

PHASE 1 HERITAGE IMPACT SCOPING REPORT

**PETROLINE LIQUID FUEL STORAGE DEPOT
ALKMAAR ALTERNATIVE SITE (SITE 2)
NELSPRUIT: MPUMALANGA**

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EXECUTIVE SUMMARY

Petroline Holdings Pty (Ltd) (Petroline) intends to develop a Liquid Fuel Storage Depot at Alkmaar near Nelspruit in Mpumalanga, South Africa. SRK Consulting has been appointed to undertake the necessary environmental authorization. This report forms a specialist study of the alternative Site 2 within this wider process.

The demarcated Alkmaar site contains two graves at the northern end of the property, which can be sufficiently protected limiting any impact and a disturbed unidentified archaeological site that will have to be monitored during the development. The Alkmaar Station and immediate surrounding area has significant historical buildings that fall outside the development area, but which may be affected by a spill over of the depot development in the form of renewal and renovation of old buildings. Such possible impacts will have to be monitored by the heritage resources authority, which is responsible for issuing prospective applicants intending such changes with a permit.

From a heritage resources management point of view, there is no objection with regard to the development on condition that management measures are implemented.

1. INTRODUCTION AND TERMS OF REFERENCE

Petroline (Pty) Ltd is planning to construct a petroleum pipeline to run from Matola (Mozambique) to Kendal (in Mpumalanga - South Africa). A heritage scoping report has already been submitted for Site 1 and this report addresses the alternative (Site 2) liquid fuels storage depot site at Alkmaar. The National Energy Regulator of South Africa (NERSA) has issued a license to Petroline to construct the proposed pipeline subject to *inter alia* compliance with environmental regulatory requirements.

The proposed pipeline will be developed in one phase, as follows:

1. Section of pipeline from Matola to Nelspruit where a storage depot is proposed
2. Pipeline from Nelspruit to Kendal, where a further depot is proposed.

The author was contracted to undertake a heritage resources scoping survey of the alternative site for the Petroline Liquid Fuel Storage Depot at Alkmaar, Mbombela local municipality. The aim was to determine the presence or not of heritage resources such as archaeological and historical sites and features, graves and places of religious and cultural significance, and to submit appropriate recommendations with regard to the cultural resources management measures that may be required at affected sites / features.

Terms of reference: Undertake a Phase 1 Heritage Impact Assessment and submit a specialist report, which addresses the following:

- Executive summary;
- Methodology used to obtain supporting information;
- Overview of relevant legislation;
- Results of all investigations;
- Interpretation of information;
- Assessment of impacts (including cumulative impacts) associated with all the stages of the project (construction, operation, closure and post closure);
- Assessment of effectiveness of management measures proposed by the client;
- Recommendations on other management measures;
- References.

The report gives an overview of the heritage status of the Alkmaar liquid fuel storage sites; In-depth studies in hotspot areas; Identification and characterisation of potential impacts for construction, operation and closure; Recommendations for mitigation of negative impacts and enhancement of benefits. The significance of heritage resources was assessed in terms of criteria defined in the methodology section and the impact of the proposed development on these resources are evaluated.

2. LEGAL REQUIREMENTS

The application constitutes an activity, which may potentially be harmful to heritage resources that may occur in the demarcated area. The National Heritage Resources Act (NHRA - Act No. 25 of 1999) protects all structures and features older than 60 years (section 34), archaeological sites and material (section 35) and graves and burial sites (section 36). In order to comply with the legislation, the Applicant requires information about the heritage resources, and their significance that may occur in the demarcated area. This will enable the Applicant to take pro-active measures to limit the adverse effects that the development could have on such heritage resources.

In terms of the National Heritage Resources Act (1999) the following is of relevance:

Historical remains

Section 34(1) No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

Archaeological remains

Section 35(4) No person may, without a permit issued by the responsible heritage resources authority-

- (a) destroy, damage, excavate, alter, deface, or otherwise disturb any archaeological or palaeontological site or any meteorite

Burial grounds and graves

Section 36 (3)(a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority-

- (c) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- (b) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in detection or recovery of metals.

Culture resource management

Section 38(1) Subject to the provisions of subsection (7), (8) and (9), any person who intends to undertake a development* ...

must at the very earliest stages of initiating such development notify the responsible heritage resources authority and furnish it with details regarding the location, nature, and extent of the proposed development.

***“development”** means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including-

- (a) construction, alteration, demolition, removal or change of use of a place or a structure at a place;
- (b) carry out any works on or over or under a place*;
- (e) any change to the natural or existing condition or topography of land, and
- (f) any removal or destruction of trees, or removal of vegetation or topsoil;

***“place”** means a site, area or region, a building or other structure* ...”

***“structure”** means any building, works, device or other facility made by people and which is fixed to the ground, ...”

