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THE SASOL GAS SUPPLY PROJECT

PROPOSED PIPELINE BETWEEN KOMATIPOORT AND SECUNDA

ENVIRONMENTAL IMPACT ASSESSMENT

ARCHAEOLOGICAL STUDY
SPECIALIST REPORT NO. 9

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1.0 INTRODUCTION

1.1 Aim

SASOL intends to construct a natural gas pipeline between Temane in Mozambique and Secunda in South Africa. Environmental legislation in both South Africa and Mozambique requires that an Environmental Impact Assessment (EIA) be undertaken prior to the implementation of the pipeline project. The EIA for the Sasol Natural Gas Project is being conducted in three stages, namely:

- an EIA for the establishment of the gas fields at Temane and Pande in Mozambique;
- an EIA for the construction of the pipeline between Temane and Ressano Garcia in Mozambique; and
- an EIA for the construction of the pipeline between Komatipoort and Secunda in South Africa.

Archaeological Resources Management (ARM) was appointed to assess the proposed alignment of the pipeline between Komatipoort and Secunda (Annexure 1) in terms of the potential impact on existing and potentially as yet undiscovered archaeological sites. This report contains the findings of the investigation.

1.2 Method

In order to assess the potential impact on archaeological sites, the investigation was conducted both in the field and from historical records of the area:

- Field Observation: Two ARM staff drove along the routes on 11 April 2000 .The routes were marked on a series of 1:50 000 topographical maps supplied by Mark Wood Consultants. The routes were examined where they crossed main roads on maps 5, 6, 8, 10 & 12. We also followed the northern option on maps 8, 9 & 10, the southern option on maps 11 and 12 and the combined route on map 13.

- Desktop Research: ARM staff examined the comprehensive files of the Wits Archaeology Department. These files began in the 1930s with the Government Bureau of Archaeology and include the Bureau's successors, the Archaeological Survey, the Archaeology Department and the Archaeological Research Unit. The data search was restricted to the 1:50 000 maps approximately one degree north and south of the proposed route.

