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**A PHASE I HERITAGE IMPACT ASSESSMENT STUDY FOR THE
PROPOSED SAB GLASS BOTTLE MANUFACTURING PLANT IN
VEREENIGING IN THE GAUTENG PROVINCE**

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ACRONYMS AND ABBREVIATIONS

AIA Archaeological Impact Assessment

ASAPA Association of South African Professional Archaeologists

CRM Cultural Resource Management

EAP Environmental Assessment Practitioner

ECO Environmental Control Officer

EIA Environmental Impact Assessment

EMP Environmental Management Plan

EPS Environmental Performance Standards

EIA Early Iron Age

ESA Early Stone Age

GPS Global Positioning System

HIA Heritage Impact Assessment

IEM Integrated Environmental Management

I & Aps Interested and Affected Parties

LIA Late Iron Age

LSA Late Stone Age

MIA Middle Iron Age

MPRDA Mineral and Petroleum Resources Development Act, 28 of 2002

MSA Middle Stone Age

NEMA National Environmental Management Act, 107 of 1998

NEMBA National Environmental Management: Biodiversity Act, 10 of 2004

NEMAQA National Environmental Management: Air Quality Act, 39 of 2004

NEMWA National Environmental Management: Waste Act, 59 of 2008

NHRA National Heritage Resources Act, 25 of 1999

NWA National Water Act, 36 of 1998

OSHA Occupational Health and Safety Act, 85 of 1993

PHRA Provincial Heritage Resource Agency

RSA Republic of South Africa

SAB South African Breweries (Pty) Ltd

SAHRA South African Heritage Resources Agency

SAHRIS South African Heritage Resources Information System

SLR SLR Consulting (South Africa) (Pty) Ltd

ToR Terms of Reference

TERMINOLOGY

Terms that may be used in this report are briefly outlined below:

- **Conservation:** The act of maintaining all or part of a resource (whether renewable or non-renewable) in its present condition in order to provide for its continued or future use. Conservation includes sustainable use, protection, maintenance, rehabilitation, restoration and enhancement of the natural and cultural environment.
- **Cultural resource management:** A process that consists of a range of interventions and provides a framework for informed and value-based decision-making. It integrates professional, technical and administrative functions and interventions that impact on cultural resources. Activities include planning, policy development, monitoring and assessment, auditing, implementation, maintenance, communication, and many others. All these activities are (or will be) based on sound research.
- **Cultural resources:** A broad, generic term covering any physical, natural and spiritual properties and features adapted, used and created by humans in the past and present. Cultural resources are the result of continuing human cultural activity and embody a range of community values and meanings. These resources are non-renewable and finite. Cultural resources include traditional systems of cultural practice, belief or social interaction. They can be, but are not necessarily identified with defined locations.
- **Heritage resources:** The various natural and cultural assets that collectively form the heritage. These assets are also known as cultural and natural resources. Heritage resources (cultural resources) include all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources, as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

- In-Situ Conservation: The conservation and maintenance of ecosystems, natural habitats and cultural resources in their natural and original surroundings.
- Iron Age: Refers to the last two millennia and 'Early Iron Age' to the first thousand years AD. 'Late Iron Age' refers to the period between the 16th century and the 19th century and can therefore include the Historical Period.
- Maintenance: Keeping something in good health or repair.
- Pre-historical: Refers to the time before any historical documents were written or any written language developed in a particular area or region of the world. The historical period and historical remains refer, for the Project Area, to the first appearance or use of 'modern' Western writing brought to the Eastern Highveld by the first Colonists who settled here from the 1840's onwards.
- Preservation: Conservation activities that consolidate and maintain the existing form, material and integrity of a cultural resource.
- Recent past: Refers to the 20th century. Remains from this period are not necessarily older than sixty years and therefore may not qualify as archaeological or historical remains. Some of these remains, however, may be close to sixty years of age and may, in the near future, qualify as heritage resources.
- Protected area: A geographically defined area designated and managed to achieve specific conservation objectives. Protected areas are dedicated primarily to the protection and enjoyment of natural or cultural heritage, to the maintenance of biodiversity, and to the maintenance of life-support systems. Various types of protected areas occur in South Africa.
- Reconstruction: Re-erecting a structure on its original site using original components.
- Replication: The act or process of reproducing by new construction the exact form and detail of a vanished building, structure, object, or a part thereof, as it appeared at a specific period.

- Restoration: Returning the existing fabric of a place to a known earlier state by removing additions or by reassembling existing components.
- Stone Age: Refers to the prehistoric past, although Late Stone Age people lived in South Africa well into the Historical Period. The Stone Age is divided into an Earlier Stone Age (3 million years to 150 000 thousand years ago) the Middle Stone Age (150 000 years to 40 000 years ago) and the Late Stone Age (40 000 years to 200 years ago).
- Sustainability: The ability of an activity to continue indefinitely, at current and projected levels, without depleting social, financial, physical and other resources required to produce the expected benefits.
- Translocation: Dismantling a structure and re-erecting it on a new site using original components.
- Project Area: refers to the area (footprint) where the developer wants to focus its development activities.
- Phase I studies refer to surveys using various sources of data in order to establish the presence of all possible types and ranges of heritage resources in any given Project Area (excluding paleontological remains as these studies are done by registered and accredited palaeontologists).
- Phase II studies include in-depth cultural heritage studies such as archaeological mapping, excavating and sometimes laboratory work. Phase II work may include the documenting of rock art, engraving or historical sites and dwellings; the sampling of archaeological sites or shipwrecks; extended excavations of archaeological sites; the exhumation of human remains and the relocation of graveyards, etc. Phase II work involves permitting processes, requires the input of different specialists and the co-operation and approval of the SAHRA.

EXECUTIVE SUMMARY

A Phase I Heritage Impact Assessment (HIA) study, as required in terms of Section 38 of the National Heritage Resources Act (No 25 of 1999), was done for the South African Breweries (Pty) Ltd's (SAB) proposed Glass Bottle Manufacturing Plant in Vereeniging in the Gauteng Province. The implementation of the proposed Glass Bottle Manufacturing Plant is hereafter referred to as the SAB Glass Bottle Project, whilst the area to be affected by the proposed glass bottle manufacturing plant is referred to as the Project Area.

