

**PROPOSED MAKHATHINI EXPANSION IRRIGATION
SCHEME, NORTHERN KWAZULU-NATAL**

**FOR NZINGWE CONSULTANCY
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INTRODUCTION

Umlando was subcontracted by Nzingwe Consultancy to undertake the HIA of the Makhathini expansion irrigation schemes. The irrigations schemes occur in five areas: Mbangweni, Bhekabantu, Nondabuya, Ikhwehle, and Mbaliyeawe.

The project involves the construction of:

- Expansion of Canals
- Reservoirs and holding dams
- Electricity substations
- New and upgrading of existing access Roads
- Water Pump houses
- Preparation of land for the various agricultural projects which will include the clearance of a vast amount of virgin land.

The proposed development will be an expansion of the already existing irrigation scheme. Canals for the transportation of water will be constructed in a similar way to the already existing canals for the entire extent of the expansion. More water efficient technology such as sprinklers and pivots are being considered for the expansion. The infrastructure for the bulk transfer of water will almost mirror the course of the Pongola River, along whose flood plains most of the land identified for the proposed expansion

The Mbaliyezwe Irrigation Scheme is located within the uMkhanyakude District, Northern KwaZulu Natal, on the Eastern side of the Pongola River, immediately north of the Mjindi Farm. The extent of the proposed development is about 290hectares.

There are existing community gardens within both Bhekabantu and Mbangweni which are active. Bhekabantu has 50 ha with 30 members, whilst

Mbangweni has 34 ha with 17 members. The intention is to increase the number of the hecters and beneficiaries of the schemes.

The Nondabuya and Ikhwehle Agricultural Scheme is going to be established as part of pocket projects that form part of the Expansion of the Makhathini Irrigation Scheme Project. This project is aimed to improve agricultural activities and outputs from the affected areas. The areas of Nondabuya and Ikhwehle are located on arable land that is in proximity of the Pongola River. There is also high availability of freshwater sources which are suitable for irrigation purposes.

Many of these areas have existing agricultural fields or fields that were used in the past, and this is shown in the report. Figures 1 – 7 indicate the locations of the irrigation schemes.

