AINP

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Heritage Impact Assessment

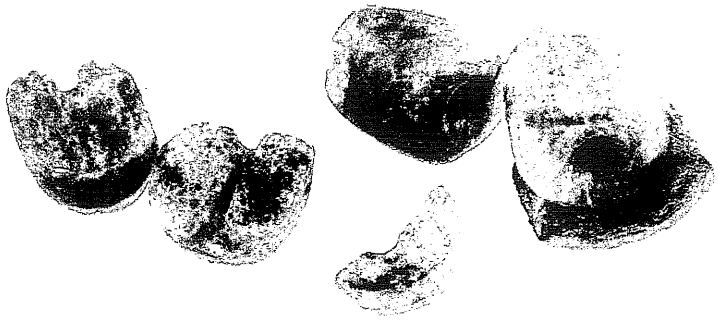
Heritage Impact Assessment for the proposed Groothoek Residential and Industrial development north-west of Burgersfort, Limpopo Province.

PREPARED BY:

Archaeo-Info Northern Province

PREPARED FOR:

Tekplan Environmental cc



August 2008

Credit Sheet

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Disclaimer; *Although all possible care is taken to identify all sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. AINP and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.*

SIGNED OFF BY: MARKO HUTTEN

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Management Summary

Site name and location: Proposed Groothoek Residential and Industrial development at Motlolo village approximately 35km north-west of Burgersfort in the Limpopo Province.

Magisterial district: Sekhukhune District Municipality

Developer: Mphoto Developers (Pty) Ltd

Consultant: AINP, PO Box 7296, Thohoyandou, 0950, South Africa

Date development was mooted: June 2008

Date of Report: August 2008

Proposed date of commencement of development: September 2008

Findings: Two sites with possible graves were identified during the investigation. The recommendations in this report regarding the possible graves should be adhered to. A site with a lower grinding stone and a low density scatter of potsherds was also identified, but no other site-specific actions or any further heritage mitigation measures are recommended as these finds did not have much heritage value or significance. 13 Sites with the remains of temporary structures were identified, but again no other site-specific actions or any further heritage mitigation measures are recommended at these sites as they had very little heritage value or significance. The proposed Groothoek Residential & Industrial development can continue from a heritage point of view if the recommendations are adhered to.

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Heritage Impact Assessment

Proposed Groothoek Residential and Industrial development at Motlolo village approximately 35km north-west of Burgersfort in the Limpopo Province.

Introduction

Archaeo-Info Northern Province (AINP) was contracted by Tekplan Environmental cc to conduct a Heritage Impact Assessment (HIA) on the proposed Groothoek Residential and Industrial development at Motlolo village approximately 35km north-west of Burgersfort in the Limpopo Province.

This HIA forms part of the Environmental Impact Assessment (EIA) as required by the Environmental Conservation Act (ECA) 73 of 1989, the Minerals & Petroleum Resources Development Act, 28 of 2002 and the Development Facilitation Act (DFA), 67 of 1995. The HIA is performed in accordance with section 38 of the National Heritage Resources Act (NHRA), 25 of 1999 and is intended for submission to the South African Heritage Resources Agency (SAHRA).

Qualified personnel from AINP conducted the assessment. The team comprised a Principal Investigator with a minimum of an Honours degree in an applicable science as well as at least five years of field experience in heritage management assisted by a fieldworker with at least a BA degree in an applicable science. All of our employees are also registered members of the Association of South African Professional Archaeologists (ASAPA).

Members of AINP performed the assessment partially on July 2-4 and completed it on July 22-24 2008.

The extent of the proposed development sites were determined as well as the extent of the areas to be affected by secondary activities (access route, construction camp, etc.) during the development. The sites were plotted using a Global Positioning System (GPS) and photographed digitally. The sites were surveyed on foot and by vehicle.

All results will be relayed in this report, firstly outlining the methodology used and then the results and recommendations for the identified resources.

Proposed Project

Mphoto Developers (Pty) Ltd has proposed the development of a residential town and industrial site, including associated engineering infrastructure viz. water, sewage treatment works, roads, etc. The size of the development area is approximately 850ha with 4456 residential erven, 216 industrial erven and other recreational and essential sites befitting a town. The purpose of the study was to determine if the proposed area was suitable for the development of the residential town and industrial site from a heritage point of view.

An unpublished report by Vhufa Hashu Heritage Consultants "A Survey of Cultural Resources within the Proposed Site for Residential Properties Development at Driekop village of Greater Tubatse Municipality" was consulted during the study. After researching the National Archive records as well as the SAHRA records it was determined that no other previous archaeological or historical studies have been performed in the demarcated study area.

The project was tabled during June 2008 and the developer intends to commence as soon as possible after receipt of the ROD from the Department of Environmental Affairs

Project Area

The proposed development will be situated on the western side of Motlolo village approximately 35km to the north-west of Burgersfort in the Limpopo Province. The proposed area was situated on both sides of the R37 with the larger section on the eastern side of the road. An area of approximately 850 hectares will be developed into 4456 residential erven, 216 industrial erven and various other public areas and facilities. The area was mainly flat with a system of dongas which crossed the site from the east to the west. Two hills were situated on the northern side of the proposed development and these will be utilised for the placement of reservoirs. No other development was planned for the hills and the developers targeted the flat areas to the south of the hills. Most of the proposed area for the development was bush cleared and was previously ploughed and exposed to intensive agricultural activities over an extended period. The occurrence of the extended donga systems and the repeated ploughing and agricultural activities left the area in a rather disturbed state from a heritage point of view. The larger part of the proposed development will be located on the farm Groothoek 256 KT and the sewage treatment works will be situated on the farm Twyfelaar 119 KT. (See Appendix E: Location Map)

Good weather conditions were experienced during the field investigations.

Methodology

Inventory

Inventory studies involve the in-field survey and recording of archaeological resources within a proposed development area. The nature and scope of this type of study is defined primarily by the results of the overview study. In the case of site-specific developments, direct implementation of an inventory study may preclude the need for an overview.

There are a number of different methodological approaches to conducting inventory studies. Therefore, the proponent, in collaboration with the archaeological consultant, must develop an inventory plan for review and approval by the SAHRA prior to implementation (*Dincause, Dena F., H. Martin Wobst, Robert J. Hasenstab and David M. Lacy 1984).*

Site Surveying

Site surveying is the process by which archaeological sites are located and identified on the ground. Archaeological site surveys often involve both surface inspection and subsurface testing. For the purposes of heritage investigations, *archaeological sites* refer to any site with heritage potential (i.e. historic sites, cultural sites, rock art sites etc.).

A systematic surface inspection involves a foot traverse along pre-defined linear transects which are spaced at systematic intervals across the survey area. This approach is designed to achieve representative area coverage. Alternatively, an archaeological site survey may involve a non-systematic or random walk across the survey area. Subsurface testing is an integral part of archaeological site survey. The purpose of subsurface testing, commonly called "shovel testing", is to:

(a) assist in the location of archaeological sites which are buried or obscured from the surveyor's view, and

(b) help determine the horizontal and vertical dimensions and internal structure of a site.

In this respect, subsurface testing should not be confused with evaluative testing, which is a considerably more intensive method of assessing site significance (*King, Thomas F., 1978).*

Once a site is located, subsurface testing is conducted to record horizontal extent, depth of the cultural matrix, and degree of internal stratification. Because subsurface testing, like any form of site excavation, is destructive it should be conducted only when necessary and in moderation.

Subsurface testing is usually accomplished by shovel, although augers and core samplers are also used where conditions are suitable. Shovel test units averaging 40 square cm are generally appropriate, and are excavated to a sterile stratum (i.e. C Horizon, alluvial till, etc.). Depending on the site survey strategy, subsurface testing is conducted systematically or randomly across the survey area. Other considerations

such as test unit location, frequency, depth and interval spacing will also depend on the survey design as well as various biophysical factors. *(Lightfoot, Keng G. 1989).*

Survey Sampling

Site survey involves the complete or partial inspection of a proposed project area for the purpose of locating archaeological or other heritage sites. Since there are many possible approaches to field survey, it is important to consider the biophysical conditions and archaeological site potential of the survey area in designing the survey strategy.

Ideally, the archaeological site inventory should be based on intensive survey of every portion of the impact area, as maximum area coverage will provide the most comprehensive understanding of archaeological and other heritage resource density and distribution. However, in many cases the size of the project area may render a complete survey impractical because of time and cost considerations.

