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Heritage Impact Assessment

HERITAGE IMPACT ASSESSMENT FOR THE
PROPOSED DEVELOPMENT OF A PRIVATE NATURE
RESERVE NEAR JANSENVILLE IN THE EASTERN CAPE
PROVINCE.

PREPARED BY:
G&A HERITAGE

PREPARED FOR:
CEN



MAY 2010

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. GAIGHER & ASSOCIATES and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.*

SIGNED OFF BY: STEPHAN GAIGHER



MANAGEMENT SUMMARY

Site name and location: Proposed development of the Ibamba Private Nature and Hunting Reserve – Eastern Cape.

Magisterial district: Cacadu District Municipality

Developer: Ibamba Private Nature Reserve.

Consultant: G&A Heritage, PO Box 522, Louis Trichardt, 0920, South Africa

Date development was mooted: January 2010

Date of Report: 16 May 2010

Proposed date of commencement of development: Development has already commenced.

Ibamba Private Nature Reserve. The development proposes the creation of the Ibamba Private Nature and Hunting reserve. This will be accomplished by the amalgamation of the following properties into one management area; Remainder of the Farm Vlak Nek No 31, Ptn 1 of the Farm Vlak Nek No 31, Farm 30, Farm 101, Ptn 1 of the Farm Groot Kloof No 32, Remainder of Farm Groot Kloof No 32, Ptn 1 of the Farm Jacobsdal No 33, Remainder of Farm Jacobsdal No 33, Ptn 1 of the Farm Hinchinbrook No 92, Farm Oudeberg No 94, Ptn 4 of the Farm Smitskraal No 113, Remainder of the Farm Russouwspoort No 115, Remaining Extent of the Farm Smitskraal No 113, and Ptn 1 of the Remaining Extent of the Farm Smitskraal No 113.

Three existing homesteads will be renovated for personnel residences while a new tented camp as well as a luxury lodge and a renovated house will be developed for visitor accommodation.

Findings;

The development of the different accommodation structures were already well advanced when the heritage practitioners investigated the area. The following sites were identified within the areas demarcated for development;

- A historic stone walled “kraal” on the farm Smitskraal
- A historic storage shed on the farm Smitskraal
- A historic homestead on the farm Jacobsdal

Only the areas to be effected by the proposed developments were investigated as the total area of the development is around 20 000ha.

The construction activities already performed did not seem to have had any negative impact on existing sites of heritage significance.

Recommendations;

- It is recommended that a heritage management plan be implemented for the preservation and curation of the historic structure (barn) on the farm Smitskraal.
- Management parameters are put in place for the use of the concrete storage area constructed next to the historic kraal on Smitskraal.
- The homestead earmarked for demolition could be of historic significance and should

- undergo a second phase of investigation to determine its heritage significance.
- The renovated homesteads were not found to have any heritage significance and were found to be of a recent nature.



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GLOSSARY

Archaeology: *Remains resulting from human activity which is in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.*

Early Stone Age: *The archaeology of the Stone Age between 300 000 and 2500 000 years ago.*

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

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

Late Stone Age: *The archaeology of the last 20 000 years associated with fully modern people.*

Middle Stone Age: *The archaeology of the Stone Age between 20 000-300 000 years ago associated with early modern humans.*

Midden: *A concentration of shellfish, bone, stone artefacts and sometimes pottery which has resulted from the actions of human activity.*

National Estate: *The collective heritage assets of the Nation.*

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

SAHRA: *South African Heritage Resources Agency – the compliance authority which protects national heritage.*

Structure (historical:) *Any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith. Protected structures are those which are over 60 years old.*

Wreck (protected): *A ship or an aeroplane or any part thereof that lies on land or in the sea within South Africa is protected if it is more than 60 years old.*



HERITAGE IMPACT ASSESSMENT (HIA)

FOR THE PROPOSED DEVELOPMENT OF A PRIVATE NATURE AND HUNTING RESERVE NEAR JANSENVILLE, EASTERN CAPE.

INTRODUCTION

G&A Heritage was contracted by CEN to conduct a first phase Basic Heritage Impact Assessment (HIA) on the proposed development of a private nature and hunting reserve on approximately 20 000ha of private property near Jansenville in the Eastern Cape 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 Gaigher & Associates 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 ten 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).

A member of Gaigher & Associates performed the assessment on 10 May 2010.

The indicted study areas were investigated for signs of sites with any heritage significance. Any sites identified were plotted using a Global Positioning System (GPS) using the WGS 84 datum 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 followed by the results and recommendations for the identified resources.

LEGISLATIVE REQUIREMENTS

This study is conducted in terms of Section 38 (1) of the National Heritage Resources Act (No 25 of 1999) which makes provision for a compulsory HIA when constructing a road or similar linear developments exceeding 300m in length or developing an area exceeding 5000m² in extent. The law provides protection for the following categories of heritage:

- Archaeological remains which is defined as material older than 100 years and includes artefacts, structures, etc. as well as artefacts associated with military history older than 75 years (Section 35);
- Paleontological and rare geological specimens and meteorites (Section 35);
- Living Heritage which can include cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems, etc;
- Historical sites, buildings and objects older than 60 years (Section 34);
- Graveyards and graves older than 60 years (Section 36);

- Proclaimed heritage sites, public monuments and memorials (Section 37);
- Ethnographic art objects and objects of decorative and visual arts (Section 32).

Further, the National Estate may include (Section 3 (2));

- Places, buildings, structures and equipment of cultural significance;
- Places to which oral traditions are attached or which are associated with living heritage;
- Historical settlements and townscapes (and this can include open space, including a public square, street or park);
- Landscapes and features of cultural significance;
- Sites of significance related to the history of slavery in South Africa.

SCOPE AND LIMITATION

The scope of work was defined as the heritage sensitivity evaluation of the historic structures and sites located within the area earmarked for development.

The management of the heritage resources in the area has been affected negatively due to the absence of any heritage investigations before the commencement of the developments and restorations. Three of the homesteads were already in an advanced stage of renovation on initiation of the heritage investigations.

REGIONAL OVERVIEW

Prior to the arrival of colonials, the area in general was inhabited by the nomadic *Khoi* and *Khoi San* and the pastoral Xhosa.

Late in the 18th century, the area became known to the Dutch who named the river the Zondag, after a settler. After the occupation of the Cape by the British the name transmuted to the Sundays.

The actual site of the town of Jansenville was first surveyed in 1814 and named Vergenoegd. This property was acquired in 1820 by Christiaan Ernst Schutte. He and his successor moved north and in 1838 Vergenoegd became the property of Petrus Jacobus Fourie from Swellendam who began to cultivate the land along the river. This was the beginning of **Jansenville history** as a matter of record.

The wagon trail from Port Elizabeth to Graaff-Reinet passed through Vergenoegd which increased the number of people in the area.

In 1853, Fourie arranged for the surveying and laying out of 80 plots on his property in order to establish a town. He had intended the town to be named Alexandria after Dutch Reformed minister Alexander Smith of Uitenhage who visited the congregation once a quarter.

In the event, by the time the application had reached Cape Town, the name Alexandria has already been granted to another settlement so the place was then named **Jansenville**, after General Janssens, the last Dutch Governor at the Cape.

In 1874 work began on the first bridge over the Sundays River at Jansenville which was completed the following year (below the estimated cost!). To-day the piers of this bridge stand next to the present bridge.

1876 saw the establishment of a police station at Jansenville with a force of two constables as well as the appointment of a magistrate.

