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REF/VERW: PI_BOIKARABELO_REPORT_01_2011
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2011-10

Johan Nel

PRINCIPAL INVESTIGATOR REPORT ON PHASE 2 MITIGATION
FOR THE BOIKAREBELO COAL MINE PROJECT

9/2/253/0003

PERMIT

No. 80/11/07/015/51

Issued under Section 35(4) of the National Heritage Resources Act, Act No. 25 of 1999.
Permission is hereby given:

to: Mr J Nel in association with Dr M van der Ryst (Principal Investigator, Iron Age),
of: Digby Wells Environmental, Private Bag X10046, Randburg, 2125 and UNISA,
for: Phase 2 mitigation which will include the following: **shovel test pits** for sites 002, 003, 006, 011, 017, 018, 019, 020, 021, 022, 026 and 027; **mapping and test excavations** for sites 009, 010, 012 and **monitoring** for sites 001,013 (should be mapped with 012), 015 and 016,
at: Boikarabelo Coal Mine,
on: the farms Zeekoevley 421 LQ and Witkopje 238 LQ, near Lephalale,
in: the Waterberg District, Limpopo Province.

Digby Wells Environmental was contracted by Ledjaja Coal to conduct a Phase 2 AIA for the Boikarabelo Coal Mine Project following on the Phase 1 AIA conducted by Professional Grave Solutions (PGS). The archaeologist at Digby Wells Environmental, Johan Nel, was designated to institute mitigation and monitoring procedures in terms of the relevant legislation and in accordance with the SAHRA APM Guidelines: Minimum standards: Archaeological and Palaeontological components of Impact Assessment Reports and in accordance with the National Heritage Resources Act (Act No. 25 of 1999). Dr MM van der Ryst of the University of South Africa has been appointed as Principal Investigator (PI) to oversee the mitigation of Iron Age finds uncovered at the site.

The process of the Phase 2 archaeological investigation includes Shovel Test Pits (STPs), more extensive test excavations at localities that will be negatively impacted by the proposed mining activities and the mapping of sites. The brief was to systematically document structures and artefact distribution at the sites recommended



for mitigation and to selectively sample some of these localities to collect cultural material. The outcomes of the project (please refer to the report prepared by Johan Nel) are in accordance with the SAHRA guidelines for a Phase 2. Such a pre-development study should record the context of the sites in order to establish a broad chronology and the cultural affinities of the occupants of the sites, assign a rating of significance to localities that will be impacted upon by the proposed development and generate a representative sample for future research, education and the promotion of our cultural heritage at large (SAHRA Minimum Standards 2007:4).

This report documents my inspection of the excavations during a visit from 07 to 08 October 2011. The purpose of the visit was to assess and review mitigation measures implemented by Johan Nel. The University of Pretoria Field School for second-year archaeology students was scheduled to take advantage of the proposed mitigation processes. Johan Nel, two interns from Digby Wells (Natasha Higgitt and en Guy Thomas) and some UP archaeology lecturers and students were involved in the excavations that formed part of the Phase 2 archaeological mitigation.

During the October 2011 PI visit the archaeological procedures followed were closely monitored. The significance of the sites was assessed and current and proposed mitigation measures were reviewed. The mitigation measures were based on recommendations for all sites identified in the Phase 1 AIA report and SAHRA recommendations, but were extended to include sites that we subsequently found or that were deemed to be of particular significance. After visiting and assessing the affected sites and surroundings in-depth discussions were held with Johan Nel regarding the nature, extent and heritage significance of the locality under review. Recommendations were also made about the monitoring of the site when construction work commences, as well as the format and contents of the excavation report.

Based on field observations and in-depth discussions, I confirm that the archaeological work is of a high standard and that the archaeologists have adhered to appropriate legislative, heritage, environmental and ethical guidelines. Standard archaeological procedures were followed during the Phase 2 mitigation excavations, sampling and data recovery (sieving and sorting) processes. These include auguring, the digging of a series of shovel test pits at each locality to locate subsurface occurrences, followed by selective and stratigraphically controlled excavations, the recovery and recording of finds and the mapping of the sites. The archaeological investigation not only complied with the recommendations of PGS following on the Phase 1 AIA but excavations were also undertaken at site 11, where monitoring only had been recommended, as the archaeologist established a higher level of significance for this particular locality based on the context, representative archaeological features and surface finds. Johan Nel has demonstrated his archaeological competence in his selection of sites for sampling, more extensive excavations and mapping.

