



INTERIM REPORT:

ARCHAEOLOGICAL MITIGATION UNDERTAKEN AT A MIDDEN (JZCP_SITE 1) EXPOSED DURING CONSTRUCTION WORK AT THE CAR PARK OF THE JOHANNESBURG ZOO, CITY OF JOHANNESBURG METROPOLITAN MUNICIPALITY, GAUTENG PROVINCE

Version **1.0**

16 October 2015

DETAILS OF REPORT

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PERMIT DETAILS: The excavations were undertaken in terms of a permit (Permit Case ID: 8228; Permit ID: 2075) issued by the South African Heritage Resources Agency (SAHRA) on 21 August 2015.

PROJECT ASSISTANTS: The abovementioned project team was assisted in their task by Heidi James-Birkholtz, Lineree de Jager, Stephany van der Walt, John Anderson, Jennifer Kitto, Joseph Moela, Thokozane Mahlangu and Bongani Sikhosana.

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- iii. The recommendations delivered to the Client.

EXECUTIVE SUMMARY

PGS Heritage was appointed by Mayat Hart Architects & Heritage Consultants to undertake archaeological mitigation at a midden (JZCP_Site 1) that was exposed during construction work at the car park of the Johannesburg Zoo, City of Johannesburg Metropolitan Municipality, Gauteng Province. This action is a mitigation project aimed at obtaining a destruction permit for the midden to allow for the construction work to be completed.

The archaeological mitigation was carried out between 27 August 2015 and 3 September 2015. The work was undertaken in terms of an archaeological excavations permit (Permit Case ID: 8228; Permit ID: 2075) issued by the South African Heritage Resources Agency (SAHRA) on 21 August 2015. The archaeological mitigation work included the excavation of 16 shovel test pits and eight Test Pits, the archaeological excavation of three 1m by 1m blocks as well as the collection of surface material across the site. A site layout plan as well as stratigraphic profiles from each of the excavation blocks and Test Pits were recorded.

For the purposes of this interim excavation report, the analysis of cultural material focussed entirely on the artefacts recovered from the three excavation blocks. This sample is believed to be sufficiently representative of the entire collection. The archaeological mitigation has revealed that the site can be dated to the period between c. 1910 and c. 1935. Furthermore, the cultural material recovered from here shows a strong correlation with domestic waste and activities. Through the excavation shovel test pits and test pits, it was established that a significant component of the midden had already been disturbed by the time that construction work at the site was halted. The only remaining undisturbed section of the site was found to be located in a strip of land between two construction excavations. All three excavation blocks were therefore placed in a staggered manner within this relatively small section comprising the undisturbed components of the site. The resulting excavations were successfully completed on all three blocks and the original assumption of undisturbed midden was confirmed during the excavation. However, the excavations also revealed that the largest component of the cultural material recovered from the site is in fact younger than 100 years.

The archaeological mitigation was supported by a detailed archival and historical investigation aimed at providing a general history of the site and surrounding landscape, but also to provide historic data with which the site can be interpreted. This research suggested that the archaeological site can almost certainly be associated with the adjacent suburb of Forest Town.

While the research here has yielded a discrete, tightly dated and well provenienced domestic assemblage which has high historic significance and is ideal for longer term research objectives, the archaeological site has been satisfactorily mitigated and no further work is required. Furthermore, the fact that a significant component of the cultural material recovered from the three blocks can be dated to after 1915 means that the largest part of the site

can not be classified as archaeological within the definition of an archaeological site provided by the National Heritage Resources Act (Act 25 of 1999). This act defines the term 'archaeological' *inter alia* as “...material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.”

Due to significant disturbance to the midden in the form of construction activities, the archaeological context and fabric of the site in its present state is diminished. Although these disturbances were made unwittingly by the construction team, they have had an impact on the archaeological context and content of the site. While the archaeological site can still be considered to have cultural historical significance, its value for providing scientific information on that cultural history other than what is contained in this report, can be considered low. Furthermore, the lack of preserved proximal and regional context for the site lowers its overall significance.

As a result the archaeological site in its entirety and in its present condition can be considered to be of medium/low significance.

The following recommendations are made:

- No further archaeological research is required at the site. This can be said as the completed archaeological excavations and associated mitigation measures resulted in a significant sample of the cultural material associated with the site. Combined with the thorough archival and historical studies undertaken, a detailed understanding of the history of the site was recorded.
- It is recommended that a destruction permit be issued for the site.
- The client has indicated that the Johannesburg Zoo would like to incorporate a display on the archaeological site and excavated material into the new parkade currently under construction. Such a display would provide information on the archaeological mitigation undertaken at the site as well as its interpretation and history. With large numbers of people visiting the zoo on an annual basis, this display would provide valuable information and awareness to the general public on archaeology in general and the site in particular. The archaeological and historical sample recovered during the mitigation is sufficiently extensive to allow for the utilization of a representative section of the assemblage in the display. For this purpose separate permitting would of course be required at a later stage.

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1. INTRODUCTION

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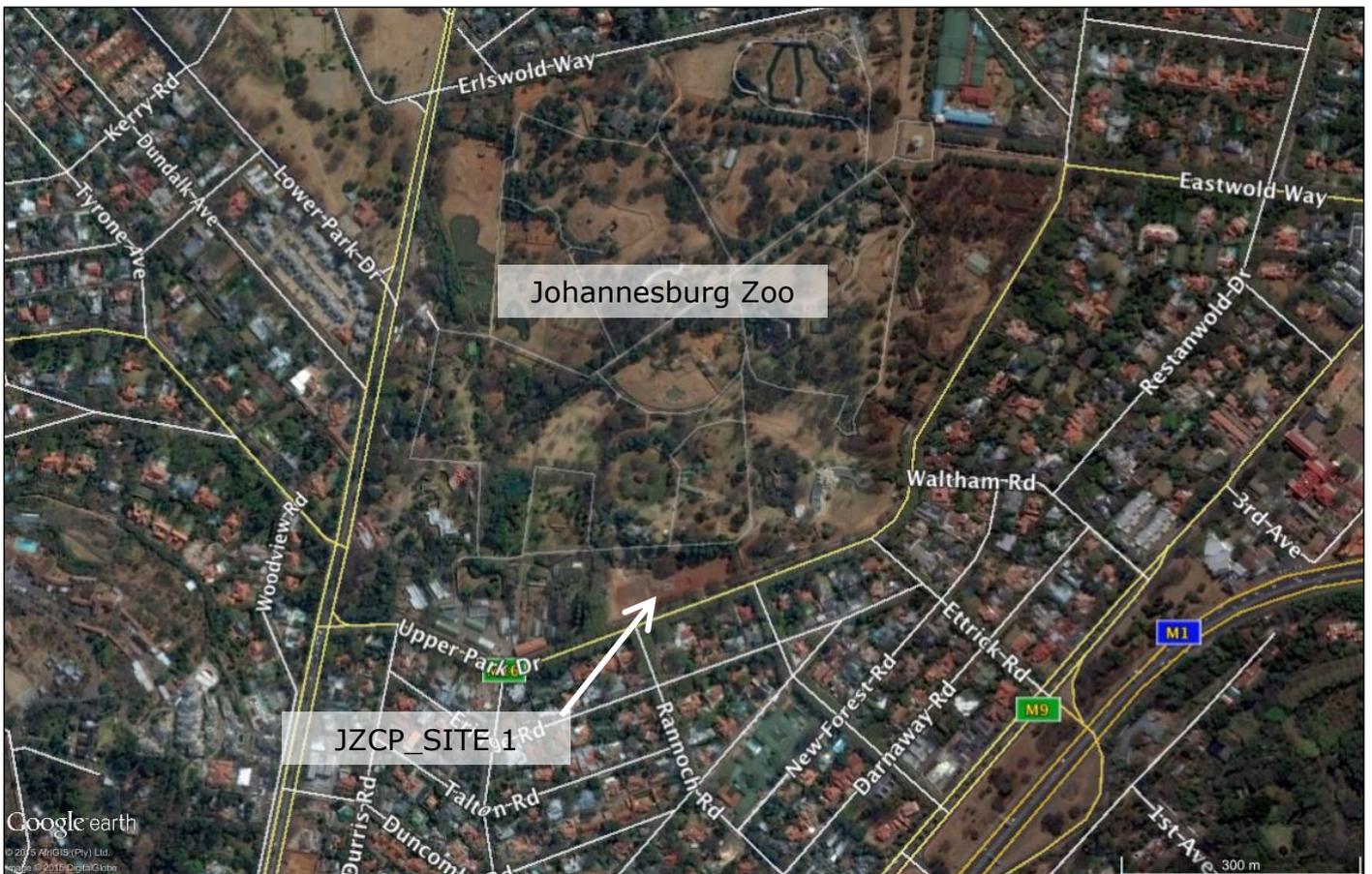


Figure 1 Google Earth image showing the position of the site within its local context.

2. IDENTIFICATION OF THE ARCHAEOLOGICAL SITE AND BACKGROUND TO THE STUDY

The following list provides a chronological framework and background to the identification of the archaeological site. It must be noted that the framework provided here is based on known information only, and as such may not necessarily represent the entire process leading up to the identification.

- Construction work at the car park of the Johannesburg Zoo commenced in June 2015.
- In July 2015 the excavation work of the construction project exposed midden material. The construction team did not realise the age of the material at the time and continued its work.
- In mid July 2015 bones were recovered from the excavations and PGS Heritage was contacted by Mr Brendan Hart of Mayat Hart Architects & Heritage Consultants to carry out a site visit to establish whether the bones are human or not.
- On 17 July 2015, Ms Stephany van der Walt of PGS Heritage conducted a site visit and made an assessment of both the recovered bones and its context. She confirmed that the bones are certainly not human and are all animal bones and found that they were recovered from a historic midden. The construction team was duly informed that no human remains had been identified, but was told that an archaeological site may have been uncovered at the construction site.
- With at least some of the observed artefacts recovered from the excavation evidently older than 100 years, the construction and development team were informed on Monday, 20 July 2015 that the midden can be classified as an archaeological site and its destruction would require a permit from SAHRA.
- The presence of an archaeological site within the construction area was communicated to the construction and development team and a buffer area of 10 m defined around the exposed midden.
- Further excavations outside of the defined buffer area indicated that the midden extends well beyond the 10 m buffer area.
- On Thursday, 30 July 2015 all work was halted at the construction site for a period of two months to allow the archaeological mitigation to proceed.

3. AIMS OF THE STUDY

The objectives of the proposed archaeological mitigation are as follows:

- Assessing Archaeological Significance of Site

The archaeological mitigation measures proposed here are firstly aimed at assessing the archaeological significance of the site. This includes aspects such as the context of the archaeological deposit and its uniqueness, as well as the type and kind of artefacts found within it.

- Destruction of Site

The site will be (and indeed had to a certain extent already been) impacted upon by the proposed construction of the Johannesburg Zoo Parkade, which cannot be undertaken without destroying the site. As a result, one of the objectives of the proposed archaeological mitigation is to thoroughly document the archaeology of the site and to obtain a representative sample of material so that a destruction permit can be issued by SAHRA.

- Interpreting the Site

The archaeological mitigation measures proposed here are of course also aimed at interpreting the site. Archaeological excavation and investigation can throw more light on the age of the midden, its origins and the daily life of the early citizens of Johannesburg who used the site as a rubbish heap.

4. METHODOLOGY

The following methodology was followed in the conducting of this study:

- Archival and Historical Desktop Study

The first step in the process was to undertake an archival and historical desktop study to compile a history of the study area and surrounding landscape. This information was then used with the findings of the archaeological mitigation to interpret the site.

The archival and historical study undertaken for the present work also utilised the report and historical data compiled and collected as part of a historical study that was produced by the author for the Johannesburg Zoo in 2005 (Birkholtz, 2005).

As a result, the archival and historical desktop study utilised resources from the National Archives and UNISA Library in Pretoria, the African Studies Library at the Johannesburg Central Library, the Local Government

Library at the Johannesburg Civic Centre, the Photographic Archive at Museum Africa and the Robert Moffat Library at the University of the Witwatersrand.

- Archaeological Mitigation

A range of activities were undertaken as part of the archaeological mitigation of the site. These include surface collection across the site, the excavation of 16 shovel test pits, the excavation of eight test pits as well as the excavation of three 1m by 1m blocks in areas identified to be undisturbed. These activities are discussed in more detail below.

All material excavated and recovered from the site were grouped into broad categories (i.e. glass, metal, plastic, ceramic, bone etc.) and were marked and packaged within its original unit context into these broad categories.

- Recording of Site Layout Plan

A site layout plan of all the components of the archaeological mitigation was recorded using a dumpy level. The end result is a layout plan depicting all components of the archaeological site.

- Laboratory Analyses of Archaeological Material

The material recovered from various components of the site was cleaned, classified, recorded and photographed.

- Compilation of Report

This document represents the mitigation report containing the information recorded from the site as well as from the analyses of the archaeological material. Possible dates and interpretations of the site and the assessment of its archaeological significance are made and conclusions and recommendations provided. The report also addresses aspects relating to the significance of the site.

5. ARCHIVAL AND HISTORIC BACKGROUND TO THE STUDY AREA

5.1 Aerial Photograph Sequence of Study Area and Surrounding Landscape

Three aerial photographs of the study area were obtained from the Chief Directorate: National Geo-Spatial Information in Cape Town. These three aerial photographs were taken in the early 1930s, 1937 and 1952. As a result they provide a valuable sequence in the history of the archaeological site and car park.

5.1.1 Aerial Photograph taken during the early 1930s

The figure below depicts a section of an aerial photograph that is assumed to have been taken during the early 1930s. This image represents the earliest aerial photograph that is available.

In general terms it is clear from this image that the zoo is being developed with a number of small trees evident. Furthermore, to the south of the study area the suburb of Forest Town is shown and appears to be almost completely built up with residences.

The following observations of relevance to the study area can be made from the aerial photograph:

- A) A irregular quadrilaterally shaped area appears to be fenced. This area corresponds to the area that was used as a car park on the 1937 and 1952 aerial photographs. The dotted red line provides the boundary of the car park today, and it is clear that the fenced car park area on this image is significantly smaller than the extent of the car park today.
- B) Unlike the situation on the 1937 and 1952 aerial photographs, very few trees can be identified around the boundary of the fenced car park.
- C) This line defines the eastern boundary of the car park as it was known at the time. The red stippled line provides the boundary of the car park at the zoo today, and it is clear that this line of splits the present car park area in two. It seems likely that this line was a fence.
- D) At the time the eastern end of the car park as it is known today did not form part of the parking area. From this aerial photograph it would appear that this section of the study area was largely undeveloped. In terms of the identified extent of the archaeological site, a small section of the midden is located within the area on the right which at the time had not yet been included in the car park, with the majority of the site located in the area where the car park is already depicted on this image (see point A above).

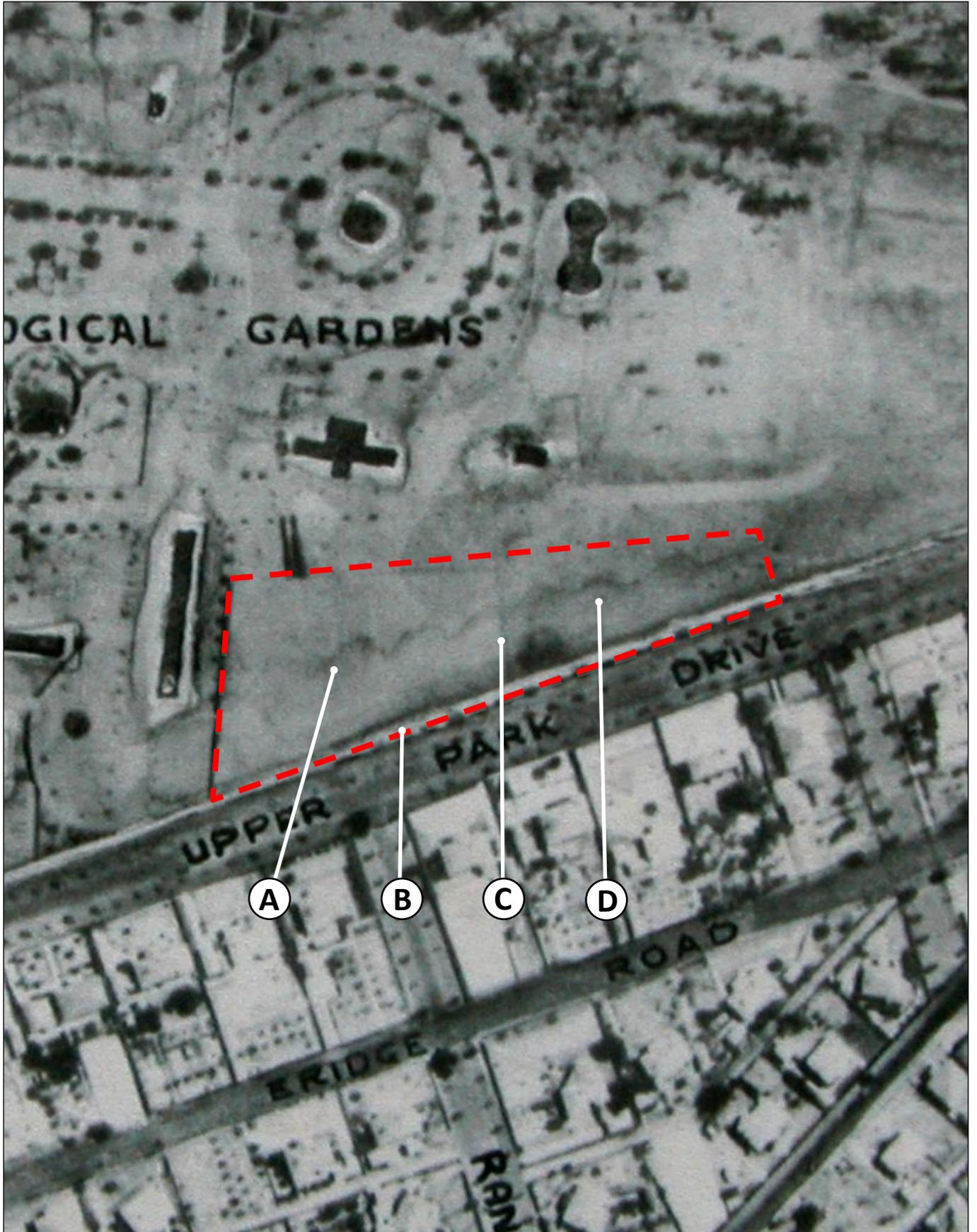


Figure 2 Section of the aerial photograph that was taken during the early 1930s.

5.1.2 Aerial Photograph taken in 1937

The figure below depicts a section of the aerial photograph that was taken in 1937 (NGI, Aerial Photographs, 133_10_6090).

In general terms it is clear from this image that the zoo is being developed with a number of trees also planted. Furthermore, to the south of the study area the suburb of Forest Town is shown and appears to be almost completely built up with residences with no vacant stands visible.

The following observations of relevance to the study area can be made from the aerial photograph:

- A) The car park is located here. No evidence for parked cars can however be seen. However, a rectangular section of the car park is of a different colour (see point B below) and be the grading and tarring activities carried out at the car park during this time.
- B) Lanes of trees had evidently be planted along sections of the boundaries of the car park. These trees appear to be still young.
- C) This line defines the eastern boundary of the car park as it was known at the time. The red stippled line provides the boundary of the car park at the zoo today, and it is clear that this line of splits the present car park area in two. It seems likely that this line was a fence.
- D) At the time the eastern end of the car park as it is known today did not form part of the parking area. From this aerial photograph it would appear that this section of the study area was largely undeveloped with a number of trees found there. In terms of the identified extent of the archaeological site, a small section of the midden is located within the area on the right which at the time had not yet been included in the car park, with the majority of the site located in the area where the car park is already depicted on this image (see point A above).

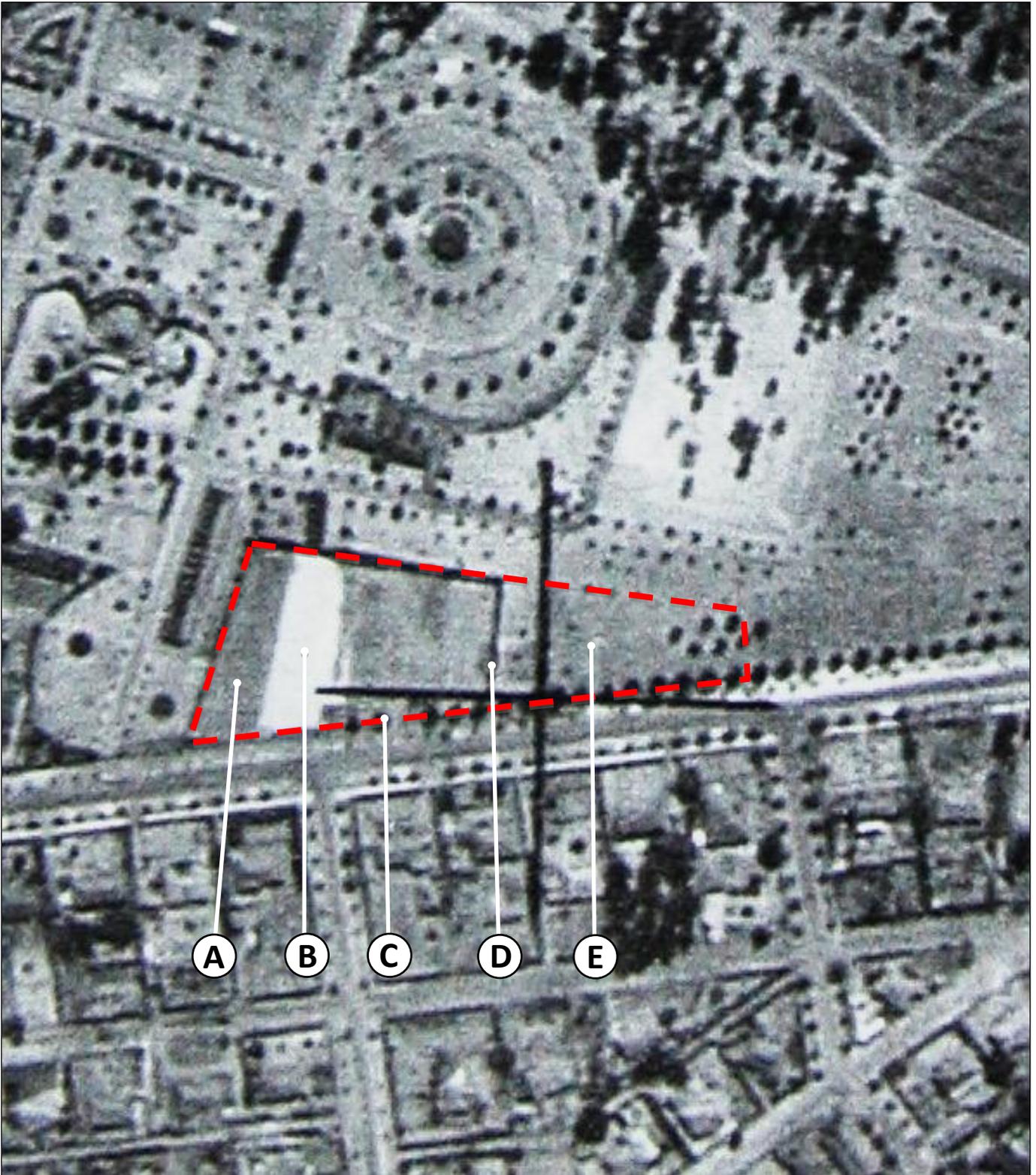


Figure 3 Section of the aerial photograph that was taken in 1937.