In some situations it may be practical to intensively survey only a sample of the entire project area. Sample selection is approached systematically, based on accepted statistical sampling procedures, or judgementally, relying primarily on subjective criteria *(Butler, W., 1984).*

Systematic Survey Sampling

A systematic sample survey is designed to locate a representative sample of archaeological or heritage resources within the project area. A statistically valid sample will allow predictions to be made regarding total resource density, distribution and variability. In systematic sample surveys it may be necessary to exempt certain areas from intensive inspection owing to excessive slope, water bodies, landslides, land ownership, land use or other factors. These areas must be explicitly defined. Areas characterized by an absence of road access or dense vegetation should not be exempted. *(Dunnel, R.C., Dancey W.S. 1983).*

Judgemental Survey Sampling

Under certain circumstances, it is appropriate to survey a sample of the project area based entirely on professional judgement regarding the location of sites. Only those areas which can reasonably be expected to contain archaeological or heritage sites are surveyed.

However, a sufficient understanding of the cultural and biophysical factors which influenced or accounted for the distribution of these sites over the landscape is essential. Careful consideration must be given to ethnographic patterns of settlement, land use and resource exploitation; the kinds and distribution of aboriginal food sources; and restrictions on site location imposed by physical terrain, climatic regimes, soil chemistry or other factors. A judgemental sample survey is not desirable if statistically valid estimates of total heritage resource density and variability are required *(McManamon F.P. 1984).*

Assessment

Assessment studies are only required where conflicts have been identified between heritage resources and a proposed development. These studies require an evaluation of the heritage resource to be impacted, as well as an assessment of project impacts. The purpose of the assessment is to provide recommendations as to the most appropriate manner in which the resource may be managed in light of the identified impacts. Management options may include alteration of proposed development plans to avoid resource impact, mitigative studies directed at retrieving resource values prior to impact, or compensation for the unavoidable loss of resource values.

It is especially important to utilize specialists at this stage of assessment. The evaluation of any archaeological resource should be performed by professionally qualified individuals.

Site Evaluation

Techniques utilized in evaluating the significance of a heritage site include systematic surface collecting and evaluative testing. Systematic surface collection is employed wherever archaeological remains are evident on the ground surface. However, where these sites contain buried deposits, some degree of evaluative testing is also required.

Systematic surface collection from archaeological sites should be limited, insofar as possible, to a representative sample of materials. Unless a site is exceptionally small and limited to the surface, no attempt should be made at this stage to collect all or even a major portion of the materials. Intensive surface collecting should be reserved for full scale data recovery if mitigative studies are required. Site significance is determined following an analysis of the surface collected and/or excavated materials *(Miller, C.L. II, 1989)*.

Significance Criteria

There are several kinds of significance, including scientific, public, ethnic, historic and economic, that need to be taken into account when evaluating heritage resources. For any site, explicit criteria are used to measure these values. Checklists of criteria for evaluating pre-contact and post-contact archaeological sites are provided in Appendix B and Appendix C. These checklists are not intended to be exhaustive or inflexible. Innovative approaches to site evaluation which emphasize quantitative analysis and objectivity are encouraged. The process used to derive a measure of relative site significance must be rigorously documented, particularly the system for ranking or weighting various evaluatory criteria.

Site integrity, or the degree to which a heritage site has been impaired or disturbed as a result of past land alteration, is an important consideration in evaluating site significance. In this regard, it is important to recognize that although an archaeological site has been disturbed, it may still contain important scientific information.

Heritage resources may be of scientific value in two respects. The potential to yield information which, if properly recovered, will enhance understanding of Southern African human history is one appropriate measure of scientific significance. In this respect, archaeological sites should be evaluated in terms of their potential to resolve current archaeological research problems. Scientific significance also refers to the potential for relevant contributions to other academic disciplines or to industry.

Public significance refers to the potential a site has for enhancing the public's understanding and appreciation of the past. The interpretive, educational and recreational potential of a site are valid indications of public value. Public significance criteria such as ease of access, land ownership, or scenic setting are often external to the site itself. The relevance of heritage resource data to private industry may also be interpreted as a particular kind of public significance.

Ethnic significance applies to heritage sites which have value to an ethnically distinct community or group of people. Determining the ethnic significance of an archaeological site may require consultation with persons having special knowledge of a particular site. It is essential that ethnic significance be assessed by someone properly trained in obtaining and evaluating such data.

Historic archaeological sites may relate to individuals or events that made an important, lasting contribution to the development of a particular locality or the province. Historically important sites also reflect or commemorate the historic socioeconomic character of an area. Sites having high historical value will also usually have high public value.

The economic or monetary value of a heritage site, where calculable, is also an important indication of significance. In some cases, it may be possible to project monetary benefits derived from the public's use of a heritage site as an educational or recreational facility. This may be accomplished by employing established economic evaluation methods; most of which have been developed for valuating outdoor recreation. The objective is to determine the willingness of users, including local residents and tourists, to pay for the experiences or services the site provides even though no payment is presently being made. Calculation of user benefits will normally require some study of the visitor population *(Smith, L.D. 1977)*.

Assessing Impacts

A heritage resource impact may be broadly defined as the net change between the integrity of a heritage site with and without the proposed development. This change may be either beneficial or adverse.

Beneficial impacts occur wherever a proposed development actively protects, preserves or enhances a heritage resource. For example, development may have a beneficial effect by preventing or lessening natural site erosion. Similarly, an action may serve to preserve a site for future investigation by covering it with a protective layer of fill. In other cases, the public or economic significance of an archaeological site may be enhanced by actions which facilitate non-destructive public use. Although beneficial impacts are unlikely to occur frequently, they should be included in the assessment.

More commonly, the effects of a project on heritage sites are of an adverse nature. Adverse impacts occur under conditions that include:

(a) destruction or alteration of all or part of a heritage site;

(b) isolation of a site from its natural setting; and

(c) introduction of physical, chemical or visual elements that are out-of-character with the heritage resource and its setting.

Adverse effects can be more specifically defined as direct or indirect impacts. Direct impacts are the immediately demonstrable effects of a project which can be attributed to particular land modifying actions. They are directly caused by a project or its ancillary facilities and occur at the same time and place. The immediate consequences of a project action, such as slope failure following reservoir inundation, are also considered direct impacts.

Indirect impacts result from activities other than actual project actions. Nevertheless, they are clearly induced by a project and would not occur without it. For example, project development may induce changes in land use or population density, such as increased urban and recreational development, which may indirectly impact upon heritage sites. Increased vandalism of heritage sites, resulting from improved or newly introduced access, is also considered an indirect impact. Indirect impacts are much more difficult to assess and quantify than impacts of a direct nature.

Once all project related impacts are identified, it is necessary to determine their individual level-of-effect on heritage resources. This assessment is aimed at determining the extent or degree to which future opportunities for scientific research, preservation, or public appreciation are foreclosed or otherwise adversely affected by a proposed action. Therefore, the assessment provides a reasonable indication of the relative significance or importance of a particular impact. Normally, the assessment should follow site evaluation since it is important to know what heritage values may be adversely affected.

The assessment should include careful consideration of the following level-of-effect indicators, which are defined in Appendix D:

- magnitude
- severity
- duration
- range
- frequency
- diversity
- cumulative effect
- rate of change

The level-of-effect assessment should be conducted and reported in a quantitative and objective fashion. The methodological approach, particularly the system of ranking level-of-effect indicators, must be rigorously documented and recommendations should be made with respect to managing uncertainties in the assessment. *(Zubrow, Ezra B.A., 1984).*

Impact Effect	Score
Magnitude	0-4
Severity	0-4
Duration	0-4
Range	0-4
Frequency	0-4

Diversity	0-4
Cumulative effect	0-4
Rate of change	0-4
Total score:	0-32

Impact severity table.

Impacts will be defined along the following parameters;

Effect	Score
No effect on site	0
Insignificant impact on site	1-5
Significant impact on site	6-16
Major destruction of site and attributes	17-24
Total destruction of sites and attributes	25-32

The study area was surveyed using standard archaeological surveying methods. The area was surveyed using directional parameters supplied by the GPS and surveyed by foot. This technique has proven to result in the maximum coverage of an area. This action is defined as;

'an archaeologist being present in the course of the carrying-out of the development works (which may include conservation works), so as to identify and protect archaeological deposits, features or objects which may be uncovered or otherwise affected by the works' (DAHGI 1999a, 28).

Standard archaeological documentation formats were employed in the description of sites. Using standard site documentation forms as comparable medium, it enabled the surveyors to evaluate the relative importance of sites found. Furthermore GPS (Global Positioning System) readings of all finds and sites were taken. This information was then plotted using a ***eTrex Legend*** GPS (WGS 84- datum).

