**ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE**

**BOSA TRANSMISSION LINE PROJECT FROM THE**

**ISANG SUBSTATION TO THE TLOKWENG BORDER POST**

**IN THE SOUTH EASTERN AND KGATLENG DISTRICTS OF BOTSWANA**

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***PREPARED BY***


**Lentswe Archaeological Consultants**

Contact person: Wim Biemond
P.O. Box 884
Mahalapye
Tel: +267 74 214826
E-mail: biemondwm@gmail.com


***PREPARED FOR***


**AURECON**
Contact person:
Diane Erasmus
P.O. Box 509
George, 6530
South Africa
+27 44 805 5428
diane.erasmus@aurecongroup.com

**RPM**
Contact person:
Kagiso Sakarea
P.O. Box 509
Gaborone
Botswana
+267 390 5414
kagiso.sakarea@digbywells.com

**G&A HERITAGE**
Contact person:
Stephan Gaigher
PO Box 522,
Louis Trichardt, 0920
South Africa,
+27 15 516 1561
stephan@gaheritage.co.za

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## GLOSSARY LIST AND DEFINITIONS

### GLOSSARY

| | |
|---|---|
| **AIA** | Archaeological Impact Assessment |
| **BNMM** | Botswana National Museum and Monuments |
| **EAA** | Environmental Assessment Act, No. 10 of 2011 |
| **EIA** | Early Iron Age |
| **ESIA** | Environmental and Social Impact Assessment |
| **ESA** | Earlier Stone Age |
| **GIS** | Geographical Information System |
| **GPS** | Global Positioning System |
| **HAU** | Heritage and Archaeology Unit |
| **HIA** | Heritage Impact Assessment |
| **HSMP** | Heritage Site Management Plan |
| **IFC** | International Finance Corporation |
| **LIA** | Late Iron Age |
| **LSA** | Later Stone Age |
| **MIA** | Middle Iron Age |
| **MRA** | Monuments and Relics Act, No. 12 of 2001 |
| **MRR** | Monuments and Relics Regulations, No. 145 of 2016 |
| **MSA** | Middle Stone Age |

### DEFINITIONS

**Monuments:** Architectural works, works of monumental sculpture and paintings, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;
**Site(s):** Works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view.
**Facies:** Stylistic ceramic design structure for Iron Age groups, also called a ceramic unit.
**Grave:** A grave includes: (a) any place, whether wholly or partly above or below the level of the ground and whether public or private, in which a body is permanently interred, whether in a coffin or other receptacle or not, and (b) any monument, tombstone, cross, inscription, rail, fence, chain, erection or other structure of whatsoever nature performing part if appurtenant to a grave.

## *INTRODUCTION*

The Southern African Power Pool Coordination Centre ("SAPP CC") has initiated the Botswana-South Africa (BOSA) Transmission Interconnection Project on behalf of two sponsors; Eskom of South Africa and Botswana Power Corporation of Botswana. The South African Power Pool (SAPP) has appointed Aurecon South Africa (Pty) Ltd ("Aurecon") to conduct the Environmental and Social Impact Assessment (ESIA) process for the BOSA Transmission Interconnection Project. SAPP is facilitating the proposed construction of approximately 210 km of 400 kV transmission line to link the Isang substation in Botswana and the Watershed B area near Mafikeng in South Africa (Figure 1). Aurecon is managing the process to ensure compliance with the funder requirements of the Development Bank of Southern Africa (DBSA), who are administering the funds for the Project, as well as the European Union, who are funding the Project.

### Project Background

The Southern African Power Pool (SAPP) coordinates planning, generation and transmission of electricity for national electricity suppliers in the Southern African Development Community (SADC) region. SAPP identified the Botswana- South Africa (BOSA) Transmission Interconnection Project as one of the initiatives to reduce electricity supply constraints and assist in improving distribution of electricity in the region. Eskom of South Africa (Eskom) and the Botswana Power Corporation (BPC) will be the beneficiaries of the project. The SAPP appointed Aurecon to undertake the Preliminary Design and the Environmental and Social Impacts Assessment (ESIA) on the transmission corridor. The proposed 400kV transmission power line project involves a 210 km transmission line which stretches between Gaborone area in Botswana to the Mahikeng area in South Africa, with the longest section (approximately 149 km) of the line within South Africa. There will be two transmission lines located 60 m apart for the 210 km stretch. The line will connect the existing Isang substation in Botswana to the proposed Watershed B substation in South Africa.

The project aims to alleviate congestion in the current power supply grid that is utilized, provides an efficient, adequate and reliable power supply as part of the southern Africa power integration program.

### Project location and layout in Botswana

The project is located at:

- District: Kgatleng and South Eastern Districts in Botswana.
- Villages along the alignment: In Botswana - Malotwana, Mochudi, Dikwididing and Modipane
- Starting point of the power line: Isang substation in Botswana.
- Ending point of the power line: Watershed B substation in South Africa.

The proposed 400 kV transmission line route will commence at the Isang Substation and cross the A1 highway and railway line near the substation to the south east. It will then follow the A1 highway for 2 km turning into a southern direction bypassing Malotwana and Mochudi to the east. It also bypasses the village of Modipane and Modipe Hill to the east heading in the direction of the Tlokweng Border Post. The route will cross the border into South Africa at a point east of the Tlokweng Border Post. The proposed layout and location of the project is shown in Figure 1.

### 400 kV transmission line details

The 400 kV power line servitude assessed for this AIA study will be 120 m wide. The power line will constitute lattice steel towers and aluminium conductors suspended above ground level (minimum clearance over 18.5 m). The distance between towers is expected to be approximately 300 metres (subject to final survey and design), and the power line corridor will require vegetation clearance at a minimum width of 30 metres for the line. No tall trees or permanent structures over 4 m below the conductors will be allowed within the corridor to ensure minimum statutory clearances are observed.

The tower type proposed for the project is a Guy-V tower type. In areas where the power line is turning direction (bend points), the Guy-V tower will not be suitable, and a self-supporting tower type (tension tower) will be installed instead. The tension tower requires much deeper concrete

foundations, which will be cast in-site during construction. It does not require the guyed support cables as with the Guy-V tower.

The vegetation within the 30 m wide corridor of each line will be removed during the vegetation clearance, however stumps and grass cover can remain on the corridor, and after completion the vegetation can re-grow to the 4 metre maximum height as per the minimum clearance requirements. One single track will be fully cleared through the middle of the route corridor, which will be used as access track during the construction, and will remain as an access track during maintenance. A summary of the technical details for the transmission line are shown in Table 1 as follows:

**Table 1:** Transmission line details

| Parameter | Detail |
|---|---|
| Proposed tower type | Guy-V tower |
| Conductors | TBA |
| Voltage | 400 kV |
| Distance between towers (span) | 300-400 m |
| Width of way-leave required | 120 m |
| Width of corridor to be cleared | 30 m |
| Maximum height of towers | 33 m |
| Minimum clearance | 18.5 m |
| Maximum height of vegetation | 4 m |


**Figure 1:** Location map showing the BOSA transmission line project in Botswana and South Africa.

## *TERMS OF REFERENCE*

Lentswe Archaeological Consultants were contracted by G&A Heritage (Pty) Ltd, RPM and Aurecon to undertake an Archaeological Impact Assessment (AIA) for the Botswana part of the proposed BOSA transmission line project.

This AIA report aims to assist the developer in managing archaeological and heritage resources found in the proposed project area in order to protect, preserve, and develop them within relevant legislative frameworks. In essence, this study aims to:

- Identify, record and document potential archaeological, cultural and historic sites of significance within the proposed development area;
- Evaluate whether proposed construction or operational activities will have any negative impacts on archaeological, cultural, historical and natural heritage resources;
- Recommend mitigation and management measures to avoid or ameliorate any negative impacts on areas of archaeological, cultural or historical importance; and
- Promote the overall conservation and protection of natural and cultural resources.

The overall objective of this study is to use measures to identify, document and assess potential sites of significance in the project area in order to conserve, mitigate and manage heritage sites and artefacts according to the recommendations and criteria of the relevant heritage authorities (BNMM) and legislation.

