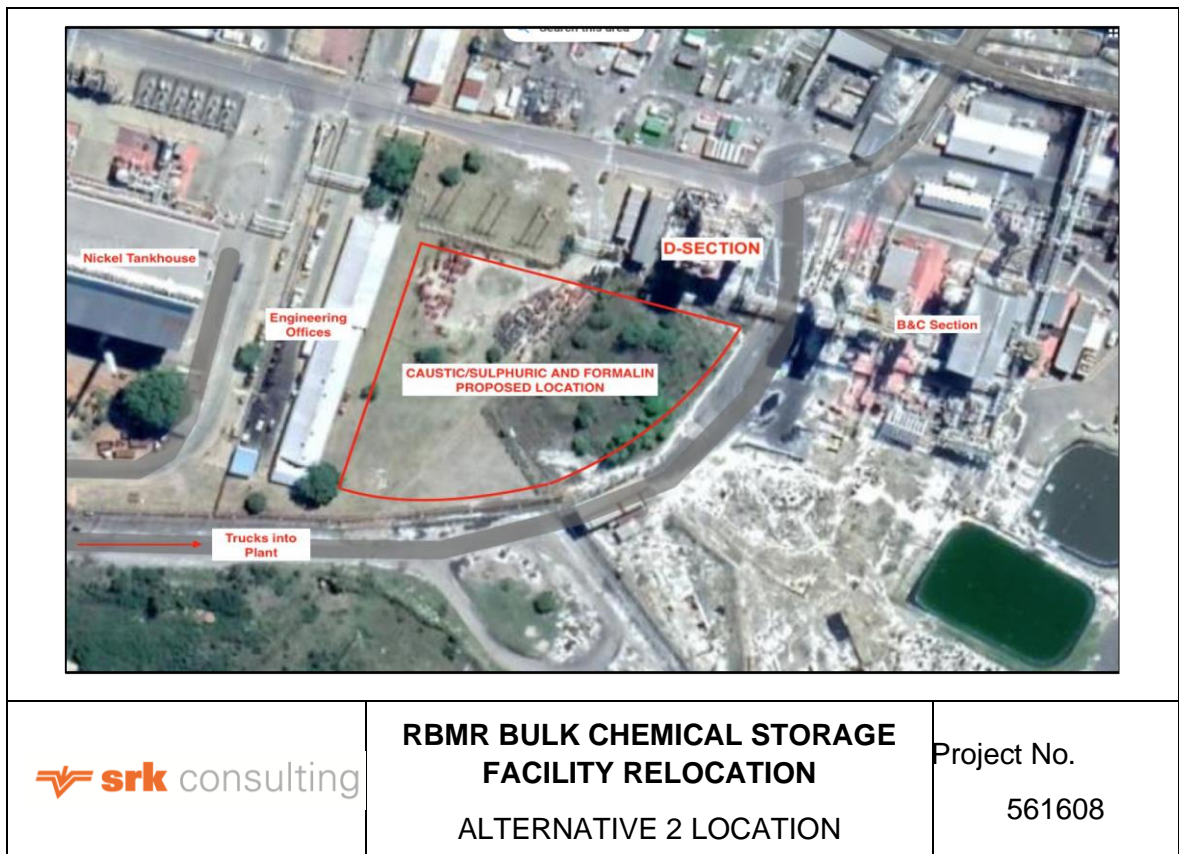


Figure 2-3: Location of Alternative 2

2.2. Terms of Reference

SRK appointed Digby Wells to conduct an HRM process in support of the EA application applicable to the Project and in compliance with Section 38(8) of the NHRA.

2.3. Scope of Work

The Scope of Work (SoW) for the specialist HRM process included the compilation of specialist input for inclusion into the DSR compiled by SRK. As part of the SoW, Digby Wells completed the following activities:

- Description of the predominant cultural landscape supported through secondary data collection¹;
- A high-level assessment of the types of potential impacts to heritage resources that may arise from the Project; and
- A description of the types of mitigation measures and management strategies that will be described in the Heritage Impact Assessment (HIA) report.