5.1.3 Aerial Photograph taken in 1952

The figure below depicts a section of the aerial photograph that was taken on 12 March 1952 (NGI, Aerial Photographs, Job 314_1952_05_44496).

In general terms it is clear from this image that some development had taken place in the immediate surroundings of the study area since the previous aerial photograph was taken. Within the zoo property for example, a new aviary is shown for the first time (see white structure directly above the study area boundary). No clear changes to the suburb of Forest Town can be seen.

The following observations of relevance to the study area can be made from the aerial photograph:

- A) The car park is located here. Although it is not intensively used at the time, at least two parked vehicles can be seen on the image. On the right hand side of the car park a road providing access into the area can just be made out.
- B) Lanes of trees can be seen defining the boundaries of the car park. The position of the marker is located near the entrance gate to the car park, although the gate can not be seen on this image.
- C) This lane of trees defines the eastern boundary of the car park as it was known at the time. The blue stippled line provides the boundary of the car park at the zoo today, and it is clear that this lane of trees splits the present car park area in two.
- D) At the time the eastern end of the car park as it is known today did not form part of the parking area. From this aerial photograph it would appear that this section of the study area was largely undeveloped with a number of trees found there. In terms of the identified extent of the archaeological site, a small section of the midden is located within the area on the right which at the time had not yet been included in the car park, with the majority of the site located in the area where the car park is already depicted on this image (see point A above).

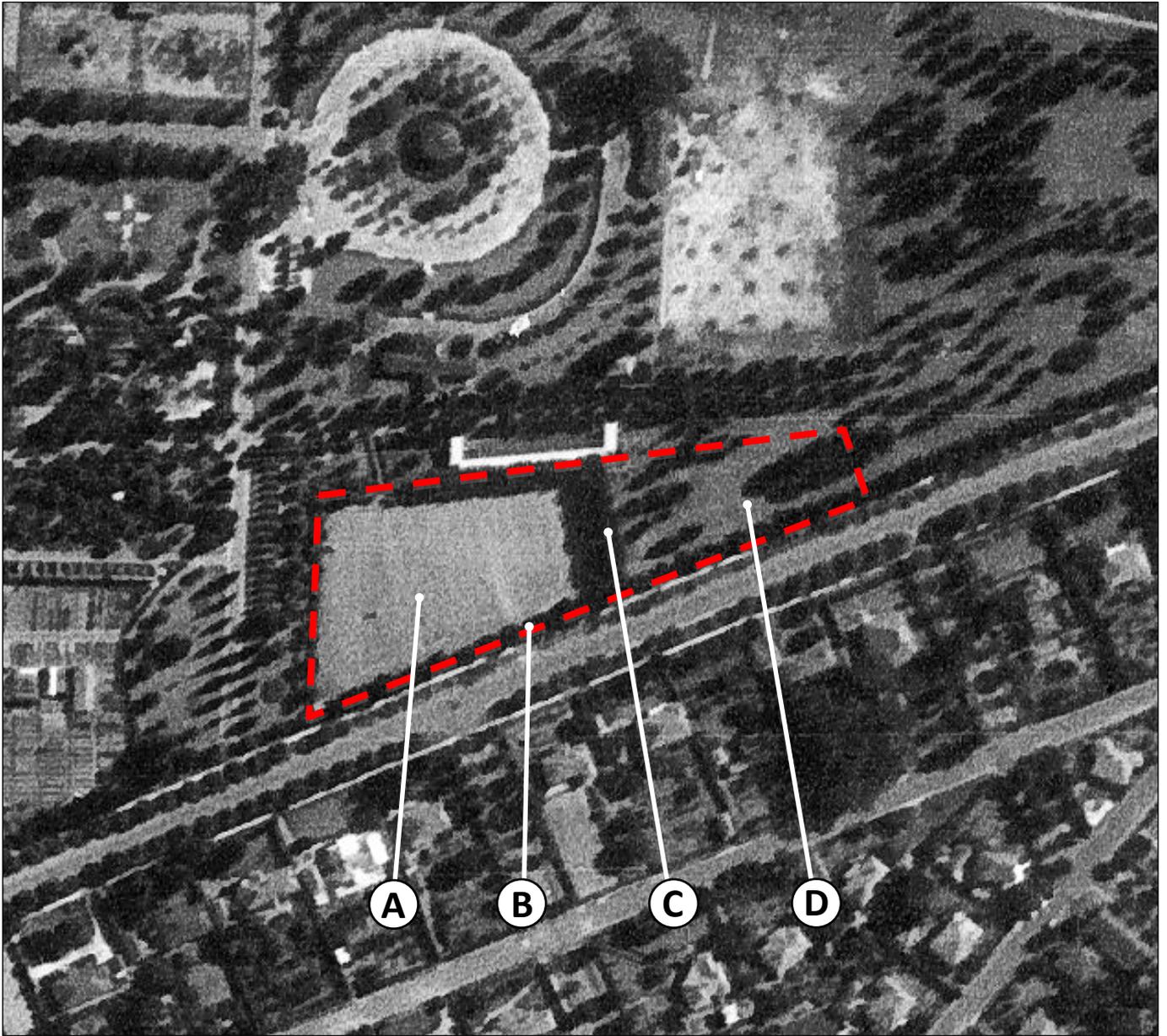


Figure 4 Section of the aerial photograph that was taken in 1952.

5.2 Historic Overview of the Study Area and Surrounding Landscape

5.2.1 Introduction

The archaeological site is located within an area with a long and unique history. In this section a number of aspects relating to the history of the study area and surrounding landscape will be highlighted and discussed.

5.2.2 Historic Overview of the Study Area and Surroundings

5.2.2.1 The Study Area before 1886

Before the discovery of gold on the Witwatersrand in 1886 the study area would have comprised a section of open veldt on the northern slope of a rocky ridge. Since the arrival of the Voortrekkers in the 1840s and 1850s, the area was subdivided into different farms and would have been characterised by an early farming landscape comprising isolated farmsteads distributed across the landscape.

The farm Braamfontein, which encloses the present study area, was registered in in 1858. Typical of the time, Braamfontein extended over a very large area and in relation to features associated with present-day Johannesburg stretched from Westdene in the west to the border of Houghton in the east and from Newtown in the south to Linden in the North (Friede, 1978).

While very few details regarding the mid 19th century farm buildings on Braamfontein are known, some sources suggest that one of the farm's earliest dwellings was located below the ridge where Parktown is found today. Later farmhouses on Braamfontein can still be seen at Marks Park and Linden. The study area would have formed part of an active farm where livestock was grazed and agricultural activities undertaken.

The first registered title holder of Braamfontein was the Voortrekker Gerrit Bezuidenhout who acquired the farm in 1858. It was subsequently subdivided with different owners acquiring different sections over time.

Of significance for the presence study area is that in 1886 the eastern part of the farm was bought by Lourens Cornelius Dirk Geldenhuys for an amount of £4,500 and the following year a western section of the farm was bought by two of his sons, namely Frans Eduard and Lourens (Louw) Geldenhuys.

As will be shown below, the present study area appears to have formed part of a portion of land that was owned by Lourens Dirk Geldenhuys and transferred to to Eduart Lippert.

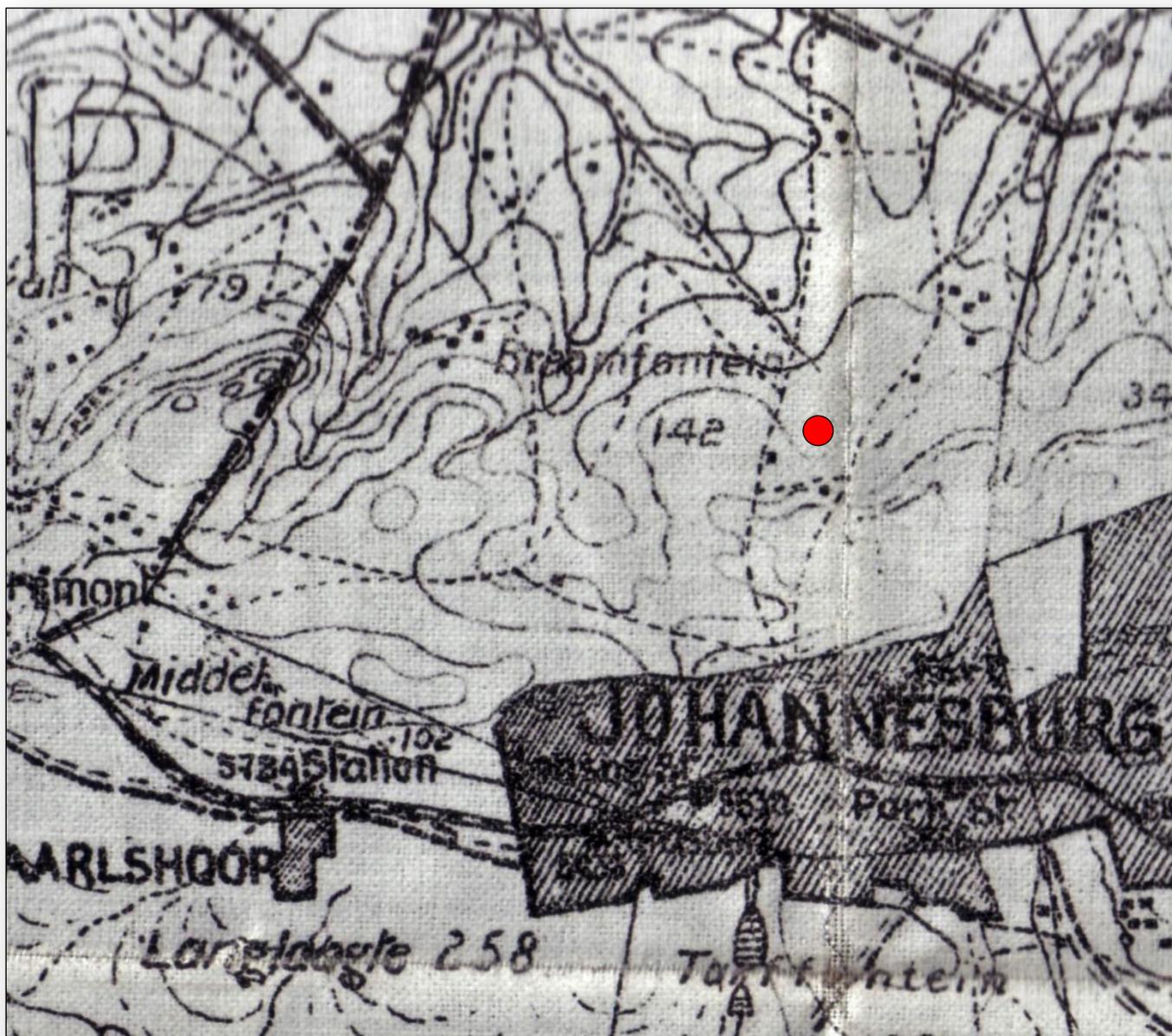


Figure 5 Detail view of the Heidelberg Sheet of the Major Jackson map series. This is the third revised edition of the particular sheet and dates to June 1902 (National Archives, Maps, 3/1896). The approximate position of the study area is shown. Although this map indicates the study area and surrounding landscape some time after the discovery of gold on the Witwatersrand, it does provide one with the position of the study area in relation to the farm Braamfontein as well as the general characteristics of the study area and surrounding landscape at the time.

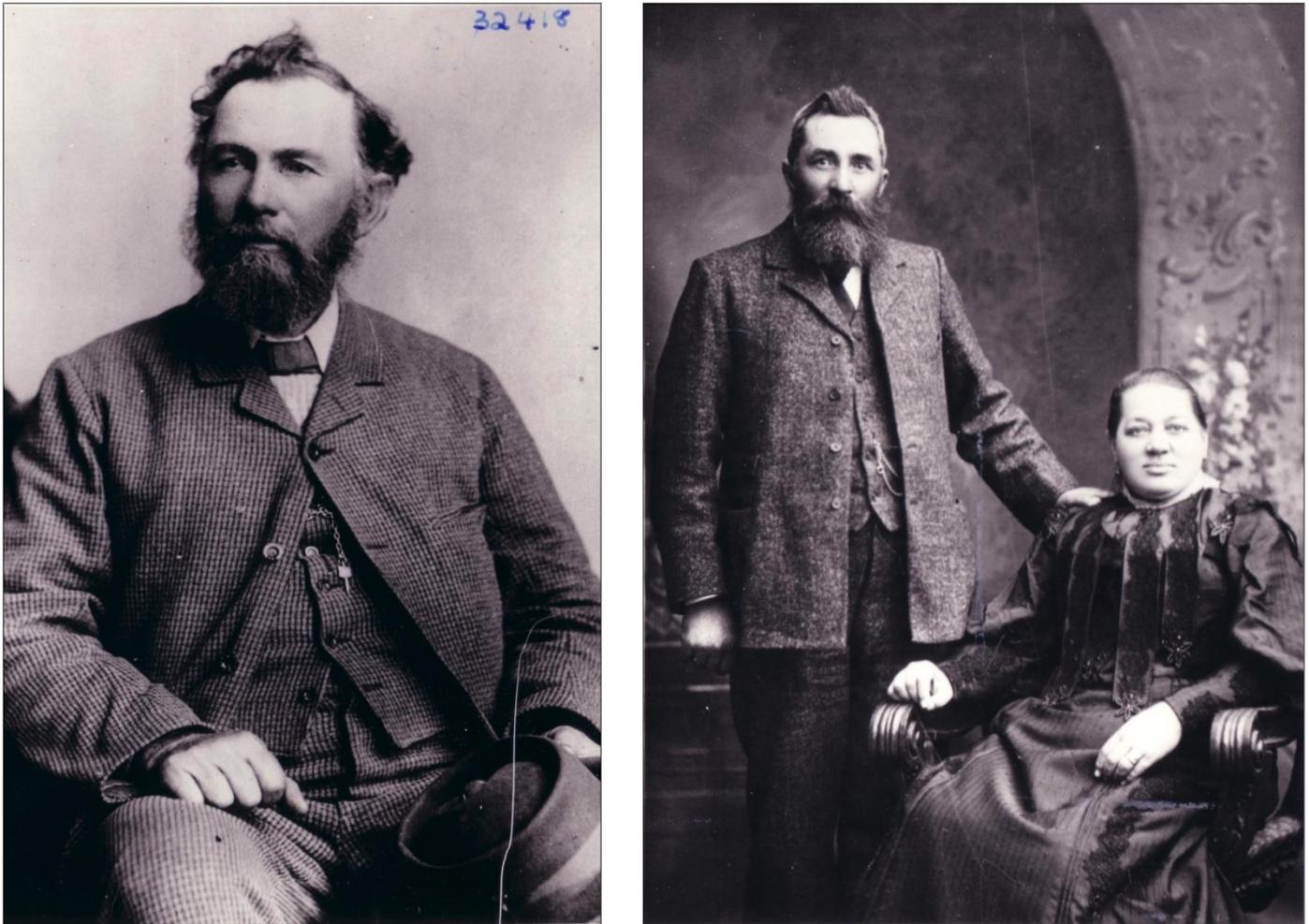


Figure 6 *Historic portraits of some of the early owners of the farm Braamfontein. The photograph on the left depicts Louw Cornelius Dirk Geldenhuys, who acquired portions of the farm in 1886. He was the father of Louw and Frans Eduard Geldenhuys. The photograph on the right depicts Frans Eduard and his wife Judith Geldenhuys, whose name is still commemorated in Judith Road (National Archives, TAB, Photographs, 32418 & 32416).*

5.2.2.2 The Period after 1886

After the discovery of gold on the Witwatersrand in 1886, people flocked to the area and before long the town of Johannesburg was born. The rapid expansion of Johannesburg during the late 1880s continued into the 1890s and with it came an increasing need for homes.

During the early development of Johannesburg, the study area and its surroundings could still be described as agricultural, located as it was a few kilometers to the north of the town centre. However, the increasing expansion of Johannesburg to all sides meant that the surroundings of the study area were eventually also enveloped by the tide of residential development and expansion. In this manner a number of suburbs were established in proximity to the study area, including Parktown (1893).

During the late 1880s the farm Braamfontein was transferred to Dirk Geldenhuys, who provided an early pioneer by the name of Eduard Lippert with a freehold lease to a large section of the northern end of the farm. Lippert named this portion Sachsenwald in honour of Bismarck's estate in his native Germany and established a home here on the outskirts of Johannesburg. During the same time the mining company Hermann Eckstein & Co took over the lease of the Natal Company to the southern portion of the farm (Shorten, 1970). Despite intensive prospecting work by the company, no potential for mining could be identified. The decision was made to establish a plantation with the aim of supplying timber to the local mines and also to use the sections of Braamfontein for residential development (Norwich, 1986).

Meanwhile, Hermann Eckstein established the Braamfontein Syndicate and approached fellow land owner Eduard Lippert to add his lease to Braamfontein to the syndicate in return for a one eighth share. Lippert agreed to this proposal and the Braamfontein Company was established with a capital of £60,000. Its shareholders at registration included both companies and individuals, namely Hermann Eckstein & Co, Consolidated Gold Fields, Lewis and Marks, Sigmund Neumann and Eduard Lippert (Shorten, 1970).

The Braamfontein Company continued with its plans to carry out residential development, and in 1893 the suburb of Parktown was proclaimed. In the ensuing years a number of other suburbs were also established on the farm by the company, including Westcliff and Forest Town.

Meanwhile, the planting of the trees during the early 1890s became the responsibility of Eduard Lippert (Smith, 1971) (Raper, 1987). During the years 1890 to 1893 a person by the name of Genth was appointed manager of the plantation. Mr. Genth was brought to Johannesburg from Germany where he had been the manager of Prince Bismarck's plantations. During these three years some two million trees were planted with seeds coming from all over the world. The plantation had 1500 trees per acre and its layout was similar to the German hop gardens, which showed "*...clear cut avenues from every point*" (Nuyten, 1990). The plantation was known as the Braamfontein Forest and Sachsenwald. During the First World War this latter name was Anglicized to Saxonwold (Norwich, 1986).

During these initial years riding activities and picnics took place in the forest, while the directors of the Braamfontein Company were also entitled to hold shooting parties (Nuyten, 1990). Especially horse riding and the holding of picnics became associated with the forest through the course of the 1890s and into the beginning of the 1900s. In 1906 a polo club was also formed in the vicinity of where the South African War Museum is today situated (Wentzel, 1975).

Genth was succeeded by a Mr. Wentworth in 1896 as forester at Sachsenwald. Under his auspices, more than a million eucalyptus trees were planted before the outbreak of the Anglo Boer War hostilities in 1899 (Wentzel, 1975).



Figure 7 Undated postcard titled 'A Glimpse of the Sachsenwald (Hermann Eckstein Park) (Norwich, 1986:119).

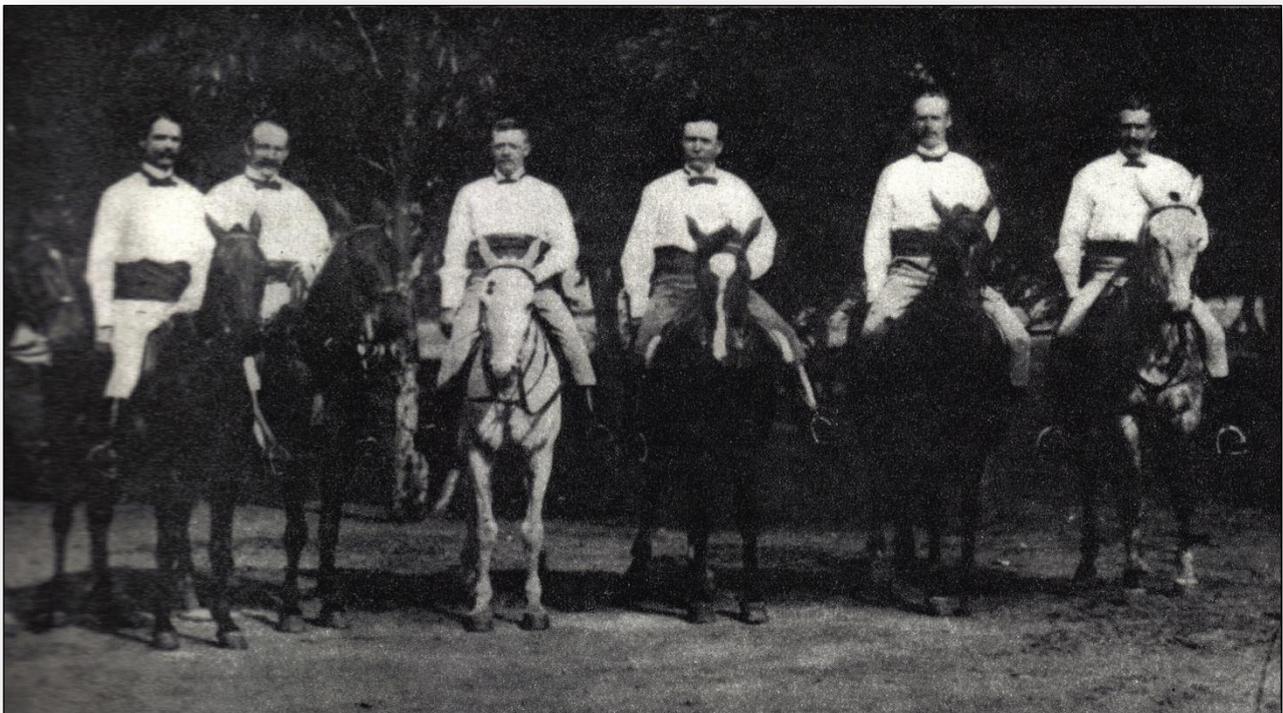


Figure 8 This photograph taken of the 1890s show the Johannesburg Fire Brigade Polo Team in the Sachsenwald (Smith, 1956:43).

5.2.2.3 Aspects relating to the Study Area and Immediate Surroundings

5.2.2.3.1 The Johannesburg Zoo

“We have very great pleasure in informing you that we have been authorised by Messrs. Wernher Beit & Co., of London, and Mr. Max Michaelis, a former partner of that firm, to offer to the town of Johannesburg about 200 acres of freehold ground in the Braamfontein Forest, generally known as the Sachsenwald, for the purposes of a public park for this town...Within the area of the park the Braamfontein Company and some of those interested in it have started the nucleus of a zoological collection. This also will be handed over to the town, and we sincerely trust that the gift will prove a source of pleasure to the people of Johannesburg.”

With these words, quoted from the original letter of Hermann Eckstein & Company to the Johannesburg Town Council and dated 5 August 1903, the foundations were laid for the establishment of the Johannesburg Zoo.



Figure 9 The image on the left is a historic portrait of Hermann Ludwig Eckstein (Johannesburg City Council, 1986:15) whereas the photograph on the right depicts a plaque at the Johannesburg Zoo commemorating the gift by Wernher Beit & Co. as well as Max Michaelis of a portion of land in the name of Hermann Eckstein which led to the establishment of the Johannesburg Zoo.

The 200 acre gift

After the Anglo-Boer War (1899-1902) the directors of Wernher Beit & Co. were eager to establish a memorial to Hermann Eckstein in recognition of his significant role played in the early years of Johannesburg. They decided that the best way of achieving this would be the establishment of a public park (Nuyten, 1990).

In a letter dated 5 August 1903 the Johannesburg Town Council was formally informed that a piece of freehold property approximately 200 acres in extent and owned by Wernher Beit & Co. and Max Michaelis would be donated to the town of Johannesburg for use as a public park. The only condition made in this letter was that the park was to be named "The Hermann Eckstein Park".