The aims with the Phase I HIA study were the following:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999) do occur in the Project Area.
- To establish the significance of the heritage resources in the Project Area and the level of significance of any possible impact on any of these heritage resources.
- To propose mitigation measures for those types and ranges of heritage resources that may be affected by the SAB Glass Bottle Project.

The Phase I HIA study for the proposed SAB Glass Bottle Project did not reveal the presence of any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in the Project Area.

There is unlikely to be any impact on heritage resources and consequently no reason from a heritage point of view why SAB's proposed IGlass Bottle Manufacturing Plant cannot proceed.

General: disclaimer

It is possible that this Phase I HIA study may have missed heritage resources in the Project Area as heritage sites may be covered with grass or vegetation while others may lie below the surface of the earth and may only be exposed once development commences.

It is also possible that heritage resources may simply have been missed as a result of human failure to detect them, although this is considered unlikely.

If any heritage resource of significance is exposed during the construction, operation or closure of the proposed SAB Glass Bottle Project, the South African Heritage Resources

Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

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1 INTRODUCTION

1.1 Background and context

The South African Breweries (Pty) Limited (SAB), with Black owned partner(s), is proposing to develop and operate a majority Black owned glass bottle manufacturing plant on Portion 238 (a portion of Portion 149) of the Farm Leeuwkuil 596 IQ. The property is owned by SAB and borders Lager Avenue, the R59 and R28 roads. The site is located within the Emfuleni Local Municipality in Vereeniging, Gauteng Province (Figures 1 & 2).

In order for the proposed glass bottle manufacturing plant to go ahead, SAB must obtain Environmental Authorisation, a Waste Management Licence and an Atmospheric Emissions Licence. A Scoping and Environmental Impact Assessment (EIA) process, in terms EIA Regulations 2014, is required to inform an Environmental Authorisation and a Waste Management Licence decision from the Gauteng Department of Agriculture and Rural Development in terms of section 24(5) of the National Environmental Management Act (NEMA) (No. 107 of 1998) and the National Environmental Management Waste Act (NEMWA) (No. 59 of 2008) respectively. In addition, an application would have to be made to the Sedibeng District Municipality for an Atmospheric Emissions Licence in terms of the National Environmental Management: Air Quality Act (NEM: AQA) (No. 39 of 2004). SLR Consulting (South Africa) (Pty) Ltd (SLR), an independent firm of environmental consultants, has been appointed to manage the environmental regulatory processes and conduct the public participation process in support of these applications.

1.2 Aims with the report

This study comprises a heritage survey and a heritage impact assessment study according to Section 38 of the National Heritage Resources Act (No 25 of 1999) for the proposed SAB Glass Bottle Project in Vereeniging in the Gauteng Province. The aims with the heritage survey and impact assessment for the project were the following:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999) do occur in the Project Area.

- To establish the significance of the heritage resources in the Project Area and the level of significance of any possible impact on any of these heritage resources.
- To propose mitigation measures for those types and ranges of heritage resources that may be affected by the proposed SAB Glass Bottle Project

1.3 Assumptions and limitations

The findings, observations, conclusions and recommendations reached in this report are based on the author's best scientific and professional knowledge and available information. The author has a good understanding of the types and ranges of heritage resources that occur in the wider region as he was involved with several heritage impact assessment studies in the area during the last fifteen years (see Part 11, 'Bibliography relating to earlier heritage studies').

The report's findings are based on accepted archaeological survey and assessment techniques and methodologies.

The GPS track log is not necessarily a true reflection of all the tracks routes that the surveyor followed as the track logs were registered with a mounted GPS instrument. Pedestrian surveys conducted from the vehicle were not in all instances recorded.

The author preserves the right to modify aspects of the report including the recommendations if and when new information becomes available particularly if this information may have an influence on the report's final results and recommendations.

The heritage survey may have missed heritage resources as heritage sites may be covered with grass or vegetation whilst others may be located below the surface of the earth and may only be exposed once development commences.

It is also possible that heritage resources may simply have been missed as a result of human failure to detect them, although this is considered unlikely.

2 DETAILS OF THE SPECIALIST

Profession: Archaeologist, Museologist (Museum Scientists), Lecturer, Heritage Guide Trainer and Heritage Consultant

Qualifications:

BA (Archaeology, Anthropology and Psychology) (UP, 1976)

BA (Hons) Archaeology (distinction) (UP, 1979)

MA Archaeology (distinction) (UP, 1985)

D Phil Archaeology (UP, 1989)

Post Graduate Diploma in Museology (Museum Sciences) (UP, 1981)

Work experience:

Museum curator and archaeologist for the Rustenburg and Phalaborwa Town Councils (1980-1984)

Head of the Department of Archaeology, National Cultural History Museum in Pretoria (1988-1989)

Lecturer and Senior lecturer Department of Anthropology and Archaeology, University of Pretoria (1990-2003)

Independent Archaeologist and Heritage Consultant (2003-)

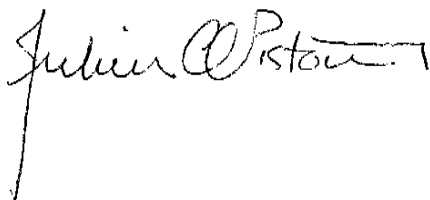
Accreditation: Member of the Association for Southern African Professional Archaeologists. (ASAPA)

Summary: Julius Pistorius is a qualified archaeologist and heritage specialist with extensive experience as a university lecturer, museum scientist, researcher and heritage consultant. His research focussed on the Late Iron Age Tswana and Lowveld-Sotho (particularly the Bamalatji of Phalaborwa). He has published a book on early Tswana settlement in the North-West Province and has completed an unpublished manuscript on the rise of Bamalatji metal workings spheres in Phalaborwa during the last 1 200 years. He has excavated more than twenty LIA settlements in North-West and twelve IA settlements in the Lowveld and has mapped hundreds of stone walled sites in the North-West. He has written a guide for Eskom's field personnel on heritage management. He has published twenty scientific papers in academic journals and several popular articles on archaeology and heritage matters. He collaborated with environmental companies in compiling State of the Environmental Reports for Ekurhuleni, Hartebeespoort and heritage management plans for the Magaliesberg and Waterberg. Since acting as an independent consultant he has done approximately 800 large to small heritage impact assessment reports. He has a longstanding working relationship with Eskom, Rio Tinto (PMC), Rio Tinto (EXP), Impala Platinum, Angloplats (Rustenburg), Lonmin, Sasol, PMC, Foskor, Kudu and Kelgran Granite, Bafokeng Royal Resources, Pilanesberg Platinum Mine (PPM) etc. as well as with several environmental companies.