FIG. 1 GENERAL LOCATION OF THE STUDY AREAS

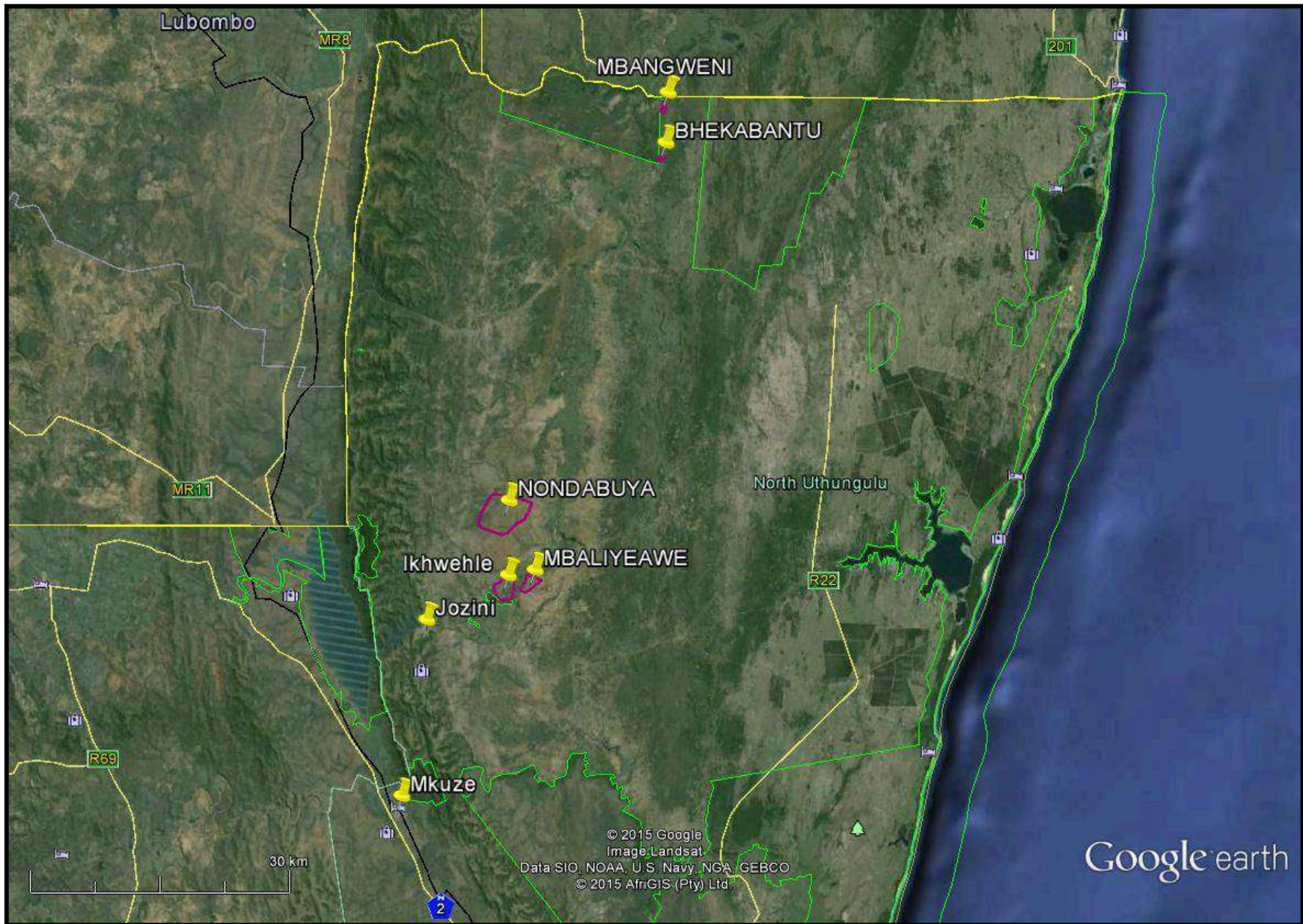


FIG. 2: AERIAL OVERVIEW OF THE MBANGWENI STUDY AREA

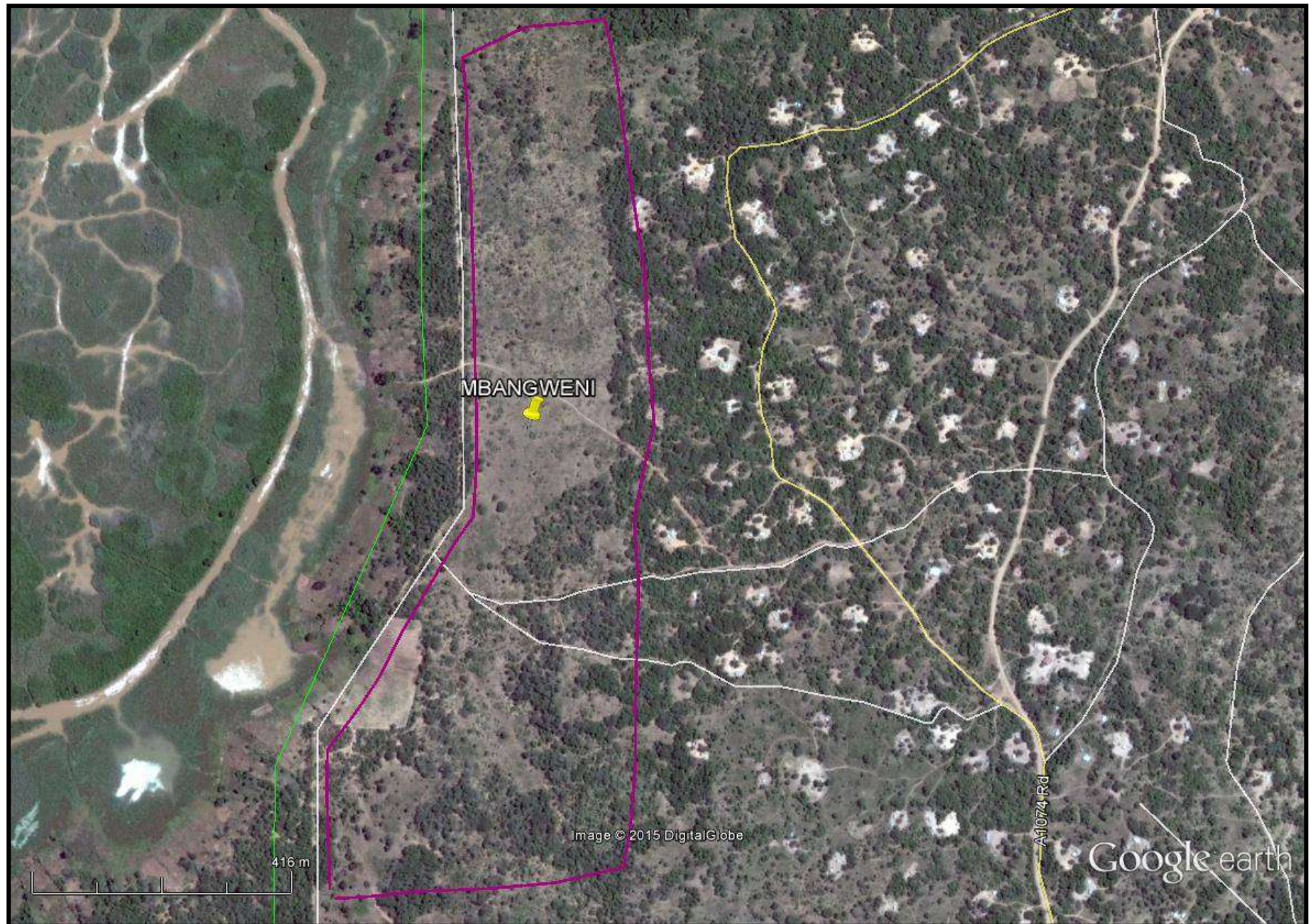


FIG. 3: TOPOGRAPHICAL OVERVIEW OF THE MBANGWENI & BHEKABANTU STUDY AREAS

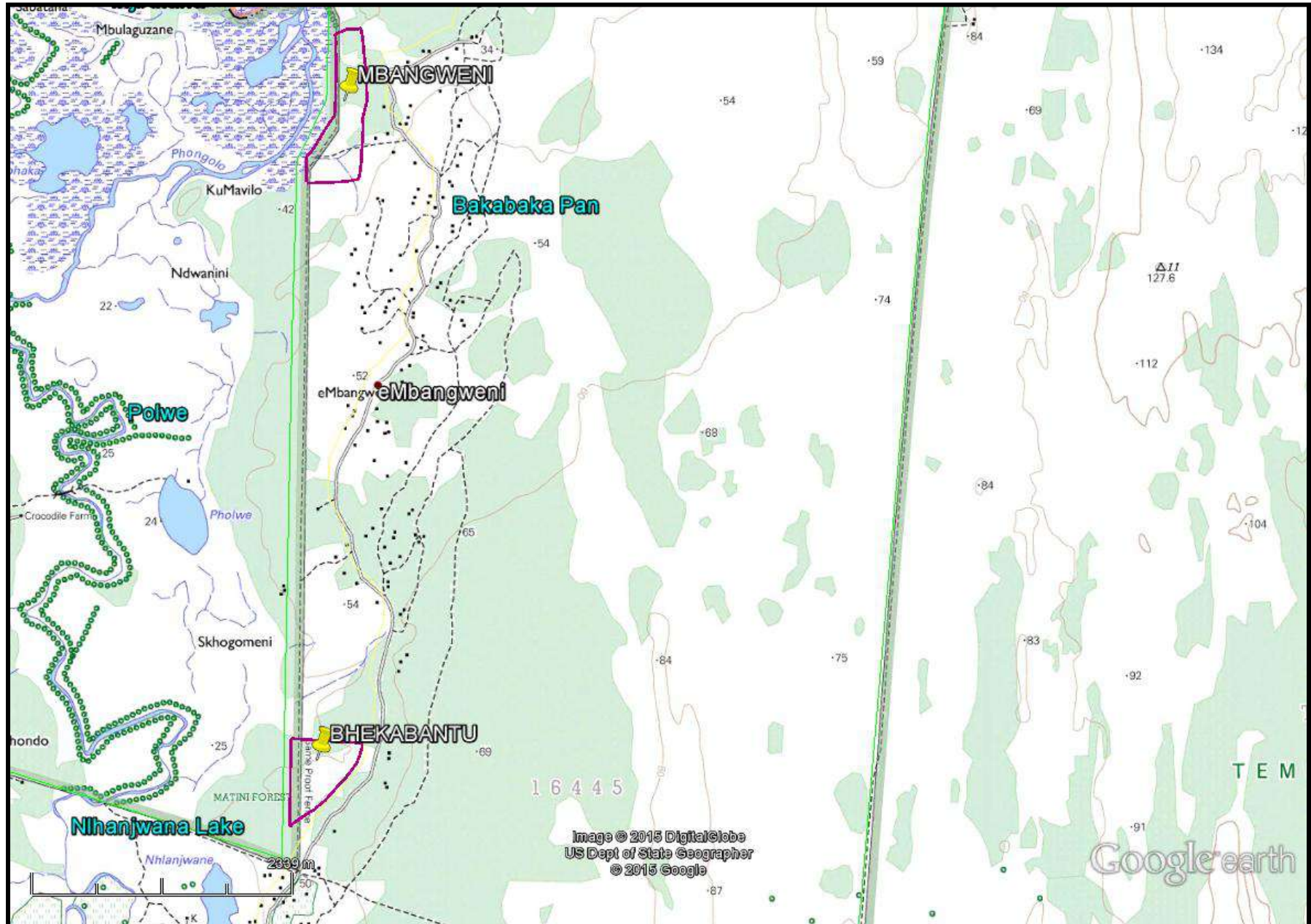


FIG. 4: AERIAL OVERVIEW OF THE MBANGWEINI STUDY AREA

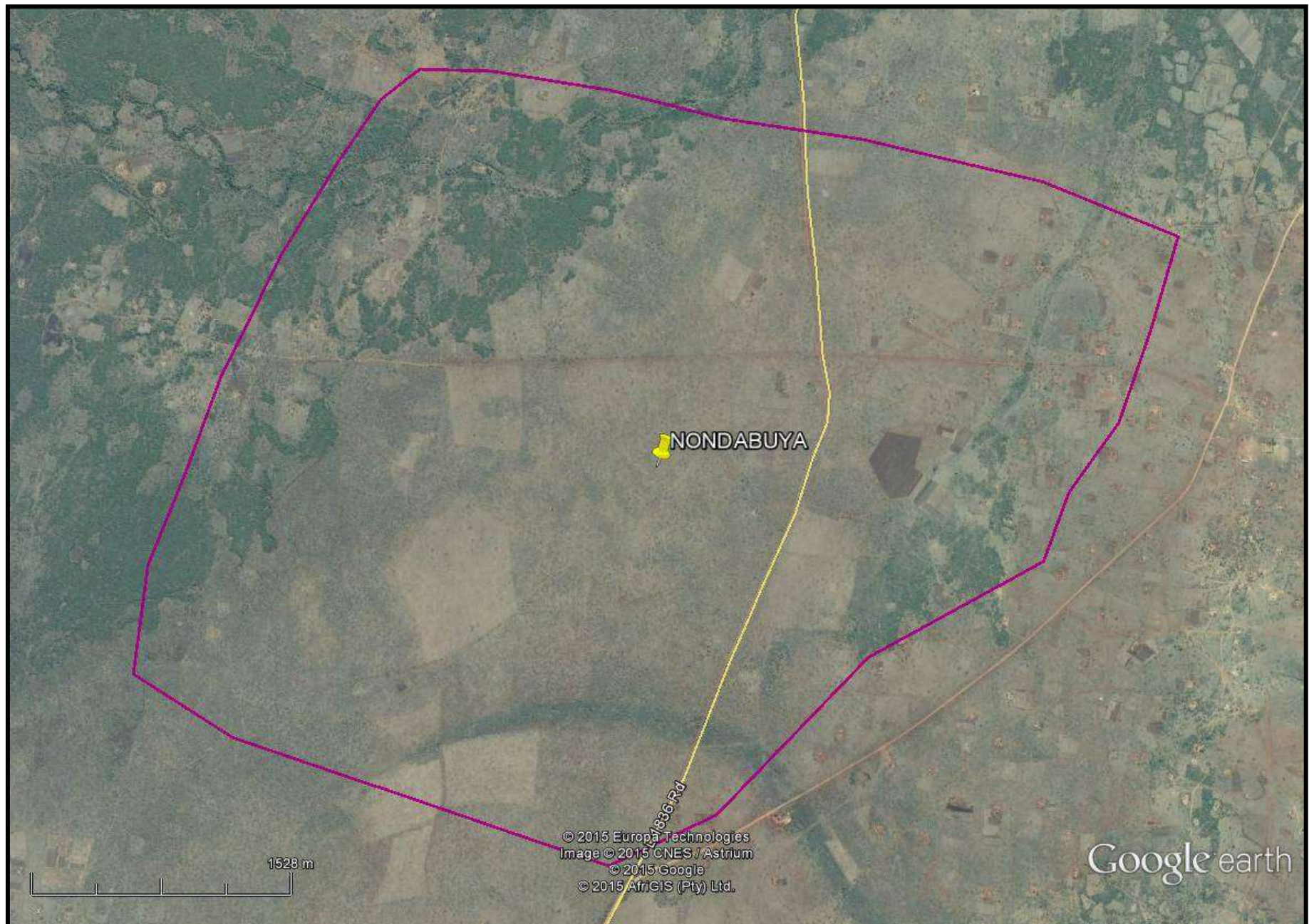


FIG. 5: TOPOGRAPHICAL OVERVIEW OF THE MBANGWEINI STUDY AREA

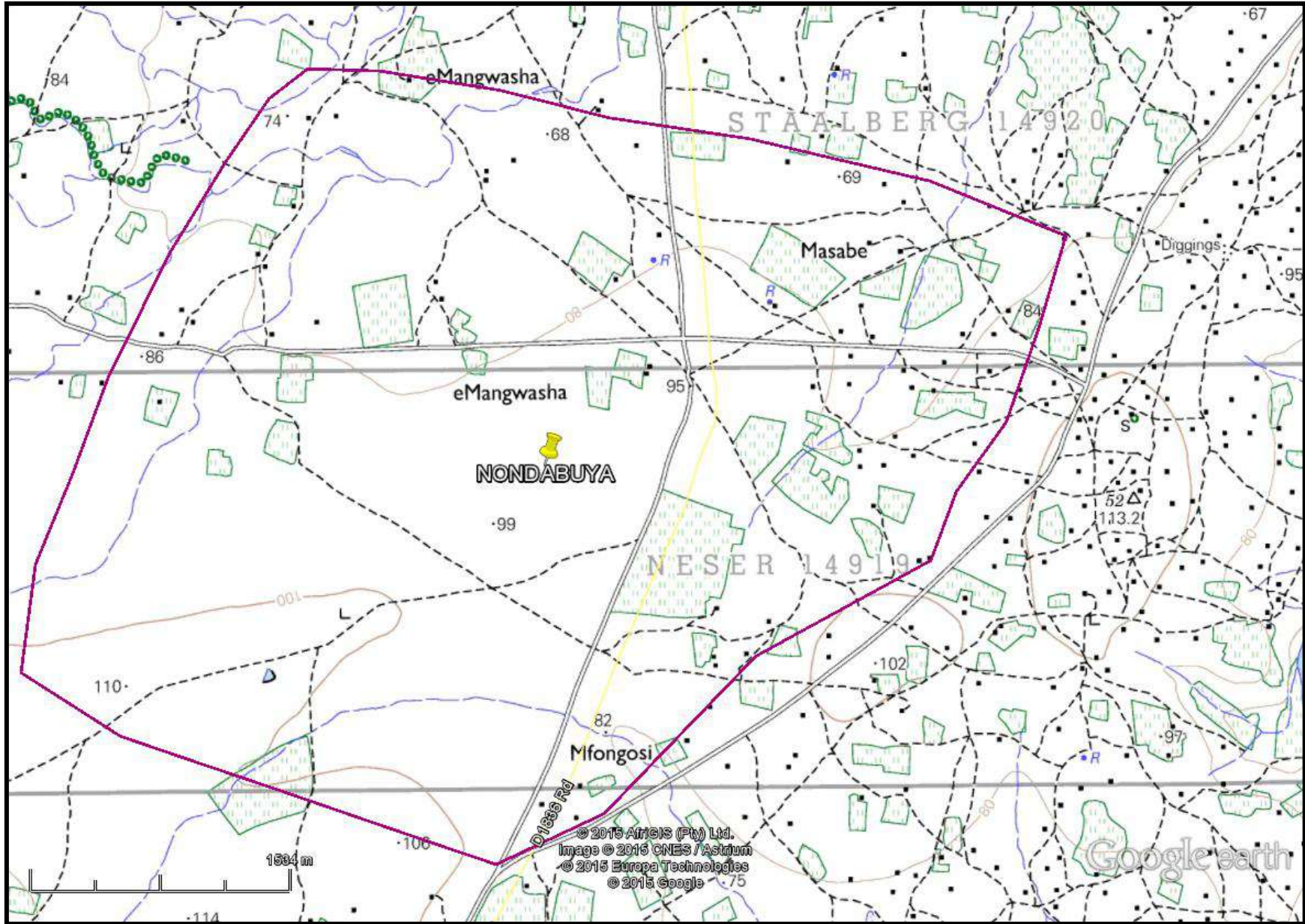


FIG. 6: AERIAL OVERVIEW OF THE IKWEHLE & MBALIYEWE STUDY AREAS

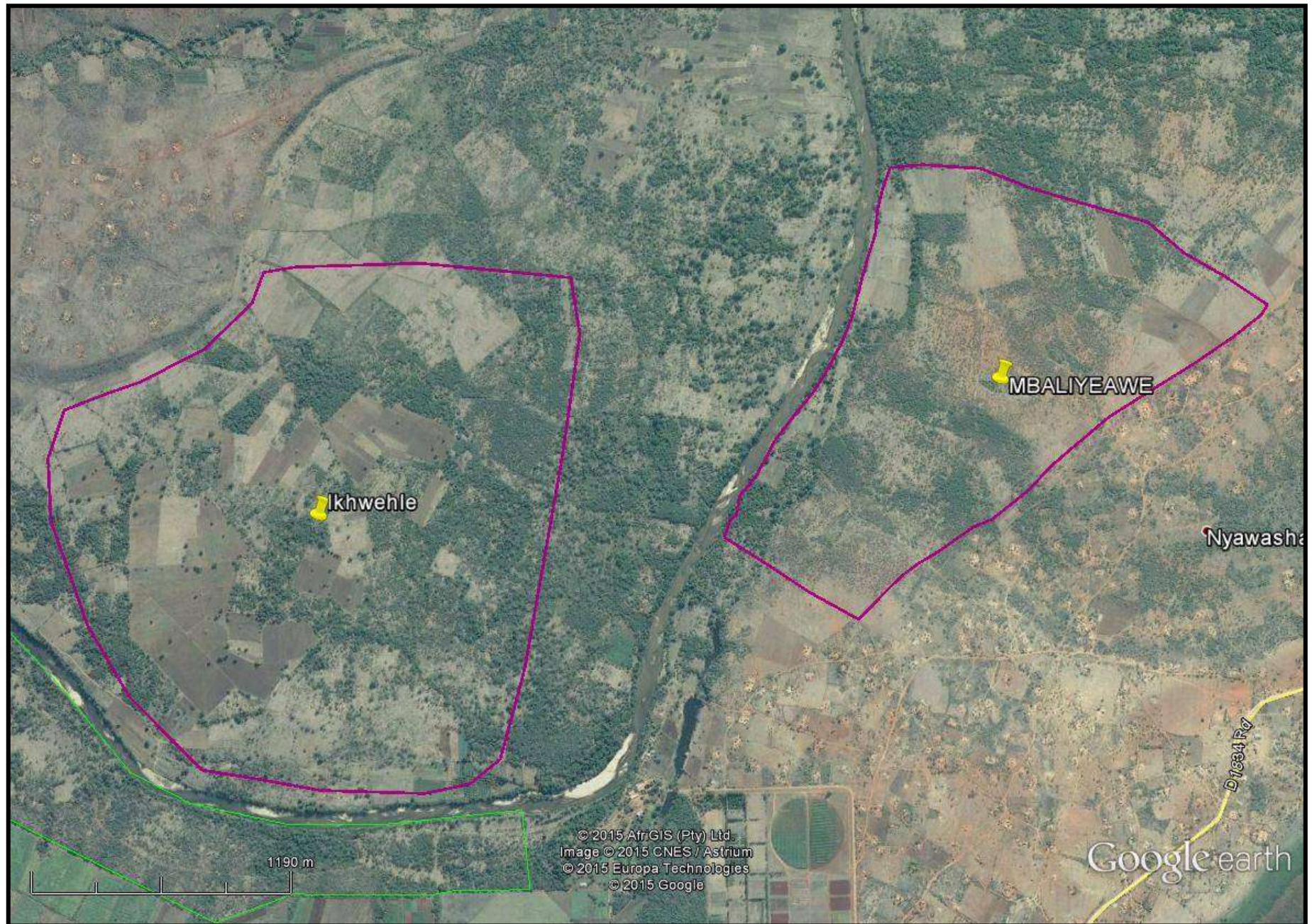
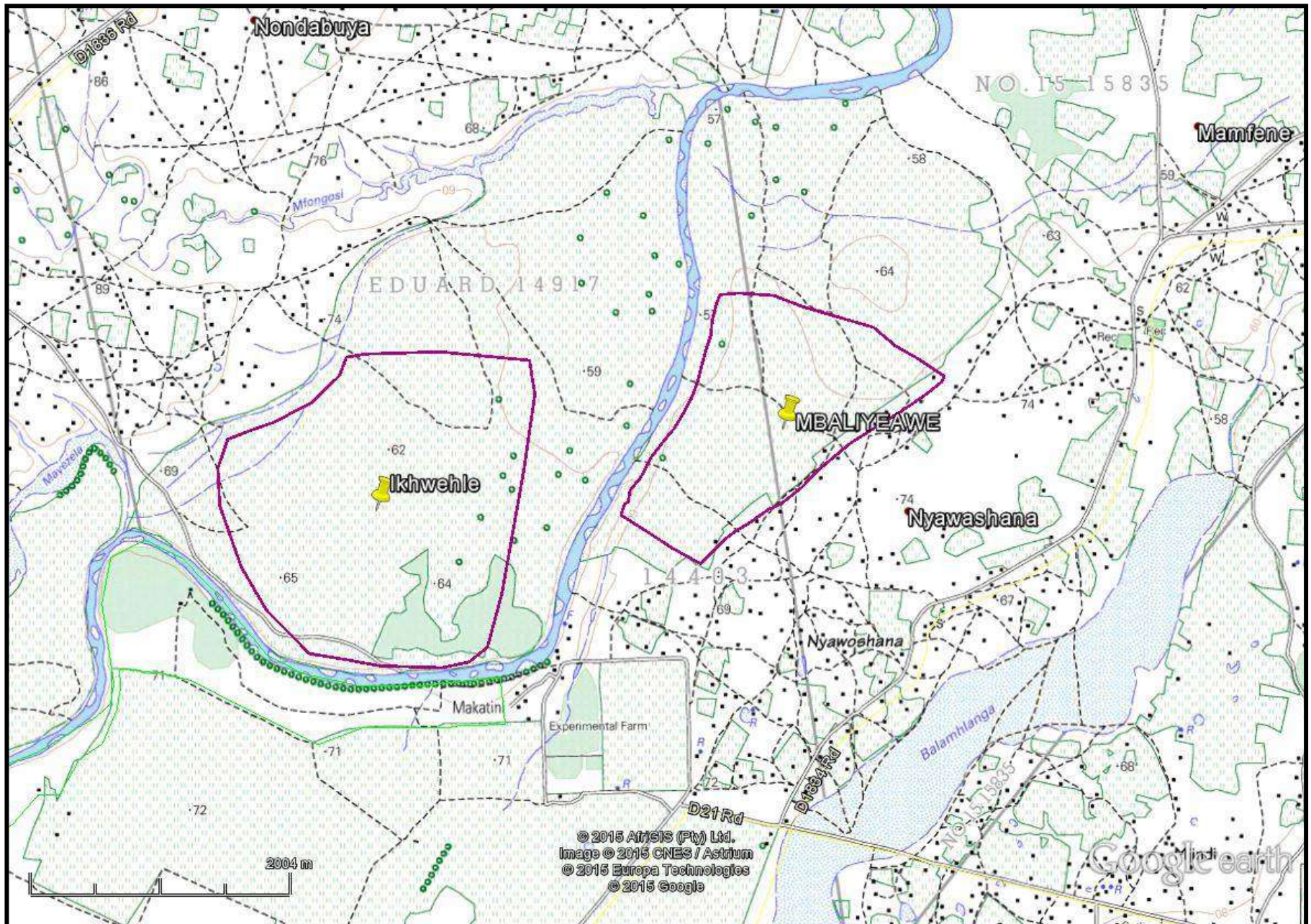


FIG. 7: TOPOGRAPHICAL OVERVIEW OF THE IKWEHLE & MBALIYEAWE STUDY AREAS



KWAZULU-NATAL HERITAGE ACT NO. 4 OF 2008

“General protection: Structures.—

- No structure which is, or which may reasonably be expected to be older than 60 years, may be demolished, altered or added to without the prior written approval of the Council having been obtained on written application to the Council.
- Where the Council does not grant approval, the Council must consider special protection in terms of sections 38, 39, 40, 41 and 43 of Chapter 9.
- The Council may, by notice in the *Gazette*, exempt—
- A defined geographical area; or
- defined categories of sites within a defined geographical area, from the provisions of subsection where the Council is satisfied that heritage resources falling in the defined geographical area or category have been identified and are adequately protected in terms of sections 38, 39, 40, 41 and 43 of Chapter 9.
- A notice referred to in subsection (2) may, by notice in the *Gazette*, be amended or withdrawn by the Council.

General protection: Graves of victims of conflict.—No person may damage, alter, exhume, or remove from its original position—

- the grave of a victim of conflict;
- a cemetery made up of such graves; or
- any part of a cemetery containing such graves, without the prior written approval of the Council having been obtained on written application to the Council.
- General protection: Traditional burial places.—
- No grave—
- not otherwise protected by this Act; and
- not located in a formal cemetery managed or administered by a local authority, may be damaged, altered, exhumed, removed from its original position, or otherwise disturbed without the prior written approval of the Council having been obtained on written application to the Council.

The Council may only issue written approval once the Council is satisfied that—

- the applicant has made a concerted effort to consult with communities and individuals who by tradition may have an interest in the grave; and
- the applicant and the relevant communities or individuals have reached agreement regarding the grave.

General protection: Battlefield sites, archaeological sites, rock art sites, palaeontological sites, historic fortifications, meteorite or meteorite impact sites.—

- No person may destroy, damage, excavate, alter, write or draw upon, or otherwise disturb any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site without the prior written approval of the Council having been obtained on written application to the Council.
- Upon discovery of archaeological or palaeontological material or a meteorite by any person, all activity or operations in the general vicinity of such material or meteorite must cease forthwith and a person who made the discovery must submit a written report to the Council without delay.
- The Council may, after consultation with an owner or controlling authority, by way of written notice served on the owner or controlling authority, prohibit any activity considered by the Council to be inappropriate within 50 metres of a rock art site.
- No person may exhume, remove from its original position or otherwise disturb, damage, destroy, own or collect any object or material associated with any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site without the prior written approval of the Council having been obtained on written application to the Council.
- No person may bring any equipment which assists in the detection of metals and archaeological and palaeontological objects and material, or excavation equipment onto any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, or meteorite impact site, or

- use similar detection or excavation equipment for the recovery of meteorites, without the prior written approval of the Council having been obtained on written application to the Council.
- The ownership of any object or material associated with any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site, on discovery, vest in the Provincial Government and the Council is regarded as the custodian on behalf of the Provincial Government.” (KZN Heritage Act of 2008)

METHOD

The method for Heritage assessment consists of several steps.