## *LEGISLATIVE REQUIREMENTS*

### *ARCHAEOLOGY AND HERITAGE (CULTURAL PROPERTY)*

Cultural property of Botswana is protected by the Environmental Assessment Act, No. 10 of 2011 (EAA 2011) and the Monuments and Relics Act, No. 12 of 2001 (MRA 2001). 'Cultural property' is defined as sites having paleontological, archaeological (pre-historic), historical, religious and unique natural values, including sites of anthropic and natural origin (World Bank Operational Notes 11.3 and International Finance Corporation Performance Standard 8.3). These resources are non-renewable and the loss thereof or damage thereto is irreversible. Both the Environmental Assessment Act, No. 10 of 2011 (EAA 2011) and the Monuments and Relics Act, No. 12 of 2001 (MRA 2001) make provision for the protection and management of cultural property through the Environmental Impact Assessment (EIA) process. An environmental assessment is compulsory for any major development including 'construction or excavation, for the purposes of mineral exploration and prospecting, mining, laying of pipelines, construction of roads and dams, or erection of any other structure which will physically disturb the earth's surface' (MRA 2001, Section 19.2).

The EAA 2011 required environmental assessments to evaluate the potential effects of and provide mitigation or management recommendations of planned development activities on Botswana's cultural property prior to development. Section 19.1 of the MRA 2001 subdivides the EIA into:

- Pre-development Archaeological Impact Assessments; and
- Environmental Impact Assessment Studies.

A pre-development Archaeological Impact Assessment (AIA) can be defined as a study conducted by a professional archaeologist, aiming to determine the impact of any development or ground disturbing activity on past cultural material remains or cultural evidence present in a particular proposed development area. AIAs are required to include recommendations on the prevention, conservation and/or mitigation of identified cultural property located in the proposed development areas (MRA 2001 Section 19.1). AIAs also serve to address particular parts of the EIA as described in Section 9.2.b of the EAA 2011 which states that 'an EIA shall identify and evaluate the environmental impact of any activity with particular reference to the archaeological, aesthetic, cultural or sanitary conditions of the environment'.

EIAs aim to determine the impact of a development or ground disturbing activity on the natural environment and biophysical (MRA 2001 Section 19.1) as referenced in Section 9.2.c of the EAA 2011 which states that 'an EIA shall identify and evaluate the environmental impact of any activity with particular reference to the configuration, quality and diversity of natural resources'. EIAs as defined in the MRA 2001 thus deal primarily with the natural component of cultural property.

### *BOTSWANA NATIONAL MUSEUM AND MONUMENTS*

Archaeological Impact Assessments aim to address past cultural property as part of the ESIA process as defined in the MRA 2001 Section 19.1 Pre-development Archaeological Impact Assessment. According to Section 10 of the EAA 2011, an AIA must be submitted, as specialist input to the EIA to the Department of Environmental Affairs (DEA) for evaluation by the relevant government departments. Under the Authority of the Ministry of Labour and Home Affairs, the Botswana National Museum and Monuments (BNMM) is liable for the MRA 2001 and ultimately responsible for the professional evaluation of AIAs. The BNMM requires AIAs to be submitted in duplicate to the Director, BNMM, within 60 days after completion of the project (MRA 2001 Section 19.3).

The BNMM accepts AIA reports authored by professional archaeologists, accredited with the BNMM. Minimum accreditation requirements include a university degree in archaeology, two years post-university archaeological experience and Botswana citizenship. Minimum standards for reports, site documentation and site descriptions are prescribed by the BNMM. BNMM standards are in accordance with standards set by the Association of Southern African Professional Archaeologists (ASAPA).

The recommended BNMM phase process for AIAs can be summarised as:

- Record Survey or pre-feasibility archaeological impact assessment;
- Phase 1 Archaeological Impact Assessment or field reconnaissance;
- Phase 2 Archaeological Impact Assessment or archaeological mitigation; and
- Phase 3 Archaeological Impact Assessment or archaeological site conservation or development.

The management and evaluation of a particular development project's associated archaeological process and requirements is largely dependent on the archaeological sensitivity of the particular project. In this regard, basic guidelines are provided by the BNMM.

## *BACKGROUND TO THE ARCHAEOLOGICAL HISTORY*

### *ENVIRONMENTAL CONDITIONS*

Botswana is a landlocked southern African country of approximately 581 730 km², sharing borders with Namibia in the west and north, Zambia in the north, Zimbabwe in the northeast and South Africa in the east and south.

The country has an estimated population of 2 million people, estimated at 3.4 persons per square kilometre, and is divided into nine regions; the North-East, North-West (Ngamiland), Ghanzi, Kgalagadi, Southern, Kweneng, South-East, Kgatleng and Central District (May 2004).

The country is furthermore characterised by a semi-arid climate with mean annual rainfall ranging from 650 mm in the extreme northeast to a minimum of less than 250 mm in the southeast (including a large part of the Kalahari) occurring mostly during summer months (November to March).

The proposed development area is situated in the Kgatleng and South Eastern Districts in the Limpopo drainage basin. The area –approximately 950 -1150 m above sea level – receives between 350 – 500 mm of rainfall per annum, often in the form of thunderstorms. Summer temperatures are averaged at 25 - 26ºC; winter temperatures at 13 - 14ºC, with an average of nine hours sunshine per day.

The major soil type consists of sandy soils generally known as Kalahari sands that may be several metres thick and hard red soils closer to river systems. The natural vegetation can be described as tree and bush savannah, characterized by various acacia thorn trees and smaller bushes (May 2004).

### *THE GENERAL ARCHAEOLOGICAL ENVIRONMENT*

The southern African archaeological environment is divided into the Stone Age, the Iron Age and the Historical Period.

**Table 2:** The Archaeological context: Sequence and definitions

| PERIOD | APPROXIMATE DATES |
|---|---|
| Early Stone Age | > 2 000 000 years ago – 250 000/200 000 years ago |
| Middle Stone Age | 250 000/200 000 years ago – 25 000 years ago |
| Later Stone Age | 25 000 years ago – AD 200 (up to historic times in certain areas) |
| Early Iron Age | AD 200 – AD 900 |
| Middle Iron Age | AD 900 – AD 1300 |
| Late Iron Age | AD 1300 – AD 1850 |

**The Stone Age**

The Stone Age is divided into the Earlier (ESA), Middle (MSA) and Later Stone Age (LSA). These terms refer to the earliest people of Southern Africa who are associated with a hunter-gatherer lifestyle. Stone was the primary raw material used to produce tools during these periods.

The ESA dates back to more than two million years ago and lasted until around 200 000 years ago (Mitchell 2002). The ESA is typically divided into the earlier Oldowan and the later Acheulean Complexes. Large cutting tools such as hand axes and cleavers are the main artefacts associated with the Acheulean and this Industry is geographically widespread (Sampson 1974).

The lithic assemblage of the MSA (200 000 to 25 000 years ago) is characterised by blade and flake technology. These lithics were often produced from cores with prepared platforms. Formal tools include retouched triangular points, blades, knives and a variety of scraper forms.

The LSA (25 000 years ago to the early nineteenth century) comprises macro- and microlithic industries, featuring composite tools. The LSA is further associated with symbolic human behaviour, including the manufacture of jewellery and formal burial of the dead. Paintings and engravings are often associated with LSA San hunter-gatherer communities (Mitchell 2002).

During the latter part of the LSA, hunter-gatherers shared the landscape with both pastoralists and Early Iron Age people. A complex association of people, including LSA hunter-gatherers, Late Iron Age (LIA) farmers and European colonists (Lane & Reid 1998), marks the advent of the Historical Period in southern Africa.

The Later Stone Age people interacted with the early herders some 2000 years ago. Archaeological and linguistic studies in the northern part of Botswana have shown that it is where domestic animals were first introduced into Southern Africa. Dates indicating evidence of livestock go back as far as the 2200 years. It was probably at this time that Late Stone Age hunter-gatherer communities who occupied the swamp river areas acquired the knowledge of domestic livestock keeping and pot making (Tlou and Campbell 2003). Herding sites are dispersed across the country and the closest researched sites to the development area include Toteng, along Boteti River and Matlapaneng.

**The Iron Age Traditions**

Iron Age people are known for their skill in manufacturing ceramics and the working of iron and other metals. They also practised agriculture and animal husbandry and are associated with aggregated large settlements, a system of kingship and emerging civilisations.

