DELRON ENVIRONMENTAL: PROPOSED ESTABLISHMENT OF 9 MONDI AGRI-VILLAGES FOR THE MKHONDO MONDI DEVELOPMENT PARTNERSHIP, GREATER PIET RETIEF, MPUMALANGA PROVINCE

Archaeological Impact Assessment

An EOH Company

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ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) OF AREAS DEMARACTED FOR THE ESTABLISHMENT OF 9 MONDI AGRI-VILLAGES, GREATER PIET RETIEF AREA, MPUMALANGA PROVINCE

June 2015

Conducted on behalf of:

Delron Environmental
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Exigo Sustainability promotes the conservation of sensitive archaeological and heritage resources and therefore uncompromisingly adheres to relevant Heritage Legislation (National Heritage Resources Act no. 25 of 1999, Human Tissue Act 65 of 1983 as amended, Removal of Graves and Dead Bodies Ordinance no. 7 of 1925, Excavations Ordinance no. 12 of 1980). In order to ensure best practices and ethics in the examination, conservation and mitigation of archaeological and heritage resources, Exigo Sustainability follows the Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment as set out by the South African Heritage Resources Agency (SAHRA) and the CRM section of the Association for South African Professional Archaeologists (ASAPA).

DECLARATION

I, Nelius Le Roux Kruger, declare that –

- I act as the independent specialist;
- I am conducting any work and activity relating to the proposed Mondi Agri-Villages Project in an objective manner, even if this results in views and findings that are not favourable to the client;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have the required expertise in conducting the specialist report and I will comply with legislation, including the relevant Heritage Legislation (National Heritage Resources Act no. 25 of 1999, Human Tissue Act 65 of 1983 as amended, Removal of Graves and Dead Bodies Ordinance no. 7 of 1925, Excavations Ordinance no. 12 of 1980), the Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment (SAHRA, AMAFA and the CRM section of ASAPA), regulations and any guidelines that have relevance to the proposed activity;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this declaration are true and correct.

_____

Signature of specialist
Company: Exigo Sustainability
Date: 2 June 2015

EXECUTIVE SUMMARY

This report details the results of an Archaeological Impact Assessment (AIA) study in the larger Piet Retief area for the establishment of 9 Agri-Villages, subject to an Enviromental Impact Assessment (BA) for the proposed Mondi Agri-Villages. The project entails the establishment of Agri-Villages at Athalia, E'Thandaukhanya, Glen Eland, Hartebeest Mdukazane, New Plaas B and New Plaas Kalambaso, Riverside, Sluis, Speenkoppies and Watersmeet A & B. The AIA was conducted subject to requirements as set out by the National Environmental Management Act (Act 107 of 1998), the National Heritage Resources Act (NHRA - Act 25 of 1999). The report includes background information on the area's archaeology, its representation in southern Africa, and the history of the larger area under investigation, survey methodology and results as well as heritage legislation and conservation policies. A copy of the report will be supplied to the provincial heritage agency (NC-PHRA) and recommendations contained in this document will be reviewed.

A number of archaeological and historical studies have been conducted in the Mpumalanga Province. These studies all infer a rich and diverse archaeological landscape. Sites, documenting Earlier, Middle and Later Stone Age habitation occur across the province, mostly in open air locales or in sediments alongside rivers or pans. In addition, a wealth of Later Stone Age rock art sites, most of which are in the form of rock engravings are to be found in the larger landscape. These sites occur on hilltops, slopes, rock outcrops and occasionally in river beds. Later, Bantu-speaking tribes moved into this area from the northern parts of Southern Africa and settled here. These were presumably Sotho-Tswana herder groups. Various historians and ethnographers describe that the Lowveld was frequented by Swazi and Sotho-Tswana groups during historic times i.e. Late Iron Age times during the period AD 1500-1800. Historical trade routes were well established before the period of Colonial expansion and these routes mainly existed as a direct consequence of metallurgy and mining for iron, tin, copper and some gold to make weapons, agricultural equipment and ornaments. During the nineteenth century the Lowveld area of Mpumalanga was extensively settled by both Bantu and European groups that migrated into this area.

Despite the fact that the proposed Mondi Agri-Villages Project areas are situated in landscapes that have, in places been sterilised of potential heritage resources, especially those dating to pre-Colonial and prehistoric times, a number of sites of interest were identified.

- The remains of a possible Historical Period stone wall enclosure occurs at Riverside (**EXIGO-RS-HP01**) away from development areas and no impact is foreseen on this resources. No further mitigation or management actions are required for the site.

- The remains of number of Historical Period collapsed stone wall structures were documented at Athalia **(EXIGO-AT-HP02, EXIGO-AT-HP03**) and ruins of a modern rectangular brick and concrete house were noted at Speenkoppies **(EXIGO-SK-HP01**). These features occur within development areas but the sites are of low significance no further mitigation or management actions are required.

- The remains of a possible Historical Period floor structure and stone wall features at Athalia (**EXIGO-AT-HP01**), a dilapidated cattle enclosure and a livestock dipping tank at New Plaas B (**EXIGO-NB-HP01, EXIGO-NB-HP02**), stone wall enclosures at Riverside (**EXIGO-RS-HP01**) and Watersmeet Farm B (**EXIGO-WB-HP01**), as well as a well preserved rectangular stone house at E'Thandaukhanya (**EXIGO-TH-HP01**) are of medium-low and medium significance respectively. These sites occur within

development areas and it is recommended that the sites be monitored in order to avoid the destruction of previously undetected heritage remains. Should the sites be impacted on by development they should be adequately documented (mapped, described and contextualised by means of a desktop study) and the necessary destruction permits should be obtained from the relevant Heritage Resources Authorities).

- Human burials are highly significant and sensitive at all levels for their spiritual, social and cultural value. Burial sites were document at Athalia (**EXIGO-AT-BP03**), E'Thandaukhanya (**EXIGO-TH-BP01, EXIGO-TH-BP02**), Glen Eland (**EXIGO-GE-BP01, EXIGO-GE-BP02**), Hartebeest Mdukazane (**EXIGO-HM-BP01, EXIGO-HM-BP05**), New Plaas Kalambaso (**EXIGO-NK-BP01**), New Plaas B (**EXIGO-NB-BP01**), Riverside (**EXIGO-RS-BP01**), Watersmeet Farm A (**EXIGO-WA-BP02, EXIGO-WA-BP03**) and Watersmeet Farm B (**Site EXIGO-WB-BP01)** but these sites occur away from development areas. It is nonetheless recommended that all burials be fenced off and that the sites be monitored to avoid impact on the resources.

- Graves and burials identified at Athalia (**EXIGO-AT-BP01, EXIGO-AT-BP02, EXIGO-AT-BP04** through **EXIGO-AT-BP28**), Glen Eland (**EXIGO-GE-BP03**), Hartebeest Mdukazane (**EXIGO-HM BP02, EXIGO-HM-BP03, EXIGO-HM-BP04**), Sluis (**EXIGO-SL-BP01**) and Watersmeet Farm A (**EXIGO-WA-BP01**) occur within development areas. In most of these cases, the graves and cemeteries are situated within settlements, often around or very close to homesteads and homestead buildings, roads and other infrastructure. These locations of human burials in the Agri-Village footprints present challenges in terms of the conservation and management of these sensitive heritage receptors. As a primary measure, SAHRA guidelines require a 50m conservation buffer for all burials but the implementation of this guideline will prove problematic and impractical in a number of instances considering the locations of many of the burials, as noted above. In such cases , human burials occurring in close vicinity to existing settlement and infrastructure and / or existing infrastructure to be upgraded for the Agri-Village project, should be fenced off and conserved and a conservation buffer of at least 2m be maintained around the heritage receptors. Note that this recommended relaxation of the standard 50m buffer for burials near existing settlement or infrastructure is subject to approval by SAHRA. Where possible, it is recommended that the standard conservation buffer zone of 50m around burials should be applied in the Agri-Villages. It is recommended that all burials, irrespective of their placement in the Agri-Villages be fenced off, conserved and that access control is applied during development stages. The developer should carefully liaise with the heritage specialist and SAHRA with regards to the restoration or renovations of any human grave or cemetery. Should impact on any human burial prove inevitable, full grave relocations are recommended for these burial grounds. This measure should be undertaken by a qualified archaeologist, and in accordance with relevant legislation and subject to any local and regional provisions and laws and by-laws pertaining to human remains. A full social consultation process should occur in conjunction with the mitigation of cemeteries and burials.

- Generally, a careful watching brief monitoring process is recommended whereby an informed ECO inspect the construction sites on regular basis in order to monitor possible impact on heritage resources. Should any subsurface paleontological, archaeological or historical material or heritage resources be exposed during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately

Mondi Agri-Villages Project: Documented Site Locations:

Village Name	Site Code	Short Description	Coordinate S E
Athalia	Site EXIGO-AT-HP01	Possible Historical Period Structure	S26.97059° E30.93788°
	Site EXIGO-AT-HP02	Possible Historical Period Structure	S26.97070° E30.92622°
	Site EXIGO-AT-HP03	Possible Historical Period Structure	S26.97076° E30.92918
	Site EXIGO-AT-BP01	Human Burial / Grave	S26.97110° E30.93784°
	Site EXIGO-AT-BP02	Human Burial / Grave	S26.96934° E30.93359°
	Site EXIGO-AT-BP03	Human Burial / Grave	S26.97636° E30.92590°
	Site EXIGO-AT-BP04	Human Burial / Grave	S26.97494° E30.92571°
	Site EXIGO-AT-BP05	Human Burial / Grave	S26.97460° E30.92832°
	Site EXIGO-AT-BP06	Human Burial / Grave	S26.97434° E30.92815°
	Site EXIGO-AT-BP07	Human Burial / Grave	S26.97359° E30.92730°
	Site EXIGO-AT-BP08	Human Burial / Grave	S26.97336° E30.92654°
	Site EXIGO-AT-BP09	Human Burial / Grave	S26.97303° E30.92537°
	Site EXIGO-AT-BP10	Human Burial / Grave	S26.97181° E30.92699°
	Site EXIGO-AT-BP11	Human Burial / Grave	S26.97175° E30.92728°
	Site EXIGO-AT-BP12	Human Burial / Grave	S26.97150° E30.92659°
	Site EXIGO-AT-BP13	Human Burial / Grave	S26.97064° E30.92632°
	Site EXIGO-AT-BP14	Human Burial / Grave	S26.96947° E30.92663°
	Site EXIGO-AT-BP15	Human Burial / Grave	S26.96958° E30.92694°
	Site EXIGO-AT-BP16	Human Burial / Grave	S26.96989° E30.92698°
	Site EXIGO-AT-BP17	Human Burial / Grave	S26.96997° E30.92752°
	Site EXIGO-AT-BP18	Human Burial / Grave	S26.97020° E30.92785°
	Site EXIGO-AT-BP19	Human Burial / Grave	S26.97047° E30.92789°
	Site EXIGO-AT-BP20	Human Burial / Grave	S26.97081° E30.92882°
	Site EXIGO-AT-BP21	Human Burial / Grave	S26.97038° E30.92878°
	Site EXIGO-AT-BP22	Human Burial / Grave	S26.97012° E30.92881°
	Site EXIGO-AT-BP23	Human Burial / Grave	S26.96974° E30.92901°
	Site EXIGO-AT-BP24	Human Burial / Grave	S26.96965° E30.92931°
	Site EXIGO-AT-BP25	Human Burial / Grave	S26.97001° E30.92975°
	Site EXIGO-AT-BP26	Human Burial / Grave	S26.97024° E30.92921°
	Site EXIGO-AT-BP27	Human Burial / Grave	S26.97051° E30.92933°
	Site EXIGO-AT-BP28	Human Burial / Grave	S26.96865° E30.92823°
E'Thandaukhanya	Site EXIGO-TH-HP01	Possible Historical Period Structure	S27.04231° E30.86033°
	Site EXIGO-TH-BP01	Human Burial / Grave	S27.04583° E30.85943°
	Site EXIGO-TH-BP02	Human Burial / Grave	S27.04863° E30.86222°
Glen Eland	Site EXIGO-GE-BP01	Human Burial / Grave	S26.67373° E30.50557°
	Site EXIGO-GE-BP02	Human Burial / Grave	S26.65675° E30.49648°
	Site EXIGO-GE-BP03	Human Burial / Grave	S26.66053° E30.48863°

Hartebeest Mdukazane	SiteEXIGO-HM-BP01	Human Burial / Grave	S26.80768° E30.49586°
	Site EXIGO-HM-BP02	Human Burial / Grave	S26.80209° E30.49416°
	Site EXIGO-HM-BP03	Human Burial / Grave	S26.80189° E30.49578°
	Site EXIGO-HM-BP04	Human Burial / Grave	S26.80186° E30.49611°
	Site EXIGO-HM-BP05	Human Burial / Grave	S26.79835° E30.49835°
New Plaas Kalambaso	Site EXIGO-NK-BP01	Human Burial / Grave	S26.72349° E30.61364°
New Plaas B	Site EXIGO-NB-HP01	Possible Historical Period Structure	S26.72813° E30.59484°
	Site EXIGO-NB-HP02	Possible Historical Period Structure	S26.72854° E30.59587°
	Site EXIGO-NB-BP01	Human Burial / Grave	S26.73093° E30.59493°
Riverside	Site EXIGO-RS-HP01		S26.82958° E30.71606°
	Site EXIGO-RS-BP01	Human Burial / Grave	S26.83556° E30.71641°
Sluis	Site EXIGO-SL-BP01	Human Burial / Grave	S26.81928° E30.47566°
Speenkoppies	Site EXIGO-SK-HP01	Possible Historical Period Structure	S27.12996° E30.89578°
Watersmeet Farm A	Site EXIGO-WA-BP01	Human Burial / Grave	S26.79251° E30.62292°
	Site EXIGO-WA-BP02	Human Burial / Grave	S26.78741° E30.62085°
	Site EXIGO-WA-BP03	Human Burial / Grave	S26.79198° E30.61638°
Watersmeet Farm B	Site EXIGO-WB-HP01	Possible Historical Period Structure	S26.80874° E30.59982°
	Site EXIGO-WB-BP01	Human Burial / Grave	S26.80483° E30.59902°

Heritage Resources occur outside and within areas proposed for development of the 9 Mondi Agri-Villages. In the opinion of the author of this Archaeological Impact Assessment Report, the proposed Mondi Agri-Villages Project may proceed from a culture resources management perspective, provided that mitigation measures as endorsed by the relevant Heritage Resources Agency are implemented.

It is essential that cognisance be taken of the larger archaeological landscape of the Mpumalanga Province in order to avoid the destruction of previously undetected heritage sites. Water sources such as pans, drainage lines and rivers should also be regarded as potentially sensitive in terms of possible Stone Age deposits. Should any previously undetected heritage resources be exposed or uncovered during construction phases of the proposed project, these should immediately be reported to SAHRA.

Since the intrinsic heritage and social value of graves and cemeteries are highly significant, these resources require special management measures. Should human remains be discovered at any stage, these should be reported to the Heritage Specialist and relevant authorities (SAHRA) and development activities should be suspended until the site has been inspected by the Specialist. The Specialist will advise on further management actions and possible relocation of human remains in accordance with the Human Tissue Act (Act 65 of 1983 as amended), the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925), the National Heritage Resources Act (Act no. 25 of 1999) and any local and regional provisions, laws and by-laws pertaining

to human remains. A full social consultation process should occur in conjunction with the mitigation of cemeteries and burials.

This report details the methodology, limitations and recommendations relevant to these heritage areas, as well as areas of proposed development. It should be noted that recommendations and possible mitigation measures are valid for the duration of the development process, and mitigation measures might have to be implemented on additional features of heritage importance not detected during this Phase 1 assessment (e.g. uncovered during the construction process).

NOTATIONS AND TERMS/TERMINOLOGY

Absolute dating:

Absolute dating provides specific dates or range of dates expressed in years.

Archaeology:

The study of the human past through its material remains.

Archaeological record:

The archaeological record minimally includes all the material remains documented by archaeologists. More comprehensive definitions also include the record of culture history and everything written about the past by archaeologists.

Artefact:

Entities whose characteristics result or partially result from human activity. The shape and other characteristics of the artefact are not altered by removal of the surroundings in which they are discovered. In the southern African context examples of artefacts include potsherds, iron objects, stone tools, beads and hut remains.

Assemblage:

A group of artefacts recurring together at a particular time and place, and representing the sum of human activities.

^{14}C or radiocarbon dating:

The ^{14}C method determines the absolute age of organic material by studying the radioactivity of carbon. It is reliable for objects not older 70 000 years by means of isotopic enrichment. The method becomes increasingly inaccurate for samples younger than ±250 years.

Ceramic Facies:

In terms of the cultural representation of ceramics, a facies is denoted by a specific branch of a larger ceramic tradition. A number of ceramic facies thus constitute a ceramic tradition.

Ceramic Tradition:

In terms of the cultural representation of ceramics, a series of ceramic units constitutes as ceramic tradition.

Context:

An artefact's context usually consists of its immediate *matrix*, its *provenience* and its *association* with other artefacts. When found in *primary context*, the original artefact or structure was undisturbed by natural or human factors until excavation and if in *secondary context,* disturbance or displacement by later ecological action or human activities occurred.

Culture:

A contested term, "culture" could minimally be defined as the learned and shared things that people have, do and think.

Cultural Heritage Resource:

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

Cultural landscape:

A cultural landscape refers to a distinctive geographic area with cultural significance.

Cultural Resource Management (CRM):

A system of measures for safeguarding the archaeological heritage of a given area, generally applied within the framework of legislation designed to safeguard the past.

Ecofact:

Non artefactual material remains that has cultural relevance which provides information about past human activities. Examples would include remains or evidence of domesticated animals or plant species.

Excavation:
The principal method of data acquisition in archaeology, involving the systematic uncovering of archaeological remains through the removal of the deposits of soil and the other material covering and accompanying it.

Feature:
Non-portable artefacts, in other words artefacts that cannot be removed from their surroundings without destroying or altering their original form. Hearths, roads, and storage pits are examples of archaeological features

GIS:
Geographic Information Systems are computer software that allows layering of various types of data to produce complex maps; useful for predicting site location and for representing the analysis of collected data within sites and across regions.

Historical archaeology:
Primarily that aspect of archaeology which is complementary to history based on the study of written sources. In the South African context it concerns the recovery and interpretation of relics left in the ground in the course of Europe's discovery of South Africa, as well as the movements of the indigenous groups during, and after the "Great Scattering" of Bantu-speaking groups – known as the *mfecane* or *difaqane*.

Impact: A description of the effect of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

Iron Age:
Also known as "Farmer Period", the "Iron Age" is an archaeological term used to define a period associated with domesticated livestock and grains, metal working and ceramic manufacture.

Lithic:
Stone tools or waste from stone tool manufacturing found on archaeological sites.

Management / Management Actions:
Actions – including planning and design changes - that enhance benefits associated with a proposed development, or that avoid, mitigate, restore, rehabilitate or compensate for the negative impacts.

Matrix:
The material in which an artefact is situated (sediments such as sand, ashy soil, mud, water, etcetera). The matrix may be of natural origin or human-made.

Megalith:
A large stone, often found in association with others and forming an alignment or monument, such as large stone statues.

Midden:
Refuse that accumulates in a concentrated heap.

Microlith:
A small stone tool, typically knapped of flint or chert, usually about three centimetres long or less.

Monolith:
A geological feature such as a large rock, consisting of a single massive stone or rock, or a single piece of rock placed as, or within, a monument or site.

Oral Histories:
The historical narratives, stories and traditions passed from generation to generation by word of mouth.

Phase 1 CRM Assessment:
An Impact Assessment which identifies archaeological and heritage sites, assesses their significance and comments on the impact of a given development on the sites. Recommendations for site mitigation or conservation are also made during this phase.

Phase 2 CRM Study:
In-depth studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including

historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling is required. Mitigation / Rescue involves planning the protection of significant sites or sampling through excavation or collection (in terms of a permit) at sites that may be lost as a result of a given development.

Phase 3 CRM Measure:

A Heritage Site Management Plan (for heritage conservation), is required in rare cases where the site is so important that development will not be allowed and sometimes developers are encouraged to enhance the value of the sites retained on their properties with appropriate interpretive material or displays.

Prehistoric archaeology:

That aspect of archaeology which concerns itself with the development of humans and their culture before the invention of writing. In South Africa, prehistoric archaeology comprises the study of the Early Stone Age, the Middle Stone Age and the greater part of the Later Stone Age and the Iron Age.

Probabilistic Sampling:

A sampling strategy that is not biased by any person's judgment or opinion. Also known as statistical sampling, it includes systematic, random and stratified sampling strategies.

Provenience

Provenience is the three-dimensional (horizontal and vertical) position in which artefacts are found. Fundamental to ascertaining the provenience of an artefact is *association,* the co-occurrence of an artefact with other archaeological remains; and *superposition,* the principle whereby artefacts in lower levels of a matrix were deposited before the artefacts found in the layers above them, and are therefore older.

Random Sampling:

A probabilistic sampling strategy whereby randomly selected sample blocks in an area are surveyed. These are fixed by drawing coordinates of the sample blocks from a table of random numbers.

Relative dating:

The process whereby the relative antiquity of sites and objects are determined by putting them in sequential order but not assigning specific dates.

Remote Sensing:

The small or large-scale acquisition of information of an object or phenomenon, by the use of either recording or real-time sensing device(s) that is not in physical or intimate contact with the object (such as by way of aircraft, spacecraft or satellite). Here, ground-based geophysical methods such as Ground Penetrating Radar and Magnetometry are often used for archaeological imaging.

Rock Art Research:

Rock art can be "decoded" in order to inform about cultural attributes of prehistoric societies, such as dress-code, hunting and food gathering, social behaviour, religious practice, gender issues and political issues.

Scoping Assessment:

The process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addressed in an impact assessment. The main purpose is to focus the impact assessment on a manageable number of important questions on which decision making is expected to focus and to ensure that only key issues and reasonable alternatives are examined. The outcome of the scoping process is a Scoping Report that includes issues raised during the scoping process, appropriate responses and, where required, terms of reference for specialist involvement.

Sensitive:

Often refers to graves and burial sites although not necessarily a heritage place, as well as ideologically significant sites such as ritual / religious places. *Sensitive* may also refer to an entire landscape / area known for its significant heritage remains.

