

South African Heritage Resources Agency
P.O. Box 4637
Cape Town
8000

TEKPLAN



(Reg. No. 2000/019116/23)
P.O. Box 55714, Polokwane, 0700
Tel: 015 291 4177 Fax: 086 218 3267
tecoplan@mweb.co.za

Environmental consultants

ATTENTION: Mr. Phillip Hine

Our ref.: TE1A259

22 May 2012

APPLICATION FOR AUTHORIZATION IN TERMS OF SECTION 24(5) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998)

PROJECT: PROPOSED PLANNING AND LAYOUT OF 312 ADDITIONAL ERVEN AT BALLOON VILLAGE, MARULENG LOCAL MUNICIPALITY, MOPANI DISTRICT MUNICIPALITY, LIMPOPO PROVINCE

1. As an Interested and Affected Party, notice is hereby given, that the **Department of Local Government and Housing (Limpopo)** is applying for Environmental Authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) from the Limpopo Department of Economic Development, Environment and Tourism (DEDET) for the following activity:

Project name: Balloon Demarcation Project

Project description: The project consists of the proposed planning and layout of approximately 312 additional residential erven. The size of the affected area measures approximately 28 ha in extent.

Project location: The proposed site is located northeast of the existing Balloon village on the Remainder and Portion 27 of the farm Lofdai 42 KT, Maruleng Local Municipality, Mopani District Municipality area (co-ordinates: 24°11' 00,6"S 30° 23' 12,1"E).

2. The project has been registered with the Limpopo Department of Economic Development, Environment and Tourism (DEDET) under ref nr: 12/1/9/2-M9
3. Please find attached a copy of **Heritage Impact Assessment Report** for your comment.
4. It is respectfully requested that should you have any comments on the attached Report, it must be forwarded to the undersigned as well as the Department of Economic Development, Environment and Tourism (DEDET) no later than 40 days from the date of this letter (2 July 2012).

Tekplan Environmental Consultants P.O. Box 55714 Polokwane 0700 Attention: Mr. Danie Combrink Tel 015 291 4176/7 Fax 086 218 3267 E-mail: tecoplan@mweb.co.za	Department of Economic Development, Environment and Tourism Directorate: Environmental Impact Management Private Bag X9484 (Cnr. Suid and Dorp Street) POLOKWANE 0700 Attention: Mr. Masungi Tshuketana (Ref. no: 12/1/9/2-M9) Tel: 015 290 7160 Fax: 015 295 5015 E-mail: Tshuketanim@ledet.gov.za
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5. Enquiries can be directed to the undersigned.

Thank you.

Yours faithfully

DANIE COMBRINK



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

Proposed Balloon Demarcation Project located on the remainder and portion 27 of the farm Lofdal 42 KT

Maruleng Local Municipality, Mopani District Municipality, Limpopo Province

REFERENCE NUMBER 12/1/9/2-M9

Specialist:	G&A Heritage		
Contact person:	Mr. S. Gaigher		
Postal address:	P.O. Box 522 Louis Trichardt		
Postal code:	0920	Cell:	073 752 6583
Telephone:	015 516 1561	Fax:	
E-mail:	Stephan@lajuma.com		
Professional affiliation(s) (if any)	Member (no 52) of the Association of South African Professional Archaeologists (ASAPA); Site Director Status Registered Heritage Practitioner with the South African Heritage Resource Agency (SAHRA)		

Project Consultant:	Tekplan Environmental		
Contact person:	Mr. Danie Combrink		
Postal address:	P.O. Box 55714, Polokwane		
Postal code:	0700	Cell:	082 335 9553
Telephone:	015 291 4177	Fax:	086 218 3267
E-mail:	tecoplan@mweb.co.za		

4.2 The specialist appointed in terms of the Regulations_

I, S. Gaigher, declare that --

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

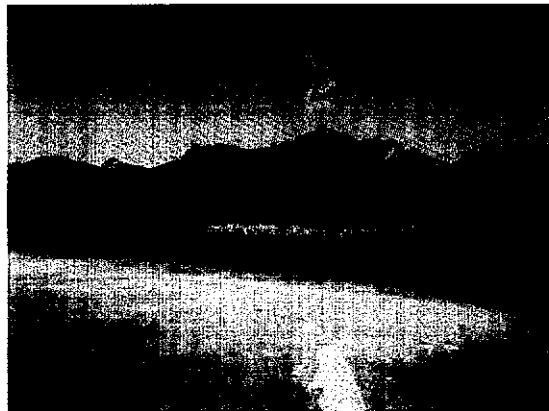
S. Gaigher
Signature of the specialist:

G&A Heritage
Name of company (if applicable):

28/6/2011
Date:

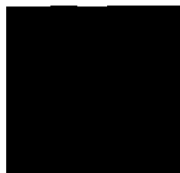
Basic Heritage Impact Assessment Report

BASIC HERITAGE IMPACT ASSESSMENT FOR THE
BALLOON VILLAGE DEMARCATION PROJECT



PREPARED BY:
G&A HERITAGE

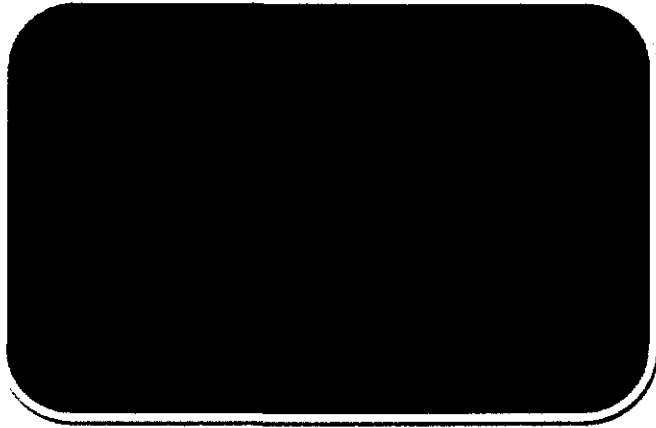
PREPARED FOR:



Tekplan
Environmental Consultants

28/06/2011

CREDIT SHEET



***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. G&A Heritage 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

A handwritten signature in black ink, appearing to read 'S. Gaigher', enclosed within a rounded rectangular border.

MANAGEMENT SUMMARY



The purpose of the management summary is to distil the information contained in the report into a format that can be used to give specific results quickly and facilitate management decisions. It is not the purpose of the management summary to regurgitate in shortened format all the information contained in the report, but rather to give a statement of results for decision making purposes.

This study focuses the demarcation of a new housing scheme for the rural village of Balloon, close to Ofcolaco in the Limpopo Province. 310 Erven is to be demarcated in the indicated study area.

The purpose of this scoping report is to outline the cultural heritage sensitivity of the proposed development area and to advise on mitigation should any heritage sites or landscapes be affected.

Findings;

No sites with significant cultural value could be identified in the study area.

