

Project Report

16 October 2012

Transnet Capital Projects Ngqura 16Mtpa Manganese Rail

Phase 1 Heritage Impact Assessment Hotazel to Kimberley and De Aar to Port Ngqura

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1. Introduction

A Phase 1 Heritage Impact Assessment is completed as part of an environmental authorisation process. The environmental impact assessment for the Ngqura 16Mtpa is undertaken by Environmental Resources Management (ERM). Elize Becker (Heritage practitioner) is the sub-consultant responsible for the completion of the Heritage Impact Assessment.

The purpose of this Phase 1 Heritage Impact Assessment is to determine if and where heritage resources are positioned within the proposed development footprint.

The gathering of information will allow for the buffering of sensitive areas, and the creation and delineation of no-go sites. The Phase 1 Heritage Impact Assessment will inform the South African Heritage Resources Agency (SAHRA), Heritage Eastern Cape and Ngwao Boswa Kapa Bokoni (Northern Cape Provincial Heritage Resources Agency) what the development entails, any areas of concern and issues that require legal input from the relevant statutory bodies.

The collection of information included a report review of previous archaeological studies that were completed in 2008. The data was confirmed during the reconnaissance survey and additional information in terms of the occurrence of heritage resources were included and summarised.

2. Project Scope

The additional manganese ore demand in South Africa has resulted in Transnet SOC Limited to decide on an increase of their export capacity to reach 16 Mtpa.

The project area focuses on Hotazel to Port Elizabeth that is approximately 800km in length. The work packages included in this report are inclusive of Hotazel to Kimberley and De Aar to Port Elizabeth. The middle section between Kimberley to De Aar has been covered by an additional environmental authorisation process.

The table below provides a summary of the proposed works at the Hotazel to Kimberley section to upgrade the existing line to support up to 200 wagon trains.

Table 2-1: Northern Cape work packages planned

Work packages planned	Description
Witloop	New loop
Wincanton	Loop extension
Vlermuislaagte	Substation upgrade
Glosam	Loop extension
Trewil	Loop extension
Tsantsabane	Loop extension
Fieldsview	Loop extension
Postmasburg	Loop extension
Sishen	New loop
Ulco	Loop extension
Gong gong	Loop Extension

The following work packages are a summary of the type of works that are proposed at the section between De Aar and Port Elizabeth.

Table 2-2: Eastern Cape work packages planned

Work packages planned	Description
Drennan	Loop extension
Thorngrove	Loop extension
Cookhouse – Golden Valley	Line doubling
Ripon - Kommadagga	Line doubling

A new compilation yard is proposed at Mamathwane that is located approximately 22km south of Hotazel in the Northern Cape. The proposed development area is an estimate of 120 ha and will be constructed next to the main line.

3. Background

In 2008, a Phase 1 Heritage Impact Assessment, undertaken by Archaic, formed part of the Environmental Impact Assessment process and identified a range of Stone Age, rock art and historical sites. The National Department of Environmental Affairs (DEA), as the competent authority, authorised the project prior to receiving comments from SAHRA who subsequently indicated shortcomings in the assessment which needed to be addressed.

The heritage practitioner responsible for this report has undertaken a gap analysis to identify where further studies were required. The results showed that further heritage investigations were necessary to have a clear understanding of the range of heritage resources that existed alongside/within the proposed railway line development route.

The main focus of the heritage impact assessment was on identifying areas where construction activities may impact on potential heritage resources. Furthermore a detailed heritage management plan that focuses on structures, cultural landscapes, archaeological sites, paleontological sites, protection of indigenous groups and heritage objects is required and compilation of this plan has been finalised.

4. Approach

This section summarises the approach followed to identify potential heritage concerns along the project development route, focusing on the section between Hotazel and Port Elizabeth.

The specific terms of reference for the Phase 1 Heritage Impact Assessment are as follows:

- Provide a description of the archaeology, and cultural heritage of the project development route and identify/map any sites of archaeological, or cultural significance that may be impacted by the proposed project. The palaeontology impact assessment will be completed as part of a separate specialist study
- Undertake an archaeological reconnaissance survey¹ to assess the sensitivity and conservation significance of any sites of archaeological or cultural heritage significance affected by the proposed development
- Make practical recommendations for the protection and maintenance of any identified and significant archaeological or cultural heritage sites that may be affected
- Provide guidance for the requirement of any permits from SAHRA, Heritage Eastern Cape and Ngwao Boswa Kapa Bokoni (Heritage Northern Cape) that might be needed

4.1 Heritage Study Objectives

The specific project objectives are as follows:

- Identify major heritage resources issues that may result in a risk to the project or may be a potential fatal flaw. Heritage resources of significance will be preserved and managed according to an approved Heritage Management Plan (HMP)
- Minimise the adverse impacts on heritage resources that are positioned on the surface or placed in situ
- Identify the areas where permanent removal of tangible as well as intangible heritage resources needs to be undertaken within a controlled environment
- If such activity has an impact on the cultural characteristics of local traditional communities, that they will be compensated. Changes to tangible and intangible heritage resources will be managed according to the approved HMP
- Avoid impacts on communities of Indigenous Peoples or minimise the impact as far as possible

¹ Archaeological reconnaissance is the attempt to locate, identify and record the distribution of archaeological sites on the surface and against the natural geographic as well as environmental background.

- Respect and conserve the practices of Indigenous Peoples

4.2 Legislation and Guidelines

SAHRA is a statutory organisation established in terms of the National Heritage Resources Act (No. 25 of 1999) as the national body responsible for the protection of South Africa's cultural heritage resources. SAHRA manages the administration of permits for:

- Destruction, alteration or demolition of structures older than sixty years
- Needs and desirability permits linked to development activities
- Sampling permits that allow for the removal of heritage objects for research purposes or rescue archaeology
- Rock art documentation permits
- Grave exhumation and removal permits
- Archaeological excavation permits

The need for input with respect to heritage resources is primarily triggered through statutory requirements, the nature and degree of the potential impact's significance, and concerns raised during the stakeholder consultation process (Provincial Government Western Cape, 2005).