2.4. Expertise of the Specialist

Table 2-1 presents a summary of the expertise of the specialists involved in the compilation of this report. Their CVs will be included in the HIA report.

Table 2-1: Expertise of the specialists

Team Member	Bio Sketch
<p>Shannon Hardwick</p> <p>ASAPA Member: 451</p> <p>ICOMOS Member 38048</p> <p>Years' Experience: 3</p>	<p>Shannon joined the Digby Wells team in May 2017 as a Heritage Management Intern and has most recently been appointed as a Heritage Resources Management Consultant. Shannon is an archaeologist who obtained a Master of Science (MSc) degree from the University of the Witwatersrand in 2013, specialising in historical archaeobotany in the Limpopo Province. She is a published co-author of one paper in <i>Journal of Ethnobiology</i>. Since joining Digby Wells, Shannon has gained generalist experience through the compilation of various heritage assessments, including Heritage Scoping Reports (HSRs), HIAs, Heritage Basic Assessment Reports (HBARs) and Section 34 permit applications. Her other experience includes compiling a Community Health, Safety and Security Management Plan (CHSSMP) and various social baselines, including researching Artisanal and Small-Scale Mining as part of a Livelihood Restoration Framework (LRF). Shannon's experience in the field includes pre-disturbance surveys in South Africa, Malawi and the Democratic Republic of the Congo and social fieldwork in Malawi.</p>
<p>Justin du Piesanie</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 and Divisional Manager in 2016 and 2018</p>

¹ Primary data collection comprising of a pre-disturbance survey has been undertaken. The results of this exercise will be reported in the HIA report.

Team Member	Bio Sketch
ASAPA Member 270 ICOMOS Member 14274 IAIASa Member Years' Experience: 13	<p>respectively. He obtained his 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 and Senegal on projects that have required compliance with IFC requirements such as Performance Standard 8: Cultural Heritage. Furthermore, Justin has acted as a technical expert reviewer of HRM projects undertaken in Cameroon, Malawi and Senegal. Justin's current focus at Digby Wells is to develop the HRM process as an integrated discipline following international HRM principles and standards. This approach aims to provide clients with comprehensive, project-specific solutions that promote ethical heritage management and assist in achieving strategic objectives.</p>

3. Methodology

The following sections present a summarised description of the methodologies employed in the compilation of this report. A more detailed description of the methodology will be included in the HIA report.

3.1. Defining the Study Area

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

- The *site-specific* study area: the farm portions extent associated with the proposed Project, including a 500 m buffer area;
- The *local* study area: the area most likely to be influenced by any changes to heritage resources in the Project area, or where project development could cause heritage impacts. The local study area is defined as the area bounded by the local municipality and includes particular reference to the immediate surrounding properties or farms. The local study area is specifically examined to offer a backdrop to the socio-economic

conditions within which the proposed development will occur. The local study area furthermore provides the local development and planning context that may contribute to cumulative impacts. The Project is situated in the RLM; and

- The *regional* study area: the area bounded by the district municipality demarcation. In this case, the Project is located in the BDM. Where necessary, the regional study area may be extended outside the boundaries of the district municipality to include areas closest to the Project area. The aim of this is to include much wider expressions of specific types of heritage resources and historical events. The regional study area also provides the regional development and planning context that may contribute to cumulative impacts.

3.2. Primary Data Collection

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

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

- Visually record the current state of the cultural landscape; and
- Record a representative sample of the visible, tangible heritage resources present within the development footprint area, site-specific study area and greater study area.

Identified heritage resources were recorded as waypoints using a handheld GPS device. The heritage resources were also recorded through written and photographic records. The results of the primary data collection will be described in the HIA report.

3.3. Secondary Data Collection

Data collection informs the cultural heritage baseline profile of the study area under consideration. Data was collected through a desktop literature review, which comprised the South African Heritage Resources Information System (SAHRIS) database as well as online electronic journal articles, reference books and select internet sources. The cultural baseline presented in Section 4 includes a summary and discussion of only the most relevant findings. Relevant sources have been cited and are included in the reference list (refer to Section 7).

