

A PHASE 1 HERITAGE IMPACT ASSESSMENT STUDY FOR THE PROPOSED ROSSBURGH STATION UPGRADE PROGRAMME, ETHEKWINI METROPOLITAN MUNICIPALITY, KWAZULU NATAL PROVINCE, SOUTH AFRICA.



First Draft

June 2014

ACKNOWLEDGEMENT OF RECEIPT

CLIENT: Ecosolve Consulting (Pty) Ltd

CONTACT PERSON: Mr. Tsepo Lepono
Tel: + 27 11 022 1364
Fax: +27 86 697 7422
Cell: +27 83 339 9103
E-mail: tsepo@ecosolve.co.za

CONSULTANT: NGT Projects & Heritage Consultants

PRINCIPAL HERITAGE CONSULTANT: Makhosazana Mngomezulu
Tel: + 27 11 476 0657
Fax: +27 86 273 6562
Cell: +27 78 665 5278
E-mail: khosim@ngtgroup.co.za

SIGNATURE: NGT___*Makhosazana Mngomezulu for NGT*_____

COPYRIGHT

This report (including all the associated data, project results and recommendations) whether manually or electronically produced, forming part of the submission and any other subsequent reports or project documents such as the inclusion in the Basic Assessment (BA) document for which it is intended for - totally vest with the author, Makhosazana Mngomezulu (NGT Project and Heritage Consultants (Pty) Ltd). Therefore, it is the author's views that no parts of this report may be reproduced or transmitted in any form whatsoever for any person or entity without prior written consent and signature of the author. This limitation is with exception to Ecosolve Consulting (Pty) Ltd, Principal Environmental Consultant for the PRASA whose limitation to use the report and its results and recommendations shall be lifted with and after full settlement of the fees agreed upon with NGT Projects & Heritage Consultants for the compilation and production of the report.

The limitation for the transmission of the report, both manually and electronically without changing or altering the reports results and recommendations, shall also be lifted for the purposes of submission, circulation and adjudication purposes by the relevant heritage authorities such as the Provincial Heritage Resource Agency KwaZulu Natal (AMAFA) and the South African Heritage Resources Agency (SAHRA) and/or any other interested legalised government authority such as the DEA.

DECLARATION OF INDEPENDENCE

This report has been compiled by Makhosazana Mngomezulu, archaeologist and heritage consultant for NGT Project and Heritage Consultants. The views expressed in this report are entirely those of the author and no other interest was displayed during the decision making process for the project.

HERITAGE CONSULTANT: NGT Projects & Heritage Consultants (Pty) Ltd

CONTACT PERSON: Makhosazana Mngomezulu

SIGNATURE: NGT__*Makhosazana Mngomezulu for NGT_*



EXECUTIVE SUMMARY

NGT Projects and Heritage Consultants (Pty) Ltd was been contracted by Ecosolve Consulting (Pty) Ltd to conduct an Heritage Impact Assessment(HIA) (exclusive of Palaeontological desktop study) for the proposed PRASA's modern maintenance depots upgrade, Rossburgh PRASA Station (EMM) as part of specialists inputs impact assessment studies required to fulfil the Basic Assessment (BA) process. Makhosazana Mngomezulu, the archaeologist and heritage consultant of NGT Projects and Heritage Consultants, conducted the HIA study for the proposed PRASA's modern maintenance depots upgrade, Rossburgh PRASA Station, EMM, KwaZulu Natal Province, South Africa. The HIA, therefore, only assesses the range of all the manmade or human influenced/alterd resources within the Rossburgh PRASA station development footprint (Figure 1). There was no Palaeontological desktop study carried out as part of this HIA study.

The physical survey of the project area (footprint) took place on 16 April 2014. The survey did not yield any traditional archaeological (from Stone Age to historical archaeology), burial grounds and graves, and other cultural features such as *places or spaces of prayer*.

The following conclusions and recommendations are made about Rossburgh PRASA Station in terms of heritage resources management:-

Conclusions:

- It is concluded that the current project upgrade/maintenance will have a minimal impact footprint on the identified resources provided they are mitigated as proposed in this HIA document.
- Therefore, in terms of heritage resources management there are no objections to this project.
- The project can be given a positive review comment by AMAFA

Recommendations:

- It is recommended that AMAFA approves the project in terms of cultural resources management since no heritage resources within Rossburgh Station proposed development foot print.

TABLE OF CONTENTS

ACKNOWLEDGEMENT OF RECEIPT	2
COPYRIGHT	3
DECLARATION OF INDEPENDENCE	3
EXECUTIVE SUMMARY.....	5
LIST OF TABLES.....	8
ABBREVIATIONS.....	9
TERMS & DEFINITION	10
1. INTRODUCTION.....	11
1.1. Project Background.....	11
1.1.1. <i>Proposed Project Aims</i>	12
1.1.2. <i>Terms of Reference for the Appointment of Archaeologist and Heritage Specialist</i>	13
2. BACKGROUND OF THE STUDY AREA.....	17
2.1. <i>Description of the affected environment</i>	17
2.2. <i>Description of proposed activities: Infrastructure Proposed</i>	21
2.3. <i>Needs & Desirability</i>	21
<i>Table 3 –List of activities in-line with the project scope</i>	21
2.4. <i>Desktop Study: Archaeological and Heritage:</i>	21
2.4.3. <i>Previous Heritage Impact Assessment Studies Conducted in and Around Rossburgh</i>	32
2.4.4. <i>History and development of Rossburgh</i>	32
3. METHODOLOGY	34

3.1. Legislative Requirements.....	34
3.2. Methodology	34
3. 1. Step I – Literature Review (Desktop Phase):.....	34
3.2. Step II – Physical Survey	34
3.3. Step III – Data Consolidation and Report Writing	36
3.4. Assessment of Site Significance in Terms of Heritage Resources Management Methodologies	36
Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows.....	37
3.5. Methodology for Impact Assessment in terms of Environmental Impact Assessment Methodologies including Measures for Environmental Management Plan Consideration:	38
4. ASSUMPTIONS, EXCLUSIONS AND UNCERTAINTIES	42
4.1. Assumptions -	42
4.2. Exclusions	42
4.3. Uncertainties.....	43
5. FINDINGS	43
5.1. Hypothesis About The Infrastructure Expected To Be Found At The Rossburgh Railways Station:	43
5.2. Deeds Search:	44
5.3. Field Survey and Identified Heritage Resources: Industrial Archaeology and Historic Built Environment & Landscape Features	44
5.3.1. Site Observations.....	44
List of identified sites, their age, grades and predicted impacts on sites as per the proposed project objectives and proposed infrastructure:	45

6. DISCUSSION	56
7. CONCLUSION	57
8 RECOMMENDATIONS	58
9. REFERENCES	59

TABLE OF FIGURES

<i>Figure 1- General location of Rossburgh PRASA Station</i>	<i>15</i>
<i>Figure 2–Aerial photo showing the location of the study area in relation to Rossburgh station. ...</i>	<i>19</i>
<i>Figure 3- Site of Moor Park; picture taken from T, N. Huffman (2007) to illustrate the C.C.P stonewalling (see also Davies 1974 from which the picture was initial taken).....</i>	<i>24</i>
<i>Figure 4-Pre-industrial Zulu village: beehive huts, note homestead built using thatch material (Colonial time picture) © Laband & Thompson, 2000.....</i>	<i>25</i>
<i>Figure 5 - An illustration of iKhanda or the royal homestead © Laband& Thompson, 2000</i>	<i>27</i>
<i>Figure 6- Map showing the Natal (south of Thukela River) and Zululand (north of Thukela River) Boundary. Stanford’s Large Scale Map of Zulu Land with adjoining parts of Natal, Transvaal and Portuguese Africa, March 4th 1879 © Map Archives, Cullen Library, University of the Witwatersrand, Johannesburg, South Africa.</i>	<i>28</i>
<i>Figure 7 - Bellair Station in Pinetown. Structure older than 60 years with characteristics of Victorian architect.</i>	<i>33</i>
<i>Figure 8 - Administration Building older than 60 years.</i>	<i>48</i>
<i>Figure 9 - Old structure currently used as the waiting room on one end not utilised on other end. The section not utilised used to be a BAR. The other structure similar is a waiting on one end and ablution facilities on the other end.</i>	<i>51</i>
<i>Figure 10 - Old Station subway.</i>	<i>53</i>
<i>Figure 11 - Recent structure utilised as ablution facilities.</i>	<i>54</i>
<i>Figure 12 - Ablution facilities and waiting room painted in Metrorail colours.</i>	<i>55</i>

LIST OF TABLES

<i>Table 1 -Rossburgh PRASA Station, EMM, KwaZulu Natal Province, South Africa.....</i>	<i>17</i>
<i>Table 2 - List of Activities.....</i>	<i>21</i>

Table 3 –List of activities in-line with the project scope.....21

Table 4: Site significance classification standards as prescribed by SAHRA.....37

Table 5 -The significance weightings for each potential impact are as follows:40

Table 6 -Measures for inclusion in the draft Environmental Management Plan:41

ABBREVIATIONS

Acronyms	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
ARCH	Archaeological
BEL	Built Environment & Landscape
BGG	Burial Grounds & Graves
BGG?	Proven not to be Burial Ground & Grave
CBD	Central Business District
CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
DoE	Department of Energy
EAP	Environmental Assessment Practitioner
BAR	Basic Assessment Reporting
ESA	Early Stone Age
GIS	Geographic Information System
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
K.y.a	Thousand years ago
LHRA	Limpopo Province Heritage Resources Authority
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NHRA	National Heritage Resources Act

NEMA	National Environmental Management Act
NWA	National Water Act
PHRA	Provincial Heritage Resources Authority
PSSA	Palaeontological Society of South Africa
ROD	Record of Decision
PDAFP	Proposed Development Area Footprint
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency
PRASA	Passenger Rail Agency of South Africa
EMM	Ethekewini Metropolitan Municipality

TERMS & DEFINITION

Archaeological resources

This includes:

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- Features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in the change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

- construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- carrying out any works on or over or under a place;
- subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- constructing or putting up for display signs or boards;
- any change to the natural or existing condition or topography of land; and
- any removal or destruction of trees, or removal of vegetation or topsoil

Heritage resources

This means any place or object of cultural significance

1. INTRODUCTION

1.1. Project Background

The current project is one of proposed PRASA's station upgrade projects. It is located at Rosburgh PRASA Station is an existing PRASA facility located in KwaZulu Natal Province, South Africa. Located within EtheKwini Metropolitan Municipality (EMM) - the erf/stand making up the site is owned by PRASA and zoned for railway (*Figure 1*).The station and associated infrastructure covers an area of more than 5000m². Rosburgh was identified as one of suitable stations within KwaZulu Natal Province for the propose PRASA National Station Modernisation Programme to upgrade its station buildings as part of government strategy to modernise and upgrade railway infrastructure and facilities as well as the rail services with the aim of uplifting the rail transport to be a preferred mode of transport in South Africa.