It is the legal responsibility of the client/developer to ensure that the cultural heritage, archaeological resources and paleontological sites that have been identified during the reconnaissance survey are protected and that the recommended mitigation procedures are implemented. It is also the responsibility of the client / developer to ensure that competent professionals are contracted to assist with the identification and protection of heritage resources.

5. Assumptions and Limitations

The following assumptions and limitations must be taken into consideration when reading this report.

5.1 Assumptions

The following assumptions are applicable based on the engineering scope of works:

- No structures older than sixty years will be demolished, disturbed or destroyed. If such an activity is to take place a professional registered Archaeologist will need to be informed immediately and a permitting process will need to be initiated
- No grave sites will be affected, disturbed, altered or exhumed. If such a scenario is to take place a permitting procedure must be initiated with SAHRA's assistance and the input from a professional registered Archaeologist
- A HMP will be drafted to guide the management of heritage resources as part of the Environmental Management Plan
- Construction of site offices will be placed at the construction sites within the railway reserve areas

5.2 Limitations

The following limitations are applicable:

- The extent of the proposed development and the time allocated to complete the archaeological reconnaissance survey limited the ability to undertake detailed studies required at sensitive cultural areas. The study therefore focussed on the construction areas identified where physical disturbance will take place
- The development is of a linear nature which crosses multiple cultural landscapes ranging from high to low significance. The extent of the developmental area limits the effectiveness of a detailed survey and therefore specific areas where development footprints are likely to result in destruction of potential sites were focused on
- Heritage resources in the Northern Cape are managed by various authorities including SAHRA offices based in Cape Town, the Provincial Heritage Authorities based in the Northern Cape (Ngwao Boswa Kapa Bokoni) and the Eastern Cape as well as the Local Heritage Authorities based at the various municipal offices. All these authorities must be considered where decisions need to be made in terms of heritage resources matters. It must be emphasised that the completion of a detailed archaeological survey is intensive and time consuming

6. Project Methodology

The methodology includes the following:

- Provision of a sensitivity map that will indicate the tangible and intangible heritage resources positioned alongside and within the proposed development route. This is supported by the review of previous heritage impact assessment reports completed for previous projects
- Document, calculate and analyse the heritage resources identified during the reconnaissance survey to determine what constitutes a significant resource and how this can be managed
- List recommendations, alternatives as well as mitigation measures to inform the decision-making process
- Consult with local community members, authorities, museums, academic institutions and historical associations on a regular basis
- Ensure that public access to the identified heritage resources of national, provincial and local significance are not affected

7. What is Cultural Heritage

Cultural heritage resources are characterised by two different sub-disciplines which represent intangible and tangible heritage resources that define the field of heritage resources management. Tangible heritage resources can be documented using a quantitative method and intangible heritage resources are documented using a qualitative method.



The list of heritage resources that are protected in terms of the National Heritage Act (No. 25 of 1999) is inclusive of the following:

- Tangible moveable and immovable objects
- Property sites, structures, or groups of structures older than sixty years
- Paleontological sites and objects
- Archaeological sites and objects
- Physical landscape features for example sacred rocks, lakes and waterfalls
- Places of historic, cultural, artistic and religious value
- Unique natural features
- Intangible forms of culture that are inclusive of cultural knowledge, innovations and traditional lifestyles

Cultural landscapes developed as a result of interactions between nature and man, are illustrative of the relationship that people/communities have with the natural environment (France_UNESCO cooperation agreement, 2006). Cultural landscapes are a combination of trees, forest, rocks, hilltops and associations with sacred natural features. Cultural landscapes are also associated with areas linked to events of bravery, survival and remarkable human events.

7.1 Archaeological Time Periods

Heritage resources and cultural landscapes are linked to specific time periods. In summary the various eras are as follows:

The Iron Age and former period occurred in Southern Africa from Common Era (2000 years ago to 1950) to historical periods. The definition is divided between Early Iron Age (c. 200 CE to c. 1400 CE) and Late Iron Age (c. 1400 CE to 1800's (Archaic, 2008)). The historical period indicates dates from 1500s to present (Natalie Swanepoel, Amanda Esterhuysen and Phillip Bonner, 2007). The Iron Age is defined as a time period that occurred during c. 200 to c. 1000 Common Era, named as the early period, and c. 1000 to 1800's Common Era (Archaic, 2008).

The Stone Age time period is divided between three different time periods, namely:

- Early: c. 2 500 000 to 150 000 Before Common Era (before 1950²)
- Middle: c. 150 000 to 30 000 Before Common Era (before 1950)
- Late: c. 30 000 Before Common Era until the historical time periods commenced (before 1950)

8. Archaeological and Historical Background

The Northern and Eastern Cape are evident of different types of human activities, settlement areas, cultural attributes and conflict time periods. The variety of cultural groups and

² 1950 has been set as the international reference date for archaeological findings.

communities have resulted in an unique cultural landscape that is an example of the way people lived in the archaeological as well historical times.

8.1 Archaeological Background

The Northern Cape has traces of various types of archaeological sites inclusive of prehistorical and historical sites. A range of these sites are positioned next to the rivers, hilltops and pans. The Northern Cape is evident of rocky outcrops and river banks that were used by hunter gatherers to develop temporary camping areas to have access to water and hunting resources.

The Northern Cape is evident of the occurrence of a variety of rock art images, stone age sites and palaeontological significant areas. The historical sites are mostly related to the siege of Kimberley and the South African War. Stone age sites have been identified in the past by archaeologists in the well-known Wonderwerk Cave located in the Kuruman Hills, Postmasburg, Doornfontein, Beeshoek and Kathu. Specularite workings, Later Stone Age and Early Middle Stone Age have been identified in Lylyfeld, Demaneng, Mashwening, King, Rust & Vrede, Paling, Gloucester and Mount Huxley to the northern side. According to archaeological records rock art sites have been identified at Beeshoek and Bruce.

Evidence of Later Iron Age (LIA) early farmers occur in the close vicinity of Kuruman. The early farmers came in contact with the Khoisan groups known as the Late Stone Age (LSA) peoples. Most of the LSA peoples were incorporated in the LIA communities and this period is represented at the Blinkklipkop specularite mine close to Postmasburg.

