PART OF THE REMAINDER OF PORTION 62 OF THE FARM WATERVAL 5 IR:
PROPOSED JUKSKEI HEIGHTS EXTENSION 3

Heritage Impact Assessment

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Declaration of Independence

The report has been compiled by PGS Heritage, an appointed Heritage Specialist for LEAP Enviro (LEAP - Lanscape Architect Environmental Planner). The views stipulated in this report are purely objective and no other interests are displayed during the decision making processes discussed in the Heritage Impact Assessment Process

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Report Title	PART OF THE REMAINDER OF PORTION 62 OF THE FARM WATERVAL 5 IR: PROPOSED JUKSKEI HEIGHTS EXTENSION 3 Heritage Impact Assessment:		
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As indicated in the table below, this Heritage Impact Assessment report was compiled in accordance with the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations Appendix 6 requirements for specialist reports.

NEMA REGS (2014) - APPENDIX 6	RELEVANT PAGES AND SECTIONS
Details of the specialist who prepared the report.	Pages i, ii, iii and 111
The expertise of that person to compile a specialist report including a curriculum vitae.	Pages 11 (Section 1.2) and Appendix B
A declaration that the person is independent in a form as may be specified by the competent authority.	Page ii
An indication of the scope of, and the purpose for which, the report was prepared.	Page 1 (Section 1.1)
The date and season of the site investigation and the relevance of the season to the outcome of the assessment.	Section 6
A description of the methodology adopted in preparing the report or carrying out the specialised process.	Section 3.1
The specific identified sensitivity of the site related to the activity and its associated structures and infrastructure.	Sections 6
An identification of any areas to be avoided, including buffers.	Section 6
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers.	Section 6 and Figure 2
A description of any assumptions made and any uncertainties or gaps in knowledge.	Section 1.3
A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment.	Section 7. Please note that no development alternatives were assessed.
Any mitigation measures for inclusion in the EMPr.	Section 8
Any conditions for inclusion in the environmental authorization.	Sections 8 and 9
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Sections 8 and 9
A reasoned opinion as to whether the proposed activity or portions thereof should be authorised and	Executive Summary and Section 9
If the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	
A description of any consultation process that was undertaken during the course of carrying out the study	Not applicable. A public consultation process was handled as part of the EIA and EMP process.
A summary and copies if any comments that were received during any consultation process	Not applicable. To date not comments regarding heritage resources that require input from a specialist have been raised.
Any other information requested by the competent authority.	Not applicable.

EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd (PGS) was appointed by LEAP Enviro (LEAP) to undertake a Heritage Impact Assessment (HIA) that forms part of the Basic Environmental Assessment Report (BAR) and Environmental Management Programme for the proposed application to establish residential institutions including retirement villages and ancillary and related uses, places of instruction, offices, shops and showrooms on part of the remainder of portion 62 of the farm Waterval 5IR, Midrand, City of Johannesburg Metropolitan Municipality, Central Gauteng Province. The development will be know as Jukskei Heights Extension 3.

A field survey was conducted on foot by two qualified archaeologists on the 3rd of June 2016. One significant heritage resource was located, a single grave dating to 1887. No other heritage resources were located.

Based on the impact assessment criteria the impact by the proposed development on heritage resources is seen as moderate. To address the possible impacts on the single grave the following management measure is recommended:

The development footprint does not allow the inclusion of the identified grave and it must be relocated through a detailed grave relocation process as described in **Appendix A** of this report needs to be implemented.

However, in the event of any further heritage resources being uncovered, SAHRA should be contacted and a qualified archaeologist appointed to evaluate the finds and make appropriate recommendation on mitigation.

Conclusions

On the condition that the mitigation measures outlined in this report are undertaken, any development impacts on the proposed development will be adequately mitigated to allow the development to take place. As such, and on this condition, no heritage reasons can be given for the development not to continue.

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1 INTRODUCTION

PGS Heritage (Pty) Ltd (PGS) was appointed by LEAP Enviro (LEAP) to undertake a Heritage Impact Assessment (HIA) that forms part of the Basic Environmental Assessment Report (BAR) and Environmental Management Programme for the proposed application to establish residential institutions including retirement villages and ancillary and related uses, places of instruction, offices, shops and showrooms on part of the remainder of portion 62 of the farm Waterval, Midrand, City of Johannesburg Metropolitan Municipality, Central Gauteng Province. The development will be known as Jukskei Heights Extension 3.

1.1 Scope of the Study

The aim of the study is to identify possible heritage sites and findings that may occur in the proposed development area. The HIA aims to inform the EIA in the development of a comprehensive EMPr to assist the developer in managing the identified heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999) (NHRA).

1.2 Specialist Qualifications

This HIA was compiled by PGS Heritage (Pty) Ltd (PGS).

The staff at PGS has a combined experience of nearly 70 years in the heritage consulting industry. PGS and its staff have extensive experience in managing HIA processes and will only undertake heritage assessment work where they have the relevant expertise and experience to undertake that work competently.

Jessica Angel, holds a Master's degree in Archaeology and is registered as a Professional Archaeologist with the Association of Southern African Professional Archaeologists (ASAPA).

Mr. Henk Steyn, the Project Sponsor, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist and is accredited as a Principal Investigator.

1.3 Assumptions and Limitations

The following assumptions and limitation apply to this study:

- Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted.
- Any such observed or located heritage features and/or objects found during construction/operation may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply as set out below.

1.4 Legislative Context

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

i. National Environmental Management Act (NEMA) Act 107 of 1998
ii. National Heritage Resources Act (NHRA) Act 25 of 1999
iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

i. GNR 982 (Government Gazette 38282, 14 December 2014) promulgated under the National Environmental Management Act (NEMA) Act 107 of 1998
    a. Basic Assessment Report (BAR) – Regulations 19 and 23
    b. Environmental Scoping Report (ESR) – Regulation 21
    c. Environmental Impact Assessment (EIA) – Regulation 23
    d. Environmental Management Programme (EMPr) – Regulations 19 and 23

ii. National Heritage Resources Act (NHRA) Act 25 of 1999
    a. Protection of Heritage Resources – Sections 34 to 36; and
    b. Heritage Resources Management – Section 38
iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
    a. Section 39(3)

The NHRA stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority. Section 34 (1) of the NHRA states that, "no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority". In addition, the NEMA (No 107 of 1998) and the GNR 982 (Government Gazette 38282, 14 December 2014) state that, "the objective of an environmental impact assessment process is to, identify the location of the development footprint within the preferred site, focussing on the geographical, physical, biological, social, economic, cultural and heritage aspects of the environment" (GNR 982, Appendix 3(2)(c), emphasis added). In accordance with legislative requirements and EIA rating criteria, the regulations of South African Heritage Resource Agency (SAHRA) and ASAPA have also been incorporated to ensure that a comprehensive legally compatible HIA report is compiled.

1.5 Terminology and Abbreviations

Archaeological resources
This includes:

i. 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;
ii. 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;
iii. 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;

iv. 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 a change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

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

Heritage

That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

Heritage resources

This means any place or object of cultural significance.

Palaeontology

Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Fossil

Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Holocene

The most recent geological time period which commenced 10 000 years ago.

Early Stone Age

The archaeology of the Stone Age, between 400 000 and 2500 000 years ago.

Middle Stone Age

The archaeology of the Stone Age between 30 000-300 000 years ago, associated with early modern humans.

Late Stone Age

The archaeology of the last 30 000 years, associated with fully modern people.

Iron Age

The archaeology of the last 1000 years up to the 1800s, associated with people who carried out iron working and farming activities such as herding and agriculture.