The earliest identified Iron Age tradition in east-central Botswana is the Happy Rest facies (dating from approximately AD 400 to AD 700). The Happy Rest people settled in the gorges of the Tswapong Hills in small villages (Denbow 1984). The earliest remains of stone platform houses were found at Maunatlala dating to AD 400 and at Goo-Tau in the Tswapong Hills (Campbell 1998). The Happy Rest facies developed into the Diamant facies, present in the archaeological record until approximately AD 900. A further development of the Diamant facies into the Eiland facies in the former Transvaal continued until the fifteenth century in the south-eastern Botswana region as the Broadhurst facies (Denbow 1981).

A second Iron Age tradition, the Zhizo facies (AD 700 to AD 1000) that is found in Eastern Botswana, becomes the Toutswe facies at AD 1000. The movement of Leokwe people from the Shashe-Limpopo into the area around AD 1000 initiated the beginning of the Toutswe chiefdom. By AD 1050 there were three large towns situated on hilltops (Toutswemogala, Bosutswe and Sung) each occupying six or more hectares. These Toutswe elite lived on hilltops, while the less affluent built their villages on surrounding hills. The commoners lived in much smaller villages on the hills below. Toutswe village layout always consisted of a central cattle byre/midden surrounded by houses and granaries with some grain pits in the byres/middens. The Toutswe facies disappeared by AD 1280 (Huffman 2007). Current research shows that the boundaries of the Toutswe chiefdom extended to the Palapye-Mahalapye-Shoshong area (Denbow 1984). Their material culture included beads, pottery, metal implements and smelting furnace remains, spindle whorls used in the manufacture of cloth and clay figurines. Such artefacts are usually found in the middens.

The people that further added to the cultural mixture of the Kweneng and Central District were the Sotho-Tswana. The Sotho-Tswana core is archaeologically characterised by the Uitkomst and Buispoort ceramic facies (Huffman 2007). Wealth in cattle (and metal) resulted in rapid population growth, complex hierarchical social systems and associated fission, dispersal and migration. By the end of the eighteenth century the original Bankenveld territory was saturated. Westward expansion was characterised by more stable chiefdoms located on a grid of trade communications and localized production of commodities (Parsons 1973; Tlou & Campbell 2003).

The same cultural process thus led not only to the rise but also the destruction of the Sotho-Tswana chiefdoms, when Shaka's circa 1818 revolution resulted in the difaqane. The original Iron Age cultural pattern of southern Africa is thus expressed in the pre-difaqane chiefdoms. Shattered by the difaqane, the system was replaced in the 1840-70s by a new State system motivated by long distance trade (and ultimately overseas capitalist trade) (Schapera 1953).

The Khurutshe were the first Hurutshe cluster offshoot to dominate part of the Central District, settling in the Shoshong Hills. Khurutshe is the Shona name given to Hurutshe who reached the north. The Kaa joined the Khurutshe and paid tribute to them, but famine led many Khurutshe to head further north. The Kaa subsequently subdued the remaining Khurutshe. In turn they were joined by tributary Kgalagadi and Kalanga from western Zimbabwe and from AD 1770 to AD 1790 by tributary Ngwato. The Lesele-Khurutshe accompanied or led the Ngwato to the Shoshong Hills in the late eighteenth century.

The Kaa were an early offshoot of the central Rolong. The Kaa separated from the main clan around AD 1500 and moved to the Gaborone area (Schapera 1953). By AD 1650, under chief Mmopane, they moved to the Buffelsdrift area. After moving along the Limpopo River they finally settled at the Shoshong Hills where they encountered and replaced the Khurutshe. Currently the Kaa are associated with the Letsibogo ceramic facies (Biemond 2014).

The Baphofu confederacy migrated from the north and settled at Mabyanamatshwana near Brits in the North West Province of South Africa under chief Malope. He had a daughter called Mohurutshe in his first house and a son, Kwena, in the second house. Following his death, the people became divided and those who followed Mohurutshe were called Bahurutshe, and those who followed Kwena were called Bakwena (Tlou & Campbell 2003). Prior to the difaqane, the Hurutshe was the senior chiefdom of the Baphofu confederacy, centred at Kaditshwene, South Africa (Schapera 1953).

The Ngwato chiefdom originated from the Kwena cluster of the Baphofu confederacy. Ngwato is credited with having founded the clan in the sixteenth century, and it remained a section of the Kgabo-Kwena (Kwena of Sechele) chiefdom until the late eighteenth century. The Kgabo-Kwena resided in the north-west region of the Bankenveld (Parsons 1973). Kwena economic activities focussed on agriculture and livestock, manufacturing, mining, transport and trade. The Kwena became known for their skill in mining, smelting and refining metal ore; an occupation that always retained a lower status than pastoralism. A low level of capitalization existed in transport and trade but no merchant class was independent of the chieftaincies. Trade beads, blue glass and porcelain of foreign origin became possibly the most important monetary medium (Tlou & Campbell 2003).

During a drought in the 17th century a split took place amongst the Kwena. At that time they were living on the Madikwe River under their kgosi, Mogopa. They moved down the river and established a large village at Rathateng, not far from what is now Buffelsdrift. This section included the Bangwaketse and Bangwato, although each group lived on its own. Sometime after 1650, Mogopa heard that the drought had ended and decided to return to his home near Mabyanamatshwana. His younger brother, Kgabo, said he would remain and follow later. Once Mogopa had left, Kgabo with perhaps no more than ten families of Bakwena, crossed into what is now Botswana and settled in the hilly country at Dithejwane, just west of Molepolole, where they found the Banakedi and Bakgwatheng, including the Baphaleng, already living. Other Bakhalagari people, such as the Babolaongwe, were also living in the region. Shortly after their arrival they were joined by other Kwena, probably including the Ngwaketse and Ngwato.

The Ngwato were a section of the Kgabo-Kwena under Kgabo I or Kgabo II. After their arrival in the Kweneng District they expelled the Kgalagadi, and Motshodi, grandson of Kgabo II became kgosi (AD 1740). Motshodi was succeeded by his grandson Motswasele I. The Ngwato-Kwena section, under Motswasele, broke away from the Kgabo-Kwena. The first independent Ngwato kgosi was Mathiba, who succeeded his regent uncle Mokgadi. Friction between Mathiba and Motswasele peaked when an Ngwato woman deserted her husband for Motswasele. Her husband's revenge led to a counter attack by Motswasele and the Ngwato fled to Shoshong (AD 1780).

Factionalism and impermanence of residence eventually led Mathiba's Ngwato to split into two. His sons, Kgama and Tawana, also disputed the inheritance of chieftainship. Kgama won and Tawana and his followers retired to the Boteti River and finally Ngamiland, where he founded the Tawana chiefdom. Mathiba followed his favourite son Tawana, but was spurned and returned to the Shoshong Hills. After being rejected also by Kgama, he committed suicide in AD 1795.

After Kgama's involvement in the 'Moloisiwa' rebellion, the Ngwato community was reduced in numbers and much weakened. The geo-political picture of the Central District at the beginning of the nineteenth century was one with many small, highly mobile clans in a large and poorly watered

territory, with no effective paramountcy. Only in the Shoshong Hills did communities, including the Ngwato, pay tribute to the Kaa. After the Kaa discovered that the Ngwato had planned to usurp them, Kgama fled to Selolwane and Meojaneng, north of Serowe. Here he was joined by the rebels of Moloisiwa. Kgama I died in about 1817. His son Kgari inherited a reconsolidated Ngwato clan.

Under Kgari, the Ngwato first emerged as a kingdom organized around the Ngwato core-group. Kgari transformed the old system into one of headmen on a national scale and formed the last of the four sections in which the wards of the Ngwato state were arranged (Ditimamodimo, Basimane, Maaloso and Maaloso-a-ngwana). He continued to amalgamate smaller communities into his kingdom. Kgari died (ruled c. 1817-1828) after the battle of the 'Flodden of the BaNgwato', a battle in the valley of the Matopo Hills.

The Ngwato were dispersed by the Kololo and Ndebele invasions of the difaqane and the kingdom had to be regrouped by Kgari's son Sekgoma I. He expelled the Kaa from the Shoshong heartland in 1849, signifying the start of the Ngwato kingdom as a sovereign state. Sekgoma ruled from 1835 and by 1870, under his son Khama III, the Ngwato state occupied all of the present Central District of Botswana. All of the population, whatever their origin, had become 'Bangwato', by virtue of their allegiance to the Ngwato kingship.