Site (Archaeological):

A distinct spatial clustering of artefacts, features, structures, and organic and environmental remains, as the residue of human activity. These include surface sites, caves and rock shelters, larger open-air sites, sealed sites (deposits) and river deposits. Common functions of archaeological sites include living or habitation sites, kill sites, ceremonial sites, burial sites, trading, quarry, and art sites,

Slag:

The material residue of smelting processes from metalworking.

Stone Age:

An archaeological term used to define a period of stone tool use and manufacture.

Stratigraphy:

This principle examines and describes the observable layers of sediments and the arrangement of strata in deposits

Stratified Sampling:

A probabilistic sampling strategy whereby a study area is divided into appropriate zones – often based on the probable location of archaeological areas, after which each zone is sampled at random.

Systematic Sampling:

A probabilistic sampling strategy whereby a grid of sample blocks is set up over the survey area and each of these blocks is equally spaced and searched.

Tradition:

Artefact types, assemblages of tools, architectural styles, economic practices or art styles that last longer than a phase and even a horizon are describe by the term *tradition*. A common example of this is the early Iron Age tradition of Southern Africa that originated ± 200 AD and came to an end at about 900 AD.

Trigger: A particular characteristic of either the receiving environment or the proposed project which indicates that there is likely to be an *issue* and/or potentially significant *impact* associated with that proposed development that may require specialist input. Legal requirements of existing and future legislation may also trigger the need for specialist involvement.

Tuyère:

A ceramic blow-tube used in the process of iron smelting / reduction.

LIST OF ABBREVIATIONS

Abbreviation	Description
ASAPA	Association for South African Professional Archaeologists
AIA	Archaeological Impact Assessment
BP	Before Present
BCE	Before Common Era
CRM	Culture Resources Management
EC-PHRA	Eastern Cape Provincial Heritage Resources Agency
EIA	Early Iron Age (also Early Farmer Period)
EIA	Environmental Impact Assessment
EFP	Early Farmer Period (also Early Iron Age)
ESA	Earlier Stone Age
GIS	Geographic Information Systems
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
K2/Map	K2/Mapungubwe Period
KZNHA	KwaZulu-Natal Heritage Act of 2008
LFP	Later Farmer Period (also Later Iron Age)
LIA	Later Iron Age (also Later Farmer Period)
LSA	Later Stone Age
MIA	Middle Iron Age (also Early later Farmer Period)
MRA	Mining Right Area
MSA	Middle Stone Age
NHRA	National Heritage Resources Act No.25 of 1999, Section 35
PFS	Pre-Feasibility Study
PHRA	Provincial Heritage Resources Authorities
SAFA	Society for Africanist Archaeologists
SAHRA	South African Heritage Resources Association
YCE	Years before Common Era (Present)

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1 BACKGROUND

1.1 Scope and Motivation

Exigo Sustainability was commissioned by the Delron Environmental for an Archaeological Impact Assessment (AIA) study subject to an Environmental Impact Assessment (EIA) for the proposed Mondi Agri-Villages Project around Piet-Retief in the Mpumalanga Province. The rationale of this AIA is to determine the presence of heritage resources such as archaeological and historical sites and features, graves and places of religious and cultural significance in previously unstudied areas; to consider the impact of the proposed project on such heritage resources, and to submit appropriate recommendations with regard to the cultural resources management measures that may be required at affected sites / features.

1.2 Project Direction

Exigo Sustainability's expertise ensures that all projects be conducted to the highest international ethical and professional standards. As archaeological specialist for Exigo Sustainability, Mr Neels Kruger acted as field director for the project; responsible for the assimilation of all information, the compilation of the final consolidated AIA report and recommendations in terms of heritage resources on the demarcated project areas. Mr Kruger is an accredited archaeologist and Culture Resources Management (CRM) practitioner with the Association of South African Professional Archaeologists (ASAPA), a member of the Society for Africanist Archaeologists (SAFA) and the Pan African Archaeological Association (PAA) as well as a Master's Degree candidate in archaeology at the University of Pretoria.

1.3 Project Brief

Mondi own or lease some 60 000 hectares of forest in the southern portion of Mpumalanga, the majority of which is located in the Mkhondo Municipal area. Some 61 scattered rural villages containing about 2 650 low income households are located within these Mondi holdings. In 2009 Mondi launched an initiative to improve the living conditions and social economic conditions of these residents and entered into a partnership agreement with the Mpumalanga Province, the Gert Sibande District Municipality and the Mkhondo Local Municipality. In terms of this partnership, entitled the Mkhondo Mondi Development Partnership (MMDP), the various parties agreed to work together to implement a programme to improve the livelihood of the households living on Mondi land. The programme functions subject to the following objectives:

- Achieve agrarian transformation and security of tenure for all beneficiaries through the award of freehold title to each beneficiary household and the construction of a top structure on each freehold title unit;
- Create rural employment and income generation opportunities for at least one person in each beneficiary household and provide basic services to all beneficiaries and achievement of self-sustainable food security for beneficiaries;
- Create non-farm related opportunities and activities for at least one person in each beneficiary household; and ring-fence all employment opportunities related to the Rural Livelihood Option for beneficiaries of the Project.

To achieve this set of 9 second generation MMDP Agri-Villages catering for approximately 1 000 households have been identified. The 9 Agri-Villages range in size from 60 to 178 plots and will accommodate some 970 households in total. The villages are Athalia, E'Thandaukhanya, Glen Eland, Hartebeest Mdukazane, New Plaas, Riverside,Sluis, Speenkoppies and Watersmeet (see Site Development Plans on Figure 1-1 to 1-11).

Figure 1-1: Site Development Plan (SDP) for the Athalia Agri-Village as part of the Mondi Agri-Village Project.

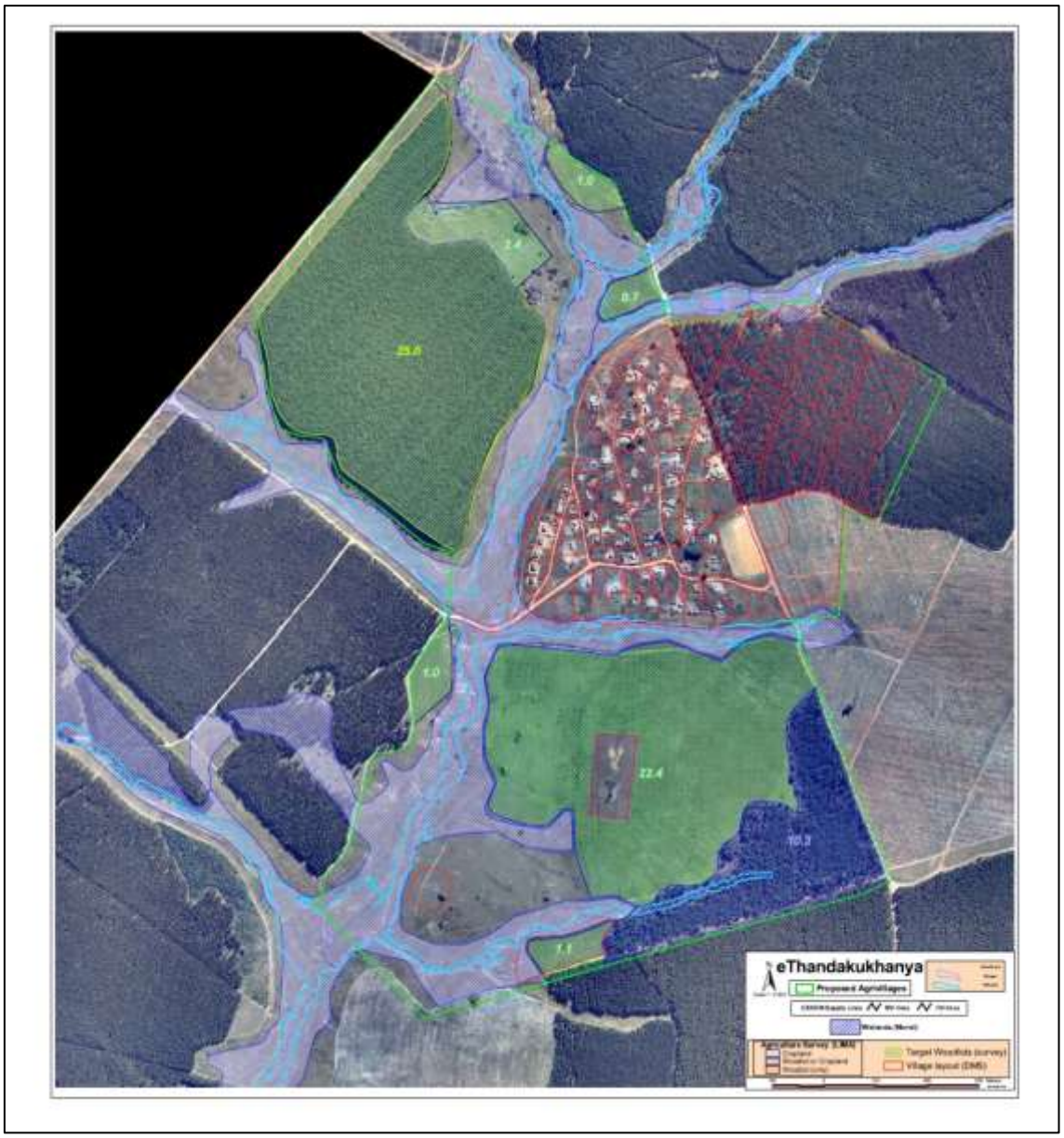

Figure 1-2: Site Development Plan (SDP) for the e'Thandaukhanya Agri-Village as part of the Mondi Agri-Village Project.

Figure 1-3: Site Development Plan (SDP) for the Glen Eland Agri-Village as part of the Mondi Agri-Village Project.

Figure 1-4: Site Development Plan (SDP) for the Hartebeest Mdukazane Agri-Village as part of the Mondi Agri-Village Project.

Figure 1-5: Site Development Plan (SDP) for the New Plaas B Agri-Village as part of the Mondi Agri-Village Project.

Figure 1-6: Site Development Plan (SDP) for the New Plaas Kalmbase Agri-Village as part of the Mondi Agri-Village Project.

Figure 1-7: Site Development Plan (SDP) for the Riverside Agri-Village as part of the Mondi Agri-Village Project.

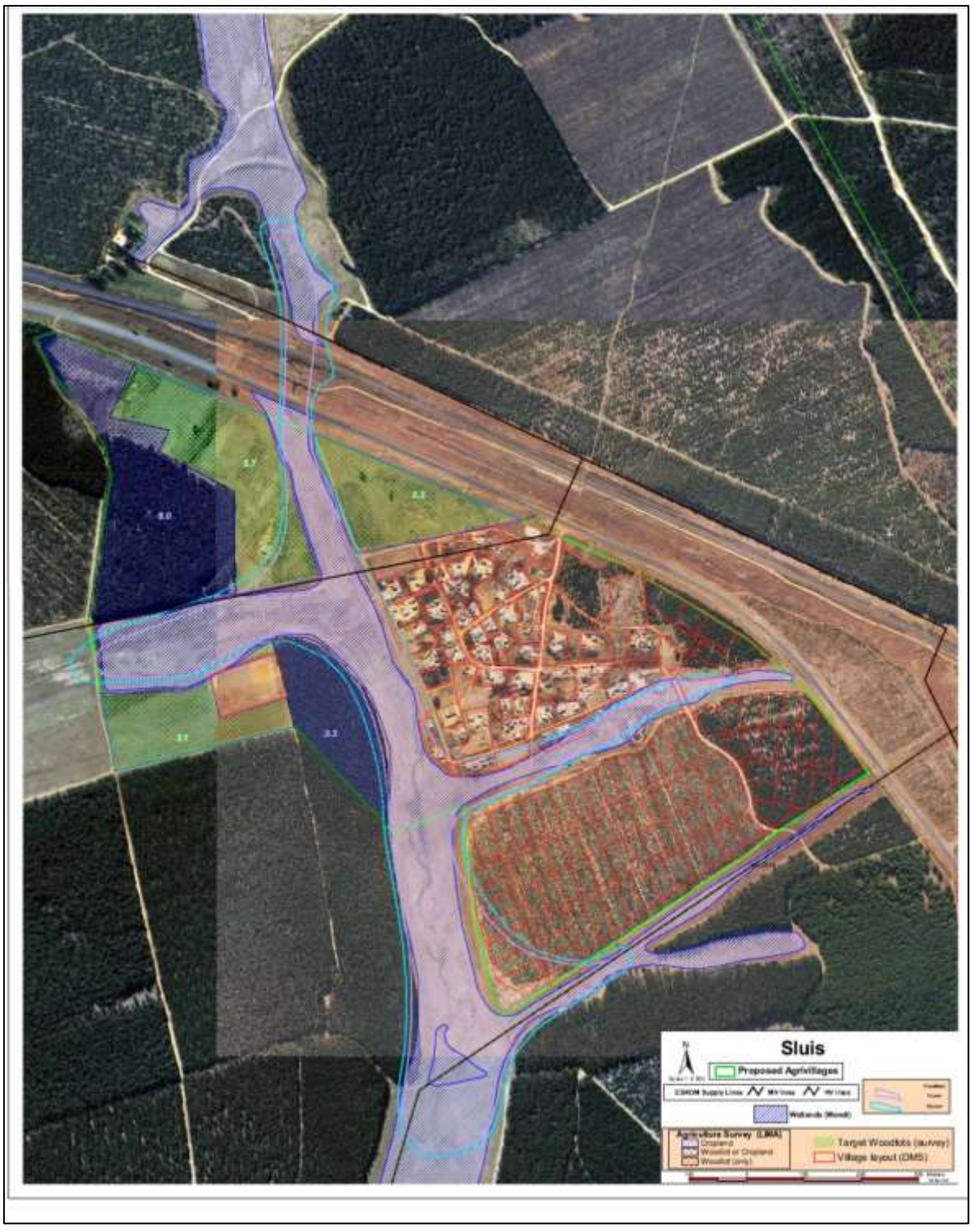

Figure 1-8: Site Development Plan (SDP) for the Sluis Agri-Village as part of the Mondi Agri-Village Project.

Figure 1-9: Site Development Plan (SDP) for the Speenkoppies Agri-Village as part of the Mondi Agri-Village Project.

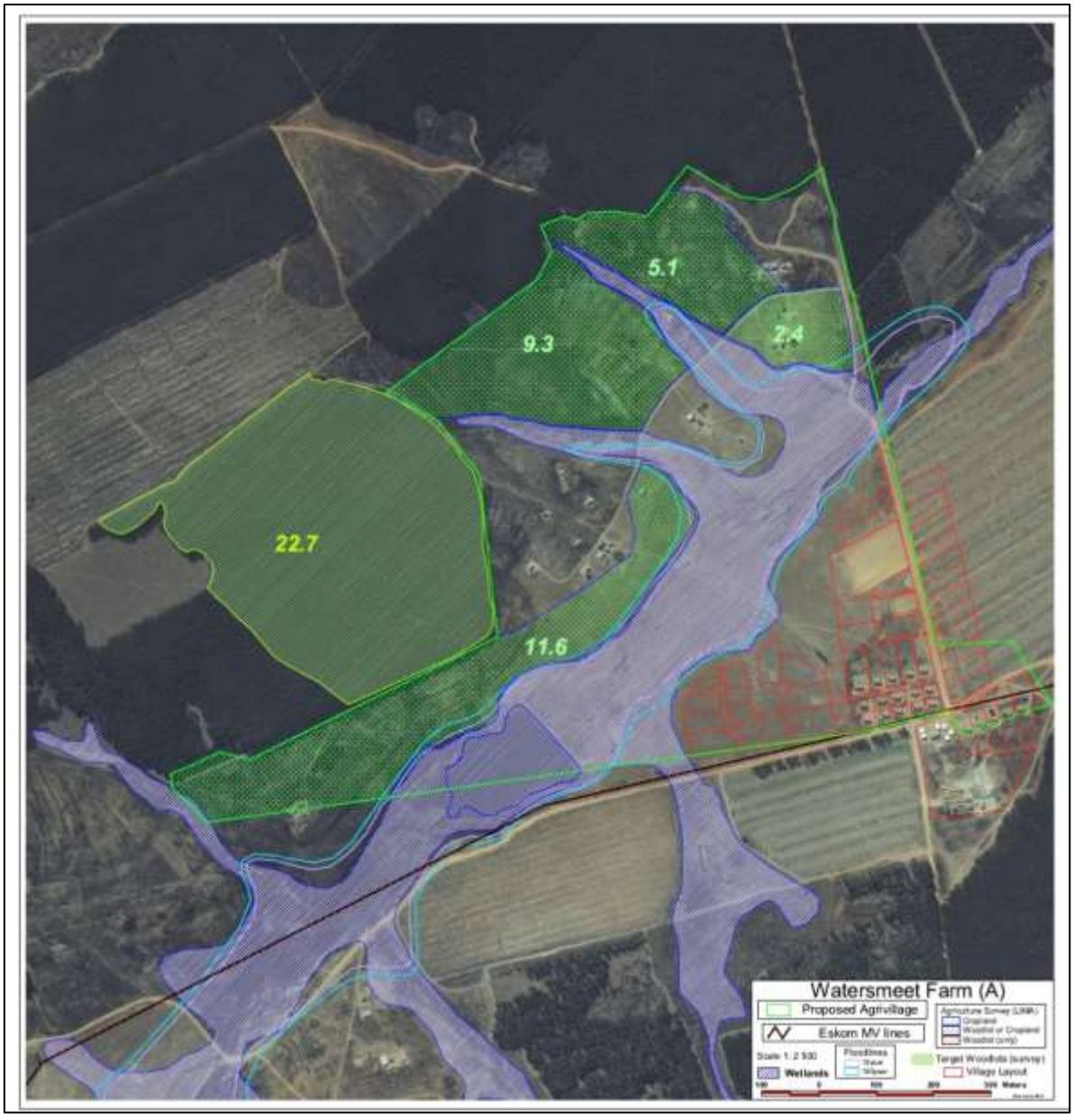

Figure 1-10: Site Development Plan (SDP) for the Watersmeet Farm A Agri-Village as part of the Mondi Agri-Village Project.

Figure 1-11: Site Development Plan (SDP) for the Watersmeet Farm B Agri-Village as part of the Mondi Agri-Village Project.

1.4 Terms of Reference

Heritage specialist input into the Environmental Impact Assessment (EIA) process is essential to ensure that through the management of change, developments still conserve our heritage resources. Heritage specialist input in EIA processes can play a positive role in the development process by enriching an understanding of the past and its contribution to the present. It is also a legal requirement for certain development categories which may have an impact on heritage resources (Refer to Section 2.5.2).

Thus, EIAs should always include an assessment of Heritage Resources. The heritage component of the EIA is provided for in the **National Environmental Management Act, (Act 107 of 1998)** and endorsed by section 38 of the **National Heritage Resources Act (NHRA - Act 25 of 1999)** and the **KwaZulu-Natal Heritage Act (KZNHRA - Act of 2008)**. In addition, the NHRA and the KZNHRA protects all structures and features older than 60 years, archaeological sites and material and graves as well as burial sites. The objective of this legislation is to ensure that developers implement measures to limit the potentially negative effects that the development could have on heritage resources.

Based hereon, this project functioned according to the following **terms of reference for** heritage specialist input**:**

- *Provide detailed updated description of all additional archaeological artefacts, structures (including graves) and settlements which may be affected, if any.*
- *Assess the nature and degree of significance of such resources within the area.*
- *Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance.*
- *Assess any possible impact on the archaeological and historical remains within the area emanating from the proposed development activities.*
- *Propose possible heritage management measures provided that such action is necessitated by the development.*
- *Obtain a comment from the EC-PHRA.*

1.5 CRM: Legislation, Conservation and Heritage Management

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

1.5.1 Legislation regarding archaeology and heritage sites

The South African Heritage Resources Agency (SAHRA) and their provincial offices aim to conserve and control the management, research, alteration and destruction of cultural resources of South Africa. It is therefore vitally important to adhere to heritage resource legislation at all times.

a. National Heritage Resources Act No 25 of 1999, section 35

According to the National Heritage Resources Act of 1999 a historical site is any identifiable building or part thereof, marker, milestone, gravestone, landmark or tell older than 60 years. This clause is commonly known as the "60-years clause". Buildings are amongst the most enduring features of human occupation, and this definition therefore includes all buildings older than 60 years, modern architecture as well as ruins, fortifications and Iron Age settlements. "Tell" refers to the evidence of human existence which is no longer above ground level, such as building foundations and buried remains of settlements (including artefacts).

The Act identifies heritage objects as:

- 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
- any other prescribed category

With regards to activities and work on archaeological and heritage sites this Act states that:

"No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit by the relevant provincial heritage resources authority." (34. [1] 1999:58)

and

"No person may, without a permit issued by the responsible heritage resources authority-

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites. (35. [4] 1999:58)."

and

"No person may, without a permit issued by SAHRA or a provincial heritage resources agency-

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority;

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals (36. [3] 1999:60)."

b. Human Tissue Act of 1983 and Ordinance on the Removal of Graves and Dead Bodies of 1925

Graves 60 years or older are heritage resources and fall under the jurisdiction of both the National Heritage Resources Act and the Human Tissues Act of 1983. However, graves younger than 60 years are specifically protected by the Human Tissues Act (Act 65 of 1983) and the Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) as well as any local and regional provisions, laws and by-laws. Such burial places also fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial MEC as well as the relevant Local Authorities.

1.5.2 Background to HIA and AIA Studies

South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. Heritage sites are frequently threatened by development projects and both the environmental and heritage legislation require impact assessments (HIAs & AIAs) that identify all heritage resources in areas to be developed. Particularly, these assessments are required to make recommendations for protection or mitigation of the impact of the sites. HIAs and AIAs should be done by qualified professionals with adequate knowledge to (a) identify all heritage resources including archaeological and palaeontological sites that might occur in areas of developed and (b) make recommendations for protection or mitigation of the impact on the sites.

The National Heritage Resources Act (Act No. 25 of 1999, section 38) provides guidelines for Cultural Resources Management and prospective developments:

"38. *(1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as:*

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site:

(i) exceeding 5 000 m^2 in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within

the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m^2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development."

And:

"The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

(a) The identification and mapping of all heritage resources in the area affected;

(b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;

(c) an assessment of the impact of the development on such heritage resources;

(d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;

(e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

(f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and

(g) plans for mitigation of any adverse effects during and after the completion of the proposed development (38. [3] 1999:64)."