Table 1: Abbreviations

ABBREVIATIONS	DESCRIPTION
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
BAR	Basic Environmental Assessment Report
CRM	Cultural Resource Management
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System

HIA	Heritage Impact Assessment
LIA	Late Iron Age
LSA	Later Stone Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PGS	PGS Heritage
PHRA	Provincial Heritage Resources Authority
PSSA	Palaeontological Society of South Africa
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

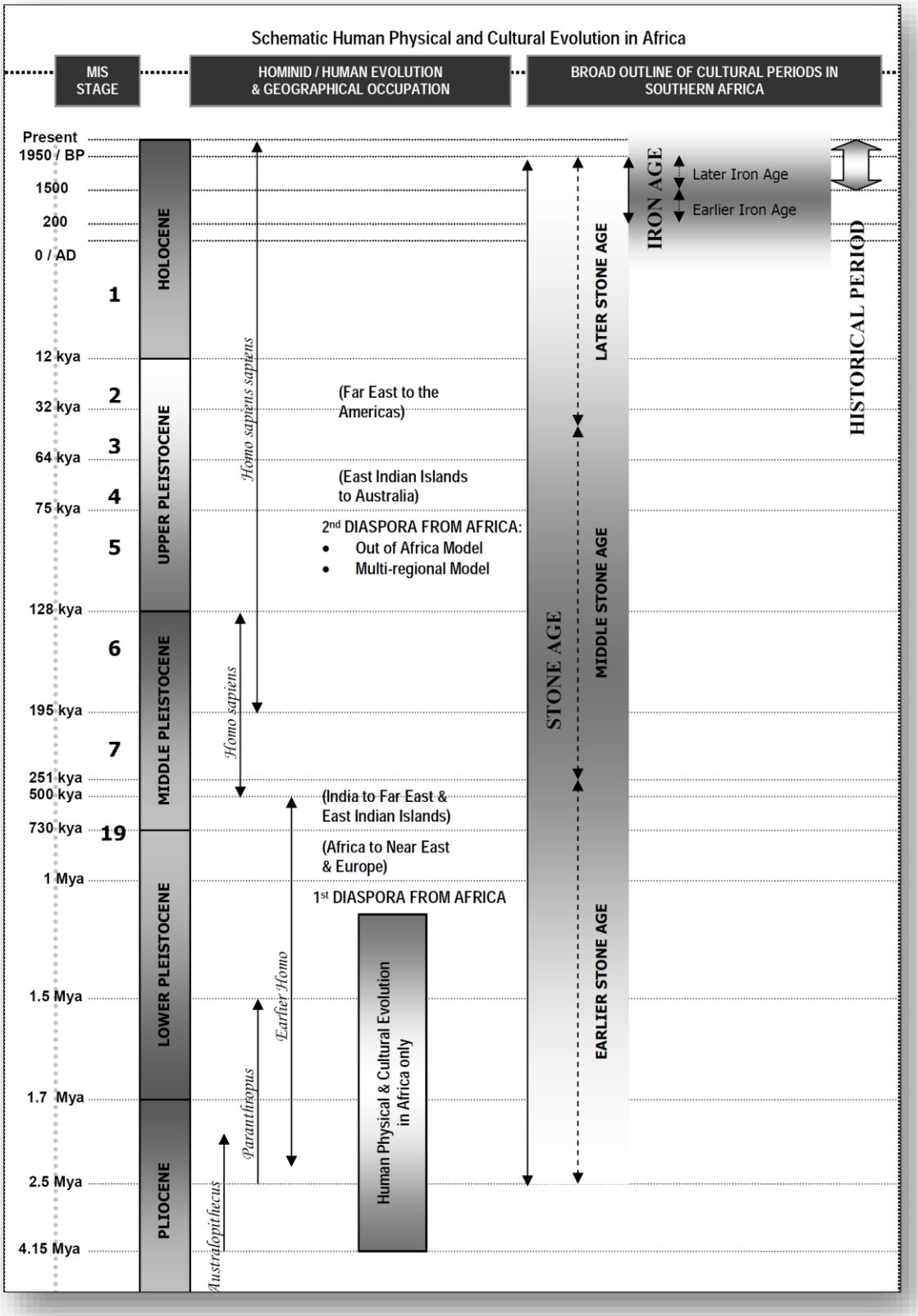

Figure 1 - Human and Cultural Time line in Africa (Morris, 2008)

2 TECHNICAL DETAILS OF THE PROJECT

2.1 Site Location

The study area is defined as part of the Remainder of portion 62 of the farm Waterval 5 IR. The site is located at the northern intersection of the R55 and Maxwell drive, in Midrand, the City of Johannesburg Metropolitan Municipality, Gauteng Province.

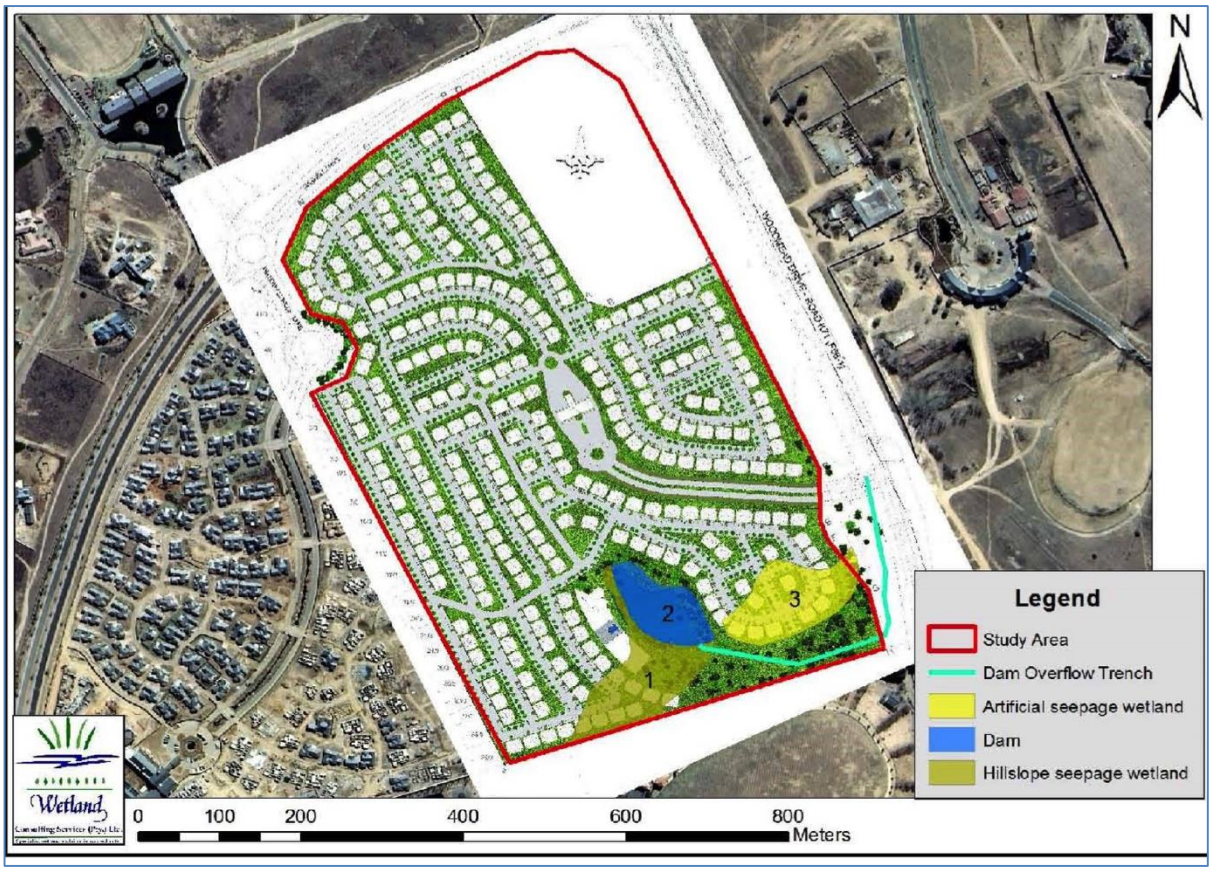

Figure 2 - Layout of the proposed development (LEAP Enviro, 2016)

Table 2 - Site details

Coordinates	The central coordinate for Part of the remainder of Portion 62 of the farm Waterval 5IR is **26° 1'35.10"S**, **28° 5'13.24"E**
Property	Part of the remainder of portion 62 of the farm Waterval 5IR, Midrand, City of Johannesburg Metropolitan Municipality, central Gauteng province.
Location	The site is located at the northern intersection of the R55 and Maxwell drive, about 4.8 Km SW from Midrand and 2.3 Km NE of Sunninghill, the City of Johannesburg Metropolitan Municipality, Gauteng Province.

