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**A PHASE I HERITAGE IMPACT ASSESSMENT STUDY FOR THE  
PROPOSED EXPANSION OF ENVIROSERV'S EXISTING  
CHLOORKOP LANDFILL SITE (CLS) ONTO ADJACENT PROPERTIES  
IN MIDRAND, 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

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

SAHRA South African Heritage Resources Agency

SAHRIS South African Heritage Resources Information System

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 16<sup>th</sup> century and the 19<sup>th</sup> 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 20<sup>th</sup> 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 proposed expansion of EnviroServ's Chloorkop Landfill Site (CLS) Project in Midrand in the Gauteng Province. The implementation of the proposed Chloorkop Landfill Site Project is hereafter referred to as the Chloorkop Landfill Site Project whilst the area to be affected by the proposed development 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 proposed Chloorkop Landfill Site.

The Phase I HIA study for the proposed expansion of the Chloorkop Landfill Site 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.

As a result it is considered unlikely that the development or operation of the Chloorkop Landfill Site would have any impact on a heritage resource. There is consequently no reason from a heritage point of view why the proposed Chloorkop Landfill Site Project cannot proceed if the recommended chance find procures are implemented should any chance finds of heritage resources occur. This applies to implementing only Phase 1a (Erf 335) or Phase 1b (Erf 334) or both phases comprising Erf 335 and Erf 334.

The location of the Chloorkop Landfill Site Project within an existing industrial hub together with factors such as the general characteristics of the Project Area, the critical need for economic development in the country and recommended mitigation and management measures should heritage resources be exposed during the construction, operation or closure of the Chloorkop Landfill Site Project are adequate reasons to proceed with the project.

General: disclaimer

It is possible that this Phase I HIA study may have missed heritage resources in the Project Area as patches with Blue Gum trees and clumps of trees occur in particularly the most northern part of the site which may hide heritage resources such as informal, undecorated and abandoned graves whilst graves or heritage resources 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.

If any heritage resources of significance is exposed during the construction, operation or closure of the proposed expansion of the Chloorkop Landfill Site 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 notify 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**

EnviroServ Waste Management (Pty) Ltd own and operate several landfill sites for the disposal of waste. In Midrand, their Chloorkop Landfill Site accepts municipal solid waste from the City of Johannesburg and the Ekurhuleni Metropolitan Municipality. The Chloorkop Landfill Site is nearing airspace capacity and will not be able to receive waste once full. Alternative airspace in the Midrand region is limited. Given the current and future waste generation potential of the Midrand region, there is an ongoing need for waste disposal services, even with growing success of the levels of waste diversion.

EnviroServ is proposing to expand the Chloorkop Landfill Site onto adjacent properties. The targeted properties, north of the site, are Erf 334 and 335 of Chloorkop Extension 6, which are approximately 14 ha in extent. EnviroServ is in engagements with the property owner.

## **1.2 Aims with the report**

This study comprises an archaeological and heritage survey and impact assessment study according to Section 38 of the National Heritage Resources Act (No 25 of 1999) for EnviroServ's proposed expansion of its existing Chloorkop Landfill Site in Midrand 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 expansion of the Chloorkop Landfill Site.

### **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, available information and his ability to keep up with the physical and other comprehensive challenges that the project commanded. 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.

## **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-)

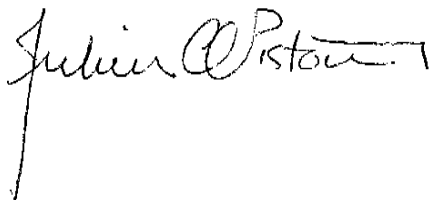
**Accreditation:** Member of the Association for Southern African Professional Archaeologists. (ASAPA)

**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.



**1 April 2019**

## **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
- Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
- 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 MPRDA**

The MPRDA stipulates under Section 5(4) no person may prospect for or remove, mine, conduct technical co-operation operations, reconnaissance operations, explore for and produce any mineral or petroleum or commence with any work incidental thereto on any area without (a) an approved environmental management programme or approved environmental management plan, as the case may be.

#### **4.1.3 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).

##### **4.1.3.1 Heritage Impact Assessment studies**

According to Section 38 of the National Heritage Resources Act (Act No 25 of 1999) 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 000m<sup>2</sup> or which involve three or more existing erven or subdivisions thereof
- Re-zoning of a site exceeding 10 000 m<sup>2</sup>
- 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.