I also invited Wim Biemond to accompany us on the PI visit in view of his in-depth knowledge of the local archaeological settlement sequence, Iron Age ceramics and his particular understanding of the local area. Mr Biemond is currently enrolled for a MA in Archaeology at Unisa and has extensively excavated and surveyed archaeological sites of the Botswana Iron Age sequence. His research area across the Limpopo River in Botswana geographically lies at a very short distance from the sites under review. He confirmed the cultural affinities of the various ceramic collections and also made a particularly valuable contribution to discussions on the spatial layout of the settlements based on his experience and acquaintance with similar sites in Botswana.

Some additional sites with significant and extensive archaeological deposits were also located during the PI visit and will be included in the mitigation process. These comprise a locality with ceramics assigned to the Icon facies of the early Moloko Tradition (13th to 15th century) and a number of very large middens where

ceramics of the Letsibogo facies (16th century) of the early Moloko Tradition were recognised (Boeyens 1998; Huffman 2007; Biemond 2010a). Early dates for Early Moloko expressions in Botswana may suggest an introductory route from that region, but this will only be resolved as more data from other localities become available (Boeyens 1998; Van der Ryst 2006).

The identification of the Letsibogo facies in the area under review is of particular importance as Letsibogo sites have mainly been identified in Botswana (Huffman 2007; Biemond 2010). This facies was first documented at the Letsibogo Dam project in eastern Botswana (Huffman & Kinahan 2002/2003). The Letsibogo facies, one of three sub-branches of the Moloko, developed during the 16th century (Huffman 2007; Biemond 2010a). Moloko ceramics, characterised by comb-stamping, incised arcs and the extensive application of red ochre and black graphite, were produced by Sotho-Tswana speakers (Huffman 1989). The Icon facies is marked by the use of multiple bands of incised and hatched motifs, commonly interspersed with graphite (Van der Ryst 2006). Arcades, horizontal bands and lozenges outlined with dragged punctate lines or short grooves are the main decorative techniques in the Letsibogo facies. Red ochre and graphite pigments were profusely used to fill in the decorative designs (see Biemond 2010b:Fig. 1). These were the only localities that yielded decorated ceramics that could be assigned to a specific facies of the Iron Age sequence.

Most of the larger sites to be mitigated conform to a spatial layout where grain bins are distributed around a large central open area. These types of sites are ephemeral with very low archaeological visibility due to the generally poor preservation of structures and sparse cultural remains. The sites are mainly identified through the stone supports for grain bin structures that occur dispersed in generally a circular pattern and sometimes are accompanied by lower and upper grindstones and also ceramics. It can be assumed that a household structure was associated with each granary (or sometimes multiple grain stores). These pole-and-dagha houses did not preserve well but house floors are occasionally uncovered.

The sites vary from around 500 to 1000 square metres. In Botswana some larger sites may occupy an area of 3 to 5 ha and contain 4 to 5 wards arranged around a large central cattle kraal/midden (Biemond 2010a). Several of the listed sites under review are not individual occurrences but can be clustered according to such a larger spatial layout, for examples sites 9 (23.63169 S/27.13259 E) and 10 (23.63040 S/27.13388 E) may be wards of a particular settlement. Our understanding of archaeological settlement patterns is to a large extent based on a configuration known in the archaeological literature as the Central Cattle Pattern that comprises a secular and symbolic division and use of space (Kuper 1980; Huffman 1982, 1986, 2007). Ethnographic data on Northern Sotho groups in addition indicate that the homestead structures often reflect the worldview of a community (Mönnig 1967:56). The early Moloko Sotho-Tswana settlements as well as those from the more recent past were organised according to the Central Cattle Pattern, where a circle of houses and associated structures such as granaries, are arranged around central cattle space to which livestock enclosures for the penning of small livestock such as goats are usually attached (Huffman 1979, 1986, 2004, 2007; Biemond 2011). Burials of important people are often present in the central cattle kraal. Other burials, based on age and gender, were placed in defined localities within the household spaces (Biemond 2011).

The excavations by the Digby Wells team sampled two of the larger grainbin sites. During the site visit we concurred that the data recovered not only complied with the recommendations for sampling, STP's and selective excavation but that more extensive investigations had indeed been undertaken by the team. No ash or midden materials seem to have preserved and in view of the extent of the sites it was deemed more important to obtain maps of the spatial layout as random excavations were not likely to yield more cultural material. All the excavated sites yielded only undecorated ceramics that were assigned to a relatively late occupation phase from the late 17th or 18th century onwards.