3. METHOD

3.1 Sources of information

The sources of information were the field reconnaissance and the information gained from the scoping phase of the study.

A pedestrian survey of the demarcated area was undertaken on foot. Standard practices of observation were followed. The sites and general conditions on the terrain were photographed with a CANON Digital camera.

3.2 Limitations

No significant limitations were experienced.

3.3 Categories of significance

The significance of archaeological sites is ranked into the following categories.

No significance: sites that do not require mitigation.
Low significance: sites, which <i>may</i> require mitigation.
Medium significance: sites, which require mitigation.
High significance: sites, which must not be disturbed at all.

The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit, and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences.

A crucial aspect in determining the significance and protection status of a heritage resource is often whether or not the sustainable social and economic benefits of a proposed development outweigh the conservation issues at stake. Many aspects must be taken into consideration when determining significance, such as rarity, national significance, scientific importance, cultural and religious significance, and not least, community preferences. When, for whatever reason the protection of a heritage site is not deemed necessary or practical, its research potential must be assessed and mitigated in order to gain data / information which would otherwise be lost. Such sites must be adequately recorded and sampled before being destroyed. These are generally sites graded as of low or medium significance.

3.4 Terminology

Early Stone Age:	Predominantly the acheulean hand axe industry complex dating to + 1Myr yrs – 250 000 yrs. before present.
Middle Stone Age:	Various lithic industries in SA dating from ± 250 000 yr. - 30 000 yrs. before present. In this area the Pietersburg Industry is dominant.
Late Stone Age:	The period from ± 30 000-yr. to contact period with either Iron Age farmers or European colonists.
Early Iron Age:	Most of the first millennium AD
Middle Iron Age:	10 th to 13 th centuries AD

Late Iron Age:	14 th century to colonial period. <i>The entire Iron Age represents the spread of Bantu speaking peoples.</i>
Historical:	Mainly cultural remains of western influence and settlement from AD1652 onwards – mostly structures older than 60 years in terms of Section 34 of the NHRA.
Phase 1 assessments:	Scoping surveys to establish the presence of and to evaluate heritage resources in a given area
Phase 2 assessments:	In depth culture resources management studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling.
Sensitive:	Often refers to graves and burial sites although not necessarily a heritage place, as well as ideologically significant sites such as ritual / religious places. <i>Sensitive</i> may also refer to an entire landscape / area known for its significant heritage remains.

4. DESCRIPTION

Co-ordinates: S25° 26' 44" E30° 49' 20". (Map reference 1:50 0000 2530 BD).

The proposed Alkmaar alternative site (Site 2 on the locality map) is located on portions 16 & 17 of portion 100 of the Farm Alkmaar 286 JT, approximately 15 km west of Nelspruit on the N4 national road. The development area is approximately 17 hectares in extent and presently zoned agricultural. The site is located in a low-lying valley where the predominant land use is agriculture. A commercial park comprising a number of businesses is located to the northeast of the site with the Alkmaar station and siding about due north of the site. The Crocodile River meanders through the valley to the north beyond the railway line. The site is slopes upwards to the west, and is bounded to the south by the N4 highway and the road to Alkmaar station to the east and north.

It must be noted that the entire area had been ploughed and is still being cultivated by the Lowveld Agri Support and Services Company.

5. ARCHAEOLOGICAL AND HISTORICAL REMAINS

5.1 STONE AGE REMAINS

No Stone Age archaeological material was observed on the site.

5.2 IRON AGE REMAINS

No intact Iron Age archaeological site could be observed on the site. However, **cultural remains** in the form of a scattering of unidentified pottery fragments and upper grinding stones (figures 2 & 3) in the context of ashy soil occur almost in the center of the terrain at co-ordinates S25° 26' 44.0" E30° 49' 24.0" (marked *cultural remains* on the locality map). The archaeological context has been destroyed by the agricultural activities. It is not known to which period of tradition these belong. The fact that the ploughed field contains no industrial

waste that is normally present on historical sites strengthens the presumption that the material is of an archaeological origin.

According to the most recent archaeological cultural distribution sequences by Huffman (2007), this area falls within the distribution area of various cultural groupings originating out of both the Uruwe Tradition (eastern stream of migration) and the Kalundu Tradition (western stream of migration). The facies that may be present are:

Urewe Tradition: Kwale Branch – *Mzonjani facies* (AD 450 – 750)
 Marateng facies (AD 1650 – 1840)

Kalunda Tradition: Happy Rest sub-branch – *Klingbeil facies* (AD 1000 – 1200)
 Maguga facies (AD 1200 – 1450)

None of the above-mention archaeological remains were positively identified on the site.

5.3 HISTORICAL REMAINS

No historical remains were observed on the demarcated site.