The station upgrade programme coincide with the PRASA depot modernisation programme which is aimed at introducing new rolling stock at PRASA depots and phasing out the existing one (*Figure 2&3*).

This HIA study forms part of specialists' studies aimed at giving inputs into the BA process. The study aims to advice on some of the best suitable heritage mitigation measures for heritage resources in terms of known heritage resources management measures.

1.1.1. Proposed Project Aims

"PRASA intends to modernise and upgrade their current services and their key objective is to promote rail as the preferred mode of transport for the majority of South Africans. This will only [be achieved or] become reality through adequate investment in the existing and neglected railway system. The poor condition of the unreliable, aging rolling stock is the "single largest obstacle" for PRASA to achieve their planned objective. Combined with the broader strategy to acquire modern technology and a changing passenger demand, PRASA is focused on upgrading its station. The overarching objective is to modernise the stations and make them relevant to Metrorail and Shosholoz Meyl (and private rail companies) passengers and potential clientele/passengers. This will make the rail industry in the country more user friendly and preferred mode of transport. Rosburgh Station was identified as one of suitable stations within KwaZulu Natal Province for the propose PRASA National Station Modernisation Programme to upgrade its station buildings as part of government strategy to modernise and upgrade railway infrastructure and facilities as well as the rail services with the aim of uplifting the rail transport to be a preferred mode of transport in South Africa. The objective of the station modernisation programme comprises the following areas of design:

- Upgrade the station to accommodate the predicted increase passengers numbers as a result of station upgrade
- Improve pedestrian access to and from the station
- Correct the functional components of the station and integration to ancillary areas
- Upgrade intermodal facilities
- Expand retail opportunities within the station precinct
- Serve the District Municipality with a quality train service to bring residents and tourism from all corners of KZN to Rossburgh.

The aim of the current HIA study is to advise PRASA on the suitable and sustainable measures to use during the construction and operational phases of the project and its closure in terms of management of the natural and cultural environment. This is done through a compilation of various impact assessment studies that will feed into the current BA process and ultimately the Environmental Management Plan (EMP) document following the completion of the BA. This HIA study will contribute to the development of such documents through assessing and evaluating impacts that affect or have the potential to impact on the cultural environment.

At the Rossburgh PRASA Station the proposed station upgrades will include the following station buildings and associated infrastructure:

- Construction of new concourse station
- Revamp of the ticketing and admin building
- Construction of intermodal facilities which will include Autopax long distance bus terminal.

1.1.2. Terms of Reference for the Appointment of Archaeologist and Heritage Specialist

Because of the nature and size of the proposed development - upgrade of Rossburgh PRASA Station and associated infrastructure exceeding a total area of more than 5000m² - a need to conduct a BA developed. In terms of Section 24 of the NEMA, No 107 of 1998 and the EIA Regulations of June 2010 (Government Notice 544 published in terms of the NEMA, No 107 of 1998) the construction of the proposed facilities is listed as an activity that requires environmental authorisation. This is because the project comprises development of structures and bulk infrastructure such as roads, water supply and electrification. Furthermore there is already existing infrastructure on site and the natural environment had already be highly altered or disturbed. Undertaking a BA instead of a full EIA process is therefore a requirement. The current process comprises of a BA and it involves the identification and assessment of environmental impacts through specialist studies.

Ecosolve Consulting (Pty) Ltd was appointed by PRASA (Ltd) as a lead Environmental Assessment Practitioner (EAP) to manage the BA process and associated impact studies for the proposed development project. Ecosolve Consulting appointment of NGT Projects & Heritage

Consultants (NGT Heritage Solutions) as an independent and lead CRM firm to conduct a Phase 1 HIA (exclusive of Palaeontological desktop study) for the proposed development as part of specialists (inputs) impact assessment studies required to fulfil the BA process and its requirements. Makhosazana Mngomezulu, the archaeologist and the general heritage specialist for NGT Projects & Heritage Consultants, conducted the current HIA study for the proposed Rosburgh PRASA Station upgrade programme - a station located in Mobeni, within EMM, KwaZulu Natal Province, South Africa (*Figures 1*).

The appointment of NGT Projects & Heritage Consultants (as an independent CRM firm) is in terms of the NHRA, No. 25 of 1999 (as amended), the NEMA, No.107 of 1998 (as amended & the applicable 2010 Regulations), as well as other applicable legislations.

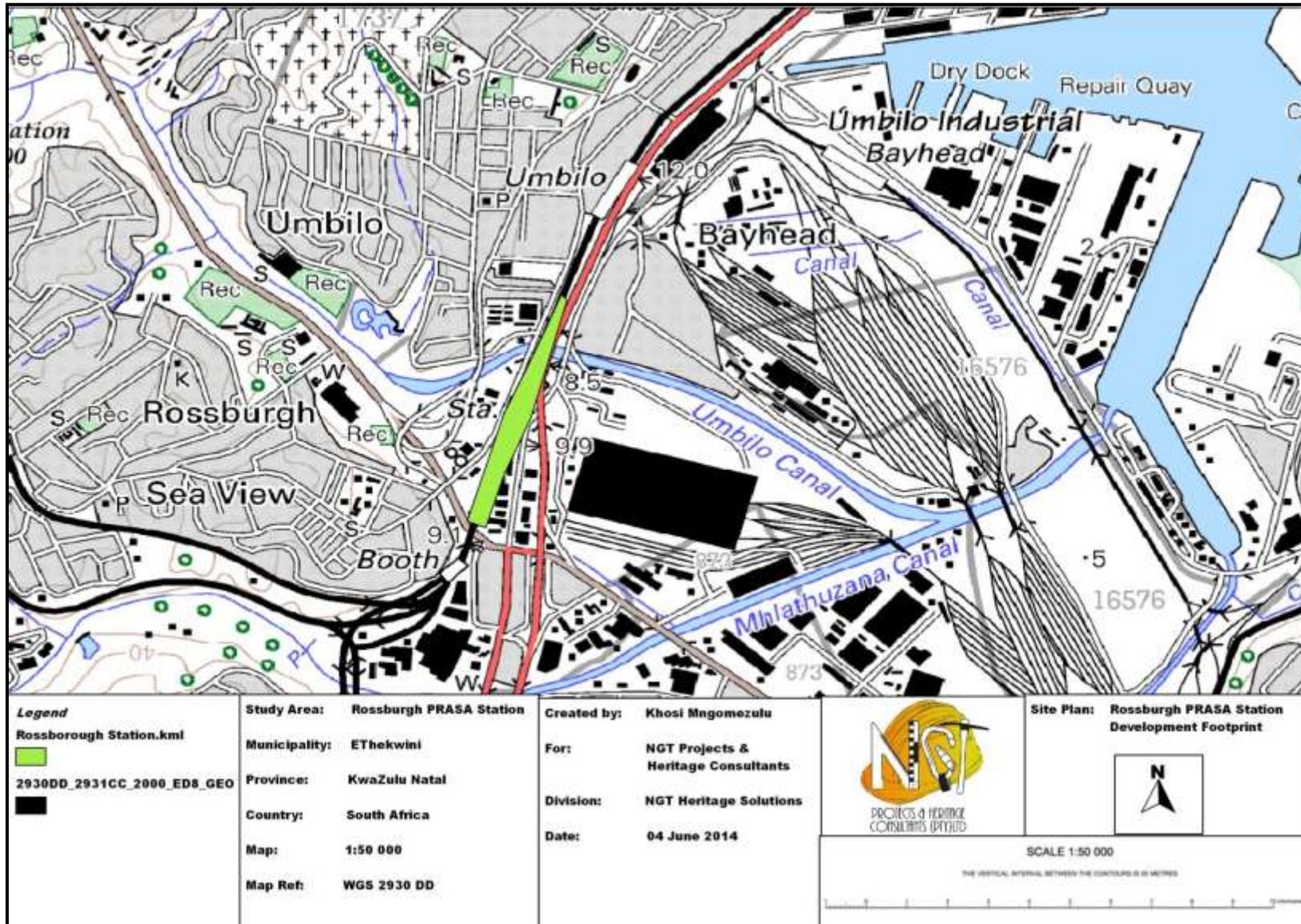


Figure 1- General location of Rossburgh PRASA Station



2. BACKGROUND OF THE STUDY AREA

2.1. Description of the affected environment

Table 1 -Rossburgh PRASA Station, EMM, KwaZulu Natal Province, South Africa

<i>Location</i>	<ul style="list-style-type: none"> The site centre GPS Coordinates are: 29° 56' 38.22"S 30° 57' 31.41"E
<i>Surrounding Towns/Townships/Villages</i>	<ul style="list-style-type: none"> Rosburgh site is located in Mobeni township and surrounded by the following (<i>Figures 2</i>): <ul style="list-style-type: none"> Race Course Halt Rail Station - North Pendlebury/Himalayas Road - South China Town - East R102 (South Coast Road) and Mobeni Industrial area - West
<i>Land Uses</i>	<ul style="list-style-type: none"> Railway. Residential - (East of the station) Industrial Area Provincial/Local roads: R102 and Pendlebury/Himalayas Road
<i>Land Owner(s)</i>	<ul style="list-style-type: none"> Site- PRASA for the Rosburgh Station Private -residential and commercial sites (around)
<i>Current Conditions</i>	<ul style="list-style-type: none"> In terms of the natural environment the site is highly disturbed landscape - with railway infrastructure (<i>Figure 2</i>). In terms of cultural heritage (industrial archaeology; built environment & landscape) the site provides a recent industrial built environment and landscape
<i>Applicant</i>	<ul style="list-style-type: none"> Ecosolve on behalf of PRASA
<i>Proposed Development</i>	<ul style="list-style-type: none"> Upgrade and modernisation of Rosburgh PRASA Station
<i>Access</i>	<ul style="list-style-type: none"> Existing provincial and local roads and railway (<i>Figure 1& 2</i>); Race Course Halt Rail Station (North of the station) Pendlebury/Himalayas Road (South of the station) Ballantrae Road (East of the station) R102 (West of the station)

<i>Defining natural features</i>	<ul style="list-style-type: none">• The Indian Ocean is located East of the proposed Station
<i>Zoned as</i>	<ul style="list-style-type: none">• Railway and retail



Figure 2–Aerial photo showing the location of the study area in relation to Rossburgh station.