Indicators such as surface finds, plant growth anomalies, local information and topography were used in identifying sites of possible archaeological importance. Test probes were done at intervals to determine sub-surface occurrence of archaeological material. The importance of sites was assessed by comparisons with published information as well as comparative collections.

Test excavation is that form of archaeological excavation where the purpose is to establish the nature and extent of archaeological deposits and features present in a location which it is proposed to develop (though not normally to fully investigate those deposits or features) and allow an assessment to be made of the archaeological impact of the proposed development. It may also be referred to as archaeological testing' (DAHGI 1999a, 27).

'Test excavation should not be confused with, or referred to as, archaeological assessment which is the overall process of assessing the archaeological impact of development. Test excavation is one of the techniques in carrying out archaeological assessment which may also include, as appropriate, documentary research, field walking, examination of upstanding or visible features or structures, examination of aerial photographs, satellite or other remote sensing imagery, geophysical survey, and topographical assessment' (DAHGI 1999b, 18).

All sites or possible sites found were classified using a hierarchical system wherein sites are assessed using a scale of zero to four according their importance. These categories are as follows;

Degree of significance	Justification	Score
Exceptional significance	Rare or outstanding, high degree of intactness. Can be interpreted easily.	13 – 16
High significance	High degree of original fabric. Demonstrates a key element of item's significance. Alterations do not detract from significance.	9 – 12
Moderate significance	Altered or modified elements. Element with little heritage value, but which contribute to the overall significance.	5 – 8
Little significance	Alterations detract from significance. One of many. Alterations detract from significance.	1 – 4
Intrusive	Damaging to the item's heritage significance.	0

Table 1. Site significance table for pre-contact sites.

Degree of significance	Justification	Score
Exceptional significance	Rare or outstanding, high degree of intactness. Can be interpreted easily.	29 – 24
High significance	High degree of original fabric. Demonstrates a key element of item's significance. Alterations do not detract from significance.	13 – 18
Moderate significance	Altered or modified elements. Element with little heritage value, but which contribute to the overall significance.	7 – 12
Little significance	Alterations detract from significance. One of many. Alterations detract from significance.	1 – 6
Intrusive	Damaging to the item's heritage significance.	0

Table 2. Site significance table for post contact sites.

The qualitative value of a site's significance will be calculated by tabling its significance characteristics (as outlined in appendix B & C) on a sliding value scale and determining an accumulative value for the specific site. Two tables will be used;

Site significance characteristics slide scale (Pre-Contact Criteria)					
Scientific Significance	0	1	2	3	4

Public Significance	0	1	2	3	4
Ethnic Significance	0	1	2	3	4
Economic Significance	0	1	2	3	4
				Total Score	

Table 3. Pre-contact site criteria (0- no value, 4- highest value)

Site significance characteristics slide scale (Post-Contact Criteria)					
Scientific Significance	0	1	2	3	4
Historic Significance	0	1	2	3	4
Public Significance	0	1	2	3	4
Other Significance	0	1	2	3	4
Ethnic Significance	0	1	2	3	4
Economic Significance	0	1	2	3	4
				Total Score	

Table 4. Post-contact site criteria (0- no value, 4- highest value)

The values calculated (as specified in appendix B&C) are attributed to a category within the site significance table to provide the site with a quantifiable significance value. This will only be done for identified sites. Should an area under investigation not show any evidence of human activity this will be stated and no further qualifying will be done.

This information will be contained in a report that will strive to;

Review the purpose, approach, methodology and reporting of archaeological assessment and monitoring and propose guidelines on how to adequately address four key questions:

i. What is the research value and potential of the archaeological remains?
ii. What will the impact of development be?
iii. What types of mitigation (by design modification or further investigation) would be appropriate to mitigate the impact of development and/or make a useful contribution to knowledge?
iv. What will be the likely cost and timescale of any further investigation, analysis and reporting, given the nature of the archaeology and the type and extent of further work required?

Chapter
2 Resource Inventory and Management

Resource Inventory

This section will contain the results of the heritage site inventory. Any identified sites will be indicated on the accompanying map plotted using the OziExplorer Geographis Information System (GIS).

Groothoek Residential and Industrial Development

Site GHK 001

GPS 24° 30' 27,3" S

30° 10' 08,0" E

A possible grave was pointed out to the investigating team by members of the community. They indicated a mound of rocks which was placed in a shallow donga (photo 1). According to them the grave belonged to a certain Makofane (first name and relatives not known) who was buried there. The rocks were placed there to prevent further erosion and the grave from washing open. No traditional way of an informal rock dressing for the grave was observed. There were no other indicators, such as grave goods or headstones to confirm that this was a grave.

Site GHK 002

GPS 24° 31' 13,4" S

30° 09' 10,3" E

A lower grinding stone was identified at this location (photo 2). The lower grinding stone was found next to one of the access roads and also next to a previously ploughed field. There were no upper grinding stones to be found. Only a few un-diagnostic potsherds were found scattered around the lower grinding stone in a radius of approximately 30m (photo 3). No other structures or features could be associated with the lower grinding stone and the few potsherds.

Site GHK 003

GPS 24° 31' 04,1" S

30° 09' 31,8" E

The remains of a small dilapidated structure/s were identified at this location (photo 4). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount of disturbances occurred. This structure measured approximately 5m x 5m. No artefacts or any other remains were identified.

Site GHK 004

GPS 24° 31' 04,3" S

30° 09' 35,1" E

The remains of another small dilapidated structure/s were identified at this location (photo 5). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this

ructure/s due to the amount of disturbances occurred. This structure measured approximately 5m x 5m. o artefacts or any other remains were identified.

Site GHK 005

GPS 24° 31' 06,3" S

30° 09' 42,0" E

The remains of a small dilapidated structure/s were identified at this location (photo 6). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount of disturbances occurred. This structure measured approximately 5m x 5m. No artefacts or any other remains were identified.

Site GHK 006

GPS 24° 31' 06,0" S

30° 09' 49,7" E

The remains of a small dilapidated structure/s were identified at this location (photo 7). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount of disturbances occurred. This structure measured approximately 5m x 5m. A lower grinding stone was found next to the remains of the structure (photo 8). No artefacts or any other remains were identified.

Site GHK 007

GPS 24° 31' 04,0" S

30° 09' 53,5" E

The remains of a small dilapidated structure/s were identified at this location (photo 9). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount of disturbances occurred. This structure measured approximately 5m x 5m. No artefacts or any other remains were identified.

Site GHK 008

GPS 24° 31' 12,5" S

30° 08' 35,9" E

The remains of a small dilapidated structure/s were identified at this location (photo 10). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount of disturbances occurred. This structure measured approximately 5m x 5m. No artefacts or any other remains were identified.

Site GHK 009

GPS 24° 31' 07,4" S

30° 08' 39,2" E

The remains of a small dilapidated structure/s were identified at this location (photo 11). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount of disturbances occurred. This structure measured approximately 5m x 5m. Three possible graves were found in close proximity of the remains of the structures. These were all elongated mounds of soil and rock and could possibly be graves (photo 12). No artefacts or any other remains were identified.

Site GHK 010

GPS 24° 31' 09,3" S

30° 08' 29,2" E

The remains of a small dilapidated structure/s were identified at this location (photo 13). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount of disturbances occurred. This structure measured approximately 5m x 5m. No artefacts or any other remains were identified.

Site GHK 011

GPS 24° 31' 11,2" S

30° 08' 34,1" E

The remains of a small dilapidated structure/s were identified at this location (photo 14). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount of disturbances occurred. This structure measured approximately 5m x 5m. No artefacts or any other remains were identified.

Site GHK 012

GPS 24° 31' 10,6" S

30° 08' 43,6" E

The remains of a small dilapidated structure/s were identified at this location (photo 15). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount of disturbances occurred. This structure measured approximately 5m x 5m. No artefacts or any other remains were identified.

Site GHK 013

GPS 24° 31' 12,3" S

30° 08' 49,4" E

The remains of a dilapidated structure/s were identified at this location (photo 16). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount

of disturbances occurred. These structures consisted of 3 square rooms which all measured approximately 5m x 5m. No artefacts or any other remains were identified.

Site GHK 014

GPS 24° 31' 12,9" S

30° 08' 47,4" E

The remains of a dilapidated structure/s were identified at this location (photo 17). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount of disturbances occurred. These structures consisted of 3 square rooms, a cooking structure and some other hut structures. No artefacts or any other remains were identified.