According to one informant the hill on the south of the village was at one stage used as a site for a traditional school. This could however not be corroborated and the intended development will not impact on this.

It is a requirement of the National Heritage Resources Act (NHRA) that the need for rural development and upliftment be balanced with the need for the preservation of heritage sites. In this regard the development of needed low cost housing precedes the significance of any heritage sites identified.

Some stone heaps could be seen throughout the pastures. These are the result of field clearing and have no cultural value.

It is possible that a concrete slab next to a large tree could be used as a religious site for local church groups.

No culturally sensitive landscape types could be identified within any of the study areas.

Recommendations;

The possible use of the concrete slab for religious purposes should be investigated.

Fatal Flaws;

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No fatal flaws were identified.

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PROJECT RESOURCES

HERITAGE IMPACT REPORT

BASIC HERITAGE IMPACT ASSESSMENT REPORT FOR THE PROPOSED BALLOON VILLAGE DEMARCATION PROJECT.

INTRODUCTION

Legislation and methodology

G&A Heritage was appointed by Tekplan Environmental Consultants to undertake a heritage impact assessment for the proposed Balloon Village demarcation project, under the South African Heritage Resources Act (25 of 1999). Section 27(1) of the act requires such an assessment in case of:

- (a) construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- (b) construction of a bridge or similar structure exceeding 50 m in length; and
- (c) any development, or other activity which will change the character of an area of land, or water –
 - (1) exceeding 10 000 m² in extent;
 - (2) involving three or more existing erven or subdivisions thereof; or
 - (3) involving three or more erven, or subdivisions thereof, which have been consolidated within the past five years; or
- (d) the costs of which will exceed a sum set in terms of regulations; or
- (e) any other category of development provided for in regulations.

A heritage impact assessment is not limited to archaeological artefacts, historical buildings and graves. It is far more encompassing and includes intangible and invisible resources such as places, oral traditions and rituals. A heritage resource is defined as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This includes the following wide range of places and objects:

- (a) places, buildings, structures and equipment;
- (b) places to which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and paleontological sites;
- (g) graves and burial grounds, including –
 - (1) ancestral graves,
 - (2) royal graves and graves of traditional leaders,
 - (3) graves of victims of conflict (iv) graves of important individuals,
 - (4) historical graves and cemeteries older than 60 years, and
 - (5) other human remains which are not covered under the Human Tissues Act, 1983 (Act No.65 of 1983 as amended);
- (h) movable objects, including ;
 - (1) objects recovered from the soil or waters of South Africa including archaeological and paleontological objects and material, meteorites and rare geological specimens;
 - (2) ethnographic art and objects;
 - (3) military objects;
 - (4) objects of decorative art;
 - (5) objects of fine art;
 - (6) objects of scientific or technological interest;
 - (7) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings; and
 - (8) any other prescribed categories, but excluding any object made by a living person;

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- (i) battlefields;
- (j) traditional building techniques.

A **'place'** is defined as:

- (a) A site, area or region;
- (b) A building or other structure (which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure);
- (c) a group of buildings or other structures (which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures); and (d) an open space, including a public square, street or park; and in relation to the management of a place, includes the immediate surroundings of a place.

'Structures' means any building, works, device, or other facility made by people and which is fixed to land and any fixtures, fittings and equipment associated therewith older than 60 years.

'Archaeological' means ;

- (a) material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- (b) rock art, being a form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years including any area within 10 m of such representation; and
- (c) wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land or in the maritime cultural zone referred to in section 5 of the Maritime Zones Act 1994 (Act 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which are older than 60 years or which in terms of national legislation are considered to be worthy of conservation;
- (d) features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

'Paleontological' means 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.

'Grave' means a place of interment and includes the contents, headstone or other marker of and any other structures on or associated with such place. SAHRA will only issue a permit for the alteration of a grave if it is satisfied that every reasonable effort has been made to contact and obtain permission from the families concerned.

Removal of graves are subject to the following procedures as outlined by the South African Heritage Resources Agency:

- Notification of the impending removals (using English, Afrikaans and local language media and notices at the grave site);
- Consultation with individuals or communities related or known to the deceased;
- Satisfactory arrangements for the curation of human remains and / or headstones in a museum, where applicable;
- Procurement of a permit from SAHRA;
- Appropriate arrangements for the exhumation (preferably by a suitably trained archaeologist) and re-interment (sometimes by a registered undertaker, in a formally proclaimed cemetery);
- Observation of rituals or ceremonies required by the families.

The limitations and assumptions associated with this heritage impact assessment are as follows;

- Limited field investigations were performed on foot and by vehicle where access was readily available.
- Sites were evaluated by means of description of the cultural landscape, direct observations and analysis of written sources and available databases.
- It was assumed that the site layout as provided by Tekplan was accurate.
- We assumed that the public participation process performed as part of the environmental management plan was sufficiently encompassing not to be repeated in the Heritage Assessment Phase.

Act	Section	Description	Possible Impact	Action
National Heritage Resources Act (NHRA)	34	Preservation of buildings older than 60 years	Possible impact on concrete slab and reservoir.	None
	35	Archaeological, paleontological and meteor sites	No Impact	None
	36	Graves and burial sites	No Impact	None
	37	Protection of public monuments	None	None
	38	Does activity trigger a HIA?	No	None

Table 1. Impacts on the NHRA sections

Action Trigger	Yes/No	Description
Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length.	No	
Construction of a bridge or similar structure exceeding 50m in length.	No	
Development exceeding 5000 m ²	Yes	Demarcation of 310 erven
Development involving more than 3 erven or sub divisions	Yes	Demarcation of 310 erven
Development involving more than 3 erven or sub divisions that have been consolidated in the past 5 years	No	
Re-zoning of site exceeding 10 000 m ²	Yes	Re-zoning to residential
Any other development category, public open space, squares, parks or recreational grounds	No	

Table 2. NHRA triggers

BACKGROUND INFORMATION

BALLOON VILLAGE DEMARCATION PROJECT

PROJECT DESCRIPTION

The study area is located to the south west of the R36 road approximately 20km from the village of Ofcolaco. The project proposes the demarcation of a new housing development with 310 erven. The project is being proposed by the Department of Local Government and Housing. This will be a residential development.

SITE LOCATION

The study area is located on Portion 28 of the Farm Lofdal 42 KT. The village of Balloon is located to the south and east of the site. The Wolkberge forms a backdrop to the development to the south.

ALTERNATIVES CONSIDERED

One alternative was considered

- No-go option where no development takes place.

METHODOLOGY

This study defines the heritage component of the Environmental Impact Assessment process. It is described as a first phase Heritage Impact Assessment (HIA). This report attempts to evaluate both the accumulated heritage knowledge of the area as well as information derived from direct physical observations.

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EVALUATING HERITAGE IMPACTS

A combination of document research as well as the determination of the geographic suitability of areas and the evaluation of aerial photographs determined which areas could and should be accessed.