The outbreak of the **Anglo-Boer War** caused something of a rift in the community, with some supporting the British while many sympathised with the Boers. A Town Guard was formed in Jansenville and three blockhouses erected; one on a knoll by the bridge, one at the main crossroads in town and the third (The "Fort") on the hill just north of the town where it can be seen to this day.



Jan Smuts and his commando entered the Cape in 1901 with a view to raising the "Cape Dutch" in rebellion although only small numbers joined him. In the event, Jansenville was never attacked although a small engagement took place at Blaauwkrantz, some 20 km north of town.

A somewhat larger engagement also took place in 1901 near **Klipplaat** between some 300 men of Kritzinger's Commando and a patrol of West Australians and 7th Dragoon Guards who were covering the right flank of a column advancing from Uniondale towards Klipplaat.

The Baviaanskloof was briefly notorious for the government work camps located here for the reform of white vagrants. The *Baviaanspoort Boerdery Kolonie en Dronkgestig vir Leeglopers* was developed in 1912 to reform white men who were seen as being unproductive or in the grips of alcoholism. This program was pushed by the NG church and was run until 1940 when it was changed into a detention centre for Nazi sympathisers.

1907 saw a remarkable storm which de-roofed or destroyed 22 houses in the town of Jansenville.

During the First World War a number of Jansenville's sons volunteered to serve against the rebels within the country, against the Germans in East Africa as well as on the western front. Of the fourteen who went to France only three returned.

During the Second World War little Jansenville distinguished itself in a small way at the disastrous fall of Tobruk in 1942 when the 2nd South African Division and other allied units had to surrender to the Germans. Lieutenant Cecil Featherstone, born and bred in Jansenville, declined to surrender and, leading a small convoy, succeeded in evading the enemy forces and bringing 46 men back to the allied lines to fight again.

Jansenville also provided the highest per capita number of volunteers for the forces of any place in South Africa during the war.

On 30th October 1941, with the Sundays River almost dry, there fell upstream 275mm of rain in one day. A few hours later water was flowing over the 13m high bridge. The lower part of the town was destroyed as were the farmlands along the river.

The town of Klipplaat is located to the east and used to be a large railway exchange area for trains from Port Elizabeth, Johannesburg and Cape Town. Today it is a rundown and impoverished area.

PROPOSED PROJECT

The proposed area for development is formed by the combining of the following properties; Remainder of the Farm Vlak Nek No 31, Ptn 1 of the Farm Vlak Nek No 31, Farm 30, Farm 101, Ptn 1 of the Farm Groot Kloof No 32, Remainder of Farm Groot Kloof No 32, Ptn 1 of the Farm Jacobsdal No 33, Remainder of Farm Jacobsdal No 33, Ptn 1 of the Farm Hinchinbrook No 92, Farm Oudeberg No 94, Ptn 4 of the Farm Smitskraal No 113, Remainder of the Farm Russouwspoor No 115, Remaining Extent of the Farm Smitskraal No 113, and Ptn 1 of the Remaining Extent of the Farm Smitskraal No 113.

The main guest accommodation site will be located in a large renovated farm homestead located next to the gravel access road. The house has been renovated in Cape Dutch style;



• Photo 1 Renovated Farm Homestead

A second farmhouse structure was renovated for personnel accommodation. A historic barn structure is located on this same site;



• Photo 2 Renovated Homestead



• Photo 3 Historic structure

The largest accommodation development will be the luxury hilltop lodge. Development of this lodge had already commenced by the time we investigated the site;



• Photo 4 Developed sit for the hill lodge

A luxury tented safari camp have also been developed along the edge of one of the ridges to the south.



• Photo 5 Tented safari camp

The demolition of a single dilapidated farm homestead on the first property on the left coming in from

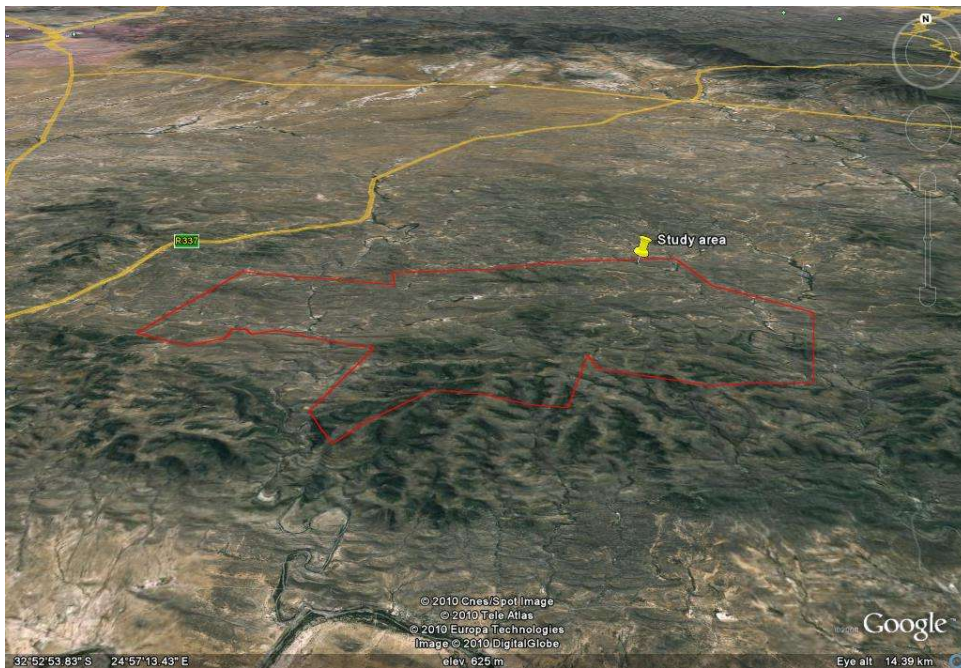
Jansenville is proposed. The structure shows signs of being of historic origin.



• Photo 6 Dilapidated homestead

PROJECT AREA

The proposed Private Nature Reserve is located on several combined properties that has been bought out by the developer. Much of the proposed sites are located to the north of the Baviaanskloof Conservancy and to the east of the town of Jansenville.



• Photo 7 Project area

Cold and windy weather conditions were experienced during the field investigations.

URBAN EDGE

The study area lies outside of the urban edge of any town or city.

ALTERNATIVES

No alternatives were considered for this project as in some places it entails the upgrading of existing infrastructure and not the development of new structures.



PALEONTOLOGICAL SITES

The Baviaanskloof formations approximately 10km to the south is well known for paleontological deposits. Specimens of *Pleurothyrella Africana* as well as *Proboscidina* have been recovered from these formations.

No indications of paleontological or meteor sites were evident from the areas investigated.