In terms of archaeological records and reports completed by heritage specialists various old mine works occur on the ridges to the west of the Glosam railway line siding (A J Pelsler, 2012). The Glosam railway siding is positioned at the Tsantsabane Local Municipality in the Siyanda district of the Northern Cape.

The 18th century was defined as a conflict time period when the Griqua, Korana and white settlers were competing for the availability of land. This period is also known for the occurrence of the Mfecane or the so called Difaqane that resulted in a time period of instability that started in the middle 1820's. The conflict time period related to the Mfecane or Difaqane was the result of the influx of the then displaced people. The continuous conflict resulted in tribal groups migrating to hilltop areas in the need of finding safe environments.

The Platfontein area on the way to Barkley West is evident of the oldest indigenous group of people in Southern Africa. The San group is named the !Xun and Khwe that form part of a larger KhoiSan category. In terms of historical records the !Xun is originally from South Angola and the Khwe from the West Caprivi in Namibia.

8.2 Historical Background

- The history of mining

North of Kimberley the Kamfersdam mine and dump are of historical value. Kamfersdam is associated with historical mining and diamond digging camp sites. The mine area was also used by the Boers during the South African War to position their ammunitions.



- South Africa's Railway History

South Africa's railway system dates back to the 1860's and is one of the largest on the African continent. The few lines that originated in the 1870's to 1880's were part of the historical time period associated with the finding of gold and diamonds. Various railway administrations and departments originated during the development of colonies as well as the Boer republics. These systems were combined in 1910 to develop one railway map (Dr. R C De Jong , 2002). The discovery of minerals in the area between Hotazel and Kimberley has resulted in the need for the development of a railway line. Various sections were originally identified to be of urgent need in transportation of goods via the use of a railway line. The first section that received railway line infrastructure was Kimberley to Barkley West and thereafter the railway line was further developed between Barkley West to Koopmansfontein (Historical and Heritage Research Consultants, 2008). Afterwards the line was extended to Postmasburg and eventually reached Lohathla, Sishen and later Hotazel.

During 1922, Borrelskop featured as an area that needed a railway station and the section between Longlands as well as Delportshoop was identified for the development of a railway siding (Historical and Heritage Research Consultants, 2008). It is estimated that the railway line between Kimberley, Barkley West and Koopmansfontein was developed between 1922 to 1930.

In 1928, with the cooperation of the Forestry Department, the South African Railways decided to develop railway infrastructure between Postmasburg, Koopmansfontein and Danielskuil to the Maremane Native Reserve in Postmasburg (Historical and Heritage Research Consultants, 2008). This route appeared to be the closest to the Kathu Forest Reserve that required goods transportation to the Postmasburg mines (Historical and Heritage Research Consultants, 2008).

The Groenwater area was managed by the Department of Native Affairs and they had to be consulted when land was needed for a railway siding. The affected local community members at Groenwater were compensated.

The railway line between Koopmansfontein and Postmasburg was approved for construction in 1929 and the infrastructure was in full operation during 1930. After the depression years that occurred between 1930 to 1936, the railway line was extended to Lohathla.

In 1953 the railway line was extended to Sishen because of an increase in manganese ore mining and the need of Kuruman miners to export their livestock to markets in the republic. Although farmers indicated their needs in terms of livestock transport, the decision was mostly based on the need of the manganese mines to export their material. Interest in manganese mining extended to Black Rock and Kathu, but as a result of cost implication the approval of such an infrastructure development was declined in 1952.

The South African Manganese Limited Company applied for a second time that a railway line should be developed between Sishen and Hotazel during 1959. A concern was that a lack of water existed between Hotazel and Kuruman that was needed for the locomotives. In the end the construction was approved by the South African government for development in 1959. The electrification of the railway line between Postmasburg and Hotazel occurred in 1966 (Historical and Heritage Research Consultants, 2008).

- Diamond Digging History

Diamond digging commenced in Kimberley during 1871 and ended by 1914 (The Big Hole Kimberley, 2012). The area was characterised historically and is still characterised today by the surroundings of original buildings occupied by the diamond diggers, diamond buyers and other business communities. De Beers has been mining in the area for the last 120 years and since the end of the underground mining activities the region has changed into a unique heritage landscape.

A decline of liberalism was experienced in the diamond fields of Kimberley during 1886. A well-known parliamentarian from the Cape indicated that Cecil John Rhodes proposed to influence the vote by incorporating the mass working class in the political structures of democracy (T Rob, 1981). An opposition was present in the political arena that was adopted during the early Diamond Field days (T Rob, 1981). The Kimberley area was dominated by merchants with interests in an expanding commodity market that was being challenged by a class of industrialists (T Rob, 1981). A clear population shift occurred in 1872 after an increase of diamond digging activities that is an estimate increase of 28 000 to 50 000 people (T Rob, 1981).

The Great Depression that occurred in 1873 resulted in the migration of diggers from Kimberley to the Gold Fields of Pilgrim's Rest (T Rob, 1981). During 1875 the population of the diamond fields was reduced and the majority of the people were concentrated around the richest diamond pipe named Kimberley mine (T Rob, 1981). The area had four mines, but the Kimberley pipe attracted most of the diggers and resulted in an average of 470 claims of ten hectares in extent that were further subdivided in smaller portions (T Rob, 1981).

- South African War 1899-1902

The South African War, also known as the Anglo - Boer War, has left a footprint of historical archaeological sites related to the siege of Kimberley between 1899 to 1900. A range of encampments and fortifications were developed in the area that is still visible today.

- Iron Age Groups in the Northern Cape

Archaeological evidence showed that Tswana speaking Iron Age groups have inhabited the areas north of Postmasburg. A variety of iron and copper artefacts of Tswana origin have been discovered. Traces of specularite which could have been from the Postmasburg area provide an indication of prehistorical trading activities in the area (Dr. A J Humphreys, 2009 reproduced).