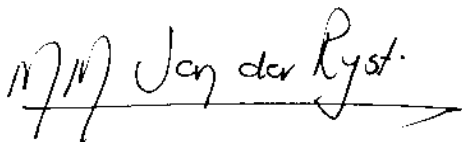
There was in general little evidence of midden material or evident dung deposits. However, the early Moloko and Letsibogo localities identified during the Phase 2 mitigation certainly contain ash and dung deposits. During the site visit ash deposits were also identified at site 21 (23.61427S/27.14582E). This locality had been recommended for STP-sampling only but we subsequently took the decision to undertake more in-depth investigations at site 17 in the form of excavations in the ashy concentrations and by mapping the extent of and the structures at the site. The excavations mostly yielded undecorated ceramics, with some short-necked jars, and faunal material, but also a fine example of a soapstone smoking pipe.

Whereas Stone Age occurrences were not included in the brief, a representative Stone Age chronology was recognised. Close to rocky outcrops and the pan area of site 21 scatters of mostly Middle Stone Age and Later Stone Age stone tools were found. During the visit of sites closer to the Limpopo more dense concentrations of lithics were observed. Fine-grained water-redistributed nodules served as a good source of lithic raw materials. The range of raw materials used in the manufacture of the lithics includes quartzite, quartz and other cryptocrystalline silicas, with lesser frequencies of banded ironstone and felsites. A particularly fine example of an Earlier Stone Age small handaxe was also found during the reconnaissance. The range and variety of lithics at these localities suggest a land-use pattern of seasonal hunting and subsistence activities focused on locally available resources.

It is important to note that in view of the findings, the large-scale extent of the use of the landscape as evidenced by the spatial settlement pattern and the **high** probability that burials may be exposed during the stripping of the surface layer that a watching brief is recommended for all localities during the forthcoming developments. Although the archaeological sites are not rich in cultural material, they represent under-researched phases of the Iron Age sequence in the Limpopo Province. The excavations established that the sites in the floodplains occupy a horizon of around 20 cm in depth and the watching brief should take this into consideration (see report by Johan Nel). The Icon and Letsibogo facies sites probably have a more extensive deposit with a more complex stratigraphy and should be handled accordingly during the watching brief.

I am pleased to conclude that the site mitigation measures employed by Digby Wells Environmental comply with a high professional standard of cultural resource management.

I trust that this report will meet with your approval.

A handwritten signature in black ink that reads "MvR Maria van der Ryst". The signature is written in a cursive style with a horizontal line underneath the name.

Dr Maria van der Ryst

Accredited professional archaeologist for the SADC region, member no. 158

CRM-accredited Principal Investigator (PI): Iron Age Archaeology

CRM-accredited Principal Investigator (PI): Stone Age Archaeology

CRM-accredited Field Director (FD): Colonial Period Archaeology

Affiliation: Senior Lecturer, Archaeology Division, Department of Anthropology and Archaeology, UNISA

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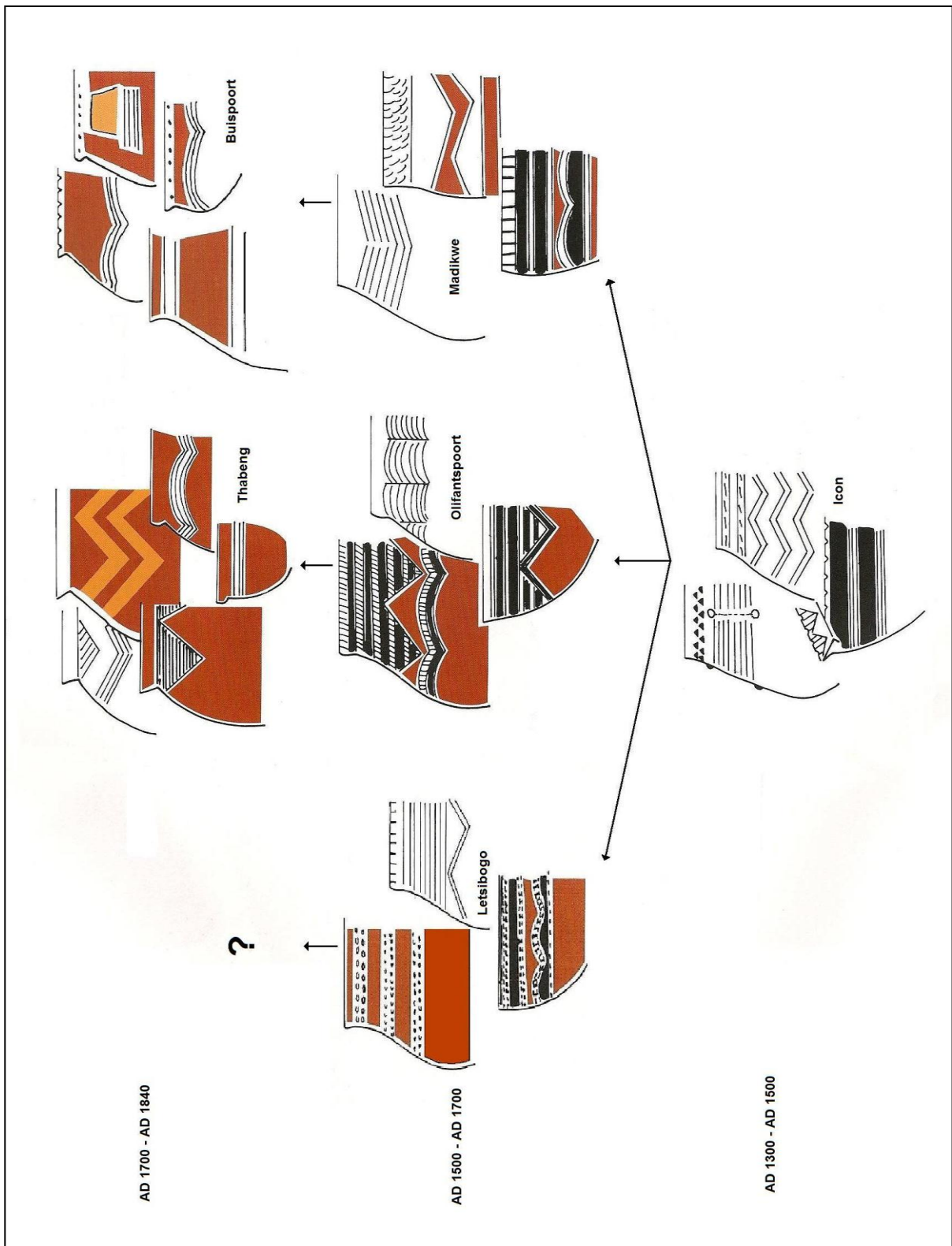