**Botswana's Historical Period**

The Historical Period is marked by the advent of writing and almost by default became associated with the sixteenth century European settlement and colonisation of southern Africa. Under this definition many European sites, including trading posts and mission stations were researched, furthering the understanding of everyday life of the early European traders, settlers and colonists (Lane & Reid 1998). Historical Period archaeological studies in Botswana remain very limited. Studies to date include, among others, the early work of Pahl (1971) at Motsenekatse Hill south of Kanye; Van Waarden's (1998) research at the eighteenth and twentieth century AD settlement at Leeukop, north-eastern Botswana; Ramsay's (1991) investigation on Livingstone's first school and church at Kolobeng; the 1863-1930s Ntsweng Kwena site near Molepolole (Ndobochani 1997; Sekgarametso 1995; Thebe 1996) and the nineteenth century Bangwato settlement at Old Palapye (Mathibidi 1996; Segadika 1997).

The pioneer traveller Dr Andrew Smith explored the region in September 1835. He travelled from the Limpopo-Ngotwane river junction crossing the Serorome (Bonwapitse) river to reach the Tropic of Capricorn. He encountered "poor Bakwena living in the bushes fleeing from man-eating lions" (Kirby 1940). He was informed that they lived on the banks of the Limpopo where they formerly had sown sorghum, beans and melons. When he met them they couldn't plant and reap crops due to constant disturbances from the Matabele of Mzilikatze. He was also informed that the trader Hume might have been the first "white man" to visit the Kaa at Shoshong in 1832. Within the region Dr Smith described the inhabitants as poor Kwena and Matabele along the Limpopo, the Kaa at Shoshong and Ngwato at Serowe.

Livingstone visited the Shoshong region in 1842/3 and met the Kaa there with the Talaote at Kalamare and the Ngwato near Serowe. The famous hunter Gordon Cumming visited the Shoshong Hills in July 1844 and June 1845, and encountering the Kaa and Ngwato wrote that they were regularly attacked by the Matabele of Mzilikazi. In 1845 he hunted along the Limpopo passing through the region up to Ngwapa Hill. Whereas Oswall and Vardon, who hunted in 1846 in the vicinity, made no mention of any tsetse fly infestation in this area, it was present to the north around Ngwapa Hills. The explorer A.A. Anderson passed through the region in 1866, encountering many cattle posts of Ngwato cattle along the Limpopo on his way to Shoshong.

By 1870 Khama III took over the chieftainship at the height of the Ngwato state. In 1885 the British Government declared a protectorate over what is today Botswana, then called the Bechuanaland Protectorate. A Bechuanaland Border Police Force (BBP) of 500 men was established to protect the territory from the ZAR (Transvaal Republic), all along the Limpopo River. Three forts were established to the north and linked by a telegraph line.

In the Kgatleng District and subsequently in the project area the Kgatla are the main ethnic group. Thus the history of the area and that of Mochudi, the capital town of the Bakgatla, is discussed within the historical framework of the Kgatleng History.

Mochudi was named after the Kwena Kgosi, Motshodi. In the late 16th or early 17th century, Kgabo's son, Motshodi, moved the Bakwena from Sokwane, on the edge of the Kalahari, eastward to Mochudi. The remains of stonewalls can still be found on the hills west of Mochudi (Campbell and Main 2003). He later moved to Modipe Hill. The Mochudi area was recognized as Kwena land until it was occupied by the Bakgatla-ba-ga-Kgafela in the late 1860s.

In the 1860s Kgosi Kgamanyane and his Kgatla followers lived in the Pilansberg area of South Africa. Paul Kruger the then leader of the ZAR expected Kgamanyane to provide a supply of labour as payment for the right to remain on the land. In 1869, Kgamanyane refused to supply labour to the boer farmers and was punished by them. Consequently he and a large group of his people moved west to seek shelter with the Kwena.

In November 1870, the Kgatla began to establish themselves in the valley below Phuthadikobo Hill in what is now the centre of Mochudi. Kgosi Sechele, chief of the Kwena, accepted their presence on his land but demanded tribute that the Kgatla refused to pay. In 1875, the Kwena attacked the Kgatla at Mochudi, but were severely defeated. Thus, the village of Mochudi was re-established, now by the Kgatla who also laid claim to the surrounding area. Intermittent fighting continued until 1881, and the Kgatla did not actually gain the title to the land until 1899 when the Protectorate Administration legally defined Kgatla boundaries.

The need for further Historical Period archaeological research in Botswana has been realized. Lane and Reid (1998) emphasise the need for research to be done in association with indigenous perceptions of history and the past. They explain that many archaeological sites in Botswana are used by contemporary people for a range of ritual and religious purposes. Many sites are associated with myths, legends and behavioural taboos. The documentation of concepts of historical value will greatly assist with the interpretation of sites and, by implication, the writing of a proper indigenous history of Botswana.

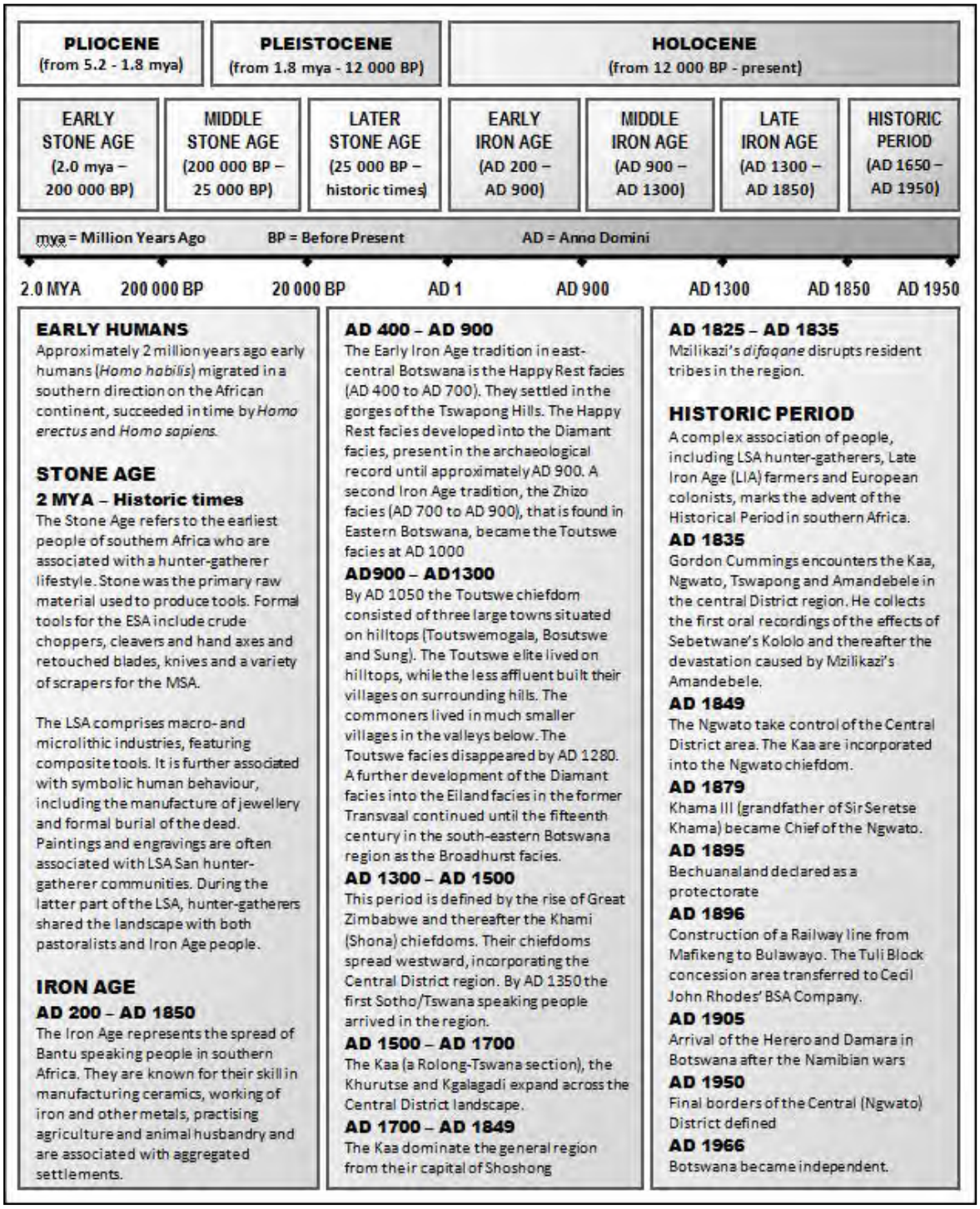


**Figure 2:** Chronological review of historical events in Botswana.

## *ARCHAEOLOGICAL RESEARCH IN THE PROJECT AREA*

Archaeological investigations for example by Denbow (1981, 1984) Segobye (1987) and Van Waarden (1998), amongst other researchers, have reported several significant archaeological and heritage sites within the Gaborone region and surrounding area. Findings include Early Stone Age (ESA), Middle Stone Age (MSA) and Later Stone Age (LSA) sites. A number of archaeological sites associated with the Middle Iron Age (Eiland traditions) and Late Iron Age (LIA) Madikwe and Letsibogo facies of the Moloko tradition were also found in the greater region of the area, as well as abandoned cattle posts and sites of historical value. The Late Iron Age discoveries can be interpreted as a tentative implication that some communities of the early Sotho-Tswana settled in this area sometime between 1500 AD and 1700 AD.