Consequently, section 35 of the Act requires Heritage Impact Assessments (HIAs) or Archaeological Impact Assessments (AIAs) to be done for such developments in order for all heritage resources, that is, all places or objects of aesthetics, architectural, historic, scientific, social, spiritual, linguistic or technological value or significance to be protected. Thus any assessment should make provision for the protection of all these heritage components, including archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects.Heritage resources management and conservation

1.6 Assessing the Significance of Heritage Resources

Archaeological sites, as previously defined in the National Heritage Resources Act (Act 25 of 1999) are places

in the landscape where people have lived in the past – generally more than 60 years ago – and have left traces of their presence behind. In South Africa, archaeological sites include hominid fossil sites, places where people of the Earlier, Middle and Later Stone Age lived in open sites, river gravels, rock shelters and caves, Iron Age sites, graves, and a variety of historical sites and structures in rural areas, towns and cities. Palaeontological sites are those with fossil remains of plants and animals where people were not involved in the accumulation of the deposits. The basic principle of cultural heritage conservation is that archaeological and other heritage sites are valuable, scarce and *non-renewable.* Many such sites are unfortunately lost on a daily basis through development for housing, roads and infrastructure and once archaeological sites are damaged, they cannot be re-created as site integrity and authenticity is permanently lost. Archaeological sites have the potential to contribute to our understanding of the history of the region and of our country and continent. By preserving links with our past, we may not be able to revive lost cultural traditions, but it enables us to appreciate the role they have played in the history of our country.

- Categories of significance

Rating the significance of archaeological sites, and consequently grading the potential impact on the resources is linked to the significance of the site itself. The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences. The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3 are used when determining the cultural significance or other special value of archaeological or historical sites. In addition, ICOMOS (the Australian Committee of the International Council on Monuments and Sites) highlights four cultural attributes, which are valuable to any given culture:

- *Aesthetic value:*

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria include consideration of the form, scale, colour, texture and material of the fabric, the general atmosphere associated with the place and its uses and also the aesthetic values commonly assessed in the analysis of landscapes and townscape.

- *Historic value:*

Historic value encompasses the history of aesthetics, science and society and therefore to a large extent underlies all of the attributes discussed here. Usually a place has historical value because of some kind of influence by an event, person, phase or activity.

- *Scientific value:*

The scientific or research value of a place will depend upon the importance of the data involved, on its rarity, quality and on the degree to which the place may contribute further substantial information.

- *Social value:*

Social value includes the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a certain group.

It is important for heritage specialist input in the EIA process to take into account the heritage management structure set up by the NHR Act. It makes provision for a 3-tier system of management including the South Africa Heritage Resources Agency (SAHRA) at a national level, Provincial Heritage Resources Authorities (PHRAs) at a provincial and the local authority. The Act makes provision for two types or forms of protection of heritage resources; i.e. formally protected and generally protected sites:

Formally protected sites:

- Grade 1 or national heritage sites, which are managed by SAHRA
- Grade 2 or provincial heritage sites, which are managed by the provincial HRA (EC-PHRA).
- Grade 3 or local heritage sites.

Generally protected sites:

- Human burials older than 60 years.
- Archaeological and palaeontological sites.
- Shipwrecks and associated remains older than 70 years.
- Structures older than 60 years.

With reference to the evaluation of sites, the certainty of prediction is definite, unless stated otherwise and if the significance of the site is rated high, the significance of the impact will also result in a high rating. The same rule applies if the significance rating of the site is low. The significance of archaeological sites is generally ranked into the following categories.

Significance	Rating Action
No significance: sites that do not require mitigation.	None
Low significance: sites, which may require mitigation.	2a. Recording and documentation (Phase 1) of site; no further action required 2b. Controlled sampling (shovel test pits, augering), mapping and documentation (Phase 2 investigation); permit required for sampling and destruction
Medium significance: sites, which require mitigation.	3. Excavation of representative sample, C14 dating, mapping and documentation (Phase 2 investigation); permit required for sampling and destruction [including 2a & 2b]
High significance: sites, where disturbance should be avoided.	4a. Nomination for listing on Heritage Register (National, Provincial or Local) (Phase 2 & 3 investigation); site management plan; permit required if utilised for education or tourism
High significance: Graves and burial places	4b. Locate demonstrable descendants through social consulting; obtain permits from applicable legislation, ordinances and regional by-laws; exhumation and reinterment [including 2a, 2b & 3]

Furthermore, the significance of archaeological sites was based on six 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),
- Social value,
- Uniqueness, and
- Potential to answer current and future research questions.

A fundamental aspect in assessing the significance and protection status of a heritage resource is often whether or not the sustainable social and economic benefits of a proposed development outweigh the conservation issues at stake. When, for whatever reason the protection of a heritage site is not deemed necessary or practical, its research potential must be assessed and mitigated in order to gain data / information, which would otherwise be lost.

2 REGIONAL CONTEXT

2.1 Area Location

The Mondi Agri-Villages Project occurs in the larger Piet Retief area in the Gert Sibande District Municipality, Mpumalanga Province. The town of Piet-Retief is located along three major routes; the N2, R33 and the N543. The individual study areas appear on 1:250000 map sheets 2630 &2730 (see Figure 2-1). More specifically, the study areas are situated generally at the following locations:

Village Name	Farm Name	Physical Address	Physical Location
Athalia	Part of Portion 8 of the Farm Athalie 520-IT	Mkondo Local Municipality	S26.97169° E30.93152°
	Part of Portion 9 of the Farm Athalie 520-IT	Mkondo Local Municipality	
	Part of Portion 11 of the Farm Athalie 520-IT	Mkondo Local Municipality	
	Part of Portion 12 of the Farm Athalie 520-IT	Mkondo Local Municipality	
Ethandakukhanya	Part of Portion 12 of the Farm Potgietershoop 151-HT	Mkondo Local Municipality	S27.04474° E30.86048°
	Remainder of the Farm Potgietershoop 151-HT	Mkondo Local Municipality	
Glen Eland	Part of Portion 11 of the Farm Glen Eland 413-IT	Msukaligwa Local Municipality	S26.66275° E30.49773°
Hartebeestfontein	Remainder of Portion 311 of the Farm Hartebeestfontein 311-IT	Mkondo Local Municipality	S26.80239° E30.49592°
Newplaas A	Part of Portion 3 of the Farm Morgenstond 418-IT	Mkondo Local Municipality	S26.72354° E30.61361°
Newplaas B	Part of the Remainder of the Farm Morgenstond 418-IT	Mkondo Local Municipality	S26.72857° E30.59520°
Riverside	Part of the Remaining Extent of Portion 5 of the Farm Ishlelo 441-IT	Mkondo Local Municipality	S26.83228° E30.71498°
	Part of the Remaining Extent of the Farm Ishlelo 441-IT	Mkondo Local Municipality	
Sluis	Part of the Remainder of the Farm Sluis 354-IT	Mkondo Local Municipality	S26.81935° E30.47572°
Speenkoppies	Part of Portion 1 of the Farm Speenkoppies 179-HT	Mkondo Local Municipality	S27.13007° E30.89583°
Watersmeet A & B	Part of the Remainder of the Farm Springvalley 429-IT	Mkondo Local Municipality	S26.79002° E30.62006°
	Part of Portion 4 of the Farm Pardekop 428-IT	Mkondo Local Municipality	S26.80627° E30.59934°

2.2 Area Description: Receiving Environment

The Mondi Agri-Villages Project is situated within the Mesic Highveld Grassland of the Grassland Biome, in particular within its Eastern Highveld Grassland vegetation unit. The terrain morphology is gently to moderately undulating plains on the Highveld plateau supporting short to medium high, dense, tufted grassland. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover. Both vegetation types have been degraded to a large extent through extensive forestry, agricultural activities and livestock farming. This vegetation type occurs on slightly to moderately undulating plains with short open tree layer with a well-developed grass layer to grass plains with occasional trees at higher altitudes. The gently undulating highland topography is

characterised by gentle rolling grass covered hills. Generally, all study areas has been disturbed in the past through agricultural activities, the development of timber plantations by Mondi, rural residential developments (currently occupied) and power lines and roads

2.3 Site Descriptions

- **Athalia**

The settlement is located 13 km East of Piet Retief. The proposed Agri-Village site intersects with four Mondi owned portions of the farm Athalia 520 IT, Portions 8, 9, 11 and 12. The settlement is currently occupied by 45 households- residing on sites which are predominantly in the 1 000m² to 2 000 m² range. In addition a number of the 41 households in the adjacent settlement of BBS (3.8 km to the north) have indicated an interest in moving to the Athalia Agri-Village. The village is currently served by a borehole equipped with an electrical pump, pumping to a reservoir which reticulates to stand pipes in the village. There is presently no electrical supply to the village but 86 connections have been provided for in the 2015/2016 Mkhondo IDP. Access is through a gravel district road which connects to the Piet Retief Mahamba tarred road. At present the only social facility in the settlement is a soccer field. A preliminary assessment conducted by Dr R Maude using Mondi forestry soils information indicates that the majority of the site is geotechnically able to be developed. There are 15 cattle owners in the village who collectively graze 154 cattle (Approx 125 LSU's) in the village and surrounding Mondi grasslands- The grazing capacity of the village and surrounds has been assessed to be 120 LSU indicating that the grazing is currently slightly overstocked.

- **E'Thandaukhanya**

The settlement is located 6.5 km's South East of Piet Retief. The Agri-Village is located within the Portion 0 of farm Rusverwacht. The settlement is currently occupied by 109 households- residing on sites which are predominantly in the 1 000m² to 1 500 m² range. In addition 23 households in the adjacent settlement of Maraba (2km to the north) have indicated an interest in moving to E'Thandaukhanya whilst 46 households in the Buyers settlement (1.4 km to the East) may wish to move into E'Thandaukhanya, giving estimated village occupancy of **178** households. The village is currently served by 4 boreholes equipped with hand pumps. There is no electrical supply to the village. Access is through gravel roads that traverse the surrounding Mondi plantations. Cell phone reception in the village is good. At present the only social facility in the settlement is a soccer field. A preliminary assessment conducted by Dr R Maude using Mondi forestry soils information indicates that the majority of the site is geotechnically able to be developed. There are 4 cattle owners in the village who collectively graze 68 cattle in the village and surrounds- The grazing capacity of the village and surrounds is currently being assessed

- **Glen Eland**

The settlement is located 16 km west of Amsterdam. The site is currently occupied by 110 in situ households. The proposed Agri-Village site is located on Rem of portion 11 of the farm Glen Eland 414. The village is to be supplied with electricity in the near future. **Social Facilities**- 1 sports field. A preliminary assessment conducted by Dr. R Maude using Mondi forestry soils information indicates that portions of the site are geotechnically able to be developed. Glen Eland is stocked with 180 head of cattle which amounts to 121 Livestock Units (LSU). With the estimated grazing capacity of 4.2ha/LSU the minimum grazing area required is 508ha. The open area is 660ha and therefore there is adequate grazing for the present herd structure and it could be considered understocked.

- **Hartebeest Mdukazane**

The settlement is located 6km North West of Iswepe. The site is currently occupied by 74 in situ households occupying plots which average 2500 m2. A further 36 households may wish to move to Hartebeest Mdukazane (Zoar 2- Driepan Dum Dum 30 and New Compound 4hh.) This indicates an Agri-Village size of approximately 110 households. The proposed Agri-Village site is located within the Farm Hartebeestfontein 311 IT. The village is supplied with electricity. The current water supply is via borehole supply. Three boreholes occur at Mdukazane and equipped with operational hand pumps. A piped treated water supply is planned by the Mkhondo Municipality but the implementation time table is not presently clear. There are no social facilities on the site. The Sibahle combined school is 2 km away in Hartebeest Wema. A preliminary assessment conducted by Dr. R Maude using Mondi forestry soils information indicates that majority of the site is geotechnically able to be developed. There are currently 11 cattle owners resident in the village, owning a total of 151 cattle**.** An assessment of the capacity of the village and surrounding Mondi grasslands is currently underway. A grazing assessment conducted earlier in 2014 concluded that there is potential to increase the stocking levels on the 936 ha of available grazing.

- **New Plaas**

The settlement is located 14.5 km's South West of Amsterdam, abutting the tarred Amsterdam to Panbult road. The proposed Agri-Village site intersects with two Mondi owned portions of the Morgenstond 418 IT, Portions 0 and portion 3. The proposed village site is occupied by 46 in situ households, Households living in surrounding areas who may wish to consolidate in the two identified settlement nodes are Mapongohla (19hh), Kalambaso (32hh) , and Mpumalanga (27hh), giving a planned settlement size of 124 hh. The two proposed settlement areas are currently supplied with water from two boreholes equipped with submersible pumps, which supply 2 reservoirs. The 31 resident cattle owners graze 515 head of cattle in the Mondi grazing lands in the complex. There is a potential to accommodate a further 289 LSU's on the available grazing lands.

- **Riverside**

The settlement is located 20 km's North of Piet Retief, abutting the main R33 connecting Piet Retief to Amsterdam. The proposed Agri-Village site is located on RE/5 and RE of the Farm Ishelo 441IT. The proposed village site is occupied by 28 in situ households, whilst a further 28 households, currently living in scattered iMuzi across the farm, have indicated a desire to relocate into the planned settlement area, giving a planned village size of 56 sites. The village is currently supplied with tanker transported water. However a borehole with a capacity of 84kl/d is located 1km from the village highpoint. There is presently no electrical supply, within the village, but an ESKOM power line is located along the Northern boundary of the village. There are no social facilities on the site. A preliminary assessment conducted by Dr. R Maude using Mondi forestry soils information indicates that the majority of the site is geotechnically able to be developed. Riverside has 253 head of cattle which is 196 LSU. At the estimated grazing capacity of 4.6ha/LSU this farm requires a minimum of 902ha to carry this amount of stock. The open area is 476ha and is therefore overstocked by 100%.

- **Sluis**

The settlement is located adjacent to the N2, 3.5 km from Panbult and 6kms from Iswepe. The average plot size is approx. 1 500 m2 excluding planted mealie fields. The site is occupied by 48 households and a further 20 households currently resident in Zoar (4kms away) wish to relocate to Sluis. The proposed Agri-Village site is located within RE of the Farm Sluis 354. The village does not have electrical supply but 68 electrical connections are planned in the 2015/16 Mkhondo IDP. The current water supply is via borehole supply. There are no social facilities on the site. The Sibahle combined school is 2.3 km away in Hartebeest Wema. A

preliminary assessment conducted by Dr. R Maude using Mondi forestry soils information indicates that the majority of the site is geotechnically able to be developed. There are currently 11 cattle owners resident in the village, owning a total of 120 cattle**.** An assessment of the capacity of the village and surrounding Mondi grasslands is currently underway.

- **Speenkoppies**

The settlement is located 16.5 km's South West of Piet Retief, abutting the tar surfaced rad connecting the N2 to Moolman. The proposed Agri-Village site is located on Portion 1 of the farm Berouw T 7388/1904. The settlement is currently occupied by 37 households- In addition, a number of households in the surrounding settlements of Potgeiterskeuse, Witklip, Langfontein and Witrivier have indicated a potential interest in settling at Speenkoppies indicating a possible total demand for an additional 62 sites. The village is currently served by 1 borehole equipped with a petrol pump. There is presently no electrical supply, within the village, but an ESKOM powerline is located along the southern boundary of the village. The Moolman Combined School is located adjacent to the southern boundary of the village. A preliminary assessment conducted by Dr R Maude using Mondi forestry soils information indicates that the majority of the site is geotechnically able to be developed. There are 3 cattle owners who collectively own 27 cattle. The grazing capacity of the village and surrounds is currently being assessed.

- **Watersmeet**

The settlement is located adjacent 11km North East of Iswepe. The site is currently occupied by 110 in situ households, living for the most part in scattered iMizi across 5 adjacent farms- Springvalley 429IT, Portion 1 of Springvalley, Portion 4 of Paardekop 426 , Portion 2 of Paardekop 426 IT and Paardekop 426. A Restitution Land claim has recently been Gazetted over Portion 2 of Springvalley adjacent to the proposed Watersmeet Agri-Village site. The proposed Agri-Village site is located on Springvalley 429ITand Portion 4 of Paardekop 426. The village is supplied with electricity. The current water supply is via borehole supply. Two boreholes occur at in proximity to the village. One of these has been tested and will be able to produce approximately 21.5 kl per day. A Combined school is located on the site. The geotechnical suitability of the identified site still needs to be confirmed.

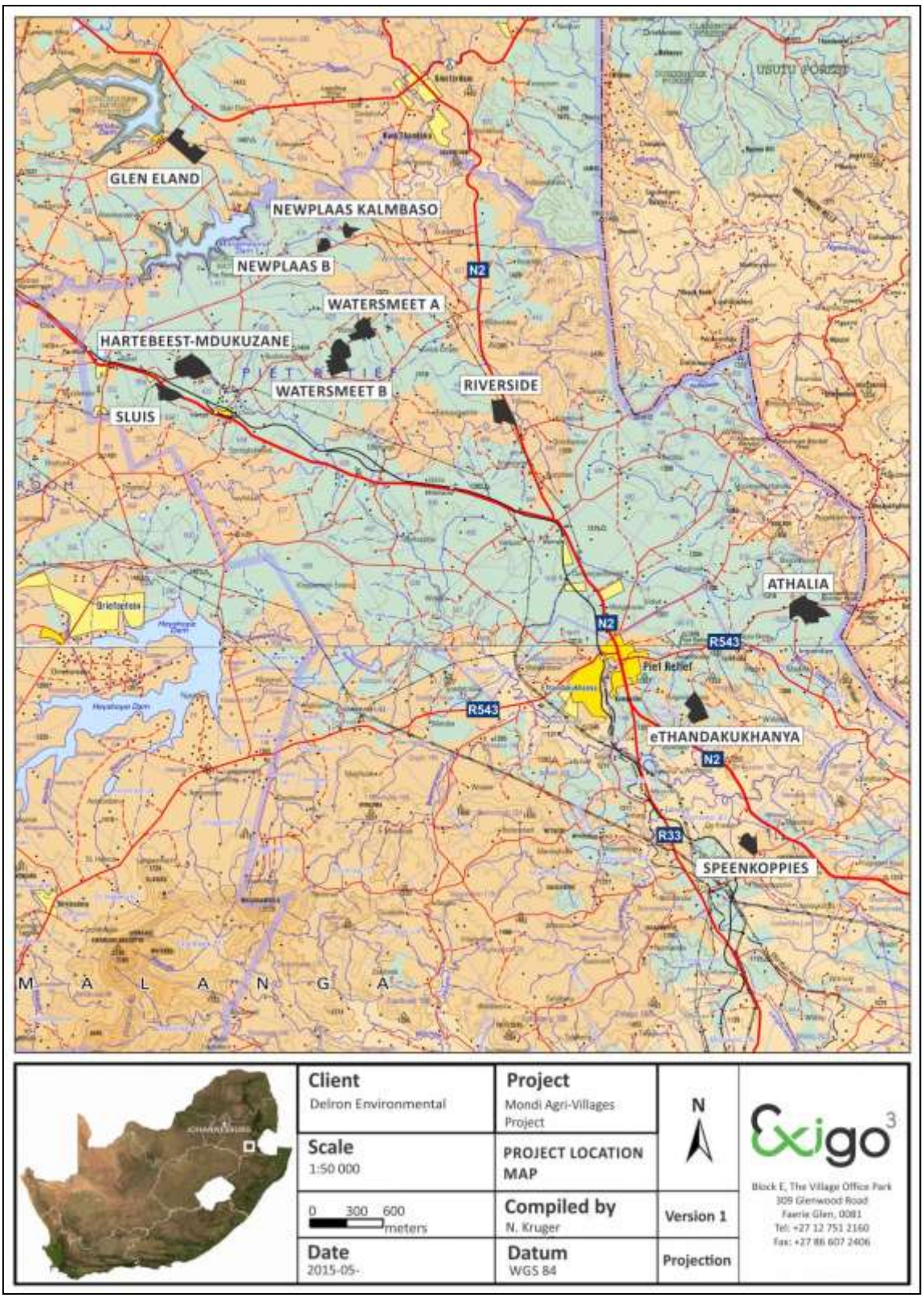

Figure 2-1: 1:250 00 Map representation of the location of the Mondi Agri-Villages Project Areas (sheets 2630 & 2730).

3 METHOD OF ENQUIRY

3.1 Sources of Information

Data from detailed desktop, aerial and field studies were employed in order to sample surface areas systematically and to ensure a high probability of heritage site recording.

3.1.1 Desktop Study

The larger landscape around Piet Retief has not been well documented in terms of its archaeology and history. A desktop study was prepared in order to contextualize the proposed project within a larger historical milieu. The study drew on available unpublished archival databases and unpublished Heritage Assessment reports to give a comprehensive representation of known sites in the study area. Furthermore, numerous academic papers and research articles supplied a historical context for the proposed project and archival sources, aerial photographs, historical maps and local histories were used to create a baseline of the landscape's heritage.

3.1.2 Aerial Representations and Survey

Aerial photography is often employed to locate and study archaeological sites, particularly where larger scale area surveys are performed. This method was applied to assist the foot site surveys where depressions, variation in vegetation, soil marks and landmarks were examined. Specific attention was given to shadow sites (shadows of walls or earthworks which are visible early or late in the day), crop mark sites (crop mark sites are visible because disturbances beneath crops cause variations in their height, vigour and type) and soil marks (e.g. differently coloured or textured soil (soil marks) might indicate ploughed-out burial mounds). Attention was also given to moisture differences, as prolonged dampening of soil as a result of precipitation frequently occurs over walls or embankments. By superimposing high frequency aerial photographs with images generated with Google Earth, potential sensitive areas were subsequently identified, geo-referenced and transferred to a handheld GPS device. These areas served as referenced points from where further vehicular and pedestrian surveys were carried out. From the aerial survey it is evident that certain surface areas subject to the Mondi Agri-Villages Project have been subjected to historical and more recent disturbances and impacts as a result of natural agents as well forestry and agriculture.

3.1.3 Field Survey

Archaeological survey implies the systematic procedure of the identification of archaeological sites. An archaeological survey of the footprint area proposed for the Mondi Agri-Villages Project was conducted in March and April 2015. The process encompassed a systematic field survey in accordance with standard archaeological practice by which heritage resources are observed and documented. In order to sample surface areas systematically and to ensure a high probability of site recording the individual sites identified for each Agri-Village village was systematically surveyed on foot, GPS reference points were visited and random spot checks were made (see detail in previous section). Using a Garmin Montana GPS (constant Estimated Position Error: 4m) objects and structures of archaeological / heritage value were recorded and photographed with a Canon 450D Digital camera. Real time aerial orientation, by means of a mobile Google Earth application was also employed to investigate possible disturbed areas during the survey. As most archaeological material occur in single or multiple stratified layers beneath the soil surface, special attention was given to disturbances, both man-made such as roads and clearings, as well as those made by natural agents such as burrowing animals and erosion.