After plotting of the site on GPS the areas were accessed using suitable combinations of vehicle access and access by foot. Vehicular access was facilitated by the client to comply with the mine's safety standards.

Sites were documented by digital photography and geo-located with GPS readings using the WGS 84 datum.

Further techniques (where possible) included interviews with local inhabitants, visiting local museums and information centers and discussions with local experts. All this information was combined with information from an extensive literature study as well as the result of archival studies based on SAHRA provincial databases.

Geological maps guided investigations into the paleontological riches of the area.

ASSESSING VISUAL IMPACT

Visual impacts of developments result when sites that are culturally celebrated are visually affected by a development. The exact parameters for the determination of visual impacts have not yet been rigidly defined and are still mostly open to interpretation. CNdV and DEAP (2006) have developed some guidelines for the management of the visual impacts of wind turbines in the Western Cape, although these have not yet been formalized. In these guidelines they recommend a buffer zone of 1km around significant heritage sites to minimize the visual impact.

ASSUMPTIONS AND RESTRICTIONS

- It is assumed that the SAHRA database locations are correct
- It is assumed that the paleontological information collected for the project is comprehensive.
- It is assumed that the inclusive Visual Impact Assessment for the EIA is sufficiently thorough.
- It is assumed that the social impact assessment and public participation process of the EIA will result in the identification of any intangible sites of heritage potential.

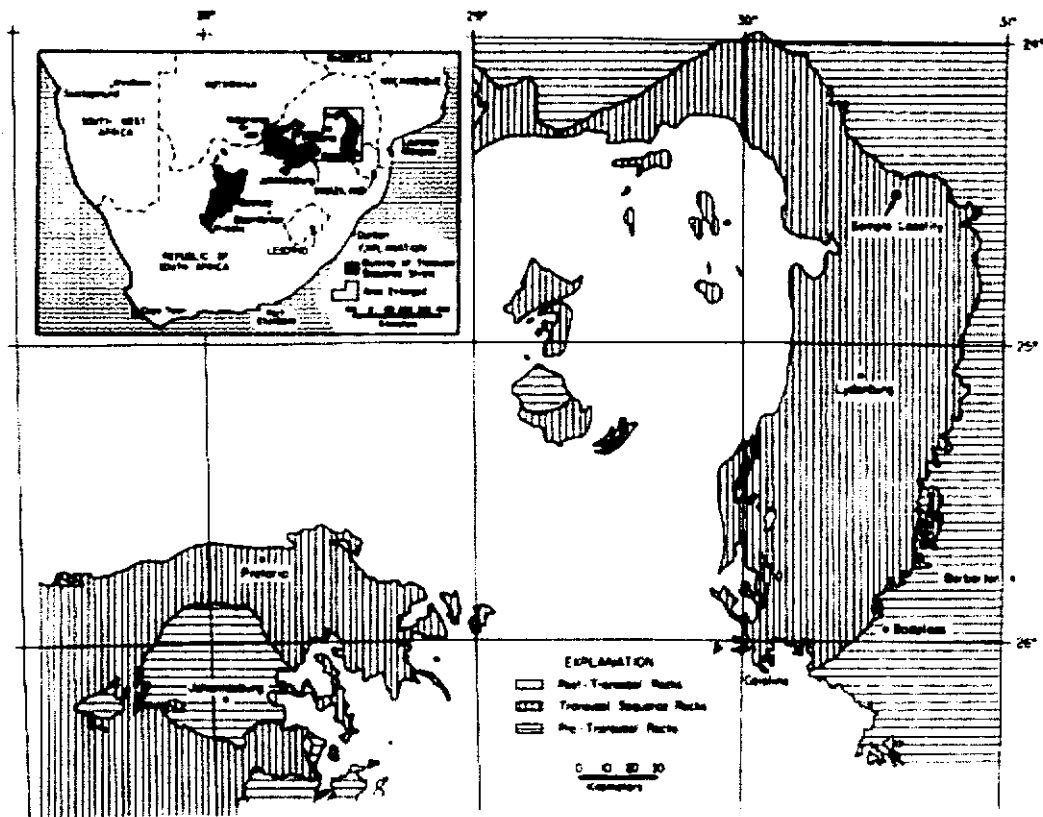
2 PROJECT RESOURCES

HERITAGE INDICATORS WITHIN THE RECEIVING ENVIRONMENTS

REGIONAL CULTURAL CONTEXT

PALEONTOLOGY

The study area is known to be rich in paleontological deposits, especially in the Wolkberg section of the Drakensberg range found to the south of the proposed development. The deposits form part of the Transvaal and Post-Transvaal deposits containing Precambrian deposits.



TEXT-FIG. 1—Map showing the outcrops of the Transvaal Sequence with sample locality (TR-1) noted, modified after A. Button (pers. comm., 1970; and ref. 1973a).

These deposits seem to be limited to the mountains. There is a possibility that Post-Transvaal sequence deposits could be found in the bedrock of the study area.

STONE AGE

This area is home to all three the known phases of the Stone Age, ni. The Early (2.5 million – 250 000 years ago), Middle (250 000 – 22 000 years ago) and Late Stone Age (22 000 – 200 years ago). The Late Stone Age in this area also contains

sites with rock art from the San and Khoi San cultural groups. Early to Middle Stone Age sites are uncommon in this area, however rock-art sites and Late Stone Age sites are much better known. Several rock art sites are known from the Wolkberg region.

No substantial number of Stone Age sites from any period of the Stone Age is however known to exist in this specific area – primarily as a result of a lack of research and general ignorance amongst the layman in recognizing stone tools that often may occur on the surface of the earth. However, it is possible that the first humans in the Lydenburg area may have been preceded by *Homo erectus*, who roamed large parts of the world during the Acheulian period of the Early Stone Age, 500 000 years ago. The forbearer of *H. erectus*, *Australopithecus*, considered to be the earliest ancestor of humans, lived in the Orighstad Valley and the Wonder Caves several million years ago.

During the Middle Stone Age, 200 000 years ago, modern man or *Homo sapiens* emerged, manufacturing a wider range of tools, with technologies more advanced than those from earlier periods. This enabled skilled hunter-gatherer bands to adapt to different environments. From this time onwards, rock shelters and caves were used for occupation and reoccupation over very long periods of time.

The Late Stone Age, considered to have started some 20 000 years ago, is associated with the predecessors of the San and Khoi Khoi. Stone Age hunter-gatherers lived well into the 19th century in some places in SA. Stone Age sites may occur all over the area where an unknown number may have been obliterated by mining activities, urbanization, industrialization, agriculture and other development activities during the past decades. Several well-known rock art sites are found in the surrounding areas.