The first step forms part of the desktop assessment. Here we would consult the database that has been collated by Umlando. These databases contains archaeological site locations and basic information from several provinces (information from Umlando surveys and some colleagues), most of the national and provincial monuments and battlefields in Southern Africa (<http://www.vuvuzela.com/googleearth/monuments.html>) and cemeteries in southern Africa (information supplied by the Genealogical Society of Southern Africa). We use 1st and 2nd edition 1:50 000 topographical and 1937 aerial photographs where available, to assist in general location and dating of buildings and/or graves. The database is in Google Earth format and thus used as a quick reference when undertaking desktop studies. Where required we would consult with a local data recording centre, however these tend to be fragmented between different institutions and areas and thus difficult to access at times. We also consult with an historical architect, palaeontologist, and an historian where necessary.

The survey results will define the significance of each recorded site, as well as a management plan.

All sites are grouped according to low, medium, and high significance for the purpose of this report. Sites of low significance have no diagnostic artefacts or features. Sites of medium significance have diagnostic artefacts or features and these sites tend to be sampled. Sampling includes the collection of artefacts for future analysis. All diagnostic pottery, such as rims, lips, and decorated sherds are sampled, while bone, stone, and shell are mostly noted. Sampling usually occurs on most sites. Sites of high significance are excavated and/or extensively sampled. Those sites that are extensively sampled have high research potential, yet poor preservation of features.

Defining significance

Heritage sites vary according to significance and several different criteria relate to each type of site. However, there are several criteria that allow for a general significance rating of archaeological sites.

These criteria are:

1. State of preservation of:

- 1.1. Organic remains:
 - 1.1.1. Faunal
 - 1.1.2. Botanical
- 1.2. Rock art
- 1.3. Walling
- 1.4. Presence of a cultural deposit
- 1.5. Features:
 - 1.5.1. Ash Features
 - 1.5.2. Graves
 - 1.5.3. Middens
 - 1.5.4. Cattle byres
 - 1.5.5. Bedding and ash complexes

2. Spatial arrangements:

- 2.1. Internal housing arrangements
- 2.2. Intra-site settlement patterns
- 2.3. Inter-site settlement patterns

3. Features of the site:

- 3.1. Are there any unusual, unique or rare artefacts or images at the site?
- 3.2. Is it a type site?
- 3.3. Does the site have a very good example of a specific time period, feature, or artefact?

4. Research:

- 4.1. Providing information on current research projects
- 4.2. Salvaging information for potential future research projects

5. Inter- and intra-site variability

- 5.1. Can this particular site yield information regarding intra-site variability, i.e. spatial relationships between various features and artefacts?
- 5.2. Can this particular site yield information about a community's social relationships within itself, or between other communities?

6. Archaeological Experience:

6.1. The personal experience and expertise of the CRM practitioner should not be ignored. Experience can indicate sites that have potentially significant aspects, but need to be tested prior to any conclusions.

7. Educational:

- 7.1. Does the site have the potential to be used as an educational instrument?
- 7.2. Does the site have the potential to become a tourist attraction?
- 7.3. The educational value of a site can only be fully determined after initial test-pit excavations and/or full excavations.

8. Other Heritage Significance:

- 8.1. Palaeontological sites
- 8.2. Historical buildings

- 8.3. Battlefields and general Anglo-Zulu and Anglo-Boer sites
- 8.4. Graves and/or community cemeteries
- 8.5. Living Heritage Sites
- 8.6. Cultural Landscapes, that includes old trees, hills, mountains, rivers, etc related to cultural or historical experiences.

The more a site can fulfill the above criteria, the more significant it becomes. Test-pit excavations are used to test the full potential of an archaeological deposit. This occurs in Phase 2. These test-pit excavations may require further excavations if the site is of significance (Phase 3). Sites may also be mapped and/or have artefacts sampled as a form of mitigation. Sampling normally occurs when the artefacts may be good examples of their type, but are not in a primary archaeological context. Mapping records the spatial relationship between features and artefacts.

SAHRA rates each site according to its significance. Table 1 lists this rating system.

TABLE 1: SAHRA GRADINGS FOR HERITAGE SITES

SITE SIGNIFICANCE	FIELD RATING	GRADE	RECOMMENDED MITIGATION
High Significance	National Significance	Grade 1	Site conservation / Site development
High Significance	Provincial Significance	Grade 2	Site conservation / Site development
High Significance	Local Significance	Grade 3A - C	
High / Medium Significance	Generally Protected A	3A	Site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B	3B	Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	Generally Protected C	3C	On-site sampling monitoring or no archaeological mitigation required prior to or during development / destruction

RESULTS

DESKTOP STUDY

The desktop study consisted of analysing various maps for evidence of prior habitation in the study area, as well as for previous archaeological surveys. The archaeological database indicates that there are archaeological sites in the general area (fig. 8 - 9). These sites include all types of Stone Age and Iron Age sites. Some sites occur in the study area. No national monuments, battlefields, or historical cemeteries are known to occur in the study area.