#### **4.1.3.2 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.

#### **4.1.3.3 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.

#### **4.1.3.4 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).

#### **4.1.3.5 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.

#### **4.1.3.6 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. Most of the Listed Activities in terms of the Government Notice Regulations (GNRs) stipulated under NEMA for which Environmental Authorisation (EA) will be applied for will also trigger a HIA as contemplated in Section 38(1) above.

#### 4.4.4 NEMA Appendix 6 requirements

NEMA 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

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 CHLOOKOP LANDFILL EXPANSION PROJECT**

### **5.1 Location**

EnviroServ's existing Chlookop Landfill Site is located on Portion 63 of Klipfontein 12-IR, Chlookop in the Johannesburg Metropolitan Municipality in Midrand in the Gauteng Province. The proposed expansion of the Chlookop Landfill Site will occur on two targeted properties, north of the existing site, namely Erf 334 and 335 of Chlookop Extension 6. The existing Chlookop Landfill Site is bordered on the west by the suburb of Klipfontein, the Chlookop industrial area comprising a wide array of industries and factories to the south and extensive mining surface activities to the east (Figures 1 and 2).

### **5.2 The nature of the CLS Project Area**

The Project Area is largely covered with the existing Chlookop Landfill Site which is nearing its airspace capacity. Along its northern perimeter several dams have been established. The expansion of the Chlookop Landfill Site will take place on Erf 334 directly bordering the CLS along its northern perimeter and still further north across Anker Street on Erf 335. Both these erven have been intensely disturbed in the past as a result of various activities which have occurred on the properties and which are still taking place.

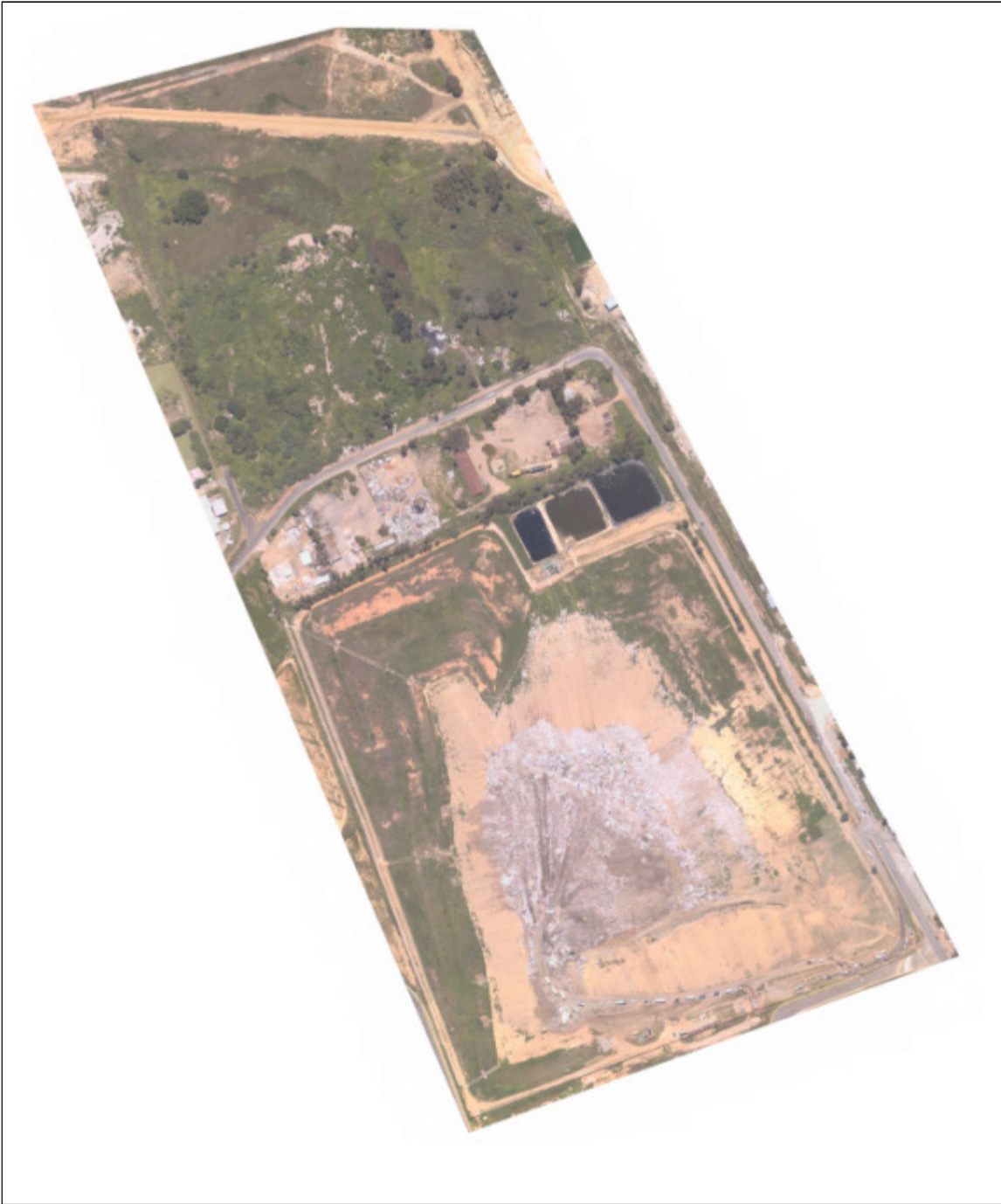
A limited number of structures with no heritage significance occur on Erf 334 in the northern part of the Project Area. No structures were noted on Erf 335.