3.2 Limitations

3.2.1 Access

The town of Piet-Retief is located along three major routes; the N2, R33 and the N543. All of the study areas occur within easy reach of these routes. Smaller regional roads and forestry service routes provided access to most of the sites. Access control is not applied to the areas relevant to this assessment and no restrictions were encountered.

3.2.2 Visibility

The surrounding vegetation around Piet Retief is mostly comprised out of mixed grasslands large scale timber plantations. Even though vegetation has been altered in certain sections of the study areas, pockets of natural vegetation remain. Generally, the study areas were densely overgrown at the time of the AIA site inspection (March & April 2015) and visibility was low to moderate (see Figures 3-1 to 3-11). In single cases during the survey sub-surface inspection was possible. Where applied, this revealed no archaeological deposits.

Figure 3-1: View of general surroundings in Athalia Village at the time of the survey.

Figure 3-2: View of general surroundings in E'Thandaukhanya Village at the time of the survey.

Figure 3-3: View of general surroundings in Glen Eland Village at the time of the survey.

Figure 3-4: View of general surroundings in Hartebeest Mdukazane Village at the time of the survey..

Figure 3-5: View of general surroundings in New Plaas Kalmbaso Village at the time of the survey..

Figure 3-6: View of general surroundings in New Plaas B Village at the time of the survey..

Figure 3-7: View of general surroundings in Riverside Village at the time of the survey.

Figure 3-8: View of general surroundings in Sluis Village at the time of the survey.

Figure 3-9: View of general surroundings in Speenkoppies Village at the time of the survey.

Figure 3-10: View of general surroundings in Watersmeet A Village at the time of the survey.

Figure 3-11: View of general surroundings in Watersmeet B Village at the time of the survey.

3.2.3 Limitations and Constraints

The foot survey for the Mondi Agri-Villages Project AIA primarily focused around areas tentatively identified as sensitive and of high heritage probability (i.e. those noted during the aerial survey) as well as areas of high human settlement catchment.

- **Visibility** proved to be a constraint where surface cover obscured features and surface occurrences.

Yet, even though it might be assumed that survey findings are representative of the heritage landscape of the project area, it should be stated that the possibility exists that individual sites could be missed due to the localised nature of some heritage remains as well as the possible presence of sub-surface archaeology. Therefore, maintaining due cognisance of the integrity and accuracy of the archaeological survey, it should be stated that the heritage resources identified during the study do not necessarily represent all the heritage resources present in the project area. The subterranean nature of some archaeological sites, dense vegetation cover and visibility constraints sometimes distort heritage representations and any additional heritage resources located during consequent development phases must be reported to the Heritage Resources Authority or an archaeological specialist.

3.3 Impact Assessment

For consistency among specialists, impact assessment ratings by AGES Specialist are generally done using the Plomp[1] impact assessment matrix scale supplied by AGES. According to this matrix scale, each heritage receptor in the study area is given an impact assessment. A cumulative assessment for the proposed project is also included.

4 ARCHAEO-HISTORICAL CONTEXT

4.1 The archaeology of Southern Africa

Archaeology in southern Africa is typically divided into two main fields of study, the **Stone Age** and the **Iron Age** or **Farmer Period**. The following table provides a concise outline of the chronological sequence of periods, events, cultural groups and material expressions in Southern African pre-history and history.

Table 1 Chronological Periods across southern Africa

Period	Epoch	Associated cultural groups	Typical Material Expressions
Early Stone Age 2.5m – 250 000 YCE	Pleistocene	Early Hominins: *Australopithecines* *Homo habilis* *Homo erectus*	Typically large stone tools such as hand axes, choppers and cleavers.
Middle Stone Age 250 000 – 25 000 YCE	Pleistocene	First *Homo sapiens* species	Typically smaller stone tools such as scrapers, blades and points.
Late Stone Age 20 000 BC – present	Pleistocene / Holocene	*Homo sapiens sapiens* including San people	Typically small to minute stone tools such as arrow heads, points and bladelets.
Early Iron Age / Early Farmer Period 300 – 900 AD	Holocene	First Bantu-speaking groups	Typically distinct ceramics, bead ware, iron objects, grinding stones.
Middle Iron Age	Holocene	Bantu-speaking groups,	Typically distinct ceramics, bead ware and

[1] Plomp, H.,2004

(Mapungubwe / K2) / early Later Farmer Period 900 – 1350 AD		ancestors of present-day groups	iron / gold / copper objects, trade goods and grinding stones.
Late Iron Age / Later Farmer Period 1400 AD -1850 AD	Holocene	Various Bantu-speaking groups including Venda, Thonga, Sotho-Tswana and Zulu	Distinct ceramics, grinding stones, iron objects, trade objects, remains of iron smelting activities including iron smelting furnace, iron slag and residue as well as iron ore.
Historical / Colonial Period ±1850 AD – present	Holocene	Various Bantu-speaking groups as well as European farmers, settlers and explorers	Remains of historical structures e.g. homesteads, missionary schools etc. as well as, glass, porcelain, metal and ceramics.

4.1.1 The Stone Ages

- **The Earlier Stone Age (ESA)**

The Earlier Stone Age from between 1.5 million and 250 000 years ago refers to the earliest that *Homo sapiens sapiens* predecessors began making stone tools. The earliest stone tool industry was referred to as the Olduwan Industry originating from stone artefacts recorded at Olduvai Gorge, Tanzania. The Acheulian Industry, the predominant southern African Early Stone Age Industry, replaced the Olduwan Industry approximately 1.5 million years ago, is attested to in diverse environments and over wide geographical areas. The hallmark of the Acheulian Industry is its large cutting tools (LCTs or bifaces), primarily handaxes and cleavers. Bifaces emerged in East Africa more than 1.5 million years ago but have been reported from a wide range of areas, from South Africa to northern Europe and from India to the Iberian coast. Earlier Stone Age deposits typically occur on the flood-plains of perennial rivers. These ESA open sites sometimes contain stone tool scatters and manufacturing debris ranging from pebble tool choppers to core tools such as handaxes and cleavers. These groups seldom actively hunted and relied heavily on the opportunistic scavenging of meat from carnivore fill sites. The most well-known Early Stone Age site in southern Africa is Amanzi Springs, situated about 10km north-east of Uitenhage, near Port Elizabeth (Deacon 1970). In a series of spring deposits a large number of stone tools were found in situ to a depth of 3-4m. Wood and seed material preserved remarkably very well within the spring deposits, and possibly date to between 800 000 to 250 000 years old.

- **The Middle Stone Age (MSA)**

The Middle Stone Age (MSA) spans a period from 250 000-30 000 years ago and focuses on the emergence of modern humans through the change in technology, behaviour, physical appearance, art and symbolism. Various stone artefact industries occur during this time period, although less is known about the time prior to 120 000 years ago, extensive systemic archaeological research is being conducted on sites across southern Africa dating within the last 120 000 years (Thompson & Marean 2008). The large handaxes and cleavers were replaced by smaller stone artefactscalled the MSA flake and blade industries. Surface scatters of these flake and blade industries occur widespread across southern Africa although rarely with any associated botanical and faunal remains. It is also common for these stone artefacts to be found between the surface and approximately 50-80cm below ground. Fossil bone may in rare cases be associated with MSA occurrences (Gess 1969). These stone artefacts, like the Earlier Stone Age handaxes are usually observed in secondary context with no other associated archaeological material. The MSA is distinguished from the ESA by the smaller-sized and distinctly different stone artefacts and chaine operatoire (method) used in manufacture, the introduction of other types of artefacts and evidence of symbolic behaviour. The prepared core technique was used for the manufacture of the stone artefacts which display a characteristic facetted striking platform and includes mainly unifacial and bifacial flake bladesand points. The Howiesons Poort Industry (80 000-55 000 years ago) is distinguished from the other

MSA stone artefacts: the size of tools are generally smaller, the range of raw materials include finer-grained rocks such as silcrete, chalcedony, cJartz and hornfels, and include segments, backed blades and trapezoids in thestone toolkit which were sometimes hafted (set or glued) onto handles. In addition to stone artefacts, bone was worked into points, possibly hafted, and used as tools for hunting (Deacon & Deacon 1999). Other types of artefacts that have been encountered in archaeological excavations include tick shell beads, the rim pieces of ostrich eggshell (OES) water flasks, ochre-stained pieces of ostrich eggshell and engraved and scratched ochre pieces, as well as the collection of materials for purely aesthetic reasons. The majority of MSA sites occur on flood plains and sometimes in caves and rock shelters. Sites usually consist of large concentrations of knapped stone flakes such as scrapers, points and blades and associated manufacturing debris. Tools may have been hafted but organic materials, such as those used in hafting, seldom remain preserved in the archaeological record. Limited drive-hunting activities are associated with the MSA.

- **The Later Stone Age (LSA)**

The Later Stone Age (LSA) spans the period from about 20 000 years ago until the colonial era, although some communities continue making stone tools today. The period between 30 000 and 20 000 years ago is referred to as the transition from the MSA to LSA; although there is a lack of crucial sites and evidence that represent this change. By the time of the Later Stone Age the genus Homo, in southern Africa, had developed into *Homo sapiens sapiens*, and in Europe, had already replaced *Homo neanderthalensis*. The LSA is marked by a series of technological innovations, new tools and artefacts, the development of economic, political and social systems, and core symbolic beliefs and rituals. The stone toolkits changed over time according to time-specific needs and raw material availability, from smaller microlithic Robberg, Wilton Industries and in between, the larger Albany/Oakhurst and the Kabeljous Industries. Bored stones used as part of digging sticks, grooved stones for sharpening and grinding and stone tools fixed to handles with mastic also become more common. Fishing equipment such as hooks, gorges and sinkers also appear within archaeological excavations. Polished bone tools such as eyed needles, awls, linkshafts and arrowheads also become a more common occurrence. Most importantly bows and arrows revolutionized the hunting economy. It was only within the last 2000 years that earthenware pottery was introduced, before then tortoiseshell bowls were used for cooking and ostrich eggshell (OES) flasks were used for storing water. Decorative items like ostrich eggshell and marine/fresh water shell beads and pendants were made. Hunting and gathering made up the economic way of life of these communities; therefore, they are normally referred to as hunter-gatherers. Hunter-gatherers hunted both small and large game and gathered edible plant foods from the veld. For those that lived at or close the coast, marine shellfish and seals and other edible marine resources were available for the gathering. The political system was mainly egalitarian, and socially, hunter-gatherers lived in bands of up to twenty people during the scarce resource availability dispersal seasons and aggregated according to kinship relations during the abundant resource availability seasons. Symbolic beliefs and rituals are evidenced by the deliberate burial of the dead and in the rock art paintings and engravings scattered across the southern African landscape. Sites dating to the LSA are better preserved in rock shelters, although open sites with scatters of mainly stone tools can occur. Well-protected deposits in shelters allow for stable conditions that result in the preservation of organic materials such as wood, bone, hearths, ostrich eggshell beads and even bedding material. By using San (Bushman) ethnographic data a better understanding of this period is possible. South African rock art is also associated with the LSA.

4.1.2 The Iron Age Farmer Period

- **Early Iron Age (Early Farming Communities)**

The Early Iron Age (also Early Farmer Period) marks the movement of Bantu speaking farming communities into South Africa at around 200 A.D. These groups were agro-pastoralists that settled in the vicinity of water in order to provide subsistence for their cattle and crops. Artefact evidence from Early Farmer Period sites is mostly found in the form of ceramic assemblages and the origins and archaeological

identities of this period are largely based upon ceramic typologies and sequences, where diagnostic pottery assemblages can be used to infer group identities and to trace movements across the landscape. Early Farmer Period ceramic traditions are classified by some scholars into different "streams" or trends in pot types and decoration that, over time emerged in southern Africa. These "streams" are identified as the Kwale Branch (east), the Nkope Branch (central) and the Kalundu Branch (west). More specifically, in the northern regions of South Africa at least three settlement phases have been distinguished for prehistoric Bantu-speaking agropastoralists. The first phase of the Early Iron Age, known as Happy Rest (named after the site where the ceramics were first identified), is representative of the Western Stream of migrations, and dates to AD 400 - AD 600. The second phase of Diamant is dated to AD 600 - AD 900 and was first recognized at the eponymous site of Diamant in the western Waterberg. The third phase, characterised by herringbone-decorated pottery of the Eiland tradition, is regarded as the final expression of the Early Iron Age (EIA) and occurs over large parts of the North West Province, Northern Province, Gauteng and Mpumalanga. This phase has been dated to about AD 900 - AD 1200. Early Farmer Period ceramics typically display features such as large and prominent inverted rims, large neck areas and fine elaborate decorations. The Early Iron Age continued up to the end of the first millennium AD.

- **Middle Iron Age / K2 Mapungubwe Period (early Later Farming Communities)**

The onset of the middle Iron Age dates back to ±900 AD, a period more commonly known as the Mapungubwe / K2 phase. These names refer to the well known archaeological sites that are today the pinnacle of South Africa's Iron Age heritage. The inhabitants of K2 and Mapungubwe, situated on the banks of the Limpopo, were agriculturalists and pastoralists and were engaged in extensive trade activities with local and foreign traders. Although the identity of this Bantu-speaking group remains a point of contestation, the Mapungubwe people were the first state-organized society southern Africa has known. A considerable amount of golden objects, ivory, beads (glass and gold), trade goods and clay figurines as well as large amounts of potsherds were found at these sites and also appear in sites dating back to this phase of the Iron Age. Ceramics of this tradition take the form of beakers with upright sides and decorations around the base (K2) and shallow-shouldered bowls with decorations as well as globular pots with long necks. (Mapungubwe). The site of Mapungubwe was deserted at around 1250 AD and this also marks the relative conclusion of this phase of the Iron Age.

- **Later Iron Age (Later Farming Communities)**

The late Iron Age of southern Africa marks the grouping of Bantu speaking groups into different cultural units. It also signals one of the most influential events of the second millennium AD in southern Africa, the difaqane. The difaqane (also known as "the scattering") brought about a dramatic and sudden ending to centuries of stable society in southern Africa. Reasons for this change was essentially the first penetration of the southern African interior by Portuguese traders, military conquests by various Bantu speaking groups primarily the ambitious Zulu King Shaka and the beginning of industrial developments in South Africa. Different cultural groups were scattered over large areas of the interior. These groups conveyed with them their customs that in the archaeological record manifest in ceramics, beads and other artefacts. This means that distinct pottery typologies can be found in the different late Iron Age groups of South Africa.

- **Bantu Speaking Groups in the South African interior**

It should be noted that terms such as "Nguni", "Sotho", "Venda" and others refer to broad and comprehensive language groups that demonstrated similarities in their origins and language. It does not imply that these Nguni / Sotho groups were homogeneous and static; they rather moved through the landscape and influenced each other in continuous processes marked by cultural fluidity.

Ethnographers generally divide major Bantu-speaking groups of southern Africa into two broad linguistic groups, the Nguni and the Sotho with smaller subdivisions under these two main groups. Nguni groups were found in the eastern parts of the interior of South Africa and can be divided into the northern Nguni

and the southern Nguni. The various Zulu and Swazi groups were generally associated with the northern Nguni whereas the southern Nguni comprised the Xhosa, Mpondo, Thembu and Mpondomise groups. The same geographically based divisions exist among Sotho groups where, under the western Sotho (or Tswana), groups such as the Rolong, Hurutshe, Kwena, Fokeng and Kgatla are found. The northern Sotho included the Pedi and amalgamation of smaller groups united to become the southern Sotho group or the Basutho. Other smaller language groups such as the Venda, Lemba and Tshonga Shangana transpired outside these major entities but as time progressed they were, however to lesser or greater extend influenced and absorbed by neighbouring groups.

4.1.3 Pastoralism and the last 2000 years

Until 2000 years ago, hunter-gatherer communities traded, exchanged goods, encountered and interacted with other hunter-gatherer communities. From about 2000 years ago the social dynamics of the southern African landscape started changing with the immigration of two 'other' groups of people, different in physique, political, economic and social systems, beliefs and rituals. One of these groups, the Khoekhoe pastoralists or herders entered southern Africa with domestic animals, namely fat-tailed sheep and goats, travelling through the south towards the coast. They also introduced thin-walled pottery common in the interior and along the coastal regions of southern Africa. Their economic systems were directed by the accumulation of wealth in domestic stock numbers and their political make-up was more hierarchical than that of the hunter-gatherers.

4.1.4 Historical and Colonial Times and Recent History

The Historical period in southern Africa encompass the course of Europe's discovery of South Africa and the spreading of European settlements along the East Coast and subsequently into the interior. In addition, the formation stages of this period are marked by the large scale movements of various Bantu-speaking groups in the interior of South Africa, which profoundly influenced the course of European settlement. Finally, the final retreat of the San and Khoekhoen groups into their present-day living areas also occurred in the Historical period in southern Africa.

4.2 The Mpumalanga and Piet-Retief Heritage Landscape: Specific Themes.

In Mpumalanga Province the Drakensberg separates the interior plateau also known as the Highveld from the low-lying subtropical Lowveld which stretches to the Indian Ocean. This fertile landscape has provided resources for humans and their predecessors for more than 1,7million years. As such, the history of Mpumalanga is reflected in a rich archaeological landscape. Sites, documenting Earlier, Middle and Later Stone Age habitation occur across the province, mostly in open air locales or in sediments alongside rivers or pans. In addition, a wealth of Later Stone Age rock art sites, most of which are in the form of rock engravings are to be found in the larger landscape. These sites occur on hilltops, slopes, rock outcrops and occasionally in river beds. Later, Bantu-speaking tribes moved into this area from the northern parts of Southern Africa and settled here. These were presumably Sotho-Tswana herder groups. Various historians and ethnographers describe that the Lowveld was frequented by Swazi and Sotho-Tswana groups during historic times i.e. Late Iron Age times during the period AD 1500-1800. Historical trade routes were well established before the period of Colonial expansion and these routes mainly existed as a direct consequence of metallurgy and mining for iron, tin, copper and some gold to make weapons, agricultural equipment and ornaments. During the nineteenth century the Lowveld area of Mpumalanga was extensively settled by both Bantu and European groups that migrated into this area.

4.2.1 The Earlier and Middle Stone Ages

In South Africa the Earlier Stone Age (ESA) dates from about 2 million to 250000 thousand years ago from

the early to middle Pleistocene. An example in Mpumalanga is Maleoskop on the farm Rietkloof where ESA tools have been found. This is one of only a handful of known ESA sites in the Province. The Middle Stone Age (MSA) has not been extensively studied in Mpumalanga but evidence of this period has been excavated at Bushman Rock Shelter on the farm Klipfonteinhoek in the Ohrigstad district. No Earlier or Middle Stone Age sites are known to occur in the area of development, or close to Piet Retief (Bergh 1999).

4.2.2 The Later Stone Age and Rock Art

The Later Stone Age (LSA) is of importance in geological terms as it marks the transition from the Pleistocene to the Holocene which was accompanied by a gradual shift from cooler to warmer temperatures. This change had its greatest influence on the higher lying areas of South Africa. Later Stone Age (LSA) sites occur both at the coast and inland as caves deposits, rock shelters, open sites and shell deposits. It appears that there is a gap of approximately 4000 years in the Mpumalanga LSA record between 9000 BP and 5000 BP. This may be a result of generally little Stone Age research being conducted in the province. It is, however, also a period known for rapid warming and major climate fluctuation which may have led people to seek out protected environments in this area. The Mpumalanga Stone Age sequence is visible again during the mid-Holocene at the farm Honingklip near Badplaas in the Carolina district (Esterhuizen & Smith in Delius, 2007; Bergh, 1999). These two sites are located on the foothills of the Drakensberg where the climate is warmer than the Highveld but also cooler than the Lowveld (Bergh, 1998). Nearby the sites, dated to between 4870 BP and 200 BP are four panels which contain rock art. Colouring material is present in all the excavated layers of the site which makes it difficult to determine whether the rock art was painted during the mid-or later Holocene. Stone walls at both sites date from the last 250 years of hunter gatherer occupation and they may have served as protection from predators and intruders (Esterhuizen & Smith in Delius, 2007; Bergh, 1998). Some rock paintings are known to occur a few kilometres north of Piet Retief (Bergh 1999).

4.2.3 Iron Age / Farmer Period

The beginnings of the Iron Age (Farmer Period) in southern Africa are associated with the arrival of a new Bantu speaking population group at around the third century AD. These newcomers introduced a new way of life into areas that were occupied by Later Stone Age hunter-gatherers and Khoekhoe herders. Distinctive features of the Iron Age are a settled village life, food production (agriculture and animal husbandry), metallurgy (the mining, smelting and working of iron, copper and gold) and the manufacture of pottery. The period referred to as the Early Iron Age (AD 200-1500 approx.) was initiated with the arrival of presumably Karanga (north-east African) herder groups, who may have been the makers of the famous Lydenburg Heads. These artefacts from the Lydenburg area date to approximately 600AD. These people were Bantu herders and agriculturists and probably populated Southern Africa from areas north -east of the Limpopo River. Some archaeological research was done during the 1970's at sites belonging to the EIA (Early Iron Age), location Plaston, a settlement close to White River (Evers, 1977). Early Iron Age pottery was also excavated by Huffman during 1997 on location where the Riverside Government complex is currently situated (Huffman 1998). This site known as the Riverside site is situated a few kilometres north of Nelspruit next to the confluence of the Nelspruit and Crocodile River. During the early 1970's Evers conducted fieldwork and excavations in the Eastern Transvaal. Two areas were studied, the Letaba area south of the Groot Letaba River, west of the Lebombo Mountains, east of the great escarpment and north of the Olifants River. The second area was the Eastern Transvaal escarpment area between Lydenburg and Machadodorp. The later phases of the Iron Age (AD 1600-1800's) is represented by various tribes including Ndebele, Swazi, BaKoni and Pedi which is characterized by extensive stonewalled settlements found throughout the escarpment and particularly around Lydenburg, Badfontein, Sekhukuneland, Roossenekal and Steelpoort. The Swazi was particularly active in the Lowveld during the difaqane period (1820's) and it

is well- known that they frequently attacked and ousted smaller herder groups like the Pai and Pulana, especially in the area today known as Low's Creek. They were however prevented from settling in the low-lying areas due to the presence of the tsetse fly and malaria. Small, isolated dry-packed stone-walled enclosures found near Nelspruit and surrounding areas may be attributed to these smaller groups who hid away from the Swazi onslaught. The sites were probably not used for extended periods as they were frequently on the move as a result of the onslaught and therefore small, indistinct and with little associated cultural material. No significant Iron Age sites are known to occur directly around Piet Retief (Bergh 1999). However, it is possible that sites dating to the Mzonjani facies of the Urewe Tradition (AD450-750), and the Maguga facies of the Kalundu Tradition (AD1200-1450) could be found in the area (Huffman 2007).