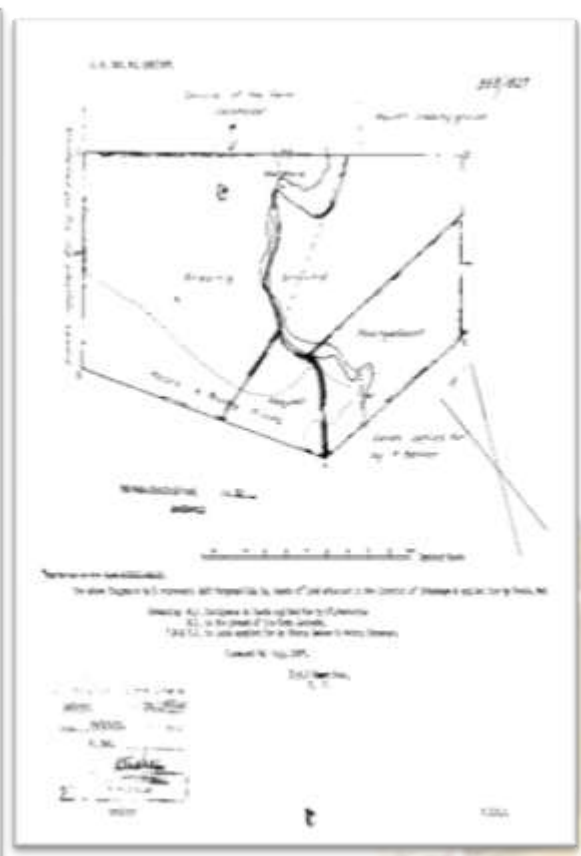
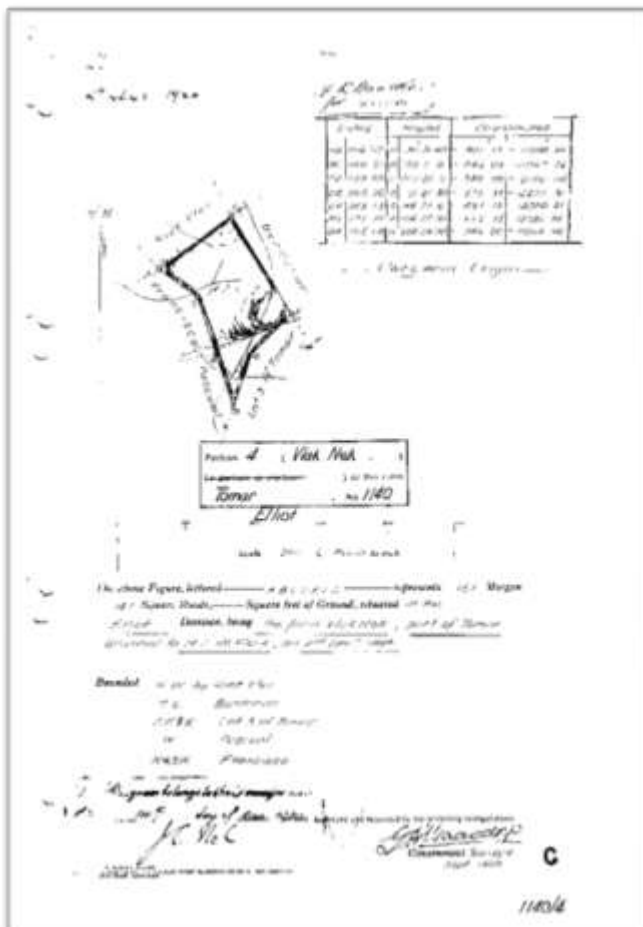
ARCHAEOLOGICAL SITES

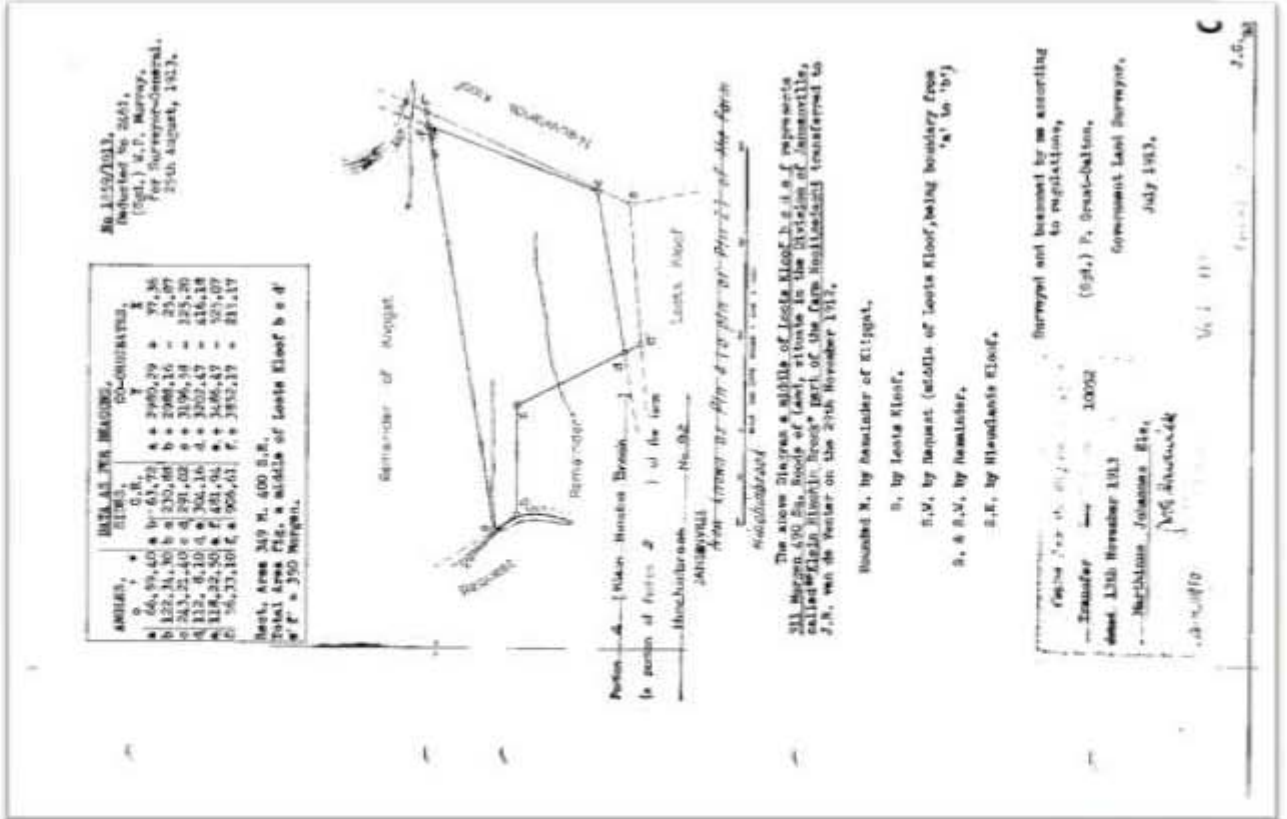
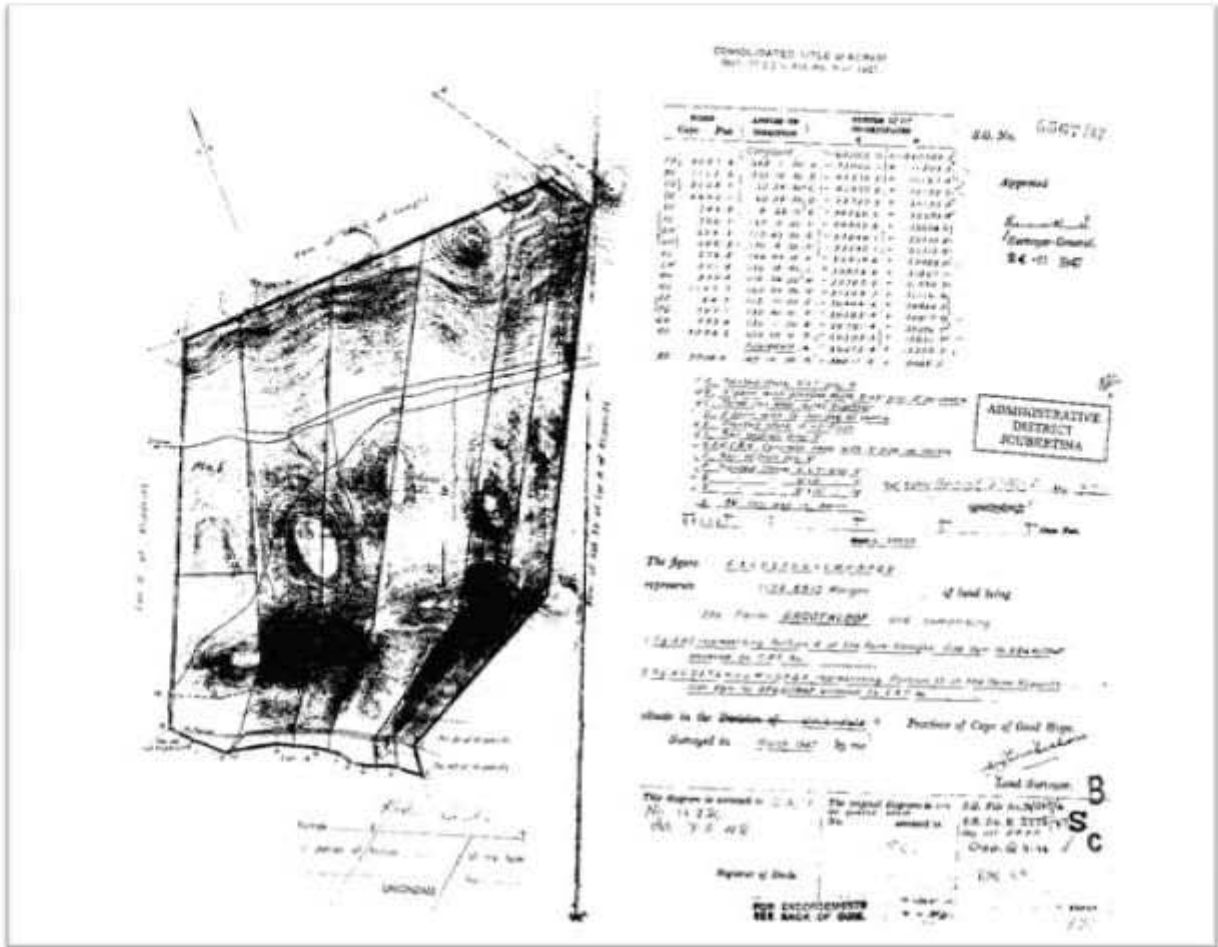
An unspecified Middle Stone Age site has been recorder in literature from the Baviaankloof dated at 10 700 BC. Several rock art sites are also known from this area. Iron Age sites are less well known in this area.