2.2. Description of proposed activities: Infrastructure Proposed

Table 2 - List of Activities

Activity 1	<ul style="list-style-type: none"> Construction of the Rosburgh Station and associated infrastructure such as retail spaces among other things
Activity 2	<ul style="list-style-type: none"> Clearing of access roads and bulk infrastructure (demolition of some of the station buildings if necessary) to support the newly proposed Rosburgh Station buildings and associated infrastructure.

2.3. Needs & Desirability

Table 3 –List of activities in-line with the project scope

Activity 1	<ul style="list-style-type: none"> Desktop study of the heritage value and integrity of the area under consideration and its surrounding with a particular focus on resources within the proposed alignment Physical identification, documentation and recording of cultural resources within the proposed development area.
Activity 2	<ul style="list-style-type: none"> The mapping, assessment and evaluation of the heritage value and integrity of the identified heritage resources and assessment of potential impacts as a result of the proposed development on these resources.
Activity 3	<ul style="list-style-type: none"> Proposing heritage management measures for inclusion in the EMP document Making recommendations to SAHRA and provincial heritage resources authority - AMAFA

2.4. Desktop Study: Archaeological and Heritage:

South Africa is rich in diverse forms and types of heritage, ranging from natural to cultural heritage. The natural include among other things palaeontological, geological and the various plant and animal species that define the country. The cultural heritage which dates as far back as 2.5 million years ago (m.y.a) includes: the Stone Age Archaeology, Iron Age Archaeology, Historical and Industrial Archaeology, the different "Political/Historic" geographies such the Imperial (early 1900s), Union (1910), the Apartheid (1962) and Democratic South Africa

(1994- to date). The current study only place focus on the Iron Age and the later periods because they deal more directly with the development of industries (such as mining and railway) and later complex communities (e.g villages and towns) in the South African landscape.

2.4.1 Background Information Study: A Stone Age, Iron Age and Historical Archaeology (including some Anthropological aspect) of the KwaZulu-Natal

The KwaZulu-Natal province provides archaeologists and cultural scientists alike with rich canvas of heritage resources varying from natural to manmade or human influenced or altered resources. The natural heritage resources of the area in which Rosburgh Station is located is highly degraded - the only remaining significant landmark feature is the Umngeni River (*Figure1*) passing the site north and joining the ocean in the Blue Lagoon (east). The man made environment of KwaZulu-Natal dates from prehistoric to historic times (time of written documents). Among archaeological (and heritage) time periods it includes: the ESA (Early Stone Age)- 2.6 m.y.a to 250 k.y.a.; MSA (Middles Stone Age)-250 k.y.a to about 35 k.y.a.; LSA (Late Stone Age)- 25 k.y.a to about 2000 k.y.a; 2 Iron Age periods (i.e. Early Iron Age & Late Iron Age)- 2000 k.y.a ; Colonial period and historic period 1800s -1994 (and most recent). Other than archaeological resources, other heritage resources found within the KwaZulu-Natal region include: historical built environment and landscape features such as industrial sites, places of worships, monuments and memorials associated with events such as the two South African Wars (commonly referred as Anglo-Boer Wars), the regional wars such as the between the various settlers (Anglo, Boer) and the Zulu's, Imfecane (African expansionist wars) and other uprisings like the Bambatha Rebellion.

The study area falls with a region known mostly for Iron Age, Historic and Industrial Archaeology. The study will therefore focus on the Iron Age, Historic and Industrial Period (inclusive of all historic built environment & landscape heritage), but without neglecting or excluding the different Stone Age periods or making reference to them (including Rock Art). This is deemed important because Stone Age is gave rise to the first occupation of KwaZulu-Natal and South Africa in general. Among other sites within the province that document the Stone Age archaeology is Sibudu Cave on the coast of KwaZulu-Natal. The cave contains evidence for early forms of cognitive human behavioural patterns in the Middle Stone Age of South Africa some 40 000 years BP (e.g. Wadley, 2005; Wadley *et al*, 2004; Wadley, 2001). There are also many other caves, valleys and hills of the KwaZulu-Natal that are known to have been occupied by the San people often referred to as San hunter-gathers or the Bushman. Evidence for this includes stone artefacts and an abundance of rock art,

predominantly in the form of rock paintings in areas such as the Giants Castle Reserve (e.g. Main Cave) and Kamberg Nature Reserve in the Drakensberg Mountains (e.g. Vinnicombe, 1976). Rock art sites are also documented in Estcourt, Mooi River and Dundee (e.g. Lewis-Williams, 1992). These regions are located north-west of the study area, but do become relevant in defining the archaeological heritage of the province. Rock Art forms archaeology material culture which documents the last phase of the Stone Age Archaeology of the KwaZulu-Natal.

The second phase of occupation of KwaZulu-Natal is known as the Iron Age archaeology. The Iron Age of southern Africa dates to the first millennium AD. The site of Mzonjani, located some 15 km north of Durban is the oldest known Iron Age site in KwaZulu-Natal dating to the third millennium AD. By 1050 AD the Natal region is known to have been occupied by the Zulu people and this is the region in which Rossburgh is located (the former Natal) with what later became Zululand further north-east of the study area. This data is informed by historic accounts, oral traditions, linguistics, anthropological databases (including ethnographic records), and archaeological data as presented through material culture and artefacts. The defining archaeological traits of the Iron Age people in this region and other parts of southern Africa is represented through distinct ceramic traditions, stone walls and other structural features such as grain bins and hut floor remains, kraals and often vitrified cattle dung (& often goat). Within southern Africa the KwaZulu-Natal region is known to have been occupied by the Nguni language speakers of the Eastern Bantu Language Stream. Iron Age structural features characterised this region include stone wall structures defined as the Central Cattle Pattern (C.C.P) (e.g. Huffman, 2007). The earliest known "stonewalling type" in this region is known as Moor Park and it dates from 14th to 16th Centuries AD (*Figure 3*). The site of Moor Park is located in the defensive position on the hilltops in the Midlands, from Bergville to Dundee just south of the town of Newcastle (see Huffman, 2010, 2007). Different theories or hypothesis have been argued for and against regarding the potential use of the site of Moor Park. Huffman (2007:33), for example argues that the wall served defensive purposes based on the location and setting of the walling - it is "located on the spurs and ends of hills, stone walls cut the settlement off from remaining terrain perimeter walls enclose about two thirds of the settlement, leaving the back free". However, it has to be noted that the C.C.P and other forms of Iron Age stonewalling features are not restricted and/or endemic to the eastern Bantu Language Speaking groups or the Nguni people whom the Zulu people form part of. Stone walling is found elsewhere in the country - in regions such as the Limpopo Province, North West Province and the Gauteng Province in South Africa and in other southern African countries such as Zimbabwe and Botswana etc. For example, Huffman argues that, "Iron Age

stonewalling occurs over much of Southern Africa "and that "as the most visible sign of agro-pastoral settlement, there are several classifications, mostly for specific areas and few for larger regions" (Huffman 2007: 31). Later on the beehive structure became a dominant feature in the Zulu Nation material culture (*Figure 4*)

In terms of stonewalling, other known stonewall features in the former Natal region resulted during the times of war - for example, during the South African Wars, the prehistoric wars such as *Mfecane*, and Anglo-Zulu and Zulu and Boer wars.

The KwaZulu-Natal region is known to have been characterised by historical wars and battles. These wars and battles were within and between the different Zulu clans, Zulu's and other 'tribal groups' such as the Swati and Ndebele, the Zulu's and the Boers, the Zulu's and the British (e.g. Anglo-Zulu War), and the British and the Boers with participation from local Zulu's ,Indian and other groups (e.g. the South African War a.k.a the Anglo-Boer War). This gives a different layer to the history of the region.

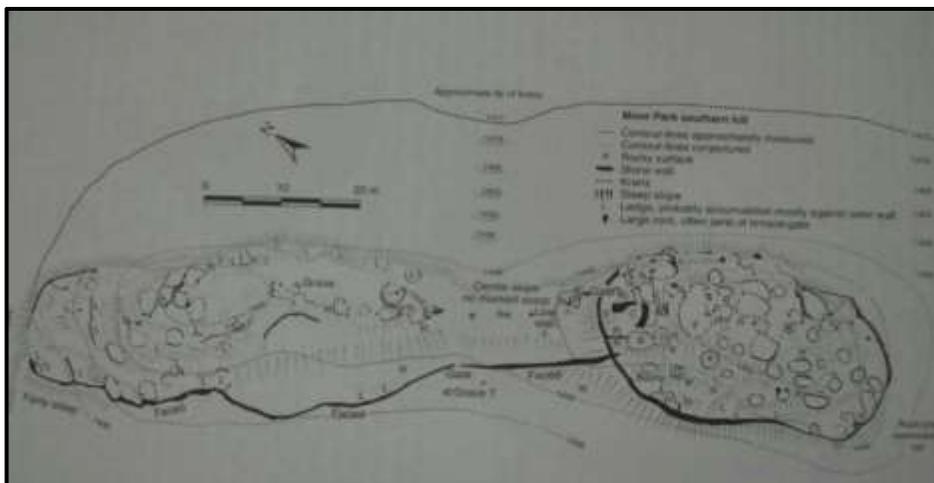


Figure 3- Site of Moor Park; picture taken from T, N. Huffman (2007) to illustrate the C.C.P stonewalling (see also Davies 1974 from which the picture was initial taken).



Figure 4-Pre-industrial Zulu village: beehive huts, note homestead built using thatch material (Colonial time picture) © Laband & Thompson, 2000

The third phase of occupation in current day KwaZulu-Natal was the Late Iron Age – a period just before the contact with the colonial settlers. In KwaZulu-Natal and other parts of southern Africa this period was characterised by a variety of expansionists' battles fought by different chiefdom, culminating to the pre-colonial southern African war called *Imfecane* (Ommer-Cooper, 1993). In the province of KwaZulu-Natal it started during the early 1800's when the amaZulu were still under the 'kingdom' of Senzangakhona (Ommer-Cooper, 1993; Knight 1998). In KZN the *Imfecane* brought about many battles between and within the different local Zulu chiefdoms.