3.4. Constraints and Limitations

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

Table 3-1: Constraints and Limitations

Description	Consequence
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.	The cultural heritage baseline presented in Section 7 below is considered accurate but may not include new data or information which may not have been made available to the public.
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.
This notwithstanding, and 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 during Project activities. Should this occur, RBMR must alert the Heritage Resource Authorities (HRAs) of the find and may need to enlist the services of a suitably qualified archaeologist to advise them on the way forward.
Archaeological resources commonly occur at subsurface levels. These types of resources cannot be adequately recorded or documented by assessors without destructive and intrusive methodologies and without the correct permits issued in terms of Section 35 of the NHRA.	The reviewed literature, previously-completed heritage assessments and the results of the field survey are in themselves limited to surface observations. Subsurface tangible heritage may be exposed during Project activities. Should this occur, RBMR must alert the HRAs of the find and may need to enlist the services of a suitably qualified archaeologist to advise them on the way forward.

4. Baseline Description

The Project area is predominantly underlain by geological layers comprising the Bushveld Complex (Johnson, et al., 2006). These layers are comprised of intrusive igneous rocks and are of zero or insignificant palaeontological sensitivity² (SAHRA, 2013). Figure 4-1 presents the palaeontological sensitivity of the area within which the Project is located, adapted from the SAHRIS Palaeosensitivity Map (PSM).

² As per the SAHRIS PSM, developments in areas of zero or insignificant palaeosensitivity do not require any palaeontological assessment. As such, any specialist palaeontological assessment has been excluded from the HRM process.