Land Description	The total area of the study area is 40 ha. The majority of the land is currently used as polo fields. The area is therefore cleared of most vegetation and flat with little occurring on the property. There are three large polo fields about 5.3 ha in size. There are a few small areas around the fields mostly on the southeastern corner that consist of denser vegetation. Several structures occur on the farm, mostly on the northern side, with one at the southeastern corner.

2.2 Project Description

2.1.1 Background

The proposed application of this project is to establish residential institutions including retirement villages and ancillary and related uses, places of instruction, offices, shops and showrooms on part of the remainder of portion 62 of the farm Waterval 5IR, Midrand, City of Johannesburg Metropolitan Municipality, central Gauteng Province.

3 ASSESSMENT METHODOLOGY

The section below outlines the assessment methodologies utilised in the study.

3.1 Methodology for Assessing Heritage Site Significance

This HIA report was compiled by PGS Heritage for the proposed application to establish residential institutions including retirement villages and ancillary and related uses, places of instruction, offices, shops and showrooms on part of the remainder of portion 62 of the farm Waterval 5IR. The applicable maps, tables and figures are included, as stipulated in the NHRA (no 25 of 1999) and the NEMA (no 107 of 1998). The HIA process consisted of three steps:

Step I – Literature Review: The background information to the field survey relies greatly on the archival and historical cartographic material assessed as part of the study, as well as a study of the available literature.

Step II – Physical Survey: A physical survey was conducted through the proposed project area by a fieldwork team comprising of two heritage specialist (Henk Steyn and Stephany van der Walt). The study was completed on foot and by vehicle on 3rd June 2016. Written descriptions, photographs and GPS coordinates were taken of all heritage sites identified during the survey.

Step III – The final step involved the recording and documentation of relevant archaeological and heritage resources, the assessment of resources in terms of the HIA criteria and report writing, as well as mapping and recommendations.

The significance of identified 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 - <10/50m^2
    - Medium - 10-50/50m^2
    - High - >50/50m^2
- 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 development activity position;
D - Preserve site, or extensive data collection and mapping of the site; and
E - Preserve site.

Impacts on these sites by the development will be evaluated as follows:

3.2 Site Significance

Site significance classification standards prescribed by the SAHRA (2006) and approved by the ASAPA for the Southern African Development Community (SADC) region, were used for the purpose of this report.

Table 3: 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	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)		High/Medium	Mitigation before destruction
Generally Protected B (GP.B)		Medium	Recording before destruction
Generally Protected C (GP.C)		Low	Destruction

3.3 Methodology for Impact Assessment

In order to ensure uniformity, a standard impact assessment methodology will be utilised so that a wide range of impacts can be compared. The impact assessment methodology makes provision for the assessment of impacts against the following criteria:

- Significance;
- Spatial scale;
- Temporal scale;
- Probability; and
- Degree of certainty.

A combined quantitative and qualitative methodology will be used to describe the impacts for each of the aforementioned assessment criteria. A summary of each of the qualitative descriptors along with the equivalent quantitative rating scale for each of the aforementioned criteria is given in Table 4.

Table 4: Quantitative rating and equivalent descriptors for the impact assessment criteria.

RATING	SIGNIFICANCE	EXTENT SCALE	TEMPORAL SCALE
1	VERY LOW	*Isolated corridor / proposed corridor*	Incidental
2	LOW	*Study area*	Short-term
3	MODERATE	*Local*	Medium-term
4	HIGH	*Regional / Provincial*	Long-term

RATING	SIGNIFICANCE	EXTENT SCALE	TEMPORAL SCALE
5	VERY HIGH	*Global / National*	Permanent

A more detailed description of each of the assessment criteria is given in the following sections.

3.3.1 Significance Assessment

Significance rating (importance) of the associated impacts embraces the notion of extent and magnitude, but does not always clearly define these since their importance in the rating scale is very relative. For example, the magnitude (i.e. the size) of area affected by atmospheric pollution may be extremely large (1000km^2) but the significance of this effect is dependent on the concentration or level of pollution. If the concentration is great, the significance of the impact would be HIGH or VERY HIGH, but if it is diluted it would be VERY LOW or LOW. Similarly, if 60 ha of a grassland type are destroyed the impact would be VERY HIGH if only 100 ha of that grassland type were known. The impact would be VERY LOW if the grassland type was common. A more detailed description of the impact significance rating scale is given in Table 5 below.

Table 5: Description of the significance rating scale.

RATING		DESCRIPTION
5	VERY HIGH	Of the highest order possible within the bounds of impacts which could occur. In the case of adverse impacts: there is no possible mitigation and/or remedial activity which could offset the impact. In the case of beneficial impacts, there is no real alternative to achieving this benefit.
4	HIGH	Impact is of substantial order within the bounds of impacts, which could occur. In the case of adverse impacts: mitigation and/or remedial activity is feasible but difficult, expensive, time-consuming or some combination of these. In the case of beneficial impacts, other means of achieving this benefit are feasible but they are more difficult, expensive, time-consuming or some combination of these.
3	MODERATE	Impact is real but not substantial in relation to other impacts, which might take effect within the bounds of those which could occur. In the case of adverse impacts: mitigation and/or remedial activity are both feasible and fairly easily possible. In the case of beneficial impacts: other means of achieving this benefit are about equal in time, cost, effort, etc.
2	LOW	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts: mitigation and/or remedial activity is either easily achieved or little will be required, or both. In the case of beneficial impacts, alternative means for achieving this benefit are likely to be easier, cheaper, more effective, less time consuming, or some combination of these.
1	VERY LOW	Impact is negligible within the bounds of impacts which could occur. In the case of adverse impacts, almost no mitigation and/or remedial activity is

RATING		DESCRIPTION
		needed, and any minor steps which might be needed are easy, cheap, and simple. In the case of beneficial impacts, alternative means are almost all likely to be better, in one or a number of ways, than this means of achieving the benefit. Three additional categories must also be used where relevant. They are in addition to the category represented on the scale, and if used, will replace the scale.
0	NO IMPACT	There is no impact at all - not even a very low impact on a party or system.

3.3.2 Spatial Scale

The spatial scale refers to the extent of the impact i.e. will the impact be felt at the local, regional, or global scale. The spatial assessment scale is described in more detail in Table 6

Table 6: Description of the significance rating scale.

RATING		DESCRIPTION
5	Global/National	The maximum extent of any impact.
4	Regional/Provincial	The spatial scale is moderate within the bounds of impacts possible, and will be felt at a regional scale (District Municipality to Provincial Level). The impact will affect an area up to 50km from the proposed site / corridor.
3	Local	The impact will affect an area up to 5km from the proposed route corridor / site.
2	Study Area	The impact will affect a route corridor not exceeding the boundary of the corridor / site.
1	Isolated Sites / proposed site	The impact will affect an area no bigger than the corridor / site.