4.2.4 Later History: Colonial Period

During the nineteenth century the Lowveld area of Mpumalanga was extensively settled by both Bantu and European groups that migrated into this area. Bantu migration was mainly as a result of political upheaval during the mfecane ("the crushing" in Nguni). This was a period of bloody tribal and faction struggles in present - day KwaZulu Natal and on the Highveld area, which occurred around the early 1820's until the late 1830's (Bergh, 1998). It came about in response to heightened competition for land and trade, and caused population groups like gun-carrying Griquas and Shaka's Zulus to attack other tribes. During this period, a movement of Swazi people took place to the areas north and northwest of Swaziland. As a result reports indicate that the Swazi were living in the Lowveld area by the 1840's (Bergh, 1998).The conflict during the mfecane, when the Swazi under Mswati II raided these smaller groups, resulted in scattered settlement of those who managed to escape the Swazi onslaught. Evidence of these scattered settlements are sometimes found in the form of small stone walled enclosures in and around Barberton, Nelspruit and onwards to the Schoemanskloof.

4.2.5 Later History: The Voortrekkers

The Voortrekker Groot Trek or ("Great Trek") commenced with the Tregardt-van Rensburg trek in 1835. Permanent European (Voortrekker) settlement of the eastern areas of Mpumalanga can first be traced back to a commission under the leadership of A.H. (Hendrik) Potgieter who negotiated with the Portuguese Governor at Delagoabaai in 1844 for land. It was agreed that these settlers could settle in an area that was four days journey from the east coast of Africa between the 10° and 26° south latitudes. Voortrekkers migrated into the area in 1845. Due to internal strife and differences between the various Voortrekker groups that settled in the broader Transvaal region, the settlers in the Ohrigstad area now governed from the town of Lydenburg decided to secede from the Transvaal Republic in 1856. The Republic of Lydenburg laid claim to a large area that included not only the land originally obtained from the Pedi Chief Sekwati in 1849 but also other areas of land negotiated for from the Swazis. The Republic of Lydenburg was a vast area and stretched from the northern Strydpoort Mountains to Wakkerstroom in the south and Bronkhortspruit in the west to the Swazi border and the Lebombo mountains east.

4.2.6 Later History: Piet Retief

The town of Piet Retief was proclaimed on 20 November 1882, on land obtained from a local Swazi chief on the farms Osloop and Geluk. The surveying of the erven however only started in 1884 (Bergh, 1999).The town was named after a Voortrekker Leader, Piet Retief (1780-1838) who was murdered by Dingane, the half-brother of Shaka, King of the Zulu nation. He was born in the Wagenmakersvallei (Wellington) in the Western Cape. He later became a activist for freedom of the Voortrekkers and led a group of them northwards during the Great Trek during 1937/38. Retief and his following left the Tugela region on 28 January 1938 to negotiate with Dingane for permanent boundaries in Natal for their settlement. The deed

of cession of the Tugela Umzimvubu region was signed by Dingane on 6 February 1838 after which Dingane invited Retief and his party of around 100 people for the viewing of a special ceremony. They were taken to a hill known as kwaMatiwane where they were all executed. The first missionaries from Sweden erected a missionary in Piet Retief in 1905, today known as the Mission House. In the 19th century Piet Retief acted as a buffer between groups where constant infringements and hostilities occurred between Zulu and Swazi Impies. In addition, Boers groups were looking to extend their farming interests to the north and to the south. Finally, the British were looking to extend the Empire in all areas. During the Anglo -Zulu War of 1879 a number of historic events also took place in the area. The area known as the 'disputed territory' was the site of several skirmishes during the war. The most important incident was the Battle of Entombe Drift which took place at dawn on 12 March 1879. Although no battles or skirmishes took place in this area during the Anglo- Boer War (1899-1902), both Boer and German settlers were involved, with many of the women and children being interned in concentration camps in Volksrust. The men took part in action further south.

4.2.7 Burial Sites / Human Remains

Human remains and burials are commonly found close to archaeological sites; they may be found in "lost" graveyards, or occur sporadically anywhere as a result of prehistoric activity, victims of conflict or crime. It is often difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface. Human remains are usually observed when they are exposed through erosion. In some instances packed stones or rocks may indicate the presence of informal pre-colonial burials. If any human bones are found during the course of construction work then they should be reported to an archaeologist and work in the immediate vicinity should cease until the appropriate actions have been carried out by the archaeologist. Where human remains are part of a burial they would need to be exhumed under a permit from either SAHRA (for pre-colonial burials as well as burials later than about AD 1500).

5 RESULTS: ARCHAEOLOGICAL SURVEY

The proposed Mondi Agri-Villages Project areas are situated in landscapes that have, in places been sterilised of potential heritage resources, especially those dating to pre-Colonial and prehistoric times. Still, a large number of heritage occurrences of interest were identified in the Mondi Agri-Villages Project study areas (see Figure 5-53 to Figure 5-63).

5.1 The Stone Age

No Stone Age occurrences were observed in any of the survey areas in the proposed Mondi Agri-Villages.

5.2 The Iron Age Farmer Period

No Iron Age (Farmer Period) occurrences were observed of the survey areas in the proposed Mondi Agri-Villages.

5.3 Historical / Colonial Period

A number of features and structures possibly were within the boundaries of a number of villages in the study area. Even though temporal contexts for the structures could not be ascertained, it might be assumed that, generally the features probably date to the late 19th and 20th centuries. These inferences are based on the following observations:

- Even though of low quality and resolution, aerial imagery dating to the first part of the 20th century suggests that the structures were present in the landscape in the early 1900's.
- As a general rule, southern African Iron Age farming communities constructed irregular circular

stock enclosures. Squarely built enclosures only appear consequent to Colonial contact, which implies that cattle kraals identified in the villages did not belong to Iron Age stock farmers, but rather later more recent family units.

- The close proximity of many of the features to other similar homesteads currently in use, might suggest that these sites were occupied during early phases of the same occupational period of current homesteads in the area.

5.3.1 Athalia Village

- **Site EXIGO-AT-HP01 (S26.97059° E30.93788°)**

A surface feature consisting out of the remains of a rectangular concrete floor slab and foundations structures of crudely built stone walls structures was documented in an open field north-east of the Athalia settlement and near and existing access road. The floor and foundation remains measure no more than 5m x 3m and the function of the structures is not known but is was likely demolished residential homestead buildings. A clear temporal context for the structures is not known but the remains might be older than 60 years. No material culture was observed in association with the remains and the structures are not well preserved. The feature, which is of medium-low heritage significance due to its poor preservation and loss of historical context, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-1: Possible Historical Period Features visible on the surface at Site EXIGO-AT-HP01.

- **Site EXIGO-AT-HP02 (S26.97070° E30.92622°)**

The remains of a number of collapsed stone wall structures were documented directly west of the Athalia settlement. The walls were probably those of round and square stone stock kraals. A clear temporal context for the structures is not known but the remains might be older than 60 years. No material culture was observed in association with the remains and the structures are not well preserved. The feature, which is of low heritage significance due to its poor preservation and loss of historical context, occurs within close proximity of site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be peripheral and permanent.

Figure 5-2: Overgrown Historical Period Features visible on the surface at Site EXIGO-AT-HP01.

- **Site EXIGO-AT-HP03 (1S26.97076° E30.92918°)**

The remains of another collapsed stone wall structure and stone wall foundation were documented in the Athalia settlement. The walls were probably those of round and square stone stock kraals. A clear temporal context for the structures is not known but the remains might be older than 60 years. No material culture was observed in association with the remains and the structures are not well preserved. The feature, which is of low heritage significance due to its poor preservation and loss of historical context, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

5.3.2 E'Thandaukhanya

- **Site EXIGO-TH-HP01 (S27.04231° E30.86033°)**

A well preserved rectangular stone house occurs in the e'Thandaukhanya settlement. The walls of the house are constructed out carefully fashioned sandstone blocks and the structure has a corrugated iron roof. A clear temporal context for the structures is not known but the house is most probably older than 60 years considering the architectural style. The feature might add to a better architectural, settlement and social understanding of the area and it is of medium heritage significance. It occurs within site development areas of the proposed e'Thandaukhanya Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-3: A Historical Period Stone House at Site EXIGO-TH-HP01.

5.3.3 New Plaas B

- **Site EXIGO-NB-HP01 (S26.72813° E30.59484°)**

The remains of a cattle enclosure and a livestock dipping tank as well as a small water tank, constructed out of concrete and sandstone occur at the New Plaas B Village. The features are not maintained and preservation thereof is fair. A clear temporal context for the structures is not known but they most probably date to the last 60 years considering the material used for construction. No material culture was observed in association with the remains and the structures are not well preserved. The feature, which is of medium-low heritage significance due to its preservation and probable more recent age, occurs within site development areas of the proposed New Plaas B Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-4: A Historical Period cattle dipping tank at Site EXIGO-NB-HP01.

- **Site EXIGO-NB-HP02 (S26.72854° E30.59587°)**

The remains of a partially-collapsed stone structure were documented in the New Plaas B settlement. The poorly preserved square structure was built up to a probable height of 1.5m. A clear temporal context for

the structures is not known but the remains might be older than 60 years. No material culture was observed in association with the remains and the structures are not well preserved. The feature, which is of medium-low heritage significance due to its poor preservation and loss of historical context, occurs within site development areas of the proposed New Plaas B Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-5: A Historical Period stone structure at Site EXIGO-NB-HP02.

5.3.4 Riverside

- **Site EXIGO-RS-HP01 (S26.82958° E30.71606°)**

The remains of a large square collapsed stone wall enclosure occur in an open field north of the Riverside settlement. The walls were probably those of a square stone stock kraal. A clear temporal context for the structures is not known but the remains might be older than 60 years. No material culture was observed in association with the remains and the structures are not well preserved. The feature, which is of medium-low heritage significance due to its poor preservation and loss of historical context, occurs away from site development areas of the proposed Riverside Agri-Village and no impact on the site is anticipated.

Figure 5-6: A large Historical Period stone wall enclosure at Site EXIGO-RS-HP01.

5.3.5 Speenkoppies

- **Site EXIGO-SK-HP01 (S27.12996° E30.89578°)**

A surface feature consisting out of the remains of a modern rectangular brick and concrete structures was documented in the Speenkoppies settlement. The multi-roomed wall and foundation remains cover an area of approximately 7m x 5m. The structure was a likely recently demolished residential homestead building. A clear temporal context for the structures is not known but, considering the modern appearance of the structure as well as the presence of glass and plastic at the site, the feature is most probably not older than 60 years, and of recent age. The feature, which is of low heritage significance due to its poor preservation and probable more recent age, occurs within site development areas of the proposed Speenkoppies Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-7: A more recent house ruin at Site EXIGO-SK-HP01.

5.3.6 Watersmeet Farm B

- **Site EXIGO-WB-HP01 (S26.80874° E30.59982°)**

The remains of a large collapsed stone wall structure and stone wall foundation were documented in the Watersmeet Farm B settlement. The walls were probably those of round and square stone stock kraals. A clear temporal context for the structures is not known but the remains might be older than 60 years. No material culture was observed in association with the remains and the structures are not well preserved. The feature, which is of medium-low heritage significance due to its poor preservation and loss of historical context, occurs within site development areas of the proposed Watersmeet Farm B Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-8: A large Historical Period stone wall enclosure at Site EXIGO-WB-HP01.

5.4 Graves / Human Burials

Human graves and burial grounds were identified within the boundaries of all villages except at Speenkoppies. In this area graves and cemeteries generally occur within settlements, often around or very close to homesteads and homestead buildings. It is therefore highly probable that these heritage resources might be encountered during construction, in addition to the sites noted below. If any human bones are found during the course of construction work then they should be reported to an archaeologist and work in the immediate vicinity should cease until the appropriate actions have been carried out by the archaeologist

5.4.1 Athalia

- **Site EXIGO-AT-BP01 (S26.97110° E30.93784°)**

A small burial site containing at least 5 graves occurs in in an open field north-east of the Athalia settlement and near and existing access road. The burials, which are not placed to a defined orientation, might possibly be related in context to the nearby Historical Period remains at Site EXIGO-AT-HP01**.** The graves, neatly dressed with elongated stones, are not maintained and preservation thereof is fair. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-9: Burial site visible at Site EXIGO-AT-BP01.

- **Site EXIGO-AT-BP02 (S26.96934° E30.93359°)**

A small burial site containing a single grave and a double grave occurs in an open field north-east of the Athalia settlement and near and existing access road. The burials, which are not placed to a defined orientation, might possibly be related in context to the nearby Historical Period remains at Site EXIGO-AT-HP01**.** The graves are marked by elongated stone cairns and the features are overgrown. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-10: Burial site visible at Site EXIGO-AT-BP02.

- **Site EXIGO-AT-BP03 (S26.97636° E30.92590°)**

A small burial site containing at least 3 graves occurs on a gradual hill in an open field south of the Athalia settlement. The burials, which are not placed to a defined orientation, are marked by elongated stone cairns and the features are densely overgrown. The burial site is not maintained and preservation thereof

is poor. The site, which is of high heritage significance, occurs away from site development areas of the proposed Athalia Agri-Village and no impact on the site is anticipated.

Figure 5-11: Densely overgrown burial site visible at Site EXIGO-AT-BP03.

- **Site EXIGO-AT-BP04 (S26.97494° E30.92571°)**

A small burial site containing at least 3 graves occurs under a tee in the Athalia settlement next to an existing access road. The burials, which are not placed to a defined orientation, are randomly marked by elongated stone cairns and the features are densely overgrown. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-12: Densely overgrown burial site visible at Site EXIGO-AT-BP04.

- **Site EXIGO-AT-BP05 (S26.97460° E30.92832°)**

A single grave is said to occur in a maize field at in the Athalia settlement next to a homestead. The grave is heavily overgrown and not visible. The site, which is of high heritage significance, occurs within site

development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-13: An apparent burial site in a maize field at Site EXIGO-AT-BP05.

- **Site EXIGO-AT-BP06 (S26.97434° E30.92815°)**

A single grave occurs under a large tree in the Athalia settlement next to a homestead. The burial is marked by elongated stone cairn and the features are densely overgrown. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-14: Densely overgrown burial site at Site EXIGO-AT-BP06.

- **Site EXIGO-AT-BP07 (S26.97359° E30.92730°)**

A single grave is said to occur under surface cover in the Athalia settlement. The apparent grave is heavily overgrown and not visible. The site, which is of high heritage significance, occurs within site development

areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-15: Densely overgrown burial site at Site EXIGO-AT-BP07.

- **Site EXIGO-AT-BP08 (S26.97336° E30.92654°)**

A large informal cemetery containing in excess of 150 graves occurs in the Athalia settlement and the site probably acts as central burial site for the community. The burials, placed in the characteristic "Christian-Western" east-west orientation, are generally marked by elongated stone cairns and some graves baear small name plaques. The burial site is maintained and preservation thereof is good. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-16: DA large communal cemetery at at Site EXIGO-AT-BP08.

- **Site EXIGO-AT-BP09 (S26.97303° E30.92537°)**

A single grave occurs within a currently forested area west of the Athalia settlement next to the existing access road. The burial, which is not placed to a defined orientation, is marked by a large elongated stone

cairn. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-17: A single grave next to a road at Site EXIGO-AT-BP09.

- **Site EXIGO-AT-BP10 (S26.97181° E30.92699°)**

A single grave occurs in a maize field at in the Athalia settlement next to a homestead. The grave is heavily overgrown and not clearly visible. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-18: Densely overgrown burial site visible at Site EXIGO-AT-BP10.

- **Site EXIGO-AT-BP11 (S26.97175° E30.92728°)**

A small burial site containing at number of graves occurs in the Athalia settlement next to a homestead. The burials not placed to a defined orientation and they are randomly scattered. The graves are marked by elongated stone cairns and the features are densely overgrown and not clearly visible. The burial site is not

maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-19: Densely overgrown burial site at Site EXIGO-AT-BP11.

- **Site EXIGO-AT-BP12 (S26.97150° E30.92659°)**

A small burial site containing at least 2 graves occurs in an open field in the Athalia settlement. The burials, which are not placed to a defined orientation, are marked by elongated stone cairns and the features are densely overgrown. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-20: Two densely overgrown graves at Site EXIGO-AT-BP12.

- **Site EXIGO-AT-BP13 (S26.97064° E30.92632°)**

Another small burial site containing 2 graves occurs next to a homestead in an open field in the Athalia settlement. The burials, which are not placed to a defined orientation, are marked by elongated stone

cairns and the features are overgrown. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-21: The remains of a grave at Site EXIGO-AT-BP13.

- **Site EXIGO-AT-BP14 (S26.96947° E30.92663°)**

A single grave occurs in an open field in the Athalia settlement. The burial is marked by elongated stone cairn and the feature is densely overgrown. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-22: Densely overgrown burial site visible at Site EXIGO-AT-BP14.

- **Site EXIGO-AT-BP15 (S26.96958° E30.92694°)**

A small burial site containing at least 2 graves occurs in an open field in the Athalia settlement. The burials, which are not placed to a defined orientation, are marked by elongated stone cairns and the features are densely overgrown. The burial site is not maintained and preservation thereof is poor. The site, which is of

high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

- **Site EXIGO-AT-BP16 (S26.96989° E30.92698°)**

A small burial site containing at least 11 graves occurs in the Athalia settlement. The burials are not placed to a defined orientation and they are randomly scattered. The graves are marked by elongated stone cairns and the features are densely overgrown and not clearly visible. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-23: A number of densely overgrown burials visible at Site EXIGO-AT-BP16.

- **Site EXIGO-AT-BP17 (S26.96997° E30.92752°)**

A single grave occurs in an open field in the Athalia settlement. The burial is marked by elongated stone cairn and the feature is densely overgrown. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-24: Densely overgrown burial site visible at Site EXIGO-AT-BP17.

- **Site EXIGO-AT-BP18 (S26.97020° E30.92785°)**

A small burial site containing at least 4 graves occurs in the Athalia settlement next to a homestead. The burials are not placed to a defined orientation. The graves are marked by elongated stone cairns and the features are densely overgrown. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-25: Four overgrown burials visible at Site EXIGO-AT-BP18.

- **Site EXIGO-AT-BP19 (S26.97047° E30.92789°)**

A small burial site containing at least 5 graves occurs in the Athalia settlement next to a homestead. The burials are not placed to a defined orientation. The graves are marked by elongated stone cairns and the features are densely overgrown and many of the graves are not visible. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-26: Densely overgrown burial site visible at Site EXIGO-AT-BP19.

- **Site EXIGO-AT-BP20 (S26.97081° E30.92882°)**

A single grave occurs in an open field in the Athalia settlement. The burial is marked by a round stone cairn and the feature is densely overgrown and not clearly visible. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-27: Densely overgrown burial site at Site EXIGO-AT-BP20.

- **Site EXIGO-AT-BP21 (S26.97038° E30.92878°)**

A single grave occurs in an open field in the Athalia settlement. The burial is densely overgrown and not clearly visible. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

- **Site EXIGO-AT-BP22 (S26.97012° E30.92881°)**

A single grave belonging to a baby is said to occur next to a housed in the Athalia settlement. The burial site, which was pointed out by locals, is not visible. The apparent site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-28: The apparent location of an infant grave next to a house wall at Site EXIGO-AT-BP22.

- **Site EXIGO-AT-BP23 (S26.96974° E30.92901°)**

A small burial site containing at least 4 graves occurs in the Athalia settlement next to a homestead. The burials are not placed to a defined orientation. The graves are marked by elongated stone cairns and the features are densely overgrown and many of the graves are not visible. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-29: Densely overgrown burial site visible at Site EXIGO-AT-BP23.

- **Site EXIGO-AT-BP24 (S26.96965° E30.92931°)**

Two graves occur in the Athalia settlement in an open field next to a homestead. The burials are not placed to a defined orientation. The graves are marked by large elongated stone cairns. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-30: Two burials visible at Site EXIGO-AT-BP24.

- **Site EXIGO-AT-BP25 (S26.97001° E30.92975°)**

A single grave occurs in an open field in the Athalia settlement. The burial is marked by an elongated stone cairn and is densely overgrown, not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-31: Densely overgrown burial site visible at Site EXIGO-AT-BP25.

- **Site EXIGO-AT-BP26 (S26.97024° E30.92921°)**

Two graves occur in the Athalia settlement in an open field next to a homestead. The burials are not placed to a defined orientation. The graves are marked by large elongated stone cairns but they are densely overgrown. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-32: Densely overgrown burial site visible at Site EXIGO-AT-BP26.

- **Site EXIGO-AT-BP27 (S26.97051° E30.92933°)**

A single grave occurs in an open field in the Athalia settlement. The burial is marked by an elongated stone cairn and is densely overgrown, not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-33: A densely overgrown grave at Site EXIGO-AT-BP27.

- **Site EXIGO-AT-BP28 (S26.96865° E30.92823°)**

A single grave occurs in an open field next to an access road in the Athalia settlement. The grave is demarcated by randomly places round stones. It said to be very old and it is not clearly visible. The site, which is of high heritage significance, occurs within site development areas of the proposed Athalia Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-34: The remains of a grave at Site EXIGO-AT-BP28.

5.4.2 E'Thandaukhanya

- **Site EXIGO-TH-BP01 (S27.04583° E30.85943°)**

A large informal cemetery containing in excess of 50 graves occurs on a small ridge south of the E'Thandaukhanya settlement. The site probably acts as central burial site for the community. The burials, placed in the characteristic "Christian-Western" east-west orientation, are generally marked by elongated stone cairns and some graves bear small name plaques. The burial site is maintained and preservation thereof is good. The site, which is of high heritage significance, occurs outside site development areas of the proposed E'Thandaukhanya Agri-Village and no impact on the site is anticipated.

Figure 5-35: A large communal cemetery at Site EXIGO-TH-BP01.