The Project Area has been altered to such an extent by development activities in the past that very little of its original character has remained intact. It can therefore be classified as a brown field's area.





**Figure 1- Regional location for EnviroServ’s existing Chloorkop Landfill Site (demarcated in red) in Midrand in the Gauteng Province (above).**



**Figure 2- Local setting for the proposed expansion of the existing Chloorkop Landfill Site in Midrand in the Gauteng Province (above).**

### **5.3 The nature of the proposed expansion of the CLF Site Project**

EnviroServ own the Chloorkop Landfill Site (CLS) and operate it in terms of a waste management license (Ref: 16/2/7/A230/D17/Z1). Municipal solid waste is received from the Midrand area, including the City of Johannesburg and the Ekurhuleni Metropolitan Municipality. The CLS is located in the Chloorkop Industrial area on Portion 63 of Klipfontein 12-IR and is accessed from Marsala Road.

The CLS has been developed over the past two decades with six engineered waste disposal cells that form the waste body. The waste body covers an area of approximately 23.2 ha. In 2016 GDARD granted approval for the permitted height of the waste body to be a maximum of 25 m above ground level.

The waste body at the CLS has finite airspace, defined by the permitted footprint, height and design parameters. The CLS will not be able to receive waste once it reaches airspace capacity.

Given the current and future waste generation potential of the Midrand region, there is an ongoing need for waste disposal services, even with growing levels of waste diversion. Alternative airspace in the Midrand region is limited. EnviroServ is proposing to expand the CLS in order to provide additional airspace for ongoing disposal of municipal solid waste.

The proposal is to expand the Chloorkop Landfill Site onto adjacent properties. The targeted properties, north of the site, are Erf 334 (Northern Extension Area 1A) and 335 (Northern Extension Area 1 B) of Chloorkop Extension 6, which are approximately 14 ha in extent. EnviroServ is in engagements with the property owner.

The concept is to establish engineered, Class B waste disposal cells on the target properties for ongoing disposal of municipal solid waste. The additional waste disposal cells would join with the current CLS waste body. The facility will include a small Material Recovery Facility for the separation of clean recyclables from the

waste. Supporting infrastructure would be integrated with the CLS and/or redeveloped as appropriate.

Anker Street separates part of the extension area from the CLS and thus a phased approach is likely. The first phase would entail the development and use of waste disposal cells between the CLS and Anker Street. The second phase would involve the development and use of waste disposal cells on the northerly portion of the site, connecting with the CLS and the first phase. The second phase would only proceed if Anker Street had been relocated or closed (subject to municipal engagement and approvals). The process to develop detailed designs for the waste disposal cells has been initiated.

### **Support Services**

The primary support services and infrastructure associated with the proposed expansion of the CLS include the site entrance and access controls, weigh bridge, leachate and storm water management and landfill gas management. The process to develop detailed designs for the supporting infrastructure has been initiated.

Access to the facility would be via Marsala Road, off the M38. Potable water and electricity would be sourced from the Ekurhuleni Metropolitan Municipality via existing connections. Effluent from the site will be disposed to the municipal sewage system.