Figure 1: The Moloko sequence (after Huffman 2007) (Biemond 2010).

Several sites are located within the development footprint of the proposed development. The sites that will be directly impacted on, or that are located sufficiently close to potential impacts, are listed and described in the table below. Only sites located in or close to an impact footprint were included in the permit application.

Site no. (cf. PGS report)	Co-ordinates	Location relative to proposed development	Description of site	Mitigation recommended by PGS
2	23.59086S/27.15922E	Open-cast pit	Low density surface non-id pottery scatter, animal burrows present	STP
3	23.60233S/27.14765E	Open-cast pit	Low density surface non-id pottery scatter	STP
4	23.59107S/27.14430E	Dump	Ash midden with non-id surface pottery scatter, two lower grinding stones present	Phase 2 map and test
9	23.63169 S/27.13259 E	Infrastructure	Remains of seven grain bins, with two lower grinding stones present	Extensive documentation
10	23.63040 S/27.13388 E	Infrastructure	Ash midden with non-id surface pottery scatter, animal burrows present	Extensive documentation
11	23.62635 S/27.14091 E	Dump	Single lower grinding stone	Monitoring
12	23.63640 S/27.12973 E	Road	Ash midden with non-id surface pottery scatter, animal burrows present	Extensive documentation
13	23.63745 S/27.12823 E	Road	Single lower grinding stone	Monitoring
14	23.61938S/27.12991E	Dump	Low density surface non-id pottery scatter, loose scatter of rocks with possible lower grinding stone. Grinding stone has three holes present in the bottom	Phase 2 map and test
17	23.61427S/27.14582E	Infrastructure	Low density surface non-id pottery scatter, animal burrows present	STP
18	23.61578S/27.15096E	Infrastructure	Low density surface non-id pottery scatter concentration(possible single vessel), animal burrows present	STP
19	23.61565S/27.15288E	Infrastructure	Low density surface non-id pottery scatter, single decorated pottery shard, animal burrows present	STP
20	23.60606S/27.14661E	Open-cast pit	Low density surface non-id pottery scatter, single ochre decorated pottery shard, animal burrows present	STP
21	23.60612S/27.15590E	Open-cast pit	Low density surface non-id pottery scatter, animal burrows present	STP
22	23.60573S/27.15650E	Open-cast pit	Low density surface non-id pottery scatter and single undecorated lip shard, animal burrows present	STP
24	23.59383S/27.15375E	Open-cast pit	Kraal area with ash midden, high density non-id pottery with animal bone found within animal burrows, grain bin platforms present	Phase 2 map and test
25	23.61144S/27.1332E	Road	Medium density surface pottery scatter, three grain bin platforms with single lower grinding stone, animal burrows present	Phase 2 map and test
27	23.59810S/27.15373E	Open-cast pit	Low density surface non-id pottery scatter with single lip shard	STP