- **Site EXIGO-TH-BP02 (S27.04863° E30.86222°)**

A number of poorly preserved graves occur within a currently forested area along the southern periphery of the E'Thandaukhanya village study area next to an access road. The burials are marked by randomly placed stones and individual graves are not clearly visible. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs outside site development areas of the proposed E'Thandaukhanya Agri-Village and no impact on the site is anticipated.

Figure 5-36: Poorly preserved graves in a forested area at Site EXIGO-TH-BP02.

5.4.3 Glen Eland

- **Site EXIGO-GE-BP01 (S26.67373° E30.50557°)**

A large informal cemetery containing in excess of 50 graves occurs along the southern periphery of the Glen Eland settlement next to the main access road. The site probably acts as central burial site for the community. The burials, placed in the characteristic "Christian-Western" east-west orientation, are generally marked by elongated stone cairns and some graves bear small name plaques. The burial site is maintained and preservation thereof is good. The site, which is of high heritage significance, occurs outside site development areas of the proposed Glen Eland Agri-Village and no impact on the site is anticipated.

Figure 5-37: A large communal cemetery at Site EXIGO-GE-BP01.

- **Site EXIGO-GE-BP02 (S26.65675° E30.49648°)**

Another large informal cemetery occurs on the south-western periphery of the Glen Eland settlement next to the main access road intersection. The site probably acts as central burial site for the community. The burials, placed in the characteristic "Christian-Western" east-west orientation, are generally marked by elongated stone cairns and some graves bear small name plaques. The burial site is maintained and preservation thereof is good. The site, which is of high heritage significance, occurs outside site development areas of the proposed Glen Eland Agri-Village and no impact on the site is anticipated.

Figure 5-38: A large communal cemetery at Site EXIGO-GE-BP01.

- **Site EXIGO-GE-BP03 (S26.66053° E30.48863°)**

A smaller informal cemetery occurs in the Glen Eland settlement next to an access road. The burials, placed in the characteristic "Christian-Western" east-west orientation, are generally marked by elongated stone

cairns and some graves bear small name plaques. Individual graves are also dressed with marked marble headstones. The burial site is maintained and preservation thereof is good. The site, which is of high heritage significance, occurs within site development areas of the proposed Glen Eland Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-39: A small communal cemetery at Site EXIGO-GE-BP01.

5.4.4 Hartebeest Mdukazane

- **Site EXIGO-HM-BP01 (S26.80768° E30.49586°)**

Two graves occur in the Hartebeest Mdukazane settlement in an open field next to a homestead. The burials are not placed to a defined orientation. The graves are marked by large elongated stone cairns but they are densely overgrown and not clearly visible. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs outside site development areas of the proposed Hartebeest Mdukazane Agri-Village and no impact on the site is anticipated.

Figure 5-40: Densely overgrown graves at Site EXIGO-HM-BP01.

- **Site EXIGO-HM-BP02 (S26.80209° E30.49416°)**

A large informal cemetery containing in excess of 200 graves occurs within the Hartebeest Mdukazane settlement. The site probably acts as central burial site for the community. The burials, placed in the characteristic “Christian-Western” east-west orientation, are generally marked by elongated stone cairns and some graves bear small name plaques. Individual graves are also dressed with marked marble headstones. The burial site is maintained and preservation thereof is good. The site, which is of high heritage significance, occurs within site development areas of the proposed Hartebeest Mdukazane Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-41: A large communal cemetery at Site EXIGO-HM-BP02.

- **Site EXIGO-HM-BP03 (S26.80189° E30.49578°)**

Another large informal cemetery occurs directly south of Site EXIGO-HM-BP02 within the Hartebeest Mdukazane settlement. The site probably acts as central burial site for the community. The burials, placed in the characteristic “Christian-Western” east-west orientation, are generally marked by elongated stone cairns and some graves bear small name plaques. The burial site is maintained and preservation thereof is good. The site, which is of high heritage significance, occurs within site development areas of the proposed Hartebeest Mdukazane Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-42: Another large communal cemetery at Site EXIGO-HM-BP03.

- **Site EXIGO-HM-BP04 (S26.80186° E30.49611°)**

A smaller informal cemetery occurs directly south of Site EXIGO-HM-BP03 within the Hartebeest Mdukazane settlement. The site probably acts as central burial site for the community. The burials, placed in the characteristic "Christian-Western" east-west orientation, are generally marked by elongated stone cairns and some graves bear small name plaques. . Individual graves are also dressed with marked marble headstones. The burial site is maintained and preservation thereof is good. The site, which is of high heritage significance, occurs within site development areas of the proposed Hartebeest Mdukazane Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-43: A large communal cemetery at Site EXIGO-HM-BP04.

- **Site EXIGO-HM-BP05 (S26.79835° E30.49835°)**

An informal cemetery containing 24 graves occurs north-east of the Hartebeest Mdukazane settlement. . The burials are not placed to a defined orientation and they are generally marked by elongated stone cairns and some graves bear small name plaques. The burial site is maintained and preservation thereof is

relatively good. The site, which is of high heritage significance, occurs outside site development areas of the proposed Hartebeest Mdukazane Agri-Village and no impact on the site is anticipated.

Figure 5-44: A small communal cemetery at Site EXIGO-HM-BP05.

5.4.5 New Plaas Kalambaso

- **Site EXIGO-NK-BP01 (S26.72349° E30.61364°)**

A large informal cemetery containing in excess of 100 graves occurs south east of the New Plaas Kalambaso settlement. The site probably acts as central burial site for the community. The burials, placed in the characteristic "Christian-Western" east-west orientation, are generally marked by elongated stone cairns and some graves bear small name plaques. Individual graves are also dressed with marked marble headstones. The burial site is maintained and preservation thereof is good. The site, which is of high heritage significance, occurs outside site development areas of the proposed New Plaas Kalambaso Agri-Village and no impact on the site is anticipated.

Figure 5-45: A large communal cemetery at Site EXIGO-NK-BP01.

5.4.6 New Plaas B

- **Site EXIGO-NB-BP01 (S26.73093° E30.59493°)**

An informal cemetery containing at least 10 graves occurs in a forested area along the southern periphery of the New Plaas B settlement study area. The burials are not placed to a defined orientation and they are generally marked by elongated stone cairns with prominent headstones places on one side. The burial site is probably very old and dates to the Historical Period since many of the graves are overgrown with large trees. Preservation of the burials is generally poor. The site, which is of high heritage significance, occurs outside site development areas of the proposed New Plaas B Agri-Village and no impact on the site is anticipated.

Figure 5-46: A small cemetery with possibly Historical Period graves at Site EXIGO-NB-BP01.

5.4.7 Riverside

- **Site EXIGO-RS-BP01 (S26.83556° E30.71641°)**

An unknown number of graves occur in the Riverside settlement in an open field next to a homestead. The burials are not placed to a defined orientation. The graves are marked by large elongated stone cairns and soil heaps but they are densely overgrown and not clearly visible. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs outside site development areas of the proposed Riverside Agri-Village and no impact on the site is anticipated.

Figure 5-47: A densely overgrown cemetery at Site EXIGO-RS-BP01.

5.4.8 Sluis

- **Site EXIGO-SL-BP01 (S26.81928° E30.47566°)**

A large informal cemetery containing in excess of 150 graves occurs in the Sluis settlement. The site probably acts as central burial site for the community. The burials, placed in the characteristic "Christian-Western" east-west orientation, are generally marked by elongated stone cairns and some graves bear small name plaques. Individual graves are also dressed with marked marble headstones. The burial site is maintained and preservation thereof is good. The site, which is of high heritage significance, occurs within site development areas of the proposed Sluis Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-48: A large communal cemetery at Site EXIGO-SL-BP01.

5.4.9 Watersmeet Farm A

- **Site EXIGO-WA-BP01 (S26.79251° E30.62292°)**

An informal cemetery containing 28 graves occurs in the Watersmeet Farm A settlement. The burials, placed in the characteristic "Christian-Western" east-west orientation, are generally marked by elongated stone cairns and some graves bear small name plaques. The burial site is maintained and preservation thereof is relatively good. The site, which is of high heritage significance, occurs within site development areas of the proposed Watersmeet Farm A Agri-Village and unmitigated impact on the site is expected to be direct and permanent.

Figure 5-49: A large communal cemetery at Site EXIGO-WA-BP01.

- **Site EXIGO-WA-BP02 (S26.78741° E30.62085°)**

Another large informal cemetery containing in excess of 100 graves occurs next to a homestead on a ridge in the Watersmeet Farm A settlement. The site probably acts as central burial site for the community. The burials, placed in the characteristic "Christian-Western" east-west orientation, are generally marked by elongated stone cairns and some graves bear small name plaques. Individual graves are also dressed with marked marble headstones. The burial site is maintained and preservation thereof is good. The site, which is of high heritage significance, occurs outside site development areas of the proposed Watersmeet Farm A Agri-Village and no impact on the site is anticipated.

Figure 5-50: Another large communal cemetery at Site EXIGO-WA-BP02.

- **Site EXIGO-WA-BP03 (S26.79198° E30.61638°)**

An informal cemetery containing 40 graves occurs on a high ridge north of the Watersmeet Farm A settlement. The burials, placed in the characteristic "Christian-Western" east-west orientation, are generally marked by elongated stone cairns. The burial site is maintained and preservation thereof is relatively good. The site, which is of high heritage significance, occurs outside site development areas of the proposed Watersmeet Farm A Agri-Village and no impact on the site is anticipated.

Figure 5-51: A small communal cemetery at Site EXIGO-WA-BP03.

5.4.10 Watersmeet Farm B

- **Site EXIGO-WB-BP01 (S26.80483° E30.59902°)**

A small burial site containing at least 12 graves occurs in a forested area in the Watersmeet Farm B settlement. The burials are not placed to a defined orientation and they are randomly scattered. The graves are marked by elongated stone cairns and the features are densely overgrown and not clearly

visible. The burial site is not maintained and preservation thereof is poor. The site, which is of high heritage significance, occurs outside site development areas of the proposed Watersmeet Farm B Agri-Village and no impact on the site is anticipated.

Figure 5-52: A densely overgrown communal cemetery at Site EXIGO-WB-BP01.

Figure 5-53: Aerial map indicating the locations of all heritage occurrences documented at Athalia, discussed in the text.

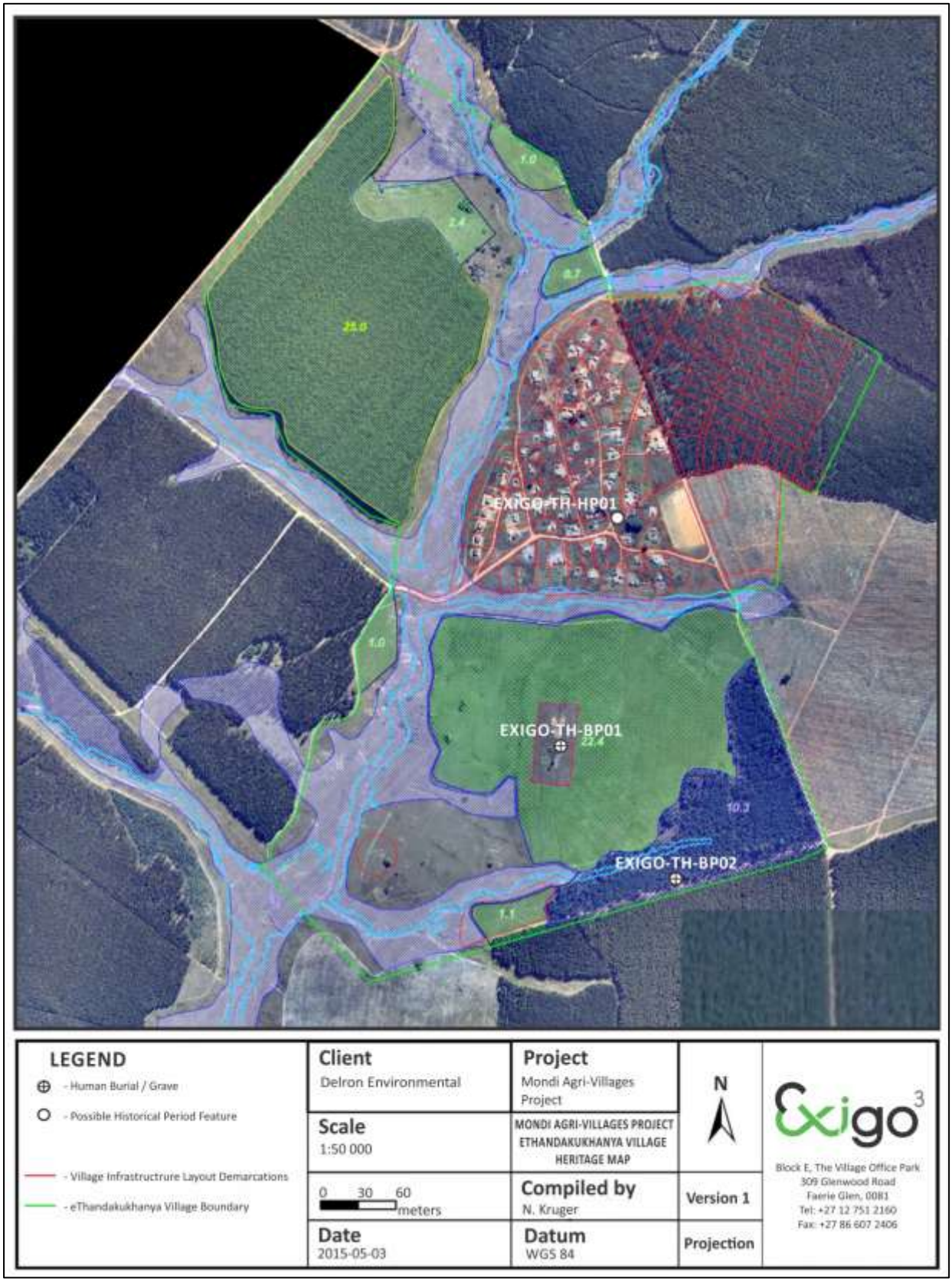

Figure 5-54: Aerial map indicating the locations of all heritage occurrences documented at E'Thandaukhanya, discussed in the text.

Figure 5-55: Aerial map indicating the locations of all heritage occurrences documented at Glen Eland, discussed in the text.

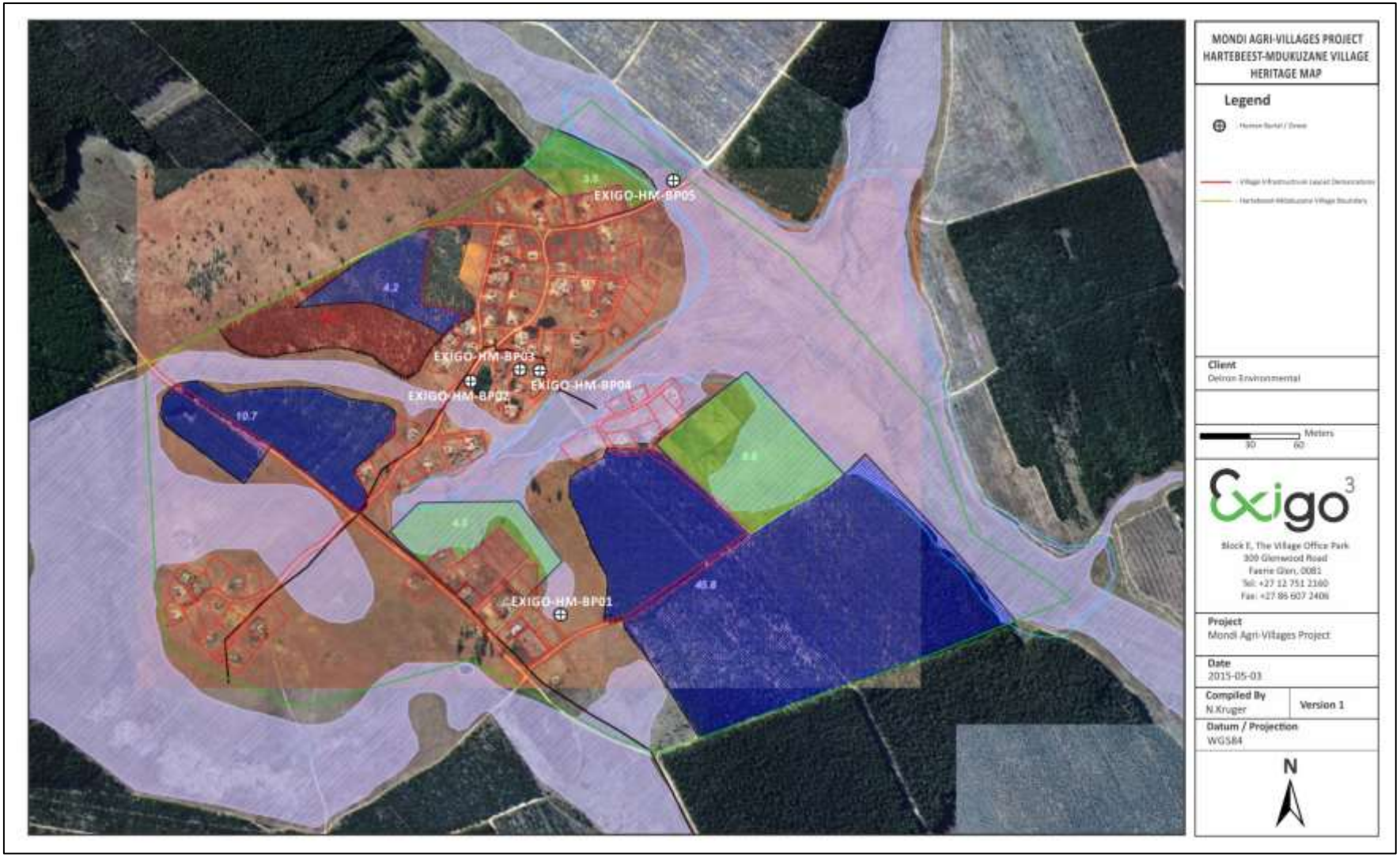

Figure 5-56: Aerial map indicating the locations of all heritage occurrences documented at Hartebeest Mdukazane, discussed in the text.

Figure 5-57: Aerial map indicating the locations of all heritage occurrences documented at New Plaas Kalmbaso, discussed in the text.

Figure 5-58: Aerial map indicating the locations of all heritage occurrences documented at New Plaas B, discussed in the text

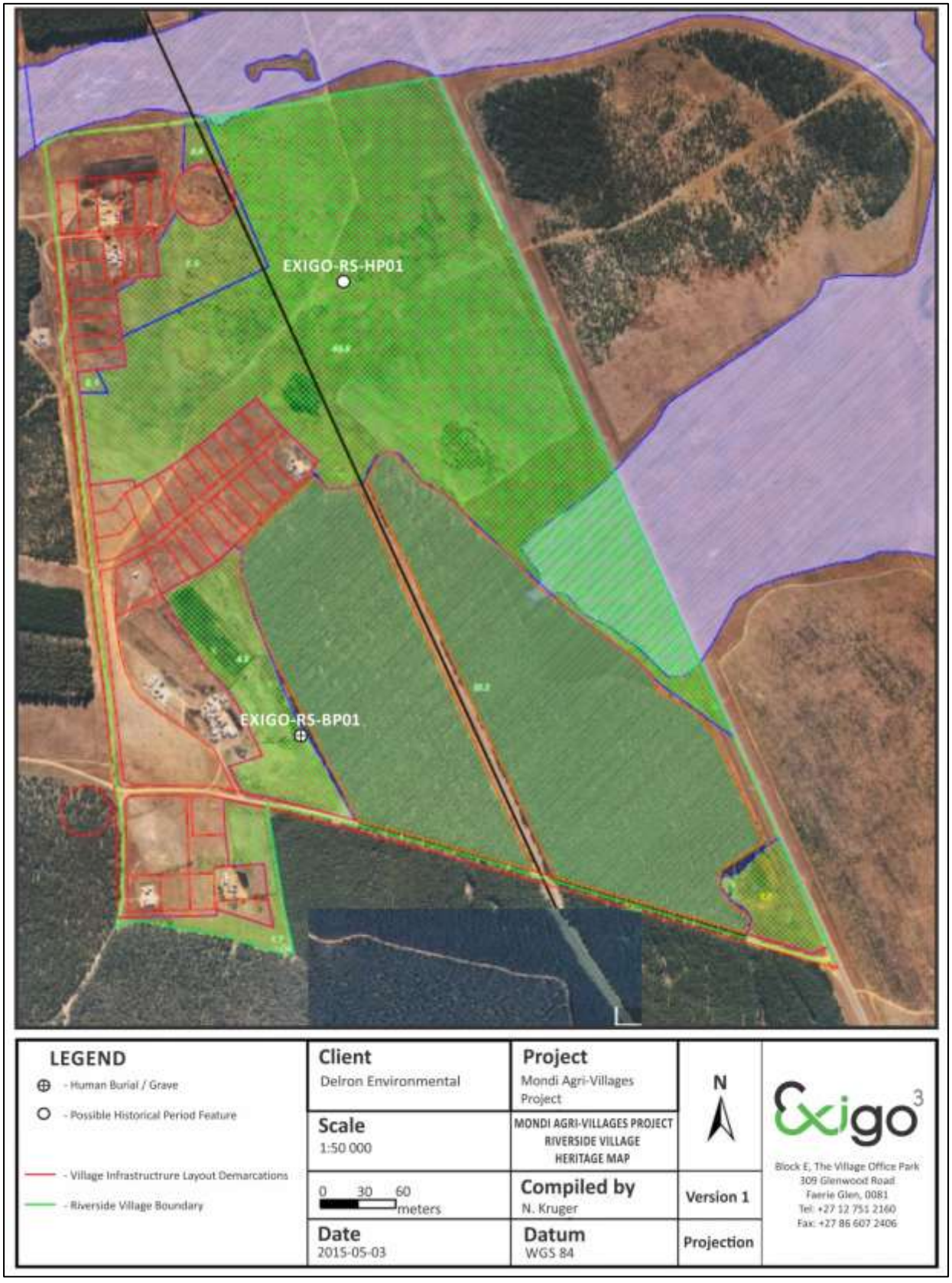

Figure 5-59: Aerial map indicating the locations of all heritage occurrences documented at Riverside discussed in the text.

Figure 5-60: Aerial map indicating the locations of all heritage occurrences documented at Sluis discussed in the text.