In other parts of the country the *Imfecane* also affected the Koni (Limpopo Province), the Tswana by the Ndebele ka-Mzilikazi (interior regions of the country) and the amaMpondo, amaHlubi, abaThembu and amaXhosa in the Eastern Cape regions (Wright, 1991). The *Imfecane* featured very prominent in KwaZulu-Natal during the reign of King Shaka KaSenzangakhona (Ommer-Cooper, 1993). Some of these battle and raids spread as far north to countries like Zimbabwe and Zambia. In Zululand, one of the bigger local chiefdoms that were conquered was the Ndwandwe chiefdom of Zwide kaLanga which were situated north of Shaka's territory around the modern day kwaNongoma (Knight, 1998).

Shaka managed, to some degree, to achieve his ideal kingdom by strategically expanding/extending the traditional *amabutho* system. The *amabutho* were the brigade of young men of similar age gathered together for a period of national service (Laband & Thompson, 2000; Torlage & Watt, 1999; Knight, 1998; Ommer-Cooper, 1993; Wright, 1991). The *amabutho* were quartered at large royal homestead, *amakhandanda* (Figure 5)- which were sited strategically above the surrounding country to guard against both outside attack and internal dissension like the site of Moor Park discussed above. During the times of need, *amabutho* would be organised into *impi* to fight and protect the Zulu kingdom. The *amabutho*, organised into *impi*, would also be sent out to attack and take over rival chiefdoms that were opposed to King Shaka's rule and in the process incorporating them under his monarchy.

As powerful as it may have been, King Shaka's reign as the Zulu King did not last long as he was assassinated by his younger brothers in September 1828. One of them, Dingane KaSenzangakhona later became King. It is argued that by the time of his assassination he had not yet fully managed to assume and reconcile into his kingdom all the local Zulu chiefdoms: "much chiefdom within the kingdom were still unreconciled to Zulu rule, while Zulu influence south of Thukela (the Natal region) [was still] patchy" (Knight, 1998: 14). The area south of the Thukela River (Natal) was to some degree not in King Shaka's hold. He did not manage to assimilate all the chiefdoms south of uThukela under his rule and this had negative ramification to the Zulu kingdom for the years to come. King Shaka moved the royal homestead to KwaDukuza, Stanger, south of upper Thukela River before his assassination by Dingane (and Mpande) who later re-relocated and rebuilt it at eMgungundlovu, 'The Place Surrounding the Elephant' in the Emakhazeni valley where King Shaka and King Dingane's forefathers are buried. The moving of the royal homestead by both Shaka and Dingane presents an interesting 'thesis' into the internal dynamics and politics of the Royal House and possibly one of the reasons for the assassination of King Shaka by his brothers. One important reason for the relocation of the royal homestead back to uMgungundlovu- north of the upper Thukela River was the growing influence of the white community at Port Natal (settlers) and the encroaching Trek Boers who crossed UKhahlamba Mountains into Natal in the 1837 (Knight, 1998). The period of encroachment of first Natal, then Zululand represents a fourth phase of settlement or occupation of KwaZulu-Natal. Before it became open to most people during the Union (1910-1961), Nationalist rule (1962-1994), and democratic South Africa (1994- current)

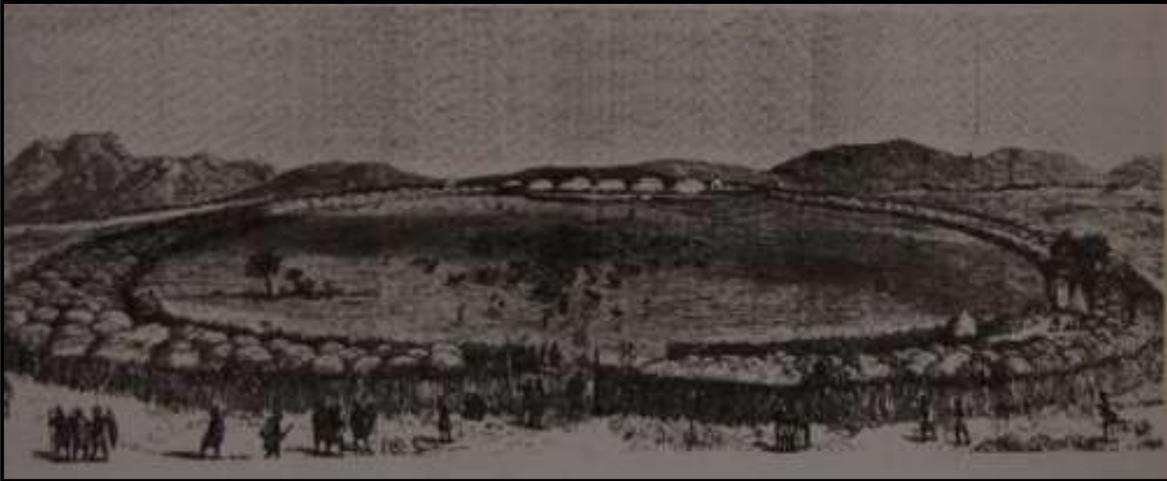


Figure 5 - An illustration of iKhanda or the royal homestead © Laband& Thompson, 2000

The fourth period of occupation of the KwaZulu-Natal came about with the settlement of KwaZulu-Natal by the colonial settlers. The settler and Boer influence south of upper Thukela (uThukela) River and the strong Zulu influence north of the river during the late 1830s become important in understanding the development of the two territories divided by the river that later became known as Natal and Zululand (Figure 6)

Since the 1830s the KwaZulu-Natal landscape was divided into north and the south; Natal in the south and Zululand in the north. Zululand can be broadly defined as the land between the uThukela River (some 100km north of present day Durban) and Swaziland and Mozambique to the north with Natal as the area south of the u-Thukela River. Initially this border was blurry and unmarked by any geographic or physical feature until the colonial times:

“Certainly, this was the extent of the Zulu kingdom during its most static phase, although at times the Zulu kings exercised authority over the country considerable further south, while their hold over the northern borders was always tenuous. In fact, the kings defined their boundaries in term of people who gave them allegiance, rather than by geographical features, and the idea of a single Zulu identity is largely mythical” (Knight, 1998:13)

Knight goes on to argue that “the history of the Zululand and its southern neighbour Natal has always been inextricably mixed, and the physical boundaries between them blurred”. The political border that existed between Zululand and Natal was in prehistoric times not marked

by any geographic features. Natal came to existence when, “the south-eastern seaboard had remained unknown to the European world until Christmas Day 1497, when the Portuguese explorer, Vasco da Gama, had noted its existence in his log as he sailed around the Cape and up the east coast of Africa, searching for a route to the Indies. He christened it *Terra Natalis*, in honour of the birth of Christ, and for the centuries Natal was used to describe the country south of uThukela” (idem: 15). Existing archival evidence for the formal proclamation of uThukela River as the political boundary dividing Zululand (in the north) and Natal (in the South) dates to the 1850’s during King Cetshwayo ka Mpande rule as the Zulu King

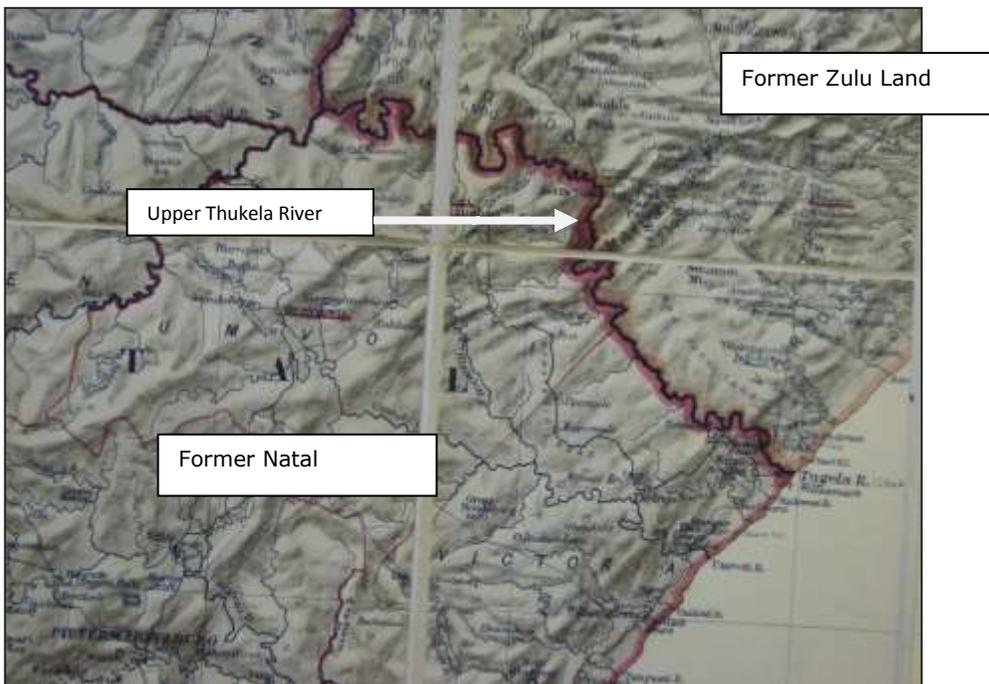


Figure 6- Map showing the Natal (south of Thukela River) and Zululand (north of Thukela River) Boundary. Stanford’s Large Scale Map of Zulu Land with adjoining parts of Natal, Transvaal and Portuguese Africa, March 4th 1879 © Map Archives, Cullen Library, University of the Witwatersrand, Johannesburg, South Africa.

The above gives a brief overview of the archaeological and historical accounts of the KwaZulu-Natal. Our current study area (Rossburgh) falls within the former Natal region of the present day KwaZulu-Natal Province. This historical overview becomes relevant to the current study because it informs the industrial archaeological component of the report which deals with the

railway history and development and the associated built environment and landscape and infrastructure.