No sites of archaeological significance were identified on the study areas.

BUILT ENVIRONMENT

The area under investigation has a rich historic background and this is also reflected in the building styles found here. None of the structures investigated could be found on the original registration documents retrieved from the Surveyor General Archives. Structures were however not always indicated on these documents so their exclusion does not necessarily reflect on their age. Analysis of the structures themselves would prove more determinate of their age.





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 a Geographic Information System (GIS).

SITE 1 – RESTORED HOMESTEAD

GPS 32° 51' 03" S
24° 57' 52" E

This site is located at the main restored homestead on the central farm. Most of the structure had been altered by the time that the study took place. According to the present- and previous owners the structure dates from the 1970's

SITE 2 – RESTORED HOMESTEAD WITH HISTORIC BARN

GPS 32° 51' 08" S
24° 58' 52" E

This homestead has also been renovated for staff accommodation as well as administrative functions. The only historic building on this site (old barn) has not recently been altered. The client indicated that they would only perform preservative actions on this structure to ensure its preservation.



• Photo 8 Old Barn

SITE 3 – HISTORIC STONE WALLED KRAAL

GPS 32° 51' 14" S

24° 58' 44" E

This is a stone walled “kraal” in the classic colonial style of this part of the country. The structure is approximately 10m x 10m with interior divisions in the same style.



• Photo 9 Klipkraal

SITE 4 – DILAPIDATED HOMESTEAD

GPS 32° 51' 13" S

24° 56' 08" E

This site consists of a dilapidated homestead structure. The structure has been altered significantly in the past, however the underlying building materials and style suggests that the building dates from the historic era and warrants further investigation.





• Photo 10 Dilapidated Structure

RESOURCE EVALUATION

SITE 1

This site is not of any historic or archaeological value, the owners has indicated that the renovated structure dates from the 1970's and it is therefore not protected under any of the sections of the NHR Act. Since renovations on this structure has is already nearing completion, no further work is recommended.

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

This evaluation shows that the site holds very little heritage significance.

SITE 2

This site consists of two components. Firstly there is the modern houses of which there is two located on this site and secondly there is the old historic barn. The houses have been renovated and it is difficult to determine their age of origin at this stage. The owners indicate that the structures are not older than 60 years, however the building style indicates otherwise.

The structure that is now referred to as the barn seems to have been the original homestead as it still has a chimney stack which you would not expect to find in a barn structure. The structure itself has been extensively modified during its lifetime; however it still retains much of its historic characteristics such as wooden flooring an attic and sundried brick walls.



• Photo 11 Interior of structure

Site significance characteristics slide scale (Post-Contact Criteria)	
Scientific Significance	3
Historic Significance	3
Public Significance	2
Other Significance	2
Ethnic Significance	0
Economic Significance	1
Total Score	
	11

This rating places the historic structure (barn) within the high value section.

SITE 3

This site has significant heritage value. It is a good example of this classic building style associated with the historic era of the Eastern Cape. The site was utilised for keeping livestock but is not currently being used for this application. The client has recently constructed a concrete storage structure within 2m of the edge of this enclosure.

Site significance characteristics slide scale (Post-Contact Criteria)	
Scientific Significance	3
Historic Significance	3
Public Significance	2
Other Significance	2
Ethnic Significance	0
Economic Significance	1
Total Score	
	11

This places this structure within the high significance section of heritage value.

SITE 4

The structure located at this site consists of a multi-room house. The building methods, style and materials all suggest that the structure is older than 60 years. Specifically the use of sun dried bricks and chalk plaster is common in the construction techniques from the 1920's – 1950's.



• Photo 12 Building materials and techniques

The inside of the structure also shows indications of fittings associated with the historic era between 1920 and 1950. Some of these are the wooden door frames as well as the wooden floor boards used in the common room areas of the house. The house also has a fireplace built in the colonial style with a mantelpiece.



• Photo 13 Building fixtures

Site significance characteristics slide scale (Post-Contact Criteria)	
Scientific Significance	2
Historic Significance	2
Public Significance	1
Other Significance	1
Ethnic Significance	0
Economic Significance	1
Total Score	
	07

This allocates the site to the moderate significance section of the heritage value scale. Even though the site is not unique it is of historic value and deserves preservation or further study before demolition.

IMPACT IDENTIFICATION AND ASSESSMENT

SITE 1

As indicated this site has already undergone significant alterations during the renovation activities. There are no indications that this structure is of historic value so no negative impacts were affected.

SITE 2

As indicated this site consists of two components, only one of which has any heritage significance. Impacts on this site will be determined by the recommendations of the proposed management plan (see recommendations).