The Alkmaar Station building and residential complex is of a historical nature and a historical graveyard is located immediately adjacent to the station building (figures 6, 7 & 8). The Station would have featured strongly in the retreat of the Boers during the Anglo-Boer War as well as in the advance of the British forces.

Although none of the structures are directly threatened by the proposed development, there will be a secondary impact resulting from this development in the form of renewal and additional constructions resulting from the expected economic revival of the area, which may lead to the demolition of older buildings. Should the development impact on these buildings in any way, a heritage assessment of the affected building must be undertaken.

5.4 GRAVES AND BURIAL GROUNDS

Two graves exist on the terrain on the far northern end of the terrain at co-ordinates S25° 26' 35.0" E30° 49' 23.7" (figures 4 & 5). One grave is unknown and only contains a wooden cross, which is badly deteriorated and illegible. The other consists of a marble headstone and is that of the infant ILIFFE BROWN who was buried there in 1915. The National Heritage Resources Act protects both these graves.

6. DISCUSSION

The assessment of the Alkmaar site was thorough. Cultural remains were detected, but no intact archaeological site exists there anymore. However, the possibility exists that subterranean material may be exposed during development. The relevant heritage resources authority or the archaeologist must then be informed. Monitoring of earthworks is recommended to manage these remains.

The historical buildings should not be directly affected by the development. Nevertheless, there is a concern for the demolition, renovation, and alterations of historical buildings that may follow because of the envisaged economic renewal brought on by the economic impetus from the development. Such actions require a permit from the heritage resources authority. **The Provincial Manager of the SAHRA Mpumalanga Office or the Mpumalanga Heritage Resources Authority should monitor this expected development.**

The graves mentioned under point 5.4 are regarded as significant. They occur on the edge of the terrain and are not a fatal flaw in terms of the development. The re-location of the graves is not required, but management measures are recommended to preserve these graves.

From a heritage resources management point of view we have no objection with regard to the development on proposed site on condition that the management measure below are implemented.

7. RECOMMENDATION AND MANAGEMENT MEASURES

Iron Age remains: In view of the presence of archaeological material on the terrain, mitigation for an archaeologist to monitor any earthworks in the area marked *cultural remains* on the locality map is recommended. This will allow for the implementation of cultural resource management measures should significant cultural remains be exposed.

Graves: Because of the sensitivity of graves, the following management measures are recommended:

1. That a suitable barricade be erected around the graves to protect them from damage or vandalism. This may be in the form of a solid wall or a sturdy palisade fence.
2. That social consultation be undertaken to identify the unknown grave and that that particular grave be renovated.
3. That a basic management plan be developed for the long-term maintenance of the graves.

8. COMPARISON BETWEEN SITE 1 AND SITE 2 (Alternative Site – this report)

<u>SITE 1</u>	<u>SITE 2</u>
1. Contains no visible heritage resources.	1. Contains graves and disturbed cultural remains.
2. No direct impact on heritage resources.	2. Negligible impact on heritage resources.
3. Development may have a secondary impact on the historical landscape of Alkmaar.	3. Development may have a secondary impact on the historical landscape of Alkmaar.
4. No management measure required.	4. Management measure required to minimise the impact on heritage resources.
5. No cost factor involved with regard to mitigation.	5. Cost factor involved with regard to mitigation and management measures.
6. No fatal flaw in respect of heritage resources.	6. No fatal flaw in respect of heritage resources.

9. BIBLIOGRAPHY

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Fig 1. General view towards the southeast.



Fig 2. Upper grinding stone.



Fig 3. Pottery fragments.



Fig 4. The two graves at the northern end of the demarcated terrain.



Fig 5. Detail of the gravestone of Iliffe Brown.



Fig 6. The Alkmaar Station building.



Fig 7. Vacant Railway house at station.



Fig 8. Graveyard at Alkmaar station.

Table 1.1: Framework for Assessing Environmental Impacts (CULTURAL RESOURCES)

SEVERITY OF IMPACT	RATING
Insignificant / non-harmful	1
Small / potentially harmful	2
Significant / slightly harmful	3
Great / harmful	4
Disastrous / extremely harmful	5

SPATIAL SCOPE OF IMPACT	RATING
Activity specific	1
Area specific	2
Whole project site / local area	3
Regional	4
National	5

DURATION OF IMPACT	RATING
One day to one month	1
One month to one year	2
One year to ten years	3
Life of operation	4
Post closure / permanent	5

FREQUENCY OF ACTIVITY / DURATION OF ASPECT	RATING
Annually or less / low	1
6 monthly / temporary	2
Monthly / infrequent	3
Weekly / life of operation / regularly / likely	4
Daily / permanent / high	5