The first addition aerial photographs for this area were not currently available for this project. The 1968 and 1969 topographical maps were used as a reference. These maps indicate that the area was sparsely populated (fig.'s 10 – 13). Table 1 gives the location of these sites. These sites should be dealt as having potential human remains, and treated as sensitive sites

By 2002 much of each study areas been changed to cultivated land, however by 2009 under half of it has presumably been left fallow, with a lot of *Acacia spp.* regrowth. This is observable in the Google Earth images.

FIG. 8: LOCATION OF KNOWN HERITAGE SITES NEAR NORTHERN THE STUDY AREA

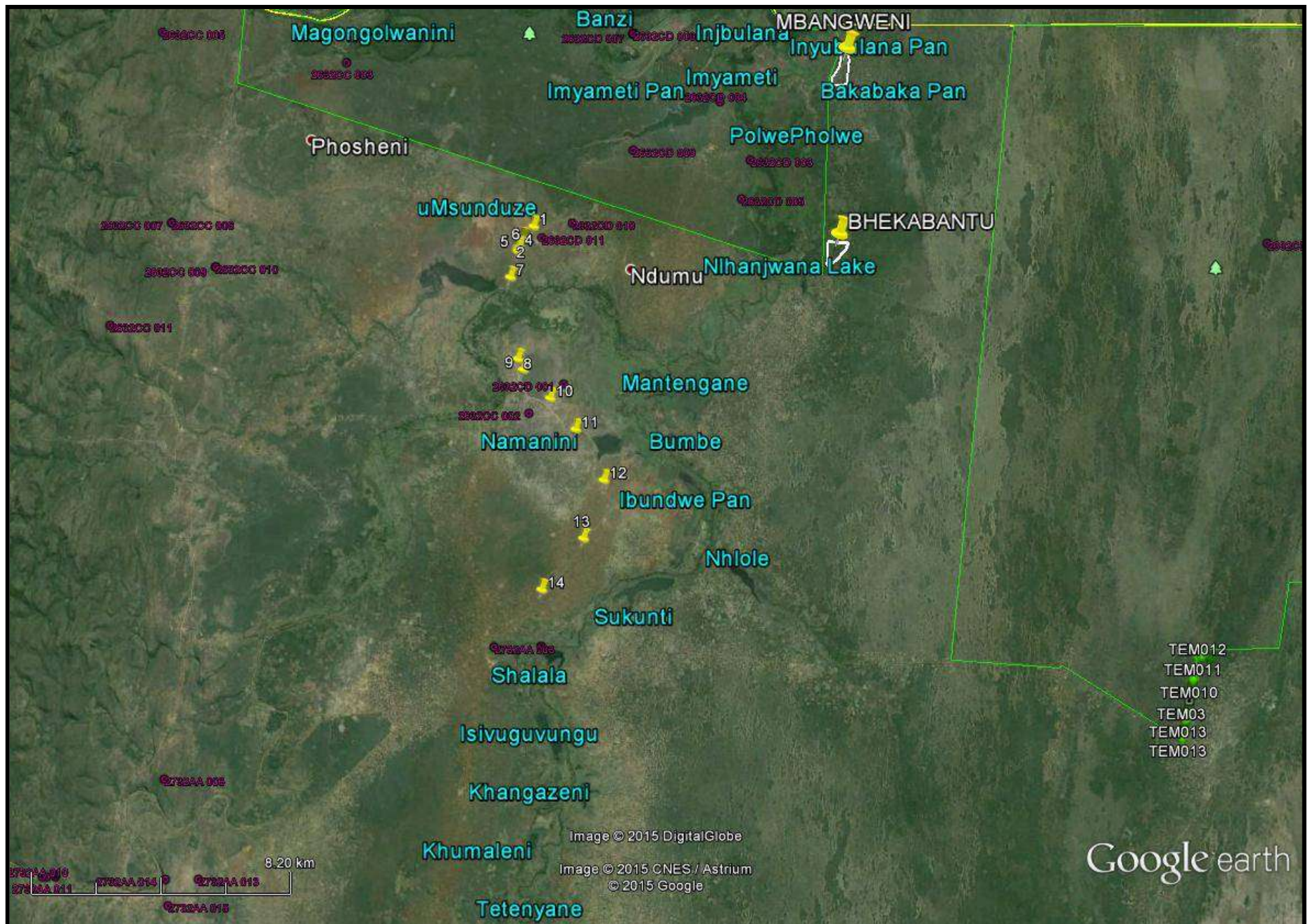


FIG. 9: LOCATION OF KNOWN HERITAGE SITES IN THE SOUTHERN STUDY AREA

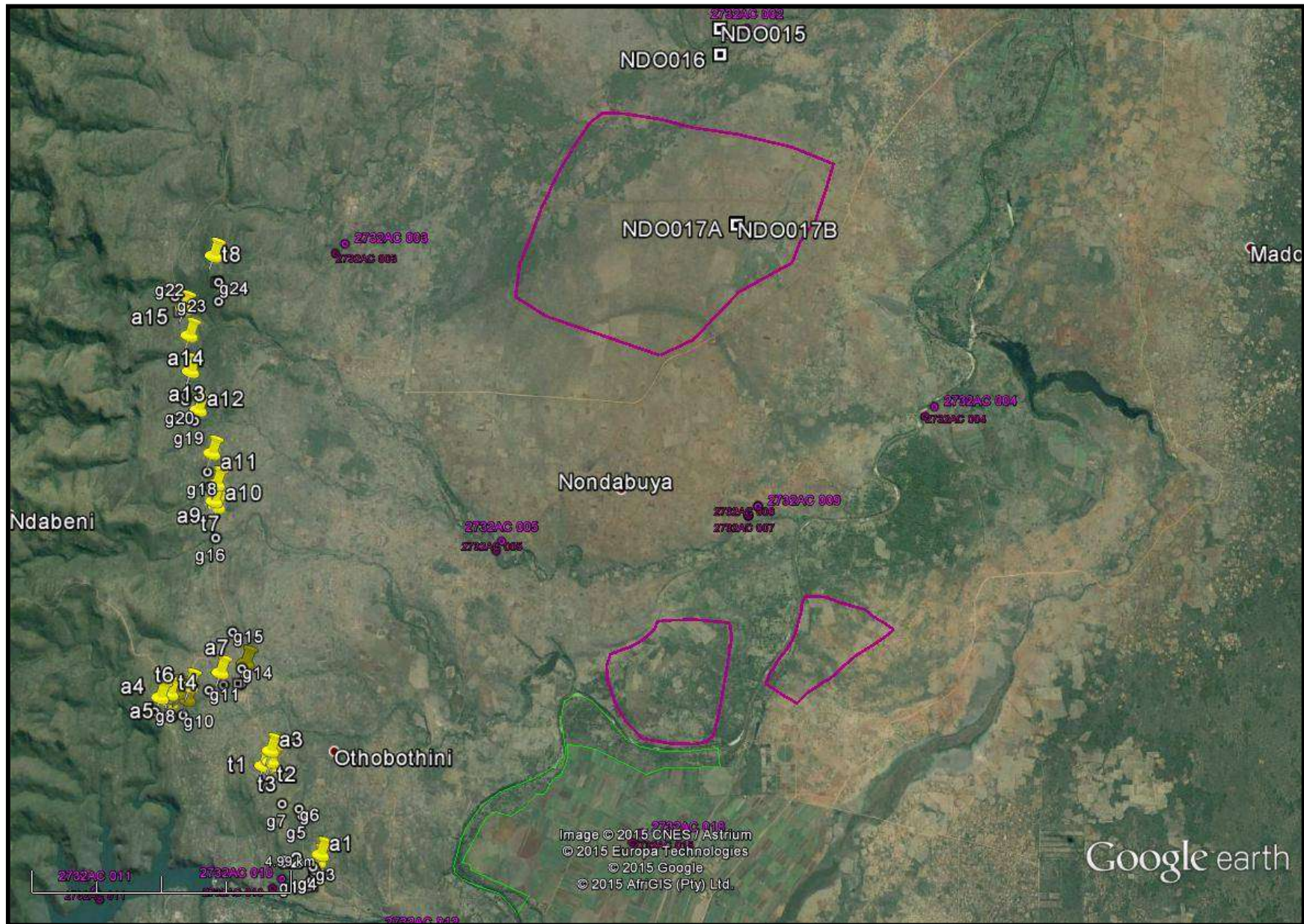


FIG. 10: MBANGWENI STUDY AREA IN 1968

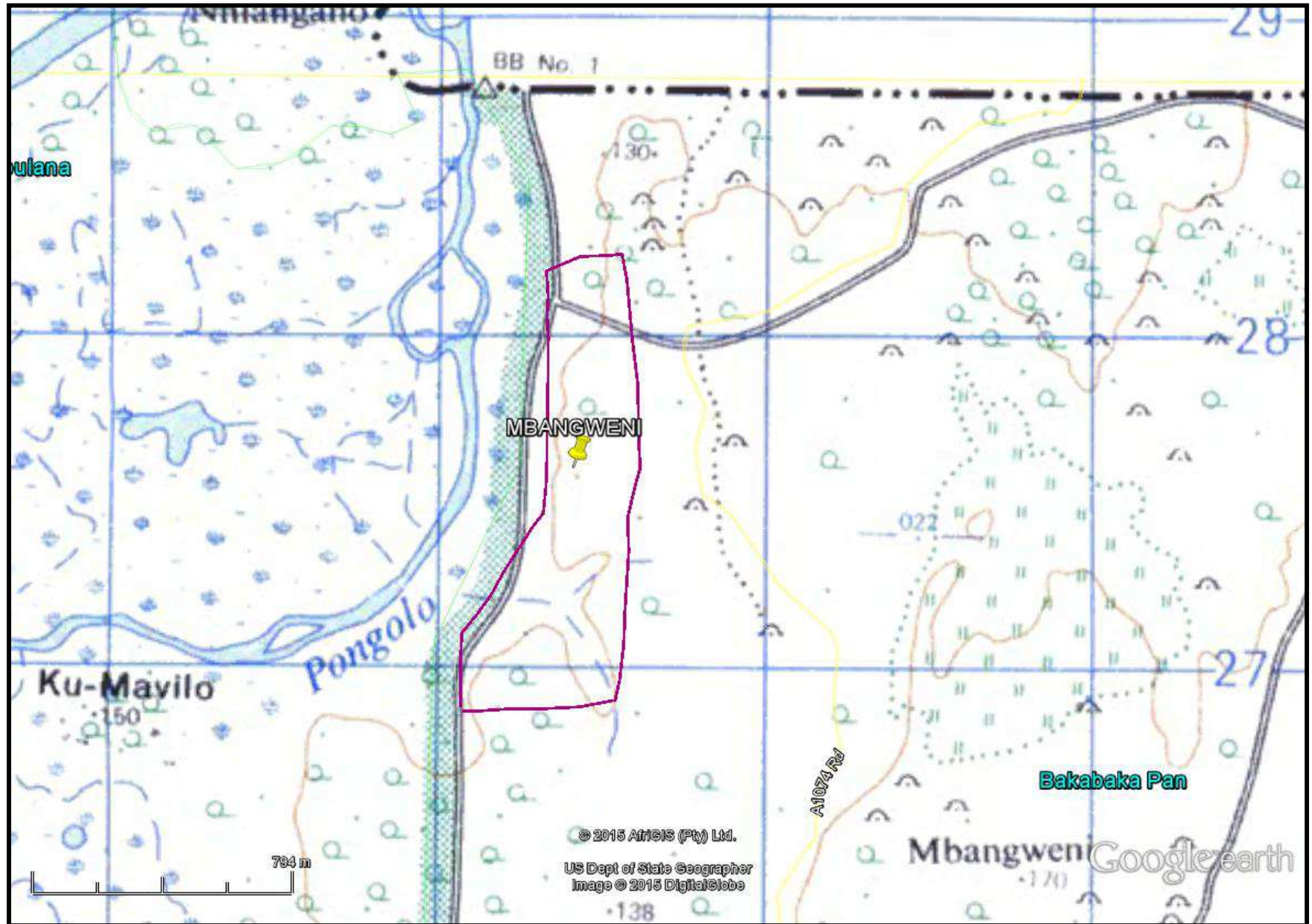


FIG. 11: BHEKABANTU STUDY AREA IN 1968



FIG. 12: NONDABUYA STUDY AREA IN 1969

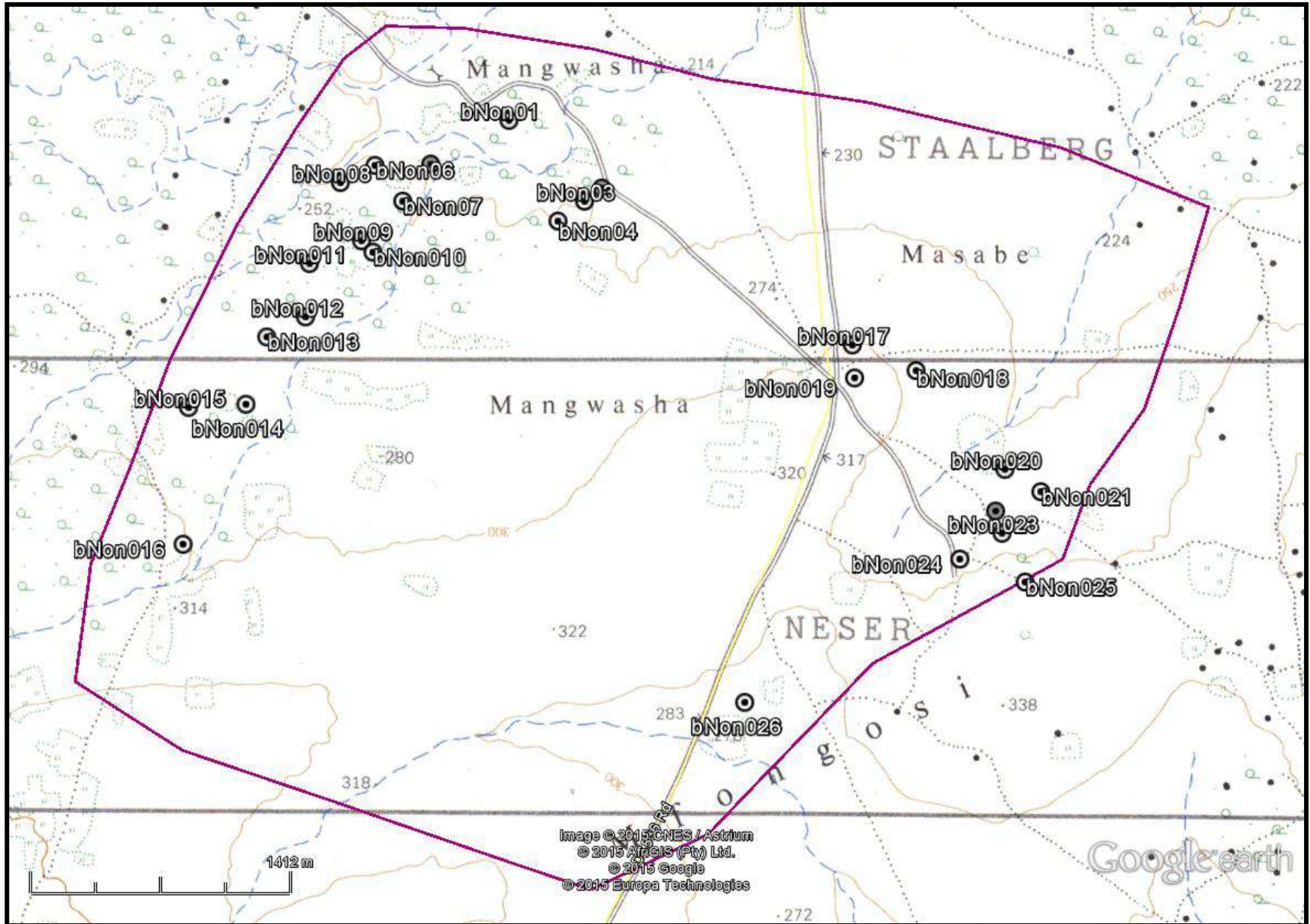


FIG. 12: IKWEHLE & MBALIYEAWE STUDY AREA IN 1969

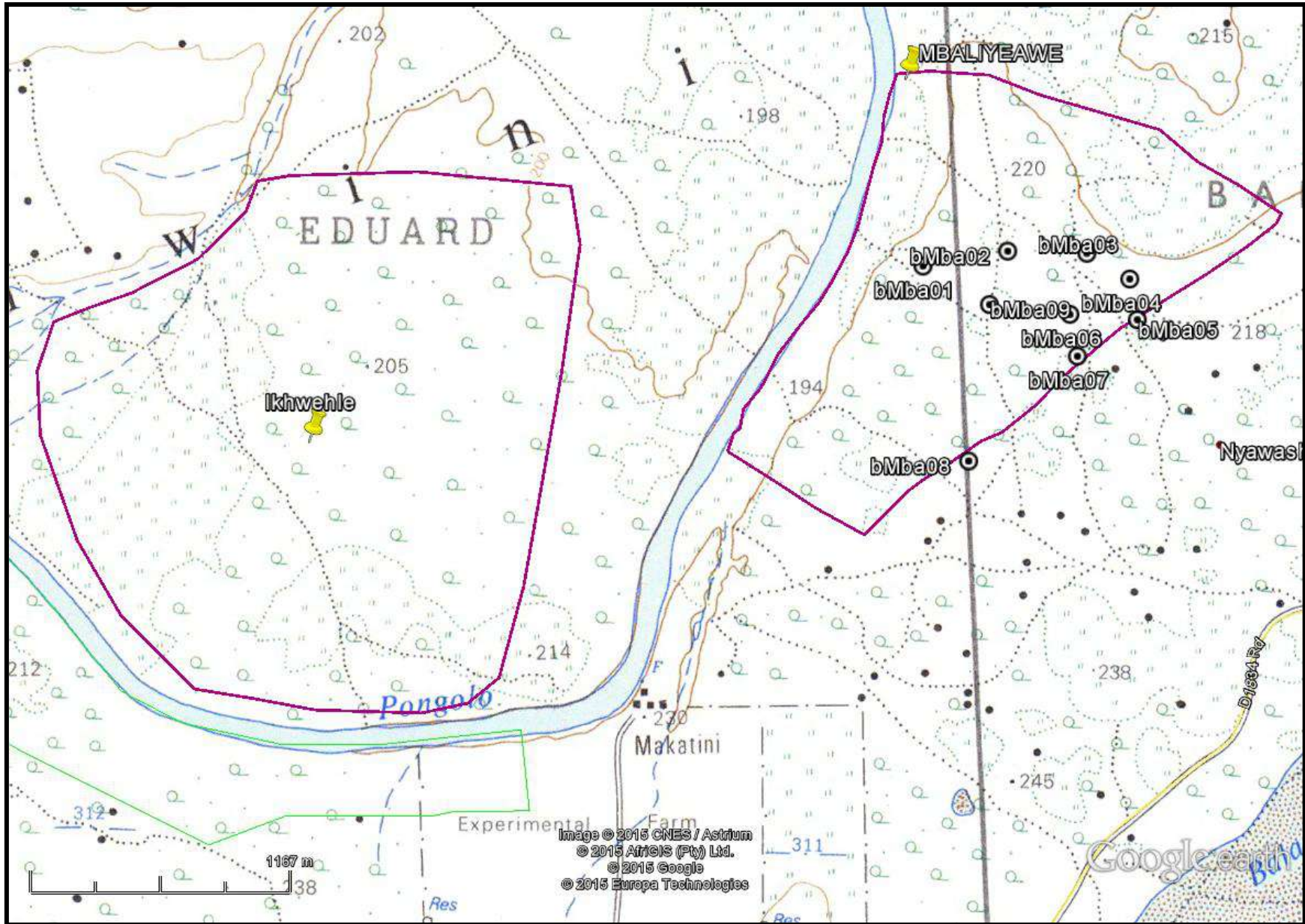


TABLE 2: LOCATION OF SETTLEMENTS IN 1968 AND 1969

NAME	LATITUDE	LONGITUDE
bBH01	-26.928659492	32.348561756
bBH02	-26.929761311	32.346441169
bBH03	-26.930633682	32.346987670
bBH04	-26.931272829	32.349070993
bBH05	-26.931802135	32.347693180
bBH06	-26.932253245	32.346423502
bNon01	-27.288808481	32.155059221
bNon02	-27.292158805	32.160227171
bNon03	-27.292814745	32.159267013
bNon04	-27.293801300	32.157788830
bNon05	-27.290977116	32.150703112
bNon06	-27.291042666	32.147603410
bNon07	-27.292815578	32.149153950
bNon08	-27.291896429	32.145685953
bNon09	-27.294785099	32.146870067
bNon010	-27.295346012	32.147500305
bNon011	-27.295908927	32.143972986
bNon012	-27.298551904	32.143757032
bNon013	-27.299541000	32.141608944
bNon014	-27.302871828	32.140457384
bNon015	-27.303030190	32.137283141