3.3.3 Duration Scale

In order to accurately describe the impact it is necessary to understand the duration and persistence of an impact in the environment. The temporal scale is rated according to criteria set out in Table 7.

Table 7: Description of the temporal rating scale.

RATING		DESCRIPTION
1	Incidental	The impact will be limited to isolated incidences that are expected to occur very sporadically.
2	Short-term	The environmental impact identified will operate for the duration of the

		construction phase or a period of less than 5 years, whichever is the greater.
3	Medium term	The environmental impact identified will operate for the duration of life of the project.
4	Long term	The environmental impact identified will operate beyond the life of operation.
5	Permanent	The environmental impact will be permanent.

3.3.4 Degree of Probability

The probability or likelihood of an impact occurring will be described, as shown in Table 8 below.

Table 8: Description of the degree of probability of an impact occurring.

RATING	DESCRIPTION
1	Practically impossible
2	Unlikely
3	Could happen
4	Very Likely
5	It's going to happen / has occurred

3.3.5 Degree of Certainty

As with all studies it is not possible to be 100% certain of all facts, and for this reason a standard "degree of certainty" scale is used as discussed in Table 9. The level of detail for specialist studies is determined according to the degree of certainty required for decision-making. The impacts are discussed in terms of affected parties or environmental components.

Table 9: Description of the degree of certainty rating scale.

RATING	DESCRIPTION
Definite	More than 90% sure of a particular fact.
Probable	Between 70 and 90% sure of a particular fact, or of the likelihood of that impact occurring.
Possible	Between 40 and 70% sure of a particular fact, or of the likelihood of an impact occurring.
Unsure	Less than 40% sure of a particular fact or the likelihood of an impact occurring.

RATING	DESCRIPTION
Can't know	The consultant believes an assessment is not possible even with additional research.

3.3.6 Quantitative Description of Impacts

To allow for impacts to be described in a quantitative manner in addition to the qualitative description given above, a rating scale of between 1 and 5 was used for each of the assessment criteria. Thus the total value of the impact is described as the function of significance, spatial and temporal scale as described below.

$$\textbf{\textit{Impact Risk}} = \frac{(\text{SIGNIFICANCE} + \textit{Spatial} + \text{Temporal})}{3} \times \frac{\text{Probability}}{5}$$

An example of how this rating scale is applied is shown in Table 10

Table 10: Example of Rating Scale

IMPACT	SIGNIFICANCE	SPATIAL SCALE	TEMPORAL SCALE	PROBABILITY	RATING
	LOW	*Local*	Medium Term	*Could Happen*	
Impact to air	**2**	***3***	**3**	**3**	**1.6**

Note: The significance, spatial and temporal scales are added to give a total of 8, that is divided by 3 to give a criteria rating of 2,67. The probability (3) is divided by 5 to give a probability rating of 0,6. The criteria rating of 2,67 is then multiplied by the probability rating (0,6) to give the final rating of 1,6.

The impact risk is classified according to 5 classes as described in Table 11.

Table 11: Impact Risk Classes.

RATING	IMPACT CLASS	DESCRIPTION
0.1 – 1.0	1	Very Low
1.1 – 2.0	2	Low
2.1 – 3.0	3	Moderate
3.1 – 4.0	4	High
4.1 – 5.0	5	Very High

Therefore with reference to the example used for air quality above, an impact rating of 1.6 will fall in the Impact Class 2, which will be considered to be a low impact.

4 CURRENT STATUS QUO

4.1 Description of Study Area

The total area of the study area is 40 ha. The majority of the land was previously used as polo fields. The area is therefore cleared of most vegetation and flat with little occurring on the property. There are three large polo fields about 5.3 ha in size. There are a few small areas around the fields mostly on the south eastern corner that consist of denser vegetation and a small dam. Several structures occur on the farm, mostly on the northern side, with one at the south eastern corner.

Figure 3 – General view of study area

Figure 4 – General view showing stables

Figure 5 – General view of current status of the area

Figure 6 – Present structures within the study area

Figure 7 –Areas with denser vegetation

Figure 8 – Polo fields

Figure 9 – Animal enclosures

Figure 10 – General view of area.

5 ARCHIVAL AND DESKTOP RESEARCH FINDINGS

The aim of the archival and desktop background research is to identify possible heritage resources that could be encountered during the field work. The archival and desktop research focused on available information sources, which were used to compile a background history of the study area and surrounds. This data then informed the possible heritage resources to be expected during field surveying.

5.1 Historic Overview of Study Area and Surrounding Landscape

5.1.1 Pre - colonial period

The cultural heritage in Midrand has been shaped by almost continuous human occupation and use of the natural landscape and resources over the past 500 000 years, beginning with human occupation during the Early Stone Age and stretching through Iron Age settlement to colonial settlement in the 1840s (de Jong, 2006).The initial human use of the area was primarily directed

towards the production of food and fibre through agriculture however, mining and industrial development since the 1880s have changed the landscape, with the result that the cultural heritage of Midrand is now dominated by manifestations and interventions in terms of mining, industry, commerce and urban settlement (de Jong, 2006).

Very little is known about the earliest human occupation of Midrand. However, de Jong (2006) states that there is little doubt that the first humans in Midrand may have been Homo erectus who roamed the area during the Acheulian period of the Early Stone Age, 500 000 years ago. The ancestor of Homo erectus, Australopithecus, considered to be the earliest ancestor of humans, lived in the Sterkfontein Valley around Krugersdorp several million years ago (de Jong, 2006). According to van Schalkwyk & de Jong (1998) the occupation of the area began as Early Stone Age people appeared in the area periodically. These ESA people manufactured simple tools and weapons of stone, bone and wood, which they used for hunting and gathering of edible plants (van Schalkwyk & de Jong, 1998). Van Schalkwyk & de Jong explain that no permanent settlement took place, and only a few deposits of stone artefacts of this period have remained behind.

Following the Early Stone Age, Midrand was the scene of the periodic occupation by MSA and LSA groups. During the MSA, 200 000 years ago, modern man or Homo sapiens had emerged, manufacturing a wider range of tools with technologies more advanced than those from earlier periods (de Jong, 2006). This enabled skilled hunter-gatherer bands to adapt to different environments. From this time onwards, rock shelters and caves were used for occupation and reoccupation over extended of time (de Jong, 2006).

The Late Stone Age, considered to have started some 30 000 years ago, is associated with the predecessors of the San and Khoi (de Jong, 2006). San hunter-gatherer bands with their small (microlithic) stone tools lived in Midrand.

Relatively little has remained of the traces of earlier human settlements, except along less disturbed riverine areas (where there often are signs of Stone Age occupation) and on some hilltops, where the ruins of Iron Age settlements have escaped urban development (de Jong, 2006). Numerous MSA artefacts have been found along water-courses, and through various excavations that have been conducted in the area.

In a report by de Jong (2006) it is mentioned where evidence of Stone Age habitation in the Midrand area can be found. These include:

- Situated between the Waterfall Quarry and the N 1 is a rock shelter, which is considered to be one of the oldest Stone Age shelters according to professor-emeritus Revil Mason. Information about this site is contained in a SEF Scoping Report in connection with the rezoning from agricultural to commercial uses of this portion (July 2001). The stone artefacts at this site, probably dating back to the Middle Stone Age, have been excavated.
- An archaeological investigation (1997) (by Revil Mason) connection with the development of The Boulders, a shopping mall at Halfway House yielded evidence of Middle and Late Stone Age occupation.
- Further downstream is the Glenferness archaeological site next to the Jukskei River.