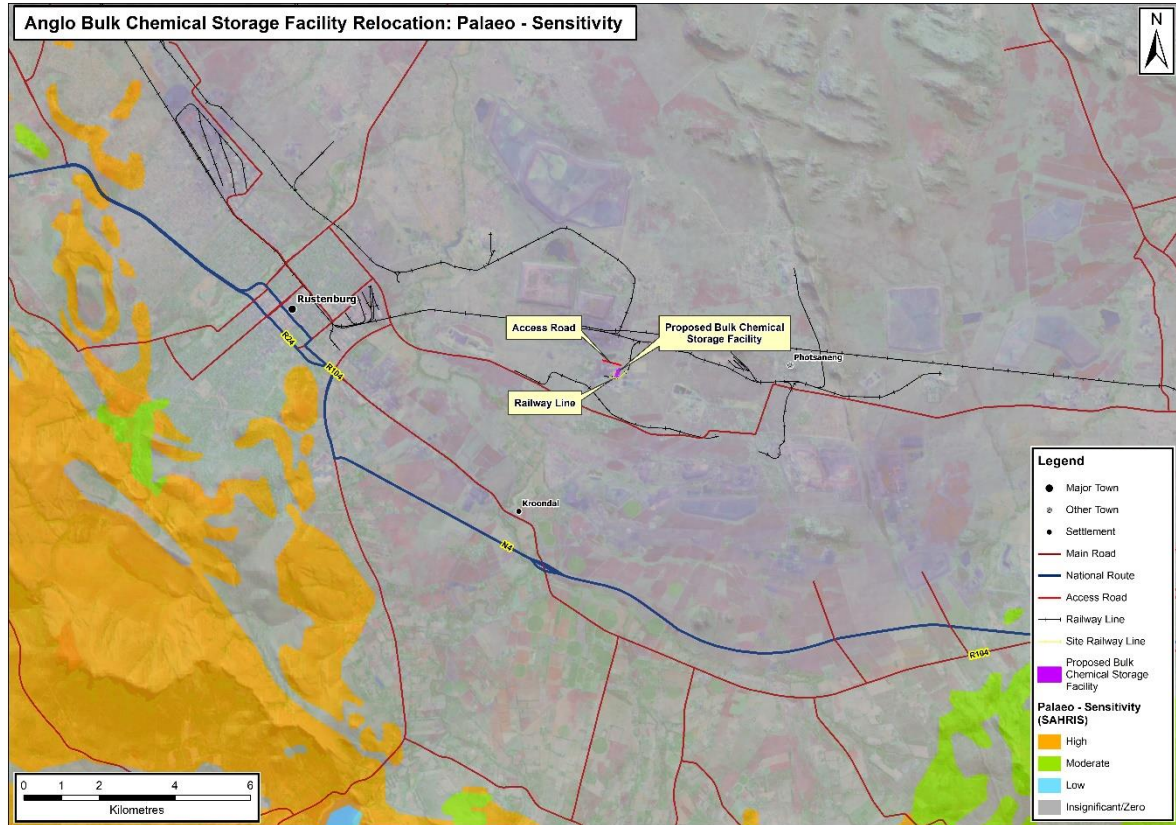


Figure 4-1: Palaeontological Context of the Project

The cultural heritage baseline description considered the predominant cultural landscape based on the identified heritage resources within the regional and local study area. Table 4-1 presents the broad timeframes for the major periods of the past in South Africa.

Table 4-1: Archaeological Periods in South Africa

The Stone Age	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 ³)
Farming Communities	Early Farming communities (EFC)	500 to 1400 CE
	Late Farming Communities (LFC)	1100 to 1800 CE

³ 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).

Historical Period	-	1500 CE to 1994 (Behrens & Swanepoel, 2008)
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Adapted from Esterhuysen & Smith, (2007)

In total, 29 heritage resources were identified in the literature applicable to the regional, local and site-specific study areas. Figure 4-2 presents the breakdown of the identified heritage resources in terms of the archaeological periods. The predominant tangible heritage resources recorded in the area under consideration demonstrate affiliations with Farming Community Period, particularly the LFC and including one expression of rock art linked to this time period. This notwithstanding, expressions of the MSA and historical period (including burial grounds and graves and the historical built environment) have been recorded in the greater study area.