Little research was done in the region on the Late Iron Age. The identification of the Letsibogo facies at the Letsibogo dam project (Huffman and Kinahan 2003) introduced a new understanding of the Late Iron Age in the region. Research done by Biemond (2014) assessed the Letsibogo facies to the Bakaa attested by oral traditions (Schapera 1953) and diaries of early European travellers travelling to the capital of the Bakaa at Shoshong e.g. Livingstone. Research on the Ngwato capital at old Palapye was done by Segadike (1997) but very little on the Shoshong capital and its sphere of influence in the 19th century.

In the Gaborone area research has been conducted for example at Matsieng, a declared national monument. Walker (1996) documented Later Stone Age rock engravings at the site which is also believed to be a creation site and ancestral home of the Tswana people. Denbow (1981) excavated Middle Iron Age sites at Moritsane Hill and Broadhurst. Pearson (1995) also conducted archaeological excavations and survey work at an important Iron Age stonewall site at Modipe Hill.

Modipe Hill comprises of a granite outcrop measuring about 3 kilometres in length and one kilometre in width. The extent of settlement at the hill is more prominent and elaborate on the eastern side of the hill with an area measuring about 200 metres in diameter characterised by potsherds and hut remains. Between 1992 and 1995 archaeological excavations and survey work was conducted by Pearson on the eastern settlement. This Iron Age site is characterised by a wide range of materials including hut remains and associated middens at the base of the hill and a complex of stone enclosures on the slope of the hill (Pearson 1995). According to the research conducted in the area, the site was occupied by early Tswana people around the 15th century with later Tswana groups occupying it in recent periods. The site was declared as a national monument and is demarcated as such.

The Botswana part of the BOSA power line project covers four 1:50 000 maps which include maps 2426 A1, 2426 A3, 2426 A4, and 2426 C1. Twenty six archaeological sites have been recorded in the BNMM database for map 2426 A3 which include the Matsieng footprints site, 2 MSA and 23 Iron Age sites in the area around Morwa Hills. On map 2426 C1 nineteen sites were recorded comprising of 8 Stone Age and 11 Iron Age sites which includes the Modipe Hill sites. No sites have been documented on maps 2426 A1 and 2426 A4.

## *THE ARCHAEOLOGICAL IMPACT ASSESSMENT*

### *SURVEY AREA*

The Phase 1 AIA for the Botswana part of the proposed BOSA transmission line project covered a survey of a corridor 64 km in length and 120 m wide from the Isang substation to the border crossing near the Tlokweng Border Post (see Figure 3). The proposed 400 kV power line corridor starts at the existing Isang substation (coordinate A) and heads south east crossing the A1 highway and railway line. At coordinate C it turns south west along the railway line for about 2 km after which it turns south at coordinate D. The power line crosses the Monametsana and Notwane Rivers and turns in a south western direction at coordinate F after which it proceeds in the direction of the Tlokweng Border Post. At coordinate H the power line crosses the border into South African territory. The transmission line coordinates are given in table 3. Six archaeological sites and one site of social significance were recorded in and around the power line corridor area.

**Table 3:** Transmission line coordinates.

| Transmission line | | |
|---|---|---|
| A | S 24°09'33.3" | E 26°13'55.9" |
| B | S 24°09'39.7" | E 26°14'07.7" |
| C | S 24°10'05.1" | E 26°14'19.5" |
| D | S 24°11'04.8" | E 26°13'46.2" |
| E | S 24°19'11.3" | E 26°13'55.6" |
| F | S 24°31'50.7" | E 26°14'31.8" |
| G | S 24°35'19.2" | E 26°12'37.4" |
| H | S 24°42'00.9" | E 26°07'25.9" |