Occupation of Midrand by the first groups of Iron Age settlers began in the 16th century (Mason 1997). (Van Schalkwyk & de Jong (1998), and Mason (1997) mention that these Iron Age settlers spoke Bantu languages, such as Tswana, kept domesticated animals, grew crops and manufactured pots and iron implements. Van Schalkwyk and de Jong (1998) further state that like the Stone Age people, they also hunted and gathered edible plants. The Bushmen, who were basically Late Stone Age people, were not displaced immediately, as is evidenced by their probable occupation of The Boulders between 1100 and 1200 AD, and for many centuries they lived side by side with the Iron Age settlers (van Schalkwyk & de Jong 1998).

Excavations by Mason (1997) at the Boulders shopping centre (~5 km NW) of the current study area) was aimed at interpreting the cultural layering of the Midrand area and provides a good platform for understanding the cultural use of the landscape in this area. He identified 7 occupational layers in his excavations that can be broadly divided into Stone Age, Iron Age and historical occupation (Mason 1997).

The Difaqane (Sotho), or Mfecane ("the crushing" in Nguni) was a time of bloody upheavals in Natal and on the Highveld, which occurred around the early 1820's until the late 1830's (Bergh, 1999). This strife occurred as a response to heightened competition for land and trade as well as environmental drought and stress. As a result, population groups like gun-carrying Griquas and Shaka's Zulus attacked other tribes in the area (Bergh, 1999) In 1827, it is believed that Mzilikazi's Ndebele started moving through the area where Johannesburg is located today. This group went on raids to various other areas in order to expand their area of influence (Bergh, 1999).

At the time of the Difaqane, a northwards migration of white settlers from the Cape was also occurring. Some travellers, missionaries and adventurers had gone on expeditions to the northern

areas in South Africa, some already as early as the 1720's. It was however only by the late 1820's that a mass movement of Dutch speaking people in the Cape Colony started advancing into the northern areas. This event was as a result of feelings of mounting dissatisfaction caused by economical and other circumstances in the Cape (van der Walt, 2015). This movement later became known as the Great Trek.

De Jong (2006) states, that because colonial farmers, settlers and miners have continuously and intensively used the development area for the past 150 years, no signs of Stone Age occupation in the form of surface deposits and finds of artefacts have been found at Waterval.

5.1.2 Colonial period

White colonisation of the area, as described above, began in the 1820s. Permanent occupation began in the early 1840s, when Voortrekker farmers such as Frederik Andries Strydom and Johannes Elardus Erasmus established the farms Olifantsfontein and Randjesfontein respectively (van Schalkwyk & de Jong, 1998). The development of Midrand was determined mostly by local agriculture. This occurred until well into the 20th century (van Schalkwyk & de Jong, 1998).

Midrand was also affected by the Anglo-Boer War (1899-1902). van Schalkwyk & de Jong (1998) discuss that for a short period Midrand was a key focus of the British war effort, when the British forces under Lord Roberts advanced through Midrand from Johannesburg on route to Pretoria, which was occupied on 5 June 1900. van Schalkwyk & de Jong (1998) further state that no major battles took place in Midrand, and the armed conflict was limited to Boer attempts at sabotaging the railway line, attacks on troop trains and other minor skirmishes. A notable event was the Boer demolition of the railway culvert near the present Pinedene Station, which had to be completely rebuilt by the Imperial Military Railways in 1901 (van Schalkwyk & de Jong, 1998).

Pretoria and Johannesburg were connected by stage-coach and post-cart services in the 1880s, and a stop-over station where horse and mule teams could be changed and passengers could rest was developed midway between the two towns (van Schalkwyk & de Jong, 1998). This stop over point soon became known as the `Halfway House'. In 1890, when it was predicted that the proposed railway line between the Witwatersrand and Pretoria would pass Halfway House, a township, known as `Waterval Mooigelegen', was surveyed, which made provision for a station, government offices, shops and a market. However, the railway bypassed Halfway House to the east, and thus Midrand's first railway station was opened on the farm Olifantsfontein in 1892 (van Schalkwyk & de Jong, 1998).

Halfway House was utilized by many of the affluent people from Johannesburg, as used as a retreat and for recreational activities. President Kruger often stopped over at the Halfway House Hotel during trips between Johannesburg and Pretoria (van Schalkwyk & de Jong, 1998).

Halfway House became a town in 1920, however real industrial, commercial and residential development, only began in the late 1930s as a result of Halfway House's central and accessible location in the heart of Gauteng (van Schalkwyk & de Jong, 1998). A feature of the 1930s and 1940s was the establishment of large agricultural estates, which in later years were subdivided into smallholdings for purchase by wealthy members of the public. van Schalkwyk & de Jong (1998) state that this period also saw the development of Midrand as a mecca for flying sport (Grand Central Flying Club 1937), motor racing (Grand Central Speedway 1948) and horse riding (Lipizzaner equestrian centre).

van Schalkwyk & de Jong (1998) discuss that while Halfway House became the western development nucleus of the Midrand area, the same happened at Olifantsfontein in the east. When the Germiston-Pretoria railway line was surveyed in the early 1890s, extensive limestone and fire clay deposits were discovered east of the old Strydom farmstead on Olifantsfontein by John Richard Holmes (van Schalkwyk & de Jong, 1998). Holmes then established a lime burning company in 1895, which was soon followed by a brick-making firm (van Schalkwyk & de Jong, 1998). The remains of the original quarry and plant have since become part of Midrand's industrial heritage.

Housing for the brick-making and pottery companies was provided in an area later called Clayville and in 1940 the Clayville township was established. According to van Schalkwyk & de Jong (1998), although Halfway House and Clayville had already been established, the first form of proper local government was only instituted in 1944, when the Halfway House/Olifantsfontein area came under the jurisdiction of the Transvaal Peri-Urban Areas Health (later Development) Board. In 1951 the Halfway House Local Area Committee was established as a form of local government under the jurisdiction of this Board. In 1964 a similar structure was instituted for Clayville/Olifantsfontein. These two Local Area Committees ceased to exist in 1981, when they amalgamated to form a fully-fledged new local authority known as Midrand (van Schalkwyk & de Jong, 1998).

5.1.3 Waterval 5 IR (from de Jong, 2006)

de Jong (2006) conducted research on the farm Waterval 5IR, the research will be presented here to discuss the events surrounding the farm ownership and activities.

According to de Jong, the original farm Waterval No 34 (now 5 IR) was probably established in the 1850s when many other colonial farms were created following the permanent settlement of the

Voortrekkers in the Midrand area. Even by the standards of those days it was a large farm, comprising about 4000 morgens (about 3400 ha). It was named after some rapids (referred to as a waterfall) in the Jukskei River, which are situated immediately west of the N 1.

Peter MacDonald properly surveyed the farm in May 1888 for its then owner, Miss E Pyrmont (widow of William Morris who's grave has been located during the survey of part of the remainder of portion 62 of the farm Waterval 5 IR). Surveyor-General Johann Rissik approved the diagram in June 1888, which was then signed off by President Paul Kruger in January 1889 (de Jong 2006).

Two Englishmen, James K and John A Gibson, bought large portions of the farm where they bred cattle and established commercial plantations. The Gibson's owned and managed a stagecoach service between Johannesburg and Pretoria and established a hotel as a "pit-stop" on their farm, soon known as Halfway House (mentioned above). This area was proclaimed as the Waterfall Park Estate Township in 1889 and the first land was sold in 1890 (de Jong, 2006)

Descendants of the Gibsons sold their portions of the farm to the Witwatersrand Estates Ltd in June 1934. Indian families, including the Mia family, held the controlling interest in this company. The company leased the farm to SI Mia. He was concerned about the education of Indian children who, either through poverty or because their parents resided in isolated parts of South Africa, could not enjoy proper education (de Jong, 2006). He started a school and hostel in Market Street, Johannesburg, where Indian street children and orphans were also admitted. This school grew so fast that a new site had to be found. Subsequently, in 1937 permission was granted by the authorities to establish a school for Indian children on the farm Waterval. Construction of this facility, known as the Waterval Islamic Institute, started in 1939 and the school opened in 1940. The Institute comprised a madrasah, boarding school and mosque. It was the first establishment of its kind in the former Transvaal Province. It is likely that some of the existing farm buildings were altered during this period and that some new buildings were erected as well (de Jong, 2006).