- Archaeological - Historical evidence from the Eastern Cape

It has been identified that from the late 17th century onwards, that an increasing number of European travellers entered the Eastern Cape. Contact between the European travellers and hunter-gatherers were limited. It seems that most of the historical contact occurred between the Colonial people and the pastoralists. In terms of historical records the section at the lower Fish River was a combination of Khoi and Xhosa pastoralists who struggled to maintain their social lifestyle in the light of an increase of landuse related to cattle grazing (S.L. Hall, 1986).

- Colonial History Eastern Cape

Britain experienced an unemployment problem after the Napoleonic conflict years. The British government decided to support immigration of their citizens to the Cape Colony in 1820. The settlers reached Table Bay at first and was thereafter sent to Algoa Bay that is currently known as Port Elizabeth (R Godlonton, 2012).

A British governor in South Africa, named Lord Somerset, supported British citizens to settle at the frontier area positioned in the Eastern Cape. The request for settlement had a specific reason and that was to defend the eastern frontier against the Xhosa speaking people. The second agenda was to increase the quantity of English-speaking people (R Godlonton, 2012).

Life at the border was difficult and some of the settlers decided to rather move to Port Elizabeth, Grahamstown and East London. The few settlers that decided to stay on decided to contribute to agricultural activities, planting of maize, as well as rye and barley. Wool farming became popular in the area that resulted in the development of trading relationships between the border and Grahamstown as well as Port Elizabeth (R Godlonton, 2012).

- Rock Art Engravings Northern and Eastern Cape

Rock engravings are mostly found in the interior plateau for example in Kimberley and the Karoo (D Lewis Williams; T Dowson, 1989). The Wonderwerk Cave (Northern Cape) archaeological excavations and research have indicated that rock engravings were evident more than 10 000 years ago (D Lewis Williams; T Dowson, 1989). Evidence exists of rock art paintings occurring in caves and shelters at the Kuruman Hills, Ghaap Escarpment and scattered sites in the Karoo (D Morris, 1988).

Rock engravings have also been identified at Driekopseiland that is positioned in the close vicinity of Kimberley Town (K W Butzer, G J Fock, L Scott and R Stuckenrath, 1979).

Driekopseiland is evident of more than ninety percent of geometric engraving sites (D Morris, 1988). Geometrics have been identified at the Kuruman valley and the middle Orange area (D Morris, 1988). Engravings tend to be found at rock walls, low outcrops, or clusters of surface stone (K W Butzer, G J Fock, L Scott and R Stuckenrath, 1979).

9. Findings

Heritage resources of significance were identified during the reconnaissance survey during March 2012 to April 2012. The emphasis of the survey was placed on areas that may experience a direct impact or change. Additional information has been provided to highlight the occurrence of different types of heritage resources that occur in the close vicinity of the proposed development areas and to ensure that those areas are protected if an change in scope occur.

The screening of the proposed development area indicated that significant cultural landscapes inclusive of the footprints of the San, the South African War, and historical diamond digging areas were within and surround the development footprint. The historical railway lines, historical structures and foundations which are part of the rail industrial archaeology have also been identified and added to the significant heritage resources that

are positioned alongside the existing railway line. Refer to the sensitivity map (Appendix A) indicating where heritage resources have been identified.

The criteria of impact was reliant on the following scenarios:

- Is the impact expected to be direct/indirect
- What is the cumulative aspect
- What is the duration and scale of the impact
- Significance of impact

Table 9-1: Findings

Area	South	East	Description	Significance of Impact before mitigation	Significance of Impact after mitigation
Bad Hope Station	S28 30 15.8	E24 27 44.4	Historical Fortifications	Low	Low
Borrelskop Station	S28 23 19.2	E24 19 39.1	Old railway station foundations	Low	Low
Borrelskop Station	S28 23 28.8	E24 19 47.3	Old railway station foundations	Low	Low
Borrelskop Station	S28 23 28.8	E24 19 47.3	Old railway station foundations	Low	Low
Borrelskop Station	S28 23 19.2	E24 19 39.1	Old railway station foundations	Low	Low
Canteen Kopje Station	S28 32 39.0	E24 32 16.1	Archaeological site	Low	Low
Fieldsview Station and surroundings	S28 40 21.4	E24 38 55.2	!Xun and Khwe cultural landscape	Medium	Low
Fieldsview Station and surroundings	S28 35 44.0	E24 40 27.9	!Xun and Khwe cultural landscape	Medium	Low
Fieldsview Station	S28 32 09.3	E24 37 15.5	Old railway structure foundation	Medium - Low	Low
Fieldsview Station	S28 32 16.0	E24 37 25.4	Old railway structure foundation	Medium - Low	Low
Ghaap Station	S28 17 39.7	E24 12 24.8	Cultural landscape	Low	Low



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Area	South	East	Description	Significance of Impact before mitigation	Significance of Impact after mitigation
Gong Gong Station	S28° 28' 43.9"	E24° 26' 30.4"	Historical Bridge	Medium	Low
Groenwater Station	S28° 15' 14.0"	E23° 18' 46.0"	Metsimetala Captain's Grave	High	Medium
Groenwater Station	S28° 16' 21.4"	E23° 20' 09.0"	Large historical grave yard (approximately 100 graves)	High	Medium
Groenwater Station	S28° 16' 57.3"	E23° 19' 45.2"	New burial site (approximately 10 graves)	High	Medium
Groenwater Station	S28° 16' 57.3"	E23° 19' 45.2"	Historical grave (1947) Stone walling Three unmarked graves	High	Medium
Groenwater Station	S28° 16' 37.7"	E23° 20' 06.4"	Traditional council meeting place	High	Medium
Mid Station	S28° 39' 40.1"	E24° 43' 39.6"	Historical railway structures	Medium	Low
Ulco Station	S28° 30' 44.1"	E24° 28' 51.5"	Cultural landscape	Medium	Low
Winter's Rush Station	S28° 26' 04.9"	E24° 22' 10.2"	Old railway lines and railway station foundations	Low	Low