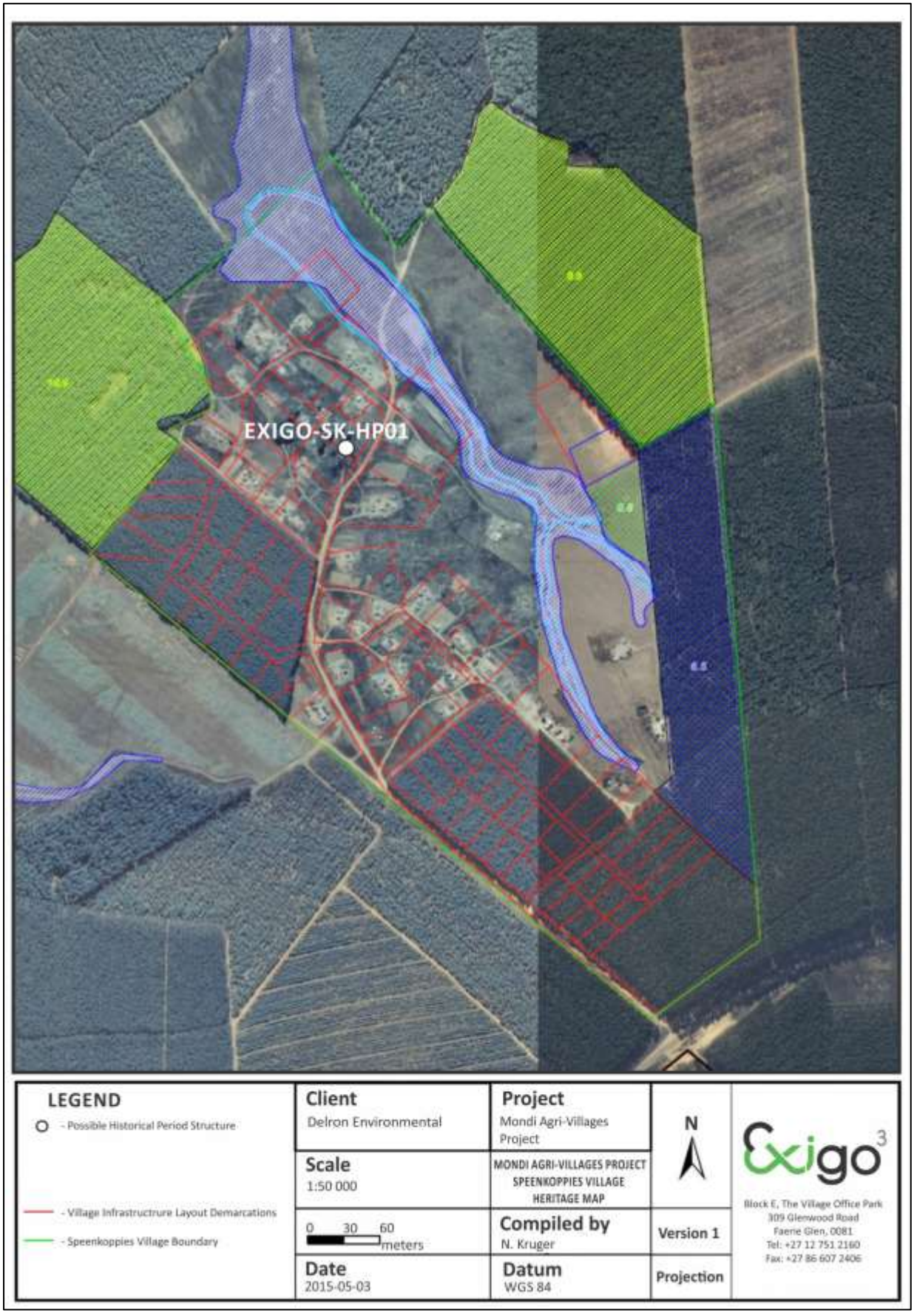

Figure 5-61: Aerial map indicating the locations of all heritage occurrences documented at Speenkoppies, discussed in the text.

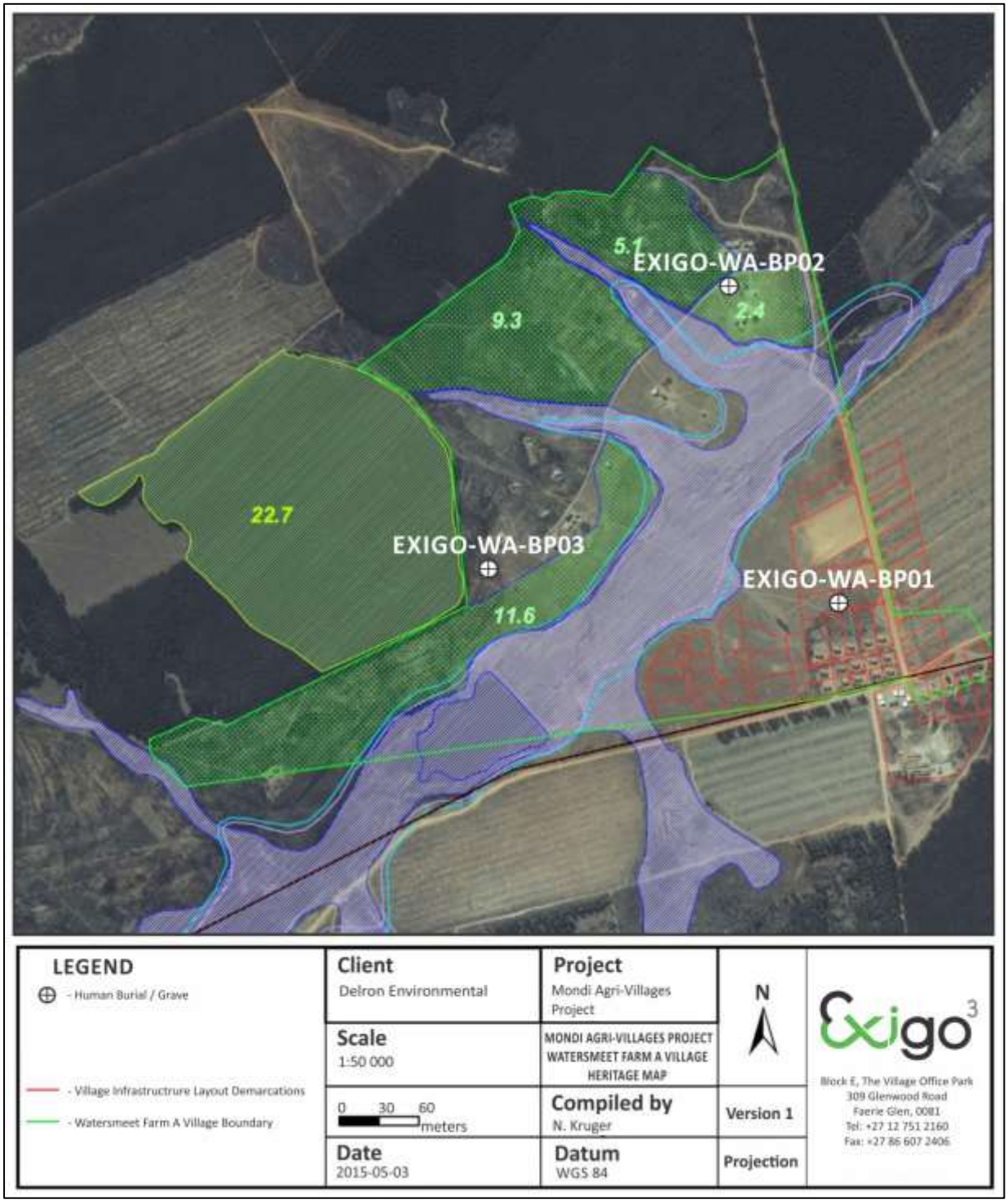

Figure 5-62: Aerial map indicating the locations of all heritage occurrences documented at Watersmeet A, discussed in the text.

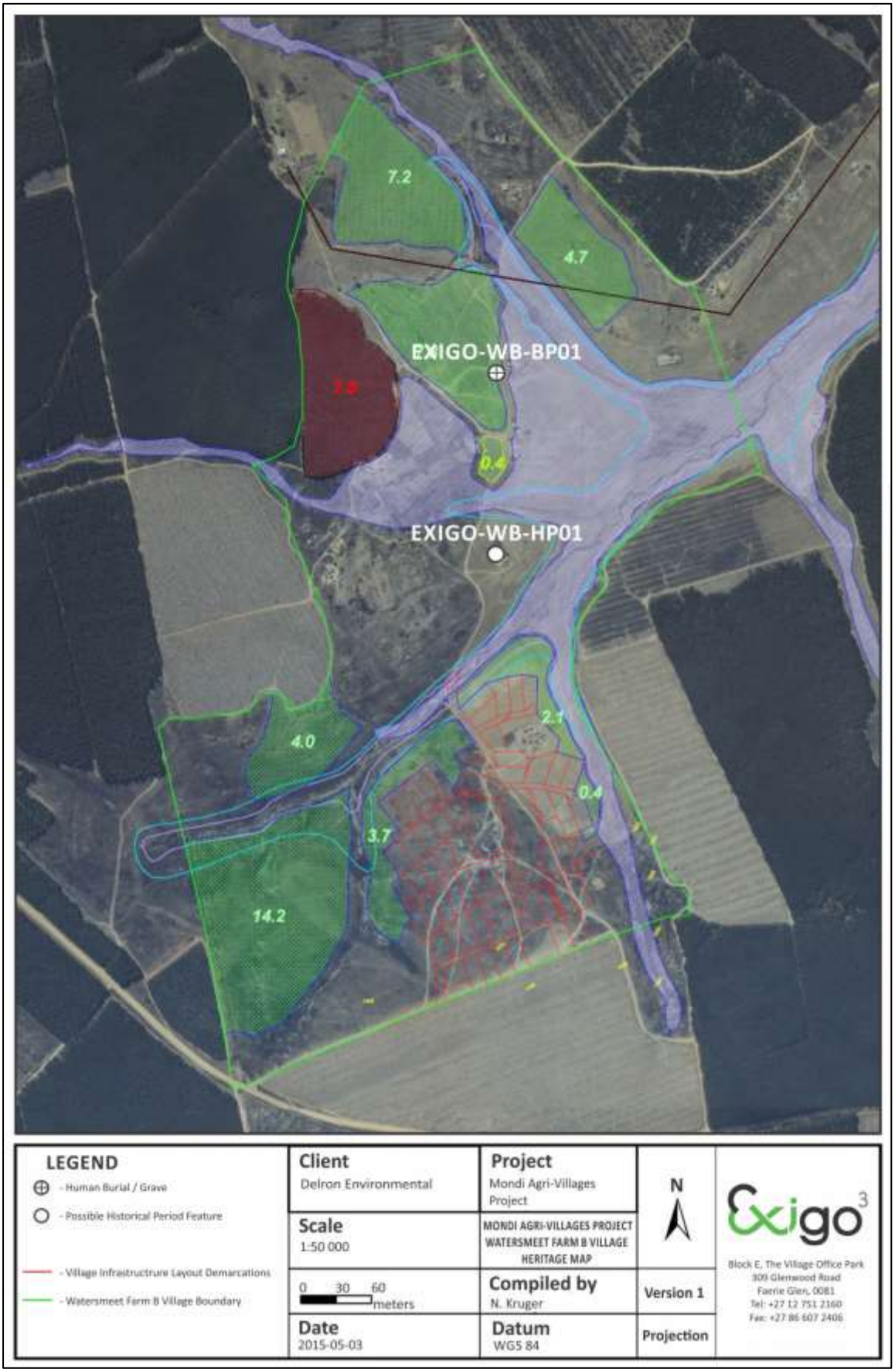

Figure 5-63: Aerial map indicating the locations of all heritage occurrences documented at Watersmeet B, discussed in the text.

6 RESULTS: STATEMENT OF SIGNIFICANCE AND IMPACT RATING

6.1 Potential Impacts and Significance Ratings[2]

The following section provides a background to the identification and assessment of possible impacts and alternatives, as well as a range of risk situations and scenarios commonly associated with heritage resources management. A guideline for the rating of impacts and recommendation of management actions for areas of heritage potential within the study area is supplied in Section 10.2 of the Addendum.

6.1.1 General assessment of impacts on resources

Generally, the value and significance of archaeological and other heritage sites might be impacted on by any activity that would result immediately or in the future in the destruction, damage, excavation, alteration, removal or collection from its original position, any archaeological material or object (as indicated in the National Heritage Resources Act (No 25 of 1999)). Thus, the destructive impacts that are possible in terms of heritage resources would tend to be direct, once-off events occurring during the initial construction period. However, in the long run, the proximity of operations in any given area could result in secondary indirect impacts. The EIA process therefore specifies impact assessment criteria which can be utilised from the perspective of a heritage specialist study which elucidates the overall extent of impacts.

6.1.2 Direct impact rating

Direct or primary effects on heritage resources occur at the same time and in the same space as the activity, e.g. loss of historical fabric through demolition work. **Indirect effects or secondary effects** on heritage resources occur later in time or at a different place from the causal activity, or as a result of a complex pathway, e.g. restriction of access to a heritage resource resulting in the gradual erosion of its significance, which is dependent on ritual patterns of access (refer to Section 10.3 in the Addendum for an outline of the relationship between the significance of a heritage context, the intensity of development and the significance of heritage impacts to be expected). Significant heritage receptors were found in the project zones and potential impacts to heritage resources is foreseen.

The following table summarizes impacts to **all** Historical Period sites located **outside** of development areas, as anticipated for the Mondi Agri-Villages Project:

Riverside: EXIGO-RS-HP01

NATURE OF IMPACT: Impacts could involve displacement or destruction of heritage structures or features in the proposed Mondi Agri-Villages Project areas.		
	Without mitigation	**With mitigation**
EXTENT	Local	Local
DURATION	Permanent	Permanent
MAGINITUDE	Minor	Minor
PROBABILITY	Improbable	Negligible
SIGNIFICANCE	Low	Low
STATUS	Neutral	Neutral
REVERSIBILITY	Non-reversible	Non-reversible

[2] Based on: W inter, S. & Baumann, N. 2005. *Guideline for involving heritage specialists in EIA processes: Edition 1.*

IRREPLACEABLE LOSS OF RESOURCES?	Yes	No
CAN IMPACTS BE MITIGATED?	N.A	
MITIGATION: No mitigation required.		
CUMULATIVE IMPACTS: No cumulative impact is anticipated.		
RESIDUAL IMPACTS: n/a		

The following table summarizes impacts to **low** significance Historical Period sites located **within** development areas, as anticipated for the Mondi Agri-Villages Project.

Athalia: EXIGO-AT-HP02, EXIGO-AT-HP03

Speenkoppies: EXIGO-SK-HP01

NATURE OF IMPACT: Impacts could involve displacement or destruction of heritage structures or features in the proposed Mondi Agri-Villages Project areas.		
	Without mitigation	**With mitigation**
EXTENT	Local	Local
DURATION	Permanent	Permanent
MAGINITUDE	Minor	Minor
PROBABILITY	Definite	Negligible
SIGNIFICANCE	Low	Low
STATUS	Negative	Neutral
REVERSIBILITY	Non-reversible	Non-reversible
IRREPLACEABLE LOSS OF RESOURCES?	Yes	No
CAN IMPACTS BE MITIGATED?	N.A	
MITIGATION: No mitigation required.		
CUMULATIVE IMPACTS: No cumulative impact is anticipated.		
RESIDUAL IMPACTS: n/a		

The following table summarizes impacts to **medium-low** significance Historical Period sites located **within** development areas, as anticipated for the Mondi Agri-Villages Project.

Athalia: EXIGO-AT-HP01

New Plaas B: EXIGO-NB-HP01, EXIGO-NB-HP02

Riverside: EXIGO-RS-HP01

Watersmeet Farm B: EXIGO-WB-HP01

NATURE OF IMPACT: Impacts could involve displacement or destruction of heritage structures or features in the proposed Mondi Agri-Villages Project areas.		
	Without mitigation	**With mitigation**
EXTENT	Local	Local

DURATION	Permanent	Permanent
MAGINITUDE	Minor	Minor
PROBABILITY	Definite	Negligible
SIGNIFICANCE	Medium	Low
STATUS	Negative	Neutral
REVERSIBILITY	Non-reversible	Non-reversible
IRREPLACEABLE LOSS OF RESOURCES?	Yes	No
CAN IMPACTS BE MITIGATED?	N.A	
MITIGATION: Site monitoring by ECO.		
CUMULATIVE IMPACTS: No cumulative impact is anticipated.		
RESIDUAL IMPACTS: n/a		

The following table summarizes impacts to **medium** significance Historical Period sites located **within** development areas, as anticipated for the Mondi Agri-Villages Project.

E'Thandaukhanya: **EXIGO-TH-HP01**

NATURE OF IMPACT: Impacts could involve displacement or destruction of heritage structures or features in the proposed Mondi Agri-Villages Project areas.		
	Without mitigation	**With mitigation**
EXTENT	Local	Local
DURATION	Permanent	Permanent
MAGINITUDE	Minor	Minor
PROBABILITY	Definite	Negligible
SIGNIFICANCE	Medium	Low
STATUS	Negative	Neutral
REVERSIBILITY	Non-reversible	Non-reversible
IRREPLACEABLE LOSS OF RESOURCES?	Yes	No
CAN IMPACTS BE MITIGATED?	N.A	
MITIGATION: Site monitoring by ECO, documentation of site, destruction permit when required.		
CUMULATIVE IMPACTS: No cumulative impact is anticipated.		
RESIDUAL IMPACTS: n/a		

The following table summarizes impacts to all burial sites located **outside** of development areas, as anticipated for the Mondi Agri-Villages Project:

Athalia: EXIGO-AT-BP03

E'Thandaukhanya: EXIGO-TH-BP01, EXIGO-TH-BP02

Glen Eland: EXIGO-GE-BP01, EXIGO-GE-BP02

Hartebeest Mdukazane: EXIGO-HM-BP01, EXIGO-HM-BP05
New Plaas Kalambaso: EXIGO-NK-BP01
New Plaas B: EXIGO-NB-BP01
Riverside: EXIGO-RS-BP01
Watersmeet Farm A: EXIGO-WA-BP02, EXIGO-WA-BP03
Watersmeet Farm B: Site EXIGO-WB-BP01

NATURE OF IMPACT: Impacts could involve displacement or destruction of human burials in the proposed Mondi Agri-Villages Project areas.		
	Without mitigation	**With mitigation**
EXTENT	Local	Local
DURATION	Permanent	Permanent
MAGINITUDE	Major	Minor
PROBABILITY	Improbable	Negligible
SIGNIFICANCE	Low	Low
STATUS	Negative	Neutral
REVERSIBILITY	Non-reversible	Non-reversible
IRREPLACEABLE LOSS OF RESOURCES?	Yes	No
CAN IMPACTS BE MITIGATED?	Yes	
MITIGATION: Site monitoring by ECO.		
CUMULATIVE IMPACTS: No cumulative impact is anticipated.		
RESIDUAL IMPACTS: n/a		

The following table summarizes impacts to high significance burial sites located **within** development areas, as anticipated for the Mondi Agri-Villages Project:

Athalia: EXIGO-AT-BP01, EXIGO-AT-BP02, EXIGO-AT-BP04 through EXIGO-AT-BP28
Glen Eland: EXIGO-GE-BP03
Hartebeest Mdukazane: EXIGO-HM-BP02, EXIGO-HM-BP03, EXIGO-HM-BP04
Sluis: EXIGO-SL-BP01
Watersmeet Farm A: EXIGO-WA-BP01

NATURE OF IMPACT: Impacts could involve displacement or destruction of human burials in the proposed Mondi Agri-Villages Project areas.		
	Without mitigation	**With mitigation**
EXTENT	Local	Local
DURATION	Permanent	Permanent
MAGINITUDE	Major	Minor
PROBABILITY	Definite	Improbable
SIGNIFICANCE	High	Low
STATUS	Negative	Neutral

REVERSIBILITY	Non-reversible	Non-reversible
IRREPLACEABLE LOSS OF RESOURCES?	Yes	No
CAN IMPACTS BE MITIGATED?	Yes	
MITIGATION: Avoidance, grave relocation, site monitoring by ECO.		
CUMULATIVE IMPACTS: No cumulative impact is anticipated.		
RESIDUAL IMPACTS: n/a		

6.1.3 Discussion: Evaluation of Results and Impacts

Previous studies conducted in the Mpumalanga Province suggest a rich and diverse archaeological landscape. The proposed Mondi Agri-Villages Project areas are situated in landscapes that have, in places been sterilised of potential heritage resources, especially those dating to pre-Colonial and prehistoric times. Cognisance should nonetheless be taken of archaeological material that might be present in surface and sub-surface deposits.

A number of potential Historical Period heritage features occur in the Mondi Agri-Villages Project areas. The remains of a possible Historical Period features at Riverside (**EXIGO-RS-HP01**) occur away from development areas and no impact is foreseen on this resources. The remains of a possible low significance Historical Period features at Athalia **(EXIGO-AT-HP02, EXIGO-AT-HP03**) and Speenkoppies **(EXIGO-SK-HP01**) occur within development areas but the threshold of the potential impact is expected to be LOW, provided that no previously undetected heritage remains of significance be exposed during construction and development phases. The remains of a possible medium and medium-low significance Historical Period features at Athalia (**EXIGO-AT-HP01**), New Plaas B (**EXIGO-NB-HP01, EXIGO-NB-HP02**), Riverside (**EXIGO-RS-HP01**), Watersmeet Farm B (**EXIGO-WB-HP01**) and E'Thandaukhanya (**EXIGO-TH-HP01**) occur within development areas and the threshold of the potential impact is expected to be MEDIUM but this rating can be lessened to a LOW impact by the implementation of mitigation measures (monitoring, site documentation, destruction permitting).

A large number of burial sites occur in the Mondi Agri-Villages Project areas. Burial sites at Athalia (**EXIGO-AT-BP03**), E'Thandaukhanya (**EXIGO-TH-BP01, EXIGO-TH-BP02**), Glen Eland (**EXIGO-GE-BP01, EXIGO-GE-BP02**), Hartebeest Mdukazane (**EXIGO-HM-BP01, EXIGO-HM-BP05**), New Plaas Kalambaso (**EXIGO-NK-BP01**), New Plaas B (**EXIGO-NB-BP01**), Riverside (**EXIGO-RS-BP01**), Watersmeet Farm A (**EXIGO-WA-BP02, EXIGO-WA-BP03**) and Watersmeet Farm B (**Site EXIGO-WB-BP01)** occur away from development areas and no impact is foreseen on these resources. However, graves and burials at Athalia (**EXIGO-AT-BP01, EXIGO-AT-BP02, EXIGO-AT-BP04 through EXIGO-AT-BP28**), Glen Eland (**EXIGO-GE-BP03**), Hartebeest Mdukazane (**EXIGO-HM BP02, EXIGO-HM-BP03, EXIGO-HM-BP04**), Sluis (**EXIGO-SL-BP01**) and Watersmeet Farm A (**EXIGO-WA-BP01**) occur within development areas and the threshold of the potential impact is expected to be HIGH but this rating can be lessened to a LOW impact by the implementation of mitigation measures (avoidance, grave relocation, monitoring, relevant permitting).