Site GHK 015

GPS 24° 31' 13,4" S

30° 08' 44,7" E

The remains of a small dilapidated structure/s were identified at this location (photo 18). The remains were set amongst some Euphorbias and they consisted basically of the packed line of rocks which was used in the foundations of the structure/s. Some of these rocks were removed and in other areas the foundations were damaged. It was difficult to determine the exact size and shape of this structure/s due to the amount of disturbances occurred. This structure measured approximately 5m x 5m. No artefacts or any other remains were identified.

Resource Evaluation

In this section an evaluation of the origins, cultural affiliation, age and heritage significance of the identified site will be given.

Groothoek Residential and Industrial Development

Sites GHK 001 & GHK 00[illegible]

Site significance characteristics slide scale (Post-Contact Criteria)	
Scientific Significance	1
Historic Significance	1
Public Significance	3
Other Significance	1
Ethnic Significance	2
Economic Significance	0
Total Score	8

Site quality: Moderate Significance

The identified sites with the possible graves have little heritage resources value or potential, but they do have personal and anthropological value and significance for the relevant families. The identified possible graves have significant cultural value and importance both for the local community as well as the next-of-

kin. The fact that these possible graves were indicated to the investigating team after consultation and that these possible graves were found in relative close proximity of previous residential areas do merit their significance to be preserved.

Site GHK 002

Site significance characteristics slide scale (Post-Contact Criteria)	
Scientific Significance	1
Historic Significance	1
Public Significance	1
Other Significance	0
Ethnic Significance	1
Economic Significance	0
Total Score	4

Site quality: Low Significance

The identification of the lower grinding stone with a few un-diagnostic potsherds was an isolated chance find. The lower grinding was most probably removed from the place or area where it was used and was moved to this location next to a ploughed field where it was most probably used temporarily. The low density scatter of potsherds did not constitute to a site and were most probably the result of people congregating during harvesting/ploughing times and these broken vessels were left behind.

Sites GHK 003 – GHK 015

Site significance characteristics slide scale (Post-Contact Criteria)	
Scientific Significance	1
Historic Significance	1
Public Significance	2
Other Significance	0
Ethnic Significance	1
Economic Significance	0
Total Score	5

Site quality: Low Significance

The identified sites with the remains of the structures have little heritage resources value or potential. The sites were all identified next to or in very close proximity of large stretches of ploughed fields. The minimalistic nature of the dilapidated remains indicated that no effort was made for these structures to last a long time. It is believed that these structures were used temporarily during high agricultural

activities. The large areas that were worked and planted needed a large and organised work force, which were evident from the amount of structures found and the number of rooms on these sites.

After consultation with Chief Mafolo (the local chief) and his brother Frank Mafolo (acting as spokesman) it was learned that the people from Motlolo village first settled in an area to the north of the proposed development (approx. 1850's). The area indicated was to the north of the proposed Recreational area and Animal park. They moved from that area in 1952 further to the east and settled in an area also to the north of the proposed development. They moved again in 1958 to the present location of Motlolo village. During all of these times the large stretches of fields were worked and people resided there during times of high activities. The identified sites and structures were confirmed by them as temporary structures, but they could not verify their age. It may be possible, but it is highly unlikely that these sites are older than 60 years.

Impact Identification and Assessment

In this section the impact of the proposed development on the identified sites will be discussed and evaluated.

Groothoek Residential & Industrial Development

The direct and indirect impacts of the development on these sites will be determined by using the parameters outlined in Addendum D. The following table will be used for the qualitative measurement of this site's heritage potential. Every aspect will be rated on a scale of 0-4 with 0 being no effect and 4 being the highest effect.

Site GHK 001 & GHK 009

Impact Effect	Score
Magnitude	4
Severity	4
Duration	4
Range	0
Frequency	4
Diversity	4
Cumulative effect	4
Rate of change	4
Total score:	28

Impact severity: Significant impact on the sites and their attributes.

The development and establishment of the various structures and infra-structure of the proposed Groothoek Residential and Industrial development could possibly impact negatively on the possible graves identified. Comprehensive earth-moving activities could endanger the possible graves structurally or totally destroy them. Fencing the area will also limit access to the graves for the possible families. Increased human activity could also possibly endanger the safety of the possible graves and their dressings.

Site GHK 00[illegible]

Impact Effect	Score

Magnitude	1
Severity	1
Duration	1
Range	1
Frequency	0
Diversity	1
Cumulative effect	0
Rate of change	0
Total score:	5

Impact severity: Insignificant impact on the site and its attributes.

e artefacts encountered were of low heritage value and significance and would therefore not have to be preserved.

Site GHK 003 – GHK 013

Impact Effect	Score
Magnitude	1
Severity	1
Duration	1
Range	1
Frequency	0
Diversity	1
Cumulative effect	0
Rate of change	0
Total score:	5

Impact severity: Insignificant impact on the site and its attributes.

The sites and structures encountered were of low heritage value and significance. These sites were in a very dilapidated state and various similar sites were also found in areas which will not be affected by the development. The probability that these sites are from a recent era and not from beyond the last 60 years is highly likely and would therefore not have to be preserved.

Resource Management Recommendations

In this section recommendations for the handling of the identified site will be given. Provided these recommendations are adhered to the site will be preserved.

Groothoek Residential & Industrial Development

Site GHK 001 & GHK 002

Possible graves were identified at these locations. The following steps and measures are recommended:

- A process of social consultation should be initiated to establish the authenticity of these possible graves.
- The identified possible graves could have significant heritage value to the relevant families and should therefore be preserved.
- It is recommended that the identified possible graves should be clearly marked with danger tape during the entire duration of the project and especially during earth-moving activities and a 30m buffer zone must be allowed around the graves.
- The possible relevant families should be identified and should be informed about the proposed activities which could possibly affect their graves.
- The proposed earth-moving activities should be altered and should be planned around these possible graves in order to protect them from any damage or other negative impacts.
- Earth-moving crews should be made aware of the possible graves in order that the graves will not be damaged during the earth-moving activities.
- The planning team should ensure that access to the possible graves is not limited in any way. A small management plan should be set up to ensure the future safety of the graves next to the proposed development.
- **If the above recommendations can not be adhered to, further steps and measures should be taken to move the possible graves and relocate them to one of the official graveyards in the area. This should only be done as last resort if no other options deem to be possible.**
- A process of consultation with the possible affected families should then be initiated to start the relocation of the graves.
- Various applications to various Departments should be put into motion to obtain the necessary permissions and permits to perform the relocation of the possible graves.
- Only after all the required permissions and permits have been obtained, can the relocation of the graves continue as performed by professionals.
- Only if the above mentioned recommendations are adhered to can the Groothoek Residential & Industrial development in these areas continue from a heritage point of view.

Site GHK 002

A lower grinding stone and a few scattered un-diagnostic potsherds were identified at this location. The following steps and measures are recommended:

- The identified site and finds were of low heritage value and significance.
- No further site-specific actions or any further heritage mitigation measures are recommended for this site as it had no heritage value or significance.
- The proposed Groothoek Residential & Industrial development in this area can continue from a heritage point of view.

Site GHK 003 - GHK 015

Several temporary sites and structures were identified at these locations. The following steps and measures are recommended:

- The identified sites were most probably of a recent nature and did not have any heritage significance or value.
- The sites were in a very dilapidated state and were most probably of a temporary origin.
- No further site-specific actions or any further heritage mitigation measures are recommended for these sites as they had no heritage value or significance.
- The proposed Groothoek Residential & Industrial development in these areas can continue from a heritage point of view.

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APPENDIX A

PHOTOGRAPHS

Photo 1: Site 1 – Possible grave.