The establishment of the zoological gardens

In the letter of 5 August 1903 it is also stated that a small zoological collection was already established in the area to be donated, and that this collection was also to be donated with the hope that it will provide a "...source of pleasure to the people of Johannesburg." (Town Council Minutes, 5 August 1903:1911).

According to the Johannesburg Town Council Minutes of 28 October 1903, the animal collection to be presented to the council consisted of "...1 Lion, 1 Leopard, 1 Cheetah Cat, 1 Tiger Cat, 1 Hawk, 2 Giraffes, 4 Sable Antelope, 1 Zebra...". Of these, the two giraffe, antelope and zebra were at the time still on their way from Rhodesia (now Zimbabwe). According to Sir Percy Fitzpatrick's daughter, Dr. Cecily Niven (*The Star*, 6 December 1984), the original collection of animals collected by her father included a lion (named Mac), kudu, sable antelope, leopard, baboons and monkeys.

The Star (8 July 1966) indicates that this first collection of animals at the zoo was formed by Sir Percy Fitzpatrick, the famous author of *Jock of the Bushveld* and also director of Wernher Beit & Co. In the same article it is stated that Fitzpatrick also assisted in the construction of cages and enclosures to house the collection, and that his personal contribution to this initial establishment of what was to become the Johannesburg Zoo came to the substantial total of £963 3s. 4d. Many of the animals in the initial collections of the zoo came to be collected due to Fitzpatrick sending telegrams to all his contacts and friends in the bushveld and lowveld asking them for donations of wild animals.

The first caretaker of Hermann Eckstein Park was O.F. Haddon, and his appointment was approved during the Town Council Meeting of 22 June 1904. His appointed salary was £22 10s. per month. At the same time, a team of six black labourers were also appointed at the "...usual wage of £3 15s. per month each and food..." (Town Council Minutes,

22 June 1904:514). A proposal was made and adopted during the Town Council Meeting of 14 December 1904 to replace the caretaker with a gardener at a monthly salary of £25 (Town Council Minutes, 14 December 1904:514).

During these initial years the animal collection, with the exception of the lion and the leopard was housed by the Braamfontein Company on their land (Town Council Minutes, 29 September 1904). In a letter written by the Johannesburg Municipal Veterinary Surgeon J. Peddie and published in the council minutes of 29 September 1904, the zoological collection was now listed as consisting of one male lion, one female leopard, two male sable antelope, one insimba cat, one female giraffe, one male baboon, 2 indian apes (one male and one female), one golden eagle and a pair of porcupines.

By the end of 1904 the park was already visited during public holidays by many picnic parties, so much so that a proposal was accepted during the Town Council Meeting of 14 December 1904 for water to be laid out from the Braamfontein Company.

Although a sum of £2000 was proposed during the Town Council Meeting of 29 September 1904 to provide accommodation for all the animals in the park (which also now included two lion cubs), no immediate changes seems to have been made as the same arrangement is indicated for 12 July 1905. However, by this time the Braamfontein Company was starting to complain about the fact that visitors to the park section were trespassing onto the land owned by the Braamfontein Company to view the animals not already accommodated within the park itself (in other words the entire collection with the exception of the leopard and the lions).

The minutes of the Town Council Meeting of 12 July 1905 shows that after the complaints received from the Braamfontein Company, the relocation of the entire animal collection to within Hermann Eckstein Park was viewed with some urgency, and that the necessary accommodation could be erected in the area surrounding the Lion House. The indication was also given that most of the required work could be done by the gardener for an estimated sum of £350. *"We are advised that this removal could be effected without much difficulty, and that the animals could be conveniently housed in the Park adjacent to the existing Lion House. This would necessitate the formation of a road through the poplars, the bridging over the spruit and the clearing of about an acre of ground; trees for shade being left at regular intervals. The only substantial building which would be necessary is a house for the Porcupines; a brick built house with a concrete floor being essential for the health of these animals."* (Town Council Minutes, 12 July 1905:793).

In the Parks Department Report included in the Minute of the Mayor for the year 1910, the significance and popularity of the Zoological Gardens for the people of Johannesburg can already be seen. One section of the report reads *"...on Sundays and Public Holidays it is safe to say that it (the Zoological Gardens) is becoming one of the favourite resorts for the people of Johannesburg."* (Minute of the Mayor, 1910:39). A significant event in the

development of the zoo was the extension of the tramways all the way to the zoo entrance. This made visits to the zoo far easier. As a result the zoo became even more popular.

In the Minute of the Mayor (1928-1929:92) the Zoological Gardens were stated to be “...*Johannesburg’s most beautiful and popular resort...*”

Layout history of the Johannesburg Zoo

During the initial years the Zoological Gardens was focussed on a small piece of land along the south-western corner of the portion of Hermann Eckstein Park situated to the east of the old Pretoria road (later Jan Smuts Avenue). As mentioned elsewhere, only the lions and leopard were kept on the property, while the remainder of the zoological collection were housed on land owned by the Braamfontein Company.

The development of the zoo gardens as well as its layout over the next forty years was largely characterised by three main activities which keep appearing in the reports. These are the clearing of the old gum trees from the plantation, the establishment of lawns and the erection of animal enclosures and accommodation. Of course, aspects such as the construction and kerbing of roads, the laying of water pipes and the maintenance of existing structures and buildings are also underscored. It must be noted in terms of the removal of the old gum trees that natural conditions also had a significant impact on these trees. For example, during 1913 thousands of gum trees died in the parks of Johannesburg due to a severe drought.

During 1905 all the entire zoological collection were relocated to the Hermann Eckstein Park, and into the south-western corner of the present zoo grounds. Although no real formal layout could be spoken about, it is stated that a road had to be cleared, a bridge built across the spruit and an acre of land cleared for the new enclosures. Intermittent trees were left as shade trees (Town Council Minutes, 12 July 1905).

During 1906 the size of the zoological gardens was 52 acres (Town Council Minutes, 12 July 1905). At the same time, the first indication of layout planning started to take place. Mention is for example made to the fact that the first layout design was made with which the future planning of the zoo could be undertaken (Minute of the Mayor, 1906). Furthermore, the establishment of the gardens in the zoo area also started to take place. It is mentioned that attempts were made during 1906 to establish flowering plants in-between the newly established animal accommodation.

The Town Council Minutes of 7 February 1906 mentions that permission was granted by the Braamfontein Company for the establishment of an entrance to the park from the east through the plantation.



Figure 10 Undated postcard depicting a very early view of the zoo and of a row of cages. Note the newly planted trees and shrubs (Museum Africa, 590.7).



Figure 11 Undated postcard showing a later view of the same area as depicted in the previous image. Note the rapid growth of the planted vegetation.

Although some measure of a start has already taken place with regards to the layout of the zoo, these initial attempts at designing the zoological grounds have been hampered by a lack of funds. However, during 1907 this was all about to change as a sum of £1500 was approved during the Town Council Minutes of 27 February 1907 for laying out the grounds as well as for the construction of animal houses and enclosures. The sum was taken from the loan that had been granted for the development of Milner Park (Town Council Minutes, 27 February 1907).

A number of animal houses were also constructed during this time, including the large animal house titled the Old Lion House in this report.

The next significant step in the layout history of the zoo took place during 1908 when the main avenue leading into the gardens from the western entrance on Jan Smuts Avenue was completed (Minute of the Mayor, 1908). During 1914 this avenue up to the bandstand was planted on both sides with plane trees with lawns stretching its full length (Minute of the Mayor, 1914).

The year 1908 also saw the planting of roses and other flowering plants in-between the cages (Minute of the Mayor, 1908). The following year open portions of gardens were transformed into shrubberies and reserves bordered with a variety of herbaceous plants (Minute of the Mayor, 1909). It was also stated at the time that plans were afoot to plant evergreen plants as a suitable background for the animal accommodation and cages throughout the year.

During 1914 a main walk was established at right angles to the existing main avenue leading from the entrance to the bandstand “...thus opening up the grounds and forming a groundwork for a suitable and effective lay-out.” (Minute of the Mayor, 1914:96). During the same year the first mention is also made of the provision for suitable vistas in the gardens. A piece of land 60 acres in extent was also added to the zoo and fenced in.

During the period 1919-1920 graded lawns were replaced by flower-beds (Minute of the Mayor, 1919-1920), while 1922-23 saw the establishment of long flower beds under the trees lining the main avenue between the western entrance and the bandstand. These flower beds were planted with summer and winter flowers (Minute of the Mayor, 1922-1923). Interestingly, fifteen of these flower beds were again replaced by *kikuyu* grass during 1943-1944 due to overshadowing and the impact of the roots of trees on the flowers (Minute of the Mayor, 1943-1944).

The whole area falling within Erlswold Way on the north and east sides, Jan Smuts Avenue on the west and Upper Park Drive in the south was fenced during 1927-1928 (Minute of the Mayor, 1927-1928). Nuyten (1990) indicates that during 1927 the portion of Upper Park Drive which separated the zoo from the site of the Rand Regiments Memorial was closed. She also states that this section was then enclosed within the zoo thereby increasing its size to 103 acres. It is also indicated by her that this enclosed section of 1927 represents the same area as the one on which the present zoo is situated.

During 1927-1928 a new entrance was opened on the northern side of the zoo (Minute of the Mayor, 1927-1928).

The years 1930-1931 saw the vistas from various points leading up to the Rand Regiments Memorial being cleared of vegetation. Significantly, it is stated that this clearing of the vistas was “...in keeping with the general layout of the grounds” (Minute of the Mayor, 1930-1931:101). According to Nuyten (1990) the avenues radiating from the memorial were introduced in 1911, after which paths and roads in the zoo were straightened out.

From the early 1930s onward several more shade trees were planted, while old gum trees from the plantation days were removed. Lawns were also annually extended.

During 1939-40 a lot of attention was spent on garden layout with most of the energy spent along Jan Smuts Avenue where trees and shrubs were removed and replaced by lawns and flower beds (Minute of the Mayor, 1939-1940).



Figure 12 Postcard from around 1914 showing the main avenue leading from the zoo entrance to the bandstand. Note that this card also shows the trees and lawns along the sides of the walk that were indicated to have been planted during 1914 (Museum Africa, 590.7).

5.2.2.3.2 Forest Town

The residential suburb of Forest Town is the closest of any existing suburbs to the study area and archaeological site. As a result, a brief history for the establishment of this suburb will be outlined below.

The archival and historical research carried out for this report has revealed that two applications for residential suburbs known as Forest Town was made. The first of these commenced in 1904 when a township area known as Forest Town was surveyed by W. K. Tucker. This township area was six morgen (5,1402 hectares) in extent and comprised a total of 11 lots that were numbered from 34 to 44. These stands were incorporated in the township of Park Town (National Archives, SAB, SGT, 610, 27/6/13, vol.1).

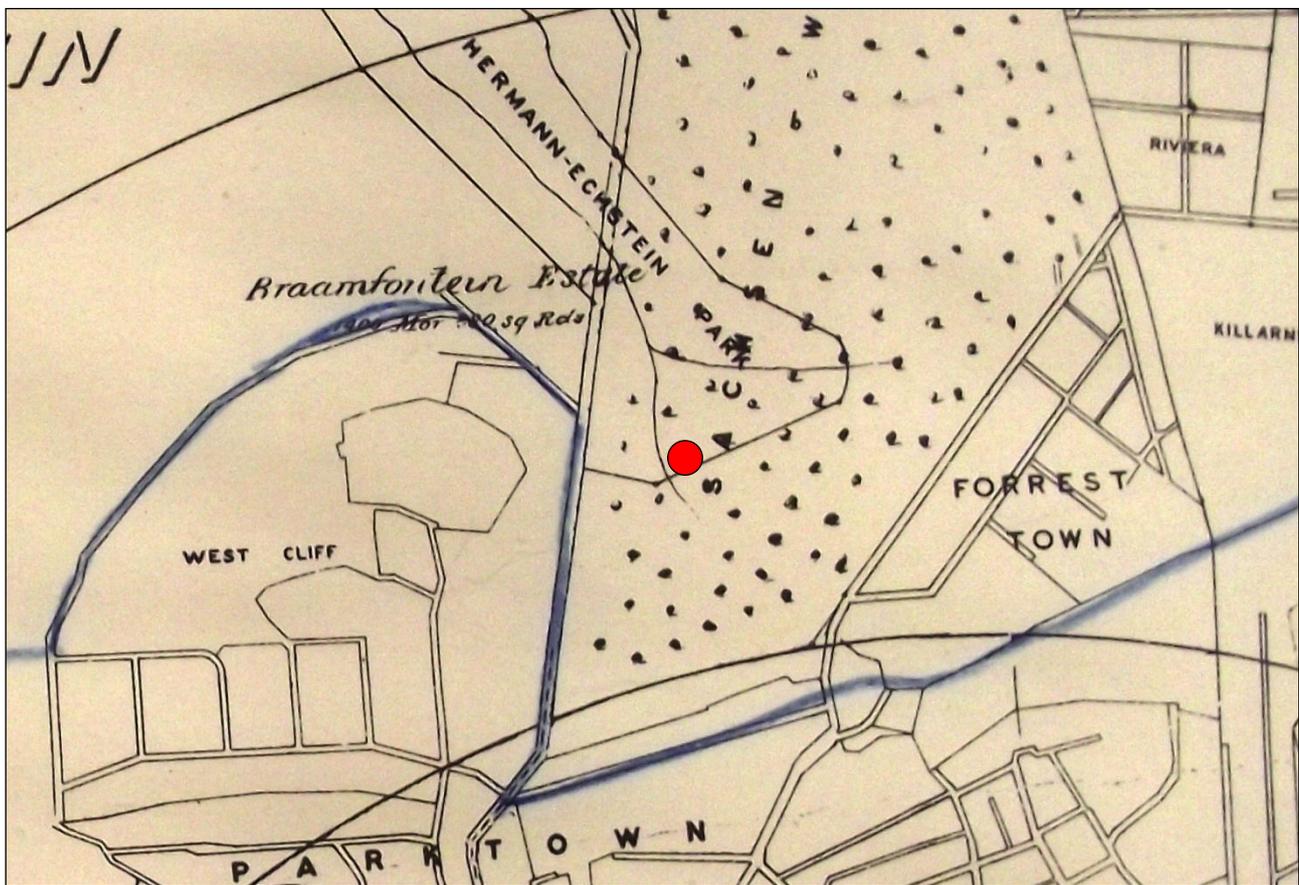


Figure 13 Section of the General Plan of the Johannesburg Municipality compiled in 1905. The position of the study area is shown. The suburb of Forest Town that was established in 1904 is depicted on the right. At the time the surroundings of the study area would have been undeveloped and covered in trees.

The establishment of Forest Town as it is known today started on 3 October 1908 with an application by the Braamfontein Company to the Mines Department for the establishment of a freehold township, named Forest Town, on a portion of land within the Witwatersrand proclaimed diggings. The application was approved on 26 October 1908 on the condition that the proposed township establishment was undertaken in a similar fashion to surrounding

townships such as Parkview (National Archives, TAB, CS, 878, 15655). This was followed by a second application on 18 February 1909 by the Braamfontein Company to the Colonial Secretary in terms of the provisions of Township Act 33 of 1907, for the establishment of Forest Town. The township proposed in this application had a total of 642 stands. This second application was approved on 9 September 1909 (National Archives, SAB, SGT, 610, 27/6/13, vol.1).

On 29 July 1909, C.J. Heard, secretary of the Braamfontein Company, in correspondence with the Town Engineering Department, agreed to the use of a small portion of the Hermann Eckstein Park for a works depot for municipal purposes, on the condition that it does not pose an eyesore or nuisance for the residents of Forest Town, (National Archives, SAB, SGT, 610, 27/6/13, vol.1).

The final step in the approval process for the establishment of Forest Town as it is known today was achieved when the Government Surveyor General approved the layout plan for the proposed township on 15 March 1910 (National Archives, TAB, TPB, 1275, TA6/10692).



Figure 14 The development layout plan for Forest Town as applied for in 1909.

5.2.2.3.3 The Car Park at the Johannesburg Zoo

The archaeological site under discussion is located within the car park of the Johannesburg Zoo. This section will provide a historic overview of the car park.

The first indication of the existence of the car park from the available documentation is from the Minute of the Mayor for the financial year 1935-1936. This document indicates that “...approximately 25,600 motor cars used the main motor park during the year, principally on Sundays and public holidays” (Minute of the Mayor, 1936: 187). It is however likely that the car park may be older than that.

Since its establishment, a number of changes have taken place at the car park. For example, during 1937-1938 the main entrance into the car park was moved thirty yards up along Upper Park Street which allows “...better handling of motor cars in and out of the motor park” (Minute of the Mayor, 1937-1938:237). It can be assumed that the new entrance referred to here is the same one still found at the car park today.

During the 1939-1940 financial year further modifications and improvements to the car park took place when it was graded and tarred. The Minute of the Mayor (1940: 225) describes these activities as follows: “The motor park off Upper Park Drive graded. 2½ in. stone rolled in and tarred”. From this description it is evident that the car park was first graded and levelled, subsequent to which small stones (possibly gravel) was rolled into the graded surface of the park as a capping layer with the tar placed on top.

During the same period the observation was made in the Minute of the Mayor report that the car park was becoming extremely crowded and that extensions would have to be undertaken as soon as funds were available. As a potential solution to the problem, a separate “Non-European” car park and entrance to the zoo was proposed (Minute of the Mayor, 1939-1940).

In the table below the number of motor vehicles making use of the car parks over a period of five years is shown.

Table 1 The annual number of parked vehicles at the zoo shown through the course of a number of years.

YEAR	NUMBER OF PARKED VEHICLES: MAIN CAR PARK	NUMBER OF PARKED VEHICLES: ALL CAR PARKS
1935-1936	25 600	-
1936-1937	45 000	-
1937-1938	50 000	-
1938-1939	-	70 000
1940-1941	-	80 000
1943-1944	-	90 000
1945-1946	-	80 564

5.3 Summary of Findings from Archival and Historical Desktop Study

The following findings can be made from archival and historical desktop study:

- Before 1886 the study area and surroundings would have comprised a section of open veldt forming part of the farm Braamfontein.
- After the discovery of gold and the establishment of Johannesburg in 1886, the farm was acquired by the Braamfontein Company. In 1893 the southern sections of the farm located closest to Johannesburg were laid out as residential suburbs (known as Parktown) with the immediate surroundings of the study area earmarked for the planting of trees to service the mining sector. This plantation became known as the Sachsenwald or Braamfontein Forest.
- By the end of the nineteenth century the plantation was described as follows: “...*the miniature forest was divided into blocks with intervening open spaces, intended as firebreaks, and very shortly equestrians were able to enjoy a morning canter in the shady avenues. It became a popular resort in that treeless land, a Bois de Boulogne on a smaller scale...*” (Fraser, 1986).
- In 1903 a 200 acre portion of land was donated to the Johannesburg Town Council for the purpose of establishing a park for the enjoyment of the citizens of Johannesburg. The only condition the donors of the land had was that the park was to be named the Hermann Eckstein Park. The 200 acre donation included the present study area, and directly led to the development of the Johannesburg Zoo.
- In 1904 a small suburb comprising 11 stands was surveyed and named Forest Town. The suburb was incorporated into Parktown. This suburb is located between the present-day suburb of Forest Town and Killarney with Parktown to the south and west.
- In 1910 the suburb still today known as Forest Town was established and laid out directly south of the property where the Johannesburg Zoo is presently located. At the time of its application, this suburb had 642 stands.
- As part of the township application for Forest Town, the Braamfontein Company provided the Johannesburg Town Council with permission to utilise a small section of Hermann Eckstein Park for the purposes of a ‘Works Depot’. The boundaries of the park would have also included the area where the car park and archaeological site is located.
- In the 1930s the Johannesburg Zoo established a car park on Upper Park Drive. The extent of this car park was much smaller than the car park known today. This same smaller car park is depicted on the 1937 and 1952 aerial photographs as well.
- Between 1952 and 1976 the car park was extended to the east.

6. DESCRIPTION OF THE ARCHAEOLOGICAL SITE

The archaeological site is located in the Johannesburg Zoo Car Park, off Upper Park Road, at the following coordinates S 26° 10' 09.7" E 28° 02' 15.0". It comprises a historical midden that was identified during construction work on the Johannesburg Zoo's new parkade. With the entire original car park tarred, evidence for the midden only came to light during excavation work deeper than the car park's tarred surface and the sub-base or capping layer underneath.

- Two extensive excavations had been mechanically dug before construction work was temporarily halted to allow archaeological mitigation to take place. The first excavation starts near the centre of the car park, extends roughly 25 m to the east and is approximately 15 m wide. A layer of grey ash could be clearly discerned along the western and eastern profiles of the excavation. Although present along the northern and southern profiles as well, only sections of the grey layer could be seen on these ends due to disturbance caused by the construction work.
- The second excavation starts at a point roughly 30 m to the west of the first, and was excavated over an area roughly 35 m x 25 m in extent. The layer of grey ash was also identified in the northern profile of the second excavation, with one complete bottle and two imported ceramic fragments visible in the profile. The layer of grey ash could clearly be discerned along the eastern profile of the excavation, at which point it is approximately 500 mm deep. The layer of ash could not be clearly identified in the remaining three profiles of the second excavation.
- Spoil heaps from the excavations were located in the undisturbed section of land between the two excavations. Additional spoil heaps were also located along the north-eastern boundary of the car park. At the time of the commencement of the archaeological mitigation work, the surfaces of these spoil heaps contained varying densities of cultural material including complete and fragmented glass containers, complete and fragmented stoneware containers, fragmented imported ceramics, metal artefacts as well as animal bones.
- It is clear that both excavations had significantly disturbed the historical midden, although an evidently undisturbed section of land between the two excavations (where the spoil heap were located) was expected to contain a reasonably large section of the midden in primary context. As a result, this strip of undisturbed land was the focus of the archaeological test excavations.



Figure 15 Google Earth image of the Johannesburg Zoo Car Park before the commencement of construction activities. This image is dated to 25 May 2015.



Figure 16 Google Earth image of the Johannesburg Zoo Car Park after construction activities were halted and shortly before the archaeological mitigation commenced. This image is dated to 25 August 2015.



Figure 17 *General view of the construction site showing one of the excavation areas in the back with two spoil heaps in the front. This photograph was taken during the site visit of 17 July 2015.*



Figure 18 *The northern profile of the western construction pit with spoil heaps in the back. This photograph was taken during the site visit of 3 August 2015.*



Figure 20 Panoramic view of the archaeological site as seen from the north. The western excavation block can be seen to the right with the eastern excavation block just visible behind the spoil heaps on the left.