bNon016	-27.309782149	32.136987482
bNon017	-27.299948614	32.174152020
bNon018	-27.301213322	32.177699042
bNon019	-27.301579558	32.174270521
bNon020	-27.306096315	32.182648570
bNon021	-27.307196948	32.184634382
bNon022	-27.308153903	32.182117594
bNon023	-27.309251438	32.182469091
bNon024	-27.310524306	32.180119627
bNon025	-27.311654422	32.183731196
bNon026	-27.317606363	32.168171174
bMba01	-27.377157368	32.189471848
bMba02	-27.376549142	32.193338823
bMba03	-27.376635776	32.196960077
bMba04	-27.377678777	32.198917825
bMba05	-27.379330610	32.199261038
bMba06	-27.379113447	32.196178641
bMba07	-27.380808183	32.196520557
bMba08	-27.385061437	32.191553516
bMba09	-27.378716959	32.192505829

FIELD SURVEY

The field survey was undertaken in May 2015. Visibility varied from good to poor. The *Acacia spp.* regrowth has resulted in thickets that were difficult to enter. Other areas had dense grasses or riverine forests, resulting very poor visibility. To counter this, I have noted areas of sensitivity from Google Earth satellite imagery. These area noted where settlements had existed and these were visited during the survey.

Surveys consisted of surveying along various tracks and servitudes where visibility was good, and using the 1969 and Google Earth images to target areas for known sites. I have undertaken several surveys in this general area, and each time I have noted that recent sites tend to disappear within 10-15 years after they are abandoned, especially the graves. Graves in these areas tend to be a circle of stones, occasionally as a cairn, cement slab, or a demarcated headstone.

Figure 13 – 15 show the location of recorded sites. Figures 16 - 20 shows the general views each study area

The survey omitted houses where people were currently living and their associated graves.

Table 3 lists the sites from the survey, and those noted from the Google Earth desktop survey.