IRON AGE

An aerial photography survey conducted by Revil Mason in 1967 and 1968 showed numerous Iron Age sites located throughout this area. Mason's original survey (1968a) documented the presence of 1 792 settlements in the drainage basin of the Steelpoort, Sabi, Crocodile and Komati rivers, and mentioned the presence of terracing. Mason suggested that perhaps the final count of sites in his survey was an underestimate.

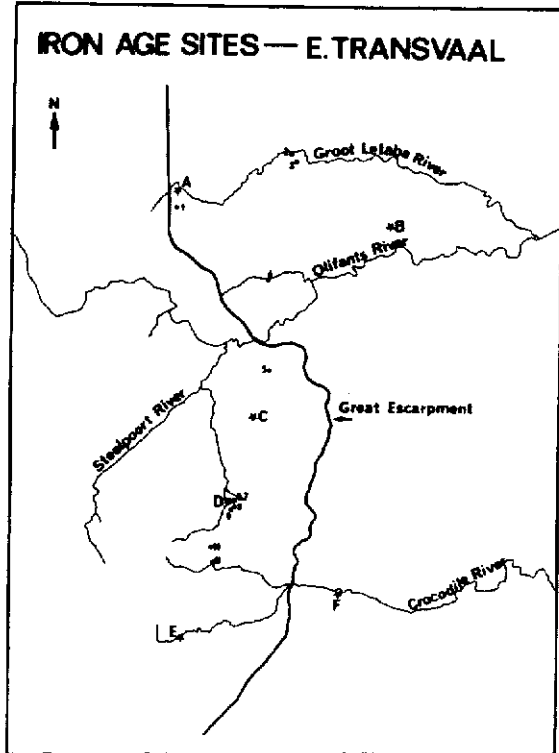


Fig. 1. Map showing distribution of Iron Age sites mentioned in text.
 A – Tzaneen, B – Phalaborwa, C – Orignad, D – Lydenburg, E – Machadodorp, F – Nelspruit.
 1 – Silverheves, 2 – Eiland Salt factory, 3 – Eiland Black Hills site, 4 – Harmony, 5 – Bushoven Rock Shelter, 6 – Lydenburg 57-58/73, 7 – Lydenburg 61/73, 8 – Serkispruit 66/72, 9 – Doornkop 91/74, 10 – Klippepruit 39/74, 11 – Badfontein 45/71.

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This statement have been corroborated through a survey by TM Evers in 1975. One hundred and sixty-six settlements were counted in an area of 1 850 km² between Lydenburg and Machadodorp which represents the Sabi, Elands and part of the Crocodile River drainage basins. An estimate based on the average of an enclosure unit count of 53 settlements (32 per settlement) suggests that in the area discussed, there must be over 5 000 enclosure units, or settlements according to Mason's 1968 definition, a figure almost as great as his total count for the southern part of the Transvaal (6 237).

Stone walled settlements are concentrated in clusters of sites and sometimes are dispersed over large areas making them vulnerable to developments of various kinds. A site consists of a circular or elliptical outer wall that is composed of a number of scalloped walls facing inwards towards one or more enclosures. Whilst the outer scalloped walls served as dwelling quarters for various family groups, cattle, sheep and goat were stock in the centrally located enclosures. Huts with clay walls and floors were built inside the dwelling units. Pottery and metal items are common on the sites. However, iron and copper were not produced locally on these sites.

Important Early Iron Age sites if found associated with the Lydenburg Sequence. These are well known for the terracotta heads (masks) recovered from these sites. Similar sites have been found as far west as the Olifants River at Matlakala village.

THE HISTORIC ERA

This area is well known for its rich historic character and contains sites connected with several historic military and political conflicts. Historic cemeteries (victim of conflict sites), provincial and private museums, battlefield sites and other historic sites are found in the Trichardsdal/Tzaneen area.

The village of Ofcolaco was found by a group of redundant British and Indian army officers and the name stands for Officers Colonial land Company. He officers club at Ofcolaco still exists today.

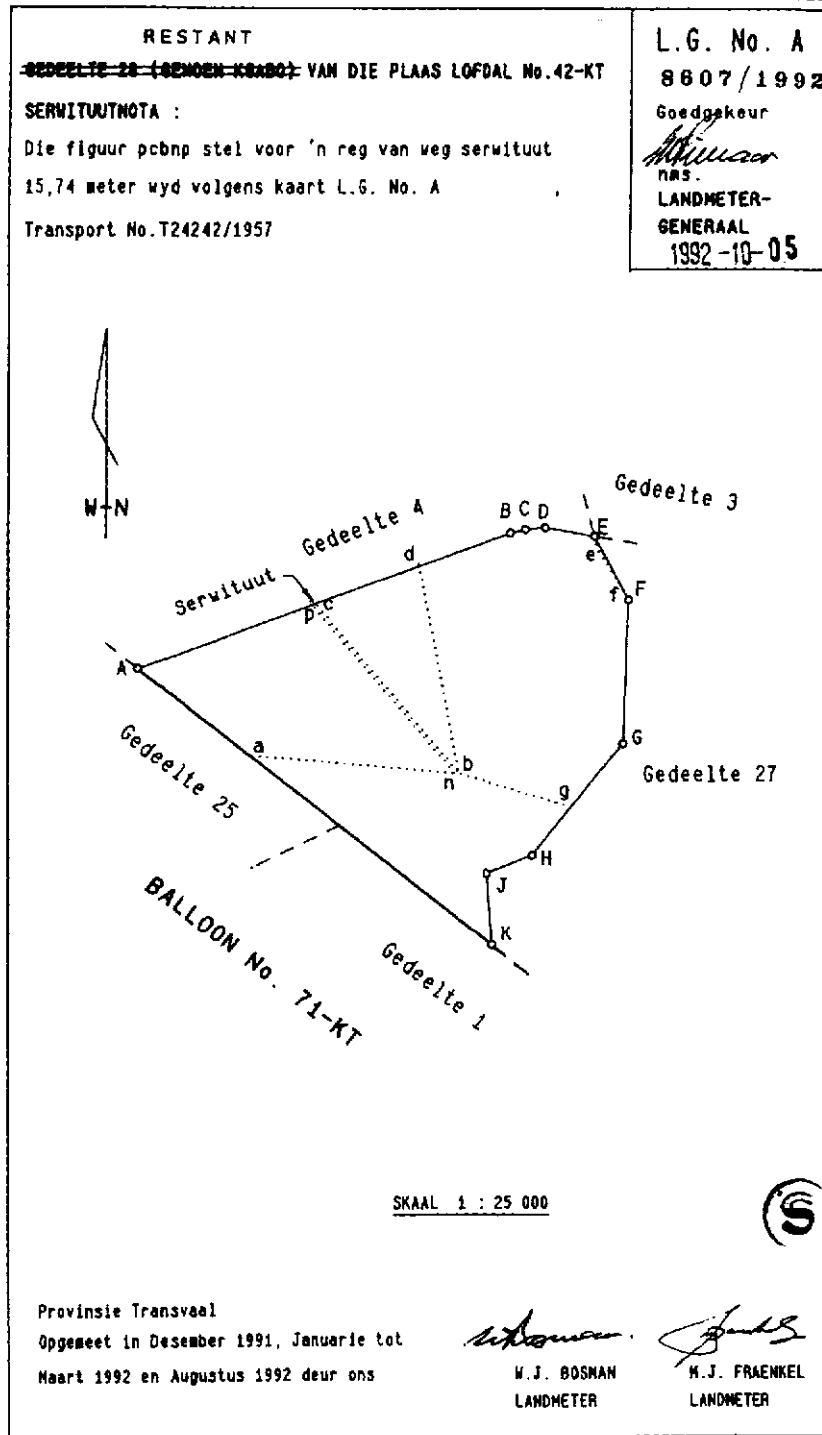
The present activities in the area is based mainly on farming and tourism activities. There is a very strong citrus farming component in this area.