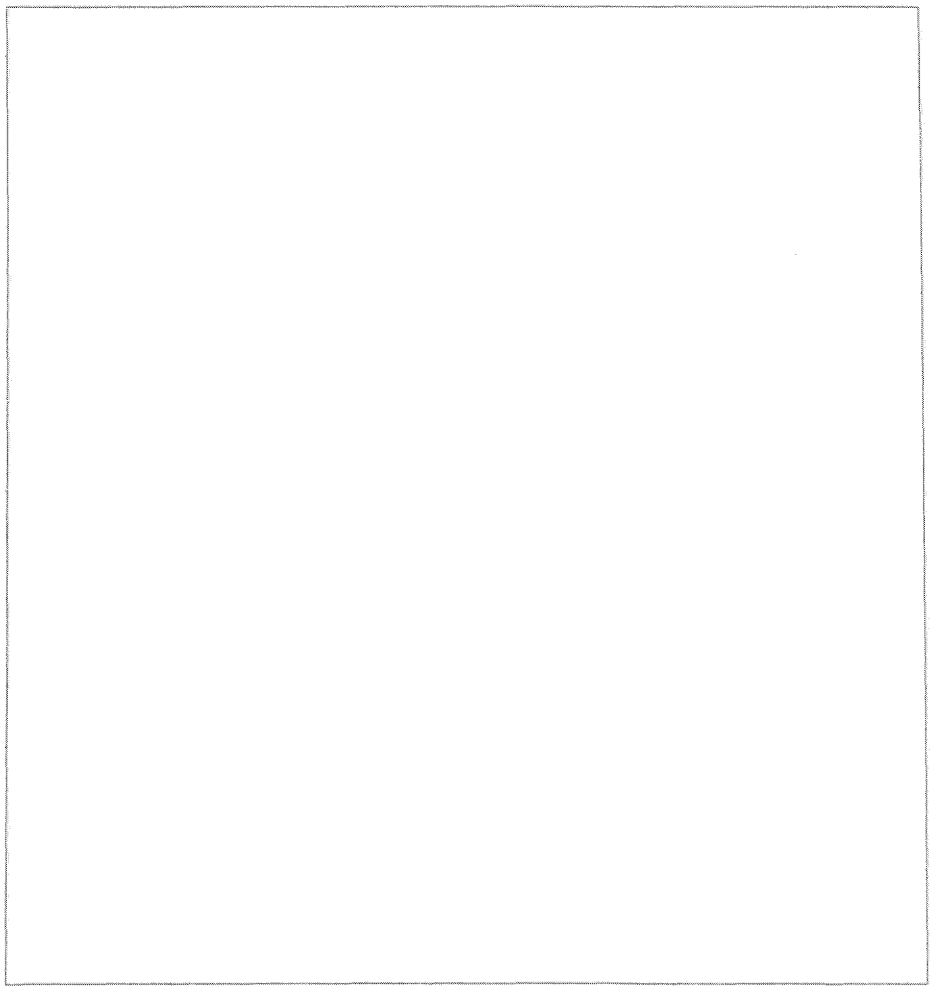
2.0 PIPELINE CONSTRUCTION AND THE POTENTIAL IMPACT ON ARCHAEOLOGICAL SITES

2.1 Pipeline Construction

It is intended that the natural gas be transported from Temane to Secunda via a sub-terranean pipeline. The pipeline, which will have a diameter of between 26 and 32 inches, will be buried at least 1m below the surface.

In order to facilitate the construction of the pipeline, a 25m working area will be required. This working area is necessary to accommodate not only the laying of the pipeline (over which a permanent 6m servitude will be registered), but also the machinery and equipment for the construction team. Within the working area, the short-term impact on the environment will be significant as vegetation will be removed to facilitate the movement of machinery and equipment, and the trench for the pipeline will be excavated. Figure 1 provides a schematic representation of the pipeline construction train.

FIGURE 1: *Schematic Representation of the Pipeline Construction Train*



2.2 Archaeological Sites and Pipeline Construction

Pipeline construction is a disruptive process and it is therefore important that archaeological sites that fall within the pipeline servitude are identified prior to construction so that appropriate actions can be taken. Depending on the significance of the site, such actions could range from minor realignment of the route to excavation prior to pipeline construction to disregarding the site if it is of very low significance.

The investigation into the likelihood of the occurrence of archaeological sites along the proposed pipeline route was structured to include the following:

- the identification of existing sites in relation to the proposed route
- the interpretation of historical records and the likelihood of as yet undiscovered sites occurring in the area.

3.0 FINDINGS

3.1 Stone Age Period

3.1.1 Early Stone Age

Some hominids began to manufacture stone tools about 2.6 million years ago, thus beginning the Early Stone Age (ESA). Known as the Oldowan industry, most of the earliest tools were rough cobble cores and simple flakes. The flakes were used for such activities as cutting meat and skinning animals.

By about 1.4 million years ago hominids started producing more recognisable stone artefacts such as handaxes, cleavers, and core tools (Volman 1984). Although serving many purposes, these Acheulian tools were probably designed to butcher large animals, such as elephants, rhino and hippo. Because these animals were dangerous, they probably were not hunted. At this time, then, some hominids were specialised scavengers.

These early humans needed good raw material to manufacture tools, and their presence is often found near outcrops of suitable stone and ancient butchery sites. ESA sites are on record for the Vaal River system near Standerton (1:50 000 topographical map 2629CC) and near Carolina (2630AA), Nelspruit (2530BD) and Barberton (2531CC).

3.1.2 Middle Stone Age

By the beginning of the Middle Stone Age (MSA), 250 000 years ago, tool kits included prepared cores, parallel-sided blades, and triangular points (Volman 1984). These points were hafted to make spears used to hunt large grazers such as wildebeest, hartebeest, and eland. By the MSA, then, hominids had become accomplished hunters.

These hunters are classified as archaic humans, and by 100 000 years ago, they were anatomically fully modern. The degree to which their behaviour was fully modern, however, is still under investigation. The repeated use of caves indicates that MSA people had developed the concept of a home base and that they could make fire. These were important steps in the cultural evolution of humanity. Furthermore, the widespread use of red ochre, presumably as body paint, also shows that MSA behaviour had become more human.

MSA artefacts have been found near Kaapmuiden (2531CB) during a survey for another pipeline (Huffman, *et al.* 1997) and more sites are known to the east (2531DA) and west (2531CA & CC, 2530AD, BA & DA).

3.1.3 Later Stone Age

Although they lived in caves, it is not clear if the behaviour of MSA people was fully modern. In contrast, by 25 000 years ago and the beginning of the Later Stone Age (LSA), human behaviour was recognisably modern. Uniquely human traits such as rock art and purposeful burials with ornaments became regular practice. In Southern Africa these people were the ancestors of the San (or Bushmen).

San rock art has a well-earned reputation for aesthetic appeal and symbolic complexity. It is essentially religious (Lewis-Williams 1981). Among other aspects, the art expresses beliefs about the role of shamans in controlling rain and game, and animals of power, such as eland and rhino, figure prominently. Such art has been recorded in the broken country near Badplaas (2530DC) and Whiteriver (2531AC).