FIGURE 13: RECORDED SITES IN THE BHEKABANTU AND MBANGWENI AREAS

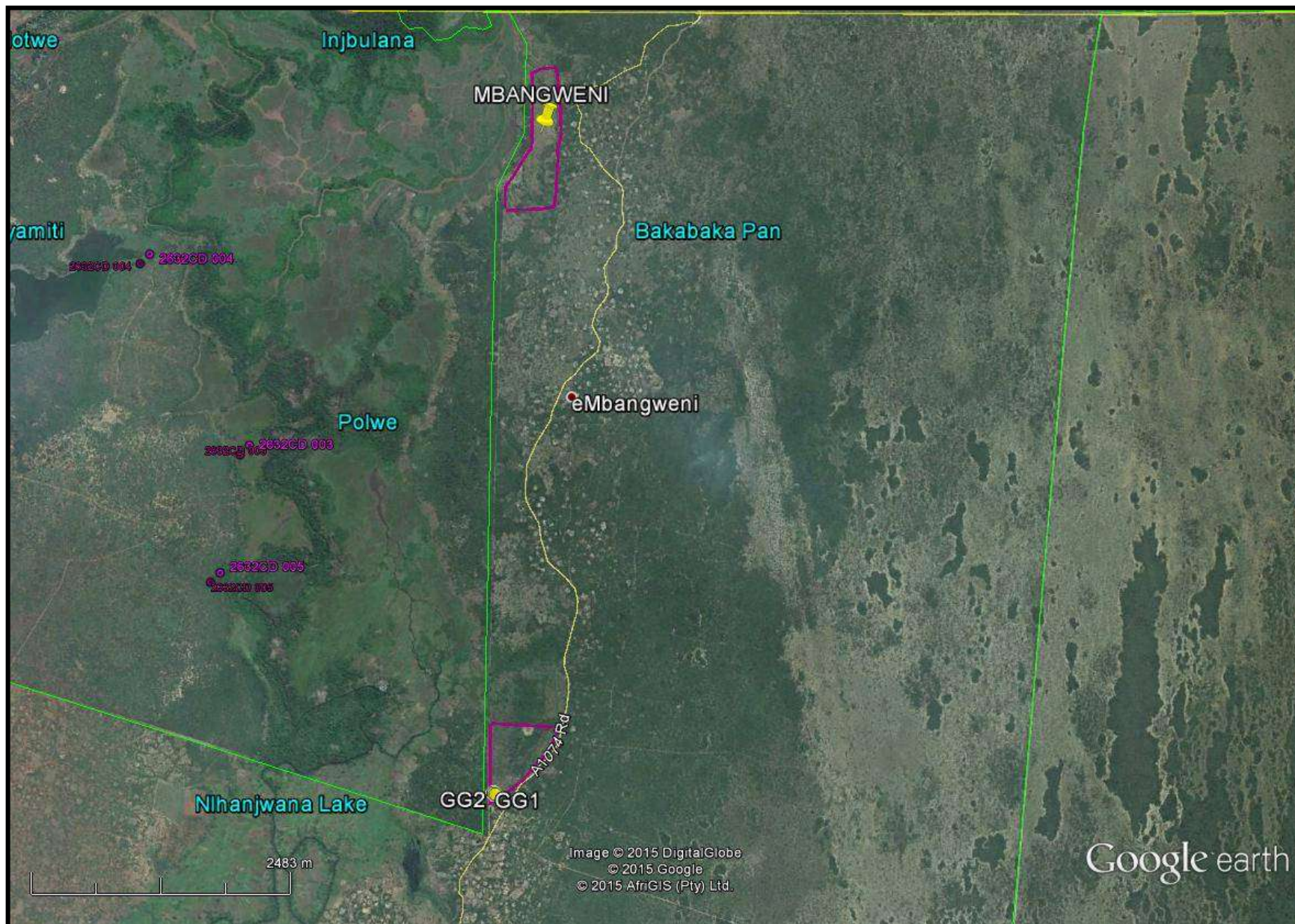


FIGURE 14: RECORDED SITES IN THE NONDABUYA AREA

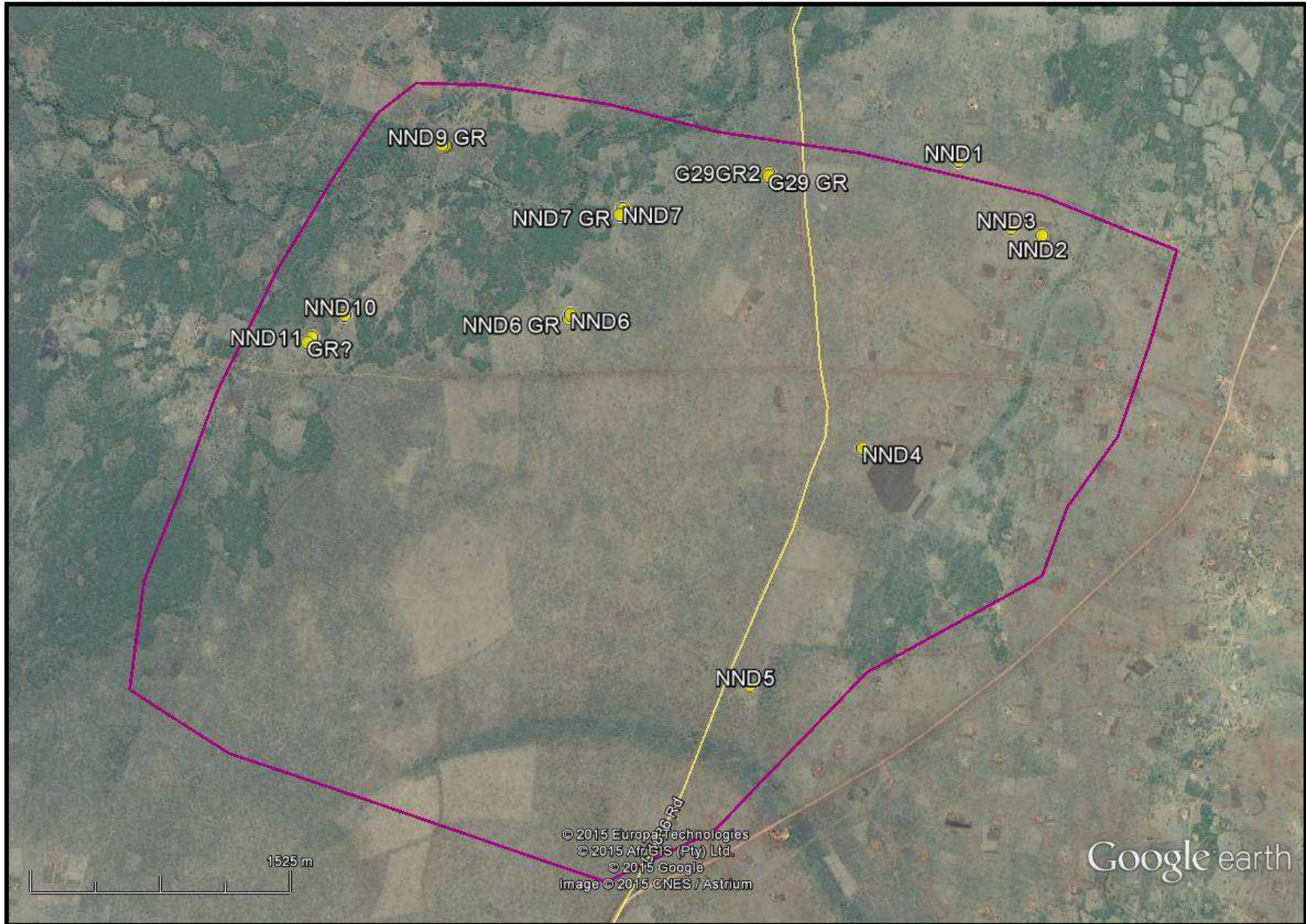


FIGURE 15: RECORDED SITES IN THE IKHWEHLE AREA

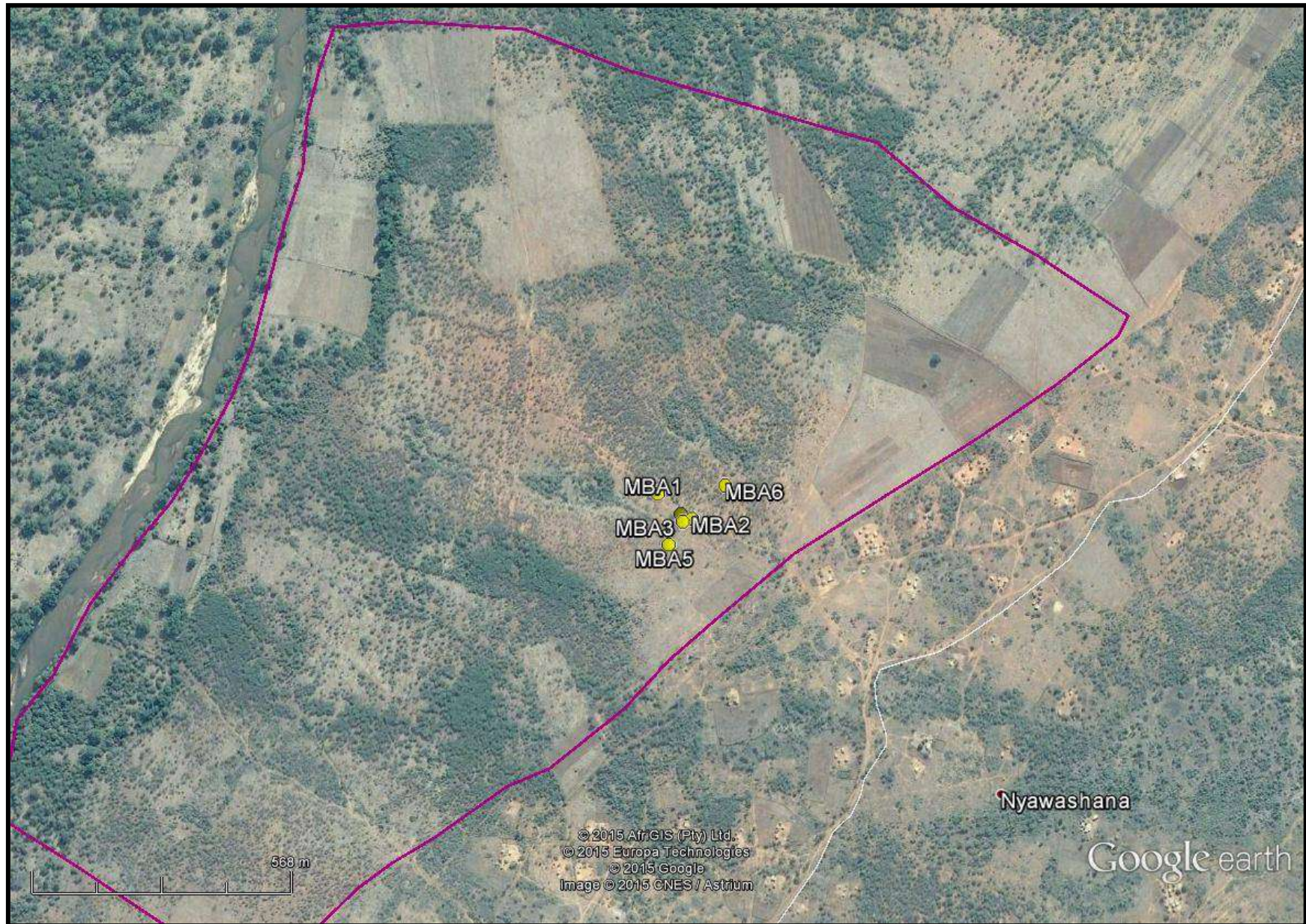


FIG. 16: SCENIC VIEWS OF MBANGWENI



FIG. 17: SCENIC VIEWS OF THE BHEKABANTU AREA



FIG. 18: SCENIC VIEWS OF THE NONDABUYA AREA



FIG. 19: SCENIC VIEWS OF THE IKWEHLE AREA



FIG. 19: SCENIC VIEWS OF THE MBALIYEWE AREA



TABLE 3: SUMMARY OF RECORDED SITES

NAME	LATITUDE	LONGITUDE	Description	Significance
ag1	-26.926680724	32.348812200	Google settlement	unknown
ag10	-27.392645248	32.163599303	Google settlement	Unknown
ag11	-27.393613070	32.167023819	Google settlement	Unknown
ag12	-27.389068008	32.167950668	Google settlement	Unknown
ag13	-27.387112698	32.168881930	Google settlement confirmed	Unknown
ag2	-26.928004824	32.350570667	Google settlement confirmed	Unknown
ag3	-26.876542234	32.351420774	Google settlement	Unknown
ag4	-26.877037043	32.350763323	Google settlement	Unknown
ag6	-26.879261700	32.349621807	Google settlement	Unknown
ag7	-26.880134685	32.347865380	Google settlement	Unknown
ag8	-27.387329298	32.150848785	Google settlement	Unknown
ag9	-27.387367575	32.151922119	Google settlement	Unknown
g1	-27.289269133	32.145865567	Google settlement	Unknown
g10	-27.290266549	32.158958232	Google settlement	Unknown
g11	-27.293277551	32.158185339	Google settlement	Unknown
g12	-27.300867431	32.140755934	Google settlement	Unknown
g13	-27.305728247	32.144024612	Google settlement	Unknown
g14	-27.305484363	32.136572218	Google settlement	Unknown
g15	-27.304446803	32.138538911	Google settlement	Unknown
g16	-27.300848457	32.146146970	Google settlement	Unknown
g17	-27.305147797	32.147544392	Google settlement	Unknown
g18	-27.311361925	32.137708152	Google settlement	Unknown
g19	-27.312947113	32.136419276	Google settlement	Unknown
g2	-27.288315248	32.163495668	Google settlement	Unknown
g20	-27.314475805	32.135660479	Google settlement	Unknown
g21	-27.313550400	32.141424461	Google settlement	Unknown
g22	-27.317322529	32.144349068	Settlement recent buildings	Low
g23	-27.316217509	32.144002594	Google settlement	Unknown
g24	-27.317235079	32.146778519	Google settlement	Unknown
g25	-27.320386539	32.147768396	Google settlement	Unknown
g26	-27.322939628	32.159247877	Google settlement	Unknown
g27	-27.311681763	32.164716991	Google settlement	Unknown
g28	-27.299140323	32.155061107	Google settlement	Unknown
g29	-27.289021177	32.169503850	Settlement, 7 graves	High