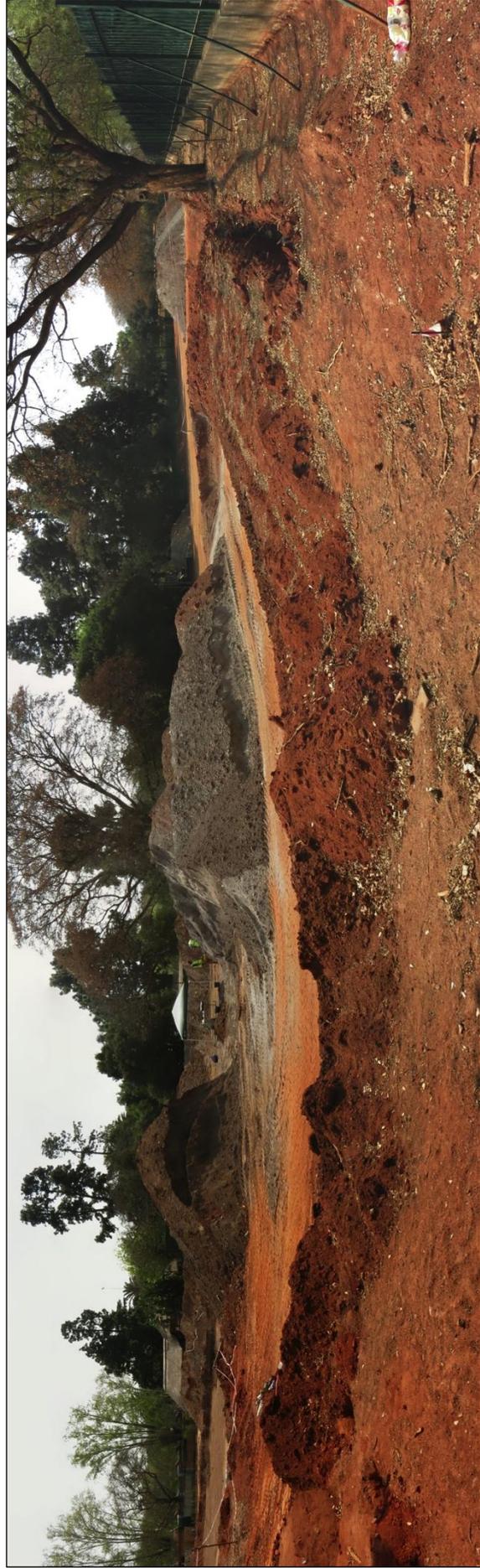


Figure 19 Panoramic view of the archaeological site as seen from the south. The western excavation block can be seen to the left with the eastern excavation block visible on the right.

7. ARCHAEOLOGICAL MITIGATION

7.1 Surface Collection

The first step in the archaeological mitigation was for the entire fieldwork team to conduct a walkthrough of the archaeological site with the purpose of identifying and collecting all artefacts located on its surface. The artefacts were exposed to the surface due to the construction work on the new parkade for the zoo. As a result, emphasis in the surface collection was placed on the spoil heaps. As the various spoil heaps had already been moved from their original positions by the time that the archaeological mitigation work commenced, the entire surface collection was recorded as a single unit.

The artefacts recovered during the surface collection, include the numbers listed in the table below.

Table 2 Number of glass, imported ceramic and metal artefacts recovered during the surface collection

Provenience	Glass	Imported Ceramics	Metal	Other
Surface Collection	253	55	26	20

7.2 Shovel Test Pits

Sixteen shovel test pits (STPs) were excavated in various localities across the site. While STPs are normally used to assess the presence of archaeological deposits as well as the depth of the cultural material located there, the sole aim for the excavation of these STPs was to establish the boundaries of the midden. The boundaries of the midden were required to allow for the continuation of construction activities in areas located outside of the midden. As a result, the soil and material excavated from the 16 STPs were not screened or collected.

The characteristics of the respective STPs will be outlined in the table below.

Table 3 The characteristics of the shovel test pits excavated at the site.

Provenience	Area	Depth	Description
STP 1	29 cm x 36 cm	56 cm	Red sterile sand without any sign of stratigraphic variance.

STP 2	32 cm x 30 cm	65 cm	Red sterile sand without any sign of stratigraphic variance.
STP 3	26 cm x 31 cm	58 cm	Red sterile sand without any sign of stratigraphic variance.
STP 4	26 cm x 28 cm	47 cm	Red sterile sand without any sign of stratigraphic variance.
STP 5	20 cm x 35 cm	56 cm	Red sterile sand without any sign of stratigraphic variance.
STP 6	Not Available	Not Available	Red sterile sand without any sign of stratigraphic variance.
STP 7	Not Available	Not Available	Midden material was exposed.
STP 8	Not Available	Not Available	Red sterile sand without any sign of stratigraphic variance.
STP 9	26 cm x 27 cm	36 cm	Red sterile sand without any sign of stratigraphic variance.
STP 10	27 cm x 40 cm	17 cm	First approximately 10 cm comprises a tar strip with the remainder of the profile comprising red sterile sand.
STP 11	44 cm x 29 cm	32 cm	First approximately 9 cm comprises a tar strip. At a depth of 12 cm below the surface a thin lens of grey ashey midden is visible. The lens extends diagonally across the profile which means that at its base, the STP has exposed midden on its one side and red sterile sand on the other.
STP 12	36 cm x 39 cm	26 cm	Red sterile sand without any sign of stratigraphic variance.
STP 13	32 cm x 49 cm	56 cm	Red sterile sand without any sign of stratigraphic variance.
STP 14	40 cm x 33 cm	17 cm	Red sterile sand without any sign of stratigraphic variance.
STP 15	49 cm x 34 cm	25 cm	Red sterile sand without any sign of stratigraphic variance.
STP 16	46 cm x 61 cm	60 cm	Red sterile sand without any sign of stratigraphic variance.



Figure 21 General view of STP 11.



Figure 22 Close-up view of STP 11. Scale in 10mm increments.

7.3 Test Pits

A total of eight test pits were excavated against the inner walls of the Western Construction Pit. With sections of the midden already exposed in the profiles of the construction pit, the aims of these excavations were to assess the depth, characteristics and extent of this midden. These eight test pits will be individually discussed below.

While no screening activities were carried out during the excavation of these eight Test Pits, all cultural material identified during the excavation were included in the assemblage. The table below provides an indication of the artefacts recovered during the excavation of these pits.

Table 4 Number of glass, imported ceramic and metal artefacts recovered during the surface collection

Provenience	Glass	Imported Ceramics	Metal	Other
Test Pit 1	2	10	2	0
Test Pit 2	5	6	3	3
Test Pit 3	6	1	7	1
Test Pit 4	5	6	2	0
Test Pit 5	0	0	0	0
Test Pit 6	9	18	0	0
Test Pit 7	60	51	35	5
Test Pit 8	5	34	1	4

7.3.1 Test Pit 1

Test Pit 1 is located on the north-eastern corner of the Western Construction Pit. A rectangular pit of 190 cm by 93 cm was excavated to a depth of 121 cm from the outer surface.

Both the eastern and northern profiles of the test pit provided evidence for vertically defined edges of the midden. This suggests that the midden material visible in these profiles were either historically discarded over time in a neatly excavated pit or alternatively that such a pit was excavated at a later stage for the sole purpose of dumping midden material from elsewhere on the site within it. If this latter scenario is true, this activity may have formed part of the activities relating to the grading, tarring and general establishment of the car park.



Figure 23 The northern profile and a section of the eastern profile of Test Pit 1 can be seen. Note the vertically defined edges of the midden on both profiles. The position of the red sterile soil on the inside of the vertically defined middens suggests that a buttress may have been left in each corners of the excavation pit to strengthen it against collapsing.

7.3.2 Test Pit 2

Test Pit 2 is located along the northern profile of the Western Construction Pit. A rectangular pit of 79 cm by 82 cm was excavated to a depth of 110 cm from the outer surface. The profile revealed a stratigraphic sequence starting with a capping layer (20 cm thick) comprising red soil with gravel stones followed by a thin layer of white-yellow sand of roughly 3 cm deep. This is followed by a tar layer roughly 5 cm deep and capping layer (with some gravel stones present) of roughly 12 cm deep located below the tar layer. Another capping layer of roughly 20 cm thick comprising red sand is located below the previous capping layer. At an estimated depth of 60 cm below the outer surface the midden was exposed. The midden extends over a depth of 50 cm and has a high number of charcoal chunks present. A thin layer of red sterile sand was identified below the midden.

From this profile it would appear that more than one tar layer was laid down during the long history of the car park. In turn, this means that the midden may have been disturbed on more than one occasion by grading and tarring activities.



Figure 24 The northern profile of Test Pit 2 can be seen. Note the thin tar layer (see red marker) with capping above and below.

7.3.3 Test Pit 3

Test Pit 2 is located along the northern profile of the Western Construction Pit. A rectangular pit of 82 cm by 78 cm was excavated to a depth of 119 cm below the outer surface. The profile revealed a stratigraphic sequence starting with a disturbed overfill (33 cm thick) followed by a thin layer of light orange sand with a 8 cm thick tar layer below. The tar layer has a red sand capping layer underneath (19 cm thick) below which the midden was exposed at a depth of approximately 62 cm below the outer surface. The midden extends over a depth of 34 cm and contains a high number of charcoal chunks. The midden ends on top of a 18 cm thick layer comprising building rubble. The excavation was halted at a depth of 119 cm below the outer surface.

From this profile it would again appear that more than one tar layer was laid down during the long history of the car park. In turn, this means that the midden may have been disturbed on more than one occasion by grading and tarring activities.



Figure 25 The northern profile of Test Pit 3 can be seen.

7.3.4 Test Pit 4

Test Pit 4 is located along the western profile of the Western Construction Pit. A rectangular pit of 78 cm by 82 cm was excavated to a depth of 134 cm from the outer surface. The profile revealed a stratigraphic sequence starting with a 51 cm thick layer of red sand followed by a 24 cm thick cream capping layer containing gravel stones. The midden was exposed at a depth of roughly 75 cm below the outer surface and extends over a depth of 41 cm. The midden material observed here differs from the midden material identified at the previous two test pits in that it comprises fine grey ash rather than a coal-rich midden. A maroon sandy layer (7 cm) was identified below the midden with a 14 cm thick gold-cloured sand layer below.

From this profile it would appear that the midden identified here differs from the midden material identified at TP 2 and TP 3.



Figure 26 The western profile of Test Pit 4 can be seen. The arrow marks the position of the midden layer.

7.3.5 Test Pit 5

Test Pit 5 is located along the southern profile of the Western Construction Pit. A rectangular pit of 82 cm by 100 cm was excavated to a depth of 128 cm from the outer surface. The profile revealed a stratigraphic sequence starting with a layer of disturbed material (52 cm thick) followed by the midden. The midden has a high charcoal content and is 18 cm thick. A dark grey ash was revealed below the midden (25 cm) with a 15 cm copper sand representing the bottom layer.

The top disturbed layer would have been deposited here during construction.



Figure 27 The southern profile of Test Pit 5 can be seen.

7.3.6 Test Pit 6

Test Pit 6 is located along the southern profile of the Western Construction Pit. A rectangular pit of 80 cm by 87 cm was excavated to a depth of 126 cm from the outer surface. The profile revealed a stratigraphic sequence comprising a top layer of dark grey sandy material which does have a low frequency of cultural material. This layer extends diagonally across the profile and has a red sterile layer below and on the reverse angle of the diagonal line. A lens comprising light grey charcoal-rich midden material is located on the lower western end of the profile.

It would appear that the stratigraphy of this pit had been disturbed. This is supported by the retrieval of a section of danger tape from within the profile at a point where the sterile red soil meets the dark grey sandy material.



Figure 28 The southern profile of Test Pit 6 can be seen. The point on the profile where the danger tape was retrieved from, is marked.

7.3.7 Test Pit 7

Test Pit 7 is located on the south-eastern corner of the Western Construction Pit. A rectangular pit of 190 cm by 85 cm was excavated to a depth of 190 cm from the outer surface. The eastern profile of the test pit provided evidence for another vertically defined edge of the midden. This suggests that the midden material visible in this profiles was either historically discarded over time in a neatly excavated pit or alternatively that such a pit was excavated at a later stage with the sole purpose of dumping midden material from elsewhere on the site within it. If true, this latter activity may have formed part of the activities relating to the grading, tarring and general establishment of the car park.



Figure 29 *The eastern profile and a section of the southern profile of Test Pit 7 can be seen. Note the vertically defined edges of the midden on the eastern profiles.*

7.3.8 Test Pit 8

Test Pit 8 is located along the eastern profile of the Western Construction Pit. A rectangular pit of 80 cm by 140 cm was excavated to a depth of 135 cm below the outer surface. The profile revealed a stratigraphic sequence starting with an orange capping layer that is roughly 20 cm thick. Below the capping layer a layer of charcoal-rich midden material was exposed followed by a layer of loose ash midden material. A thin layer of red sterile sand was identified at the bottom of the excavation.

The clear differentiation in the midden from a single locality between a charcoal rich and more loose ash evident in this profile was also observed in the profiles Block 3.



Figure 30 The eastern profile of Test Pit 8 can be seen.

7.4 Archaeological Excavation of Blocks

7.4.1 Introduction

The excavation of the 16 STPs and eight Test Pits, as well as a general assessment of the site, suggested that an undisturbed section of the midden is located between the two construction pits in an area that was almost entirely covered by spoil heaps. This area was earmarked for the excavation of three blocks. To achieve this in a safe manner, the removal of significant sections of the spoil heaps had to be accomplished first. The client was requested to provide a TLB and under supervision from the archaeological fieldwork team a section of the spoil heaps were removed and placed further to the east. Care was taken to ensure that the undisturbed midden located below the spoil heaps is not disturbed by the machinery.



Figure 31 This view of the site depicts the excavation of Block 1 in progress. The TLB is in the process of removing a section of the spoil heaps to allow for the excavation of the other two blocks.

7.4.2 The excavation of Block 1

After the removal of a section of the spoil heaps, the decision was made to excavate a 1 m x 1 m block in close proximity to the eastern profile of the Western Construction Pit. The position of Block 1 was decided upon as the original intention was for three excavation blocks to be staggered in a diagonal way across the area believed to contain undisturbed midden. As will be shown below, the excessive time required to remove all of the spoil heaps necessitated a change in strategy and as a result a staggered formation in the shape of a seven was decided upon.

From the excavation of the STPs as well as the Test Pits it had already become clear that the all of the site is covered with a layer containing red sand that is devoid of any cultural material. This layer is interpreted as a capping layer between the midden and the tar used to surface the car park. This capping layer does not form part of the midden nor does it contain any cultural material. As a result, to save time the decision was made to remove the capping layer as a single spit in all three block excavations thereby exposing the midden below.

The excavation of the exposed midden continued in arbitrary spits of 10cm each. At a depth of approximately 120cm below the ground surface sterile soil had been confirmed across the base of the block and its excavation was stopped. A total of ten layers (the capping layer named Block 1 Layer 1 as well as nine layers excavated in spits of 10cm and named Block 1 Layer 2 to Block 1 Layer 10.



Figure 32 *General view of the site showing the position of the three blocks. The area that was cleared of spoil heaps to allow for the placement and excavation of the three blocks can be seen.*

7.4.3 The excavation of Block 2

After the excavation of Block 1 the decision was made to place a second 1m by 1m block at a distance of 10m to the east of Block 1. The reason for placing the second block so far from the first was to allow for as much coverage of the perceived undisturbed midden during the excavation of the blocks. The second block was numbered Block 2 and was excavated in the same manner as Block 1, with the clearly identifiable red capping layer removed as the first layer followed by the excavation of the midden by way of 10cm arbitrary spits.

At a depth of approximately 92cm below the ground surface sterile soil had been confirmed across the base of the block and its excavation was stopped. A total of five layers (the capping layer named Block 2 Layer 1 as well as four layers excavated in spits of 10cm and named Block 2 Layer 2 to Block 2 Layer 5).



Figure 33 Block 2 after excavations had ceased. Scale in 50mm increments.

7.4.4 The excavation of Block 3

After the excavation of Blocks 1 and 2, the decision was made to place a third 1m by 1m block at a distance of 10m to the south of Block 2. The reason for placing this third block so far from the other blocks was to allow for as much coverage of the perceived undisturbed midden during the excavation of the blocks. The block was numbered Block 3 and was excavated in the same manner as Blocks 1 and 2, with the clearly identifiable red capping layer removed as the first layer followed by the excavation of the midden by way of 10cm arbitrary spits.

At a depth of approximately 172cm below the ground surface sterile soil had been confirmed across the base of the block and the excavation here was halted. A total of 15 layers (the capping layer named Block 3 Layer 1 as well as 14 layers that were excavated in spits of 10cm and named Block 3 Layer 2 to Block 3 Layer 15).



Figure 34 The base of Block 3 Layer 7 can be seen. Scale in 50mm increments.



Figure 35 The base of Block 3 Layer 13 can be seen. Scale in 50mm increments.

7.5 Recording of Site Layout

The last mitigation measure conducted at the site was the recording of the site layout. A dumpy level with 100m measuring tape was used for this purpose.

All aspects of the site including the 16 shovel test pits, eight test pits, three excavation blocks and so forth were measured in from a basepoint on the southern boundary of the site.

The end result of this activity is an archaeological site layout plan which is depicted below.

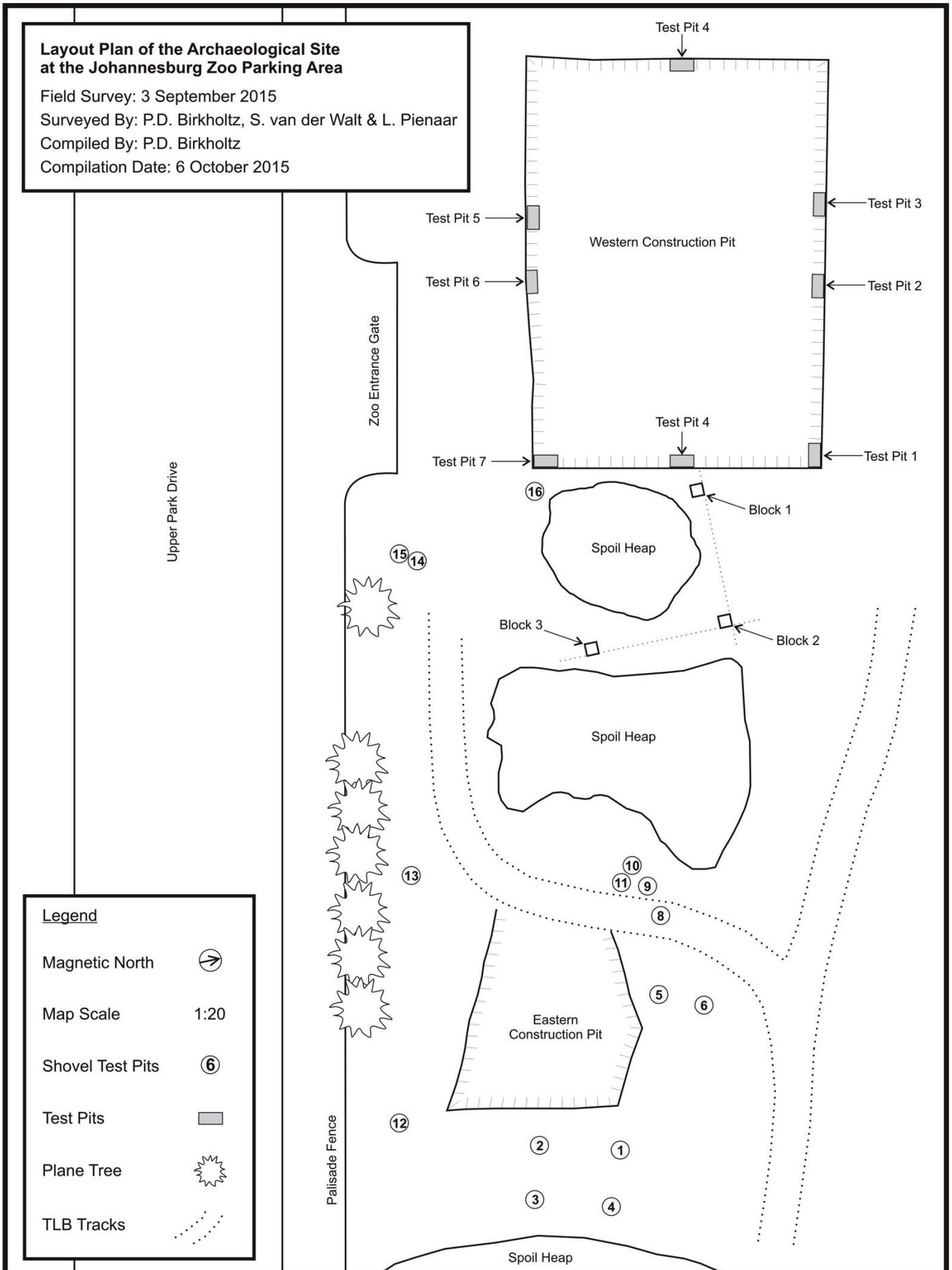


Figure 36 The archaeological site layout plan.

7.6 Discussion of Stratigraphy

7.6.1 Introduction

The eastern, northern and western profiles of Block 1; the eastern and northern profiles of Block 2 and the southern and western profiles of Block 3 were measured and drawn. These profile records are used as the basis for the interpretation of the stratigraphy of the site. As significant differences in the stratigraphy of the three blocks can be highlighted, the stratigraphy of the three blocks will be discussed individually.

7.6.2 Stratigraphy of Block 1

7.6.2.1 Block 1 Stratigraphic Layer 1

The first stratigraphic unit to be identified consists of a layer of red largely sterile sand within which a number of gravel stones could be identified. Stratigraphic Layer 1 is represented in the excavation by Block 1 Layer 1. This layer can be interpreted as a capping layer of red sand that was placed over the midden either as just as a foundation for the parking of cars or alternatively as a capping between the midden and the tarring of the car park. No evidence for the tar layer known to have covered the entire car park could be found. It can be assumed that the tar layer (and presumably a section of the capping layer as well) had already been removed by construction activities when the archaeological mitigation commenced.

The available archival and historical information suggest that the car park at the Johannesburg Zoo was already in existence during the 1935 to 1936 financial year and was graded and tarred in the 1939 to 1940 financial year. This capping layer can either be associated with a capping of the midden when the car park was established in the mid 1930s or can be linked to the tarring of the car park during the late 1930s to early 1940s.

7.6.2.3 Block 1 Stratigraphic Layer 2

At depths ranging between 32cm and 41cm below the surface a layer of grey ashy material was exposed which extended to depths between 46cm and 80cm below the surface. Block 1 Stratigraphic Layer 2 revealed a high number of artefacts and is represented in the excavation by Block 1 Layer 2, Block 1 Layer 3, Block 1 Layer 4, Block 1 Layer 5, Block 1 Layer 6, Block 1 Layer 7, Block 1 Layer 8, Block 1 Layer 9 and Block 1 Layer 10.

A number of glass artefacts recovered from this block can certainly be dated to the period after 1920. Two fish paste bottles containing a registration number indicating that these bottles were registered on 6 July 1920, were recovered from Block 1 Layer 3 and Block 1 Layer 10. Furthermore, four glass artefacts (MNV=1) from Block 1 Layer 6

and Block 1 Layer 7 formed part of a bottle with a registration number which indicates that the bottle was registered between 22 March and 29 April 1921. The only seemingly alternate date that is available for Stratigraphic Layer 2 is in the form of newspaper fragments from a single newspaper that were recovered from Block 1 Layer 6 and Block 1 Layer 7. These fragments could be identified as the 'November 1, 1916' edition of the British weekly Punch. Although this publication date seems to suggest an earlier date than the ones proposed above, it is worth noting that contrary to the standard daily papers of the day, the characteristics of Punch as a humorous newspaper filled with illustrations and jokes would have meant that it was more often than not kept for a while after purchase. Furthermore, the paper was only published in Great Britain and the date on which this newspaper was published was in the fulcrum of the First World War (1914 – 1918). These aspects would certainly also have delayed the arrival of the newspaper in Johannesburg.

7.6.2.4 Block 1 Stratigraphic Layer 3

The third and final stratigraphic layer comprises red sand without any cultural material or stones. This layer represents the sterile layer below the midden.