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Area	South	East	Description	Significance of Impact before mitigation	Significance of Impact after mitigation
Winter's Rush Station	S28° 26' 14.9"	E24° 22' 29.1"	Old railway structure foundations	Low	Low
Winter's Rush Station	S28° 26' 18.6"	E24° 22' 34.5"	Old railway structure foundations	Low	Low
North of Barradeel Station	S31°13'12.07"	E24°56'49.06"	Medium density stone age material	Low	Low
Carlton Station	S31°18'18.18"	E24°57'2.02"	Sandstone blockhouse and railway	Medium	Low
Flonker Station	S31°22'58.69"	E25° 01'59.38"	Medium density stone age material and old railway line	Medium	Low
Rosmead Station	S31°29'24.36"	E25° 07'8.54"	Historical housing	High	Medium
Tafelberg Station	S31°36'55.37"	E25°14'25.87"	Historical church	High	Medium
South of Glenheath Station	S31°42'14.00"	E25°16'42.64"	Historical stone wall	Medium	Low
North of Peins Station	S31°50'36.50"	E25°22'16.60"	Historical bridge	Medium	Low
South of Peins Station	S31°51'29.80"	E25°22'58.70"	Historical bridge	Medium	Low
South of Visrivier Station	S31°54'08.50"	E25°24'26.40"	Traditional grave	Medium	Low
South of Visrivier Station	S31°54'28.40"	E25°24'41.90"	Blockhouse	High	Medium



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Area	South	East	Description	Significance of Impact before mitigation	Significance of Impact after mitigation
Visrivier Town	S31°54'51.30"	E25°25'05.30"	Visrivier historical landscape	High	Medium
South of Visrivier Town	S31°55'34.00"	E25°26'00.64"	Historical stone structure	Medium	Low
Knutsford Station	S31°57'10.30"	E25°30'21.90"	Medium density scattered stone tools	Medium	Low
Knutsford Station	S31°57'27.43"	E25°29'10.46"	Historical retaining wall	Low	Low
South of Knutsford Station	S31°58'32.70"	E25°31'04.70"	High density scattered stone tool material	Medium	Low
North of Kaptein Station	S32° 00'03.30"	E25°30'43.30"	Historical buildings	High	Low
North of Marlow Station	S32° 06'16.24"	E25°36'6.30"	Possible in situ stone age material may occur	Medium	Low
South of Klipfontein Station	S32°36'10.94"	E25°45'43.67"	Graves	High	Medium
Slagtersnek Station	S32°41'34.52"	E25°50'05.19"	Historical cultural landscape	Low	Low
Golden Valley Area	S32°42'45.00"	E25°48'41.18"	Rock art	Medium	Low
South of Golden Valley Station	S32°49'42.02"	E25°47'46.79"	Medium density middle and late stone tool material	Medium	Low
South of Golden Valley	S32°50'05.60"	E25°47'41.39"	Medium density middle	Medium	Low



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Area	South	East	Description	Significance of Impact before mitigation	Significance of Impact after mitigation
Station			and late stone tool material and historical monument		
Kommadagga Station and surroundings	S33° 6'56.63"	E25°53'50.78"	Medium density middle and late stone tool material	High	Medium
Kommadagga Station and surroundings	S33° 06'57.10"	E25°53'50.68"	Medium density middle and late stone tool material	High	Medium
Kommadagga Station and surroundings	S33° 06'58.21"	E25°53'47.51"	Medium density middle and late stone tool material	High	Medium
Kommadagga Station and surroundings	S33° 07'01.24"	E25°53'46.28"	Medium density middle and late stone tool material located in the railway reserve and development area	High	Medium
Kommadagga Station and surroundings	S33° 07'06.71"	E25°53'58.56"	Medium density middle and late stone tool material located in the railway reserve and development area	High	Medium



Area	South	East	Description	Significance of Impact before mitigation	Significance of Impact after mitigation
Saltaire Station and surroundings	S33°10'46.09"	E25°56'22.74"	Medium density middle and late stone tool material located in the railway reserve and development area	High	Medium
Saltaire Station and surroundings	S33°10'46.09"	E25°56'22.74"	Rock art located in the development area	High	Medium
South of Alicedale Station	S33°21'0.04"	E26° 04'08.29"	Riverbank sensitive towards the occurrence of in situ archaeological material	High	Medium
Eagle's Crag Station	S33°23'02.40"	E26° 03'24.80"	Historical railway station	High	Medium
Flonker	S31°22'58.69"	E25° 01'59.38"	Historical railway line and medium density stone age material	Medium	Low



10. Mitigation Procedures and Recommendations

The following mitigation procedures and recommendations would assist in the protection of heritage resources at the identified cultural landscape areas:

- Construction activities must remain within designated rail reserve construction areas. If any types of works are to take place outside of the reserve areas, the significance level will change and a different assessment approach will be required. Should this be necessary, a professional registered Archaeologist must survey these areas prior to site disturbance to supervise and provide guidance
- The historical structures identified at cultural resource areas mentioned above may not be destroyed, demolished, altered, collected or impacted upon unless a permit has been issued by SAHRA
- During construction, if any heritage objects are discovered, a professional registered Archaeologist, SAHRA, Heritage Eastern Cape and Ngwao Boswa Kapa Bokoni (Northern Cape Heritage) must be informed. No work is allowed to proceed at the specific site of where the discoveries were made before a letter of approval has been issued by the relevant authorities. It is recommended that a professional registered Archaeologist be appointed on a contract basis to allow for continuous monitoring and sampling during the construction phase or where excavations are required
- It is proposed that the professional registered Archaeologist comprehensively document and survey before construction where an indication of scattered stone tools exist. It will also be to the advantage of the provincial and local heritage that scattered stone tool material is rescued and taken to McGregor Museum in Kimberley, Port Elizabeth Museum or Albany Museum in Grahamstown for safekeeping and protection. In this scenario it is required that the Archaeologist applies for a sampling and monitoring permit from SAHRA. Sensitive heritage features, as identified by the appointed professional, should be fenced in situations where construction activities will occur within 50 metres
- A built environment permit application must be submitted to Ngwao Boswa Kapa Bokoni (Northern Cape Heritage Department) and Heritage Eastern Cape who will determine if work may proceed at the cultural landscape areas and indicate what the requirements are. They will also provide the terms and conditions related to work allowed at the cultural landscapes that is positioned within and outside of the proposed impacted area
- A heritage management plan must be completed to support the conservation of the historical structures, historical suburban area and historical diamond mining landscape as well as the associated heritage objects. This management plan must be approved and signed by the National and Provincial Heritage Authority before any construction activities may commence
- During construction it is recommended that identified historical features are buffered and fenced off
- A monitoring program is proposed that will allow for regular inspections to ensure that terms and conditions stipulated in the Heritage Management Plan are adhered to