**Figure 3:** Location map showing the BOSA power line development (blue) and the identified sites (red).

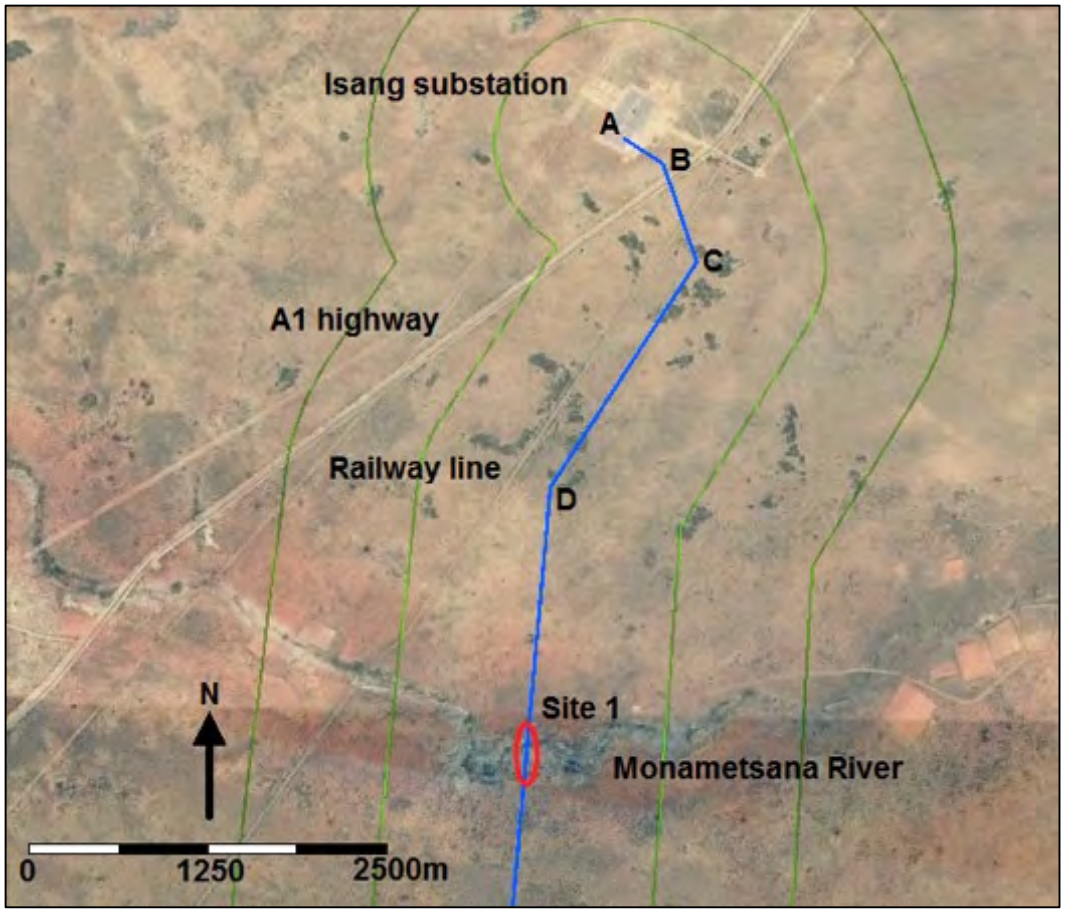


**Figure 4:** Location map showing the BOSA power line development (blue) and the identified site (red).

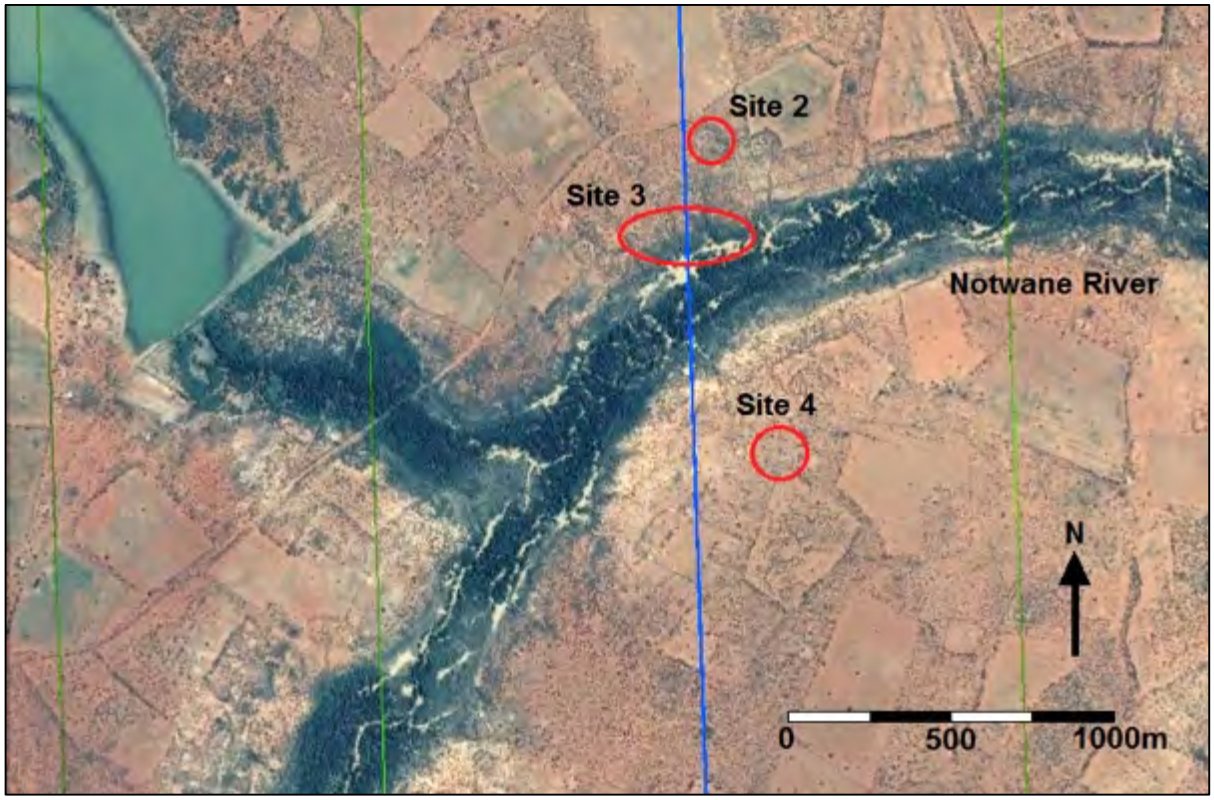


**Figure 5:** Location map showing the BOSA power line development (blue) and the identified sites (red).

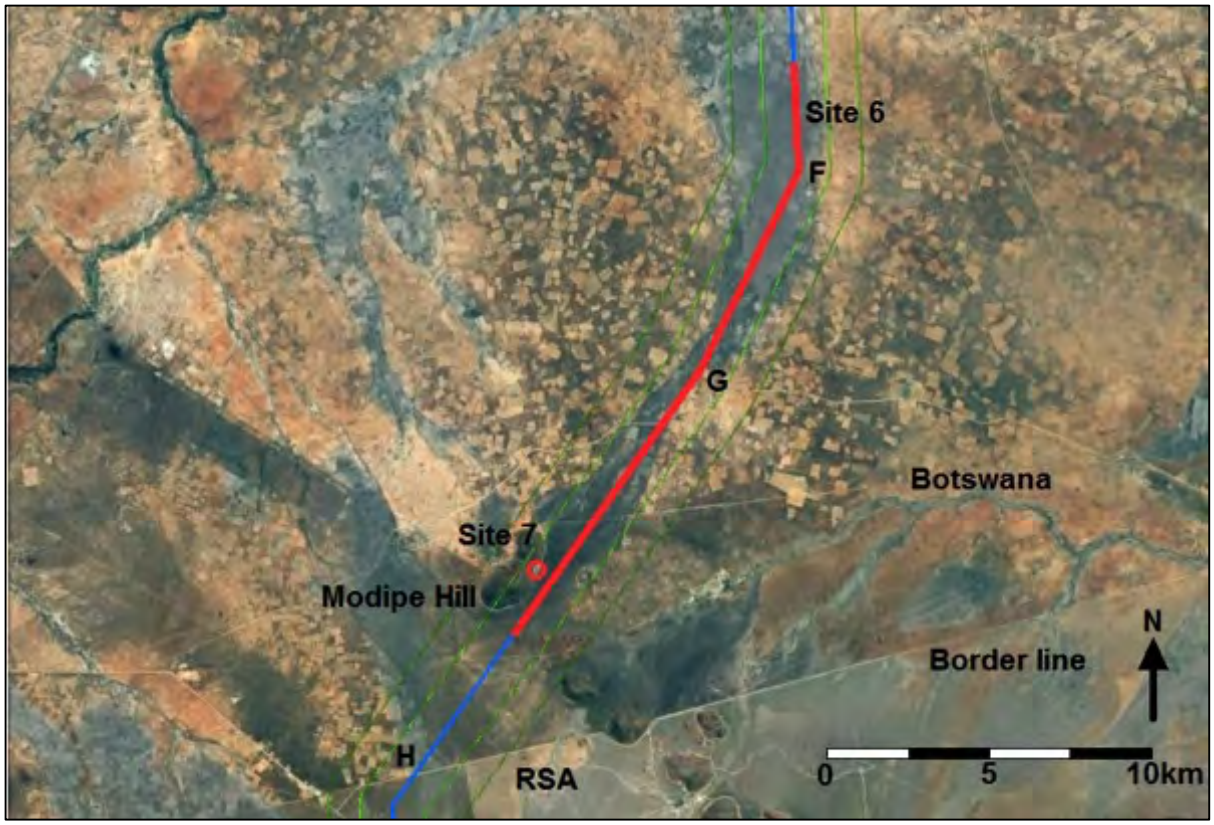


**Figure 6:** Location map showing the BOSA power line development (blue) and the identified sites (red).

***METHODOLOGY***

The Scope of Work for the study was conducted by Lentswe Archaeological Consultants, facilitated by archaeologist Wim Biemond, accredited local archaeologist with the Botswana National Museum. The assessment of the Phase 1 Archaeological Impact Assessment (AIA) for the proposed transmission line project was done on foot over a 7 day period. The power line corridor was surveyed in 30 m transects covering the respective area. Site locations were recorded with a Garmin GPSmap 60CSx (datum – WGS84). Artefacts were collected for photographic documentation purposes only and left on-site; no artefacts were removed from the sites. Photographic documentation was done with a Sony Cybershot 3.2 digital camera. Site significance assessment was based on the five-tier system (1-5) prescribed by the BNMM. Associated mitigation recommendations were done according to the system prescribed by the BNMM.

**Table 4:** BNMM mitigation requirements

| BNMM SITE SIGNIFICANCE | MITIGATION RECOMMENDATION |
|---|---|
| 1 | Preserve at all costs |
| 2 | Preserve if possible, otherwise extensive salvage work |
| 3 | Test excavation to determine whether further work is necessary |
| 4 | Systematic representative sampling necessary |
| 5 | No further archaeological work required |

***PROJECT TEAM***

The project team comprises Wim Biemond (archaeologist) and local community field technicians Alec Ntsatsi, Ntompe Kgaolo and Ndi Oupa.