It is worth noting that this layer has a variable surface to the extent that in some areas the differentiation between this stratigraphic layer and Stratigraphic Layer 2 was found to be near vertical. This seems to indicate that the midden material from Stratigraphic Layer 2 was not deposited on a reasonably level surface, but may have been deposited in an hole, pit or hollow which had originally been excavated with the intention of discarding midden material there. Two possible interpretations for this feature can be identified, namely that before the midden was established the Johannesburg City Council may have excavated a pit or hollow with the intention of discarding the midden material into this depression. The second possible interpretation is that the construction team working on the development of the car park (including its grading and tarring) during the 1930s may have excavated a pit or hole with the intention of pushing all midden material identified within the proposed car park into the depression as a way of levelling the midden. This action would also have saved the construction team from carting the entire midden material away.

Although excavations would have ceased when the sterile layer was identified, Stratigraphic Layer 3 would also have been exposed in sections of Block 1 Layer 3, Block 1 Layer 4, Block 1 Layer 5, Block 1 Layer 6, Block 1 Layer 7, Block 1 Layer 8, Block 1 Layer 9 and Block 1 Layer 10.

7.6.3 Stratigraphy of Block 2

7.6.3.1 Block 2 Stratigraphic Layer 1

The first stratigraphic unit to be identified consists of a layer of grey compacted soil containing a large number of rocks. Block 2 Stratigraphic Layer 1 represents a section of Block 2 Layer 1.

It is possible that this layer was a second capping layer placed over the red capping layer identified in Block 1. If this assumption is true, the grey capping layer may have been placed over the red capping layer at the time of the tarring of the car park in the 1939 to 1940 financial year. It follows then that the red capping layer identified below this layer (and also at the top of Block 1) may have been placed over the midden when the car park was first established i.e. a capping activity aimed at producing a reasonably level surface for the motor vehicles to ride and park on.

7.6.3.2 Block 2 Stratigraphic Layer 2

At depths ranging between 12cm and 17cm below the surface a layer of red sandy was exposed which extended to depths of between 30cm and 40cm below the surface. Block 2 Stratigraphic Layer 2 comprises red sand with some gravel rocks present. Block 2 Stratigraphic Layer 2 is represented in the lower sections of Block 2 Layer 1.

Block 2 Stratigraphic Layer 2 shows significant similarities to Block 1 Stratigraphic Layer 1. Both units contain sterile red sand with gravel rocks also present. It seems more than likely that the two stratigraphic units are the same.

This stratigraphic unit is believed to represent a capping layer placed over the midden at the time when the car park was established in the 1930s. The information available at present suggest that the red sand capping represented the surface of the car park for a few years until the car park was tarred. Within this scenario it follows that the second capping layer of compacted grey soil (see Block 2 Stratigraphic Layer 1) would have been placed over the red sand layer as a second capping layer as a foundation for the tar.

7.6.3.3 Block 2 Stratigraphic Layer 3

At depths ranging between 30cm and 40cm below the surface a layer of very loose ashey material was exposed which extends to depths of between 69cm and 76cm below the surface. Block 2 Stratigraphic Layer 3 revealed a high number of artefacts and is represented in the excavation by Block 2 Layers 2 to 4.

A complete glass bottle was recovered from Block 2 Layer 2 which has the letters 'UGB' embossed on its base. The UGB mark on the base of this bottle was used by the British company United Glass Bottle Manufacturers Inc. which came into being in 1913 when a number of British glass manufacturing companies including Cannington, Shaw & Company, Nuttall & Company and Alfred Alexander & Company came together. The company existed between 1913 and 1968 (www.britishbottleforum.co.uk). Furthermore, 24 glass fragments (MNV=2) were recovered from Block 2

Layer 4. Of these, 22 fragments (MNV=1) could be associated with the company Crystal Springs Aerated Water Company. Bottles of this company appear in directories between 1896 and 1925 (Lastovica, 2000).

It seems likely for the midden material identified in this block as Stratigraphic Layer 3 to be the same as the ashey midden material in Block 1's Stratigraphic Layer 2.

7.6.3.4 Block 2 Stratigraphic Layer 4

At depths ranging between 69cm and 76cm below the surface a layer of red-brown soil was exposed which extends to depths of around 80cm below the surface. Block 2 Stratigraphic Layer 4 revealed some artefacts including a high number of bones. It is represented by sections of Block 2 Layer 4 and Block 2 Layer 5.

This stratigraphic layer was not identified in the excavation of Block 1.

7.6.3.5 Block 2 Stratigraphic Layer 5

At depths of around 80cm below the surface a layer of red sand was exposed. This layer contained no cultural material and also no rocks. With this sterile layer confirmed, the excavation of Block 2 was halted here. Block 2 Stratigraphic Layer 5 is represented by the lower sections of Block 2 Layer 5.

7.6.4 Stratigraphy of Block 3

7.6.4.1 Block 3 Stratigraphic Layer 1

The first stratigraphic unit to be identified consists of a layer of red sand containing some gravel stones. Block 3 Stratigraphic Layer 1 is represented in the archaeological excavations by Block 3 Layer 1.

Block 3 Stratigraphic Layer 1 shows significant similarities to Block 2 Stratigraphic Layer 2 and Block 1 Stratigraphic Layer 1. All three these units contain sterile red sand with gravel rocks also present. It seems more than likely that these three stratigraphic units comprise the same overall layer of red sand which appears to have covered extensive sections of the car park, if not the entire car park

This stratigraphic unit is believed to represent a capping layer placed over the midden at the time when the car park was established in the 1930s. The information available at present suggest that the red sand capping represented the surface of the car park for a few years until the car park was tarred.

7.6.4.2 Block 3 Stratigraphic Layer 2

At depths ranging between 14cm and 22cm below the surface a layer of charcoal-rich ashey material was exposed which extended to depths of between 35cm and 52cm below the surface. Block 3 Stratigraphic Layer 2 is represented in the lower sections of Block 3 Layer 2, Block 3 Layer 3, Block 3 Layer 4 and potentially small sections of Block 3 Layer 5.

A body and base fragment was recovered from Block 3 Layer 2 which has the letters 'UGB' embossed on its base. The UGB mark on the base of this bottle was used by the British company United Glass Bottle Manufacturers Inc. which came into being in 1913 when a number of British glass manufacturing companies including Cannington, Shaw & Company, Nuttall & Company and Alfred Alexander & Company came together. The company existed between 1913 and 1968 (www.britishbottleforum.co.uk). Furthermore, 10 fragments (of which seven could be mended together) with a MNV of one were recovered from Block 3 Layer 4. This bottle has the appearance of a rectangular pannelled medicine bottle. The following section is embossed on one of the bottle's side panels: "SAR & H SIEK". It is evident therefore that the bottle was a medicine container of the Sick Fund of the South African Railways and Harbours. The South African Railways and Harbours existed between 31 May 1910 and October 1981 (www.transnetfreightrail-tfr.net).

7.6.4.3 Block 3 Stratigraphic Layer 3

At depths ranging between 35cm and 52cm below a layer of very loose ashey material was exposed which extended to depths of between 152cm and 158cm below the surface. Block 3 Stratigraphic Layer 3 is represented in sections of Block 3 Layer 4 and Block 3 Layer 5 as well as Block 3 Layer 6, Block 3 Layer 7, Block 3 Layer 8, Block 3 Layer 9, Block 3 Layer 10, Block 3 Layer 11, Block 3 Layer 12, Block 3 Layer 13 and sections of Block 3 Layer 14.

Four fragments (MNV=1) from a Ball Jar were recovered from Block 3 Layer 14. The layout of the cursive text visible on this jar indicates that the bottle can be dated to between 1910 and 1923 (www.minnetrista.net).

7.6.4.4 Block 3 Stratigraphic Layer 4

At depths ranging between 152cm and 158cm below the surface a copper-coloured layer was exposed which extends to depths of 168cm below the surface. It is represented by sections of Block 3 Layer 14 and Block 3 Layer 15.

One complete bottle (MNV=1) was excavated from Block 3 Layer 15. The embossing on the side panels of the bottle identified it as a 3-In-One Oil container. In 1894 George W. Cole of Asbury, New Jersey, compounded a chemical mixture for the maintenance of bicycles to achieve rust protection, lubrication and cleaning. Between 1905 and

1910 the company name was changed to 3-In-One Oil Company. The company introduced screw top closures on its bottles in c. 1910 (www.3inone.com). It is clear that this bottle can be dated to between c. 1905 and c. 1910.

7.6.4.5 Block 3 Stratigraphic Layer 5

At depths of around 168cm below the surface a layer of red sand was exposed. This layer contained no cultural material and also no rocks. With this sterile layer confirmed, the excavation of Block 3 was halted here. Block 3 Stratigraphic Layer 15 is represented by the lower sections of Block 3 Layer 15.

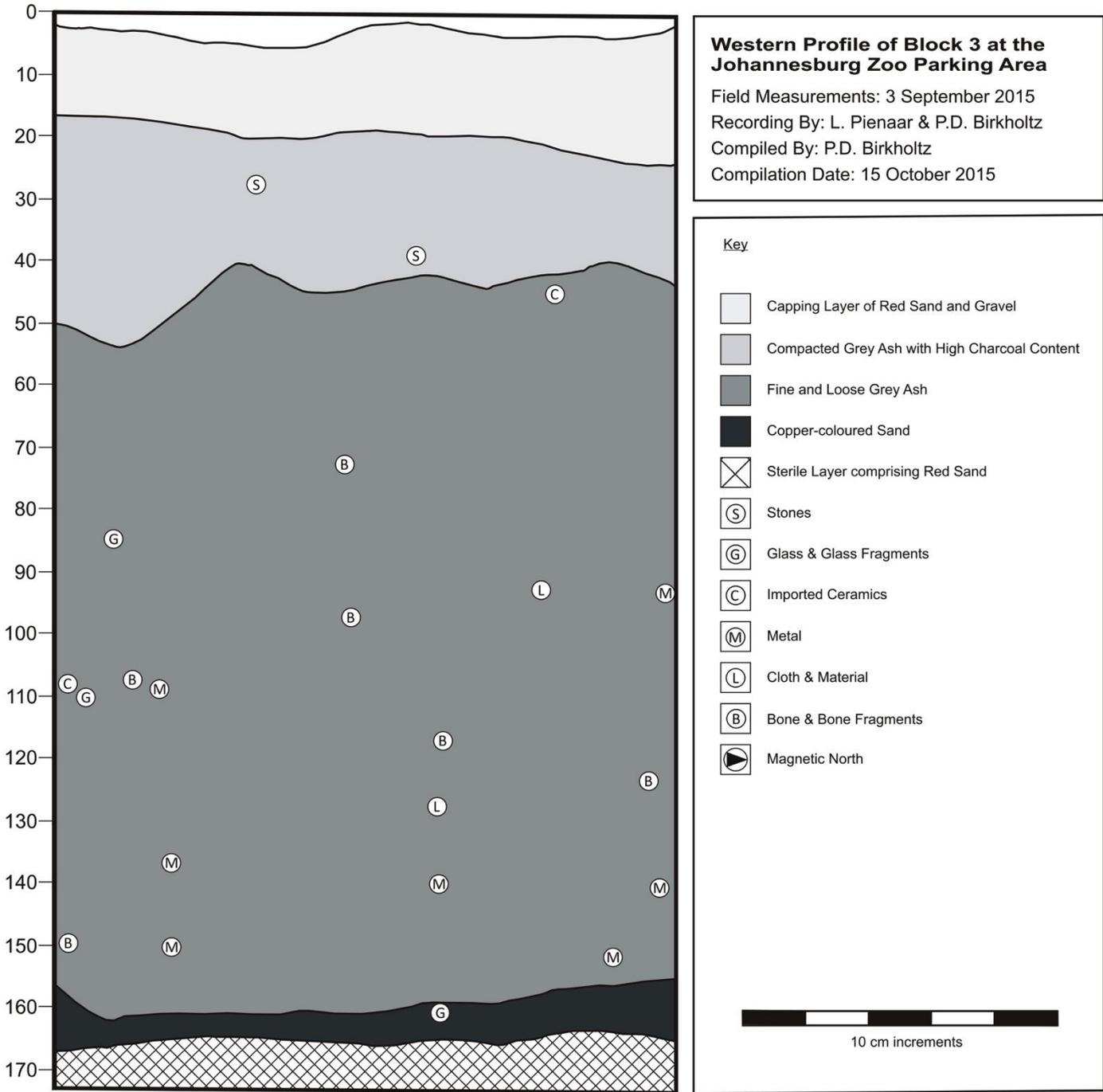


Figure 37 The western profile of Block 3.

8. DISCUSSION OF ARCHAEOLOGICAL ARTEFACTS

It is important to note that for the purposes of this interim report, artefact analysis was conducted on the three excavation blocks only with the retrieved material from the Test Pits and Surface Collection earmarked for inclusion in the final report. As a result, all the conclusions made in this section of the report (as is the case with the whole document), are based on the analysis of the three excavated blocks only. As a result, although the overall interpretation of the site as outlined below is not expected to deviate to any significant extent in the final report, this section must be considered as provisional for the time being.

In the section that follows below, the artefacts recovered during the excavations of the three blocks will be discussed within their respective classes.

8.1 Discussion of Glass Artefacts

8.1.1 General Discussion

A total of 748 individual glass fragments were recovered from the site. The MNV (Minimum Number of Vessels) for these fragments is 129. This means that at least 129 individual glass bottles and containers are represented in the assemblage.

Once all the glass artefacts had been washed and dried they were grouped firstly according to their provenience followed by their association with one of four large identity classes namely Containers (i.e. bottles and jars), Flat Items (i.e. window panes), Tableware (i.e. glasses, serving bowls and pouring jugs) and Ornaments (i.e. figurines). Those artefacts grouped into Containers were classified further into their respective colours namely aqua, light green, green, dark green, colourless, opaque-white, solarised, light blue, blue, turquoise, pink brown and yellow. The classification also allowed for the recording of the number of artefacts which could be identified from each colour as well as the MNV for both the sub-classes and each provenience as a whole. Finally, the classification also provides for the recording of the number of artefacts from each sub-group which could be identified. The definition of “identified” used in this instance was whether an artefact could be grouped into seven identity classes namely medicine bottles, food bottles, non-alcoholic beverages bottles, liquor bottles, tableware, general household ware as well as flat glass fragments (i.e. window panes). With the exception of flat glass, the number and MNV for all these identified classes were recorded. Due to the characteristics of flat glass its MNV was not calculated. Refer Annexure A for the glass classification forms. Out of the total number of 748 glass fragments recovered from the site only 379 fragments could be grouped into the above mentioned seven groups. This means that 50.67% of the total glass assemblage could be identified.

In the table below the provenience of all the glass artefacts as well as the MNV for each unit from across the site is provided. The following observations can be made:

- A total of 94 fragments (or 12.6% of all the glass artefacts) were recovered from Block 2 / Layer 4. This is the highest number of glass artefacts recovered from any of the block units. Of the 94 fragments recovered from Block 2 / Layer 4, as much as 61 are flat window pane fragments.
- The unit from the site with the second highest frequency of glass artefacts is Block 3 / Layer 5. A total of 80 individual glass artefacts were recovered from this unit which equates to a percentage of 10.7% of all the glass artefacts from the site. In contrast to Block 2 / Layer 4, only 11 glass pane fragments were recovered from this unit.
- Block 3 / Layer 10 revealed the third highest number of glass fragments, namely 61 (or 8.2% of all the glass artefacts). A total of 20 flat window pane fragments were recovered from this unit.
- It is evident from this table that no artefacts were recovered from the first layer of any of the three blocks. The reason for this is that the first layer on all three blocks comprised the remains of the capping (primarily red sand) which had been placed over the midden when the original car park was built. In all three blocks this capping was removed as the first layer, notwithstanding their individual thicknesses.

Table 5 Provenience of all the glass artefacts recovered from the site.

Provenience	Number of Fragments	MNV
Block 1 / Layer 1	0	0
Block 1 / Layer 2	46	8
Block 1 / Layer 3	26	6
Block 1 / Layer 4	16	5
Block 1 / Layer 5	8	5
Block 1 / Layer 6	24	5
Block 1 / Layer 7	12	7
Block 1 / Layer 8	13	3
Block 1 / Layer 9	17	2
Block 1 / Layer 10	4	3
<hr/>		
Block 2 / Layer 1	0	0
Block 2 / Layer 2	12	3
Block 2 / Layer 3	11	3
Block 2 / Layer 4	94	5
Block 2 / Layer 5	4	3
<hr/>		
Block 3 / Layer 1	0	0
Block 3 / Layer 2	20	5
Block 3 / Layer 3	29	7
Block 3 / Layer 4	31	6
Block 3 / Layer 5	80	5
Block 3 / Layer 6	15	5
Block 3 / Layer 7	13	4
Block 3 / Layer 8	31	5
Block 3 / Layer 9	25	4
Block 3 / Layer 10	61	7
Block 3 / Layer 11	43	4
Block 3 / Layer 12	39	5
Block 3 / Layer 13	21	2
Block 3 / Layer 14	27	6
Block 3 / Layer 15	26	6
Total	748	129

In the table below a summary is provided of all the glass artefacts from the assemblage which could be classified into one of the seven pre-defined identity types namely medicine bottles, food bottles, non-alcoholic beverages bottles, liquor bottles, tableware, general household ware and flat glass.

The table displays the provenience, number of artefacts and MNV. Furthermore, the totals and relevant percentages are provided at the bottom.

The following observations can be made from this table:

- When one excludes the MNV columns and only compare the number of fragments with one another, it is quite clear that the flat glass group is by far best represented in the assemblage with 61.60% of the fragments that could be identified falling in this group. The second and third best represented groups in terms of the number of fragments are medicine bottles (9.28%) and food (7.73%). This is followed by tableware (7.22%), non-alcoholic beverages bottles (6.70%), liquor bottles (4.38%) and household ware in last place with 3.09% representation.
- A comparison of the MNV figures provide a better understanding of the representation of the different bottle groups. Excluding the flat glass component of the assemblage, this comparison has shown that tableware is best represented with a percentage of 32.73%. The second best represented groups in terms of MNV is the medicine bottle group (21.82%) with food bottles (16.36%) in third position. Household ware is in the fifth position with a percentage of 12.73%. The liquor bottle group (9.09%) has the second least representation, with the non-liquor beverages group in last place with a 7.27% representation.
- The high frequency of flat glass in terms of the number of fragments point to a strong association between the site and urban households, and may even point to a period during which the surroundings of the study area would have been characterised by intensive building activities with the establishment and expansion of early suburbs such as Froest Town from 1909 onward.
- The high MNV representation for tableware, followed by medicine bottles, food bottles and household ware point to a strong domestic and urban character and association to the midden.

Table 6 Provenience of identified glass artefacts.

Provenience	Medicine Bottles		Food Bottles		Non-Alcoholic Bottles		Liquor Bottles		Tableware		Household Ware		Flat Glass	
	No.	MNV	No.	MNV	No.	MNV	No.	MNV	No.	MNV	No.	MNV	No.	MNV
Block 1 Layer 2					1	1					1	1	4	
Block 1 Layer 3	1	1	1	1					2	2	1	1		
Block 1 Layer 4					1	1								
Block 1 Layer 6							1	1	2	0			1	
Block 1 Layer 7	1	1	4	2					1	1				
Block 1 Layer 8	1	1	3	1					2	1			1	
Block 1 Layer 9									7	1			8	
Block 1 Layer 10			1	1										
Block 2 Layer 2													5	
Block 2 Layer 3													4	
Block 2 Layer 4					24	2							61	
Block 2 Layer 5													1	
Block 3 Layer 2	1	1							2	2			1	
Block 3 Layer 3									2	2			5	
Block 3 Layer 4	10	1					1	1					4	
Block 3 Layer 5									1	1	1	1	11	
Block 3 Layer 6			2	1					1	1			2	
Block 3 Layer 7													7	
Block 3 Layer 8	7	1	1	1			10	1	2	2	1	1	8	
Block 3 Layer 9	2	2							3	2			13	
Block 3 Layer 10	7	1											20	
Block 3 Layer 11													34	
Block 3 Layer 12									1	1	6	1	23	
Block 3 Layer 13							3	1			1	1	11	
Block 3 Layer 14	1	1	4	1					2	2			13	
Block 3 Layer 15	5	2	14	1			2	1			1	1	2	
Total = 388 MNV = 55	36	12	30	9	26	4	17	5	28	18	12	7	239	
Percentage of total	9.28	21.82	7.73	16.36	6.70	7.27	4.38	9.09	7.22	32.73	3.09	12.73	61.60	

8.1.2 Dating the Glass Assemblage

In the section below two tables are presented, both of which relate to the dating of artefacts from the glass assemblage. The first table discusses all the artefacts which could be identified with a specific company i.e. the specific brand represented by the glass item as well as any glass manufacturing companies which can be associated with artefacts from the site. The life histories of the specific brands and glass manufacturing companies can then be used to provide date sequences and ages for the specific glass artefacts. The second table discusses aspects such as glass manufacturing techniques which can suggest dates for specific glass items.