## 6 CONTEXTUALISING THE PROJECT AREA

Very little is known about the earliest human occupation of the Midrand area, except for the odd reporting of a stone tool or two which are found here and there near limited rocky outcrops in this area along the northern tip of the southern Highveld. However, no substantial number of Stone Age sites from any period of the Stone Age is known to exist in this area, primarily as a result of a lack of research, general ignorance amongst the layman in recognising stone tools but probably due to the fact that the area was not suitable for human habitation during the Iron Age and probably part of the Stone Age as well.

However, it is possible that the first humans in Midrand may have been preceded by *Homo Erectus* who roamed the area during the Acheulian period of the Early Stone Age, 500 000 years ago. *Homo Erectus* spread widely across Africa and the world departing from its original preference of forested habitational zones. The forbearer of *Homo Erectus*, *Australopithecus*, considered to be the earliest ancestor of humans, lived in the Blaaubank Valley around Krugersdorp in Gauteng (today the Cradle of Humankind – a World Heritage Site) several million years ago (Deacon and Deacon 1999).

During the Middle Stone Age, 200 000 years ago, modern man or *homo sapiens* had emerged, manufacturing a wider range of tools with technologies more advanced than those from earlier periods. This enabled skilled hunter-gatherer bands to adapt to different environments. From this time onwards, rock shelters and caves were used for occupation and reoccupation over very long periods of time. Although no caves occur in the Midrand area it is most likely that MSA tools may still be found across this piece of the northern Highveld (Deacon and Deacon 1999).

The Late Stone Age, considered to have started some 20 000 years ago, is associated with the predecessors of the San and Khoi Khoi. San hunter-gatherer bands with their small (microlithic) stone tools may have lived in the Midrand area as a magnificent engraving site near Duncanville attest to their presence in Vereeniging, south but close to Midrand. Stone Age hunter-gatherers lived well into the 19<sup>th</sup>

century elsewhere in South Africa but were probably not present in substantial numbers when the first Colonists crossed the Vaal River during the early part of the 19<sup>th</sup> century (Deacon and Deacon 1999).

A considerable number of Late Iron Age stone walled sites dating from the 18<sup>th</sup> century and from the 19<sup>th</sup> century, some may have been occupied as early as the 16<sup>th</sup> century, occur along and on top of the rocky ridges of the Klipriviersberg and further east towards Alberton and Heidelberg. These settlements and features in these sites, such as huts, were built with dry stone, reed and clay available from the mountain and the Kliprivier (Mason 1962, 1986).

These stone walled settlements are both dispersed and concentrated in clusters of sites. A site consists of a circular or elliptical outer wall that is composed of a number of scalloped walls facing inwards towards one or more enclosures. Whilst the outer scalloped walls served as dwelling quarters for various family groups, cattle, sheep and goat were stock in the centrally located enclosures. Huts with clay walls and floors were built inside the dwelling units. Pottery and metal items are common on the sites. However, iron and copper were not produced locally on these sites (Mason 1962, 1986).

Sotho-Tswana speaking people who herded domestic stock such as cattle, sheep and goat most probably occupied these stone walled settlements. Their pastoral way of life was supplemented with the hunting, gathering and snaring of large and small game from the veldt. None of these LIA sites occur in the Midrand area. The closest site that was investigated used to exist at Lone Hill to the north-west of the Project Area (Mason 1962, 1986).

If any human occupation did occur in the Midrand area during the *difiqane* and pre-difaqane wars (AD1820's to the 1840's) when Mzilikazi and the Ndebele arrived from the Vaal River before moving north across the Magaliesberg these communities were probably uprooted as most of the refugees during this time period fled elsewhere such as Botswana or the Free State Province. Archaeological evidence

from the Klipriviersberg settlements indicates that these sites might have been abandoned, suddenly, and that the Late Iron Age people may have left the area as they were attacked (Rasmussen 1978).

Some of the oldest colonial towns (except large cities such as Johannesburg and Pretoria) close to Midrand include Edenvale, Kempton Park, Modderfontein, Tembisa West, Phomolong, Rabie Ridge and Lethabong.

Edenvale owes its existence to the fact that Cornish miners settled there, and to Tobias Mynhardt, who decided to subdivide his farm Rietfontein. He sold one portion to the old Rietfontein Gold Mining Company, another to private persons and retained the third portion. The first stands were sold in 1903 and the town was probably named after John Eden, who owned part of Rietfontein in 1900. The first health committee was established in 1935 and municipal status was attained in 1942. Edenvale is mainly a residential town (Leroux 1992; O Hagan [ed.]).