SITE 3

This site has already suffered some negative impacts due to the construction of the concrete storage structure. Due to the proximity of this structure, future negative effects are anticipated. These can be measured as follows;

<i>Impact Effect</i>	<i>Score</i>
Magnitude	1
Severity	1
Duration	2
Range	2
Frequency	1
Diversity	2
Cumulative effect	2
Rate of change	1
Total score:	12

This table shows that significant impacts could be expected due to secondary effects of the storage structure and the associated heightened activities as well as issues such as soil compaction and run-off erosion. It is recommended that these be mitigated – see below.

SITE 4

The structure located here is earmarked for demolition and therefore is subject to possible total destruction.

<i>Impact Effect</i>	<i>Score</i>
Magnitude	4
Severity	4
Duration	1
Range	1
Frequency	1
Diversity	4
Cumulative effect	4
Rate of change	4
Total score:	23

This table shows that total destruction of the site will result in its demolition.

RESOURCE MANAGEMENT RECOMMENDATIONS

SITE 1

No further recommendations are suggested for this site as renovations to the building has already been completed and because the site is not deemed as being of heritage significance.

SITE 2

The modern structures that have been renovated have little heritage significance and no further recommendations are given for them.

It is recommended that the historic structure at this site (the historic barn/homestead) is subjected to a heritage management plan. This plan should be compiled by a suitably qualified heritage practitioner.

Terms of Reference for Appointed Heritage Practitioner (HP)

- ✓ The appointed professional will be responsible for the compilation of a heritage management plan for this historic structure.
- ✓ The heritage management plan should address the following issues;
 - The preservation of the site
 - Mitigation measures needed for its curation
 - Allowable usage of the structure
 - Research into the origin, age and function of the structure
 - Determining the public significance of the structure
 - Monitoring of the implemented measures
- ✓ The appointed HP should liaise with the client and SAHRA as well as provincial bodies and should act as mediator between different parties
- ✓ The heritage management plan should be submitted to SAHRA for comments and approval before implementation
- ✓ Regular reports on the progress of the management plan should be submitted to SAHRA
- ✓ Where the heritage management plan involves alterations to the structure the HP will be responsible for any permits needed from SAHRA

SITE 3

This site has already suffered damage from the construction of the concrete storage structure. The following measures are recommended to mitigate existing damage as well as to limit future possible harm to the site;

- ✓ The concrete storage structure should be removed without damaging the “kraal” structure
- ✓ Access to the site should be controlled
- ✓ Monitoring should be done to determine any possible future damage to the site
- ✓ It should be considered (due to its close proximity to Site 2) to include this structure in the heritage management plan suggested for Site 2.

SITE 4

This site shows characteristics of structures older than 60 years and it is recommended that the house be preserved and not demolished.

Should the client still wish to demolish this structure it is recommended that a second phase of investigation be entered into to determine its heritage significance. After evaluation of the second phase investigations, SAHRA will make recommendations on the mitigation work needed for the issuing of a permit for destruction. As this is a historic structure the developer is urged not to alter the site in any way without direct consultation with SAHRA.

Further Recommendations

It is recommended that the public participation process be extended to the construction phase and that the community be kept abreast of the processes involved.

Although unlikely, sub-surface remains of heritage sites could still be encountered during excavations on site. Such sites would offer no surface indication of their presence due to the high state of alteration in the area. The following indicators of unmarked sub-surface sites could be encountered;

- Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate)
- Bone concentrations, either animal or human
- Ceramic fragments such as pottery shards either historic or pre-contact
- Stone concentrations of any formal nature

Although no other sites of heritage significance were identified within the proposed study area, the following recommendations are given should any sub-surface remains of heritage sites be identified as indicated above;

- All operators of excavation equipment should be made aware of the possibility of the occurrence of sub-surface heritage features and the following procedures should they be encountered.
- All construction in the immediate vicinity of the site should cease.
- The heritage practitioner should be informed as soon as possible.
- In the event of obvious human remains the SAPS should be notified.
- Mitigative measures (such as refilling etc.) should not be attempted.
- The area in a 50m radius of the find should be cordoned off with hazard tape.
- Public access should be limited.
- The area should be placed under guard.
- No media statements should be released until such time as the heritage practitioner has had sufficient time to analyze the finds.

It was noted during the site survey that the developer was in the process of planning the construction of several new roads on the property. It is imperative that a HIA be performed for any of these roads found to exceed 300m in length.

CULTURAL LANDSCAPE ANALYSIS

The cultural landscape is homogeneous and can be described as one unit;

LANDSCAPE UNIT A

The cultural landscape of this part of the country is strongly associated with early nomadic herder societies, hunter gatherer sites and more commonly, historic occupations. Most of the area falls within the colonial farming framework with classic sun dried brick and corrugated iron roof buildings. Also characteristic of this area's cultural heritage is the occurrence of large stone walled livestock enclosures ("kraals").

The *genius loci* is of rural farming communities living in close contact with the land and nature.

RECOMMENDATIONS

It is recommended that the developers take this landscape character into consideration when building and planning new structures. It is seen as a positive cultural landscape type. New developments should aim to integrate with the existing landscape and should try to reflect this in their designs. Where this is not possible the designs should aim to be as unobtrusive as possible.



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APPENDIX A

METHODOLOGY



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. (*Dunneil, R.C., Dancy 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 evaluated 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).

<i>Impact Effect</i>	<i>Score</i>
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 of severity;

<i>Effect</i>	<i>Score</i>
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;

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

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

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

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

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?

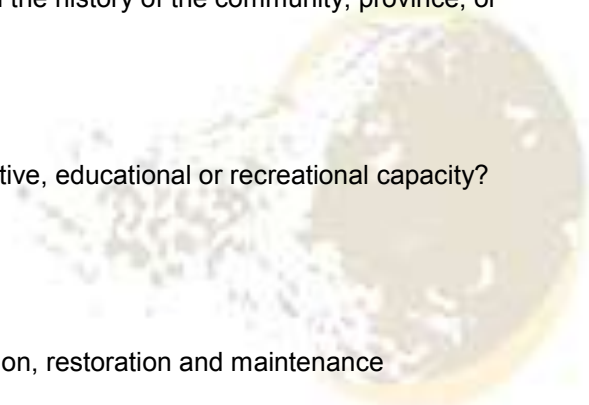
(c) Is the site associated with a particular historic event whether cultural, economic, military, religious, social or political that has made a significant contribution to, or impact on, the community, province or nation?

(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?