FREQUENCY OF IMPACT	RATING
Almost never / almost impossible	1
Very seldom / highly unlikely	2
Infrequent / unlikely / seldom	3
Often / regularly / likely / possible	4
Daily / highly likely / definitely	5

CONSEQUENCE

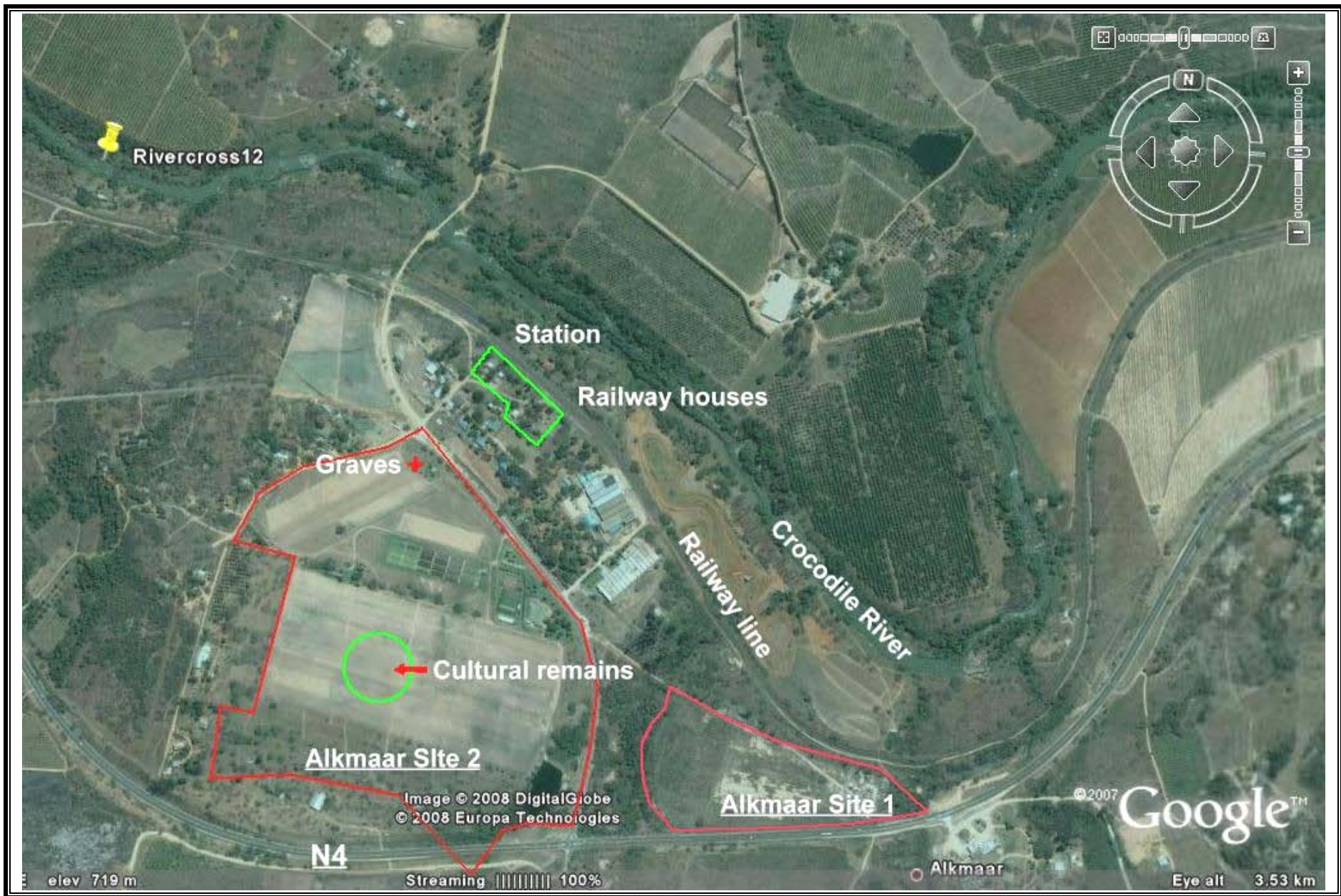
LIKELIHOOD

Table 1.2: Significance Rating Matrix

CONSEQUENCE (Severity + Spatial Scope + Duration)															
LIKELIHOOD (Frequency of activity + Frequency of impact)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

Table 1.3: Positive/Negative Mitigation Ratings

Colour Code	Significance Rating	Value	Negative Impact Management Recommendation	Positive Impact Management Recommendation
	Very high	126-150	Improve current management	Maintain current management
	High	101-125	Improve current management	Maintain current management
	Medium-high	76-100	Improve current management	Maintain current management
	Low-medium	51-75	Maintain current management	Improve current management
	Low	26-50	Maintain current management	Improve current management
	Very low	1-25	Maintain current management	Improve current management



Locality Map.