Table 7 Identified brands and glass manufacturing companies represented in the glass assemblage

Provenience and Description	Discussion on Chronological Markers	Suggested Dates
<p>One complete cylindrical ink bottle (MNV = 1) with vertical body sides recovered from Block 3 Layer 5. The embossed base of the bottle contains the following words: "Higgins / Inks / Brooklyn NY". The remnants of a label indicates that the bottle contained "Higgins American India Ink Superior".</p>	<p>Charles M. Higgins was born in Ireland and moved to the United States of America as a child. He started his ink business in New York in 1880 (www.bottlebooks.com).</p>	<p>1880 – c. 1950</p>
<p>Six fragments with a MNV of one were recovered during the archaeological fieldwork. The provenience of these fragments is Block 3 Layer 12.</p> <p>One of the six fragments is a base and contains the following embossed section: "THIS CONTAINER / MADE IN / USA / 7". This wording on the base as well as the characteristics and appearance of rim, neck and shoulder fragments, identified these fragments as part of a Waterman's Ink Bottle.</p>	<p>Lewis Edson Waterman started the Waterman Pen Company in 1894. The company expanded rapidly in the years after Waterman's death in 1901. The company shut down in 1954 (www.wikipedia.org).</p>	<p>1901 – 1954</p>
<p>One complete bottle with a MNV of one was recovered from Block 1 Layer 2.</p> <p>The bottle is a small opaque cylindrical container with the following embossed section on its base: "MUM MFG CO PHILA PA".</p>	<p>Mum was the first brand of commercial deodorant. Invented in 1888, the company became very successful. In 1931 it was bought by Bristol-Myers (www.wikipedia.org).</p>	<p>1888 – 1931</p>
<p>One fragment with a MNV of one was recovered from Block 1 Layer 2 and 22 fragments with a MNV of one from Block 2 Layer 4.</p> <p>All these fragments include sections of the</p>	<p>The Crystal Springs Aerated Water Company bottles appear in directories between 1896 and 1925 (Lastovica, 2000).</p>	<p>1896 – 1925</p>

<p>“fountain in lozenge” trademark of the Crystal Springs Aerated Water Company and can be associated with the company.</p>		
<p>Seven fragments with a MNV of one were recovered from Block 3 Layer 8. One of the fragments has the word “-York” embossed on it. This word would have formed part of the sentence: “CHESEBROUGH MANFG. CO. CD. NEW-YORK” and identifies these fragments as part of a Vaseline jar.</p>	<p>The history of Vaseline starts in 1859 when a New York chemist by the name of Robert Chesebrough extracted the key ingredient of petroleum jelly, petrolatum (www.parks.ca.gov). He patented Vaseline Petroleum Jelly in 1872 and its popularity rapidly grew worldwide. Its first appearance in South Africa was in 1885 (www.unilever.co.za). Vaseline is still manufactured today, albeit in a plastic container.</p> <p>The threaded caps replaced the cork closures in 1908 (Fike, 1987).</p>	<p>1908 – 1970s</p>
<p>One complete bottle with a MNV of one was recovered from Block 3 Layer 15.</p> <p>The bottle has indented panels on its sides with a bead closure (with cork still inside) and blake base profile. The two indented panels contain the following embossed sections: “THREE IN ONE OIL CO.” and “THREE IN ONE”.</p>	<p>In 1894 George W. Cole of Asbury, New Jersey, compounds a chemical mixture for the maintenance of bicycles to achieve rust protection, lubrication and cleaning. Between 1905 and 1910 the company name was changed to 3-In-One Oil Company. The company introduced screw top closures on its bottles in c. 1910 (www.3inone.com).</p>	<p>c. 1905 – c. 1910</p>
<p>One complete bottle with a MNV of one was recovered from Block 3 Layer 13.</p> <p>The bottle is rectangular pannelled container with a patent closure (with cork still inside). The front panel contains the remains of a label, from which the following words could be read “PROPERT’S” and “ROYAL NAVY DRESSING”.</p>	<p>Propert’s Limited was in existence between 1877 and 1955 (www.blancoandbull.com).</p> <p>Propert’s Royal Navy Dressing was a boot cleaner often used on polo shoes. References to this product was found in a book published at the turn of the century (Dale, 1902).</p>	<p>1877 – 1955</p>
<p>One complete bottle with a MNV of one was recovered from Block 3 Layer 15.</p> <p>The bottle is a tall brown vertical container with a wide cork closure. The bottle has two flat vertical sides and two round sides. All sides of the bottle has the embossed word “KEPLER”</p>	<p>In 1880 the company Burroughs, Wellcome & Company was established in Britain by two American pharmacists namely Silas Mainville Burroughs and Henry Solomon Wellcome. By</p>	<p>1883 – 1930</p>

<p>near the top and the remains of a label could be identified on three of the bottles' sides.</p>	<p>1883 the company started producing its so-called Kepler products, namely cod liver oil and malt preparations (www.ncbi.nlm.nih.gov).</p>	
<p>One complete bottle with a MNV of one was recovered from Block 1 Layer 8. The letters "UGB" are embossed on its base.</p> <p>One complete bottle with a MNV of one was recovered from Block 2 Layer 2. The following numbers and letters are embossed on its base "A52 / C O / UGB".</p> <p>One base and lower body fragment with a MNV of one was recovered from Block 3 Layer 2. The following numbers and letters are embossed on its base "452 / 3 2 / UGB".</p>	<p>The UGB mark on the base of these bottles was used by the British company United Glass Bottle Manufacturers Inc. which came into being in 1913 when a number of British glass manufacturing companies including Cannington, Shaw & Company, Nuttall & Company and Alfred Alexander & Company came together. The company existed between 1913 and 1968 (www.britishbottleforum.co.uk).</p>	<p>1913 – 1968</p>
<p>One complete bottle with a MNV of one was recovered from Block 1 Layer 7. The following letters and numbers are embossed on its base: "FGC / 138 / 5".</p> <p>One complete bottle with a MNV of one was recovered from Block 3 Layer 8. The followed is embossed on its base: "FGC / 4".</p>	<p>The FGC mark on the base of the two bottles was used by the Forsters Glass Company from St. Helens in Lancashire, England (www.jbarrystoberts.webspace.virginmedia.com). The company existed between 1902 and 1966 (www.glassbottlemarks.com).</p>	<p>1902 – 1966</p>
<p>Two complete bottles with a MNV of two were recovered from Block 1 Layer 3 and Block 3 Layer 15.</p> <p>The first bottle has the following embossed on its base: "WELLCOME / 100 / CHEM. WORKS". The second bottle has the following embossed on its base: "WELLCOME CHEMICAL WORKS".</p>	<p>Burroughs Wellcome and Company was originally established in 1880. It began manufacturing in London in 1882 and within two years by 1884 the company had a factory site at Bell Lane Wharf at Wandsworth. Due to the company's rapid expansion over the ensuing years, this factory site proved too small by 1888. Another site was obtained at the former Phoenix Paper Mills in Dartford in 1892. This factory site was officially known as the Wellcome Chemical Works (www.archives.wellcomelibrary.org).</p>	<p>1892 – 1950s</p>
<p>Two mended fragments with a MNV of one recovered from Block 3 Layer 15.</p> <p>The mended bottle has the appearance of a square pickle jar with a wide cork closure and the remains of a label on its front panel. The</p>	<p>The company Elizabeth Lazenby and Son was established in 1776. The company trademark which appears on this bottle was registered on 26 February 1907</p>	<p>1907 – 1950s</p>

<p>following words or sections of words can be read from the label: "PRE", "E. LAZENBY &", "ELIZABETH L" and "18 OUNCES".</p>	<p>(www.trademarks.justia.com).</p>	
<p>Ten fragments (of which seven could be mended together) with a MNV of one were recovered from Block 3 Layer 4.</p> <p>The bottle has the appearance of a rectangular pannelled medicine bottle. The following section is embossed on one of the bottle's side panels: "SAR & H SIEK".</p> <p>It is evident therefore that the bottle was a medicine container of the Sick Fund of the South African Railways and Harbours.</p>	<p>On 31 May 1910 the Union of South Africa was established by merging the colonies of Natal and the Cape with the former Boer Republics of the Transvaal and Free State. On the same day the South African Railways and Harbours (SAR & H) was also established and merged the Central South African Railways, Cape Government Railways and Natal Government Railways into one entity. In October 1981 the railways was renamed the South African Transport Services (www.transnetfreightrail-tfr.net).</p>	<p>c. 1910 – c. 1981</p>
<p>Complete aquamarine bottle with four indented panels was recovered from Block 3 Layer 14.</p> <p>The one indented side panel has the following embossed on it "CHAMBERLAIN'S" whereas the opposite side panel contains the embossed words "COUGH REMEDY". The remains of a label on the front panel also refer to "CHAMBERLAIN'S", indicates that the medicine was manufactured in "CAPE TOWN" and interestingly enough has instructions in both English and Dutch .</p> <p>It is clear that the bottle contained Chamberlain's Cough Remedy.</p>	<p>Chamberlain's Cough Remedy was first sold in 1881 (Lastovica & Lastovica, 1990). Between 1900 and 1920 offices for the Chamberlain Medicine Company were opened in South Africa, Australia and Canada (www.chamberlainlotion.com). The Cape Town offices of the company were certainly established before 1918, and possibly before 1908 as well.</p>	<p>c. 1908 – c. 1930</p>
<p>A green body and base fragment (MNV of one) was recovered from Block 1 Layer 6. The following embossed sections can be read from the bottle fragment: "AN" and "S LTD".</p> <p>Two green body fragments with a MNV of one were recovered from Block 3 Layer 15. One of the fragments has the following embossed letters: "N" and "S".</p> <p>Both vessels can be identified as beer bottles of the South African Breweries Limited.</p>	<p>The South African Breweries was already established in 1895 and still exists today. The embossed beer bottles date to the late 19th and early 20th centuries.</p>	<p>1895 – c. 1920</p>
<p>Two complete cylindrical fish spread bottles (MNV of two) with cork closures and vertical ridging along the body were recovered from Block 1 Layer 3 and Block 1 Layer 10.</p>	<p>While it is impossible to identify the exact brand of fish spread, the British Registration Number listed on the base of the two bottles indicate that this bottle</p>	<p>6 July 1920 - Unknown</p>

<p>The bases of both bottles contain the followed embossed section: "RG. NO. 677035".</p>	<p>desgin was registered in the name of W.A. Bailey on 6 July 1920 (www.great-glass.co.uk).</p>	
<p>Two fragments from Block 1 Layer 7 and two fragments from Block 1 Layer 8 could be cross-mended. The four fragments have a MNV of one.</p> <p>The cross-mended bottle is a cylindrical open cork closure with vertical ridging around its body. The lower section of the body (just above the base) is decorated with embossing depicting what appears to be peanut trees.</p> <p>The following appears just below the rim of the bottle: "Reg. No. 682017".</p>	<p>While it is impossible to identify the exact product brand, the British Registration Number listed just below the rim of the bottle indicates that this bottle design was registered between 22 March and 29 April 1921 (www.great-glass.co.uk).</p>	<p>1921 – Unknown</p>
<p>One green fragment from an octagonal bottle was recovered from Block 1 Layer 7. The following embossed section could be read: "PHO". It is clear from the spacing of the letters and the unused space after the "O", that this word section represents the end of a word. Based on this it would appear that the fragment formed part of a Udolpho Wolfe's Aromatic Schnapps bottle.</p>	<p>Udolpho Wolfe was a well-respected American merchant who in 1848 started importing high quality Dutch gin from the Netherlands to the United States. By the time of his death in 1870, Udolpho Wolfe's Aromatic Schnapps was a well-known brand across the world. After the death of Udolpho Wolfe in 1870, the company was taken over by his brother-in-law David Burke and was renamed Udolpho Wolfe Co. (www.ricksbottleroom.com).</p> <p>Newspaper advertisements for Udolpho Wolfe Schnapps are known for the years 1905 and 1911 and available information appear to suggest that Udolpho Wolfe's schnapps was made until the 1920s.</p>	<p>1848 – c. 1920s</p>
<p>One complete bottle with a MNV of one was recovered from Block 1 Layer 8.</p> <p>Embossing on two sides of the bottle as well as the readable sections of a lable on the front circular panel of the container identifies it as a 16 ounces Bovril meat extract bottle. The embossing on the one side reads "16 oz BOVRIL LIMITED" and on the other side reads "16 oz BOVRIL LIMITED C524".</p>	<p>In 1870 John Lawson Johnston created a product known as "Johnston's Fluid Beef" that was later renamed Bovril. In 1889 the Bovril Company was established (www.wikipedia.org).</p>	<p>1889 – Present Day</p>
<p>One complete bottle with a MNV of one was recovered from Block 3 Layer 8.</p> <p>The bottle is brown with a disc-like body and</p>	<p>The Marmite Food Company was established on 13 June 1902. Marmite was discovered by Justus Freiherr von Liebig when</p>	<p>c. 1920 – Present Day</p>

<p>cylindrical neck and rim which has a screw top lid.</p>	<p>he found that a yeast waste product during the beer brewing process "...could be made into a meaty flavoured concentrate that was completely vegetarian." (www.marmitemuseum.co.uk).</p> <p>The same website indicates that Marmite was first sold in white earthenware jars. In 1920 the "...<i>iconic brown bulbous glass jars...</i>" were introduced to the market.</p>	
<p>A complete opaque ointment bottle was recovered from Block 3 Layer 8.</p> <p>The word "OATINE" is embossed on the base of the bottle.</p>	<p>Oatine Face Cream appears to have been introduced to the market during the early 1900s. It became very popular amongst women working in factories during the First World War (1914 – 1918).</p>	<p>c. 1900 – c. 1950</p>
<p>Four clear fragments with a MNV of one were recovered from Block 3 Layer 14. Another fragment, potentially from the same container, was recovered from Block 3 Layer 15.</p> <p>Two fragments contain sections of the same embossed word in cursive text, namely "all". The fragment from Block 3 Layer 15 contains an embossed "AL" in formal text.</p> <p>It is clear that these fragments formed part of a Ball Mason jar, and with the fragment from Block 3 Layer 15, it would appear that the bottle may have been either a Ball Ideal, Ball Special or Ball Super Seal jar.</p>	<p>Ball Fruit Jars were produced by the glass making company Ball Bros Manufacturing Company which was established in 1880. They became the best known fruit jar (also known as canning jars) manufacturer in the world (www.glassbottlemarks.com).</p> <p>The layout of the cursive text indicates that the bottle can be dated to between 1910 and 1923 (www.minnetrista.net).</p>	<p>1910 – 1923</p>

8.1.3 Identified Glass Bottles

8.1.3.1 Medicine Bottles

A total of 36 artefacts (with an MNV of 12) can be associated with the medicine bottle category. This means that at least 12 individual medicine bottles are represented in the assemblage. For the purposes of this report the definition of medicine bottles was such that it included poison bottles, tablet bottles, schnapps bottles, cough remedies and vaseline bottles. The provenience of these 36 artefacts (MNV = 12) is provided in the table below.

Provenience	No. of Fragments	MNV
Block 1 Layer 3	1	1
Block 1 Layer 7	1	1
Block 1 Layer 8	1	1
Block 3 Layer 2	1	1
Block 3 Layer 4	10	1
Block 3 Layer 8	7	1
Block 3 Layer 9	2	2
Block 3 Layer 10	7	1
Block 3 Layer 14	1	1
Block 3 Layer 15	5	2
Total	36	12

Out of the entire section of the collection that could be identified as medicine bottles, a total of four complete bottles are present. These four bottles were recovered from Block 1 Layer 3 (n=1), Block 3 Layer 9 (n=1), Block 3 Layer 14 (n=1) and Block 3 Layer 15 (n=1). Three of these four complete bottles could be associated with specific medicine brands or manufacturers namely Wellcome Chemical Works (n=1), Chamberlain's Cough Remedy (n=1) and Kepler Cod Liver Oil (n=1). Of the remaining 32 fragments (with a MNV of 8), a number of medicine brands could also be identified. These include Udolpho Wolfe's Aromatic Schnapps (1 fragment with a MNV of 1), South African Railways and Harbours Sick Fund (10 fragments with a MNV of 1) and Vaseline (7 fragments with a MNV of 1). The remaining 14 fragments with a MNV of five include one fragment of faceted green glass (MNV=1), seven fragments (MNV=1) of an unidentified cylindrical tablet container, one base and body fragment (MNV=1), one rectangular base and lower body fragment (MNV=1) and four fragments from a rectangular medicine container (MNV=1).

The identified medicine brands will be individually discussed below as will their respective representation in the glass collection from the site.

- **Chamberlain's Cough Remedy**

A complete aquamarine bottle with four indented panels was recovered from Block 3 Layer 14. The one indented side panel has the following embossed on it "CHAMBERLAIN'S" whereas the opposite side panel contains the embossed words "COUGH REMEDY". The remains of a label on the front panel also refer to "CHAMBERLAIN'S" and indicates that the medicine was manufactured in "CAPE TOWN". Interestingly enough this label has instructions in both English and Dutch. The brand can undoubtedly be identified as Chamberlain's Cough Remedy.

Chamberlain's Cough Remedy was first sold in 1881 (Lastovica & Lastovica, 1990). Between 1900 and 1920 offices for the Chamberlain Medicine Company were opened in South Africa, Australia and Canada (www.chamberlainlotion.com).

The Cape Town offices of the company were certainly established before 1918, and possibly before 1908 as well.

- **Kepler Cod Liver Oil**

One complete bottle was recovered from Block 3 Layer 15. The bottle is a brown container with a defined shoulder and a wide cork closure. The bottle has a eerie oval or monarch base profile (see Fike, 1987) with a flat front and back and two shorter curved sides. All sides of the bottle has the embossed word "KEPLER" just below the shoulder and the remains of a label could be identified on three of the bottles' sides.

In 1880 the company Burroughs, Wellcome & Company was established in Britain by two American pharmacists namely Silas Mainville Burroughs and Henry Solomon Wellcome. By 1883 the company started producing its so-called Kepler products, namely cod liver oil and malt preparations (www.ncbi.nlm.nih.gov).



Figure 38 This complete bottle of Chamberlain's Cough Remedy was recovered from Block 3 Layer 14.. Scale in 10mm increments.



Figure 39 This complete bottle of Kepler Cod Liver Oil was recovered from Block 3 Layer 15. Scale in 10mm increments.

- **Vaseline**

Seven fragments (MNV=1) were recovered during the archaeological fieldwork. The provenience of these artefacts is Block 3 Layer 8. One of the fragments has the following word section embossed on it “-YORK” which allowed for the identification of these fragments. This identification could be made as it is known that earlier vaseline bottles were embossed with the following words: “CHESEBROUGH MANFG. CO. CD. NEW-YORK”. The body shape of some of the fragments also supported this identification.

The history of Vaseline starts in 1859 when a New York chemist by the name of Robert Chesebrough extracted the key ingredient of petroleum jelly, petrolatum (www.parks.ca.gov). He patented Vaseline Petroleum Jelly in 1872 and its popularity rapidly grew worldwide. Its first appearance in South Africa was in 1885 (www.unilever.co.za). Vaseline is still manufactured today, albeit in a plastic container. The threaded caps replaced the cork closures in 1908 (Fike, 1987).



Figure 40 Fragment of a Vaseline bottle recovered from Block 3 Layer 8. Scale in 10mm increments.

- **Udolpho Wolfe's Aromatic Schnapps**

One green fragment from an octagonal bottle was recovered from Block 1 Layer 7. The following embossed section could be read: "PHO". It is clear from the spacing of the letters and the unused space after the "O", that this word section represents the end of a word. Based on this it would appear that the fragment formed part of a Udolpho Wolfe's Aromatic Schnapps bottle.

Udolpho Wolfe was a well-respected American merchant who in 1848 started importing high quality Dutch gin from the Netherlands to the United States. By the time of his death in 1870, Udolpho Wolfe's Aromatic Schnapps was a well-known brand across the world. After the death of Udolpho Wolfe in 1870, the company was taken over by his brother-in-law David Burke and was renamed Udolpho Wolfe Co. (www.ricksbottleroom.com). Newspaper advertisements for Udolpho Wolfe Schnapps are known for the years 1905 and 1911 and available information appear to suggest that Udolpho Wolfe's schnapps was made until the 1920s.



Figure 41 Fragment of a bottle of a Udolpho Wolfe's Aromatic Schnapps. The provenience of the fragment is Block 1 Layer 7. Scale in 10mm increments.

- **SAR & H Sick Fund**

Ten fragments (MNV = 1) were recovered from Block 3 Layer 4. Of these ten fragments, seven could be mended together.

The bottle has the appearance of a rectangular pannelled medicine bottle. The following section is embossed on one of the bottle's side panels: "SAR & H SIEK". It is evident therefore that the bottle was a medicine container of the Sick Fund of the South African Railways and Harbours.

On 31 May 1910 the Union of South Africa was established by merging the colonies of Natal and the Cape with the former Boer Republics of the Transvaal and Free State. On the same day the South African Railways and Harbours (SAR & H) was also established and merged the Central South African Railways, Cape Government Railways and Natal Government Railways into one entity. In October 1981 the railways was renamed the South African Transport Services (www.transnetfreightrail-tfr.net).

- **Unknown medicine bottle of the Wellcome Chemical Works**

One complete amber-coloured bottle with a MNV of one was recovered from Block 1 Layer 3. This bottle has the following embossed on its base: "WELLCOME / 100 / CHEM. WORKS".

The bottle still contains the remnant of tablets and was evidently a medicine bottle. The exact medicine is however not known.

Burroughs Wellcome and Company was originally established in 1880. It began manufacturing in London in 1882 and within two years by 1884 the company had a factory site at Bell Lane Wharf at Wandsworth. Due to the company's rapid expansion over the ensuing years, this factory site proved too small by 1888. Another site was obtained at the former Phoenix Paper Mills in Dartford in 1892. This factory site was officially known as the Wellcome Chemical Works (www.archives.wellcomelibrary.org).



Figure 42 One mended bottle of the South African Railways and Harbours Sick Fund. The bottle fragments were excavated from Block 3 Layer 4. Scale in 10mm increments.



Figure 43 One complete bottle manufactured by the Wellcome Chemical Works was recovered from Block 1 Layer 3. Scale in 10mm increments.

8.1.3.2 Food Bottles

A total of 30 fragments associated with food are included in the collection. The MNV for these 30 fragments is 9. This means that at least nine individual bottles associated with food were recovered from the site. The definition used for this item is such that it includes a wide array of food-related items including pickles, extracts, fish spreads, canning jars and so forth. The provenience of the food bottles from the site can be seen in the table below.

Provenience	No. of Fragments	MNV
Block 1 Layer 3	1	1
Block 1 Layer 7	4	2
Block 1 Layer 8	3	1
Block 1 Layer 10	1	1
Block 3 Layer 6	2	1
Block 3 Layer 8	1	1
Block 3 Layer 14	4	1
Block 3 Layer 15	14	1
Total	30	9

Out of the entire section of the collection that could be identified as food bottles, a total of five complete bottles are present. These five bottles were recovered from Block 1 Layer 3 (n=1), Block 1 Layer 7 (n=1), Block 1 Layer 8 (n=1), Block 1 Layer 10 (n=1) and Block 3 Layer 8 (n=1). Two of these five complete bottles could be associated with specific food brands or manufacturers namely Marmite (n=1) and Bovril (n=1). Furthermore, two of these five complete bottles could also be identified as fish spread bottles (with bottle designs registered in 1920), but the exact brand of fish spread is not known. Of the remaining 25 fragments (MNV=4), a number of food brands could also be identified. These include a Ball Fruit (or Canning) Jar (5 fragments with a MNV of 1) and a pickle bottle of the company Elizabeth Lazenby & Son (14 fragments with a MNV of 1). The remaining 6 fragments with a MNV of two include two rim fragments of a wide-mouthed cork closure food jar (MNV=1) as well as four crossmended fragments (MNV=1) which may have been used for peanut butter or coconut oil.

The identified food brands will be individually discussed below as will their respective representation in the glass collection from the site.

- **Elizabeth Lazenby & Son**

Two mended fragments (MNV=1) were recovered from Block 3 Layer 15. The mended bottle fragment has the appearance of a square pickle jar with a wide cork closure and the remains of a label on its front panel. The following words or sections of words can be read from the label: "PRE", "E. LAZENBY &", "ELIZABETH L" and "18 OUNCES". The company Elizabeth Lazenby and Son was established in 1776. The company trademark which appears on this bottle was registered on 26 February 1907 (www.trademarks.justia.com).



Figure 44 Mended bottle fragment of the company Elizabeth Lazenby & Son that was recovered from Block 3 Layer 15. Scale in 10mm increments.

- **Marmite**

One complete bottle with a MNV of one was recovered from Block 3 Layer 8. The bottle is brown with a disc-like body and cylindrical neck and rim which has a screw top lid.

The Marmite Food Company was established on 13 June 1902. Marmite was discovered by Justus Freiherr von Liebig when he found that a yeast waste product during the beer brewing process “...could be made into a meaty flavoured concentrate that was completely vegetarian.” (www.marmitemuseum.co.uk). The same website indicates that Marmite was first sold in white earthenware jars. In 1920 the “...iconic brown bulbous glass jars...” were introduced to the market.



Figure 45 One complete Marmite bottle from Block 3 Layer 8. Scale in 10mm increments.

- **Bovril**

One complete bottle with a MNV of one was recovered from Block 1 Layer 8. Embossing on two sides of the bottle as well as the readable sections of a label on the front circular panel of the container identify it as a 16 ounces Bovril meat extract bottle. The embossing on the one side reads “16 oz BOVRIL LIMITED” and on the other side reads “16 oz BOVRIL LIMITED C524”.

In 1870 John Lawson Johnston created a product known as “Johnston’s Fluid Beef” that was later renamed Bovril. In 1889 the Bovril Company was established (www.wikipedia.org).



Figure 46 This complete Bovril bottle was recovered from Block 1 Layer 8. Scale in 10mm increments.