3 DECLARATION OF INDEPENDENCE

I, Dr Julius CC Pistorius declare the following:

- I act as an independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even, if this result in views and findings that are not favourable for the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialists report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the applications;
- I will comply with the Act, Regulations and other applicable legislation;
- I will consider, to the extent possible, the matters listed in Regulation 13;
- I understand to disclose to the applicant and the competent authority all material information in my possession
- All the particulars furnished by me in this form are true and correct that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority; and
- I realise that a false declaration is offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



20 June 2018

4 LEGAL FRAMEWORK

South Africa's heritage resources ('national estate') are protected by international, national, provincial and local legislation which provides regulations, policies and guidelines for the protection, management, promotion and utilization of heritage resources. South Africa's 'national estate' includes a wide range of various types of heritage resources as outlined in Section 3 of the National Heritage Resources Act (NHRA, Act No 25 of 1999) (see Box 1).

At a national level heritage resources are dealt with by the National Heritage Council Act (Act No 11 of 1999) and the National Heritage Resources Act (NHRA, Act No 25 of 1999). According to the NHRA (Act No 25 of 1999) heritage resources are categorized using a three-tier system, namely Grade I (national), Grade II (provincial) and Grade III (local) heritage resources.

At the provincial level, heritage legislation is implemented by Provincial Heritage Resources Agencies (PHRA's) which apply the National Heritage Resources Act (Act 25 of 1999) together with provincial government guidelines and strategic frameworks. Metropolitan or Municipal (local) policy regarding the protection of cultural heritage resources is also linked to national and provincial acts and is implemented by the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Agencies (PHRA's).

4.1 Legislation relevant to heritage resources

Legislation relevant to South Africa's national estate includes the following:

- National Environmental Management Act (NEMA) Act 107 of 1998
- National Heritage Resources Act (NHRA) Act 25 of 1999
- Development Facilitation Act (DFA) Act 67 of 1995

Box 1: Types and ranges of heritage resources (the national estate) as outlined in Section 3 of the National Heritage Resources Act, 1999 (No 25 of 1999).

The National Heritage Resources Act (Act No 25 of 1999, Art 3) outlines the following types and ranges of heritage resources that qualify as part of the National Estate, namely:

- (a) places, buildings structures and equipment of cultural significance;
- (b) places to which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features of cultural significance;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and palaeontological sites;
- (g) graves and burial grounds including-
 - (i) ancestral graves;
 - (ii) royal graves and graves of traditional leaders;
 - (iii) graves of victims of conflict;(iv) graves of individuals designated by the Minister by notice in the Gazette;
 - (v) historical graves and cemeteries; and
 - (vi) other human remains which are not covered by in terms of the Human Tissues Act, 1983 (Act No 65 of 1983);
- (h) sites of significance relating to the history of slavery in South Africa;
- (i) movable objects, including -
 - (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - (ii) objects to which oral traditions are attached or which are associated with living heritage;
 - (iii) ethnographic art and objects;
 - (iv) military objects;
 - (v) objects of decorative or fine art;
 - (vi) objects of scientific or technological interest; and
 - (vii) books, records, documents, photographs, positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No 43 of 1996).

The National Heritage Resources Act (Act No 25 of 1999, Art 3) also distinguishes nine criteria for places and objects to qualify as 'part of the national estate if they have cultural significance or other special value ...'. These criteria are the following:

- (a) its importance in the community, or pattern of South Africa's history;
- (a) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- (b) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- (c) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- (g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; (h)
- (h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;
- (i) sites of significance relating to the history of slavery in South Africa

4.1.1 NEMA

The NEMA stipulates under Section 2(4)(a) that sustainable development requires the consideration of all relevant factors including (iii) the disturbance of landscapes and sites that constitute the nation's cultural heritage must be avoided, or where it cannot be altogether avoided, is minimised and remedied. Heritage assessments are implemented in terms of the NEMA Section 24 in order to give effect to the general objectives. Procedures considering heritage resource management in terms of the NEMA are summarised under Section 24(4) as amended in 2008. In addition to the NEMA, the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPA) may also be applicable. This act applies to protected areas and world heritage sites, declared as such in terms of the World Heritage Convention Act, 1999 (Act No. 49 of 1999) (WHCA).

4.1.2 NHRA

According to Section 3 of the NHRA (Act No 25 of 1999) the 'national estate' comprises a wide range and various types of heritage resources (see Box 1).

4.1.2.1 Heritage Impact Assessment studies

According to Section 38 of the NHRA a Heritage Impact Assessment (HIA) process must be followed under the following circumstances:

- The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- The construction of a bridge or similar structure exceeding 50m in length
- Any development or activity that will change the character of a site and which exceeds 5 000m² or which involve three or more existing erven or subdivisions thereof
- Re-zoning of a site exceeding 10 000 m²
- Any other category provided for in the regulations of SAHRA, a provincial or local heritage authority or any other legislation such as NEMA, MPRDA, etc.

4.1.2.2 Section 34 (Buildings and structures)

Section 34 of the NHRA provides for general protection of structures older than 60 years. According to Section 34(1) no person may alter (demolish) any structure or part thereof which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

A structure means any building, works, device or any other facility made by people and which is fixed to land and which includes fixtures, fittings and equipment associated with such structures.

Alter means any action which affects the structure, appearance or physical properties of a place or object, whether by way of structural or any other works such as painting, plastering, decorating, etc..