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

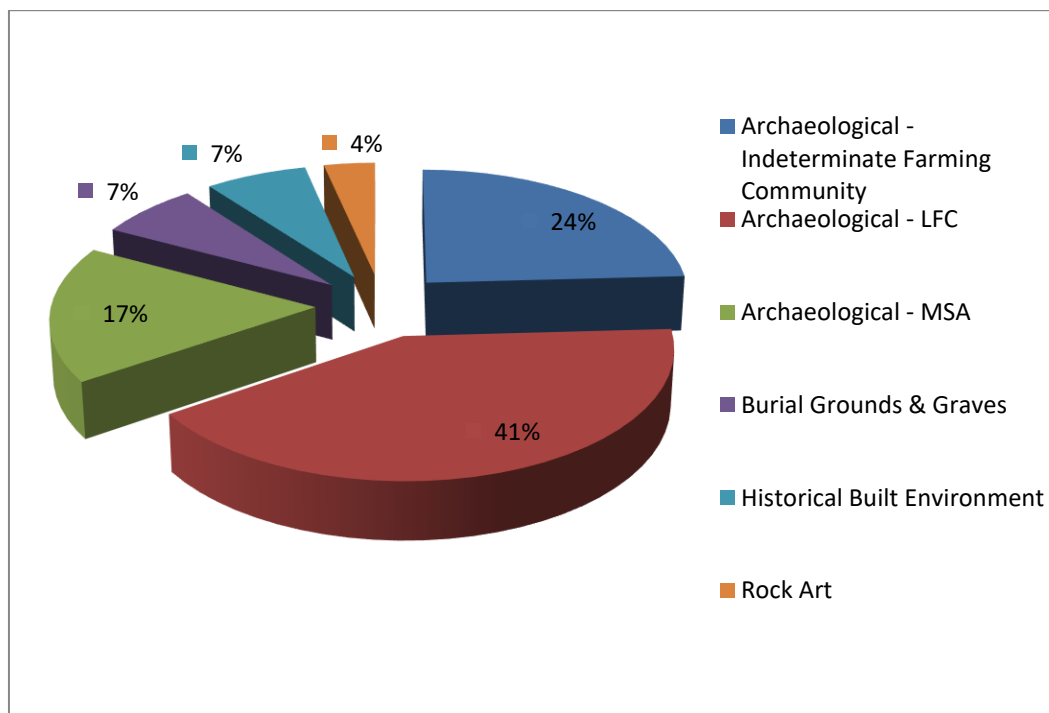


Figure 4-2: Heritage Resources Identified within the Regional Study Area

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

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

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

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

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

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

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

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

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

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

Table 4-2: Stonewalling types within the regional study area

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

After Huffman (2007)

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

Table 4-3: Ceramic facies within the local study area

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

After Huffman (2007)

The historical period⁴ is commonly regarded as the period characterised by contact between Europeans and Bantu-speaking African groups and the written records associated with this

⁴ In southern Africa, the last 500 years represents a formative period that is marked by enormous internal economic invention and political experimentation that shaped the cultural contours and categories of modern identities outside of European contact. This period is currently not well documented but is being explored through the 500 year initiative (Swanepoel, et al., 2008).

interaction. However, the division between the LFC and historical period is artificial, as there is a large amount of overlap between the two.

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

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

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

- Two instances of individual graves (van Schalkwyk & Pelsler, 1999; 2001); and
- The historical built environment, including structural remains and the historical townscape of Kroondal (van Schalkwyk & Pelsler, 1999).

5. Potential Identified Impacts and Mitigation Measures

This section presents an overview of the potential risks to heritage resources that are expected at this stage and outlines preliminary mitigation measures that may mitigate these anticipated risks. The risk assessment will be refined following a pre-disturbance survey of the Project area and an assessment of the Cultural Sensitivity (CS) of any heritage resources identified within the Project area. The CS is directly linked to proposed mitigation measures as determined by the South African Heritage Resources Agency (SAHRA) Minimum Standards for HIAs (2012). As such, the proposed mitigation measures are subject to change following the assessment of CS or the detailed impact assessment process.

Proposed Project activities pose a potential risk of damage to or destruction of heritage resources generally protected under Sections 35 and 36 of the NHRA (i.e. previously unidentified archaeological or fossiliferous material or burial grounds and graves respectively). These Project activities include:

- Surface and/or vegetation clearing ahead of the construction of the new Bulk Chemical Storage Facility;
- Excavation of the area in preparation for the construction of the facility; and
- Construction of the facility and paving of the existing access road.

Digby Wells will recommend proactive mitigation measures to avoid potential impacts to the heritage resources or reactive measures to mitigate impacts. The potential for residual risk ranges from low to medium risk.

6. Conclusions and Recommendations

The cultural landscape within which the Project is located is characterised by the archaeological features, representing primarily the Farming Community period, specifically the LFC. This notwithstanding, other archaeological material representing the MSA and the historical period (including the historical built environment and burial grounds) are present within the regional study area.

Digby Wells recommends the completion of an HIA report to comply with Section 38 of the NHRA. Section 6.1 summarises the way forward, including the activities to be undertaken to produce the HIA report.

6.1. Way Forward

Digby Wells will map the results of the pre-disturbance survey in relation to the proposed infrastructure. Digby Wells will calculate the CS values and assign Field Ratings of any identified heritage resources in compliance with Sections 3 and 7 of the NHRA. The assigned CS and Field Ratings have direct bearing on the intensity of predicted impacts and the minimum required mitigation.

Following this, Digby Wells will undertake an assessment of the identified heritage resources and develop specific and appropriate mitigation measures, considering the CS of the heritage resources and the SAHRA Minimum Standards.

As indicated in Figure 4-1, the proposed Project area is underlain by geological strata of zero palaeosensitivity and, as such, no palaeontological assessment is required. Digby Wells will therefore not include a Palaeontological Impact Assessment (PIA) in the HIA report.

7. Works Cited

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