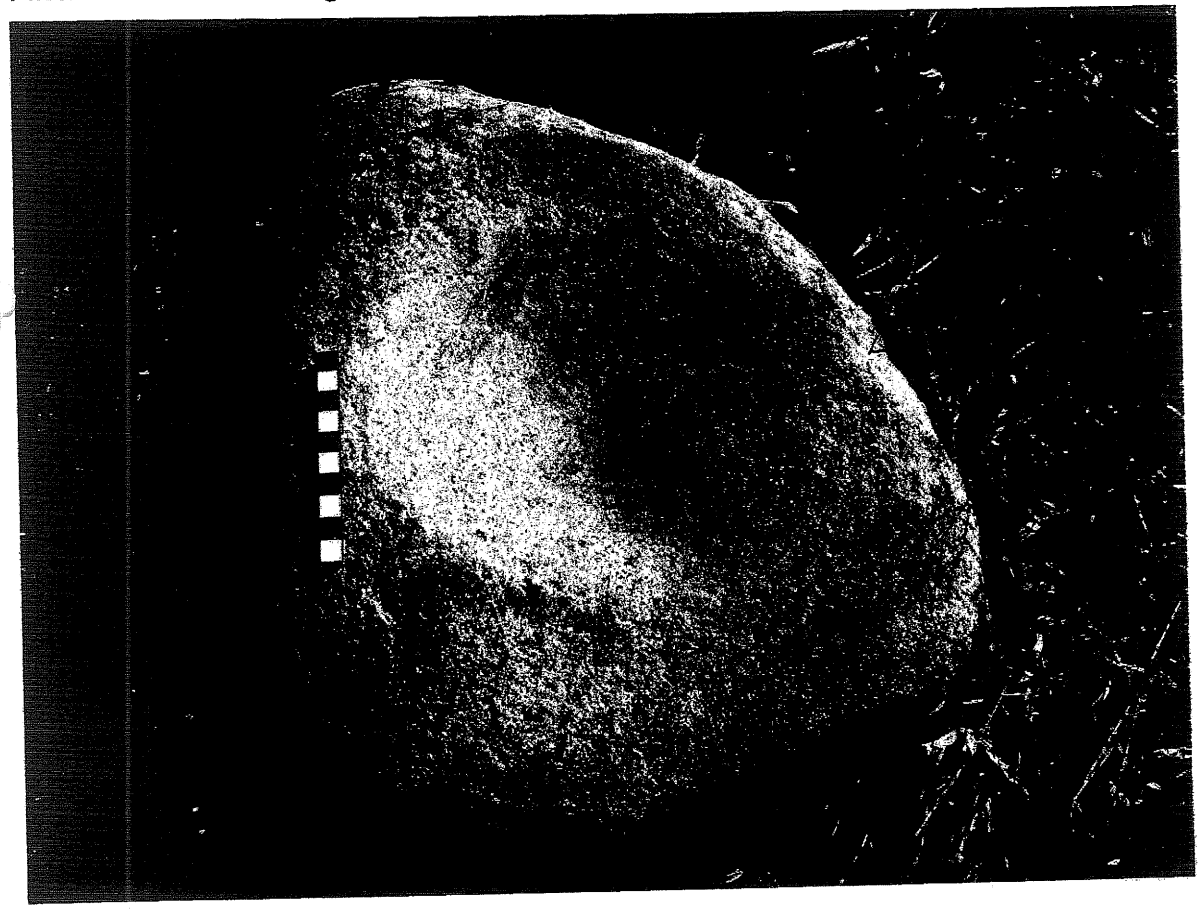


Photo 2: Site 2 – Lower grinding stone.

Photo 3: Site 2 – Un-diagnostic potsherds.

Photo 4. Site 3.

Photo 5: Site 4.

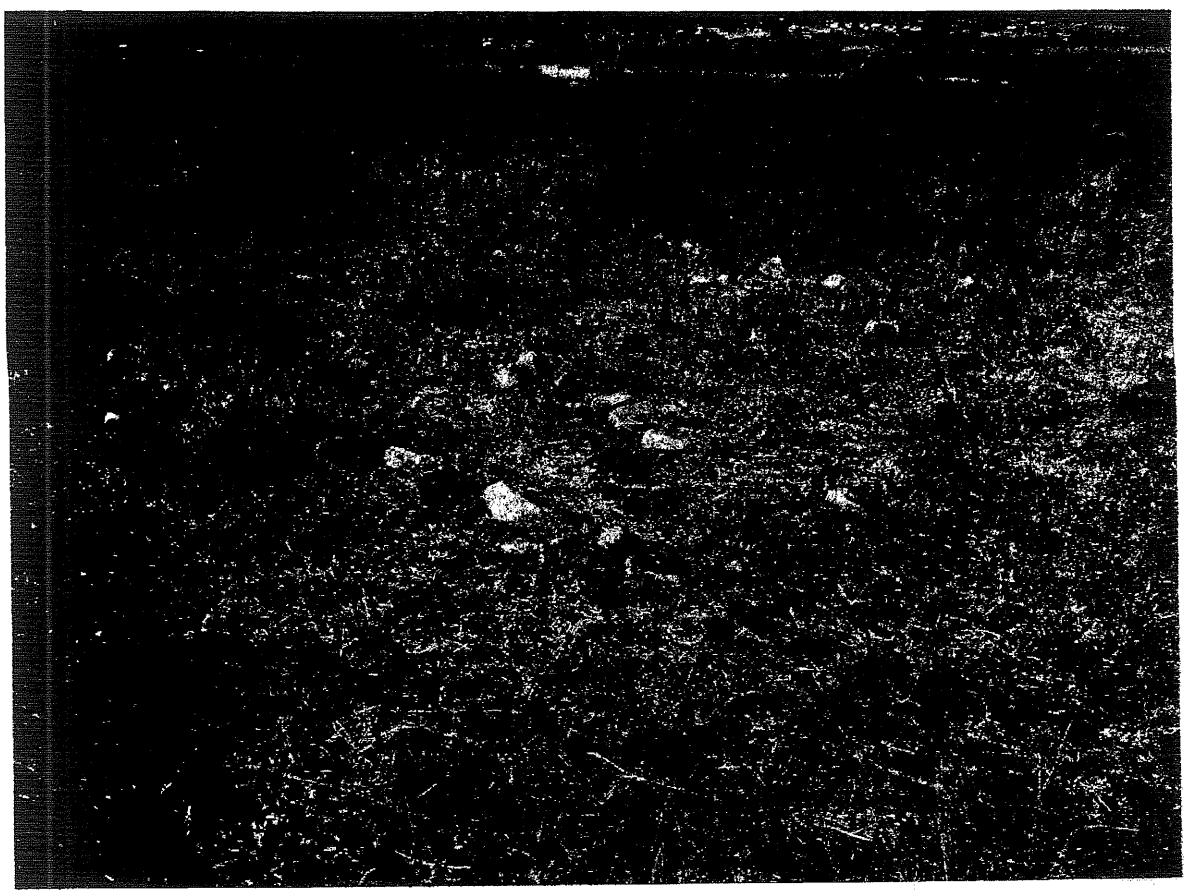


Photo 6: Site 5.

Photo 7: Site 6.

Photo 8: Site 6 – Lower grinding stone.

Photo 9: Site 7.

Photo 10: Site 8.

Photo 11: Site 9.

Photo 12: Site 9 – Possible grave.

Photo 13: Site 10.

Photo 14: Site 11.

Photo 15: Site 12.

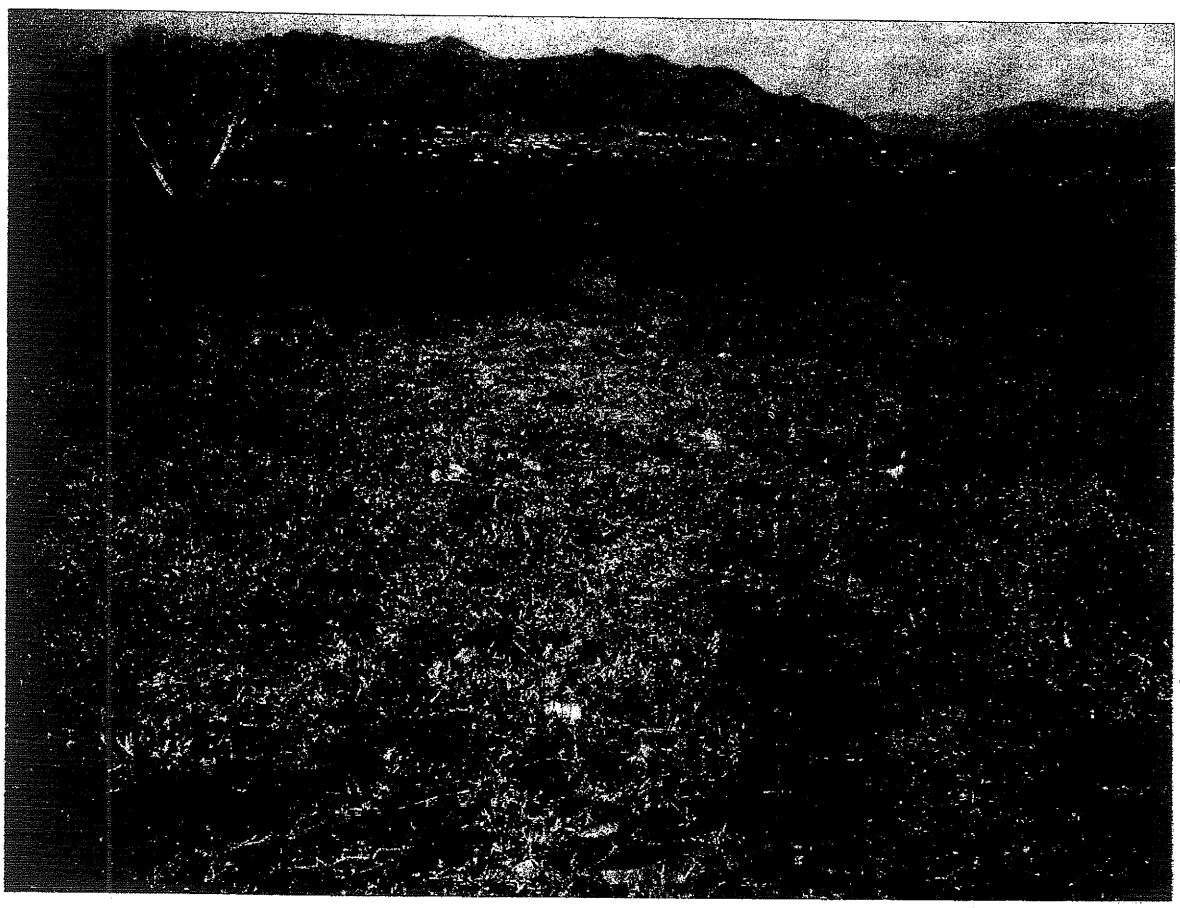


Photo 16: Site 13.