Edenvale was strengthened through the amalgamation with Modderfontein, Tembisa West, Phomolong and Rabie Ridge in 1995. Tembisa West proved to be a homecoming exercise to many people whose families had been removed from Edenvale due to apartheid policies prior to 1994. The area was established in 1948 and today provides a home for in excess of 80 000 people. The name of the region was later changed to Lethabong, meaning Place of Happiness (Erasmus 1995).

The first title deed in the Kempton Park area was issued in 1859 for the farm Zuurfontein. A major contributing factor to the establishment of Kempton Park was the railway line between Pretoria and Vereeniging, built for the NZASM between 1890 and 1893. Zuurfontein station later became Kempton Park station. Industry also played a large role in the expansion of Kempton Park and indirectly in the establishment of Tembisa as a regional township for Africans in 1956. The first major industry in the area was the explosives factory at Modderfontein. A special railway link, necessary to transport all building materials to this site, was constructed in 1895, resulting in the isolation of a large triangular piece of land. Carl Wolff purchased this land and established a township in 1903, named Kempton, after the town in Bavaria from which he came. A health committee was established in 1935

and in 1942 Kempton Park became a municipality. Apart from being a residential area, road, rail and air communications have made Kempton Park an important industrial area (Erasmus 1995).



## 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 19 March 2019. Archaeological visibility was good as the largest part of the Project Area was scarred in the past. Only a few clumps with Blue Gum trees and clusters of trees occurred in the most northern part of the Project Area. The largest surface area of the proposed Chlookop Landfill Site is already covered with a rubbish dump whilst various kinds of activities were conducted on the property in the past so that it cannot be described as a pristine piece of land any longer.



**Figure 3- 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 current, 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. However, Mrs. Charmain Mitchell as well as Mr. Goodwill Sebidi of EnviroServ was consulted with regard to the possible presence of heritage resources such as graves on site. Mr. Sebidi also accompanied the author during the survey of the Project Area.

## **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 largely comprises the existing Chlookop Landfill Site and the severely disturbed Erven 334 and 335 which are located to the north of the existing landfill site. Patches with dense vegetation still occur on Erf 335 and may hide heritage resources such as isolated, abandoned graves although this seems most unlikely considering the intensity and range of activities which have occurred over the property in the past as well as in the present.

Limited infrastructure with no heritage significance occurs in Erf 334 directly to the south of Anker Street in the northern part of the Project Area. No infrastructure was noted on Erf 335.



**Figure 4–The largest part of the Project Area is covered with the current Chlookop Landfill Site which has obliterated the natural environment and which significantly has altered the state of the environment (above).**



**Figure 5– Cell 7 Area within the CLS holds several dams and a methane producing plant. This area is separated from Northern Extension Area 1A by means of a fence and patches with Blue Gum trees (above).**



**Figure 6 – The south-western corner of the CLS where the relocated methane plant will be established have been disturbed in the past (above).**



**Figure 7– Northern Extension Area 1 A is used for various activities such as crushing, recycling of waste materials, dumping, etc. The workshops and other infrastructure in this area hold no heritage significance (above).**



**Figure 8– The southern edge of Northern Extension Area 1 A is covered with bush. Patches with Blue Gum trees and heaps of dumped waste material (above).**



**Figure 9- The northern part of Northern Extension Area 1 A where the PCD and MRF will be established has been scarred by road construction and the removal of soil and have left the area in a negative environmental state (above).**



**Figure 10- The southern part of the Northern Extension Area 1 is covered with soil dumped on site totally altering the site's original appearance (above).**



## **8.2 Summary**

The Phase I HIA study for the proposed expansion of the Chloorkop Landfill Site 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.

As a result it is considered unlikely that the development or operation of the expanded Chloorkop Landfill Site would have any impact on a heritage resource. There is consequently no reason from a heritage point of view why the proposed expansion of the Chloorkop Landfill Site Project cannot proceed if the recommended chance find procures are implemented should any chance finds of heritage resources occur. This applies to implementing only Phase 1a (Erf 335) or Phase 1b (Erf 334) or both phases comprising Erf 335 and Erf 334.