- It is proposed that the professional registered Archaeologist apply for a sampling and monitoring permit that will allow for heritage resource rescue work if necessary. The permit will be used in the event that in situ archaeological material related to the South African War sites, stone tool material or any other type of heritage objects are uncovered during earthmoving activities
- The Provincial Heritage Resources Authority will provide the terms and conditions related to work allowed at cultural landscapes that are positioned in the Northern and Eastern Cape cultural landscape areas
- No rock engraving sites or cultural landscapes are allowed to be entered without a permit from the South African Heritage Authority
- Regular liaison with the local indigenous groups for example the Xun and Khwe at Kimberley, McGregor Museum, Wildebeestkuil Rock Art Centre, Albany Museum, Port Elizabeth Museum and academic institutions must take place. This will ensure the development of good community relations and will allow for a transparent approach dealing with Indigenous Groups
- At Sishen a new loop is proposed. This area is highly disturbed because of the occurrence of intensive mining activities. In terms of previous heritage impact assessment reports a cluster of stone age sites occurs close to Kathu and the Sishen areas . It is therefore advised that monitoring occurs before and after construction.
- The proposed Mamathwane Rail Compilation Yard covers an area of 120 ha that is proposed to be placed next to the existing railway line. Although the area is already disturbed because of railway activities, it must be emphasized that in terms of previous archaeological impact assessment reports, a high density of stone tools were identified in the close vicinity. It is recommended that monitoring occurs before and during construction
- The sections identified to include the doubling of an existing railway line fall within sensitive heritage resources landscapes. It is recommended that a Phase 2 Heritage Impact Assessment is completed at these areas. A Phase 2 Heritage Impact Assessment is inclusive of sampling (removal of stone age material that is located in the development areas) and further detailed documentation within the impacted area. Monitoring (Phase 3) is proposed to occur during the construction phases of the development
- Rock art engravings occur within 50 metres from the railway line at the end of the Ripon to Kommadagga doubling section. It is recommended that the rock art engraving site is buffered and that no construction activity is allowed within 20 metres from the rock art site. Monitoring is required to ensure that the recommendation is adhered to
- Historical water towers that are positioned at Ripon to Kommadagga are under threat of removal and it is recommended that a permit application is forwarded to Heritage Eastern Cape to request permission for removal/replacement

11. Management of Living Heritage Resources

Intangible heritage and living heritage provide information about who existing communities are and the past that has shaped them (South African Heritage Agency, 2012). Living



heritage is transferred by usage and observation of individuals, families, community and society by practice. These practices and skills are verbally transferred to the immediate community members and visitors from foreign areas. An example of one of these communities is the !Xun and Khwe speaking indigenous group positioned at Kimberley. The significant display of a unique culture must be protected and respected during the implementation of the project. It is therefore recommended that continuous liaison occurs between the !Xun and Khwe speaking community members, other local groups, museums and institutions. This will allow a transparent communication flow and to ensure that these communities are not threatened by the proposed development.

12. Focus on Borrow Pit Areas

The following paragraphs provide an indication of where borrow pits will be placed alongside the existing railway line and the conditions to be followed during as well as after construction.

12.1 Location of Borrow Pits

The locations of the borrow pits have not been determined. It is recommended that any decisions related to the proposed position of borrow pit areas, must be completed with the cooperation of a professional Archaeologist.

12.2 Development of borrow pits in sensitive cultural landscape sites

The following points should be noted:

- The aim should be to have minimal impact on heritage resources sites
- It is recommended that borrow pits are placed away from any significant heritage resources sites
- A Heritage Resources Assessment should be conducted prior to earthmoving activities
- A professional archaeologist must survey the area before and during construction. This will allow the archaeologist to determine if any heritage objects are positioned on the surface
- Heritage objects positioned on the surface before construction should be rescued
- If heritage objects need to be rescued a permit application must be completed and forwarded to the South African Heritage Resources Agency for approval. If a permit is issued by the relevant authority, sampling must be undertaken as soon as possible. The heritage objects will have to be documented properly and site recording forms must be completed
- The rescued material must be taken to the local museum responsible for safekeeping of provincial archaeological, historical and paleontological artefacts. It is advised that sampling is undertaken with the cooperation of the archaeology department at the McGregor Museum in Kimberley, Port Elizabeth Museum or the Albany Museum in Grahamstown. This will allow for quality control in the archaeological fieldwork and will ensure that correct fieldwork methodologies are used
- Heritage objects uncovered after construction commenced should be rescued

- Should heritage objects be identified after construction activities have commenced, it is compulsory that development stops at the specific area. The professional archaeologist and McGregor Museum must be contacted as soon as possible to inform them about the situation such that the site can be assessed. The archaeologist must record the type of heritage objects uncovered and forward the information to the national as well as provincial heritage resources authorities. The heritage resources authorities will decide on the way forward. Works at the specific section may only proceed with an approval letter from the South African Heritage Authority, Ngwao Boswa ya Kapa Bokone (Heritage Northern Cape) and Heritage Eastern Cape
- Heritage resources should be monitored during construction
- Once earthmoving activities have commenced, the professional archaeologist must monitor the borrow pit areas on a monthly basis and provide an audit report to the heritage resources authorities. This will provide SAHRA, Ngwao Boswa ya Kapa Bokone (Heritage Northern Cape) and Heritage Eastern Cape with an opportunity to comment on the status of the cultural environment and provide additional comments / requirements when necessary
- Heritage resources should be monitored during the handover phase
- During the handover phase a final monitoring report must be forwarded to the relevant authorities
- Approval from heritage authorities before any type of development may commence
 - ◆ No borrow pit developments are allowed without the approval from the South African and Provincial Heritage Agencies. The approval will be in the format of a letter or permit document dependent on a decision made by the heritage resources authorities. The permits normally contain a list of terms and conditions that must be followed. Monitoring and auditing will be completed against a list of heritage resources management requirements. On a monthly basis the sensitive areas identified in this report will be audited to ensure that no heritage resources of significance have been destructed, that no development activity occurs in the close vicinity of historical structures, grave sites or rock art engraving sites
 - ◆ A professional archaeologist must monitor the area during rehabilitation of the borrow pit sites. The cultural landscape will be disturbed during the development of borrow pits and as a result a detailed cultural landscape rehabilitation plan is necessary to guide the process when construction activities come to an end
- Heritage Resources education and training
 - ◆ Construction workers and the Environmental Control Officer must be educated in terms of the type of heritage objects that may be discovered during earthmoving operations, who to contact in such an event and what to do before a professional archaeologist attend to the site