Most importantly, Section 34(1) clearly states that no structure or part thereof may be altered or demolished without a permit issued by the relevant Provincial Heritage Resources Authority (PHRA). These permits will not be granted without a HIA being completed. A destruction permit will thus be required before any removal and/or demolition may take place, unless exempted by the PHRA according to Section 34(2) of the NHRA.

4.1.2.3 Section 35 (Archaeological and palaeontological resources and meteorites)

Section 35 of the NHRA provides for the general protection of archaeological and palaeontological resources, and meteorites. In the event that archaeological resources are discovered during the course of development, Section 38(3) specifically requires that the discovery must immediately be reported to the PHRA, or local authority or museum who must notify the PHRA. Furthermore, no person may without permits issued by the responsible heritage resources authority may:

- destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite

- destroy, damage, excavate, remove from its original position, collect or own any archaeological or paleontological material or object or any meteorite
- trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or paleontological material or object, or any meteorite; or bring onto or use at an archaeological or paleontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and paleontological material or objects, or use such equipment for the recovery of meteorites
- alter or demolish any structure or part of a structure which is older than 60 years.

Heritage resources may only be disturbed or moved by an archaeologist after being issued with a permit received from the South African Heritage Resources Agency (SAHRA). In order to demolish heritage resources the developer has to acquire a destruction permit by from SAHRA.

4.1.2.4 Section 36 (Burial grounds and graves)

Section 36 of the NHRA allows for the general protection of burial grounds and graves. Should burial grounds or graves be found during the course of development, Section 36(6) stipulates that such activities must immediately cease and the discovery reported to the responsible heritage resources authority and the South African Police Service (SAPS). Section 36 also stipulates that no person without a permit issued by the relevant heritage resources authority may:

- a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves
- b) destroy, damage, alter, exhume or 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
- c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

Section 36 of the NHRA divides graves and burial grounds into the following categories:

- a. ancestral graves
- b. royal graves and graves of traditional leaders
- c. graves of victims of conflict
- d. graves designated by the Minister
- e. historical graves and cemeteries
- f. human remains

Human remains less than 60 years old are subject to provisions of the National Health Act, 2003 (Act No 61 of 2003), Ordinance 12 of 1980 (Exhumation Ordinance) and Ordinance No 7 of 1925 (Graves and dead bodies Ordinance, repealed by Mpumalanga). Municipal bylaws with regard to graves and graveyards may differ. Professionals involved with the exhumation and relocation of graves and graveyards must establish whether such bylaws exist and must adhere to these laws.

Unidentified graves are handled as if they are older than 60 years until proven otherwise.

Permission for the exhumation and relocation of graves older than sixty years must also be gained from descendants of the deceased (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and local police. Furthermore, permission must also be gained from the various landowners (i.e. where the graves are located and where they are to be relocated) before exhumation can take place.

Human remains can only be handled by a registered undertaker or an institution declared under the Human Tissues Act (Act 65 of 1983 as amended).

4.1.2.5 Section 37 (Public monuments and memorials)

Section 37 makes provision for the protection of all public monuments and memorials in the same manner as places which are entered in a heritage register referred to in Section 30 of the NHRA.

4.1.2.6 Section 38 (HRM)

Section 38 (8): The provisions of this section do not apply to a development as described in Section 38 (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation. Section 38(8) ensures cooperative governance between all responsible authorities through ensuring that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of Subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.

The Listed Activities in terms of the Government Notice Regulations (GNRs) stipulated under NEMA for which Environmental Authorisation (EA) will be applied for will trigger a HIA as contemplated in Section 38(1) above as follows:

4.1.3 EIA Regulation Appendix 6 requirements

EIA Regulations (2014) - Appendix 6	Relevant section in report
Details of the specialist who prepared the report	Dr Julius CC Pistorius
The expertise of that person to compile a specialist report including a curriculum vitae	Part 2. Details of the specialist
A declaration that the person is independent in a form as may be specified by the competent authority	Part 3. Declaration of independence
An indication of the scope of, and the purpose for which, the report was prepared	Part 1. Introduction
The date and season of the site investigation and the relevance of the season to the outcome of the assessment	Part 7. Approach and Methodology Part 8.1. Field survey
A description of the methodology adopted in preparing the report or carrying out the specialised process	Part 7. Approach and Methodology
The specific identified sensitivity of the site related to the activity and its associated structures and infrastructure	Part 8.1 The field survey
An identification of any areas to be avoided, including buffers	Part 8.2 Summary
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 3
A description of any assumptions made and any uncertainties or gaps in knowledge;	Part 1.3. Assumptions and limitations
A description of the findings and potential implications of such findings on the impact of	Part 8.2 Summary Part 9. Conclusion and

EIA Regulations (2014) - Appendix 6	Relevant section in report
the proposed activity, including identified alternatives, on the environment	recommendations
Any mitigation measures for inclusion in the EMPr	Part 8.2. Summary Part 9. Conclusion and recommendations
Any conditions for inclusion in the environmental authorisation	Part 9. Conclusion and recommendations
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Part 9. Conclusion and recommendations
A reasoned opinion as to whether the proposed activity or portions thereof should be authorised and	Part 9. Conclusion and recommendations
If the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Part 9. Conclusion and recommendations
A description of any consultation process that was undertaken during the course of carrying out the study	Part 7.4 Consultation process undertaken and comments received from stakeholders
A summary and copies if any comments that were received during any consultation process	Part 7.4 Consultation process undertaken and comments received from stakeholders
Any other information requested by the competent authority.	None

5 THE SAB GLASS BOTTLE MANUFACTURING PLANT PROJECT

5.1 Location

The SAB Glass Bottle Project will be located on Portion 238 of the farm Leeuwkuil 596IQ on Leeuwkuil Extension 5 within an industrial area in the Emfuleni Local Municipality in Vereeniging in the Gauteng Province. The factory site is surrounded by Steelpark and other developments including industrial sites, residential areas such as Leeuhof, Sharpeville, Sebokeng and Duncanville and still further to the north and south large industrial complexes such as Mittal Steel on the border between Vanderbijlpark and Vereeniging and Anglo Coals' large open cast and underground coal mining activities on the northern banks of the Vaal River (Figures 1 & 2).