- **Unidentified Fish Spread**

Two complete cylindrical fish spread bottles (MNV of two) with cork closures and vertical ridging along the body were recovered from Block 1 Layer 3 and Block 1 Layer 10. The bases of both bottles contain the followed embossed section: "RG. NO. 677035".

While it is impossible to identify the exact brand of fish spread, the British Registration Number listed on the base of the two bottles indicate that this bottle design was registered in the name of W.A. Bailey on 6 July 1920 (www.great-glass.co.uk).



Figure 47 This complete fish spread bottle was recovered from Block 1 Layer 10. Scale in 10mm increments.

- **Ball Fruit or Canning Jar**

Four clear fragments with a MNV of one were recovered from Block 3 Layer 14. Another fragment, potentially from the same container, was recovered from Block 3 Layer 15. Two fragments contain sections of the same embossed word in cursive text, namely “all”. The fragment from Block 3 Layer 15 contains an embossed “AL” in formal text.

It is clear that these fragments formed part of a Ball Mason jar, and with the fragment from Block 3 Layer 15, it would appear that the bottle may have been either a Ball Ideal, Ball Special or Ball Super Seal jar.

Ball Fruit Jars were produced by the glass making company Ball Bros Manufacturing Company which was established in 1880. They became the best known fruit jar (also known as canning jars) manufacturer in the world (www.glassbottlemarks.com). The layout of the cursive text indicates that the bottle can be dated to between 1910 and 1923 (www.minnetrista.net).



Figure 48 Two mended fragments from a Ball Jar. These fragments were both excavated from Block 3 Layer 14. Scale in 10mm increments.

8.1.3.3 Non-Alcoholic Beverages Bottles

A total of 26 artefacts (MNV=4) can be associated with this bottle category. This means that at least four individual non-alcoholic beverages bottles are represented in the assemblage. For the purposes of this report the definition of this bottle category was such that it included mineral water bottles, sodas and so forth.

The provenience of these 26 artefacts (MNV = 4) is provided in the table below.

Provenience	No. of Fragments	MNV
Block 1 Layer 2	1	1
Block 1 Layer 4	1	1
Block 2 Layer 4	24	2
Total	26	4

No complete bottles are represented in this section of the collection. Of the 26 fragments (MNV=4), one manufacturer / brand could be identified namely the Crystal Springs Aerated Water Company (23 fragments with a MNV of 2). The remaining three fragments with a MNV of two include one aqua fragment of an unconfirmed mineral water company and a clear body fragment on which the following words are embossed: "LOANED / WHEN". It seems likely that the latter two words formed part of the following sentence: "THIS BOTTLE LOANED MUST BE RETURNED WHEN EMPTY". This wording is known from early soda bottles in the United States.

The identified brands will be individually discussed below as will their respective representation in the glass collection from the site.

- **Crystal Springs Aerated Water Company**

One fragment (MNV=1) was recovered from Block 1 Layer 2 and 22 fragments (MNV=1) from Block 2 Layer 4. All these fragments include sections of the "fountain in lozenge" trademark of the Crystal Springs Aerated Water Company.

The Crystal Springs Aerated Water Company bottles appear in directories between 1896 and 1925 (Lastovica, 2000).



Figure 49

Mended body fragment of a bottle of the Crystal Springs Aerated Water Company. The 'fountain in lozenge' trademark of the company that is partially depicted on this mended body fragment identified the bottle as a mineral water bottle of this company.

8.1.3.4 Liquor Bottles

A total of 17 artefacts (MNV=5) can be associated with this bottle category. This means that at least five individual liquor bottles are represented in the assemblage. For the purposes of this report the definition of this bottle category was such that it included beer bottles, wine bottles, brandy bottles and so forth.

The provenience of these 26 artefacts (MNV = 4) is provided in the table below.

Provenience	No. of Fragments	MNV
Block 1 Layer 6	1	1
Block 3 Layer 4	1	1
Block 3 Layer 8	10	1
Block 3 Layer 13	3	1
Block 3 Layer 15	2	1
Total	17	5

No complete bottles are represented in this section of the collection. Of the 17 fragments (MNV=5), one manufacturer / brand could be identified namely the South African Breweries (3 fragments with a MNV of 2). The remaining 14 fragments (MNV=3) include one dark green lower body and base fragment, 10 fragments of an unknown liquor bottle and three fragments of a dark green liquor bottle.

The identified brands will be individually discussed below as will their respective representation in the glass collection from the site.

- **South African Breweries**

A green body and base fragment (MNV=1) was recovered from Block 1 Layer 6. The following embossed sections can be read from the bottle fragment: "AN" and "S LTD". Two green body fragments (MNV=1) were recovered from Block 3 Layer 15. One of the fragments has the following embossed letters: "N" and "S". Both vessels can be identified as embossed beer bottles of the South African Breweries Limited.

The South African Breweries Limited was established in 1895 and still exists today. The embossed beer bottles of this manufacturer dates to the late 19th and early 20th centuries (Lastovica, 2000).



Figure 50 Green base and boy fragment from Block 1 Layer 6. The embossing shown on this fragment form part of the phrase South African Breweries Ltd. Scale in 10mm increments.

8.1.3.5 Tableware

A total of 28 glass fragments (MNV of 18) from tableware items were identified in the collection. This means that at least 18 individual items of this type are represented in the assemblage. The provenience of these is as follows:

Provenience	No. of Fragments	MNV
Block 1 Layer 3	2	2
Block 1 Layer 6	2	0
Block 1 Layer 7	1	1
Block 1 Layer 8	2	1
Block 1 Layer 9	7	1
Block 3 Layer 2	2	2
Block 3 Layer 3	2	2
Block 3 Layer 5	1	1
Block 3 Layer 6	1	1
Block 3 Layer 8	2	2
Block 3 Layer 9	3	2
Block 3 Layer 12	1	1
Block 3 Layer 14	2	2
Total	28	18

The tableware artefacts comprise the following:

- One fragment of cut glass which appears to have formed part of a decanter was recovered from Block 1 Layer 3. Block 1 Layer 6 revealed two more fragments of cut glass. While the three fragments could not be crossmended, it seems likely that they formed part of the same decanter.
- One green fragment from a drinking glass decorated with geometric patterns and frosted glass. The fragment was recovered from Block 1 Layer 3.
- A clear neck and partial rim fragment from a cruet (or decanter?) with a triple flanged spout. The fragment was recovered from Block 1 Layer 7.
- One clear fragment of a stopper recovered from Block 1 Layer 8.

- One lid fragment of a circular serving dish recovered from Block 1 Layer 8. The clear glass fragment is decorated with concentric lines. Seven lid fragments of a circular serving dish with the same concentric lines were recovered from Block 1 Layer 9. All these fragments appear to have formed part of the same item.
- One clear fragment of a stopper recovered from Block 3 Layer 2.
- A clear fragment of a serving dish lid recovered from Block 3 Layer 2.
- One white opaque fragment containing decorative designs. The fragment was recovered from Block 3 Layer 3 and may have formed part of a plate or serving dish.
- One clear fragment containing a star and bubble design recovered from Block 3 Layer 3.
- One clear base and lower body fragment from a drinking glass. The fragment was recovered from Block 3 Layer 5.
- One cylindrical salt or pepper shaker with a repetitive diamond design. The shaker was recovered from Block 3 Layer 6.
- One complete clear stopper recovered from Block 3 Layer 8. The stopper could either have been from a decanter or cruet.
- One clear base and lower body fragment from a drinking glass. The fragment was recovered from Block 3 Layer 8.
- One clear base and lower body fragment from a drinking glass. The fragment was recovered from Block 3 Layer 9.
- Two fragments forming part of the base of a wine glass. The fragments were recovered from Block 3 Layer 9.
- One clear fragment containing a cross-hatch decorative design. The fragment was recovered from Block 3 Layer 12.
- One clear rim fragment of a thin drinking glass, possibly a wine glass. The fragment was recovered from Block 3 Layer 14.
- One rectangular fragment which may have been part of a plate, serving dish or oven dish. Fragment recovered from Block 3 Layer 14.



Figure 51 This near complete shaker was recovered from Block 3 Layer 6. Scale in 10mm increments.



Figure 52 Four examples of tableware recovered from the site including a neck and partial rim fragment from a cruet with a triple flanged spout recovered from Block 1 Layer 7 (top left), a fragment of a serving dish lid from Block 3 Layer 2 (top right), a clear stopper fragment from Block 1 Layer 8 (bottom left) as well as a stopper fragment from Block 3 Layer 2 (bottom right). Scale in 10mm increments.



Figure 53 A cut glass fragment of a decanter recovered from Block 1 Layer 3. Scale in 10mm increments.

8.1.3.6 General Household Ware

This category comprises those glass artefacts associated with domestic activities and household life but which do not have any association with food or tableware.

A total of 12 glass fragments (MNV=7) could be grouped into this category. The provenience of these fragments is as follows:

Provenience	No. of Fragments	MNV
Block 1 Layer 2	1	1
Block 1 Layer 3	1	1
Block 3 Layer 5	1	1
Block 3 Layer 8	1	1
Block 3 Layer 12	6	1
Block 3 Layer 13	1	1
Block 3 Layer 15	1	1
Total	12	7

These 12 fragments (MNV=7) could be identified as follows:

- **Mum Deodorant Jar**

One complete bottle with a MNV of one was recovered from Block 1 Layer 2. The bottle is a small opaque cylindrical container (ointment jar) with the following embossed section on its base: "MUM MFG CO PHILA PA".

Invented in 1888, Mum was the first brand of commercial deodorant and over time the company became very successful. In 1931 it was bought by Bristol-Myers (www.wikipedia.org).



Figure 54 Side and base view of the opaque jar containing Mum Deodorant. The provenience of the artefact is Block 1 Layer 2. Scale in 10mm increments.

- **Light Bulb**

One broken stem of an old light bulb was recovered from Block 1 Layer 3.

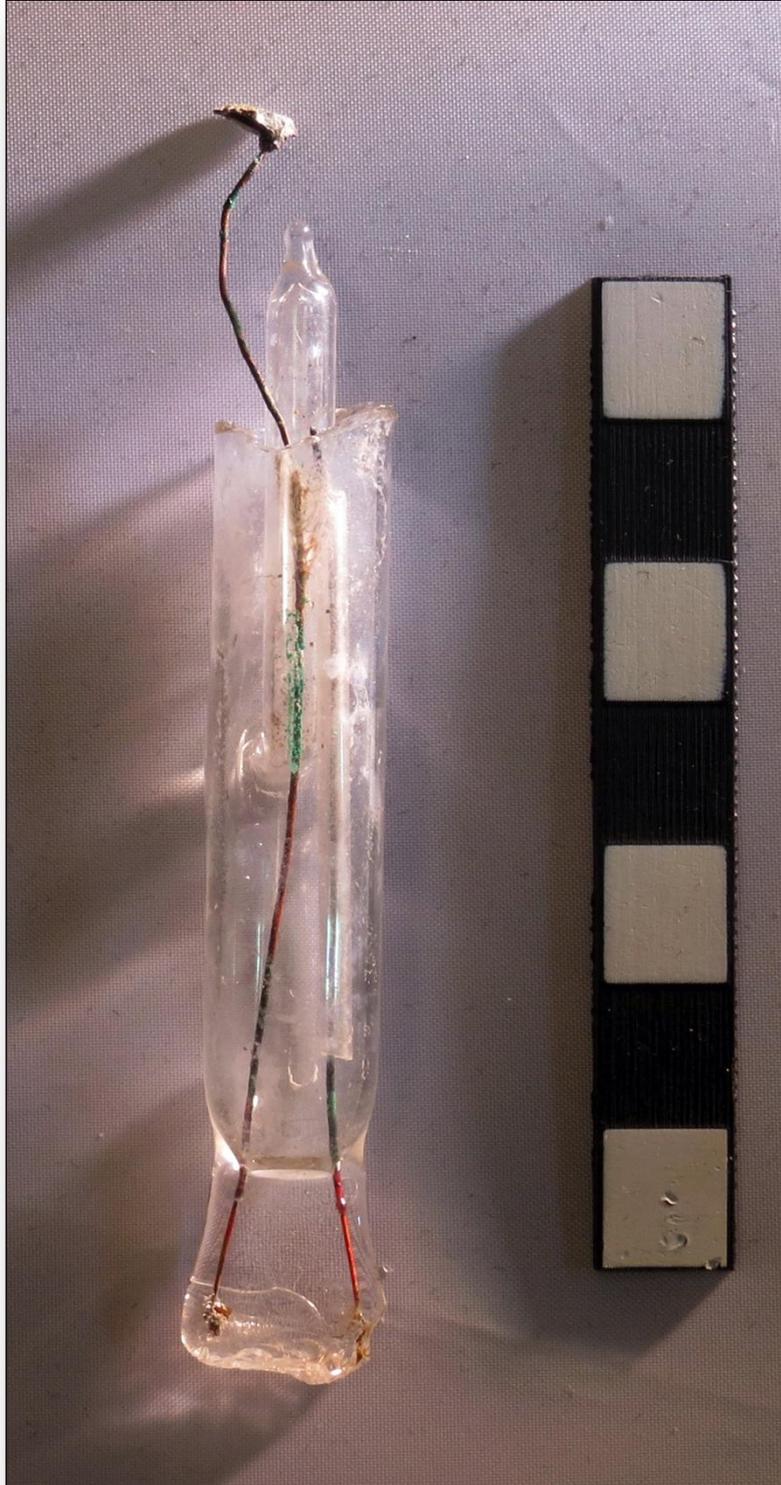


Figure 55 This stem of a light bulb was recovered from Block 1 Layer 3. Scale in 10mm increments.

- **Higgins Ink Bottle**

One complete cylindrical ink bottle (MNV = 1) with vertical body sides recovered from Block 3 Layer 5. The embossed base of the bottle contains the following words: "Higgins / Inks / Brooklyn NY". The remnants of a label indicates that the bottle contained "Higgins American India Ink Superior".

Charles M. Higgins was born in Ireland and moved to the United States of America as a child. He started his ink business in New York in 1880 (www.bottlebooks.com).



Figure 56 A complete cylindrical bottle of Higgins American India Ink Superior from Block 3 Layer 5. Scale is in 10mm increments.

- **Oatine Face Cream**

One opaque ointment bottle was recovered from Block 3 Layer 8. With the word “OATINE” embossed on its base. Oatine Face Cream appears to have been introduced to the market during the early 1900s. It became very popular amongst women working in factories during the First World War (1914 – 1918).



Figure 57 Side and base view of the Oatine jar recovered from Block 3 Layer 8. Scale in 10mm increments.

- **Waterman's Ink**

Six fragments with a MNV of one were recovered during the archaeological fieldwork. The provenience of these fragments is Block 3 Layer 12. One of the six fragments is a base and contains the following embossed section: "THIS CONTAINER / MADE IN / USA / 7". This wording on the base as well as the characteristics and appearance of rim, neck and shoulder fragments, identified these fragments as part of a Waterman's Ink Bottle.

Lewis Edson Waterman started the Waterman Pen Company in 1894. The company expanded rapidly in the years after Waterman's death in 1901. The company shut down in 1954 (www.wikipedia.org).

- **Propert's Royal Navy Dressing**

One complete bottle with a MNV of one was recovered from Block 3 Layer 13. The bottle is rectangular pannelled container with a patent closure (with cork still inside). The front panel contains the remains of a label, from which the following words could be read "PROPERT'S" and "ROYAL NAVY DRESSING".

Propert's Limited was in existence between 1877 and 1955 (www.blancoandbull.com). Propert's Royal Navy Dressing was a boot cleaner often used on polo shoes. References to this product was found in a book published at the turn of the century (Dale, 1902).

- **Three In One Oil**

One complete bottle with a MNV of one was recovered from Block 3 Layer 15. The bottle has indented panels on its sides with a bead closure (with cork still inside) and blake base profile. The two indented panels contain the following embossed sections: "THREE IN ONE OIL CO." and "THREE IN ONE". The remains of a label is still fastened to the front panel of the bottle. The following words can still be read from the label: "CLEANS AND POLISHES / PREVENTS".

In 1894 George W. Cole of Asbury, New Jersey, compounds a chemical mixture for the maintenance of bicycles to achieve rust protection, lubrication and cleaning. Between 1905 and 1910 the company name was changed to 3-In-One Oil Company. The company introduced screw top closures on its bottles in c. 1910 (www.3inone.com).

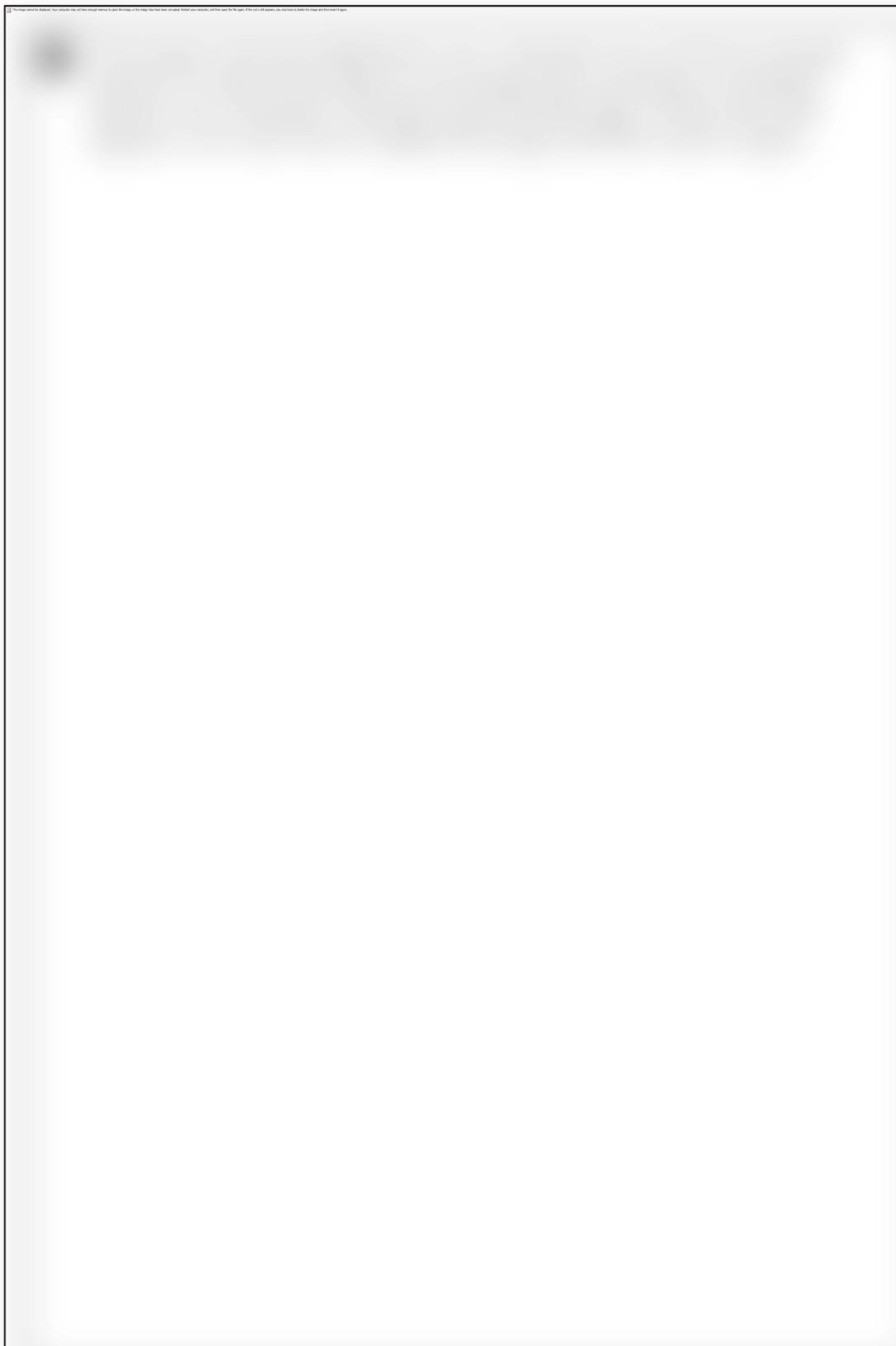


Figure 58 *Bottle of Propert's Royal Navy Dressing retrieved from Block 3 Layer 13. Scale is in 10mm increments.*

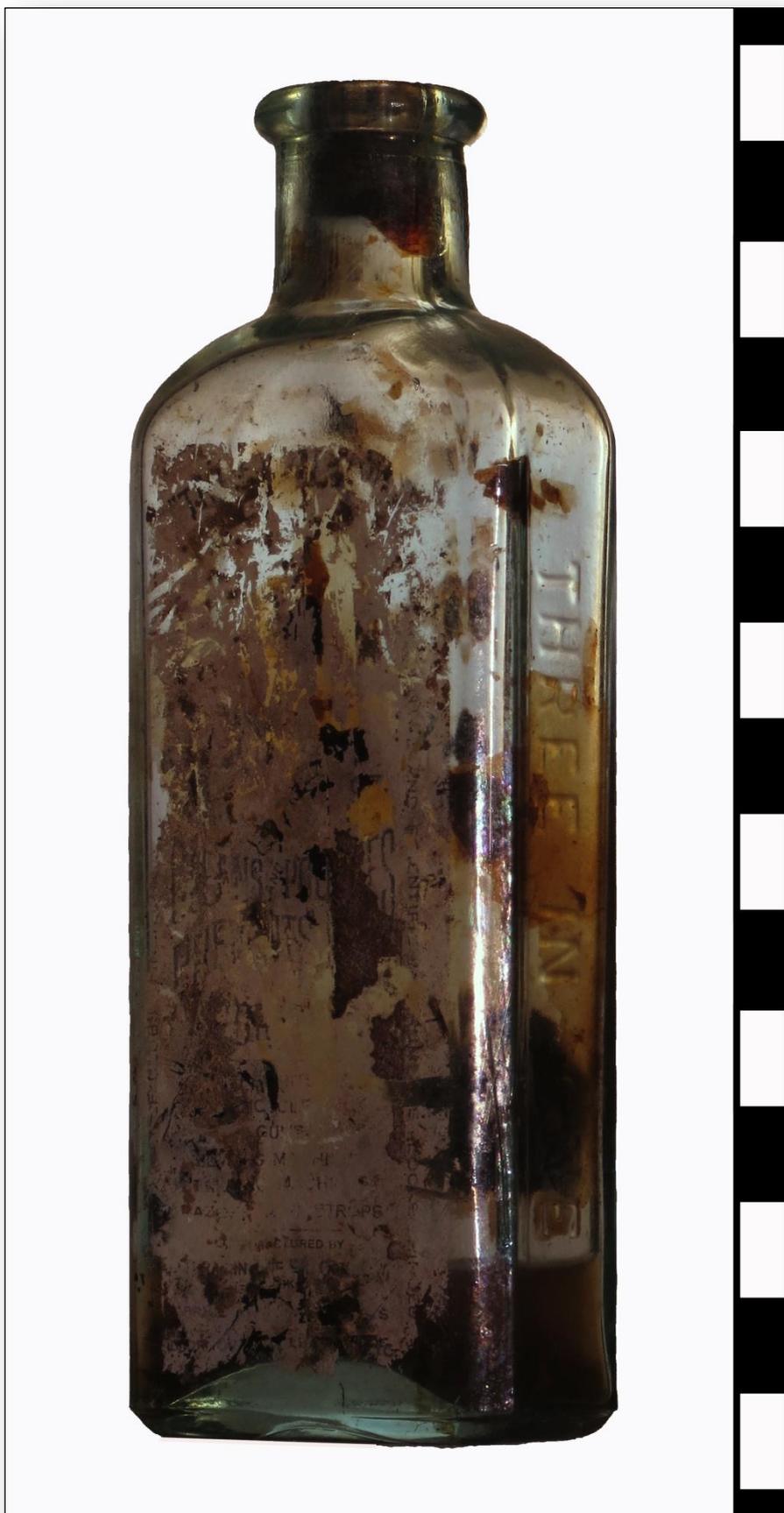


Figure 59 Bottle of Three in One Oil recovered from Block 3 Layer 15.. Scale is in 10mm increments.