The establishment of Mia's farm led to the revival of the Jamiatul Ulama Transvaal, originally created in 1923 as an organisation to which Indian religious leaders belong in the former Transvaal Province (de Jong, 2006).

The main purpose of farming on Waterval was (and still is) to provide meat and dairy products to the Islamic Institute and also funds from the sale of these products. For this purpose, an irrigation system was constructed, comprising water furrows, dams and weirs, providing water for pastures and crops. Various buildings for this purpose were added to the existing buildings at the farmstead (de Jong, 2006).

The township of Buccleugh, also on the farm Waterval, was established by FC Gibson and named after the residence of his father, John A Gibson, at Kenilworth in the Western Cape. It was proclaimed in August 1938 (de Jong, 2006).

5.2 Previous Heritage Impact Assessment Reports

Studies in the general vicinity of the study area include:

- Behrens, J. 2008. Archaeological investigation of a number of structures on Waterval 5IR.
- De Jong, R.C. 2006. Heritage scoping report: proposed Waterfall Park development (Mia's farm), Johannesburg. In this case, cemeteries, historic farmsteads, weirs and ruins were identified.
- De Jong, R.C. 2007. Specialist report (heritage scoping report): proposed Waterfall Wedge and associated roads development, located on portions of the farm Waterval 5 IR (Mia's Farm), Johannesburg, Gauteng Province.
- De Jong, R.C. 2008. Final heritage impact assessment report: proposed Waterfall Estate (Mia's Farm), Johannesburg.
- eThembeni Cultural Heritage. 2006. Heritage impact assessment of Gautrain route variants, Tshwane, Gauteng Province, South Africa.
- Hall, S. 1997. A Phase 1 archaeological assessment of Modderfontein. Department of Archaeology.
- Huffman, T. N. 1999. A Phase-1 Report. Archaeological survey of Bluehills Farm, Midrand. This site occurs ~ 8 km North of the present study area. LSA artefacts and historic structures were located.
- Mason, R. 2007. Excavation of a Middle Stone Age site on the farm Waterval, Midrand. Johannesburg:
- Van der Walt, J. 2008. Archaeological Impact Assessment: Noordwyk Extention 92, Holding 114 Erand A. H, Midrand, Gauteng. This assessment occurs ~ 7 km NW of the present study area. No heritage sites were located, recent structures were present.
- Van der Walt, J. 2009. Archaeological Impact Assessment: On the portion 123 of the farm Klipfontein 12 IR Midrand, Gauteng. This assessment occurs ~ 8.75 km SE of the present study area. No heritage finds in this case, possible cemetery.

- Van der Walt, J. 2015. Archaeological Impact Assessment: For the proposed Midridge Park Ext. 25 Township Development, Midrand, Gauteng. This assessment occurs ~ 7 km NW of the present study area. This site was disturbed and no heritage features were located.
- Van Schalkwyk, J.A. 2006. Heritage impact assessment: proposed Jukskei Heights X1.
- Van Schalkwyk, J.A. 2007a. Heritage impact assessment: Jukskei Extensions 1 & 6.
- Van Schalkwyk, J.A. 2007b. Addendum to the heritage impact assessment for the proposed Gautrain Rapid rail Link, Gauteng Province, South Africa.
- Van Schalkwyk, J.A. 2007c. Heritage impact assessment: Grand Central Extension 8.
- Van Schalkwyk, J.A. & De Jong, R.C. 1998. A survey of cultural resources in the Midrand municipal area, Gauteng Province. This assessment occurred in the greater Midrand area. 51 sites were identified, these include stone walling, cemeteries, historic farmsteads and remains of historic structures, stone age factory site, ESA, MSA and LSA artefacts, old railway viaduct and class A locomotive, and Glenferness cave.

6 FIELDWORK FINDINGS

On 3rd June 2016, PGS staff, Ms S van der Walt (Archaeologist) and Mr H Steyn (Archaeologist), visited the site (Part of the remainder of portion 62 of the Farm Waterval 5 IR) to survey for possible heritage features. The PGS staff arrived on site and continued a perimeter walk down of the property. Transects of the property were conducted focussing on areas of possible heritage features (PHF) that may be present on the property keeping in mind previous heritage findings of previous assessments in the area.

Figure 11 -Google Earth Image showing the track logs of the field survey. Note that only one of the archaeologists carried a GPS and that the area was covered in more detail than shown.

The following features were identified:

6.1 Heritage Resources identified in the Field

NO.	LATITUDE, LONGITUDE	DESCRIPTION	PHOTOGRAPH
Waterval 1	26° 1'27.78"S, 28° 5'5.77"E	Grave of the late William Morris (d. 23/04/1887. He was the husband of Miss E, Pyrmont who was at one stage the owner of the 62 of the farm Waterval 5 IR (refer to the Archival and Desktop Research findings – **Section 5.1.3**). Refer to **Figure 11** for locality. The heritage resources is graded a having a local significance and thus a grading of **3B**.	

7 IMPACT OF PROPOSED DEVELOPMENT ON HERITAGE RESOURCES

In this section the impact of the proposed development on the study area will be calculated.

7.1 Introduction

One heritage resource was identified during the survey.

In the section that follows, impact risk assessments will be undertaken on those sites that will be impacted upon by the proposed development.

7.2 Risk Calculation for the Impact of the Proposed Development on possible heritage resources

Based on the impact assessment criteria the pre-mitigation impact by the proposed development on identified heritage resources is seen as high.

Implementing the proposed mitigation measures the impact will be reduced to moderate.

Table 12: Impact calculation

Activity	Proposed Mitigation Measures	Post-Activity Impact			Post-Mitigatory Impact		
		Ranking Criteria	Scores	Impact Rating	Ranking Criteria	Scores	Impact Rating
Site Development Impact on the identified grave	Relocation of the grave through a detailed grave relocation process	Significance	3	3.67	Significance	3	3.0
		Spatial	3		Spatial	3	
		Temporal	5		Temporal	3	
		Degree of Probability	5		Degree of Probability	5	
		Degree of Certainty	Definite		Degree of Certainty	Definite	

No impact is expected past the construction phase

8 MITIGATION MEASURES

The risk calculation above has shown that the impact of the proposed development on heritage resources in the study area is a moderate impact post-mitigation.

8.1 Mitigation Measures required for Heritage Features

The development footprint does not allow the inclusion of the identified grave and it must be relocated through a detailed grave relocation process as described in **Appendix A** of this report needs to be implemented.

9 CONCLUSIONS AND RECOMMENDATIONS

PGS was appointed by LEAP Enviro to undertake a Heritage Impact Assessment that forms part of the Environmental Impact Assessment and Environmental Management Programme for the proposed application to establish residential institutions including retirement villages and ancillary and related uses, places of instruction, offices, shops and showrooms on part of the remainder of portion 62 of the farm Waterval 5IR, Midrand, City of Johannesburg Metropolitan Municipality, central Gauteng Province.

A field survey was conducted on foot by two qualified archaeologists on the 3rd of June 2016. One significant heritage resource was located, a single grave dating to 1887. No other heritage resources were located.