5.2 The nature of the project area

The larger area surrounding the Leeuwkuil Extension 5 site has been subjected to development activities over several decades. Coal deposits were already exploited at the end of the 19th century on Leeuwkuil 596IQ, north and south of the Vaal River. These and other developments, such as the establishment of the massive Makau plantations at the turn of the 19th century by August Pistorius followed by the Iscor Flat Steel Producers Plant in the second half of the 20th century on Vereeniging's border, have altered this part of the northern Highveld to such an extent that very little of its original character beyond the Vaal River (Trans Vaal Province) has remained intact.

5.3 The nature of SAB's Glass Bottle Manufacturing Plant project

SAB utilises a large volume of glass bottles for the beer they produce and distribute. SAB, with Black owned partner(s), is intending to enter the glass bottle manufacturing industry in order to transform its glass bottle procurement spend, while at the same time providing an opportunity for new Black economic entrant(s).

The annual production target would be approximately 290 000 tons of glass bottles. Glass is a non-crystalline amorphous solid made of the fusion of a diverse range of

non-organic oxides found in sand, soda ash, limestone and other raw materials. Recycled glass, known as cullet, would also be utilised as a raw material.



Figure 1- Regional location for new industrial developments including the proposed SAB Project (red demarcated area) on the farm Leeuwkuil 596IQ in Vereeniging in the Gauteng Province (above).

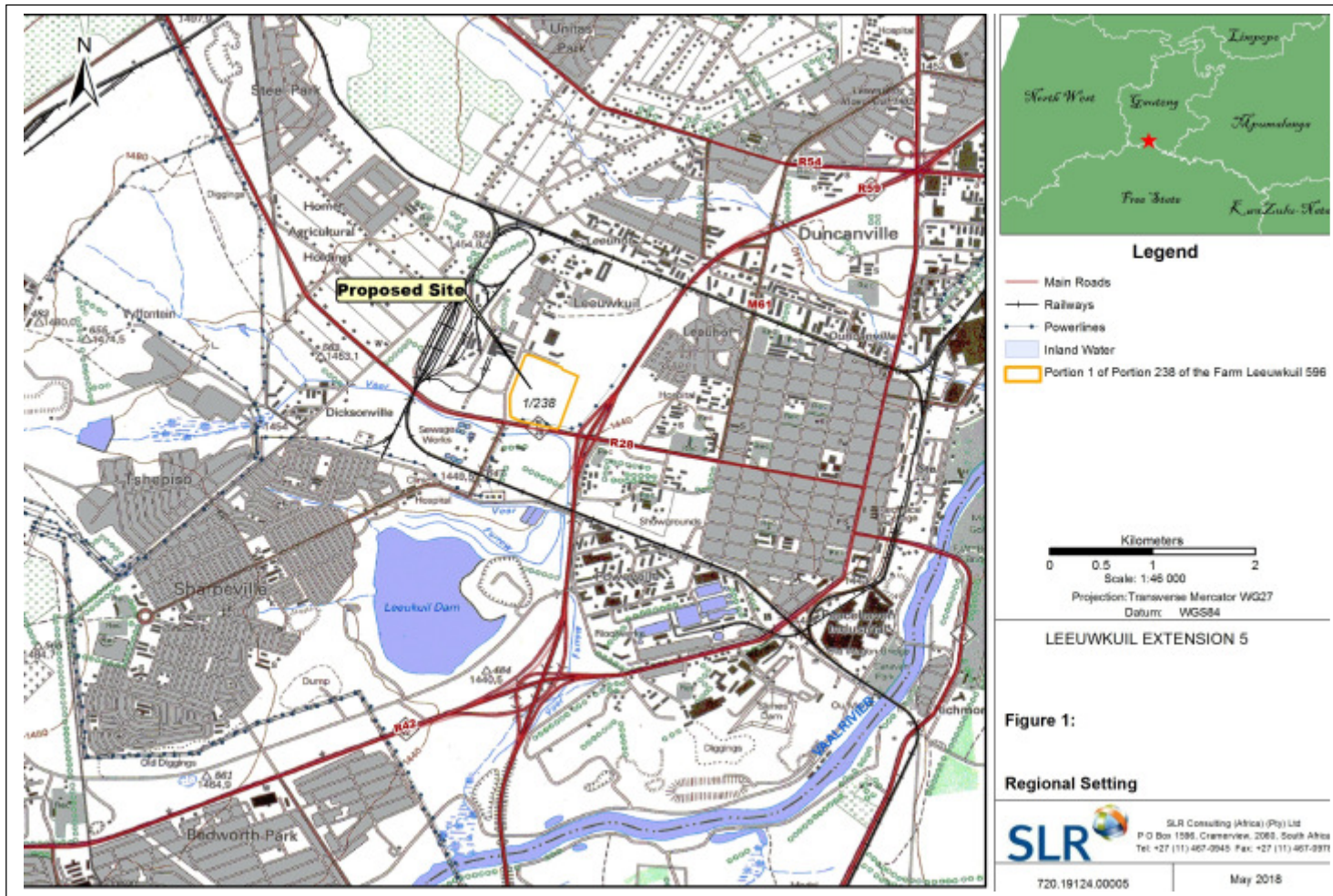


Figure 2- Local setting for the proposed SAB Glass Bottle Project on the farm Leeuwkuil 596IQ in Vereeniging, Gauteng Province (above).