2.4.2 Industrial Archaeology: the South African Railway Industry and Implication for Rosburgh PRASA Station, Durban, KwaZulu-Natal Province

South African has long history of the railway industry compared to many countries located within the SADC block. It is in fact the mother country for the development of the railway industry in this socio-economic block. The first steam train in South Africa was development in Durban in the 2nd half of the 1800s - the train made its official journey between Durban and the Point on the 26 of June 1860 (Kemmerling, 1997; Day, 1963). It covered a distance of only 3.2 km and it has been said that the journey only took approximately 5 minutes (Day, 1963). This development led to a wider development of the railway industry in the country. It took another two years before other trains were launched in the country. On the 13 February 1862 Cape Town and Eeste River launch their own trains. However, it has to be noted that the plans in the Cape of Good Hope to launch a railway industry in South Africa had long started before the first train launch in Durban in 1860. For example, "in 1828 the Cape Town Chamber of Commerce suggested to the Cape Colonial Government that a railway, or series of wooden ways, should be built on Cape Town wharf so that casks of wine and brandy could be rolled along them to the ships which would take them overseas" (Day, 1963: 11). This can be interpreted as the first strategic move to the development of the industry in the country. It took another 17 years, in 1845 to register the first South African railway company - the Cape of Good Hope Western Railway (Ltd) with it Chairman Mr. Harrison Watson (Day, 1963). Mr. Watson was a banker and merchant by profession and he announced the same year (on the 17 October) that his company planned a railway and that "[The] Railway is calculated to be of immense benefit to this flourishing Colony; and as it is confined to the more populous districts in the neighborhood of Cape Town, the enterprise is certain to return ample remunerative profits to the shareholders" (ibid:13). However, the reaction to this announcement was rather negative. The promoters of this company had named the Attorney-General of the Cape Colony, the Honourable William Porter, as their legal adviser without properly consulting with him on the subject. Porter refused the invitation and was of the view the attempts were fatal and hopeless. Eventually the plans were put on hold. It took another 6 years since the launch of South Africa's first train in Durban, and 4 years for the Cape launch, for South Africa to significant strides in the development or expansion of the industry. The first expansion took place with the discovery of the diamonds in 1866. The railway lines developed from Cape Town to De Aar Junction and Kimberley. With the discovery of gold in the Witwatersrand in

1884 the railway infrastructure developed into the Transvaal. During this time other railway lines had developed from East London and Port Elizabeth in the modern day Eastern Cape Province. Back to KwaZulu-Natal, Day argues that "... the little green engine fusing up and down three times a day between Durban and the Point had prepared the way for greater things" (Day, 1963:28). This is regardless of some of the challenges that it faces - at times it is suggested there was a reversion to ox-haulage whenever the engine was in for repairs. The line later expands from Durban and the Point to include a railway to Pietermaritzburg, then Capital of the Natal Colony. The first train in Natal seem to have been marred by constant abortive rides up to a point where external intervention was deemed necessary - Government in London wanted to intervene. This prompted the Natal Government to take the railway construction into its own hands. This suggests that the Natal Railway Company established in 1859 would have been relieved of the responsibility of constructing railways in Natal. Following the takeover, the Natal Government embarked on a series of surveys and engineering planning activities to expand the railway industry in the province (then an independent Colony). The planned routes included the crossing of the Drakensburg mountain range (1873). By 1875 the Natal Government Railways Law was promulgated and it gave powers to the government of the time to "...make, maintain, equip and work certain railways in the Colony of Natal" (Day, 1963: 28). This assertion by Day, suggests that the private industry had not totally died out. "This Act provided that the railway should be of 3ft 6in. gauge and, unless the Lieutenant-Governor directed otherwise, should be a single track" (Idem). A first attempt by government to actively regulate the industry which it subsequently took over in years to come. Since then there has been numerous development of the industry throughout the country. Below are some of the railway companies that developed in South Africa to-date:

Year	Company Name	Modern day South African Province
1862	-Cape Town Railway and Dock Company	Western Cape
1890	Rand Tram	Gauteng
1892	The Link-up Begins (East London & Port Elizabeth, Cape Colony)	Eastern Cape, Western Cape, and Northern Cape
1894	Nederlandsche Zuid Afrikaansche Spoorweg Maatschappij	Gauteng

1898	The Link-up Completed	Eastern Cape, Western Cape, Northern Cape, Free State and Gauteng
1900	Imperial Military Railways	Free State and Gauteng
1902	Central South African Railways	Free State and Gauteng
1916	South African Railways and Harbours	South Africa (all provinces)
1981	South African Transport Services	South Africa (all provinces)
1989	Privatisation ("Legal Succession to the South African Transport Services Act, 1989" transformed the South African Transport Services from a government department into a public company)	South Africa (all provinces)
1990	Transnet	South Africa (all provinces)
In 1997 the subsequent formation of the various Parastatal which include Transnet, PRASA (Metrorail) etc		

Back to Durban, during the construction of the first railway and subsequent launch of the first train in South Africa Durban Station was built to accommodate train travellers on the Durban-Point line which still stand today. The main building was declared the National Monument under the National Monuments Act (1969) and would be considered a Provincial Heritage Site under the NHRA, No. 25 of 1999 and the applicable Amafa KwaZulu Natali heritage legislation (KZNHA, No. 10 of 1997) and Bill (KZNHB of 21 February 2008). The little blue steam locomotive which gave birth to the train industry in South Africa is suggested to be still standing at the Old Point Durban Station which has been converted into a shopping complex. The public inventory of KwaZulu-Natal Provincial Heritage Sites lists the site as follows:

SAHRA ID	9/2/407/0011
Site Name	Old Point Railway Station, 111 Point Road, Durban

Description	Main building has an arched entrance flanked by a pair of gable fronts with well proportioned windows Erected in 1890 by the NGR and played a very important part in the development of the port of Durban. This Victorian railway station dates from the eighteen-nineties when the Natal Government Railways experienced a boom. The wrought iron verandah and the b Type of site: Railway Station Previous use: railway station. Current use: offices. From the CBD take West St. (one way) towards the beach. Turn right into Point Rd and travel out. This Victorian railway station dates from the eighteen-nineties when the Natal Government Railways axed the Natal Railway Company.
Town	Durban, Point
District	Durban
NHRA Status	Provincial Heritage Status
Coordinates	N/A

2.4.3. Previous Heritage Impact Assessment Studies Conducted in and Around Rossburgh

- Heritage Impact Assessment of the proposed Clairwood Logistics Park, EThekweni Municipality by Frans Prins (2012);
- Clairwood Turf Heritage Impact Assessment by Archaic Consulting (2012);
- A Heritage Impact Assessment study for the proposed PRASA's modern maintenance Depots upgrade, Springfield, KwaZulu-Natal Province (2013).

2.4.4. History and development of Rossburgh

The research conducted for Rossburgh did not yield much historical background about the station nor the area itself. It is known that Rossburgh is an industrial area. According to South African History online (22/05/2014), the railway line from Rossburgh to Isipingo was opened 01 February 1880, making 134 years in the year 2014. The station is surrounded by areas that are of heritage significance. 5 km south is the racecourse which was officially opened on

Tuesday, May 24 1921 (Prins 2012), it consists of buildings dating back to the 1930 (Archaic Consulting 2012). 3.5 km southeast is the Merebank concentration camp, a punishment camp for Boers by the British colonialists (www.merebank.info/jacobs-wentworth-campus). 3km west is the Bellair Station with the main building declared as a historic monument. The structure was built in 1899 with the characteristics of Victorian period (see figure 7), that makes it 115 years in the year 2014. The station served as a link to supply troops during the Boer War with more troops, concentration camp inmates and prisoners of war passing through the station (www.umgenisteamrailway.co.za/Bellairstation.php). From Bellair Station to Rosburgh Station is a double track since the later is a junction with the South Coast Line and the Main Line.



Figure 7 - Bellair Station in Pinetown. Structure older than 60 years with characteristics of Victorian architect.

3. METHODOLOGY

3.1. Legislative Requirements

The National Environmental Management Act (NEMA), No. 107 of 1998 stipulated that for any development in South African to be granted permission to go ahead an assessment of the potential impacts of the proposed development on both the natural and cultural environment should to be conducted. As such, this HIA fulfils the requirements of NEMA (and the applicable 2010 BAR Regulations) and is conducted in-line with Section 38 (1) of the NHRA, No. 25 of 1999.

3.2. Methodology

This chapter outlines the methodology used in conducting the HIA study for the proposed Rossburgh PRASA Station upgrade project. The study area is located within EMM. This is done according to the Terms of Reference provided by the client for the appointment of heritage specialist and completion of this study. However, some areas of the report follow minimum standards for completion of professional HIA as stipulated in SAHRA minimum standard (2012) such as detailed account to the archaeological and historical background of the study area or region.

3. 1. Step I – Literature Review (Desktop Phase):

- Sources used in this study included, but not limited to published academic papers and HIA studies conducted in and around the region where the current development will take place.
- There was limited use of archival maps -one historical map and one archaeological map and one general travel map showing the proposed area of development and its surround were assessed to aid information about the proposed area of development and its surrounding.
- The above also included a review and assessment of relevant environmental and heritage legislations such as the NEMA (together with the 2010 EIA Regulations) and the NHRA.

3.2. Step II – Physical Survey

The physical survey of the study area aimed to address the following main areas of concern raised by the client in the specialist Terms of Reference:

1. To conduct an onsite verification survey for the proposed Rossburgh PRASA Station upgrade and maintenance project area.
2. To identify all objects, sites, occurrences and structures of archaeological or historical significance (cultural heritage sites) located within Rossburgh PRASA Station proposed to be upgraded.
3. Make use of annotated maps where appropriate.

In order to address these concerns:

- The physical survey of Rossburgh PRASA Station proposed to be upgraded was conducted on the 16 April 2014
- The survey covered the entire station - on foot and track logs of the survey were recorded using Garmin GPSmap 62s.
- The objective of the survey was to locate and identify archaeological and built environment and landscape features within the proposed development footprint - for example, buildings and structures that are older than 60 years. To record and map them using necessary and applicable tools and technology.
- The physical survey was deemed necessary since the desktop phase of the project yielded information about rich history and heritage of Rossburgh PRASA Station and of the broader region in which the study area is located.
- The following technological tools and platforms were deemed important for documenting and recording located and/or identified sites:
 - Garmin GPSmap 62s - to take Lat/Long coordinates of the identified sites and to take track logs.
 - Lenovo ThinkCentraided with Garmin Basecamp Software, Google Earth - to plot the station and associated infrastructure such as historic built environment and landscape features.
 - Quantum GIS Lisboa (1.8.0) was used to plot all the identified features and/or resources and to develop heritage maps in order to inform the heritage analysis of Rossburgh PRASA Station proposed for upgrades.
 - Maps provided by the client before the survey also proved invaluable
 - KML/KMZ data provided by the client was used to map the development area footprint.
 - Samsung camera - was used to take photos of the affected environment and the identified heritage sites.