***ASSESSMENT RESULTS***

The survey conducted within and around the proposed transmission line corridor area revealed six archaeological sites and one site of social significance. The sites were documented and described as follows:

**Table 5:** Coordinates of sites situated within and around the proposed transmission line project.

| SITE | COORDINATES | | TYPE | BNMM CATEGORY |
|---|---|---|---|---|
| 1 | S 24°12'01.6" | E 26°13'48.4" | Middle Stone Age | 5 |
| 2 | S 24°17'15.4" | E 26°13'55.2" | Abandoned historical homestead | 5 |
| 3 | S 24°17'24.1" | E 26°13'53.5" | Middle Stone Age | 5 |
| 4 | S 24°17'47.5" | E 26°14'04.2" | Late Iron Age settlement | 5 |
| 5 | S 24°22'03.1" | E 26°14'10.4" | Abandoned homestead | S |
| 6 | S 24°30'39.8" | E 26°14'28.4" | Middle Stone Age | 5 |
| 7 | S 24°38'30.3" | E 26°09'43.6" | Late Iron Age town – Modipe Hill | 1 |

**S – Social significance**
**1 – Preserve at all costs**
**2 – Preserve if possible, otherwise extensive salvage work**
**3 – Test excavation to determine whether further work is necessary**
**4 – Systematic representative sampling necessary**
**5 – No further archaeological work required**

***SITE 1***

**S 24°12'01.6" E 26°13'48.4"**
**Middle Stone Age (MSA)**

The site is located on the raised limestone outcrops situated on the northern and southern embankment of the Monametsana River. The limestone outcrops were exposed by natural erosion of the river embankment. MSA artifacts are eroding out of and are still imbedded in the gravel soils and limestone bedrock in a ± 100 m zone along the exposed outcrops. In the river bed and along the western embankment only a few tools were documented. The site involves an area of about 300 m in length along the transmission line corridor between coordinates S 24°12'01.6" E 26°13'48.4" (northern embankment) and S 24°12'10.8" E 26°13'48.7" (southern embankment).

Stone artifact types that were identified consisted of flakes, waste, cores and a number of formally retouched samples. A variety of raw materials were used to produce artifacts, the major source for raw material being local river pebbles. The MSA formal tools consist of spear points, blades and scrapers and were primarily produced from quartzite, CCS and fine-grained shale. Artifact ratios (artifacts: m²) around the exposed outcrops varied from 1:10 to 1:50. Geologically it seems as though artifact layers overly the limestone in the area, in turn being overlain by Kalahari sands, with artifacts being exposed by eroding sands.

*Significance and recommendations*

The site is situated within the transmission line corridor and will be impacted on by the development. Because of the lower density of artifacts the site is not deemed to be considered for mitigation and the documentation thereof is adequate. Therefore the site is assigned a BNMM mitigation requirement category 5 and no archaeological mitigation is required prior to development.

**Figure 7:** General view of the site.

**Figure 8:** The river embankment.

**Figure 9:** Exposed pebble on limestone outcrops.

**Figure 10:** MSA artefacts identified

***SITE 2***

**S 24°17'15.4" E 26°13'55.2"**
**Abandoned historical homestead**

The abandoned historical homestead is situated in an open clearing in the natural vegetation on the rise in the landscape on the northern embankment of the Notwane River. Two soil mounds of about 4 m in diameter demarcate the house remains. To the southern side of the house remains a kraal deposit of 15 m in diameter was documented. The area surrounding the house foundations exhibit a low-density scatter of artifacts comprising of ceramics, pieces of glass and metal fragments. A lower grinding stone and upper grinding stones were also documented at the site. The homestead was abandoned more than 60 years ago, judging from the artefacts found around the site.

*Significance and recommendations*

The abandoned historical homestead is situated within the transmission line development area and will be impacted on by the development. It is assigned a BNMM mitigation requirement category 5 and no archaeological mitigation is required prior to development. Due to the possible occurrence of unidentified graves, it is recommended that a watch brief and monitoring program be implemented during development.

**Figure 11:** View of the house foundations.

**Figure 12:** View of the kraal deposit.

**Figure 13:** Lower grinding stone.

**Figure 14:** Artefacts identified at the site.

***SITE 3***

**S 24°17'24.1" E 26°13'53.5"**
**Middle Stone Age (MSA)**

The site is located on the northern embankment of the Notwane River. MSA artifacts were discovered eroding out of the top Kalahari sand member overlaying the sandstone bedrock on the embankment. The artifacts were identified in an area of 100 m along the power line corridor around the above given coordinate. A variety of raw materials were used to produce the artifacts, the major source for raw material being river pebbles. The MSA formal tools consist of spear points, blades and scrapers and were produced from quartzite, quartz and fine-grained shale. Artifact ratios (artifacts: m²) varied from 1:25 to 1:50.

*Significance and recommendations*

The site is situated within the transmission line corridor and will be impacted on by the development. Because of the low density of artifacts at the site it is not deemed to be considered for mitigation and the documentation thereof is adequate. Therefore the site is assigned a BNMM mitigation requirement category 5 and no archaeological mitigation is required prior to development.

**Figure 15:** View of the Notwane River.

**Figure 16:** View of the river embankment.

**Figure 17:** Exposed pebbles and artifacts.

**Figure 18:** MSA artefacts identified.

***SITE 4***

**S 24°17'47.5" E 26°14'04.2"**
**Late Iron Age settlement**

The site is located on the rise in the landscape on the southern embankment of the Notwane River. The site measures about 50 m in diameter and is characterized by a scanty kraal and midden deposit. The kraal deposit extends approximately 10 m in diameter and is demarcated by grey soils with a bordering middin deposit of 5 m in diameter. Burrowing animals exposed a low density of artefacts consisting of mainly undecorated ceramics. No grain bin or hut remains were identified at the site. The low density of artefacts gives the impression of a shorter occupation period for the site. Unidentified graves may be present at the site.

*Significance and recommendations*

The site borders the proposed power line development and could be impacted on by the development. It is assigned a BNMM mitigation requirement category 5 and no archaeological mitigation is required prior to development. Due to the possible occurrence of unidentified graves, it is recommended that a watch brief and monitoring program be implemented during development.

**Figure 19:** View of the kraal deposit.

**Figure 20:** The disturbed midden deposit.

**Figure 21:** Ceramics identified at the site

***SITE 5***

**S 24°22'03.1" E 26°14'10.4"**
**Abandoned homestead**

The abandoned homestead is situated within an open clearing in the natural vegetation. The site involves an area of about 200 m in length along the transmission line corridor. It consists of the remains of 2 yards with houses and scanty middens. The house foundations are demarcated by 4 m in diameter circular soil mounds. The area surrounding the house foundations exhibits a low-density scatter of artifacts comprising of pieces of glass, ceramic and metal. The older homestead (coordinates S 24°22'08.4" E 26°14'10.1") was abandoned about 70 years ago, judging from the artefacts found around the site.

*Significance and recommendations*

The abandoned homestead borders the transmission line corridor area and will be impacted on by the development. It is of social significance and recommendations as per the social impact assessment should be complied with. Due to the possible occurrence of unidentified infant burials under the house foundations, it is recommended that a watch brief and monitoring program be implemented during development at the site.

**Figure 22:** View of the abandoned homestead.

**Figure 23:** House foundations – older homestead.

**Figure 24:** Artefacts identified at the site.

**Figure 25:** Identified Talana glass bottle dating to 1944.

***SITE 6***

**S 24°30'39.8" E 26°14'28.4"**
**Middle Stone Age (MSA)**

The site is located on the flood plains of a fossil riverbed. Concentrations of pebbles and MSA artefacts were found on the floodplains, widely but thinly distributed along the proposed power line corridor. Some exposed gravel concentrations contain raw materials that were ideal sources to produce stone tools from. The MSA artifacts were found eroding out of and still imbedded in the clay soils around and in between the exposed gravel concentrations. The raw material used by the toolmakers to produce the MSA artifacts consisted of nodules from the gravel concentrations which includes materials like quartzes, quartzites and Crypto Crystalline Silicates (CCS). The MSA formal tools consist of spear points, blades and scrapers. Artifact ratios (artifacts: m²) varied from 1:100 to 1:200. The site involves an area of about 20 km in length along the transmission line corridor (see Figure 6).

*Significance and recommendations*

This extended site is situated within the transmission line corridor and will be impacted on by the development. Because of the wide distribution and lower density of artifacts the site is not deemed to be considered for mitigation and the documentation thereof is adequate. Therefore it is assigned a BNMM mitigation requirement category 5 and no archaeological mitigation is required prior to development.