Indicators of Impact Severity

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

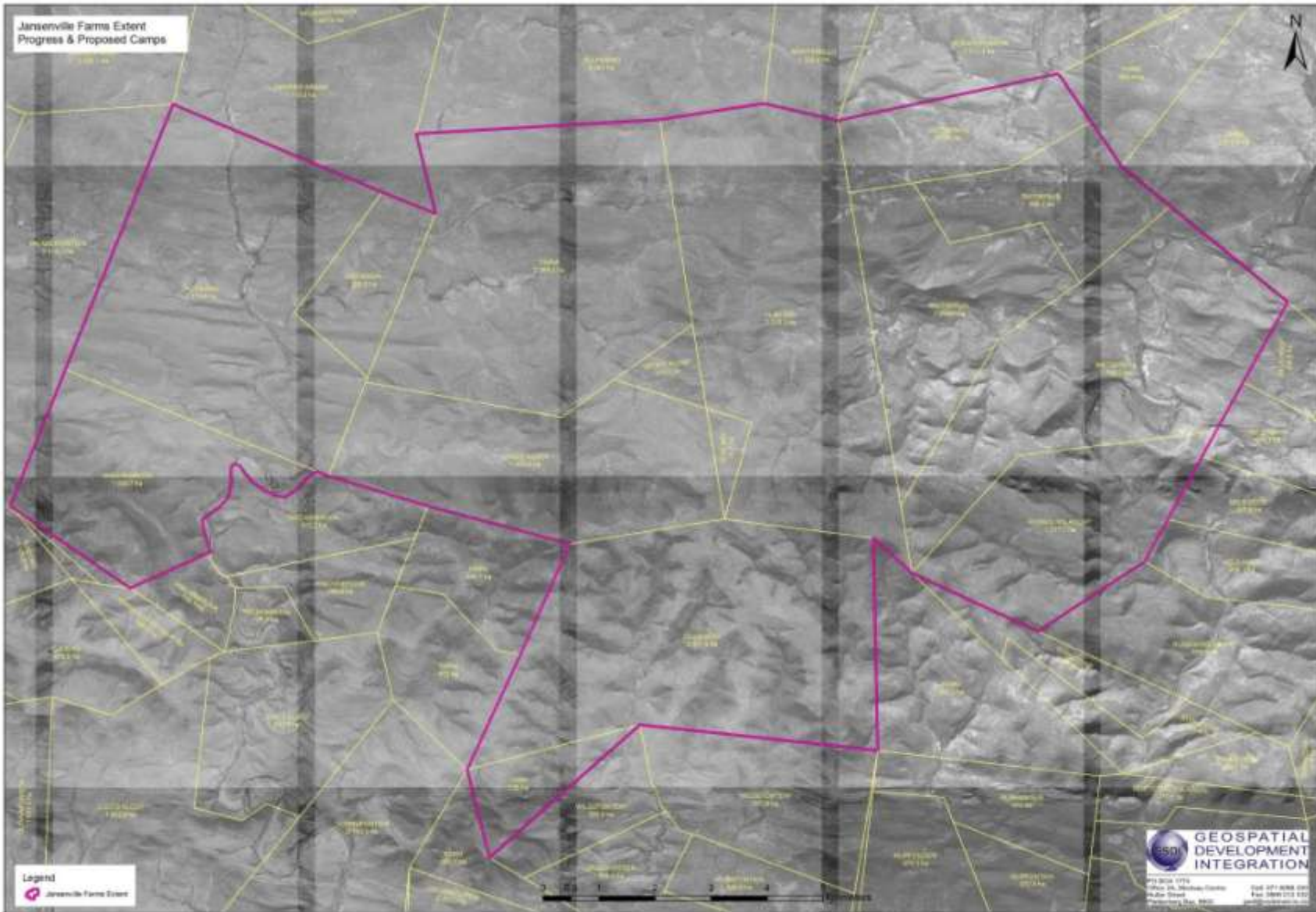
The rate at which an impact will effectively alter the integrity or physical condition of a heritage site. Although an important level-of-effect indicator, it is often difficult to estimate. Rate of change is normally assessed during or following project construction.