The village of Balloon was founded approximately in 1968. The Mantjana Primary School is located on the southern side of the study area.

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The 1992 property act survey for the farm Lofdal 42 KT

CULTURAL LANDSCAPE

The main cultural landscape type associated with this area is one of agriculture and tourism and to a lesser extent subsistence farming activities.

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The cultural landscape for this area is also richly associated with the colonial period as well as its violent past. A unique stone architectural heritage was established in Mpumalanga from the second half of the 19th century well into the early 20th century. During this time period stone was used to build farmsteads and dwellings, both in urban and in rural areas. Although a contemporary stone architecture also existed in the Karoo and in the Eastern Free State Province of South Africa a wider variety of stone types were used in Mpumalanga. These included sandstone, ferricrete (.ouklip.), dolerite (.blouklip.), granite, shale and slate.

The origins of a vernacular stone architecture in Mpumalanga may be ascribed to various reasons of which the ecological characteristics of the region may be the most important. Whilst this region is generally devoid of any natural trees which could be used as timber in the construction of farmsteads, outbuildings, cattle enclosures and other structures, the scarcity of fire wood also prevented the manufacture of baked clay bricks. Consequently stone served as the most important building material.



Photo 1. Indicating landscape type



IMPACT ASSESSMENT

MEASURING AND EVALUATING THE CULTURAL SENSITIVITY OF THE STUDY AREA

In 2003 the South African Heritage Resource Agency (SAHRA) compiled the following guidelines to evaluate the cultural significance of individual heritage resources;

TYPE OF RESOURCE;

- Place
- Archaeological Site
- Structure
- Grave
- Paleontological Feature
- Geological Feature

TYPE OF SIGNIFICANCE

1. HISTORIC VALUE

It is important in the community, or pattern of history

- o Important in the evolution of cultural landscapes and settlement patterns
- o Important in exhibiting density, richness or diversity of cultural features illustrating the human occupation and evolution of the nation, province, region or locality.
- o Important for association with events, developments or cultural phases that have had a significant role in the human occupation and evolution of the nation, province, region or community.
- o Important as an example for technical, creative, design or artistic excellence, innovation or achievement in a particular period.

It has strong or special association with the life or work of a person, group or organisation of importance in history;

- o Importance for close associations with individuals, groups or organisations whose life, works or activities have been significant within the history of the nation, province, region or community.

It has significance relating to the history of slavery

- o Importance for a direct link to the history of slavery in South Africa.

2. AESTHETIC VALUE

It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group.

- o Important to a community for aesthetic characteristics held in high esteem or otherwise valued by the community.
- o Importance for its creative, design or artistic excellence, innovation or achievement.
- o Importance for its contribution to the aesthetic values of the setting demonstrated by a landmark quality or having impact on important vistas or otherwise contributing to the identified aesthetic qualities of the cultural environs or the natural landscape within which it is located.
- o In the case of an historic precinct, importance for the aesthetic character created by the individual components which collectively form a significant streetscape, townscape or cultural environment.

3. SCIENTIFIC VALUE

It has potential to yield information that will contribute to an understanding of natural or cultural

heritage

- o Importance for information contributing to a wider understanding of natural or cultural history by virtue of its use as a research site, teaching site, type locality, reference or benchmark site.
- o Importance for information contributing to a wider understanding of the origin of the universe or of the development of the earth.
- o Importance for information contributing to a wider understanding of the origin of life; the development of plant or animal species, or the biological or cultural development of hominid or human species.
- o Importance for its potential to yield information contributing to a wider understanding of the history of human occupation of the nation, Province, region or locality.
- o It is important in demonstrating a high degree of creative or technical achievement at a particular period
- o Importance for its technical innovation or achievement.

4. SOCIAL VALUE

- o It has strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
- o Importance as a place highly valued by a community or cultural group for reasons of social, cultural, religious, spiritual, symbolic, aesthetic or educational associations.
- o Importance in contributing to a community's sense of place.

DEGREES OF SIGNIFICANCE

1. RARITY

It possesses uncommon, rare or endangered aspects of natural or cultural heritage.

- Importance for rare, endangered or uncommon structures, landscapes or phenomena.

2. REPRESENTIVITY

- It is important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects.
- Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class.
- Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, Province, region or locality.

Spheres of Significance	High	Medium	Low
International			
National			
Provincial			
Regional			
Local			
Specific Community			

What other similar sites may be compared to this site?

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ASSESSMENT OF IMPACTS

ACTIVITIES THAT WILL AFFECT THE HERITAGE ENVIRONMENT

POST-CONTACT HERITAGE

Nature of Impacts: The development could negatively impact on the concrete reservoir and concrete slab located at the edge of the study area.

Extent of Impacts: Localized damage to the site.

Nature of Impact: Possible post-contact site could be damaged locally by excavation activities		
	Without Mitigation	With Mitigation
Extent	Local	Local
Duration	Long term	Long term
Magnitude	High	Low
Probability	Probable	Improbable
Significance	Low	Low
Status	Negative	Positive
Reversibility	Irreversible	Reversible
Irreplaceable loss of resource	Yes	No
Can impacts be mitigated	No	Yes
Mitigation	None necessary	
Cumulative impacts	None	
Residual impacts	Local negativity towards development activities	

IMPACT STATEMENT

PALEONTOLOGICAL SITES

No paleontological sites of high value could be identified. Paleontological sites could be affected if bedrock was to be disturbed during the construction activities.

Mitigation

Paleontological monitoring during excavation activities where bedrock is to be disturbed.

ARCHEOLOGICAL SITES

No archaeological sites were identified.

Mitigation.