NAME	LATITUDE	LONGITUDE	Description	Significance
G29 GR	-27.289178000	32.169367000	Graves	High
G29G3	-27.288980000	32.169362000	Graves	High
G29GR2	-27.289010000	32.169349000	Graves	High
g3	-27.293417457	32.143624272	Google settlement	Unknown
g30	-27.293899445	32.170535660	Settlement	Low
g4	-27.293367146	32.149076287	Google settlement	Unknown
g5	-26.878805494	32.351024624	Google settlement	Unknown
g5	-27.295005279	32.139689581	Google settlement	Unknown
g6	-27.294594574	32.148436874	Google settlement	Unknown
g7	-27.292689382	32.150623325	Google settlement	Unknown
g8	-27.291479369	32.153827732	Google settlement	Unknown
g9	-27.291865794	32.159143239	Google settlement	Unknown
GG1	-26.932367000	32.345817000	Grave	
GG2	-26.932301000	32.345642000	Grave	
GR?	-27.298096000	32.141596000	Grave	
MBA1	-27.378562000	32.195400000	Grave	High
MBA2	-27.379051000	32.196148000	Grave	High
MBA3	-27.379107000	32.195949000	Grave	High
MBA4	-27.378962000	32.195908000	Grave	High
MBA5	-27.379556000	32.195638000	House floor	Low
MBA6	-27.378398000	32.196887000	House floor	Low
NND1	-27.288357000	32.180830000	Settlement	Graves
NND10	-27.296614000	32.143824000	Settlement	
NND11	-27.297814000	32.141845000	Settlement, grave?	High
NND2	-27.292371000	32.185827000	Settlement , graves	High
NND3	-27.291981000	32.183961000	Settlement, graves	High
NND4	-27.303769000	32.174985000	Cemetery	High
NND5	-27.316429000	32.168184000	Settlement, graves	High
NND6	-27.296616000	32.157432000	Settlement, graves	High
NND6 GR	-27.296817000	32.157322000	Grave	High
NND7	-27.290936000	32.160583000	Settlement, graves	High
NND7 GR	-27.291254000	32.160378000	Grave	High
NND8	-27.290272	32.159704	Settlement	Low
NND9	-27.287561000	32.149913000	Settlement, graves	High
NND9 GR	-27.287499000	32.149654000	Grave	

Sites beginning with 'ag' or 'g' are based from Google earth search. These should be noted as sensitive areas for potential human remains. These areas were specifically surveyed for settlements

An example of the poor visibility and fast deterioration of sites can be seen in Figure 20. This figure shows the location of a 1969 settlement bBH03. No identifiable features remain of the settlement after 40 years. Thus one would need to rely on the oral history (*amasiko*) from the elderly in the area regarding these recently old sites.

FIGURE 20: VIEW OF bBH03



No sites were recorded in the Mbangweni and Ikwehle areas. Mbangweni was a difficult to access. The grass and bush was thick in most areas. However, neither the Google Earth imagery nor the historical maps showed signs of inhabitation within this area, rather that is has been used for cultivation. Ikwehle is in a flood plain and would be regularly flood, and thus have few, if any archaeological sites would occur. It is currently under cultivation and Hurricane Damoina would have removed any archaeological sites.

MBANGWENI

No sites were found in Mbangweni. There are five sensitive areas from the Google earth satellite images.

BHEKABANTU

GG1 & GG2

GG1 and GG2 are located near the southern boundary. The graves might relate to the site bBH06, although the graves appear to be more recent in age. Each grave consists of a cement brick outline and headstone. There is no date or name on the headstones, although they are known in the community – I was also informed about them in passing by someone whilst surveying.

Significance: The graves are of high significance.

Mitigation: A 20m buffer needs to be placed between the grave and any activity.

SAHRA Rating: 3A

FIG. 21: GRAVES AT GG1 & GG2



NONDABUYA

Nondabuya is the largest area of all the study areas. It covers the hills and plains. The hills consist of dolerite outcrops with a few sandstone blocks. The hills are covered with secondary regrowth resulting in Acacia thickets in several places. The base of the hill, along the southern side has a few fossilised shells. The plains consist of Acacia and riverine thickets interspersed with cleared cultivated lands and roads. The plains vary from sandy to muddy areas. All areas that appeared to be old settlements on the Google Earth images were noted for the survey and occur on Table 3.

NND1

NND1 is located on the northern border of the irrigation scheme. The site is an abandoned settlement with virtually no foundations remaining. Only a single grave was noted (fig. 22). The grave is in an east-west orientation.

Significance: The grave is of high significance.

Mitigation: A 20m buffer needs to be placed between the grave and any activity.

SAHRA Rating: 3A

FIG. 22: GRAVE AT NND1



NND2

NND2 is a recently abandoned (post 2003) settlement, with one grave and house remains. The fencing is still around. The grave is underneath an *Acacia* spp. tree and in an east-west orientation.

Significance: The grave is of high significance.

Mitigation: A 20m buffer needs to be placed between the grave and any activity.

SAHRA Rating: 3A

FIG. 23: GRAVE AT NND2



NND3

NND3 is located ~200m west of NND2. The site consists of three house foundations (barely visible) and two graves (fig. 24). The graves consist of discontinuous cement blocks in an oval shape, surrounding a mound of sand. The mound appears to be fresh and within the last 5 years. The graves are in an east-west orientation.

Significance: The graves are of high significance.

Mitigation: A 20m buffer needs to be placed between the graves and any activity.

SAHRA Rating: 3A

FIG. 24: GRAVES AT NND4



NND4

NND4 is a cemetery previously recorded by Umlando. There are 20+ graves from the last 40-50 years. Some of the graves are formally demarcated while others are not demarcated (fig. 25). All of the graves are in an east-west orientation.

Significance: The graves are of high significance.

Mitigation: Since some graves are not clearly demarcated I would extend the buffer from 20m to 50m. A 50m buffer needs to be placed between the outer grave and any activity.

SAHRA Rating: 3A

FIG. 25: GRAVES AT NND4



NND5

NND5 might be related to bNON026 from the desktop study. The site would be a settlement, with graves. The site consists of an area demarcated with poles and some aloes in one corner – these may be recent and natural additions (fig. 26). This area should be treated as if it was a cemetery. This site also highlights the difficulty in locating older graves in the area where they disappear within 40 – 50 years.

Significance: The graves are of high significance.

Mitigation: Since some graves are not clearly demarcated I would extend the buffer from 20m to 50m. A 25m buffer needs to be placed between the outer grave and any activity.

SAHRA Rating: 3A

FIG. 26: POSSIBLE GRAVES AT NND5



NND6

NND6 is a recently (post 1970s) abandoned settlement. The site consists of the foundations of ~6 houses with rectangular or circular bases, in the general pattern of the area. A sisal outlined byre occurs to the west of the houses. A single grave occurs to the southwest of the houses. The grave is in an east-west orientation. Figure 27 shows the house foundations and the grave.

Significance: The graves are of high significance.

Mitigation: Since some graves are not clearly demarcated I would extend the buffer from 20m to 50m. A 25m buffer needs to be placed between the outer grave and any activity.

SAHRA Rating: 3A

FIG. 27: HOUSE FOUNDATIONS AND GRAVE AT NND6



NND7

NND7 is a recently abandoned settlement with bricked and mud bricked buildings and a cemetery. The cemetery consists of at least five graves in an east west orientation. The eastern graves are older, and less visible, than the western graves. One of the western graves appears to date to the last years or two as the branches are still fresh. Figure 28 shows the site. There is a large kraal to the southwest of the site.

Significance: The graves are of high significance.

Mitigation: Since some graves are not clearly demarcated I would extend the buffer from 20m to 50m. A 25m buffer needs to be placed between the outer grave and any activity.

SAHRA Rating: 3A

FIG. 28 :BUILDINGS AND GRAVES AT NND7



NND8

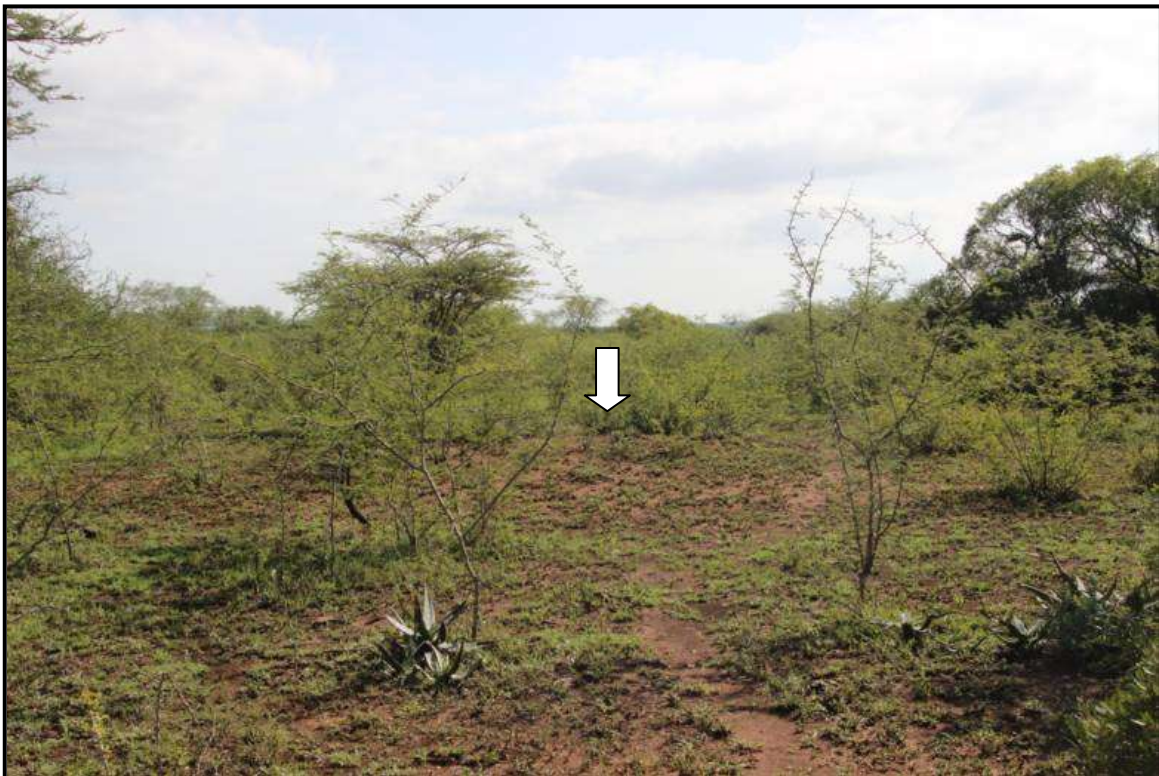
NND8 occurs nearby NND7 but does not appear to be part of it. The site consists of a house floor made from pebbles and is too large to be a grave (fig. 29). The floor is ~2.5m in radius. No other features were noted; however, graves are likely to occur in the vicinity.

Significance: The house floor is of low significance

Mitigation: No further mitigation is required. The area should be noted as being sensitive for possible human remains.

SAHRA Rating: 3C

FIG. 28: HOUSE FLOOR REMAINS AT NND8



NND9

NND9 consists of two buildings and a two graves. The buildings are rectangular and circular and appear to be recently abandoned. The graves are in a northeast-southwest orientation and occur behind the buildings. These features are illustrated in figure 29.

Significance: The graves are of high significance.

Mitigation: A 20m buffer needs to be placed between the outer grave and any activity.

SAHRA Rating: 3A

FIG. 29: BUILDINGS AND GRAVES AT NND9



NND10

NND10 occurs next to a gravel road. The site consists of either a house foundation similar to NND8, or three to four graves (fig. 30). There is a cleared area behind this feature, however no more features could be discerned.

Significance: The features should be treated as possible graves until proven otherwise.

Mitigation: A 20m buffer needs to be placed between the outer grave and any activity.

SAHRA Rating: 3A

FIG. 30: FEATURES AT NND10



NND11

NND11 is an abandoned house with a possible grave on the western side of the settlement (fig. 31). The neighbours said that there were no known graves at this site, but several at their house and other neighbours' houses.