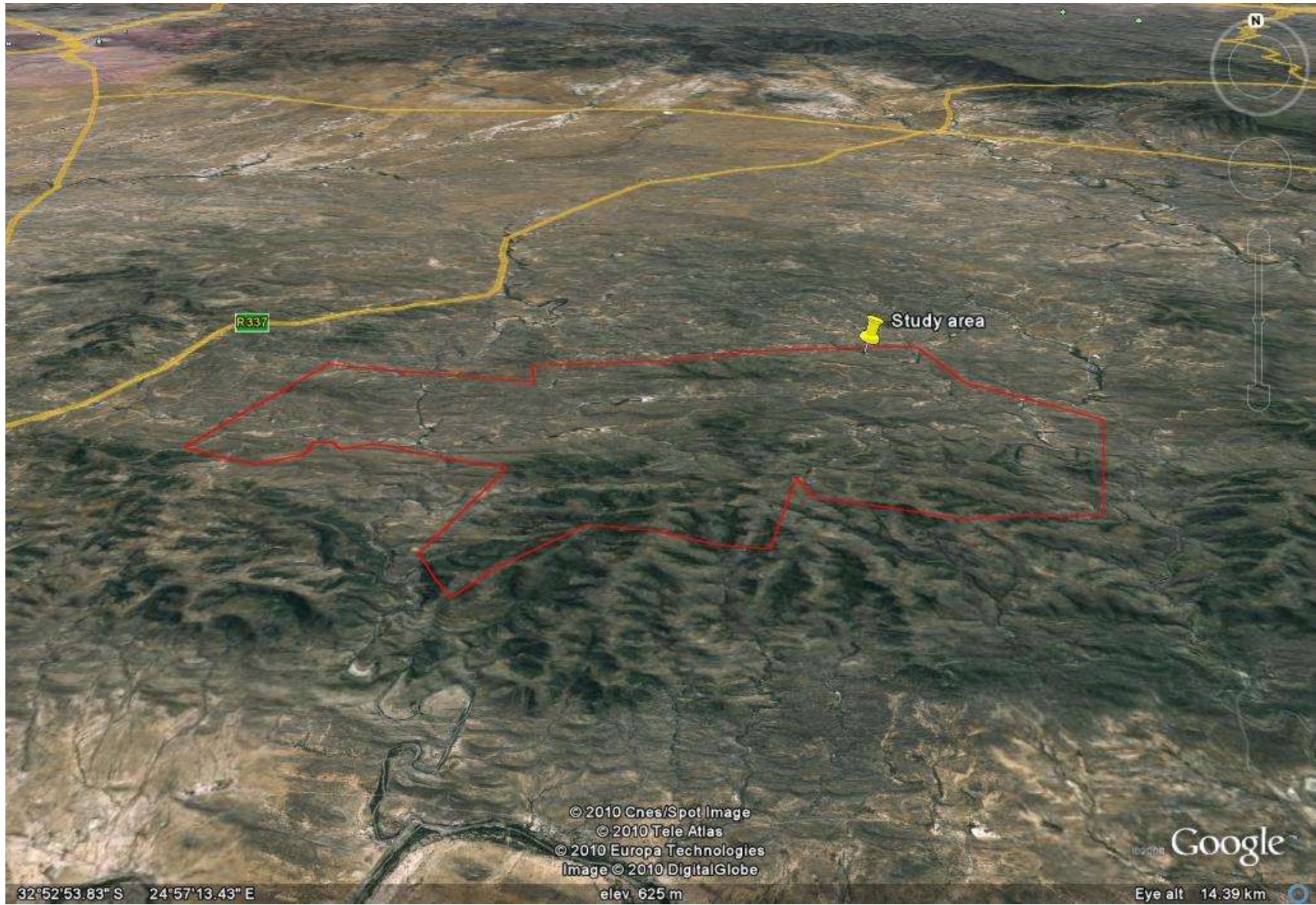
APPENDIX B

LOCATION MAPS



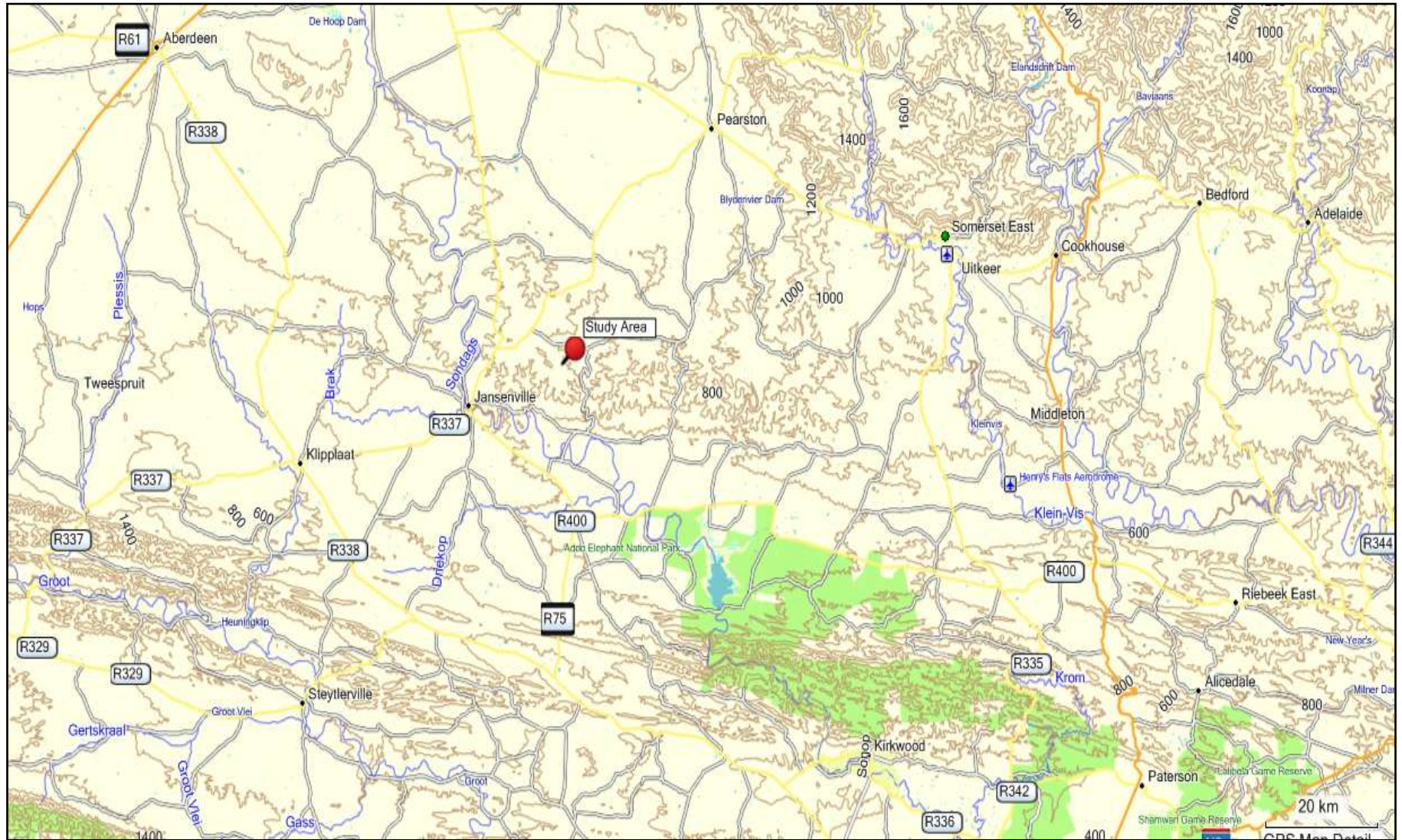


• Map 1 Location Map 1

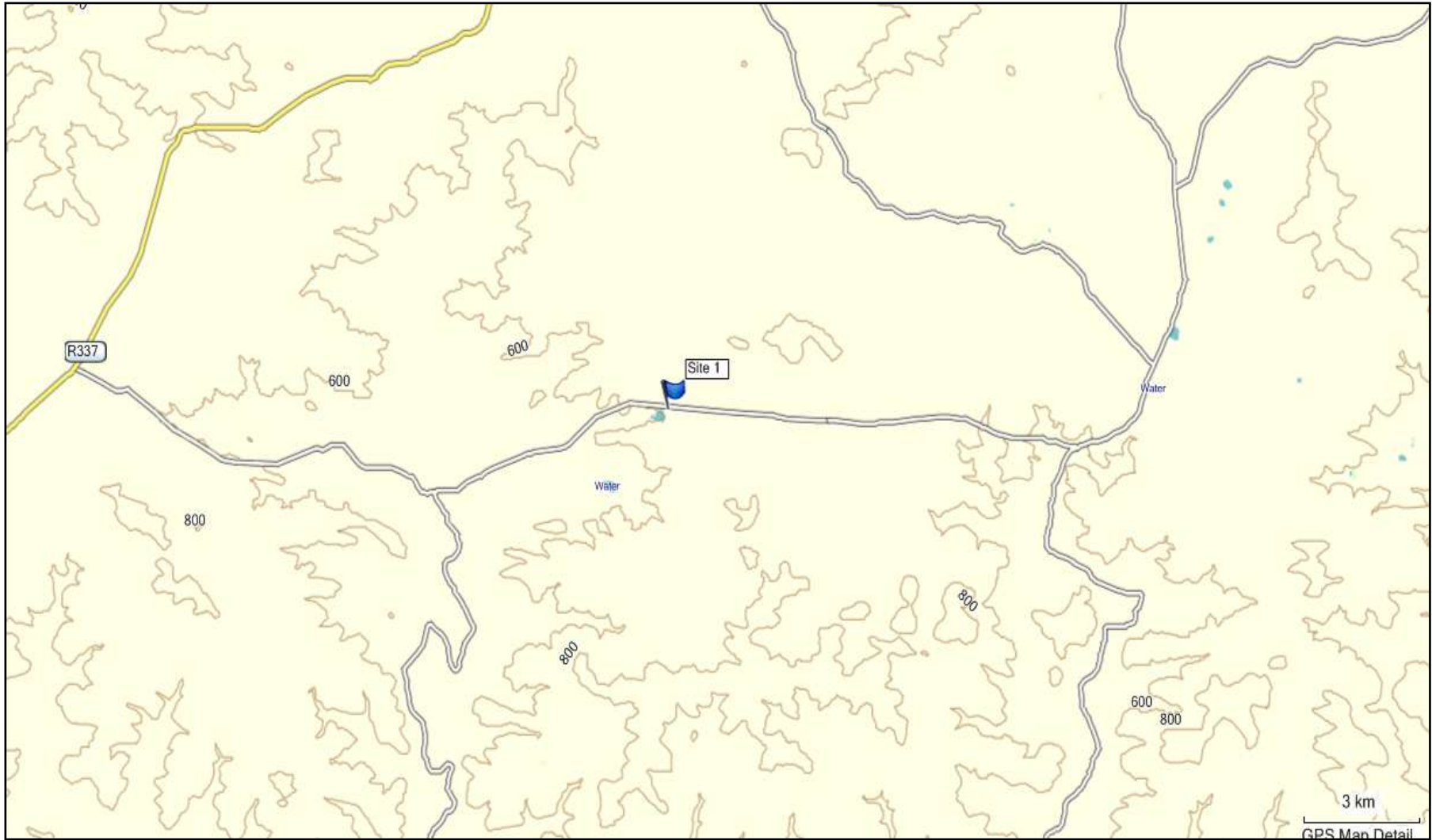


• Map 2 Landscape Map

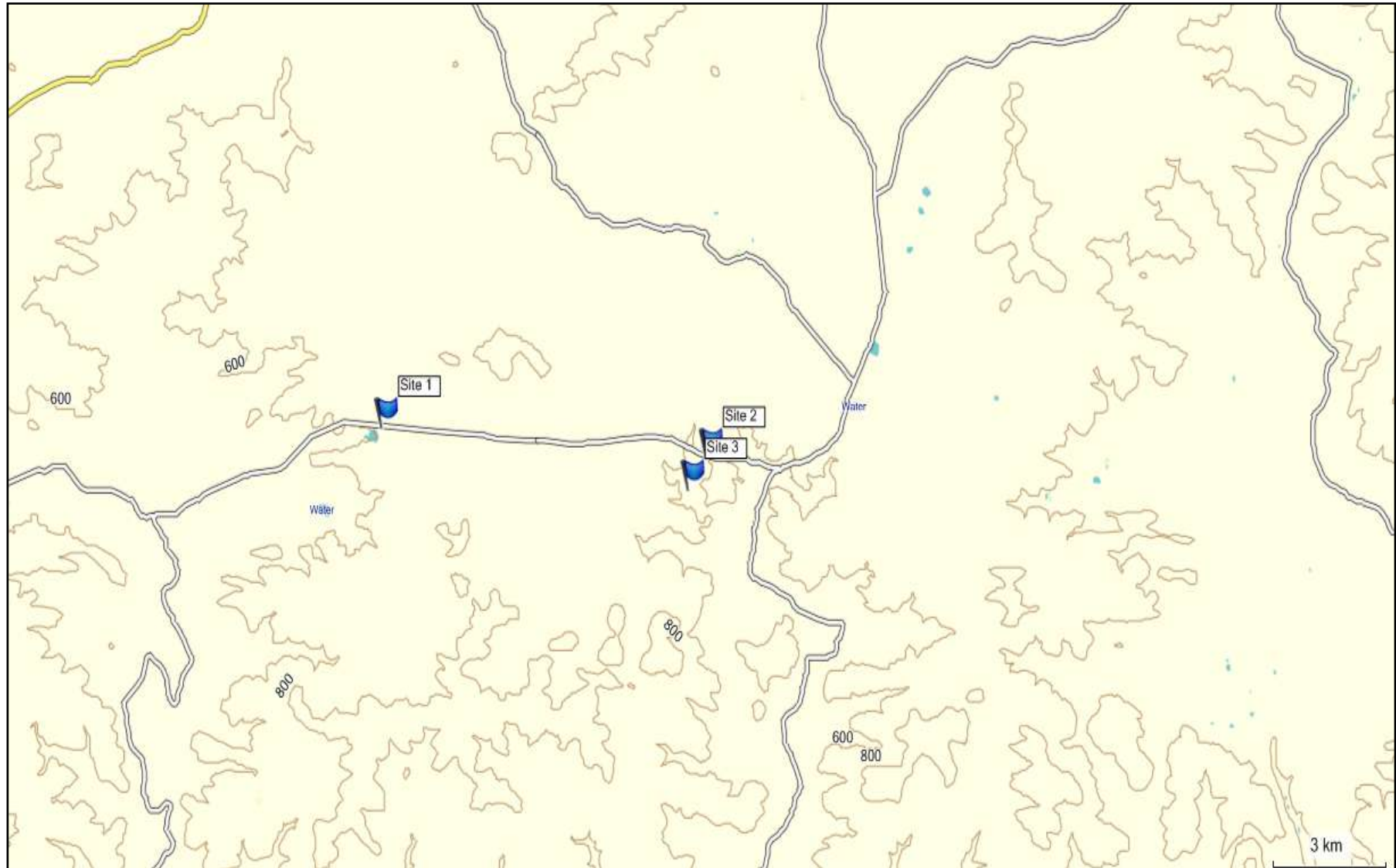