No mitigation is necessary

BUILT ENVIRONMENT

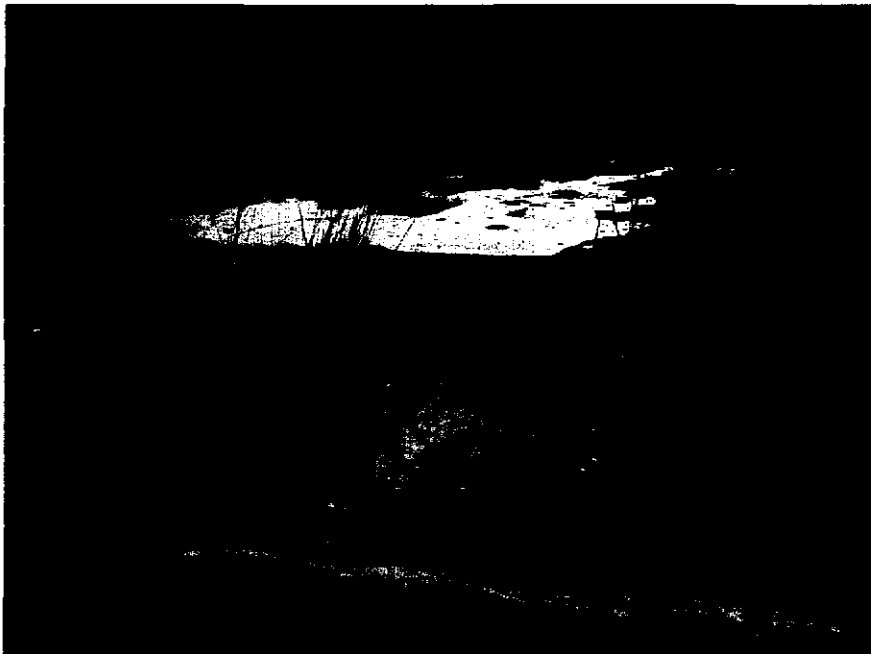
Some modern structures associated with farming were identified on the site these include;

- Concrete reservoir dam
- Concrete slab

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Concrete reservoir



Concrete slab

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Mitigation

It is recommended that the possibility of the concrete slab being used for religious ceremonies be investigated by the social consultant on the project. Should this be found to be the case an alternative location should be provided to the specific religious group.

CULTURAL LANDSCAPE

The following landscape types were identified during the study.

Landscape Type	Description	Occurrence still possible?	Identified on site?
1 Paleontological	Mostly fossil remains. Remains include microbial fossils such as found in Baberton Greenstones		No
2 Archaeological	Evidence of human occupation associated with the following phases – Early-, Middle-, Late Stone Age, Early-, Late Iron Age, Pre-Contact Sites, Post-Contact Sites	No	No
3 Historic Built Environment	<ul style="list-style-type: none"> - Historical townscapes/streetscapes - Historical structures; i.e. older than 60 years - Formal public spaces - Formally declared urban conservation areas - Places associated with social identity/displacement 	No	No
4 Historic Farmland	<p>These possess distinctive patterns of settlement and historical features such as:</p> <ul style="list-style-type: none"> - Historical farm yards - Historical farm workers villages/settlements - Irrigation furrows - Tree alignments and groupings - Historical routes and pathways - Distinctive types of planting - Distinctive architecture of cultivation e.g. planting blocks, trellising, terracing, ornamental planting. 		
5 Historic rural town	<ul style="list-style-type: none"> - Historic mission settlements - Historic townscapes 	No	No
6 Pristine natural landscape	<ul style="list-style-type: none"> - Historical patterns of access to a natural amenity - Formally proclaimed nature reserves - Evidence of pre-colonial occupation - Scenic resources, e.g. view corridors, viewing sites, visual edges, visual linkages - Historical structures/settlements older than 60 years - Pre-colonial or historical burial sites - Geological sites of cultural significance. 	No	No
7 Relic Landscape	<ul style="list-style-type: none"> - Past farming settlements - Past industrial sites - Places of isolation related to attitudes to medical treatment - Battle sites - Sites of displacement, 	No	No
8 Burial grounds and grave sites	<ul style="list-style-type: none"> - Pre-colonial burials (marked or unmarked, known or unknown) - Historical graves (marked or unmarked, known or unknown) - Graves of victims of conflict - Human remains (older than 100 years) - Associated burial goods (older than 100 years) - Burial architecture (older than 60 years) 	No	No

9 Associated Landscapes	<ul style="list-style-type: none"> - Sites associated with living heritage e.g. initiation sites, harvesting of natural resources for traditional medicinal purposes - Sites associated with displacement & contestation - Sites of political conflict/struggle - Sites associated with an historic event/person - Sites associated with public memory 	No	No
10 Historical Farmyard	<ul style="list-style-type: none"> - Setting of the yard and its context - Composition of structures - Historical/architectural value of individual structures - Tree alignments - Views to and from - Axial relationships - System of enclosure, e.g. defining walls - Systems of water reticulation and irrigation, e.g. furrows - Sites associated with slavery and farm labour - Colonial period archaeology 	No	No
11 Historic institutions	<ul style="list-style-type: none"> - Historical prisons - Hospital sites - Historical school/reformatory sites - Military bases 	No	No
12 Scenic visual	<ul style="list-style-type: none"> - Scenic routes 	No	No
13 Amenity landscape	<ul style="list-style-type: none"> - View sheds - View points - Views to and from - Gateway conditions - Distinctive representative landscape conditions - Scenic corridors 	No	No

Mitigation

It is recommended that the development designs take into account the positive and negative characteristics of the existing cultural landscape type and that they endeavor to promote the positive aspects while at the same time mitigating the negative aspects.

IMPACT ASSESSMENT MATRIX

NHRA Class	Identification		Significance	Impact	Recommendations
	Site	GPS			
Buildings and structures	BVD 001	24° 11' 00" S 30° 23' 00" E	Low	None	None

RESOURCE MANAGEMENT RECOMMENDATIONS

Although unlikely, sub-surface remains of heritage sites could still be encountered during the construction activities associated with the project. Such sites would offer no surface indication of their presence due to the high state of alterations in some areas as well as heavy plant cover in other areas. 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

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- Ceramic fragments such as pottery shards either historic or pre-contact
- Stone concentrations of any formal nature

Although no 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 (50m radius 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.

CONCLUSION

The area investigated shows numerous signs of human occupation and especially agricultural activities. With the exception of the concrete reservoir and slab there is no other built environment facets. It is recommended that the social consultant on the project investigates the possibility of the cement slab being used as a site for religious ceremonies. Should this be the case an alternative location should be provided.

A single informant indicated that a close lying hill is periodically used as a site for a traditional school (initiation school). Although these schools need a high level of privacy, the development of the village will not impact thereon.