Based on the impact assessment criteria the impact by the proposed development on heritage resources is seen as moderate. To address the possible impacts on the single grave the following management measure is recommended:

The development footprint does not allow the inclusion of the identified grave and it must be relocated through a detailed grave relocation process as described in **Appendix A** of this report needs to be implemented.

However, in the event of any further heritage resources being uncovered, SAHRA should be contacted and a qualified archaeologist appointed to evaluate the finds and make appropriate recommendation on mitigation.

10 REFERENCES

Behrens, J. 2008. Archaeological investigation of a number of structures on Waterval 5IR. Unpublished report. Pretoria: Unisa.

Bergh, I.S. (ed.). 1999. Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies. Pretoria: J.L. van Schaik.

De Jong, R.C. 2006. Heritage scoping report: proposed Waterfall Park development (Mia's farm), Johannesburg. Unpublished report. Pretoria: Cultmatrix.

De Jong, R.C. 2007. Specialist report (heritage scoping report): proposed Waterfall Wedge and associated roads development, located on portions of the farm Waterval 5 IR (Mia's Farm), Johannesburg, Gauteng Province. Unpublished report. Pretoria: Cultmatrix.

De Jong, R.C. 2008. Final heritage impact assessment report: proposed Waterfall Estate (Mia's Farm), Johannesburg. Unpublished report. Pretoria: Cultmatrix.

eThembeni Cultural Heritage. 2006. Heritage impact assessment of Gautrain route variants, Tshwane, Gauteng Province, South Africa. Unpublished Report. Pietermaritzburg: eThembeni Cultural Heritage.

Hall, S. 1997. A Phase 1 archaeological assessment of Modderfontein. Department of Archaeology. Johannesburg: University of the Witwatersrand.

Mason, R. 2007. Excavation of a Middle Stone Age site on the farm Waterval, Midrand. Johannesburg: Unpublished report.

Mason, R. 1997. Recording Midrand Heritage from the earliest occupation. The Boulders shopping centre project

Van der Walt, J. 2015. Archaeological Impact Assessment: For the proposed Midridge Park Ext. 25 Township Development, Midrand, Gauteng. Unpublished report. Heritage Contracts and Archaeological Consulting CC

Van Schalkwyk, J.A. 2006. Heritage impact assessment: proposed Jukskei Heights X1. Unpublished report. Pretoria: National Cultural History Museum.

Van Schalkwyk, J.A. 2007a. Heritage impact assessment: Jukskei Extensions 1 & 6. Unpublished report. Pretoria: National Cultural History Museum.

Van Schalkwyk, J.A. 2007b. Addendum to the heritage impact assessment for the proposed Gautrain Rapid rail Link, Gauteng Province, South Africa. Unpublished report. Pretoria: National Cultural History Museum.

Van Schalkwyk, J.A. 2007c. Heritage impact assessment: Grand Central Extension 8. Unpublished report. Pretoria: National Cultural History Museum.

Van Schalkwyk, J.A. & De Jong, R.C. 1998. A survey of cultural resources in the Midrand municipal area, Gauteng Province. Unpublished report. Pretoria: National Cultural History Museum.

All contemporary aerial views used in this report were obtained using Google Earth and Google Earth Pro. This is true for overlays made as well.

Appendix A

LEGISLATIVE REQUIREMENTS – TERMINOLOGY AND ASSESSMENT CRITERIA

1. GENERAL PRINCIPLES

In areas where there has not yet been a systematic survey to identify conservation-worthy places, a permit is required to alter or demolish any structure older than 60 years. This will apply until a survey has been completed and identified heritage resources are formally protected.

Archaeological and palaeontological sites, materials, and meteorites are the source of our understanding of the evolution of the earth, life on earth and the history of people. In terms of the heritage legislation, permits are required to damage, destroy, alter, or disturb such sites. People who already possess such material are required to register it. The management of heritage resources is integrated with environmental resources and this means that before development takes place heritage resources are assessed and, if necessary, rescued or mitigated.

In addition to the formal protection of culturally significant graves, all graves which are older than 60 years and are not in a cemetery (such as ancestral graves in rural areas) are protected. The legislation protects the interests of communities who have an interest in the graves: they must be consulted before any disturbance takes place. The graves of victims of conflict and those associated with the liberation struggle should be identified, cared for, protected and memorials erected in their honour.

Anyone who intends to undertake a development must notify the heritage resource authority and if there is reason to believe that heritage resources will be affected, an impact assessment report must be compiled at the applicant's (i.e. mining company or development company) cost. Thus, the applicant will be able to proceed without uncertainty about whether work will have to be stopped if an archaeological or heritage resource is discovered.

According to the National Heritage Act (Act 25 of 1999 section 32) it is stated that:

An object or collection of objects, or a type of object or a list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object, including –

- objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, meteorites and rare geological specimens;
- visual art objects;
- military objects;
- numismatic objects;

- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;
- objects of scientific or technological interest;
- books, records, documents, photographic positives and negatives, graphic material, film or video or sound recordings, excluding those that are public records as defined in section 1 (xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996), or in a provincial law pertaining to records or archives; and
- any other prescribed category.

Under the National Heritage Resources Act (Act No. 25 of 1999), provisions are made that deal with, and offer protection to, all historic and prehistoric cultural remains, including graves and human remains.

2. GRAVES AND CEMETERIES

Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) as well as the Human Tissues Act (Act 65 of 1983) and National Health Act (Act 61 0f 2003) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the Office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning or in some cases the MEC for Housing and Welfare. Authorisation for exhumation and reinterment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. In order to handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

Graves older than 60 years, but younger than 100 years, fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act) as well as the Human Tissues Act (Act 65 of 1983) and National Health Act (Act 61 0f 2003) and are the jurisdiction of the South African Heritage Resource Agency (SAHRA). The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation.

If the grave is not situated inside a formal cemetery but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws set by the cemetery authority must be adhered to.

Appendix B

CURRICULUM VITAE

JESSICA ANGEL
Professional Archaeologist

Personal Details

- **Name:** Jessica
- **Surname:** Angel
- **Identity Number:** 8312250052082
- **Date of Birth:** 25-12-1983
- **Citizenship:** South African
- **Gender:** Female
- **Marital Status:** Single
- **Languages Spoken**: English and Afrikaans

Education History

- **2002**: Matriculated from Northcliff High School with the following subjects: English, Afrikaans, Mathematics, Science, Biology and Art.
- **2005**: Completed BA at University of the Witwatersrand with Geography and Archaeology Majors.
- **2006**: Completed BSc Hons (Geography) at the University of the Witwatersrand with the following subjects: Environmental Management, Advanced Geographic Information Systems (GIS), Paleogeomorphology and Globalisation and Agro Food Restructuring.
- **2009 – 2013**: M.Sc Archaeology and Geography, with thesis title: *Mpumalanga Late Iron Age: Incorporating Geographic Information Systems (GIS) and Archaeological Data to Better Understand Spatial and Temporal Distribution of Past Societies.* (Graduated March 2014).

Employment History
Part time employment as a student:

- **2011**: Research Assistant: GIS work for Prof Karim Sadr. Duties include: Google Earth survey work and digitising.
- **2012-2013:** Basic internship at PGS. Duties include gaining familiarity with gathering relevant background data, field surveys, exhumations and report writing.
- **2013:** Heritage work at NGT. Background research, report writing and ground surveys.
- **2015 –** Archaeologist – PGS Heritage

Experience in the field of archaeology:

September 2012: First Phase Heritage Assessment. Belfast. Marko Hutten and Jennifer Kitto
August 2012: First Phase Heritage Assessment. Delareyville. Wouter Fourie. Stone Age survey
August 2012: Heritage Assessment. MP. Chris van Vuuren and Jennifer Kitto. Ndebele initiation site.
February 2013: Map survey. PTA East. Polka Birkholtz. Mapping Iron Age site.