Photo 17: Site 14.

Photo 18: Site 15.

APPENDIX B

Pre-Contact Criteria

APPENDIX B

Pre-Contact Criteria

Scientific Significance

(a) Does the site contain evidence which may substantively enhance understanding of culture history, culture process, and other aspects of local and regional prehistory?

internal stratification and depth

chronologically sensitive cultural items

materials for absolute dating

association with ancient landforms

quantity and variety of tool type

distinct intra-site activity areas

tool types indicative of specific socio-economic or religious activity

cultural features such as burials, dwellings, hearths, etc.

diagnostic faunal and floral remains

exotic cultural items and materials

uniqueness or representativeness of the site

integrity of the site

(b) Does the site contain evidence which may be used for experimentation aimed at improving archaeological methods and techniques?

monitoring impacts from artificial or natural agents

site preservation or conservation experiments

data recovery experiments

sampling experiments

intra-site spatial analysis

(c) Does the site contain evidence which can make important contributions to paleoenvironmental studies?

topographical, geomorphological context

depositional character

diagnostic faunal, floral data

(d) Does the site contain evidence which can contribute to other scientific disciplines such as hydrology, geomorphology, pedology, meteorology, zoology, botany, forensic medicine, and environmental hazards research, or to industry including forestry and commercial fisheries?

Public Significance

(a) Does the site have potential for public use in an interpretive, educational or recreational capacity?

integrity of the site

technical and economic feasibility of restoration and development for public use

visibility of cultural features and their ability to be easily interpreted

accessibility to the public

opportunities for protection against vandalism

representativeness and uniqueness of the site

aesthetics of the local setting

proximity to established recreation areas

present and potential land use

land ownership and administration

legal and jurisdictional status

local community attitude toward development

(b) Does the site receive visitation or use by tourists, local residents or school groups?

Ethnic Significance

(a) Does the site presently have traditional, social or religious importance to a particular group or community?

ethnographic or ethno-historic reference

documented local community recognition or, and concern for, the site

Economic Significance

(a) What value of user-benefits may be placed on the site?

visitors' willingness-to-pay

visitors' travel costs

APPENDIX C

Post-Contact Criteria

Scientific Significance

(a) Does the site contain evidence which may substantively enhance understanding of historic patterns of settlement and land use in a particular locality, regional or larger area?

(b) Does the site contain evidence which can make important contributions to other scientific disciplines or industry?

Historic Significance

(a) Is the site associated with the early exploration, settlement, land use, or other aspect of southern Africa's cultural development?

(b) Is the site associated with the life or activities of a particular historic figure, group, organization, or institution that has made a significant contribution to, or impact on, the community, province or nation?

(c) Is the site associated with a particular historic event whether cultural, economic, military, religious, social or political that has made a significant contribution to, or impact on, the community, province or nation?

(d) Is the site associated with a traditional recurring event in the history of the community, province, or nation, such as an annual celebration?

Public Significance

(a) Does the site have potential for public use in an interpretive, educational or recreational capacity?

visibility and accessibility to the public

ability of the site to be easily interpreted

opportunities for protection against vandalism

economic and engineering feasibility of reconstruction, restoration and maintenance

representativeness and uniqueness of the site

proximity to established recreation areas

compatibility with surrounding zoning regulations or land use

land ownership and administration

local community attitude toward site preservation, development or destruction

present use of site

(b) Does the site receive visitation or use by tourists, local residents or school groups?

Ethnic Significance

(a) Does the site presently have traditional, social or religious importance to a particular group or community?

Economic Significance

(a) What value of user-benefits may be placed on the site?

visitors' willingness-to-pay

visitors' travel costs

Integrity and Condition

(a) Does the site occupy its original location?

(b) Has the site undergone structural alterations? If so, to what degree has the site maintained its original structure?

(c) Does the original site retain most of its original materials?

(d) Has the site been disturbed by either natural or artificial means?

Other

(a) Is the site a commonly acknowledged landmark?

(b) Does, or could, the site contribute to a sense of continuity or identity either alone or in conjunction with similar sites in the vicinity?

(c) Is the site a good typical example of an early structure or device commonly used for a specific purpose throughout an area or period of time?

(d) Is the site representative of a particular architectural style or pattern?

APPENDIX D

Indicators for Assessing Impact

Magnitude
The amount of physical alteration or destruction which can be expected. The resultant loss of heritage value is measured either in amount or degree of disturbance.

Severity
The irreversibility of an impact. Adverse impacts which result in a totally irreversible and irretrievable loss of heritage value are of the highest severity.

Duration
The length of time an adverse impact persists. Impacts may have short-term or temporary effects, or conversely, more persistent, long-term effects on heritage sites.

Range
The spatial distribution, whether widespread or site-specific, of an adverse impact.

Frequency
The number of times an impact can be expected. For example, an adverse impact of variable magnitude and severity may occur only once. An impact such as that resulting from cultivation may be of recurring or ongoing nature.

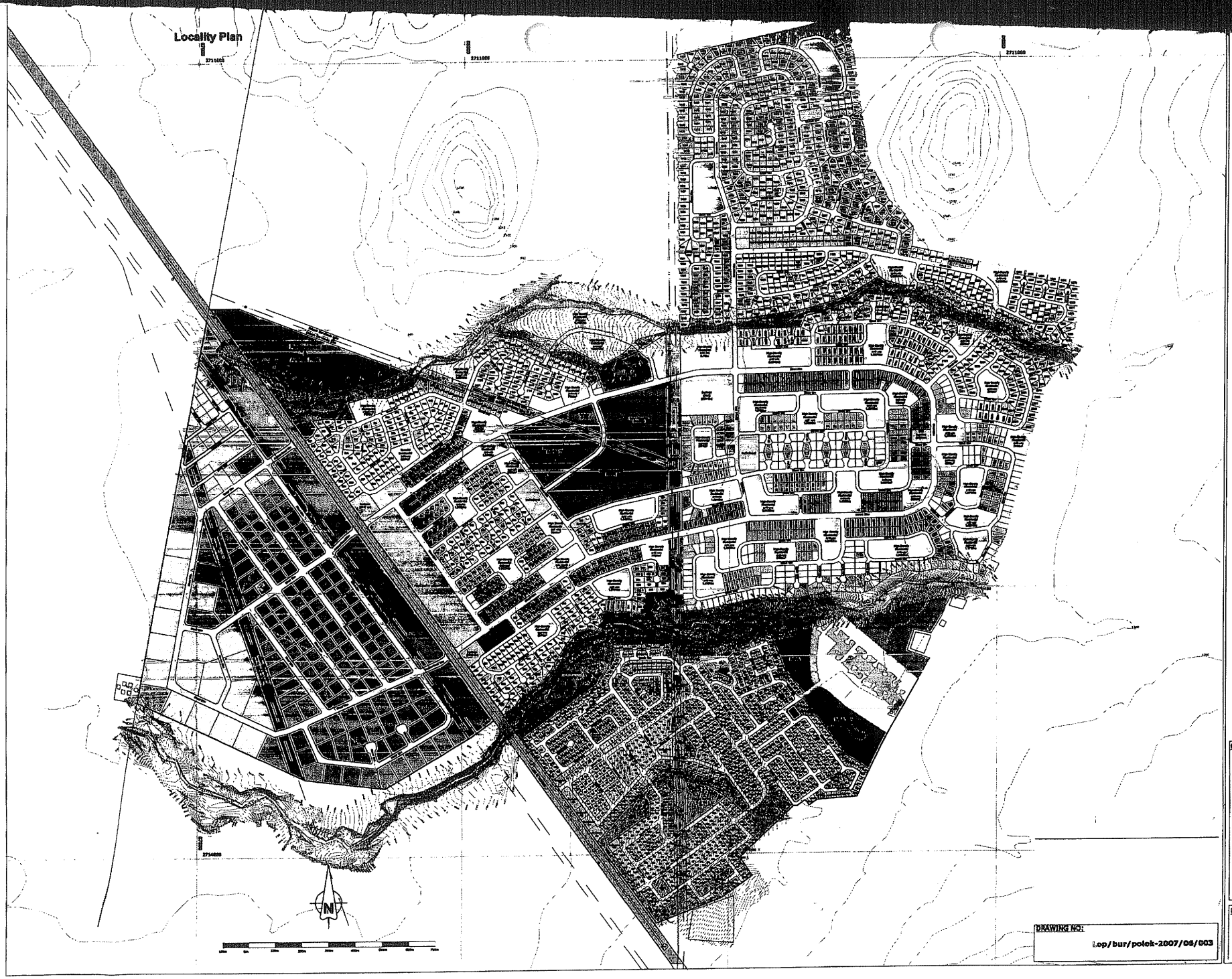
Diversity
The number of different kinds of project-related actions expected to affect a heritage site.