Significance: The graves are of high significance if they are graves.

Mitigation: A 20m buffer needs to be placed between the outer grave and any activity.

SAHRA Rating: 3A

FIG. 31: HOUSE & POSSIBLE GRAVE AT NND11



bNON3

bNON3 is located in the plains at the northern part of the Nondabuya area. The site was identified on the 1969 map. No specific features were observed during the survey even though features are visible on Google earth. The area is a large scatter of Middle Stone Age (MSA) and Late Stone Age (LSA) artefacts; however, this scatter occurs across the entire plain, and the plain itself is a continual lag deposit of of the whole spectrum of Early, Middle and Late Stone Age stone tool artefacts. The tools are made from quartzite, indurated shale and various types of cryptocrystalline silicates. Two pottery sherds (fig. 31) were noted in the area as well and these are probably related to bNON3 itself. Graves probably do exist in the area but were not observed.

Significance: The site is of low significance

Mitigation: No further mitigation is required

SAHRA Rating:

FIG. 31: STONE TOOLS AND POTTERY SHERDS AT bNON03



G22

G22 is located on the top of the hill along the eastern side of this study area. The site consists of an animal dip, a series of small buildings presumably for goats or calves, and two buildings/houses (fig. 32). The buildings are in ruin. No artefacts were noted on the ground and the buildings do not occur on the 1969 maps. No other features were observed.

Significance: The buildings are of low significance.

Mitigation: No further mitigation is required.

SAHRA Rating: 3C

FIG. 32: BUILDINGS AT G32



G29

G29 is a recently abandoned settlement at the northern part of this study area. The site has two large Milkwood trees centre. Around these trees are three to five house foundations. The houses are rectangular or circular in shape. There are three groups of graves to the west and southwest of the main house. All graves are in an east-west orientation and a few have trees growing on them – this may be intentional. Fig. 32 shows these features.

The first group of graves consists of five graves (fig. 32 top right). The graves are stone cairns that have started to sink into the ground. One has a large *Acacia spp.* tree growing out of it.

The second group of graves consists of two stone cairns each at next to an *Acacia spp.* tree (fig. 32 bottom left)

The last grave is a single grave to the north of the second group. This grave is a circle of stones with an *Acacia spp.* tree growing from the middle of it (fig. 32 bottom right).

Significance: The graves are of high significance.

Mitigation: A 20m buffer needs to be placed between the graves and any development. The trees associated with the graves should not be removed or cut down.

SAHRA Rating: 3A

FIG. 32: HOUSE & GRAVES AT G29



G30

G30 is a recently abandoned settlement made from mud bricks; however the foundations are barely visible. There would probably be graves associated with this settlement; however, none are currently visible. There is a kraal to the south of the main site. No artefacts are present except the normal plethora of Early, Middle and Late Stone Age tools (fig. 33).

Significance: The stone tools are of low significance.

Mitigation: No mitigation is currently required.

SAHRA Rating: 3C

FIG. 33: SAMPLE OF STONE TOOLS NEAR G30



MBALIYEAWE

Most of Mbaliyeawe has been ploughed for agricultural purposes from the 1970s onwards. The lack of more recent sites from Google Earth desktop attests to this. The area consists of a central gently rising hill with a flood plain along the banks of the Pongola. All of the recorded sites, from the desktop study and survey are located on the hill. I surveyed all of the sites noted on the desktop survey; however I did not observed any artefacts or house foundations at these places. This suggests that they have been completely destroyed by agricultural activity.

MBA1

MBA1 is an isolated single grave placed between two *Acacia spp.* trees. The grave is dated to 1965 (fig. 34).

Significance: The grave is of high significance.

Mitigation: A 20m buffer must be placed around the grave.

SAHRA Rating: 3A

FIG. 34: GRAVE AT MBA1



MBA2 - 5

MBA2 -5 are a cluster of features that form a single settlement, that was noted as bMBA06 from the desktop study. MBA2, 3 and 4 are graves, while MBA5 consists of the remains of house foundations. The graves appear to be more recent than the house floor. These are shown in figure 35 in clockwise order.

MBA2 consists of cement brick blocks in an oval shape. Wooden branches have been placed in the centre of the grave. The grave is in an east-west orientation.

MBA3 consists of a pile of wooden poles similar to MBA2, with no outer circle. The feature appears to be a grave. The possible grave is in a north-south orientation.

MBA4 is a rectangular area by four wooden poles. This is often used to demarcate an area for graves, and is thus treated as a cemetery. There are two piles of wooden logs/branches within this rectangle.

MBA5 consists of a burnt and demolished house floor. There may be two house floors in the general area.

Significance: The graves are of high significance, even if they have been designated as possible graves.

Mitigation: A 20m buffer must be placed around the grave.

SAHRA Rating: 3A for all graves. The house floor is rated as 3C

FIG. 35: GRAVES AND HOUSE FLOOR AT MBA2 – MBA5



MBA6

MBA6 is located ~100m northeast of MBA2. The site consists of five circular house foundations. The foundations are 2.5m – 3m wide. The foundations have been recently ploughed and/or burned (fig. 35). No other features were observed.

Significance: The site is of low significance

Mitigation: No mitigation is required.

SAHRA Rating: 3C

FIG. 35: HOUSE FLOOR REMAINS AT MBA6



PALAEOLOGY

The palaeontology of the area varies. The SAHRIS palaeontological sensitivity map rates various areas in southern Africa according to its palaeontological significance, and this defines the type of mitigation required for a development. Table 4 summarises this table.

TABLE 4: SUMMARY OF PALAEOLOGICAL SIGNIFICANCE

RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

The five areas are coded as follows:

- Mbangweni Blue
- Bhekabantu Blue
- Nondabuya Red
- Ikhwehle Red
- Mbaliyeawe Red

This means that the southern three areas will require a Phase 1 Palaeontological Impact Assessment (PIA) survey. However, given the type of development that will occur, i.e. relatively shallow excavations for canals, a substation, and irrigation, I would suggest that a desktop PIA is undertaken first. An assessment of the various impacts of the types of construction activities on potential palaeontological deposits can be made and from that a decision on field be deduced.

GENERAL MANAGEMENT PLAN

The survey covered several areas in an area generally referred to as the Makhathini Flats. This area is known to be sandy and not conducive for preserving open sites, hence the large scatters of stone tools for several kilometres. These tools are not significant and do not require further management.

Several human graves were recorded during the survey. Moreover the survey noted that human graves and settlements tend to disappear from the observable archaeological record within 40 – 50 years. It is for this reason that the sites noted from the desktop studies and the Google Earth maps are placed into the database and noted as being generally sensitive with the possibility of yielding human remains. A general 50m sensitivity radius should be placed around these areas. This does not mean that the development may not occur in this area, rather that the development should be made aware of its sensitivity and the protocols to follow in case human remains are uncovered.

All recorded human graves and/or cemeteries mentioned in the report require clear demarcation if there will be any construction activity related to the irrigation projected within 100m of the graves, e.g. excavation of trenches for pipes. This should occur for any graves possibly missed during the survey but noted by members of the community. Demarcation is as follows:

- A 5m buffer zone between the edge of the grave and the fence
- For cemeteries, it will be 5m from the graves along the edge.
- Photographs of each demarcated area needs to be taken.
- There needs to be a 15m buffer zone from the fence to any construction activity. No construction activity is allowed in this 15m zone.
- The Community Liaison Officer should attempt to locate the living descendents of the deceased. This is usually an easy process as most of the graves have houses nearby, and it is a simple case of speaking to those inhabitants.
- Permission from the living descendants must be obtained, in writing, to allow a temporary fence. The living descendants have the option to retain the fence for the graves after construction. In cases where no living descendants can be found, the relevant Tribal Authority needs to give permission.

Areas with possible graves cannot be demarcated on the ground, although they need to be noted for the construction team and/or the community. If unmarked graves, or human remains, are uncovered during the course of construction, then all work in that area needs to stop immediately. KZN Heritage must be contacted as well as the SAPS. Only if a grave is less than 60 years (with a few exceptions) may an undertaker be directly involved without informing Amafa. Since many of the sensitive areas are on the verge of being older than 60 years, I would recommend that the archaeologist is referred to as a matter of course.

The process of grave removals is a complex one that requires community consultation, advertisements, several permits, and finally reburial. Moreover, those graves older than 60 years require a qualified archaeologists to undertake the entire process. This process is summarised as follows¹:

¹ Information supplied by SAHRA, and it applies to KZN, although falling under the KZN Heritage Act.

In terms of the National Heritage Resources Act (No. 25 of 1999), and KZN Heritage Act of 1997 and 2008, graves older than 60 years (not in a municipal graveyard) are protected. Human remains younger than 60 years should be handled only by a registered undertaker or an institution declared under the Human Tissues Act. Anyone who wishes to develop an area where there are graves older than 60 years is required to follow the process described in the legislation (section 36 and associated regulations). The specialist will require a permit from the heritage resources authority:

- Determine/ confirm the presence of the graves on the property. Normally the quickest way to proceed is to obtain the service of a professional archaeologist accredited to undertake burial relocations. The archaeologist will provide an estimate of the age of the graves. There may be a need for archival research and possibly test excavations (permit required).
- The preferred decision is to move the development so that the graves may remain undisturbed. If this is done, the developer must satisfy SAHRA/KZN Heritage that adequate arrangements have been made to protect the graves on site from the impact of the development. This usually involves fencing the grave(yard) and setting up a small site management plan indicating who will be responsible for maintaining the graves and how this is legally tied into the development. It is recommended that a distance of 20 m is left undisturbed between the grave and the fence around the graves.
- If the developer wishes to relocate or disturb the graves:
 - A 60-day public participation (social consultation) process as required by section 36 (and regulations - see attachment), must be undertaken to identify any direct descendants of those buried on the property. This allows for a period of consultation with any family members or community to ascertain what their

wishes are for the burials. It involves notices to the public on site and through representative media. This may be done by the archaeologist, who can explain the process, but for large or sensitive sites, a social consultant should be employed. Archaeologists often work with undertakers, who rebury the human remains.

- If as a result of the public participation, the family (where descendants are identified) or the community agree to the relocation process then the graves may be relocated.
- The archaeologist must submit a permit application to SAHRA/KZN Heritage for the disinterment of the burials. This must include written approval of the descendants or, if there has not been success in identifying direct descendants, written documentation of the social consultation process, which must indicate to SAHRA's satisfaction, the efforts that have been made to locate them. It must also include details of the exhumation process and the place to which the burials are to be relocated. (There are regulations regarding creating new cemeteries and so this usually means that relocation must be to an established communal rural or formal municipal cemetery.)
- Permission must be obtained before exhumation takes place from the landowner where the graves are located, and from the owners/managers of the graveyard to which the remains will be relocated.
- Other relevant legislation must be complied with, including the Human Tissues Act (National Department of Health) and any ordinances of the Provincial Department of Health). The archaeologist can usually advise about this.

No graves or human remains older than 60 years may be moved from their original position without a permit from KZN Heritage.

Three of the five areas are considered to have very high palaeontological sensitivity. These would require a PIA field survey. I suggest that a PIA desktop is first undertaken once the types of infrastructures of the three sensitive areas are finalised. The impacts of these infrastructures on potential palaeontological deposits can then be ascertained. The results of this desktop can then determine if a field survey is required.

CONCLUSION

A HIA was undertaken for five areas for the Makhathini irrigation scheme. These are areas that have been identified as requiring agricultural upgrading for the relevant communities. The Mbaliyeawe and Ikhwehle areas have been completely tilled for over thirty years and there were no visible structures or graves. More than half of the Nondabuya flood plain has been used for agriculture over the last thirty years; however there have been settlements within these areas and several were noted. The flood plain has a lot of *Acacia* spp. regrowth resulting in several thickets that were not surveyed. Most of the settlements occur high up in the hills at Nondabuya. The two settlements abutting Ndumo, Mbangweni and Bhekabantu, had the densest vegetation resulting in poor site visibility. Human graves were still noted in these two areas.

The desktop study noted several areas that had human settlements but these were no long visible. These areas should be treated as sensitive with the possibility of human remains. Most of the graves are either unmarked or have submerged below the surface. Thus all human settlements should be assumed to have human remains and be treated as sensitive.

REFERENCES

Anderson, G. 2012. Heritage Survey Of The Proposed Ndumo-Nondabuyo 132kv Line, Northeastern Kwa-Zulu Natal. For SRK Consulting