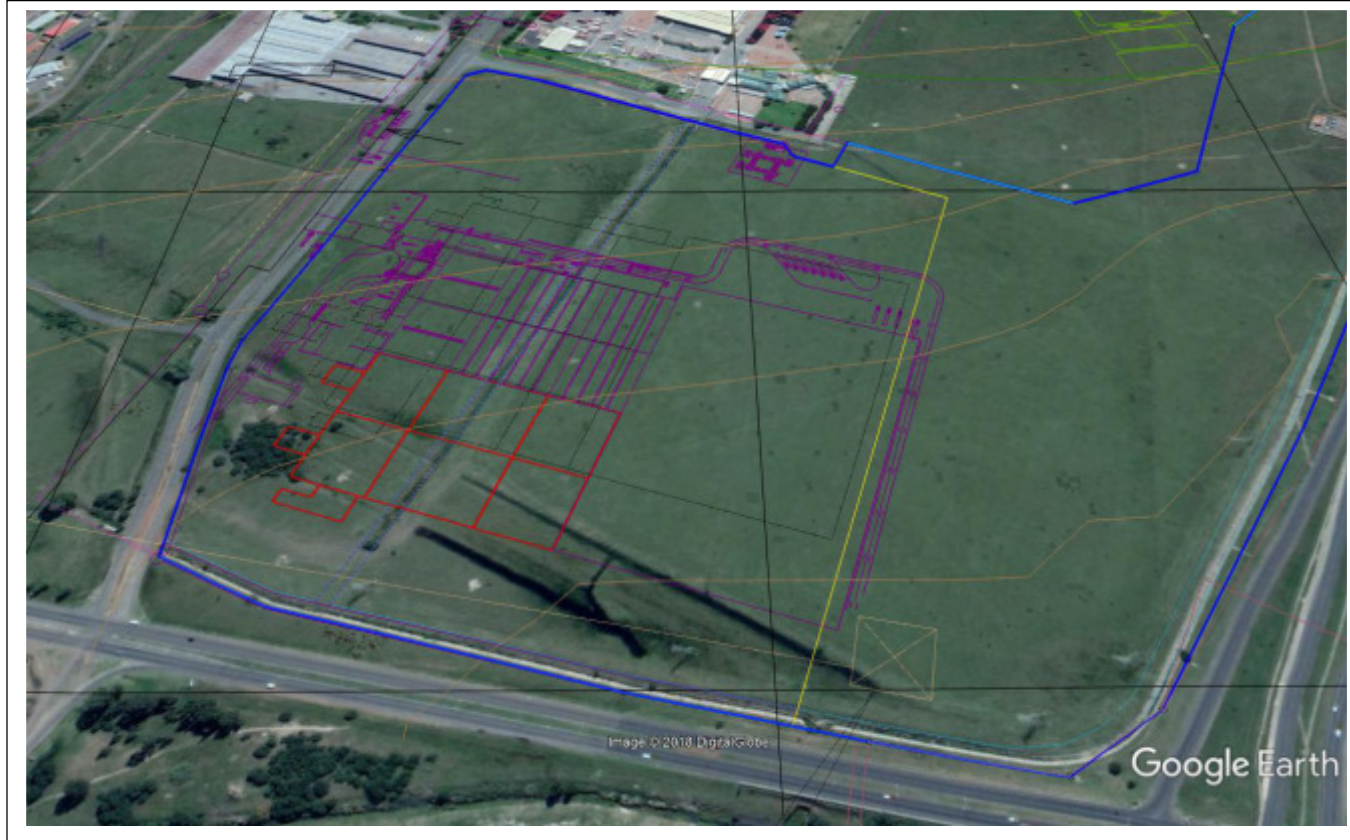


Figure 3- Footprint for the proposed SAB Glass Bottle Project on Portion 238 of the farm Leeuwkuil 596IQ in Vereeniging (above).

Conceptual process flow

The proposed glass bottle manufacturing plant would produce green and amber coloured bottles. The facility would comprise a batch plant, main manufacturing building and warehouse.

Batch plant

The batch plant building would have a footprint of approximately 2 100 m² and would be used to receive, store and mix the raw materials required in glass manufacture. The key raw materials are sand, soda ash and limestone, with a number of other raw materials also required. These would be delivered by truck. The raw materials are stored in a variety of silos, hoppers and bunds, before being mixed according to specific recipes for each glass product. Once mixed, the raw material batches would be conveyed across to the main manufacturing building.

Main manufacturing building

The main manufacturing building would comprise a single large covered hall, approximately 45 000 m² in extent. The building consists of three areas (named the Furnace, Hot End and Cold End areas) in which, the glass is melted, formed into bottles and inspected for quality and defects.

Furnaces

The two furnaces at the proposed plant would utilise natural gas or Liquid Petroleum Gas (LPG) as a heat source. The facility would have a green glass furnace with the capacity to melt 390 metric tons per day (mtpd). This furnace would feed to three bottle manufacturing lines. The amber glass furnace, with a capacity to melt 530 mtpd, would feed to four bottle manufacturing lines. In the furnace the raw materials would be melted into glass at temperatures of up to 1 530°C and degassed. Emissions from the furnaces would be cleaned in order to comply with the minimum emissions standards and released via a stack.



Figure 4- Developmental components for the proposed SAB Glass Bottle Project (above).

Hot end

In the Hot End the molten glass would be channelled to a series of glass forming machines that cool and meter the glass before using mechanical and pneumatic means to create the specific glass containers. The bottles would be hot end coated to enhance surface resistance and cooled in an annealing oven in a controlled manner, so as to avoid internal stresses.

Cold End

At the Cold End the bottles would be further coated and then subject to inspection for defects by high precision equipment that measure capacity, dimensions, impact, pressure resistance and other tests. Bottles that do not meet specifications would be crushed and conveyed back to the furnaces where the cullet is re-used in the raw material mix.

Completed bottles would be packaged by automated palletizers and moved to the warehouse for storage and distribution.

Warehouse

The warehouse building would have an area of approximately 40 000 m². Storage of the bottles would be in plastic wrapped, bulk pallets up to three pallets high. Pallets would be mobilized using single or dual fork lifts and loaded onto trucks for distribution to customers.

Support services

Support services associated with the proposed project would include an office building, canteen and gate house. The facility would also have a gas station to regulate gas supply, a diesel fuel oil storage facility as a back-up furnace fuel, diesel generators for emergency electricity supply and emergency water storage.

6 CONTEXTUALISING THE PROJECT AREA

In 1879 the pioneer geologist George W. Stow, who undertook geological explorations for the Orange Free State, discovered coal fields north of the Vaal River on the farm Leeukuil. This led to the establishment of the Zuid-Afrikaansche en Oranje Vrystaatsche Steenkool en Mineralen Mijn Vereeniging. The owners of this company were Samuel Marks and Isaac Lewis. The company commissioned Stow to purchase and to develop all the coal-bearing farms in the area. Mining began in 1879 and in 1882 the company applied to establish a township on Leeukuil. The town was named Vereeniging. The name was derived from the last word in the company's name. A bust of Stow can be seen in the Vereeniging library and a memorial in the Civic Center.