February 2013: Grave Exhumation. Chlorkop. Marko Hutten
March 2013: First Phase Heritage Assessment. MP. Jennifer Kitto.
July 2013: Grave Exhumation. Mafikeng. Prof Maryna Steyn and Coen Nienaber.
November 2013: First Phase Heritage Assessment. Port Nolloth. Luke Verbant, Ursula Verbant.
January 2015 – June 2015: 10 Heritage Impact assessments and background research for PGS Heritage

CURRICULUM VITAE

Name:	HS (Henk) Steyn
Profession:	Archaeologist
Date of birth:	1971-09-15
Parent Firm:	PGS Heritage (Pty) Ltd
Position at Firm:	Managing Director
Years with firm:	13
Years of experience:	18
Nationality:	South African
HDI Status:	White Male

EDUCATION

Name of University or Institution	**:**	University of Pretoria
Degree obtained	**:**	BA
Major subjects	**:**	Archaeology, History & Cult. History
Year	**:**	1996

Name of University or Institution	**:**	University of Pretoria
Degree obtained	**:**	BA [Hons] (Cum laude)
Major subjects	**:**	Archaeology
Year	**:**	1997

Professional Qualifications:
Professional Archaeologist - Association of Southern African Professional Archaeologists (ASAPA) - Professional Member
CRM Accreditation:

- Principal Investigator - Grave Relocations
- Field Director – Iron Age
- Field Supervisor – Colonial Period and Stone Age

Treasurer of the Association of South African Professional Archaeologists (ASAPA) 2011 - current

Languages:
Afrikaans (Home language)
English – Speaking (Good) Reading (Good), Writing (Good)

KEY QUALIFICATIONS
Grave Relocation Management, Cultural Resource Management and Heritage Impact Assessment Management, Archaeology, Business Management

CONFERENCE PAPERS AND PUBLICATIONS

- *2011 – POSTER* – H.S. Steyn, W. Fourie and M. Hutten. Kappa Omega Transmission Line: Findings from an Archaeological Walk Down. *Association of Southern African Professional Archaeologists – Conference, Swaziland*

EXPERIENCE

Heritage Assessments

As a heritage practitioner I have been involved with approximately 60 Heritage Impact Assessments including, but not limited to:

- Archaeological Walkdown, Hydra-Perseus Transmission line (260km), Northern Cape Province - Eskom
- Phase 2 Heritage Impact Assessment and EMP, Gamma-Omega Transmission line (550km), Western Cape Province - Nature Conservation Corporation
- Archaeological Walk Down and EMP, Eros- Neptune Transmission Line (380km), Transkei, Eastern Cape Province – Aurecon
- Phase 2 Heritage Impact Assessment in terms of the proposed Comet Ext. 8 Development, Ekurhuleni Metropolitan Municipality – Urban Dynamics
- Heritage Impact Assessment for the proposed development of Comet Ext. 14, Ekurhuleni Metropolitan Municipality, Marsh Environmental
- Nature Conservation Corporation, Phase 2 Heritage Impact Assessment and EMP, Hydra-Perseus Transmission line (260km – selected areas), Northern Cape Province
- Heritage Assessment, Friarsdale, Northern Cape – Afrimat
- Heritage Assessments for three SCP Projects (De Aar, Kimberley, Loeriesfontein) – SiVest
- Co-Author of a Cultural Resources Management Plan for Marakele National Park.
- Co-Author of a Cultural Resources Management Plan for Augrabies National Park.

Grave Relocations

As Managing Director of PGS, I have been involved in more than 60 grave relocation projects, including but not limited to:

1. iMpunzi Division of Duiker Mining, Witbank, Relocation of 950 graves.
2. University of Pretoria, Nandoni Dam Grave Relocation Project, Thohoyandou, Limpopo Province. Relocation of approximately 1,000 graves.
3. Alveda Park Development, NewHco. Relocation of 114 graves.
4. Tselentis Colliery, Duiker Mining. Relocation of 80 graves.
5. Tselentic Colliery, Expansion of mining activities. Relocation of 15 graves.
6. Abland, Proposed development of Portion 41 of the farm Wonderboom 302-JR. Relocation of 17 graves.
7. TCTA, VRESAP Development. Relocation of 56 graves.
8. Biscuit Trading, Proposed Development of Portion 97 of the farm Knopjeslaagte 385-JR. Relocation of 5 graves.
9. Savannah Country Estates, Mamelodi, Pretoria, Gauteng Province. Relocation of 7 graves.
10. Atterbury Property Developments, Hartebeespoort Dam, Pretoria. Relocation of 11 graves.
11. The Outpost Estate, Bela-Bela, Limpopo Province. Relocation of 78 graves.
12. Nkomati Mine, Onverwacht grave relocation, near Badplaas, Mpumalanga. Relocation of 45 graves.
13. Nkomati Mine, Nkomati Mine grave relocation, near Badplaas, Mpumalanga. Relocation of 60 graves.
14. New Vaal Colliery, Mac West Project, Free State, Relocation of 650 graves.
15. Phokathaba Platinum, Smokey Hills Mine, Maandagshoek, Burgersfort, Limpopo Province. Relocation of 11 graves.
16. Martins Funerals (Randburg), Garstfontein road grave relocation, Pretoria, Gauteng Province. Relocation of 1 grave.
17. Bombela CJV, Graves affected by Gautrain Development, Midrand, Gauteng Province. Relocation of 26 graves.
18. Cranbrook Properties, Motaganeng Project, Burgersfort, Limpopo Province. Relocation of 60 graves.
19. Silver Glade Investments, Swavelpoort, Pretoria. Relocation of 45 graves.
20. Anglo Coal (Kleinkopje Colliery), Zondagsvlei, near Ogies, Mpumalanga Province.
21. Anglo Coal (Kleinkopje Colliery), Kleinkopje Coppiery, Witbank, Mpumalanga Province. Relocation of 4 graves.
22. Africon. Rescue excavation of 1 grave near Silvertondale, Pretoria, Gauteng Province.
23. Osizweni Plaza, Newcastle, KwaZulu-Natal. Relocation of 65 graves.
24. Anglo Coal, Farm Straffontein, Delmas, Mpumalanga. Relocation of 16 graves.

25. Beaurivage, Relocation of 3 graves, Hartebeestpoort, North West Province. Field Director, under WC Nienaber as PI.
26. EIMS, Rescue excavation of 2 graves, Watloo, Pretoria, Gauteng Province.
27. Xtsrata Coal, Phoenix Plant. Relocation of 1 grave.
28. Xstrata Coal, ATCOM East, Relocation of 53 graves.
29. Nkomati Mine, near Badplaas, Mpumalanga Province. Relocation of 32 graves (Phase 2).
30. Nkomati Mine, Badplaas Mpumalanga. Relocation of 25 graves (Phase 3).
31. Hatch-Goba, Coega, Port Elizabeth. Relocation of 25 graves (Phase 1).
32. Hillary Construction on behalf of SANRAL, Kroonstad, Free State Province. Relocation of 55 graves.
33. Transnet SOC Limited, Coega, Port Elizabeth. Relocation of 56 graves (Phase 1).
34. Transnet SOC Limited, Coega, Port Elizabeth. Relocation of 180 graves (Phase 2) (Current)
35. Glencore, Tweefontein Optimisation Project, Mpumalanga Province. Relocation of 828 graves (Current).

EMPLOYMENT SUMMARY

Positions Held

1997-2000
Member – Archaeo-Info cc

2000 - 2010
Member – Archaeology Africa cc

2003-Current
Managing Director - Professional Grave Solutions (Pty) Ltd

Countries of work experience:

- South Africa
- Botswana
- Swaziland