**Figure 26:** General view of the flood plain.

**Figure 27:** View of some exposed gravel zones.

**Figure 28:** Exposed artifacts in the clay soils.

**Figure 29:** MSA tools identified.


**Figure 30:** Map showing Modipe Hill and the power line development (blue) with the National Monument in red.

***SITE 7***

**S 24°38'30.3" E 26°09'43.6"**
**Modipe Hill – Late Iron Age Tswana town**

The site is located on the eastern base in the waist of Modipe Hill. It is declared as a National Monument and is demarcated by a BNMM signpost. The settlement measures about 200 m across (±4ha) with more than 50 rubble concentrations demarcating burnt down houses of about 4 m in diameter each. The remains of grain bin platforms constructed with stones packed in ±1.5 m circles are spaced amongst the rubble concentrations. Natural erosion of the site has exposed the rubble concentrations together with a fair amount of cultural material in the middens around them. The middens are characterized by a typical ash-grey deposit containing cultural material such as pottery and faunal remains. The ceramic decorations on the pottery are representative of the Madikwe and Letsibogo facies. On the hill slope above the site numerous low stonewalls and packed terraces have also been recorded. The site was researched by Pearson (1995) and carbon dated to the 15$^{th}$ century.

*Significance and recommendations*

The power line development bypasses the outskirts of site approximately 400 m to the east. The site will not be impacted on by the proposed development. As a National Monument a BNMM mitigation requirement category 1 is endorsed to the site. This implies that it should be protected at all costs. The site should be conserved and it is recommended that a watch brief and monitoring program be implemented during development to protect it from any disturbance.

**Figure 31:** General view of the site.

**Figure 32:** The BNMM sign post demarcating the site.

**Figure 33:** Exposed house remains.

**Figure 34:** Madikwe and Letsibogo facies potsherds.

## *CONCLUSION AND RECOMMENDATIONS*

The AIA survey of the proposed transmission line project covered a 120 m wide corridor from the Isang substation to the border crossing near the Tlokweng Border Post for a distance of 64 km. Six archaeological sites one site of social significance were documented during the survey in and around the power line corridor area.

## Archaeological sites

**National Monument – Modipe Hill Iron Age sites**

The power line development bypasses the outskirts of **site 7** approximately 400 m to the east. The site will not be impacted on by the proposed development. As a National Monument a BNMM mitigation requirement **category 1** is endorsed to the site. This implies that it should be protected at all costs. The site should be conserved and it is recommended that a watch brief and monitoring program be implemented during development to protect it from any disturbance.

**Middle Stone Age sites**

Three Middle Stone Age sites (**Sites 1, 3 and 6**) were identified within the proposed power line corridor.

*Recommendations*

**Sites 1, 3 and 6** are assigned a BNMM mitigation requirement **category 5**. Because of the wide distribution and lower density of artifacts at the sites they are not deemed to be considered for mitigation and the documentation of them is adequate therefor no archaeological mitigation is recommended prior to development.

**Iron Age and historical sites**

One Late Iron Age site (**Site 4**) and one abandoned historical homestead (**Site 2**) were documented within and adjacent to the power line corridor.

*Recommendations*

**Sites 2 and 4** border the proposed power line development and could be impacted on by the development. They are assigned a BNMM mitigation requirement **category 5** and no archaeological mitigation is required prior to development. Due to the possible occurrence of unidentified graves, it is recommended that a watch brief and monitoring program be implemented during development.

## Sites of social significance

One site of social significance (an abandoned homestead – **Site 5**) was identified bordering the proposed development area. It is of social rather than archaeological significance and recommendations as per the social impact assessment should be complied with. Due to the possible occurrence of unidentified infant burials under the house foundations it is recommended that a watch brief and monitoring program be implemented during development at these sites.

## Graves

No grave sites were documented during the survey. Chance finds of unknown human remains and archaeological material may occur during development. Such human remains can be of archaeological or historical context and are subject to the provisions of the Public Health Act, the Monuments and Relics Act and the District Council regulations. Due to the possible occurrence of unidentified burials in the abandoned cattle kraals and infant burials under the abandoned house foundations, it is recommended that a watch brief be implemented during development at these sites. If human remains are encountered during the development, the BNMM should be notified as soon as possible.

## *REFERENCES*


Biemond, W. M. 2014. The Iron Age sequence around a Limpopo river floodplain on Basinghall Farm, Tuli Block, Botswana, during the second millennium AD. M.A Dissertation. University of South Africa

Campbell, A.C. 1998. Archaeology in Botswana: origins and growth, In Lane, P., Reid, A. & Segobye, A. (eds) Ditswammung: the archaeology of Botswana. Gaborone: Pula Press & The Botswana Society.

Campbell, A.C. & Main, M. 2003. Guide to greater Gaborone. Gaborone: Printing and Publishing Company Botswana.

Denbow, J.R. 1981. Broadhurst: A 14th century A.D. expression of the Early Iron Age in South-Eastern Botswana. South African Archaeological Bulletin 36:66-74.

Denbow, J.R. 1984. Cows and kings: a spatial and economic analysis of a hierarchical Early Iron Age settlement system in Eastern Botswana. In Hall, M. et al (eds) Frontiers: Southern African Archaeology Today. Oxford: BAR International series 207. Pp. 24-39.

Government of Botswana. (No 10 of 2011). Environmental Assessment Act.

Government of Botswana. (No 12 of 2001). Monuments and Relics Act.

Government of Botswana. (No 145 of 2016). Monuments and Relics Regulations.

Huffman, T.N. & Kinahan, J. 2002/2003. Archaeological mitigation of the Letsibogo dam: agropastoralism in south-eastern Botswana. Southern African field archaeology 11 & 12: 4-63

Huffman, T.N. 2007. *Handbook to the Iron Age: the archaeology of pre-colonial farming societies in southern Africa*. Scottsville: Univ. of KwaZulu-Natal Press.

Kirby, P.C. (ed.) 1940. *The diary of Dr Andrew Smith,* 1834-1836, vol. 2. Cape Town: Van Riebeeck Society.

Lane, P.J. & Reid, A. 1998. Historical Archaeology. In Lane, P.J., Reid, A. & Segobye, A (eds.) Ditswamung: The Archaeology of Botswana. Gaborone: Pula Press & Botswana Society.

Mathibidi, N. 1996. Landscape history in Botswana: A study of the layout of settlement and the spatial organisation of BaNgwato society at Old Palapye. Unpublished B.A. dissertation. University of Botswana.

May, D. 2004. Geography of Botswana. Gaborone: Macmillan Botswana Publishing.
Mitchell, PJ. 2002. *The archaeology of southern Africa*. Cambridge: Cambridge University Press.

Ndobochani, A. 1997. A zoo-archaeological study of butchery practices at Ntsweng, Molepolole. Unpublished B.A Dissertation. University of Botswana.

Pahl, R. 1971. Notes on an Iron Age settlement on Motsenekatse Hill Botswana Notes and Records 3: 27-31
Parsons, Q. N. 1973. On the origins of the bamaNgwato. Botswana notes and records 5: 82-103.

Pearson, N. 1995. Archaeological research at Modipe Hill, Kgatleng district survey and excavation, 1992-1995. Botswana Notes and Records 27: 21-40.

Ramsay, J. 1991. The Batswana-Boer war of 1852-53: how the Batswana achieved victory. Botswana Notes and Records 23: 193-207

Sampson, C. G. 1974. The Stone Age Archaeology of Southern Africa. New York & London: Academic Press Inc.

Schapera, I. 1953. The Tswana. London: International African Institute Press.

Segadika, P. 1997. The dialogue between 'Early Writings', oral history and archaeology. Unpublished MA Dissertation. University of Wales, Lampeter

Segobye, A.K. 1987. Southern Kgatleng prehistory: an archaeological reconnaissance survey. *Botswana Notes and Records* 19: 45-56.

Sekgarametso, P. 1995. An archaeological survey of Ntsweng in Molepolole. Unpublished B.A Dissertation. University of Botswana.

Thebe, P. 1996. An archaeological study of pottery from Ntsweng, Molepolole, Unpublished B.A Dissertation. University of Botswana.

Tlou, T. & Campbell, A. 2003. History of Botswana. Gaborone: Macmillan Botswana Publishing.

Van Waarden, C. 1998. The Later Iron Age. In Lane, P.J., Reid, A. & Segobye, A (eds.) Ditswamung: The Archaeology of Botswana. Gaborone: Pula Press & Botswana Society.

Walker, N. 1996. In The Footsteps of the Ancestors: The Matsieng creation site in Botswana, in South African Archaeological Bulletin 52:95-104.

World Bank. Undated. World Bank Operational Notes 11.3. Unpublished notes.