13. Conclusion and the Way Forward

The section between Hotazel and Kimberley consists of a variety of heritage resources sites that are mostly positioned outside of the railway line reserve areas. Stone walling and South African War fortifications that are positioned outside of the railway line reserve areas must not be impacted by the proposed development. The assumption is that a large section of the construction work will be limited to the railway reserve areas. If any type of work is proposed to commence outside of the railway reserve properties, SAHRA must be notified immediately. The reason for this is that fortifications, historical structures and archaeological sites could be destroyed when development is allowed outside of the mentioned boundaries.

The proposed compilation yard has a larger impact than the new loops and loop extensions. The area is already disturbed as a result of past and existing mining activities. It is recommended that construction work stay within areas that are already disturbed.

The railway line sections that will be doubled at Golden Valley and Kommadagga are evident of significant Stone Age sites that require further documentation. The area is also evident of a rock art engraving site that needs protection from any type of construction activity.

If any heritage resources are discovered during the earthmoving operations, it is advised that a professional Archaeologist is contacted immediately to guide the process.

In terms of the way forward the Heritage Impact Assessment report will be externally reviewed and forwarded to SAHRA for review comment.

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Elize Becker
EB:EB
Attachment(s)/Enclosure

Appendix A : Heritage Sensitivity Map



Appendix B : Site Photos and Descriptions



Safety • Quality • Sustainability • Innovation

Site Photo	Description
	<p>Barkley West railway reserve. The railway reserve areas are highly disturbed and heritage resources located in these areas tend to be out of context</p>
	<p>Commercial buildings that border the Barkley West railway reserve areas. The photograph is an indication of the disturbed cultural environment</p>

	<p>Borrelskop station featured during the start of the railway development in 1922</p> <p>Traces of the old railway station foundations are visible</p> <p>No construction is scheduled to take place in this area</p>
	<p>Traces of fortifications are evident alongside the existing railway line. The density of these features increases when entering Bad Hope railway station and surroundings</p>



Collapsed stone walling evident next to the existing railway line in the close vicinity of **Bad Hope** railway station

The area will not be affected by the proposed development



Further traces of collapsed stone walling in the **Bad Hope** area

	<p>Fieldsview cultural landscape</p> <p>The cultural landscape is an extension of the Footprints of the San that occurs on the opposite site of road between Kimberley and Barkley West</p>
	<p>Old railway lines, structures and foundations occur in the Fieldsview reserve areas</p>

	<p>Example of access roads used to reach railway reserve areas between Gong Gong and Fieldsview</p>
	<p>Service roads are located in the railway reserve areas and as a result archaeological features have been disturbed or are out of context</p>

	<p>The railway reserves are mostly entered via crossing farming properties. These areas are highly disturbed and archaeological features are destroyed because of historical developments. The type of developments refer to are access roads, service roads, the railway line and fencing</p>
	<p>The existing railway reserve area at Groenwater and surrounds are a combination of the railway line, the reserve area and scattered traces of old pieces of railway building material</p>



Ghaap cultural landscape is known for the occurrence of significant palaeontological resources. Secondly various types of significant information regarding the Diamond Digging history occur in this area. The heritage resources are not positioned in the railway reserve areas



Kneukel occurs close the Ghaap station and is evident of relatively new structures

	<p>Groenwater and surroundings. The service road has recently been upgraded and as a result archaeological material are out of context</p>
	<p>A large traditional graveyard is positioned within 130 metres from the existing railway line at the Groenwater area. The burial ground belongs to the Metsimetala Tswana speaking community</p>

	<p>An average of a hundred graves occur in the open field that belongs to the descendents of the Metsimetala community from Groenwater</p>
	<p>The grave of Kgosi Kweetsane is positioned in the Metsimetala traditional grave yard area. This area is of high heritage significance</p>

	<p>A distant picture displaying Kgosi Kweetsane's grave</p>
	<p>Approximately 10 unmarked graves are positioned within 50 metres from the current railway reserve area at Groenwater. No fencing occur at the grave or railway reserve area</p>

	<p>The environmental landscape that surrounds the graves mentioned above</p>
	<p>Large graves occur in the area positioned within 50 metres from the Groenwater railway reserve areas. The graves could belong to previous traditional leaders and they are of high sensitivity</p>



A 1931 grave that occur within 50 metres from the existing railway line reserve area in **Groenwater**



A new grave yard is positioned at the Groenwater area. The new burial ground is approximately 700 metres from the existing railway line



This is the environment that borders the **Winterton** railway reserve areas



Example of a railway crossing at **Winter's Rush**



Old railway station foundations occur at **Winter's Rush** railway station
No construction is scheduled to take place in this area



Winter's Rush bridge. No construction is proposed at this area

	<p>Road on the way to Silver Streams and surroundings. No heritage resources of significance were identified within the railway reserve area</p>
	<p>Cultural landscape north of Postmasburg in the close vicinity of Sishen</p>