3.3. Step III – Data Consolidation and Report Writing

During field work and on the return from the field the following were addressed:

1. Assessment of the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value"
2. Description of possible impact of the proposed development on these cultural remains, according to a standard set of conventions;
3. Proposal of suitable mitigation measures to minimize possible negative impacts on the cultural resources;
4. Review of applicable legislative requirements - Section 3.1. of this Chapter (i.e. Chapter 3) addresses this concern as well as Section 5.5 of Chapter 5 discusses Sections of the NHRA, No. 25 triggered by the current study findings
5. Highlighting of assumptions, exclusions and key uncertainties". Chapter 4 (below) of this report address this concern.

The final step involved the consolidation of the data collected using the various sources as described above. This involved the manipulation of data through Quantum GIS. Assessing the significance and potential impact of the identified sites, discussing the finds, report writing and making recommendation on the management and mitigation measures of the identified sites and resources as well as the impact and influence of these sites and resources on the proposed corridor.

3.4. Assessment of Site Significance in Terms of Heritage Resources Management Methodologies

The significance of heritage sites was based on four main criteria:

- Site integrity (i.e. primary vs. secondary context)
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures)
 - Density of scatter (dispersed scatter)
 - Low - <10/50m²
 - Medium - 10-50/50m²
 - High - >50/50m²
- Uniqueness and

- Potential to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

- A - No further action necessary;
- B - Mapping of the site and controlled sampling required;
- C - No-go or relocate pylon position
- D - Preserve site, or extensive data collection and mapping of the site; and
- E - Preserve site
- F - Impacts on these sites by the development will be evaluated as follows:

Measure of Heritage Sites Significance

The following site significance classification minimum standards as prescribed by the SAHRA (2006) and approved by the ASAPA for the SADC region were used for the purpose of this report.

Table 4: Site significance classification standards as prescribed by SAHRA

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	Grade 3C	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	Grade 3D	Medium Significance	Recording before destruction
Generally Protected	Grade 3E	Low Significance	Destruction

C (GP.A)			
----------	--	--	--

3.5. Methodology for Impact Assessment in terms of Environmental Impact Assessment Methodologies including Measures for Environmental Management Plan Consideration:

The determination of the effects of environmental impact on an environmental parameter is determined through a systematic analysis of the various components of the impact. This is undertaken using information that is available to the environmental practitioner through the process of the BAR. The impact evaluation of predicted impacts was undertaken through an assessment of the significance of the impacts. This is in line with specialist requirements as required by the client. For example, the request that:-

The impact methodology [should] focus on addressing key issues identified by the heritage consultant. This methodology to be employed in the report thus results in a circular route, which allows for the evaluation of the efficiency of the process itself. The assessment of actions in each phase [that should] be conducted in the following order:

- Assessment of key issues;
- Analysis of the activities relating to the proposed wetlands rehabilitation project and breaching of dams that are no longer functional;
- Assessment of the potential impacts arising from the activities, without mitigation; and
- Investigation of the relevant mitigation measures for both the construction and operational phases.

The following assessment criteria is used for impact assessment

An impact can be defined as any change in the physical-chemical, biological, cultural and/or socio-economic environmental system that can be attributed to human activities related to alternatives under study for meeting a project need. The significance of the aspects/impacts of the process will be rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process. These matrixes use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

The significance of the impacts will be determined through a synthesis of the criteria below:

Probability: describes the likelihood of the impact actually occurring

- **Improbable:** the possibility of the impact occurring is very low, due to the circumstances, design or experience.
- **Probable:** there is a probability that the impact will occur to the extent that provision must be made therefore.
- **Highly Probable:** it is most likely that the impact will occur at some stage of the development.
- **Definite:** the impact will take place regardless of any prevention plans and there can only be relied on mitigatory measures or contingency plans to contain the effect.

Duration: the lifetime of the impact

- **Short Term:** the impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.
- **Medium Term:** the impact will last up to the end of the phases, where after it will be negated.
- **Long Term:** the impact will last for the entire operational phase of the project but will be mitigated by direct human action or by natural processes thereafter.
- **Permanent:** the impact is non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.

Scale: the physical and spatial size of the impact

- **Local:** the impacted area extends only as far as the activity, e.g. footprint
- **Site:** the impact could affect the whole or measurable portion of the above mentioned properties.
- **Regional:** the impact could affect the area including the neighbouring residential areas.

Magnitude/Severity: Does the impact destroy the environment, or alter its function

- **Low:** the impact alters the affected environment in such a way that natural processes are not affected.
- **Medium:** the affected environment is altered, but functions and processes continue in a modified way.
- **High:**

function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

Significance:

This is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.

- **Negligible:** the impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.
- **Low:** the impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.
- **Moderate:** the impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.
- **High:** The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.

The significance is calculated by combining the criteria in the following formula:

$$\text{Sum (Duration, Scale, Magnitude) x Probability (Table -2)}$$

S = Significance weighting; Sc = Scale; D = Duration; M = Magnitude; P = Probability

Table 5 -The significance weightings for each potential impact are as follows:

Aspect	Description	Weight
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short term	1
	Medium term	3
	Long term	4

	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severity	Low	2
	Medium	6
	High	8
Significance	Sum (Duration, Scale, Magnitude) x Probability	
	Negligible	≤20
	Low	>20≤40
	Moderate	>40≤60
	High	>60

The significance of each activity was rated without mitigation measures (WOM) and with mitigation (WM) measures for both construction, operational and closure phases of the proposed development. To address the question of Heritage Management Plan the following table is used for Measures to be included in the EMP. This table is relevant in that it addresses key issues at the various stages of the project by also addresses how some of the key concerns that develop from a heritage point of view can be mitigated.

Table 6 - Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: Description of the objective, which is necessary in order to meet the overall goal; this takes into account the findings of the environmental impact assessment specialist studies

Project component/s	List of project components affecting the objective		
Potential Impact	Brief description of potential environmental impact if objective is not met		
Activity/risk source	Description of activities which could impact on achieving objective		
Mitigation: Target/Objective	Description of the target; include quantitative measures and/or dates of completion		
Mitigation: Action/control	Responsibility	Timeframe	

List specific action(s) required to meet the mitigation target/objective described above	Who is responsible for the measures	Time periods for implementation of measures
Performance Indicator	Description of key indicator(s) that track progress/indicate the effectiveness of the management plan.	
Monitoring	Mechanisms for monitoring compliance; the key monitoring actions required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods and reporting	

4. ASSUMPTIONS, EXCLUSIONS AND UNCERTAINTIES

The assumptions, exclusions and uncertainties that exist in terms of the present study are discussed in the following sub-sections.

4.1. Assumptions -

- The current study is a Phase 1 Heritage Impact Assessment. As such, a historical and archival desktop study as well as a field survey were undertaken to identify tangible heritage resources located in and around the proposed development area footprint. The assumption is that a heritage social consultative process would have taken place with some of the locals or passengers to ascertain known archaeological or heritage sites or historic buildings or existence of graves and cemeteries etc within or close proximity to the station. However, there was no formal heritage social consultation that took place as part of the study
- The study assumes that the amount of heritage resources located in and around the proposed Rossburgh PRASA Station represents the total amount of physical or tangible resources distributed in and around it.

4.2. Exclusions

The following exclusions or limitations have direct consequence to the study and its results:

- There was no deeds search for the proposed Rosburgh PRASA Station upgrade - the study area is owned by the developer, SARCC (Ltd)/PRASA and Transnet. PRASA is in the case the developer. There was therefore no need to conduct a deeds search for the property.

4.3. Uncertainties

Heritage studies like most other specialist studies often experience many challenges during and after the physical survey of the proposed development area. From an archaeological and general heritage perspective, the assumption is often made that, the amount of identified archaeological and heritage resources during physical survey of the proposed development area represent some of the total amount of resources that exist in and around or along the development area. This is not often true because the nature of some the archaeological and heritage resources are subterranean in nature and as such, one cannot totally rule out their presence or existence within the proposed development area even though they are not recorded and map as part of the current study. These resources may be exposed or brought to the surface of the earth during the construction phase of the project which will involve excavation for infrastructure development and clearing of top soil in some instances. This presents one of the major uncertainties regarding the 'holistic' management or archaeological and heritage resources within and around the proposed development area. But, I doubt there will be any such resources with Rosburgh development footprint.

Archaeologist and heritage specialist alike refer to discovery of such resources as chance finds and to mitigate such uncertainty, it is advisable that should such chance finds be made of archaeological and heritage resources on site, the Environmental Control Officer (ECO) responsible for the site should report them to the nearest SAHRA or AMAFA office or the nearest museum or call an archaeologist and heritage specialist to investigate the finds make necessary recommendations.

5. FINDINGS

5.1. Hypothesis About The Infrastructure Expected To Be Found At The Rosburgh Railways Station:

Based on the background information search about Rosburgh PRASA Station we developed a set of hypothesis about the site.

- The first hypothesis is that the station infrastructure is that of Victorian architect, given that the railway of the station was opened in 1880 to Isipingo and, a structure of similar features is found in Pinetown, Bellair station which is 4 kms away from the study area and was constructed in 1899 according the historical and development background.
- The architecture will be that of the 1890s and early 1900s - above 60 year benchmark as stipulated in Section 34 of the NHRA, No. 25 of 1999.

Based on the 1890s and early 1900s date obtained for the establishment of Rossburgh, the Rossburgh PRASA Station can be relatively dated to 112 years or older in year 2014.

5.2. Deeds Search:

No deeds search was conducted as part of the study. The project area is known to be the property of SARCC (Ltd)/ PRASA and it involves upgrade of existing Rossburgh PRASA Station- as such title deeds search was not deemed necessary. Deeds search plays a pivotal role in cases where there are multiple stakeholders with different interests in project area with issues such as land claims and/or presence of ancestral graves etc. In the case both PRASA and Transnet are government Parastatals.

5.3. Field Survey and Identified Heritage Resources: Industrial Archaeology and Historic Built Environment & Landscape Features

5.3.1. Site Observations

The hypothesis that the Victorian inspired architecture associated with the Natal Government Railways elaborate architectural designs was proven true for the station. One of the station buildings is a true example of British influenced architecture – with pronounced belted mouldings above and below the building and around windows and doors. Other old buildings include the two buildings where one consists of the waiting room on one end and what use to be a BAR on the other end and; another building that consists of the waiting room on one end and ablution facilities on the other end. Structures and landscapes that are recent in age were also found on site and these include, the station main building with administration offices and ticketing area; ablution facilities and; waiting room.