Cumulative Effect
A progressive alteration or destruction of a site owing to the repetitive nature of one or more impacts.

Rate of Change
The rate at which an impact will effectively alter the integrity or physical condition of a heritage site. Although an important level-of-effect indicator, it is often difficult to estimate. Rate of change is normally assessed during or following project construction.

APPENDIX E

Location Maps



Summaries of Areas

Residential	= 342.44 Ha
Industrial	= 76.4 Ha
Streets	= 102.08 Ha
Public Open Spaces	= 45.39 Ha
Recreational/Animal Park	= 11.34 Ha
Undetermined	= 26.00 Ha
Eskom Servitudes	= 25.13 Ha
Total	= 623.44 Ha

CLIENT:

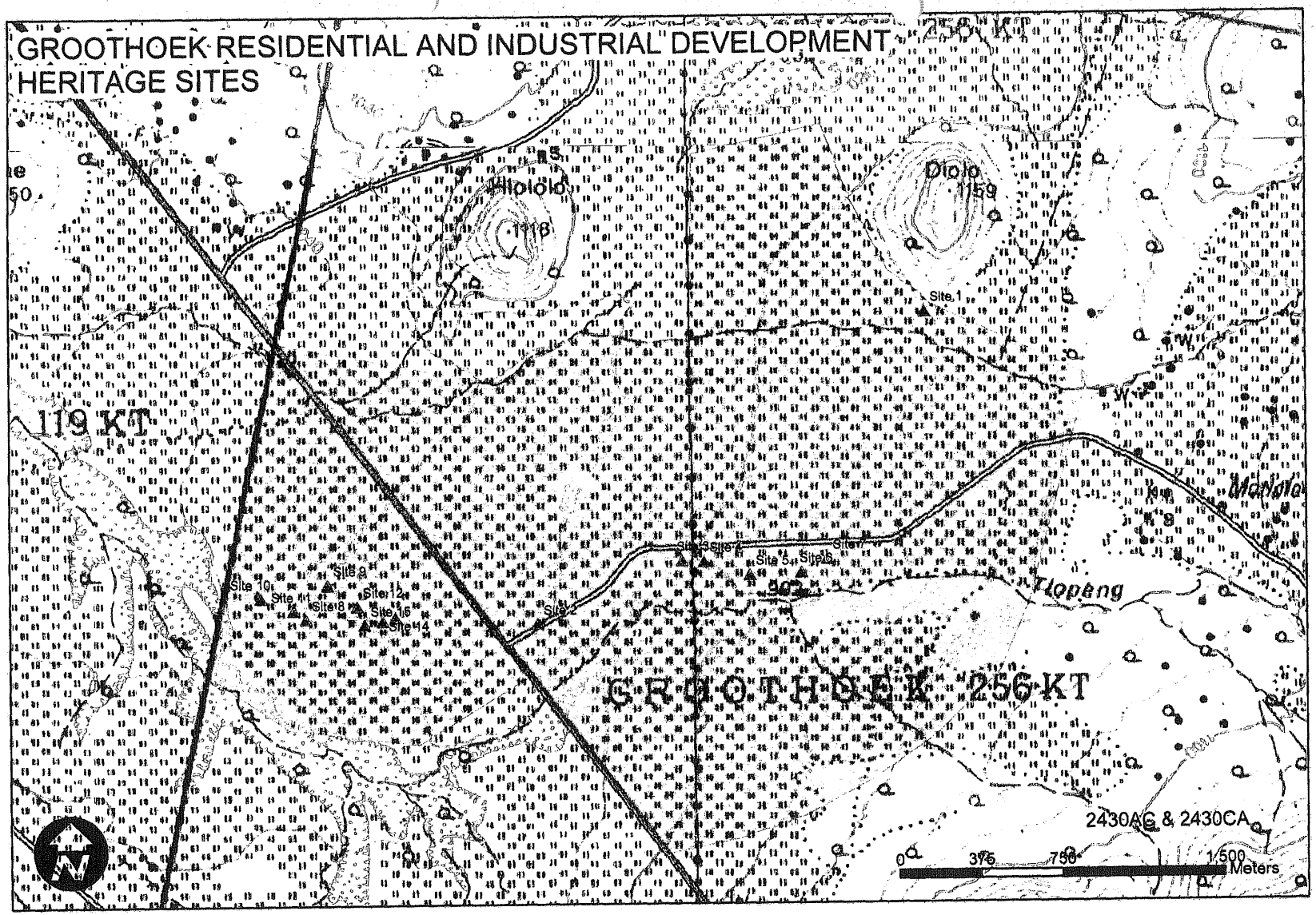
KWENA MAFOLO TRUST
&
LOPEN PROJECTS CC
pen.infragroup@lantic.net

PROJECT:

MAFOLO PARK
(GROOTHOEK 256 KT)
Residential & Industrial

DRAWING NO:

Lop/bur/polok-2007/06/003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HERITAGE SITES
Hlololo
1118
Diolo
1159
119 KT
Site 1
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Site 3
Site 4
Site 5
Site 6
Site 7
Site 8
Site 9
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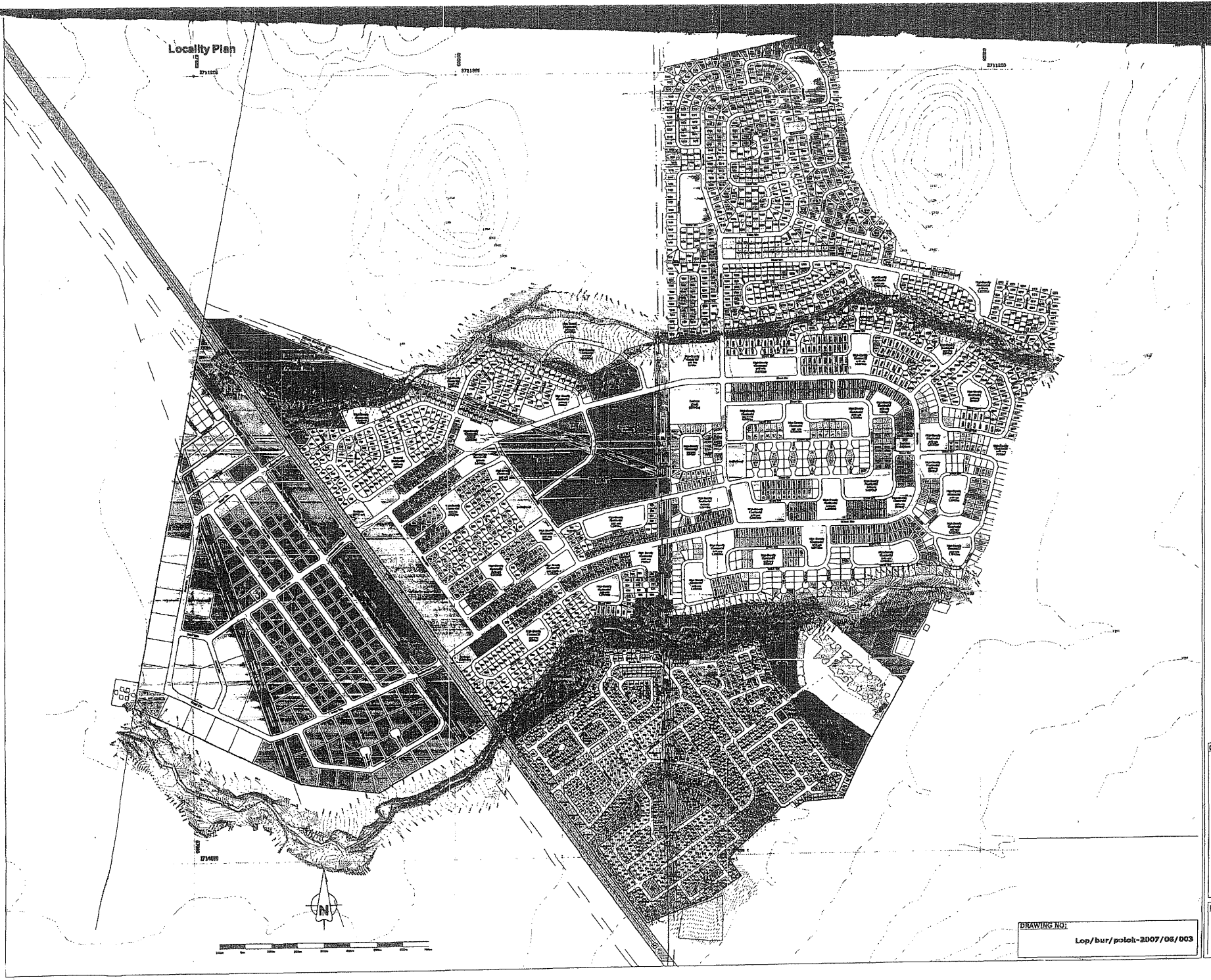