 A photograph showing a cultural landscape north of Postmasburg. The foreground is dominated by tall, dry grasses and scattered green shrubs. In the middle ground, there are several utility poles and a water tower. The sky is blue with scattered white clouds.	<p>Cultural landscape north of Postmasburg in the close vicinity of Sishen</p>
 A photograph of the Canteen Kopje archaeological site. The foreground is a field of green grass with some small bushes. In the background, there is a dense line of trees under a clear sky.	<p>Canteen Kopje archaeological site located within 300 metres from the railway line</p>

	<p>Canteen Kopje archaeological site located within 300 metres from the railway line</p>
	<p>Diamantoord railway station. The cultural landscape is evident of South African War and Diamond Digging historical resources. No heritage resources are positioned in the railway reserve area</p>



Railway line north of **Sishen** on the way to Hotzael



Gong Gong station and relatively modern buildings



Gong Gong
historical bridge
that is position
within 50
metres from the
railway line
reserve



Railway line
north of **Sishen**
on the way to
Hotzael



Railway crossings at Kommadagga



Railway crossings at Kommadagga

	<p>Existing borrow pit area in close vicinity of Golden Valley. Borrow pit areas have displayed valuable evidence of middle and late stone age material</p>
	<p>Existing borrow pit area in close vicinity of Golden Valley. Borrow pit areas have displayed valuable evidence of middle and late stone age material</p>

	<p>Rock art engravings north of Saltaire positioned within 50 metres from the existing railway line (Archaic, 2008)</p>
	<p>Sections between Conway and Cypress Grove are evident of local community members living in historical houses. The structures will not be demolished, altered or destroyed</p>

	<p>The railway line is part of the cultural landscape in the Eastern Cape area</p>
	<p>An example of a culvert that occurs in the Eastern Cape section</p>

	<p>Kommadagga is one of the areas that was identified to be of high significance in terms of the occurrence of stone age material</p>
	<p>The type of cultural landscape that borders the existing railway line reserve is typical of a stone age time period environment</p>

	<p>A culvert that occurs in the Kommadagga area</p>
	<p>Hilltop areas are positioned in close vicinity of the railway line that could display valuable archaeological material</p>



River banks have the potential to contain valuable archaeological material



The Fish River railway bridge



Golden Valley
railway station



Golden Valley
railway station

	<p>Scattered middle to late stone age material occur in Knutsford and surrounds</p>
	<p>High density middle to late stone age material occur within the railway reserve at Kommadagga Station</p>

	<p>Service road positioned next to the railway line at Kommadagga Station</p>
	<p>Slagtersnek Memorial</p>

	<p>Golden Valley cultural landscape</p>
	<p>In terms of previous heritage reports rock art engraving sites have been identified within 500 metres from the existing railway line at Golden Valley</p>

	<p>The area has the potential to display archaeological material and possible rock art sites.</p>
	<p>Various historical water towers are positioned alongside the existing railway line</p>



The soil heap at Kommadagga contains traces of middle to late stone age material



The existing railway line that is located at Kommadagga

	<p>Local community members are living in the close vicinity of the Kommadagga railway line</p>
	<p>A single middle age hand axe identified at Kommadagga</p>



Stone tool material have been identified at the sand banks that occur next to the railway line



Medium density stone age material identified within the Golden Valley Station reserve areas

	<p>Various photovoltaic type developments have been proposed at the Golden Valley, Ripon and Kommadagga areas</p>
	<p>Stone structure positioned south of Visrivier area</p>



Blockhouse positioned next to the existing railway line at Visrivier area



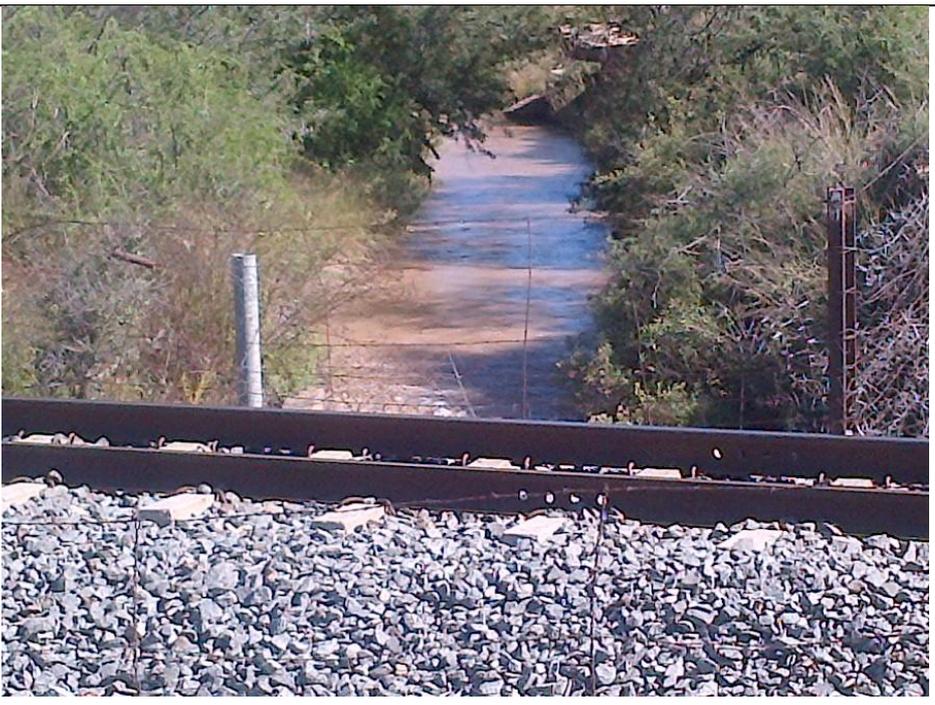
Historical water towers positioned next to the existing railway line at Visrivier area



The historical town of Visrivier



Historical houses are positioned next to the existing railway line at the Visrivier area

	<p>Historical stone wall or retaining wall is evident at the section south of Knutsford.</p> <p>Knutsford is also known for the occurrence of low to medium density stone tool material and evidence of the colonial historical resources</p>
	<p>River banks have the potential to contain valuable archaeological material</p>



Historical housing south of Kommadagga



Irrigation farms that occur at Kommadagga area and surrounds



Klipfontein graves (Archaic, 2008)



Rosmead historical houses (Archaic, 2008)