Since the late 19th century, quarrying operations in Vereeniging have revealed some fossiliferous sandstone outcrops in the area. Dr T. N. Leslie was one of the first to discover these plant fossils. The discoveries were made at places such as Leeukuil and the Central Colliery Mine as well as at other localities close to the Vaal River. Specimens are displayed at the Bernard Price Institute for Palaeontological Research (Leslie Collection), the Geological Museum in Johannesburg and in the Vereeniging Museum. The most common genera present are *Noeggerathiopsis*, *Gangamopteris* and *Glassopteris*.

The quarrying operations originally undertaken to mine for coal not only revealed the presence of plant fossils in these deposits but also the presence of numerous Stone Age sites along earlier or ancient banks of the Vaal River and the Klip River. Early and Middle Stone Age sites were discovered at several localities, such as Klipplaatdrift, the Klip River Quarry site, the Duncanville Archaeological Reserve (also known as the Van Riet Louw Archaeological Reserve). These sites contain thousands of stone tools.

A rock engraving site that was declared a national monument was also discovered at Redan. The Redan rock engraving site contains as many as 244 rock engravings done on an outcrop of rocks. Some of the engravings depict animals, while others

illustrate San (Bushmen) weapons. A large number of the engravings are geometric designs, such as circles and other symbolic figures.

The first railway line over the Vaal River linking the Orange Free State Republic and the Zuid-Afrikaanse or Transvaal Republic was officially opened on 21 May 1892 by President Reitz of the OFS and President Kruger of the ZAR. Pillars of the bridge carrying the old railway line can still be seen in the Vaal River.

Vereeniging achieved world prominence at the end of the Anglo-Boer war when the peace negotiations were held in Vereeniging from 15 to 31 May 1902. The site is indicated today by a sawn-off tree trunk near the Vereeniging Refractories' Recreation Hall.

The Peace of Vereeniging Monument was erected to commemorate the Peace of Vereeniging that ended the Anglo-Boer War in 1902. (The peace accord was signed in Pretoria). The following inscription is engraved on the monument: 'Gewond maar onoorwonne' ('Wounded but not vanquished').

A well-preserved British blockhouse still testifies to the Anglo-Boer War (1899-1902). It is located at Witkop, ten kilometres to the north of Meyerton on the main road to Johannesburg.

The Vereeniging concentration camp cemetery is located in the old municipal cemetery, off Beaconsfield Avenue near the abattoir. A garden of remembrance also exists on the Makauvlei golf course, near the clubhouse. This feature was built to commemorate British soldiers who died during the Anglo-Boer War near the railway line that crosses the Vaal River.

The small Voortrekker Monument celebrating the 100 year anniversary of the Ossewatrek was erected in 1938 in the middle of Voortrekker road in Vereeniging, between Marklaan and Merrimanlaan.

Several coal mines were established on both sides of the Vaal River, such as the Cornelia and Springfield coal mines. A memorial for five miners who died in South

Africa's first mining disaster in 1905 was erected at the Vereeniging cemetery. The National Monuments Council has unveiled a bronze plaque to commemorate the 100 year anniversary of the discovery of coal at Dickinson Park.

The extensive Makauvlei plantations near the town of Vereeniging consist of pines, oaks and apple trees and were initially established by August Pistorius. One of the first apple processing factories in South Africa was established at Makauvlei. Since 1912 a number of important industries have been established in the municipal industrial township known as Duncanville. These industries are involved in the manufacture of a wide range of iron and steel products, steel tubes, steel wire, bolts and nuts, electric cables, glass, bricks and tiles, etc.

The townships in Vereeniging include Sharpeville. There are at least two cemeteries, namely the Vuka cemetery in Dabula Street and the Pelindaba cemetery on the corner of Rafuba and Tessum Mareka Streets, in Sharpeville in Vereeniging. These graves are classified as 'struggle graves'. These cemeteries are associated with the Sharpeville massacre which occurred on 21 March 1960.

7 APPROACH AND METHODOLOGY

This heritage survey and impact assessment study was conducted by means of the following:

7.1 Field survey

A field survey was conducted on 11 December 2017. Archaeological visibility was good as the Gauteng summer rain season was not yet in full swing in this part of the Gauteng Province whilst the Project Area was covered with a short grass cover.