Summarise of Areas

Residential	= 342.44 Ha
Industrial	= 76.4 Ha
Streets	= 102.16 Ha
Public Open Spaces	= 45.91 Ha
Recreational/Animal Park	= 11.34 Ha
Undetermind	= 26.60 Ha
Eskom Servitudes	= 29.12 Ha
Total	= 823.44 Ha

CLIENT:

KWENA MAFOLO TRUST
&
LOPEN PROJECTS CC
pan.infragroupdiliantic.mal

PROJECT:

MAFOLO PARK
(GROOTHOEK 256 KT)
Residential & Industriel

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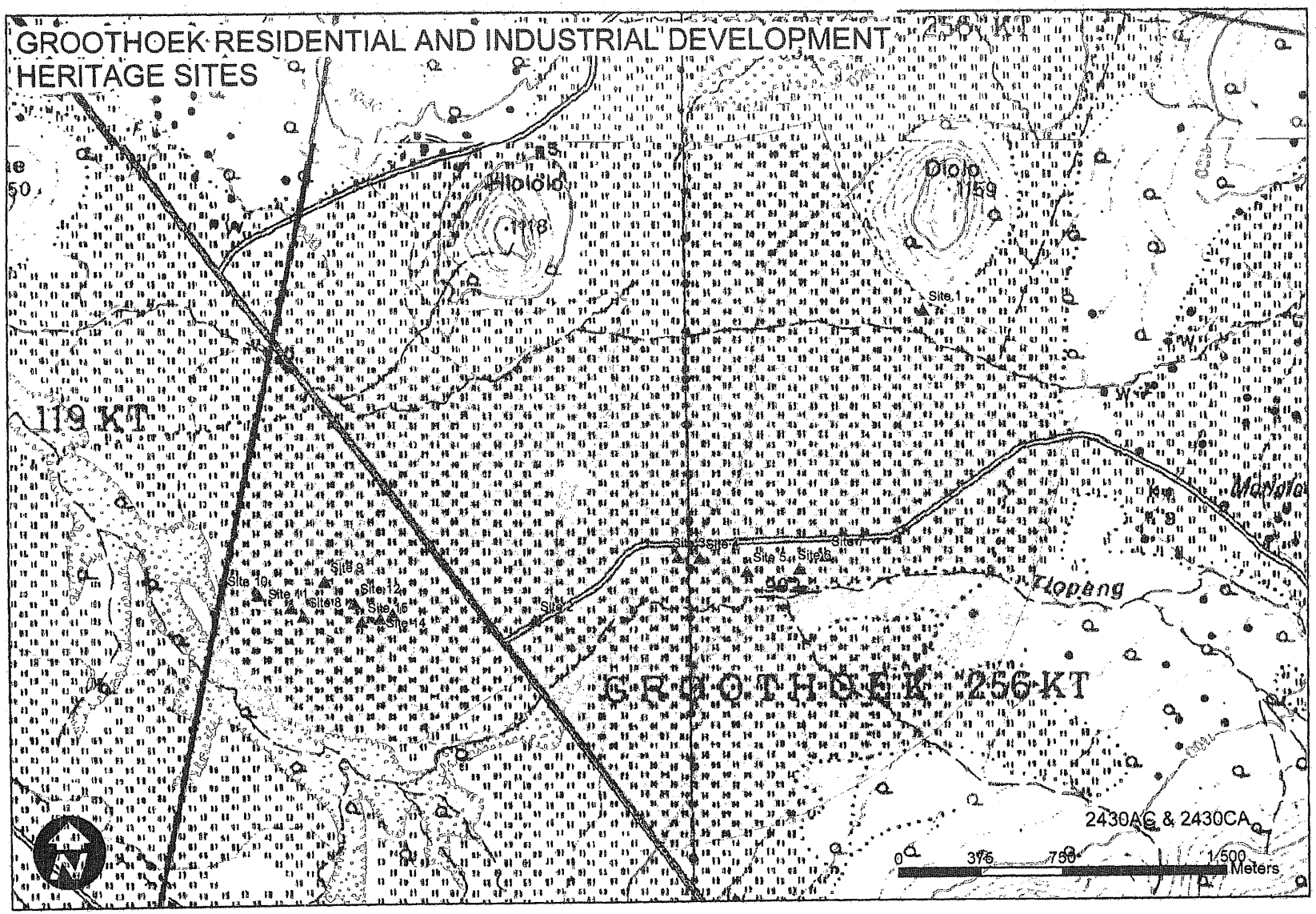
GROOTHOEK RESIDENTIAL AND INDUSTRIAL DEVELOPMENT
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Diolo
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Site 4
Site 5
Site 6
Site 7
Site 8
Site 9
Site 10
Site 11
Site 12
Site 13
Site 14
Site 15
Site 16
Site 17
Site 18
Klopeng
GROOTHOEK 256 KT
2430AC & 2430CA
0
375
750
1,500
Meters

LIST OF HIAs/AIAs/EIAs RECEIVED BY BURIAL GROUNDS & GRAVES UNIT: FEBRUARY- MARCH 2009

Client Name	Title	Author	Date	BGG comments
Metago Environmental Engineers for Spitzkop Platinum Mine	A Phase I HIA Study For the proposed new Spitzkop Platinum Mine in Steelpoort in the Mpumalanga Province	Dr Julius Pistorius	July 2007	3 graves (G01, G02, G03) & 3 graveyards (GY01, GY02, GY03) found. Most seem to be less than 60 years although some of unknown date. Not clear if graves/g-yards will be impacted by mining or not. Should be avoided if possible.
Naledzi Environmental Consultants CC	An Archaeological Investigation of a Proposed Road Upgrade from gravel to tar of Road D1331 at Modjaji Area within the Greater Letaba Local Municipality, Limpopo Province	Vhufa Hashu Heritage Consultants	October 2008	3 graves of unknown date, one close to proposed road reserve. Preferably to be avoided and marked/fenced off to prevent damage.
Landscape Dynamics for Eskom	A Phase I HIA Study For Eskom's Proposed new 132kV power line running between the Paradise-T and Musina Substations in the Limpopo Province	Dr Julius Pistorius	August 2008	Noted that 2 graveyards identified and one could be affected. However, recommended that both be avoided.
Tekplan Environmental	Heritage Impact Assesment for the proposed Groothoek Residential and Industrial development north-west of Burgersfort, Limpopo Province	Archaeo-Info Northern Province (Marko Hutten*)	August 2008	If the 2 gravesites (GHK001, GHK009) cannot be retained then full public cons must be done before application for removal
Zitholele Consulting for Eskom Megawatt Park	A Phase I HIA Study For Eskom's Proposed Bravo Project On The Eastern Highveld In The Gauteng And Mpumalanga Provinces Of South Africa: The Construction Of Two 400kv Power By-Pass Lines From The Sol Substation To The Zeus And Cambden Substations	Dr Julius Pistorius	September 2008	Graveyard (GY01) situated near to historical farm complex. Therefore need info from Phase II HIA to determine significance. Cannotr comment until receive Phase II report.