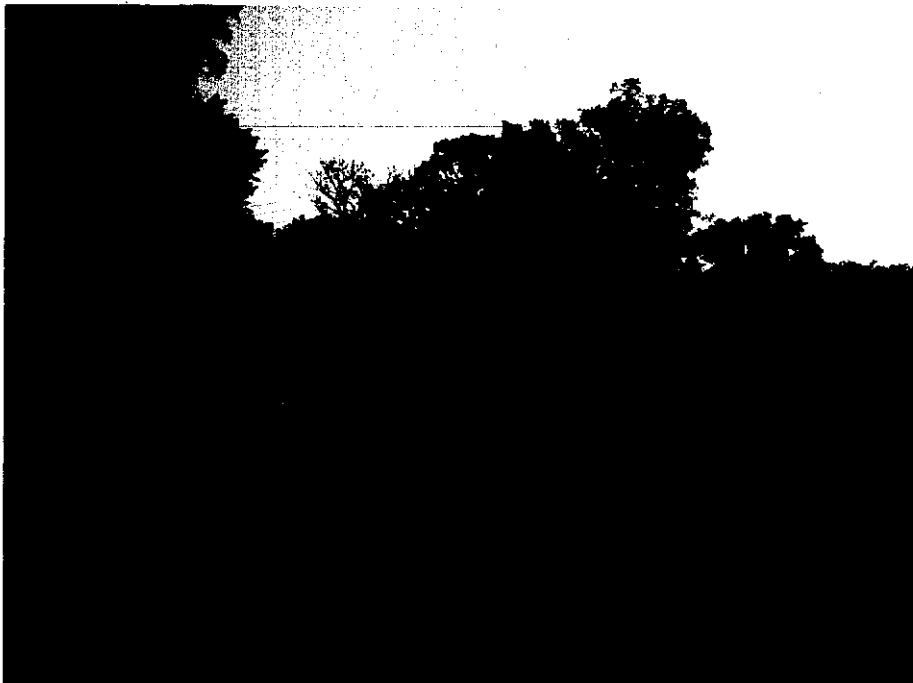
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3 SITE REGISTER

HERITAGE SITES IDENTIFIED WITHIN THE STUDY AREA

SITE BVD 001

GPS Coordinates 24° 11' 00" S
 30° 23' 00" E



A concrete water reservoir and concrete slab. The reservoir is not in use anymore.

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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

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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. (*Dunnell, 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.

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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

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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).

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 **Garmin Colorado** 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).

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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

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- 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

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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

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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 on-going nature.

Diversity

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

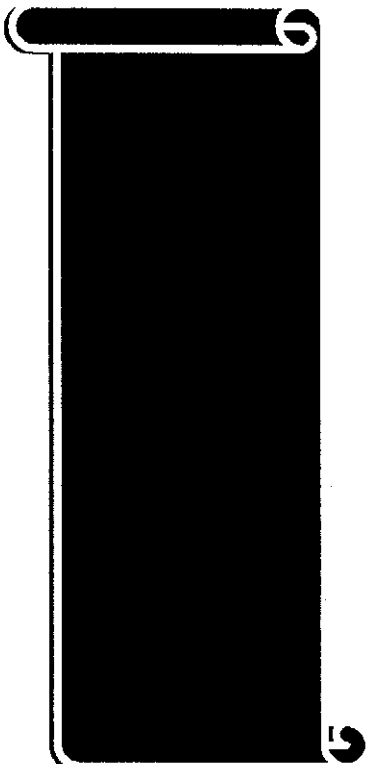
Cumulative Effect

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.

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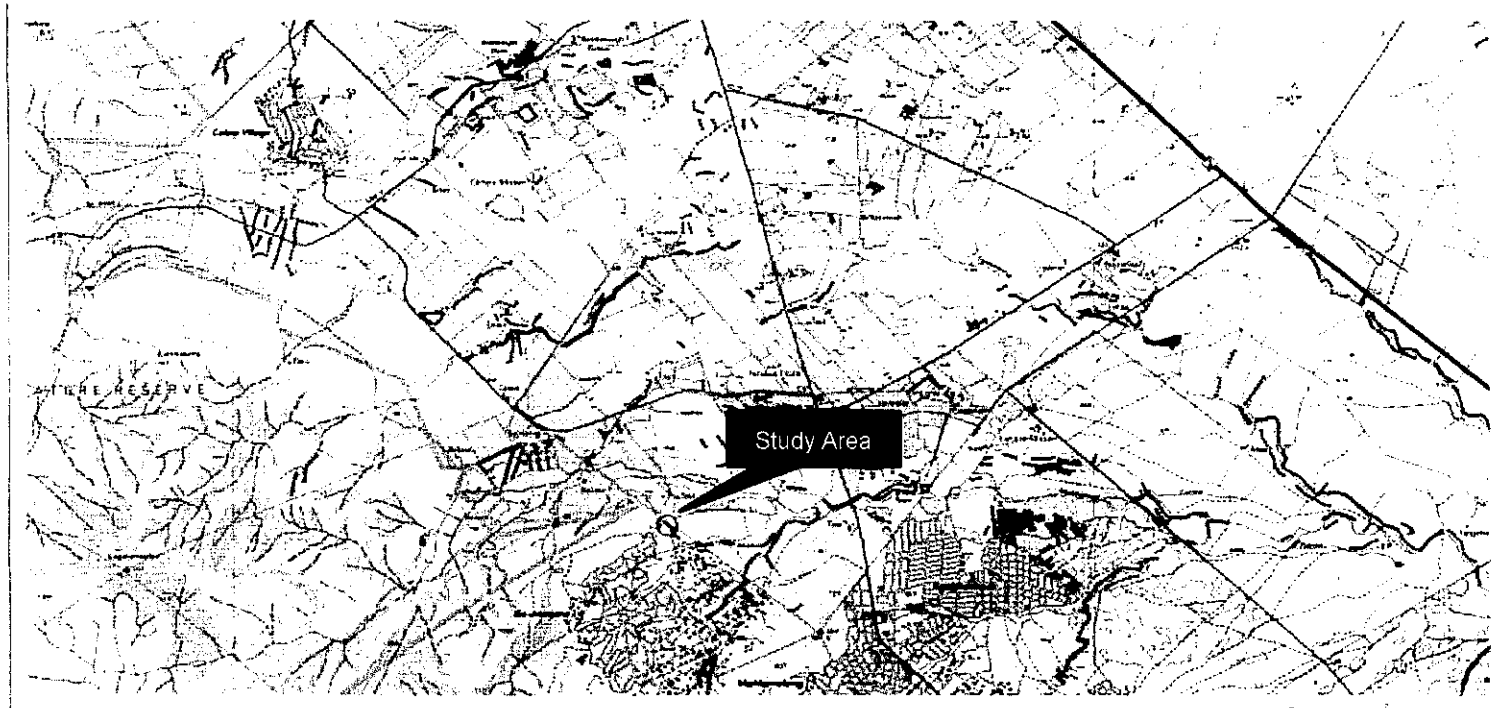
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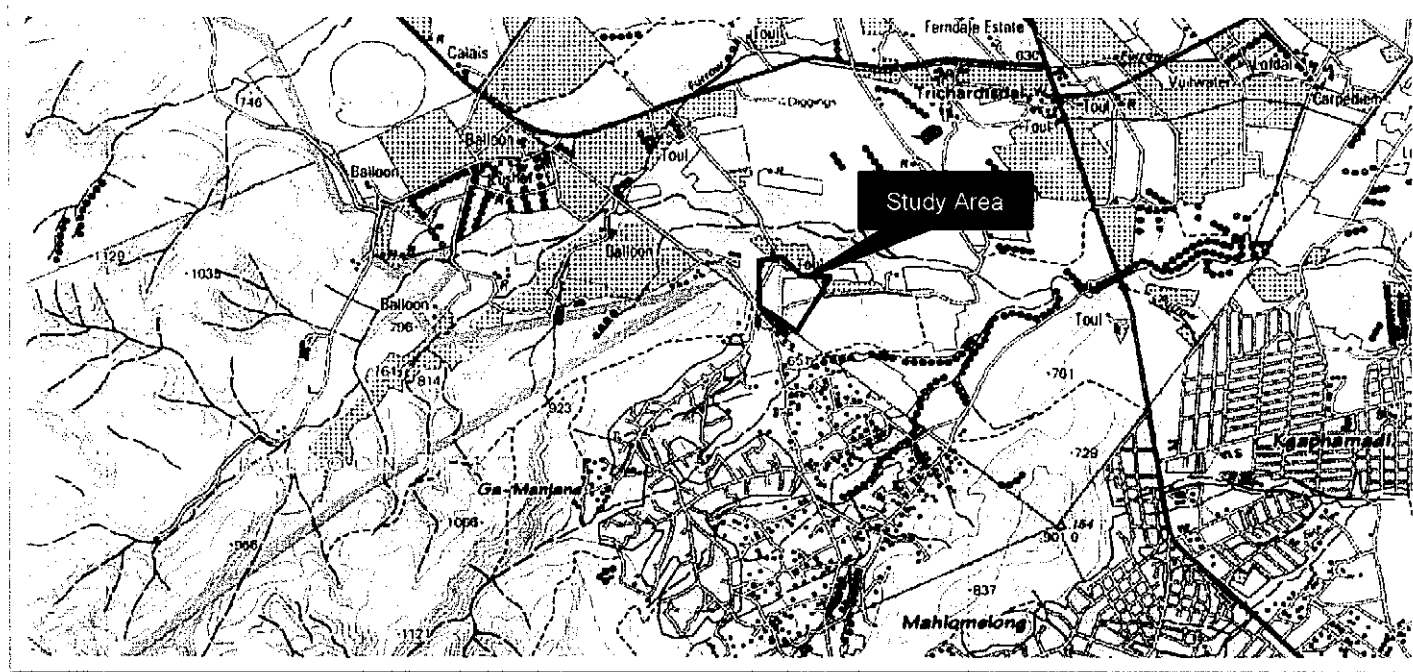
Location Map for the Balloon Village Demarcation HIA