Heritage Resources occur outside and within areas proposed for development of the 9 Mondi Agri-Villages. In the opinion of the author of this Archaeological Impact Assessment Report, the proposed Mondi Agri-Villages Project may proceed from a culture resources management perspective, provided that mitigation measures as endorsed by the relevant Heritage Resources Agency are implemented.

6.2 Management actions

Recommendations for relevant heritage resources management actions are vital to the conservation of heritage resources. A general guideline for recommended management actions is included in Section 10.4 of the Addendum. The following management measures would be required during implementation of the proposed Lyleveld North Waste Rock Dump expansion and Lyleveld South haul road extension Project.

OBJECTIVE: prevent unnecessary disturbance and/or destruction of previously undetected heritage receptors.

- ***No mitigation or management actions are required for the remains of a possible Historical Period feature at Riverside (EXIGO-RS-HP01), Athalia (EXIGO-AT-HP02, EXIGO-AT-HP03) and Speenkoppies (EXIGO-SK-HP01).***

- ***For the remains of Historical Period features at Athalia (EXIGO-AT-HP01), New Plaas B (EXIGO-NB-HP01, EXIGO-NB-HP02), Riverside (EXIGO-RS-HP01), Watersmeet Farm B (EXIGO-WB-HP01) and E'Thandaukhanya (EXIGO-TH-HP01) the following are required in terms of heritage management and mitigation:***

PROJECT COMPONENT/S	All phases of construction and operation.		
POTENTIAL IMPACT	Damage/destruction of sites.		
ACTIVITY RISK/SOURCE	Digging foundations and trenches into sensitive deposits that are not visible at the surface.		
MITIGATION: TARGET/OBJECTIVE	To locate previously undetected heritage remains / graves as soon as possible after disturbance so as to maximize the chances of successful rescue/mitigation work.		
MITIGATION: ACTION/CONTROL		**RESPONSIBILITY**	**TIMEFRAME**
Fixed Mitigation Procedure (**required**)			
Site Monitoring: Regular examination of trenches and excavations. Possible documentation of sites (mapping, desktop study). Permitting if and when required.		ECO, HERITAGE ASSESSMENT PRACTITIONER	Monitor as frequently as practically possible.
PERFORMANCE INDICATOR	Archaeological sites are discovered and mitigated with the minimum amount of unnecessary disturbance.		
MONITORING	Successful location of sites by person/s monitoring.		

- ***For burial sites at Athalia (EXIGO-AT-BP03), E'Thandaukhanya (EXIGO-TH-BP01, EXIGO-TH-BP02), Glen Eland (EXIGO-GE-BP01, EXIGO-GE-BP02), Hartebeest Mdukazane (EXIGO-HM-BP01, EXIGO-HM-BP05), New Plaas Kalambaso (EXIGO-NK-BP01), New Plaas B (EXIGO-NB-BP01), Riverside (EXIGO-RS-BP01), Watersmeet Farm A (EXIGO-WA-BP02, EXIGO-WA-BP03) and Watersmeet Farm B (Site EXIGO-WB-BP01) the following are required in terms of heritage management and mitigation:***

PROJECT COMPONENT/S	All phases of construction and operation.
POTENTIAL IMPACT	Damage/disturbance to subsurface burials and surface burial features.
ACTIVITY RISK/SOURCE	Digging foundations and trenches into sensitive deposits that are not visible at the surface.
MITIGATION: TARGET/OBJECTIVE	To locate human burials as soon as possible after disturbance so as to maximize the chances of successful rescue/mitigation work.

MITIGATION: ACTION/CONTROL	RESPONSIBILITY	TIMEFRAME
Preferred Mitigation Procedure		
Avoidance: Implement a heritage conservation buffer of at least 50m around the heritage resource; avoid the heritage resource and the proposed conservation buffer. Fence burial places and apply access control.	DEVELOPER	Prior to the commencement of construction and earth-moving.
Fixed Mitigation Procedure (**required**)		
Site Monitoring: Regular examination of trenches and excavations.	ECO	Monitor as frequently as practically possible.

PERFORMANCE INDICATOR	Archaeological sites are discovered and mitigated with the minimum amount of unnecessary disturbance.
MONITORING	Successful location of sites by person/s monitoring.

- ***For graves and burials at Athalia (EXIGO-AT-BP01, EXIGO-AT-BP02, EXIGO-AT-BP04 through EXIGO-AT-BP28), Glen Eland (EXIGO-GE-BP03), Hartebeest Mdukazane (EXIGO-HM BP02, EXIGO-HM-BP03, EXIGO-HM-BP04), Sluis (EXIGO-SL-BP01) and Watersmeet Farm A (EXIGO-WA-BP01) the following are required in terms of heritage management and mitigation:***

PROJECT COMPONENT/S	All phases of construction and operation.
POTENTIAL IMPACT	Damage/disturbance to subsurface burials and surface burial features.
ACTIVITY RISK/SOURCE	Digging foundations and trenches into sensitive deposits that are not visible at the surface.
MITIGATION: TARGET/OBJECTIVE	To locate human burials as soon as possible after disturbance so as to maximize the chances of successful rescue/mitigation work.

MITIGATION: ACTION/CONTROL	RESPONSIBILITY	TIMEFRAME
Preferred Mitigation Procedure		
Avoidance: Implement a heritage conservation buffer of at least 50m around the heritage resource for all **NEW** developments and 2m where grave occur in close vicinity to existing settlement and infrastructure and / or existing infrastructure to be upgraded for the Agri-Village project, if necessary redesign SDP's to avoid the heritage resource and the proposed conservation buffer. Fence all burial places and apply access control.	DEVELOPER QUALIFIED HERITAGE SPECIALIST	Prior to the commencement of construction and earth-moving.
Alterative Mitigation Procedure (**if preferred mitigation procedure is not feasible**)		
Grave Relocation: Relocation of burials and documentation of site, full social consultation with affected parties, possible conservation management and protection measures. Subject to authorisations and relevant permitting from heritage authorities and affected parties.	QUALIFIED HERITAGE SPECIALIST	Prior to the commencement of construction and earth-moving.
Fixed Mitigation Procedure (**required**)		
Site Monitoring: Regular examination of trenches and excavations.	ECO	Monitor as frequently as practically possible.

PERFORMANCE INDICATOR	Archaeological sites are discovered and mitigated with the minimum amount of unnecessary disturbance.
MONITORING	Successful location of sites by person/s monitoring.

7 RECOMMENDATIONS

Previous studies conducted in the larger Mpumalanga Province suggest a rich and diverse archaeological landscape. Even though the proposed Mondi Agri-Villages Project is situated in areas that have, in places been sterilised of potential heritage resources, a number of sites of interest were identified in Villages identified for the Mondi Agri-Villages Project. The following recommendations are made based on general observations in these Project Areas:

- The remains of a possible Historical Period features at Riverside (**EXIGO-RS-HP01**) occur away from development areas and no impact is foreseen on this resources. No further mitigation or management actions are required for the site.
- The remains of a possible Historical Period features at Athalia **(EXIGO-AT-HP02, EXIGO-AT-HP03**) and Speenkoppies **(EXIGO-SK-HP01**) occur within development areas but, since the sites are of low significance no further mitigation or management actions are required for the sites.
- The remains of a possible medium and medium-low significance Historical Period features at Athalia (**EXIGO-AT-HP01**), New Plaas B (**EXIGO-NB-HP01, EXIGO-NB-HP02**), Riverside (**EXIGO-RS-HP01**), Watersmeet Farm B (**EXIGO-WB-HP01**) and E'Thandaukhanya (**EXIGO-TH-HP01**) occur within development areas and it is recommended that the sites be monitored in order to avoid the destruction of previously undetected heritage remains. Should the sites be impacted on by development they should be adequately documented (mapped, described and contextualised by means of a desktop study) and the necessary destruction permits should be obtained from the relevant Heritage Resources Authorities).
- Human burials are highly significant and sensitive at all levels for their spiritual, social and cultural value. Burial sites at Athalia (**EXIGO-AT-BP03**), E'Thandaukhanya (**EXIGO-TH-BP01, EXIGO-TH-BP02**), Glen Eland (**EXIGO-GE-BP01, EXIGO-GE-BP02**), Hartebeest Mdukazane (**EXIGO-HM-BP01, EXIGO-HM-BP05**), New Plaas Kalambaso (**EXIGO-NK-BP01**), New Plaas B (**EXIGO-NB-BP01**), Riverside (**EXIGO-RS-BP01**), Watersmeet Farm A (**EXIGO-WA-BP02, EXIGO-WA-BP03**) and Watersmeet Farm B (**Site EXIGO-WB-BP01)** occur away from development areas but it is nonetheless recommended that all burials be fenced off and that the sites be monitored to avoid impact on the resources.
- Graves and burials identified at Athalia (**EXIGO-AT-BP01, EXIGO-AT-BP02, EXIGO-AT-BP04** through **EXIGO-AT-BP28**), Glen Eland (**EXIGO-GE-BP03**), Hartebeest Mdukazane (**EXIGO-HM BP02, EXIGO-HM-BP03, EXIGO-HM-BP04**), Sluis (**EXIGO-SL-BP01**) and Watersmeet Farm A (**EXIGO-WA-BP01**) occur within development areas. In most of these cases, the graves and cemeteries are situated within settlements, often around or very close to homesteads and homestead buildings, roads and other infrastructure. These locations of human burials in the Agri-Village footprints present challenges in terms of the conservation and management of these sensitive heritage receptors. As a primary measure, SAHRA guidelines require a 50m conservation buffer for all burials but the implementation of this guideline will prove problematic and impractical in a number of instances considering the locations of many of the burials, as noted above. In such cases , human burials occurring in close vicinity to existing settlement and infrastructure and / or existing infrastructure to be upgraded for the Agri-Village project, should be fenced off and conserved and a conservation buffer of at least 2m be maintained around the heritage receptors. Note that this recommended relaxation of the standard 50m buffer for burials near existing settlement or infrastructure is subject to approval by SAHRA. Where possible, it is

recommended that the standard conservation buffer zone of 50m around burials should be applied in the Agri-Villages. It is recommended that all burials, irrespective of their placement in the Agri-Villages be fenced off, conserved and that access control is applied during development stages. The developer should carefully liaise with the heritage specialist and SAHRA with regards to the restoration or renovations of any human grave or cemetery. Should impact on any human burial prove inevitable, full grave relocations are recommended for these burial grounds. This measure should be undertaken by a qualified archaeologist, and in accordance with relevant legislation and subject to any local and regional provisions and laws and by-laws pertaining to human remains. A full social consultation process should occur in conjunction with the mitigation of cemeteries and burials.

- Generally, a careful watching brief monitoring process is recommended whereby an informed ECO inspect the construction sites on regular basis in order to monitor possible impact on heritage resources. Should any subsurface paleontological, archaeological or historical material or heritage resources be exposed during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately
- It is essential that cognisance be taken of the larger archaeological landscape of the area in order to avoid the destruction of previously undetected heritage sites. Should any subsurface paleontological / archaeological / historical material and /or graves/human remains be uncovered, all activities should be suspended and the archaeological specialist should be alerted immediately.
- It should be noted that mitigation measures are valid for the duration of the development process, and mitigation measures might have to be implemented on additional features of heritage importance not detected during this Phase 1 assessment (e.g. uncovered during the construction process).

In addition to these site-specific recommendations, careful cognizance should be taken of the following:

- As Palaeontological remains occur where bedrock has been exposed, all geological features should be regarded as sensitive.
- Water sources such as drainage lines, fountains and pans would often have attracted human activity in the past. As Stone Age material the larger landscape should be regarded as potentially sensitive in terms of possible subsurface deposits.

8 GENERAL COMMENTS AND CONDITIONS

This AIA report serves to confirm the extent and significance of the heritage landscape of the proposed Mondi Agri-Villages Project areas. The larger heritage horizon encompasses rich and diverse archaeological landscapes and cognisance should be taken of heritage resources and archaeological material that might be present in surface and sub-surface deposits. If, during construction, any possible archaeological material culture discoveries are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find. Such material culture might include:

- Formal Earlier Stone Age stone tools.
- Formal Middle Stone Age stone tools.
- Formal Later Stone Age stone tools.
- Potsherds and Iron objects.
- Beads made from ostrich eggshell and glass.
- Ash middens and cattle dung deposits and accumulations.
- Faunal remains.
- Human remains/graves.

- Stone walling or any sub-surface structures.
- Historical glass, tin or ceramics.
- Fossils.

If such site were to be encountered or impacted by any proposed developments, recommendations contained in this report, as well as endorsement of mitigation measures as set out by AMAFA, SAHRA, the National Resources Act and the CRM section of ASAPA will be required. It must be emphasised that the conclusions and recommendations expressed in this archaeological heritage sensitivity investigation are based on the visibility of archaeological sites/features and may not therefore, represent the area's complete archaeological legacy. Many sites/features may be covered by soil and vegetation and might only be located during sub-surface investigations. If subsurface archaeological deposits, artefacts or skeletal material were to be recovered in the area during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately **(*cf*. NHRA (Act No. 25 of 1999)**, Section 36 (6)). It must also be clear that Archaeological Specialist Reports will be assessed by the relevant heritage resources authority (SAHRA).

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10 ADDENDUM 1: CONVENTIONS USED TO ASSESS THE SIGNIFICANCE OF HERITAGE

10.1 Site Significance Matrix

According to the NHRA, Section 2(vi) the **significance** of heritage sites and artefacts is determined by it aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these. The following matrix is used for assessing the significance of each identified site/feature.

2. SITE EVALUATION			
2.1 Heritage Value (NHRA, section 2 [3])	High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.			
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.			
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.			
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.			
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).			
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			
It has significance relating to the history of slavery in South Africa.			
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.			
2.2 Field Register Rating			
National/Grade 1 [should be registered, retained]			
Provincial/Grade 2 [should be registered, retained]			
Local/Grade 3A [should be registered, mitigation not advised]			
Local/Grade 3B [High significance; mitigation, partly retained]			
Generally Protected A [High/Medium significance, mitigation]			
Generally protected B [Medium significance, to be recorded]			
Generally Protected C [Low significance, no further action]			
2.3 Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Local			
Specific community			

10.2 Impact Assessment Criteria

The following table provides a guideline for the rating of impacts and recommendation of management actions for sites of heritage potential.

Significance of the heritage resource

This is a statement of the nature and degree of significance of the heritage resource being affected by the activity. From a heritage management perspective it is useful to distinguish between whether the significance is embedded in the physical fabric or in associations with events or persons or in the experience of a place; i.e. its visual and non-visual qualities. This statement is a primary informant to the nature and degree of significance of an impact and thus needs to be thoroughly considered. Consideration needs to be given to the significance of a heritage resource at different scales (i.e. sitespecific, local, regional, national or international) and the relationship between the heritage resource, its setting and its associations.

Nature of the impact

This is an assessment of the nature of the impact of the activity on a heritage resource, with some indication of its positive and/or negative effect/s. It is strongly informed by the statement of resource significance. In other words, the nature of the impact may be historical, aesthetic, social, scientific, linguistic or architectural, intrinsic, associational or contextual (visual or non-visual). In many cases, the nature of the impact will include more than one value.

Extent

Here it should be indicated whether the impact will be experienced:

- On a site scale, i.e. extend only as far as the activity;
- Within the immediate context of a heritage resource;
- On a local scale, e.g. town or suburb
- On a metropolitan or regional scale; or
- On a national/international scale.

Duration

Here it should be indicated whether the lifespan of the impact will be:

- Short term, (needs to be defined in context)
- Medium term, (needs to be defined in context)
- Long term where the impact will persist indefinitely, possibly beyond the operational life of the activity, either because of natural processes or by human intervention; or
- Permanent where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.

Of relevance to the duration of an impact are the following considerations:

- Reversibility of the impact; and
- Renewability of the heritage resource.

Intensity

Here it should be established whether the impact should be indicated as:

- Low, where the impact affects the resource in such a way that its heritage value is not affected;
- Medium, where the affected resource is altered but its heritage value continues to exist albeit in a modified way; and
- High, where heritage value is altered to the extent that it will temporarily or permanently be damaged or destroyed.

Probability

This should describe the likelihood of the impact actually occurring indicated as:

- Improbable, where the possibility of the impact to materialize is very low either because of design or historic experience;
- Probable, where there is a distinct possibility that the impact will occur;
- Highly probable, where it is most likely that the impact will occur; or
- Definite, where the impact will definitely occur regardless of any mitigation measures

Confidence

This should relate to the level of confidence that the specialist has in establishing the nature and degree of impacts. It relates to the level and reliability of information, the nature and degree of consultation with I&AP's and the dynamic of the broader socio-political context.

- High, where the information is comprehensive and accurate, where there has been a high degree of consultation and the socio-political context is relatively stable.

- Medium, where the information is sufficient but is based mainly on secondary sources, where there has been a limited targeted consultation and socio-political context is fluid.
- Low, where the information is poor, a high degree of contestation is evident and there is a state of socio-political flux.

Impact Significance

The significance of impacts can be determined through a synthesis of the aspects produced in terms of the nature and degree of heritage significance and the nature, duration, intensity, extent, probability and confidence of impacts and can be described as:

- Low; where it would have a negligible effect on heritage and on the decision
- Medium, where it would have a moderate effect on heritage and should influence the decision.
- High, where it would have, or there would be a high risk of, a big effect on heritage. Impacts of high significance should have a major influence on the decision;
- Very high, where it would have, or there would be high risk of, an irreversible and possibly irreplaceable negative impact on heritage. Impacts of very high significance should be a central factor in decision-making.

10.3 Direct Impact Assessment Criteria

The following table provides an outline of the relationship between the significance of a heritage context, the intensity of development and the significance of heritage impacts to be expected

	TYPE OF DEVELOPMENT			
HERITAGE CONTEXT	**CATEGORY A**	**CATEGORY B**	**CATEGORY C**	**CATEGORY D**
CONTEXT 1 High heritage Value	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected	Very high heritage impact expected
CONTEXT 2 Medium to high heritage value	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected
CONTEXT 3 Medium to low heritage value	Little or no heritage impact expected	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected
CONTEXT 4 Low to no heritage value	Little or no heritage impact expected	Little or no heritage impact expected	Minimal heritage value expected	Moderate heritage impact expected

NOTE: A DEFAULT "LITTLE OR NO HERITAGE IMPACT EXPECTED" VALUE APPLIES WHERE A HERITAGE RESOURCE OCCURS OUTSIDE THE IMPACT ZONE OF THE DEVELOPMENT.

HERITAGE CONTEXTS	CATEGORIES OF DEVELOPMENT
Context 1: Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 1, 2 or 3A heritage resources **Context 2:** Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources. **Context 3:** Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources **Context 4:** Of little or no intrinsic, associational or contextual heritage value due to disturbed, degraded conditions or extent of irreversible damage.	**Category A: Minimal intensity development** - No rezoning involved; within existing use rights. - No subdivision involved. - Upgrading of existing infrastructure within existing envelopes - Minor internal changes to existing structures - New building footprints limited to less than 1000m2. **Category B: Low-key intensity development** - Spot rezoning with no change to overall zoning of a site. - Linear development less than 100m - Building footprints between 1000m2-2000m2 - Minor changes to external envelop of existing structures (less than 25%) - Minor changes in relation to bulk and height of immediately adjacent structures (less than 25%). **Category C: Moderate intensity development** - Rezoning of a site between 5000m2-10 000m2.

	- Linear development between 100m and 300m. - Building footprints between 2000m2 and 5000m2 - Substantial changes to external envelop of existing structures (more than 50%) - Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 50%) **Category D: High intensity development** - Rezoning of a site in excess of 10 000m2 - Linear development in excess of 300m. - Any development changing the character of a site exceeding 5000m2 or involving the subdivision of a site into three or more erven. - Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 100%)

10.4 Management and Mitigation Actions

The following table provides a guideline of relevant heritage resources management actions is vital to the conservation of heritage resources.

No further action / Monitoring

Where no heritage resources have been documented, heritage resources occur well outside the impact zone of any development or the primary context of the surroundings at a development footprint has been largely destroyed or altered, no further immediate action is required. Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation in order to ensure that no undetected heritage\ remains are destroyed.

Avoidance

This is appropriate where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. Mitigation is not acceptable or not possible. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources.

Mitigation

This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated to a degree of medium to low significance, e.g. the high to medium impact of a development on an archaeological site could be mitigated through sampling/excavation of the remains. Not all negative impacts can be mitigated.

Compensation

Compensation is generally not an appropriate heritage management action. The main function of management actions should be to conserve the resource for the benefit of future generations. Once lost it cannot be renewed. The circumstances around the potential public or heritage benefits would need to be exceptional to warrant this type of action, especially in the case of where the impact was high.

Rehabilitation

Rehabilitation is considered in heritage management terms as a intervention typically involving the adding of a new heritage layer to enable a new sustainable use. It is not appropriate when the process necessitates the removal of previous historical layers, i.e. restoration of a building or place to the previous state/period. It is an appropriate heritage management action in the following cases:

- The heritage resource is degraded or in the process of degradation and would benefit from rehabilitation.
- Where rehabilitation implies appropriate conservation interventions, i.e. adaptive reuse, repair and maintenance, consolidation and minimal loss of historical fabric.
- Where the rehabilitation process will not result in a negative impact on the intrinsic value of the resource.

Enhancement

Enhancement is appropriate where the overall heritage significance and its public appreciation value are improved. It does not imply creation of a condition that might never have occurred during the evolution of a place, e.g. the tendency to sanitize the past. This management action might result from the removal of previous layers where these layers are culturally of low significance and detract from the significance of the resource. It would be appropriate in a range of heritage contexts and applicable to a range of resources. In the case of formally protected or significant resources, appropriate enhancement action should be encouraged. Care should, however, be taken to ensure that the process does not have a negative impact on the character and context of the resource. It would thus have to be carefully monitored