## **9 MITIGATING POSSIBLE HERITAGE RESOURCES**

No heritage resources have been observed in the Project Area and it considered highly unlikely that heritage resources would have an influence or bearing on the proposed development. Consequently, no mitigation measures are necessary. However, patches with Blue Gum trees and clumps of trees occur in particularly the most northern part of the site which may hide heritage resources such as informal, undecorated and abandoned graves.

If chance finds of heritage resources, including graves that have been missed during the Phase I survey, are made during the construction, operation or eventual closure of the expansion of the Chlookop Landfill Site, the following chance find procedures must be implemented.

### **9.1 Chance find procedures**

Chance Find Procedures are applicable during the construction, operation or closure phases of the expansion of Chlookop Landfill Site Project and apply to all contractors, subcontractors, subsidiaries or service providers. If any of the institutions employees find any heritage resources during any developmental activity the person and institution must cease work at the site of the find. They must report this find to their immediate supervisor and through their supervisor to the senior on-site manager.

#### **9.2.1 Chance find procedures for heritage resources**

The initial procedure to follow when heritage resources are uncovered during development is aimed at avoiding any further possible damage to the heritage resources. The following procedures must be followed:

- The person or group who identified or exposed the heritage resource or burial ground must cease all activity in the immediate vicinity of the site.
- The chance find must be reported to the on-site manager.

- The on-site manager must make an initial assessment of the extent of the find and confirm that further work has stopped. He must ensure that the site is secured and that controlled access is implemented.
- The on-site manager must inform the Environmental Officer (EO) and Health and Safety Officer (HS) of the chance find and its immediate impact on the Chlookop Landfill Site Project. The EO must contact an archaeologist registered with the Association for Southern African Professional Archaeologist (ASAPA) or the South African Heritage Resources Agency (SAHRA) who would provide the details of an archaeologist.
- The archaeologist will conduct a site inspection and confirm the significance of the discovery, recommend appropriate mitigation measures to the Chlookop Landfill Site Project and notify the relevant authorities.
- Based on the comments received from the authorities the archaeologist will provide the Chlookop Landfill Site Project with a Terms of References Report (TOR) and associated costs if mitigation measures have to be implemented. The archaeologist will also obtain the necessary permits from SAHRA to conduct the necessary mitigation measures

### **9.3.2 Chance Find Procedures for burials and graves**

In the event that unidentified burial grounds or graves are identified and/or exposed during any of the developmental phases of the expansion of Chlookop Landfill Site Project the following steps must be implemented subsequent to those outlined above:

- The archaeologist must confirm the presence of graveyards and graves and implement the following procedures.
- Inform the local South African Police (SAP) and traditional authority.
- The archaeologist in conjunction with the SAP and traditional authority will inspect the possible graves and make an informed decision whether the remains are of forensic, recent, cultural-historical or archaeological significance.

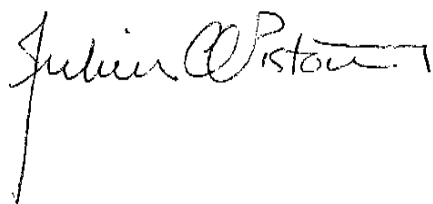
- Should it be concluded that the find is of heritage significance and therefore protected in terms of heritage legislation the archaeologist will notify the relevant authorities.
- The archaeologist will provide advice with regard to mitigation measures for the graves.

## **10 CONCLUSION AND RECOMMENDATION**

The Phase I HIA study for the proposed expansion of the Chloorkop Landfill Site 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.

As a result it is considered unlikely that the development or operation of the expansion of the Chloorkop Landfill Site would have any impact on a heritage resource. There is consequently no reason from a heritage point of view why the proposed expansion of Chloorkop Landfill Site Project cannot proceed if the recommended chance find procures are implemented should any chance finds of heritage resources occur. This applies to implementing only Phase 1a (Erf 335) or Phase 1b (Erf 334) or both phases comprising Erf 335 and Erf 334.

The location of the Chloorkop Landfill Site Project within an existing industrial hub together with factors such as the general characteristics of the Project Area, the critical need for economic development in the country and recommended mitigation and management measures should heritage resources be exposed during the construction, operation or closure of the expansion of Chloorkop Landfill Site Project are adequate reasons to proceed with the project.

A handwritten signature in black ink, appearing to read 'Julius CC Pistorius'. The signature is written in a cursive style with a long vertical line extending downwards from the end of the name.

**DR JULIUS CC PISTORIUS**  
**Archaeologist & Heritage Consultant**  
**Member ASAPA**

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