List of identified sites, their age, grades and predicted impacts on sites as per the proposed project objectives and proposed infrastructure:

A number of observations are made about Rossburgh PRASA Station - the station is recent in age. The infrastructure on site attests to this. Below is the list of some of some of the identified built environment and landscape infrastructure found within the station.

Site	R-1
Type	Structure
Density	1 Structure
Location/Coordinates	29° 56' 38.22"S 30° 57' 31.41"E
Approximate Age (More than 60 Or Less than 60 years old)	Older than 60 years old
Applicable Section of the NHRA, No 25 of 1999:	Section 34
Applicable Sections of the KZNHA, No.10 of 1997	Section 26 (1)
Applicable Sections of the KZNHB, 2008	Chapter 8 and section 29 (1)
Description:	
The site is an existing PRASA Station building. The building has the elements of Victorian design typical of the Natal architect dating to the 1890s until 1902. The type of material used to construct walls is red clay brick which has been restored. It has belted mouldings above and below the building, around windows and doors; doors also have wooden satche (<i>Figure 8</i>).	

- **Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):**

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
LS	Not applicable	Localised	Low	Low significance	Probable	Construction & Operational phase	None proposed

- **Note!** – This is heritage site/resources - therefore it should be restored and adaptively reused. A Conservation Management Plan of the building is recommended (Figure 8).

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development footprint i.e. the Rossburgh Station.

Project component/s	Construction phase of the project	
Potential Impact	Destruction of buildings/structures which were not initially include in the list of buildings/structure proposed to be restored or demolished	
Project component/s	Operational phase of the project	
Potential Impact	During future maintenance programmes in the depot	
Activity/risk source	Not keeping to the objective of the current proposed Spatial Development Framework (SPF attached below)	
Mitigation: Target/Objective	A phase 2 study of this site complex is proposed based on the types of buildings contained within this site complex and the age of the buildings to be demolished, renovated and refurbished. This should be done prior to project construction phase. And as soon as possible to allow enough time for permission processes with PHRAG.	
Mitigation: Action/control	Responsibility	Timeframe
<ul style="list-style-type: none"> • PRASA should commission a Phase 2 HIA to sample and document structures that will be destructed or restore. As well as other historic buildings within this site complex. This should be done by a qualified conservationist architect (Not an architectural historian). • An ICMP should be developed to manage other historical buildings within the site complex prior, during construction and after the construction phase. • A process that should form part of the Phase 2 study. 	PRASA	Before the construction and operational phase of the project
Performance	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of	

Indicator	completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	<ul style="list-style-type: none"> • ECO tasked with the Environmental Management of the site. • AMAFA should also do site visits during the project construction phase to monitor if heritage management objective as recommended in the current and future documents are met.



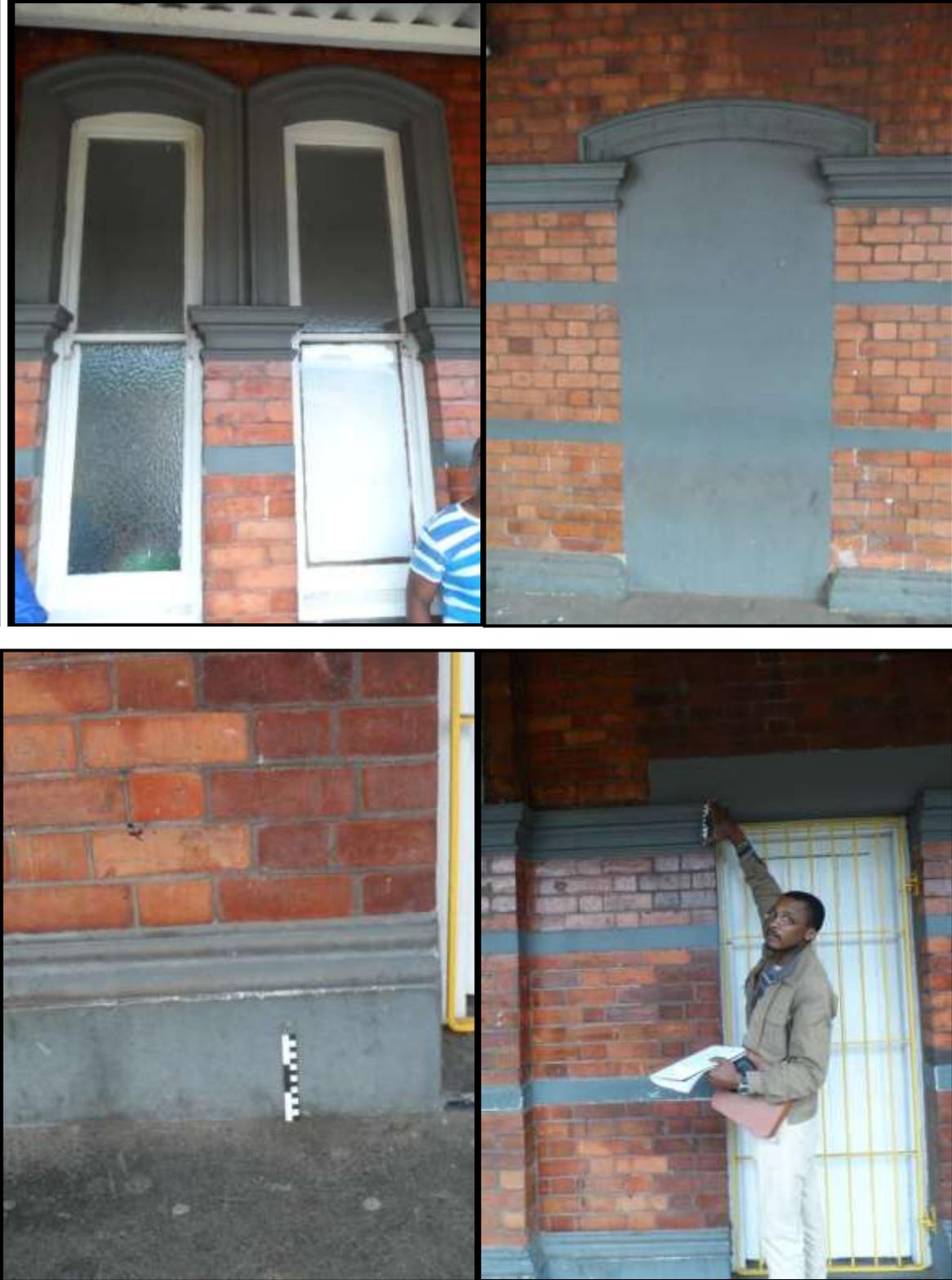


Figure 8 - Administration Building older than 60 years.

Site	R-2
Type	Structure
Density	1 Structure
Location/Coordinates	29° 56' 38.22"S 30° 57' 31.41"E
Approximate Age (More than 60 Or Less than 60 years old)	Older than 60 years old
Applicable Section of the NHRA, No 25 of 1999:	Section 34
Applicable Sections of the KZNHA, No.10 of 1997	Section 26 (1)
Applicable Sections of the KZNHB, 2008	Chapter 8 and section 29 (1)
Description:	
<p>The site is an existing PRASA Station building. The structure is built with red clay refractory brick which was dominant in the 1930s. A Galvanised gutter system was also used, and was dominant as a building material in the late 1940s. There is a possibility that the roof was replaced in the 1906s or later, the type of material used is a corrugated asbestos which was dominant in the 1960s (<i>Figure 9</i>).</p>	

- ***Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):***

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
LS	Not applicable	Localised	Low	Low significance	Probable	Construction & Operational phase	None proposed

- **Note!** – *This is heritage site/resources - therefore it should be restored and adaptively reused. A Conservation Management Plan of the building is recommended (Figure 9).*





Figure 9 - Old structure currently used as the waiting room on one end not utilised on other end. The section not utilised used to be a BAR. The other structure similar is a waiting on one end and ablution facilities on the other end.

Site	R-3
Type	Structure
Density	1 Structure
Location/Coordinates	29° 56' 38.22"S 30° 57' 31.41"E
Approximate Age (More than 60 Or Less than 60 years old)	Older than 60 years old
Applicable Section of the NHRA, No 25 of 1999:	Section 34
Applicable Sections of the KZNHA, No.10 of	Section 26 (1)

1997	
Applicable Sections of the KZNHB, 2008	Chapter 8 and section 29 (1)
Description: The site is an existing PRASA Station building. It is a subway less than 60 years old (<i>Figure 10</i>).	

- ***Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):***

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
LS	Not applicable	Localised	Low	Low significance	Probable	Construction & Operational phase	None proposed

- **Note!** – *This is not a heritage site/resources - therefore are no further actions in terms of heritage resources management recommended for it (Figure 10).*



Figure 10 - Old Station subway.

Site	R-4
Type	Structure
Density	1 Structure
Location/Coordinates	29° 56' 38.22"S 30° 57' 31.41"E
Approximate Age (More than 60 Or Less than 60 years old)	Older than 60 years old
Applicable Section of the NHRA, No 25 of 1999:	Section 34
Applicable Sections of the KZNHA, No.10 of 1997	Section 26 (1)
Applicable Sections of the KZNHB, 2008	Chapter 8 and section 29 (1)
Description:	
<p>The site is an existing PRASA Station building. It is a recent structure utilised as ablution facilities and less than 60 years old. The structure is built using red clay brick, coated with water paint (<i>Figure 11</i>).</p>	

- **Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):**

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
LS	Not applicable	Localised	Low	Low significance	Probable	Construction & Operational phase	None proposed

- **Note!** – This is not a heritage site/resources - therefore are no further actions in terms of heritage resources management recommended for it (Figure 11).



Figure 11 - Recent structure utilised as ablution facilities.

Site	R-5
Type	Structure
Density	1 Structure
Location/Coordinates	29° 56' 38.22"S 30° 57' 31.41"E
Approximate Age (More than 60 Or Less than 60 years old)	Older than 60 years old
Applicable Section of the NHRA, No 25 of	Section 34

1999:	
Applicable Sections of the KZNHA, No.10 of 1997	Section 26 (1)
Applicable Sections of the KZNHB, 2008	Chapter 8 and section 29 (1)
Description:	
The site is an existing PRASA Station building. The site is painted in grey and yellow (Metrorail colours) and one is utilised as the waiting room, and the other as ablution facilities (<i>Figure 12</i>).	

- ***Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):***

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
LS	Not applicable	Localised	Low	Low significance	Probable	Construction & Operational phase	None proposed

- **Note!** – *This is not a heritage site/resources - therefore are no further actions in terms of heritage resources management recommended for it (Figure 12).*



Figure 12 - Ablution facilities and waiting room painted in Metrorail colours.