In addition to art, LSA sites contain a diagnostic tool kit. Characteristic LSA artefacts include microlithic tools such as scrapers and segments manufactured from cherts, chalcedonies and other

crypto-crystalline materials (Deacon 1984). Spear hunting probably continued, but LSA peoples began to hunt smaller game with a bow and poisoned arrow. This technology was the norm by 20 000 years ago.

Open sites are on record near Kaapmuiden (2531CB) and Badplaas (2530DC). Because of their skills as hunters and gatherers, LSA peoples developed a mutually beneficial relationship with the first Bantu-speaking farmers.

3.2 Iron Age Period

Bantu-speaking people moved into East, Central, and Southern Africa about 2000 years ago. These people cultivated sorghum and millets, herded cattle, sheep and goats and manufactured iron tools and copper ornaments (Huffman 1989). Because metal working represents a totally new technology, archaeologists have named this period the Iron Age. The first 1000 years are known as the Early Iron Age (EIA).

3.2.1 Early Iron Age

As agriculturalists, EIA people lived in semi-permanent homesteads comprising pole-and-daga (mud or clay mixed with dung) houses and grainbins arranged around animal byres. As a rule these homesteads were sited near water and good alluvial and colluvial soils that could be cultivated with an iron hoe.

In addition to homestead remains, characteristic ceramic styles help archaeologists to divide the sites into different traditions and phases. For example, Eastern Bantu speakers who moved through Angola and Botswana into South Africa produced the Kalundu ceramic tradition, while other Eastern Bantu speakers who moved through East Africa and Mozambique produced the Urewe ceramic tradition (Huffman 1989).

Early Urewe tradition pottery has been found near Nelspruit (Huffman 1998) and Whiteriver (Evers 1977) while Kalundu pottery has been excavated in the Lydenburg area (2530AB). Lydenburg, in fact, produced the famous Lydenburg ceramic heads (Inskeep & Maggs 1976) now on display in the South African Museum, Cape Town.

3.2.2 Later Iron Age

For purposes of convenience, archaeologists call the present millennium the Late Iron Age (LIA). The Little Ice Age began during this period, at about AD 1300 (Tyson & Lindsay 1992), and its impact upon human population was particularly severe.

The ancestors of the present day Nguni and Sotho-Tswana speakers moved from East Africa into South Africa at this time. Because of the colder and drier conditions, these LIA people had to live in the few areas suitable for both agriculture and pastoralism. The climate ameliorated again between about AD 1425 and 1675, and LIA people inhabited a large part of the district. Sites of this period are known near Kaapmuiden (2531AD & CB) and in Swaziland (2631AB).

In the 16th or 17th century some LIA people began to build stonewalls around their cattle byres and settlements. In plan these settlements appear as simple concentric circles, somewhat like a 'fried egg', connected by cattle lanes (Collett 1982). Many examples of this type are known along the escarpment from Carolina to Lydenburg (Mason 1968). Indeed, on one farm near Waterval Boven (2530CB) over 150 such settlements are recorded in one cluster. Large lower grindstones for processing maize - an American import via the Portuguese - date some of the stonewalled settlements to the 18th and 19th centuries.

3.3 Historic Period

Early European mining in the Barberton District is well known. Eureka City (2531CA), for example, was established in the 19th century. As a result of the mining, Barberton became an important centre with the first stock exchange, and several buildings are proclaimed monuments.

3.4 Findings

The proposed route does not endanger any known historic buildings or stonewalled sites.

However, historical evidence suggests that the potential for Iron Age sites is high in the Suidkaaprivier Valley. Stone Age sites could also be present in the lowveld but are unlikely to be present on the highveld except around pans and rivers.

4.0 RECOMMENDATIONS AND CONCLUSIONS

The proposed route is not aligned through any known archaeological sites and it is therefore unnecessary to consider any adjustments to the route alignment at this level of planning.

The fact that there is a high potential for Iron Age sites in the Suidkaapriver Valley is, however, notable. At present the route alignment is not precisely defined and a detailed survey is not warranted until the aerial photography is flown. Following this, a field survey is recommended as a component of the Environmental Management Plan for the project to identify sites. If any are found, they should be classified into one of three groups with respect to impact management:

- sites of low significance: these can be destroyed without mitigation
- sites of medium significance: these require limited mitigation, such as mapping and the collection of artefacts on the surface
- sites of high significance: these require extensive mitigation, such as mapping and excavation.

It is highly unlikely that the route of the pipeline will need to be altered on archaeological grounds. However, if sites of high significance are identified, appropriate mitigatory measures should be implemented before construction of the pipeline begins.

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