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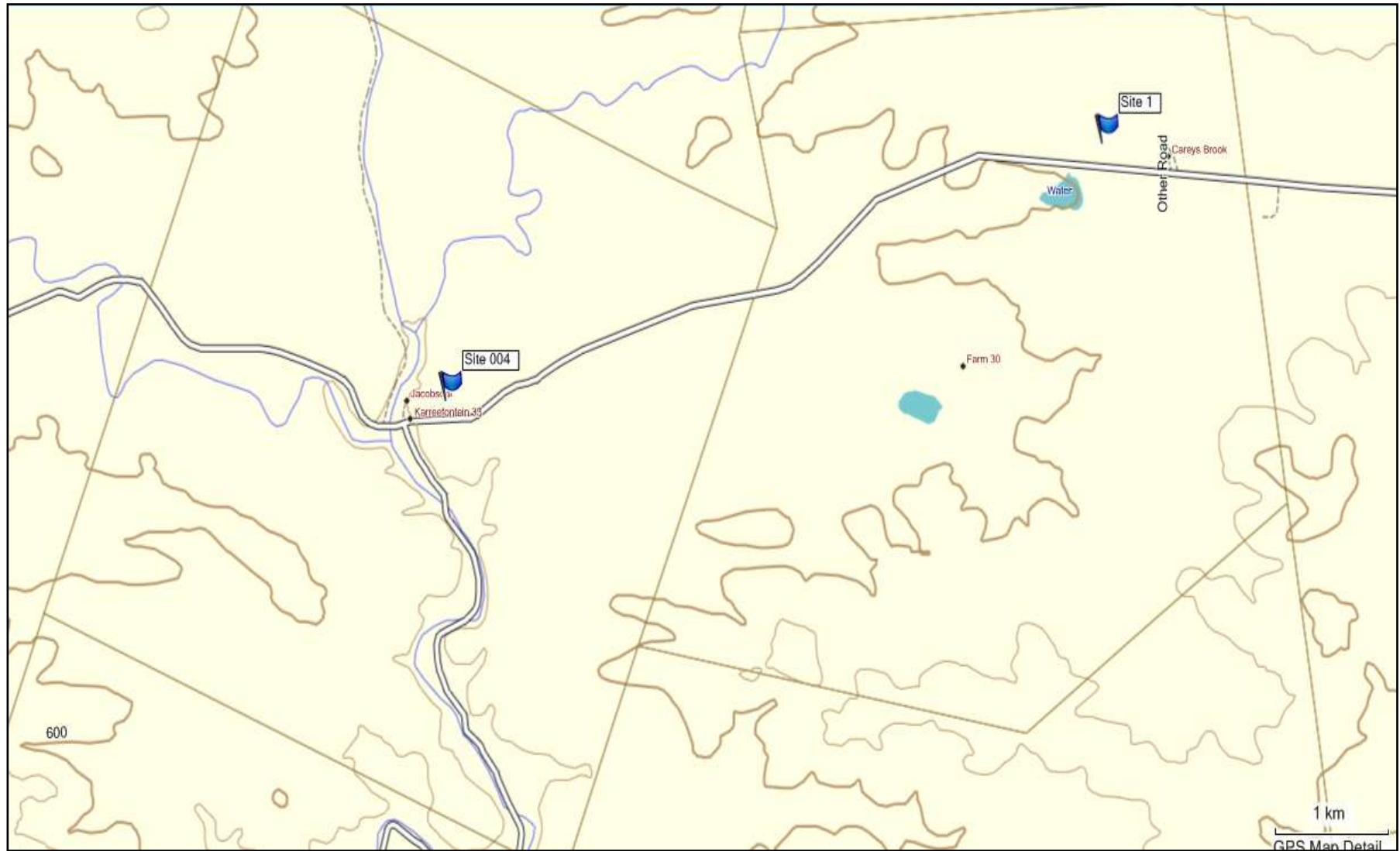
• Map 3 Study Area Location



• Map 4 Location of Site 1



• Map 5 Location of Site 2 & 3



• Map 6 Location of Site 4