6. DISCUSSION

The Rossburgh PRASA Station presents a unique example of early railway infrastructure by the Natal Government Railways. It is one of the old stations to be built when the Natal Government Railways took over from the Natal Railway Company.

The first train in Natal seem to have been marred by constant abortive rides up to a point where external intervention was deemed necessary - Government in London wanted to intervene. This prompted the Natal Government to take the railway construction into its own hands. This suggests that the Natal Railway Company established in 1859 would have been relieved of the responsibility of constructing railways in Natal. Following the takeover, the Natal Government embarked on a series of surveys and engineering planning activities to expand the railway industry in the province (then an independent Colony). The planned routes included the crossing of the Drakensburg mountain range (1873). By 1875 the Natal Government Railways Law was promulgated and it gave powers to the government of the time to "...make, maintain, equip and work certain railways in the Colony of Natal" (Day, 1963: 28).

The Victorian architecture was found on site during the physical survey of the station. Old Point Railway Station in Durban dates from the 1890s and is said to be the first station to be build in Durban. The main building has an arched entrance flanked by a pair of gable fronts and the wrought iron verandah, typical of Victorian architect. As such, the building was declared a National Monument under the National Monuments Act (1969). Furthermore, a similar structure to that of the proposed site was found in Pinetown, the Bellair Station. The main building has belted mouldings above and below the building, and around the windows and frames. In addition is the cantilever verandah with gable fronts; meaning, a triangle formed by a sloping roof.

Taking into consideration that the railway from Rossburgh to Isipingo was opened in 1880; the first station in Durban to be constructed was in the 1890s; the Bellair Station was constructed in 1899 with similar characteristics as those found on site; the year 1902 marked the end of colonialism in South Africa which means, the cease of Victorian inspired design buildings. With that being said, it is unlikely that the Rossburgh station may be constructed in 1880 when the railway line open since the first station in Durban to be constructed was only in the 1890s. Again, there is no certainty as which station was constructed first between Rossburgh and Bellair due to the lack of historical background of the study area; therefore it cannot be affirmed that the station was built the same year as that of Bellair irrespective of the similarities. However there surety that his building (Rossburgh 1) was built between the 1890s and 1902, which gives it an estimated date of 112-120 years in the year 2014.

Apart from the Victorian inspired design structure there are other structures located within the station precinct and they include; the BAR (currently closed), waiting rooms and ablution facilities (Rossburgh 2). They are more than 60 years old and together with the main station, are protected in terms of Section 34 of the NHRA, No. 1999 which sets a 60 year benchmark for the general protection of historic buildings. Other built environment and landscape features such as the subway (Rossburgh 3), ablution facilities (Rossburgh 4 & 5) and waiting room (Rossburgh 5) are also found on but recent in age.

The assessment and evaluation of the heritage fabric and integrity of Germiston PRASA Station yield the following information about the station precinct:

- From built environment and landscape perspective a number of the station precinct buildings are generally protected in terms of the NHRA, No. 25 of 1999.
- Together with the historical building the historic resources on site make approximately 40% of the station with the rest considered to recent in age.
- All the station historic resources will be affected by the proposed development, but the levels differ from resources to resource.
- For example the main station building has high heritage significance and this is based on its architecture and historic association. The building will be impact by the proposed development and it is proposed that it be retained and mitigated. Should this not be done the site will be negatively impacted and based on the levels of the site heritage significance the impact will, be site and regional if the site is not mitigated.
- Site Rossburgh PRASA-2 & has medium heritage significance based on the age and the conditions of the site.
- Structures 2 are allocated a field grade of GPA; that require mitigation before destruction.

Based on the different strands of evidence and the assessments made about resources located with the Rossburgh PRASA Station precinct the following conclusion and recommendations are made about the site.

7. CONCLUSION

- It is conclude that Rossburgh PRASA Station is of unique historic and heritage value based on the type and the different forms of heritage resources located within the

station. Its construction during the time when the Natal Government Railway took over from the Natal Railway Company is demonstrated from the main historic building.

- It also concludes that the proposed Rosburgh PRASA Station will have direct impact on the identified resources. However, the impacts will be varied and depend on what is proposed for each of the resources.
- For the Victorian design historic building the impacts will be high without mitigation and low with mitigation. The same conclusions are made about sites such as Rosburgh PRASA 2.

8 RECOMMENDATIONS

- It is recommended that PRASA should retain the main historic building, waiting rooms, ablution facilities and what used to be a BAR (R 2). These three resources should be restored and adaptively reuse within the proposed station upgrade programme.
- We recommend AMAFA aKwaZulu Natali to issue PRASA a demolish permit should they consider destructing the old waiting room with BAR and ablution facilities, but on condition that mitigation measures are considered prior to their destruction.
- All other structures were not of exceptional heritage significance and can be destructed.
- A Stage 2 HIA is recommended for the main historic buildings. This should include an architectural assessment of the type and language of architecture and the current conditions of the site. Mapping and recording of the buildings axis, floor plans, windows, roof etc to develop as-builds. This should be conducted by a qualified and accredited conservationist architecture.
- The Stage 2 HIA should involve the development of a Conservation Management Plan and construction and post construction monitoring plan to monitor and report of the restoration process.
- It is recommended that PRASA consider the used of the main historic building as opposed to its current use; e.g the station canteen, for it not sound for a building of that calibre with high significance from a heritage perspective to be utilised as ablution facility.
- It is also recommended that AMAFA aKwaZulu Natali should consider declaring the main historic building as a National Monument based on the unique features of the building and the fact that a site of similar features, Bellair Station, is already declared a National Monument.

9. REFERENCES

A Century of Transport 1860 - 1960, Da Gama Publications

Archaic Consulting. 2012. Report: Clairwood Turf Heritage Impact Assessment prepared for Kerry Seppings Environmental Specialists cc.

Burman,J. 1984. Early railways at the Cape. Human & Rousseau. Cape Town Pretoria

De Jong, R.C., Van der Waal, G-M & Heydenrych, D.H. 1988. NZASM 100, 1887 - 1899: the buildings, steam engines and structures of the Netherlands South African Railways Company. Chris van Rensburg Publishing

Day, J. R. 1963. *Railways of Southern Africa*. Arthur Bakker Limited

Fair, T.J.D & Mellows, E.W.N. 1959. The Southern Transvaal: An Emerging Metropolitan Complex in Africa. *The Town Planning Review* 30 (2): 125-138.

Hamilton, C. (ed.) 1995. *The Mfecane Aftermath*. Johannesburg: Witwatersrand University Press.

Kemm, K. (1997) "*South Africa features prominently in history of rail transport*" [online] Available at:engineeringnews.co.za [Accessed 17 June 2009]

Kleinsgeld, C. 2003. A SOUTH AFRICAN RAILWAY HISTORY.General Freight Business Promotions, Spoornet, Cape Town. Edited by Col André Kritzinger (SAAF, Rtd).

Moloi, T.C. 2005.Youth politics : the political role of AZANYU in the struggle for liberation : the case of AZANYU Tembisa branch, 1980s to 1996. Master of Arts Thesis.University of the Witwatersrand.

Maggs, T. 1976. *Iron Age Communities of the Southern Highveld*.Pietermaritzberg: Natal

Nasson, B. 2000.UyadelaWen'osulapho: Black Participation in the Anglo-Boer War. *The Anglo-Boer War Series*.Ravan press

Omer-Cooper, J. D. 1993. Has the Imfecane a Future? A Response to the Cobbing Critique.*Journal of Southern African Studies*, Vol.9 (2): 273-294.

Pakenham, T. 1979. *The Boer War*. London: MacDonald & Co. (1982 edition).

Pistorius, J.C.C. 1992. *Molokwane: an Iron Age BaKwena Village*. Johannesburg: Perskor Printers.

Pirie, G.H. 1992. Rolling Segregation into Apartheid: South African Railways.*Journal of contemporary history* 27 (4): 671 – 693

Potgieter, D.J. et al. (eds) (1970) *Standard Encyclopaedia of Southern Africa*. Cape Town: NASOU, v. 9, p. 218-19.

Prins, F. 2012. Report: Heritage Impact Assessment of the proposed Clairwood Logistics Park, EThekweni Municipality prepared for Kerry Seppings Environmental Specialists cc.

Smith, I. R. 1996. *The Origins of the South African War 1899-1902*, Longman, London New York.

Tomose, N. G. 1998. The Viability of South African Museums in the Post-1994 Landscape. Unpublished MSc thesis. University of the Witwatersrand Johannesburg.

Tomose, N.G. & Birkholtz, P. 2011. Heritage Impact Assessment for Randjesfontein Estate. Johannesburg City Parks.

Tomose, N.G. 2013 [HIA for the Proposed Wolmerton PRASA Depot Upgrade](#). Ecosolve Environmental Consulting

Tomose, N.G. 2013. A Heritage Impact Assessment study for the proposed PRASA's modern maintenance Depots upgrade, Springfield, KwaZulu-Natal Province for Ecosolve Consulting.

Richardson, D, Richardson, P and Van Helten, J .J. 1980. Labour in the South African Gold Mining Industry, 1886-1914.*Journal of African History*, 21 :43-59,

SOUTH AFRICA 1999. *NATIONAL HERITAGE RESOURCES ACT (No 25 of 1999)*, Government Gazette. Cape Town..

The History of Old Durban by George Russell - 1899 p395

Encyclopaedia Britannica, 1969 edition, vols 19 & 20

SAHRA APMHOB. 2004. *Policy for the management of Archaeology, Palaeontology, Meteorites and Heritage Object*. SAHRA: Cape Town.

SAHRA APM. 2006. *Guidelines: Minimum standards for the archaeological and palaeontological Component of Impact Assessment Reports*. . SAHRA: Cape Town.

SAHRA APMHOB 2002. General Introduction to surveys, impact assessments and management plans SAHRA: CT.

SAHRA. 2002. General guidelines to Archaeological Permitting Policy. SAHRA: Cape Town.

SAHRA. 2002. General Introduction to surveys, impact assessments and management plans.

SAHRA. What to do when Graves are uncovered accidentally.

Van-Helten, J. J.. 1978. German Capital, the Netherlands Railway Company and the Political Economy of the Transvaal 1886-1900. *The Journal of African History*, Vol.19, No.3(1978), pp. 369-390

Internet Source:

www.cityofethekwini.co.za

www.umgenisteamrailway.co.za/Bellairstation.php

www.homesignal.surfermoon.com/bellair.html