1:50 000 Map Reference 3024 CD



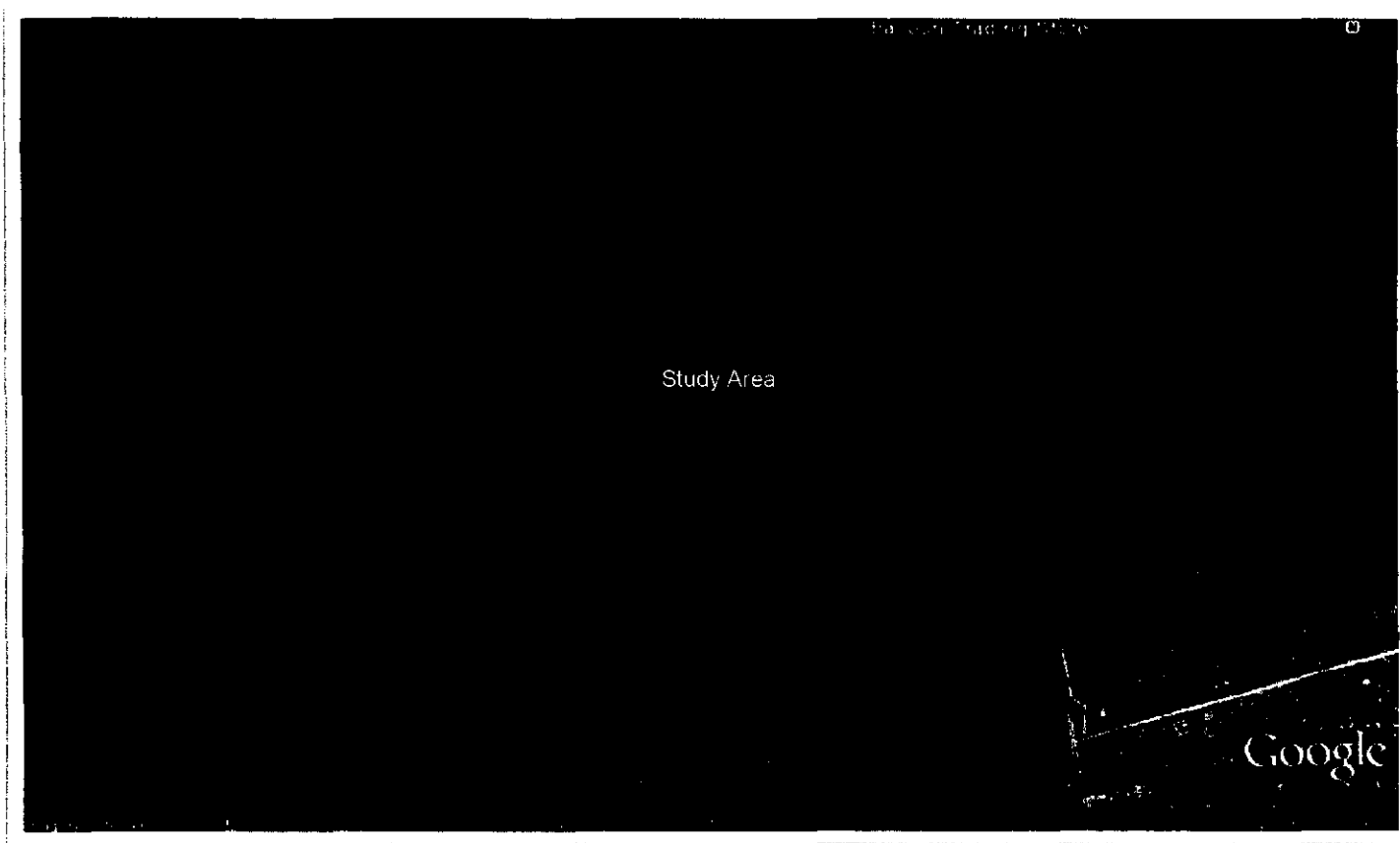
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Study Area



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Study Area



Aerial Photograph Showing the Location of the Study Area

28/06/2011

Location of Site BVD 001