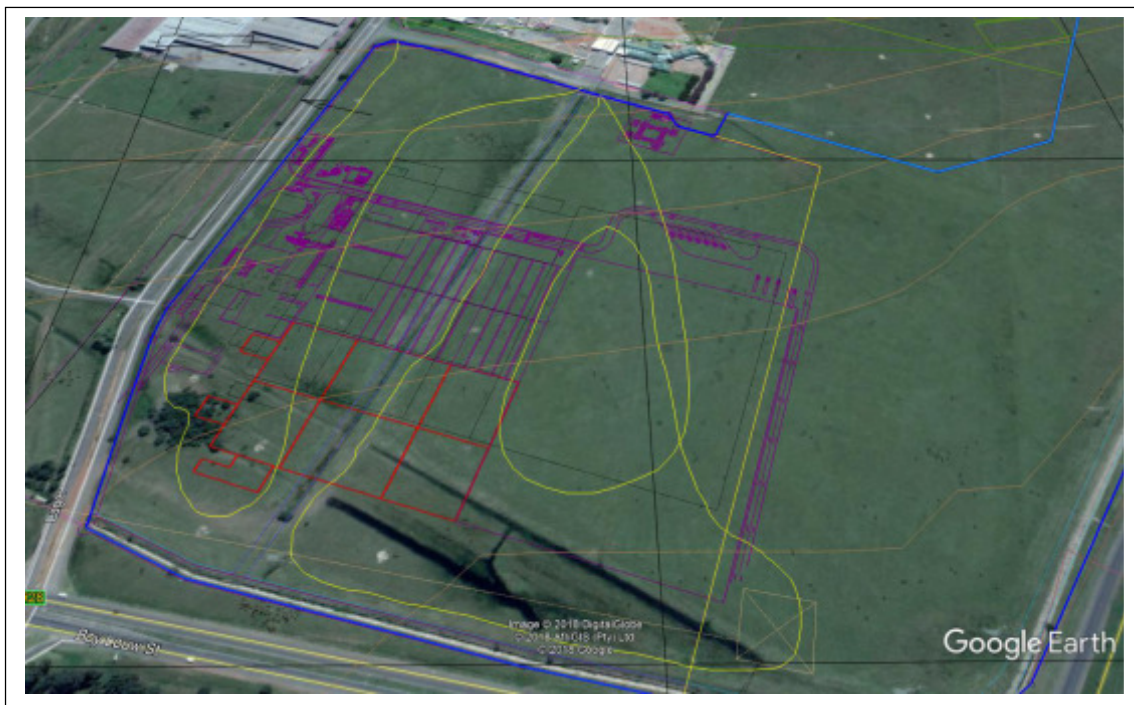


Figure 5- GPS track log which was registered with a mounted GPS instrument (yellow outline). Pedestrian surveys were conducted from the main pathway. Not all tracks were recorded (above).

All coordinates for heritage resources recorded were done with a Garmin Etrex hand set Global Positioning System (instrument) with an accuracy of < 15m.

Google imagery was used as a supplementary source (*prior* to and after fieldwork) to establish the possible presence of heritage resources such as abandoned or demolished buildings in the Project Area.

The nature and character of the Project Area is further illuminated with descriptions and photographs in Part 8.1 'The field survey'.

7.2 Databases, literature survey and maps

Databases kept and maintained at institutions such as the PHRA, the Archaeological Data Recording Centre at the National Flagship Institute (Museum Africa) in Pretoria and SAHRA's national archive (SAHRIS) were consulted by the author to determine whether any heritage resources of significance had been identified during earlier heritage surveys in or near the Project Area. Nevertheless heritage resources may have been missed as a result of various factors (Part 1.3, 'Assumptions and limitations').

7.3 Consultation process undertaken and comments received from stakeholders

No specific consultation process was undertaken for the purposes of the heritage study as the stakeholder consultation for the project is being done by SLR Consulting (South Africa) (Pty) Ltd.

7.4 Significance ratings

The significance of possible impacts on the heritage resources was determined using a ranking scale based on the following:

- Occurrence
 - Probability of occurrence (how likely is it that the impact may/will occur?), and
 - Duration of occurrence (how long may/will it last?)
- Severity
 - Magnitude (severity) of impact (will the impact be of high, moderate or low severity?), and
 - Scale/extent of impact (will the impact affect the national, regional or local environment, or only that of the site?).

Each of these factors has been assessed for each potential impact using the following ranking scales:

Probability: 5 – Definite/don't know 4 – Highly probable 3 – Medium probability 2 – Low probability 1 – Improbable 0 – None	Duration: 5 – Permanent 4 – Long-term (ceases with the operational life) 3 - Medium-term (5-15 years) 2 - Short-term (0-5 years) 1 – Immediate
Scale: 5 – International 4 – National 3 – Regional 2 – Local 1 – Site only 0 – None	Magnitude: 10 - Very high/don't know 8 – High 6 – Moderate 4 – Low 2 – Minor

The heritage significance of each potential impact was assessed using the following formula:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$

The maximum value is 100 Significance Points (SP). Potential environmental impacts are rated as very high, high, moderate, low or very low significance on the following basis:

- More than 80 significance points indicates VERY HIGH heritage significance.
- Between 60 and 80 significance points indicates HIGH heritage significance.
- Between 40 and 60 significance points indicates MODERATE heritage significance.
- Between 20 and 40 significance points indicates LOW heritage significance.
- Less than 20 significance points indicates VERY LOW heritage significance.

8 THE PHASE I HERITAGE SURVEY AND ASSESSMENT

8.1 The field survey

The Project Area on Portion 238 of the farm Leeuwkuil 596 IQ is wedged between the Boy Louw freeway (R 28) and an existing industrial plant (SAB Vereeniging Depot). The Project Area comprises a homogenous, flat piece of land covered with grass veld. The Project Area and its surroundings are utilized by local herdsman to graze their cattle herds.

Disturbances of various kinds occurred on the Project Area and its surroundings during the more recent past. These may have included the development of the existing industrial infrastructure and the Sybrand van Niekerk Highway along eastern border. The Project Area is bisected by a prominent man-made, storm water channel.



Figure 6–The Project Area’s southern edge near the Boy Louw freeway reveals its homogenous, flat appearance and the presence of a short grass cover (above).



Figures 6–The Project Area’s main use currently is for the grazing of cattle by local herdsmen (above).



Figure 7 – Part of a prominent channel that bisects the Project Area and stand of exotic trees near the western boundary of the Project Area (above).



Figure 8– Short grass cover and flat outstretched part of Project Area to the south of a prominent channel running across the veld (above).

8.2 Summary

The Phase I HIA study for the proposed SAB Glass Bottle Manufacturing Plant did not reveal the presence of any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in the Project Area.


As a result it is considered unlikely that the development or operation of the SAB Glass Bottle Project would have any impact on a heritage resource. There is consequently no reason from a heritage point of view why the proposed SAB Glass Bottle Project cannot proceed.

9 CONCLUSION AND RECOMMENDATION

The heritage survey revealed no heritage resources of significance in the SAB Glass Bottle Project Area. It is highly unlikely that any heritage resources would have an influence or bearing on the proposed industrial development.

An impact might occur if heritage resources with outstanding significance, missed during the survey, are exposed as a result of excavations when the site is cleared or excavated. However, mitigation and management measures are also available should any heritage resources be exposed during the development project.

The location of the SAB Glass Bottle Project, within an existing industrial hub together with factors such as the general characteristics of the Project Area; the presence of an established SAB Depot; the availability of mitigation and management measures should heritage resources be exposed during development and the critical need for economic development in the Vaal Triangle are adequate reasons to proceed with the project.



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