8.1.3.7 Flat Glass

A total of 239 flat glass fragments were identified in the assemblage. These fragments would primarily have formed part of window panes. Due to the difficulties in associating flat fragments of glass with certain original panes, no MNV could be calculated. The provenience of these flat glass fragments are as follows:

Provenience	No. of Fragments	MNV
Block 1 Layer 2	4	-
Block 1 Layer 6	1	-
Block 1 Layer 8	1	-
Block 1 Layer 9	8	-
Block 2 Layer 2	5	-
Block 2 Layer 3	4	-
Block 2 Layer 4	61	-
Block 2 Layer 5	1	-
Block 3 Layer 2	1	-
Block 3 Layer 3	5	-
Block 3 Layer 4	4	-
Block 3 Layer 5	11	-
Block 3 Layer 6	2	-
Block 3 Layer 7	7	-
Block 3 Layer 8	8	-
Block 3 Layer 9	13	-
Block 3 Layer 10	20	-
Block 3 Layer 11	34	-
Block 3 Layer 12	23	-
Block 3 Layer 13	11	-
Block 3 Layer 14	13	-
Block 3 Layer 15	2	-
Total	239	-

8.2 Discussion of Imported Ceramics

This analysis and interpretation of the imported ceramics from the site was undertaken by Joanna Behrens of UNISA.

8.2.1 Introduction

The Johannesburg Zoo imported ceramic collection was recovered during the expansion and upgrading of the car park off Upper Park Drive in Forest Town, Johannesburg. This report provides preliminary details on the ceramics (n=393) recovered from the three excavated blocks (Blocks 1-3). The ceramics recovered during surface collections of the disturbed areas of the dump will be analysed for the final report.

8.2.2 Analytical Protocols

The ceramics were cleaned using water and a soft toothbrush. Each fragment was labelled to indicate the provenience (see below) and to facilitate cross-mends and MMV counts (forthcoming in the final report).

COLLECTION AREA	LABEL
Block 1 Level 2	JZCP / 1 / 2
Block 1 Level 3	JZCP / 1 / 3
Block 1 Level 4	JZCP / 1 / 4
Block 1 Level 5	JZCP / 1 / 5
Block 1 Level 6	JZCP / 1 / 6
Block 1 Level 7	JZCP / 1 / 7
Block 1 Level 8	JZCP / 1 / 8
Block 1 Level 9	JZCP / 1 / 9
Block 2 Level 2	JZCP / 2 / 2
Block 2 Level 3	JZCP / 2 / 3
Block 2 Level 4	JZCP / 2 / 4
Block 2 Level 5	JZCP / 2 / 5
Block 3 Level 2	JZCP / 3 / 2
Block 3 Level 3	JZCP / 3 / 3
Block 3 Level 4	JZCP / 3 / 4
Block 3 Level 5	JZCP / 3 / 5
Block 3 Level 6	JZCP / 3 / 7
Block 3 Level 7	JZCP / 3 / 8
Block 3 Level 8	JZCP / 3 / 9
Block 3 Level 9	JZCP / 3 / 10
Block 3 Level 10	JZCP / 3 / 11
Block 3 Level 11	JZCP / 3 / 12
Block 3 Level 12	JZCP / 3 / 13
Block 3 Level 13	JZCP / 3 / 14
Block 3 Level 14	JZCP / 3 / 15
Block 3 Level 15	JZCP / 3 / 16

The assemblage is composed primarily of Porcelains and white-bodied Refined Industrial Wares (RIW) with low percentages of colour-bodied Refined Industrial Wares, Refined Stoneware and glass-ceramic.

Table 8 Johannesburg Zoo Imported Ceramics: Ware Summary

WARE TYPE	BLOCK 1		BLOCK 2		BLOCK 3		TOTAL	% TOTAL
	No.	%	No.	%	No.	%		
Stoneware								
Refined Stoneware					2	1.0	2	0.5
Porcelain	30	38.7	45	39.1	94	47.0	169	43.0
Refined Industrial Ware: White-bodied White Ware	46	59.0	68	59.1	83	41.5	197	50.1
Refined Industrial Ware: Coloured-bodied Ware					4	2.0	4	1.0
Glass-ceramic			1	0.9	4	2.0	5	1.3
Cased glass					1	1.0	1	0.3
Doll	1	1.3			11	5.5	12	3.1
Unidentified	1	1.3	1	0.9	1	1.0	3	0.8
TOTAL	78	100.3	115	100.0	200	100.5	393	100.1

Please refer **Annexure B** for the remainder of the tables relating to imported ceramics.

8.2.3 Interim Findings

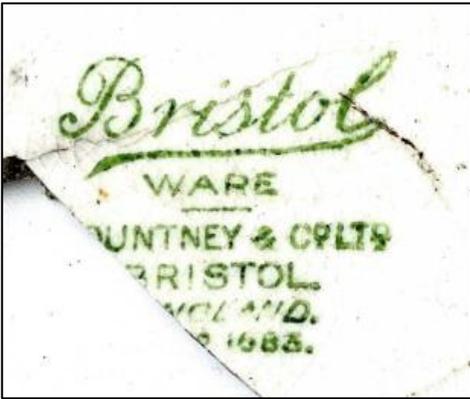
Several maker's marks are present and date the assemblage to the early decades of the 20th century with the lower levels providing TPQ (*terminus post quem*) dates of 1906 and 1910 (see Table 3).

There is a high incidence of cross-mends, a pattern in keeping with mega-dump deposits. Although time-consuming in the laboratory, cross-mends will facilitate accurate MNV (minimum number of vessel) counts and form identifications (forthcoming in the final report).

The ceramics are domestic in character and appear to be composed primarily of tea and tablewares with few health and hygiene related ceramics and no evidence of architectural ceramics.

More detailed comments on the character of the assemblage will be offered in the final report.

Table 9 Johannesburg Zoo Imported Ceramics: Maker's Marks

	<p>Block 3, Level 3 c.1918-1938 http://www.kovels.com/marks/pottery-porcelain-marks</p>
	<p>Block 2, Level 4 GLADSTONE CHINA G.P. & C^o MADE IN ENGLAND Staffordshire Potteries 1939-1952 (Godden 1991: 274)</p>
	<p>Block 1, Level 4, Block 3, Level 5 and Block 3, Level 14 BRISTOL WARE POUTNEY & CO LTD BRISTOL ENGLAND ESTD 1683 Poutney & Co. (Ltd), Bristol Victoria Pottery c.1930 + (Godden 1991: 507)</p>

	<p>Block 3, Level 9</p> <p>BOOTH'S</p> <p>SILICON CHINA</p> <p>ENGLAND</p> <p>ANTIQUE PHEASANT</p> <p>Printed mark c.1906 +</p> <p>(Godden 1991: 87)</p>
	<p>Block 3, Level 13</p> <p>ROYAL STAFFORDSHIRE POTTERY</p> <p>WILKINSON LTD</p> <p>ENGLAND</p> <p>Royal Staffordshire Pottery</p> <p>c. 1910</p> <p>(Godden 1991: 673)</p>

8.2.4 Photographs



Block 2, Level 3
Porcelain: moulded



Block 1, Level 7
Porcelain: moulded, painted and gilded



Block 3, Level 2
Porcelain: printed (underglaze), blue & white



Block 3, Level 10
Porcelain: enamelled



Block 2, Level 2
Porcelain: enamelled



Block 1, Level 3
Porcelain: lithographic print



Block 3, Level 13
Porcelain: lithographic print



Block 1, Level 9
Porcelain: lithographic print



Block 1, Level 7
Porcelain: lined and gilded



Block 1, Level 8
Porcelain: pink glazed and gilded



Block 3, Level 5
Porcelain: yellow glazed



Block 3, Level 3
Porcelain: lustre and gilded



Block 2, Level 3
RIW: painted (underglaze) blue



Block 2, Level 4
RIW: gold & white



Block 3, Level 7
RIW: printed (underglaze) willow



Block 2, Level 5
RIW: printed (underglaze) blue & white



Block 3, Level 10
 RIW: printed (underglaze) blue & white



Block 3, Level 2
 RIW: print & paint (underglaze)



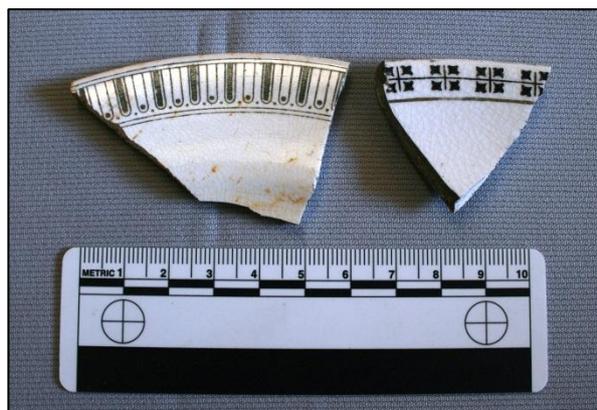
Block 3, Level 12
 RIW: printed (underglaze) & gilded



Block 1, Level 3
 RIW: lithographic



Block 1, Level 8
 RIW: lithographic



Block 3, Level 14 & Block 3, Level 11
 RIW: lithographic & lithographic & gilded



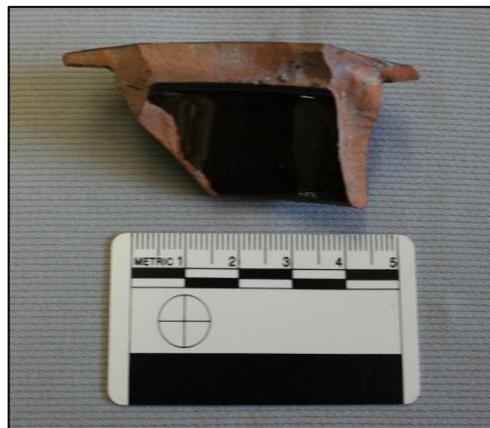
Block 3, Level 14
RIW: moulded



Block 3, Level 5
RIW: moulded



Block 1, Level 2
RIW: lined & Porcelain: lined & gilded



Block 3, Level 2
Refined Colour-bodied Ware: teapot ware



Block 3, Level 15
Refined Colour-bodied Ware: yellow ware



Block 3, Level 3
Doll

8.3 Discussion of Metal Artefacts

8.3.1 General Discussion

A total of 1,608 individual metal pieces were recovered from the site. No minimum number calculations were undertaken due to the large number of unidentified items in the collection. Once all the metal artefacts had been dry-brushed they were grouped first according to their provenience followed by their association with one of six identified groups namely Construction, Household, Clothing, Agricultural, Cartridges and Unidentified. Those artefacts grouped into Construction were further classified into 17 more detailed identification classes namely Wire, Nails, Nuts, Washers, Bolts, Pipes, Screws, Rivets, Tools, Discs, Hooks, Valves, Latches, Hinges, Roof Seals, Keyholes and Fly Screens. Refer Annexure B for the classification forms.

Out of the total number of 1,608 metal artefacts recovered from the site, 343 could be identified into the above mentioned six groups. This means that only 21.33% of the total metal assemblage from the site could be identified. In the table below an outline is provided of all the metal artefacts from the assemblage that could be classified into the six pre-defined identification types. It also displays the provenience and number of artefacts. Furthermore, the totals and relevant percentages are provided at the bottom. The following observations can be made from this table:

- The largest number of metal artefacts was recovered from Block 3 Layer 15. A total of 225 items (or 13.99%) were recovered from this unit. The second largest group of metal artefacts was recovered from Block 3 Layer 14. A total of 180 items (or 11.19%) were recovered from this unit.
- Not surprisingly, the unidentified group is best represented with a representation of 78.67%.
- The second biggest group is that of construction with a representation of 16.48%. As this group was defined to include any items associated with a building (i.e. construction, architectural details and maintenance), this high value is not unexpected.
- The third biggest identified component is household items which hold an 4.34% share. The relatively low presence in a midden associated with the early urban development of Johannesburg is surprising.
- The fourth biggest group is the one comprising agricultural items and comprises 0.50% of the total identified assemblage. The artefacts classified into this group include horse, pony, donkey and mule shoes as well as fencing.

8.3.2 Identified Metal Artefact Groups

As mentioned elsewhere, nine metal artefact type groups were identified namely Construction, Household, Tents, Clothing, Agricultural, Cartridges, Railways, General Transport and Mining. In this section a discussion of each identified group will be provided. The provenience of these identified metal artefacts will also be indicated.

Table 10 Provenience of all the metal artefacts recovered from the site.

Provenience	Construction	Household	Agricultural	Unidentified	Totals
	No.	No.	No.	No.	No.
Block 1 Layer 2	19			2	21
Block 1 Layer 3	4	1		8	13
Block 1 Layer 4	6	8		22	36
Block 1 Layer 5	5		4	16	25
Block 1 Layer 6	19	3		65	87
Block 1 Layer 7	23			73	96
Block 1 Layer 8	14	1	1	74	90
Block 1 Layer 9	10	1		88	99
Block 1 Layer 10	2			19	21
Block 2 Layer 2	9			1	10
Block 2 Layer 3	24			40	64
Block 2 Layer 4	12	2		13	27
Block 2 Layer 5	5			0	5
Block 3 Layer 2	4			2	6
Block 3 Layer 3	6			8	14
Block 3 Layer 4	3			3	6
Block 3 Layer 5	10	7		39	56
Block 3 Layer 6	7	4		37	48
Block 3 Layer 7	1			26	27
Block 3 Layer 8	1	6		11	18
Block 3 Layer 9	16	9	1	41	67
Block 3 Layer 10	13	4		49	66
Block 3 Layer 11	8	8	2	39	57
Block 3 Layer 12	15	7		59	81
Block 3 Layer 13	7	3		143	153
Block 3 Layer 14	9	5		166	180
Block 3 Layer 15	9	1		215	225
Block 3 Layer 15A	4			6	10
Total = 343	265	70	8	1,265	1,608
Percentage of total	16.48%	4.35%	0.50%	78.67%	100%

8.3.2.1 Construction

This group was defined to include all metal artefacts that could be associated with buildings and construction. A further 17 sub-groups were identified within the overall construction group namely wire, nails, nuts, washers, bolts, pipes, screws, rivets, tools, discs, hooks, valves, latches, hinges, roof seals, keyholes and fly screens. The distribution of the construction items into these sub-groups can be found in the classification forms (refer Annexure B).

A total of 265 artefacts could be identified as part of this group. The provenience of these items can be seen in the overall table above. It is evident from this table that the largest number of artefacts of this group was recovered from Block 2 Layer 3. As indicated elsewhere, the construction group with a representation of 16.48% has apart from the unidentified items the biggest representation of any of the identified categories. This may be attributed to the perceived association of the midden with the early urban development of suburbs such as Forest Town.



Figure 60 *These nails were all recovered from Block 3 Layer 12.*

8.3.2.2 Household

This group was defined to include all metal artefacts that could be associated with households and included items such as cutlery as well as fragments of metal food and beverage containers. The distribution of the household items can be seen in the classification forms (refer Annexure B). A total of 70 artefacts could be identified as part of the household group. The provenience of these items can be seen in the overall table above. It is evident from this table that the largest number of artefacts of this group was recovered from Block 3 Layer 9.

The relatively large number of household items at the site can easily be explained by the perceived association of the midden with the residential suburbs nearby, including Forest Town. A number of interesting household artefacts from the site can be mentioned. These include the following:

- Fork

The fork was recovered from Block 1 Layer 6. The fork is poorly preserved with and its handle is missing.

- Ring

A simple twisted metal ring was excavated from Block 1 Layer 4.

- Icilma Lid

The poorly preserved remains of the lid from an Icilma Vanishing Cream jar was recovered from Block 2 Layer 4.

- Unidentified Crown Tops

Two crown tops of unknown brand were recovered from Block 1 Layer 7 and Block 2 Layer 4.

- Can Key

One utilised can key was recovered from Block 3 Layer 6. It is not presently known whether this can opener was used on a can of sardines or bully beef.



Figure 61 This fork was recovered from Block 1 Layer 6.



Figure 62 The lid fragment from an Icilma Vanishing Cream jar was recovered from Block 2 Layer 4. The ring was excavated from Block 2 Layer 4.

8.3.2.3 Agriculture

This group was defined to include all metal artefacts that could be associated with agricultural activities. As a result this component includes horse, pony, donkey and mule shoes as well as fencing. However, it is quite clear that any of these items could have been grouped into some of the other categories as well. For example, the presence of a horsehoe in the archaeological site does not necessarily reflect a farming activity but rather - and especially so in terms of the location of the present site - an early suburban one. Before the widespread utilisation of motor vehicles in suburban Johannesburg during the 1920s and 1930s, almost all early Johannesburg households would have had stables and in some cases wagon sheds for horse drawn carts as well.

A total of eight artefacts could be identified as part of the agriculture group. The provenience of these items can be seen in the overall table above.



Figure 63

Three of the animal shoes recovered from the site. Scale is in 10mm increments.

8.4 Discussion of Paper

Newspaper fragments and clumps were recovered from a number of units. For the most part, these newspaper pieces are poorly preserved and appear to have been burnt. As a result it would be impossible to state the exact number of newspapers represented in the collection and to provide a count of the individual fragments would be pointless. The provenience of the identified newspaper artefacts is shown below.

Provenience	Minimum Number of Newspapers
Block 1 Layer 6	1
Block 1 Layer 7	1
Block 1 Layer 8	1
Block 1 Layer 9	1
Block 3 Layer 6	2
Total	6

As indicated, the preservation of most of the newspaper pieces recovered from the site is very poor. The following observations can however be made:

- The remains of two different newspapers were recovered from Block 3 Layer 6, the one English and the other isiZulu. The latter newspaper refers to Dr. Williams' Pink Pills and appears to have contained an advertisement.
- The newspaper remains from both Block 1 Layer 6 and Block 1 Layer 7 appear to have been derived from the same newspaper. Scraps of newspaper from both units contain a multitude of well executed line drawings. Relatively well preserved paper strips from Block 1 Layer 6 allowed for the identification of this particular newspaper as a 1 November 1916 copy of Punch (also known as the London Charivari).
- The newspaper remains recovered from Block 1 Layer 8 are poorly preserved and the only readable section of text from any of these fragments contains the following phrase: "1st Prize £2".
- Although the newspaper remains from Block 1 Layer 9 are also poorly preserved, although it is possible to confirm that this newspaper was an English one.



Figure 64 Two fragments of the Punch newspaper recovered from Block 1 Layer 6. The top fragment identifies the newspaper as Punch, while the lower one provides the edition date as 'November 1, 1916'. It is not known whether these two fragments were from the same page, as every sheet of the newspaper contained this information.

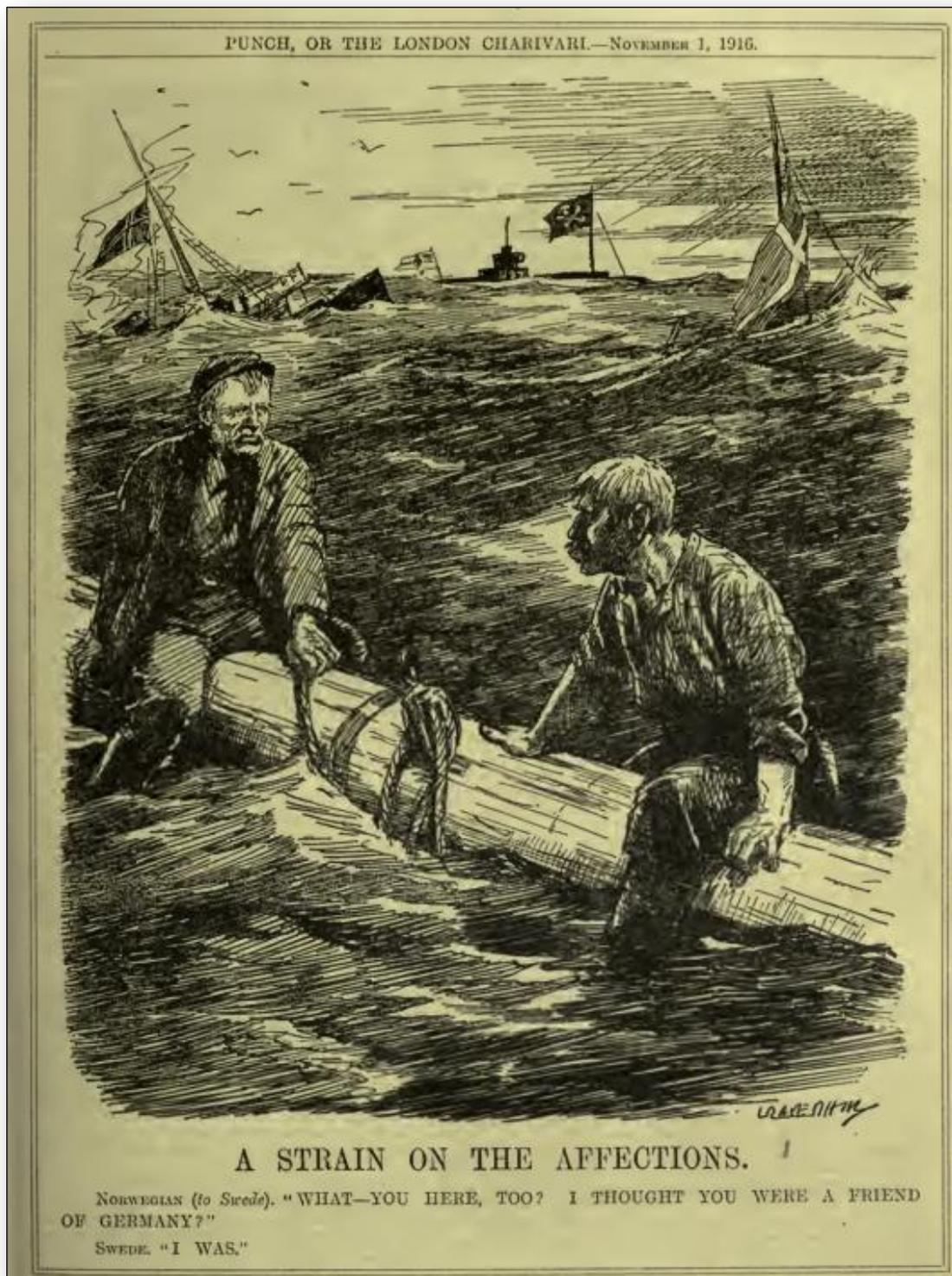


Figure 65 A page from an electronic copy of the relevant Punch newspaper. This sheet was obtained from the internet (www.onlinebooks.library.upenn.edu). It is clear that the bottom fragment from the previous image was from this page of the newspaper.

8.5 Discussion of Clay Artefacts

One clay artefact was recovered from the three excavation blocks. Its provenience is shown in the table below.

Provenience	Clay Pipe
Block 3 Layer 7	1
Total	1

The clay artefact under discussion here is a white clay pipe bowl and partial stem that was manufactured from tobacco clay pipe which typically fires to a white colour. While clay pipes were popular between the 16th and 19th centuries, they were used as recent as the 1930s by children for blowing of soap bubbles (Behrens, Pers. Comm.).

8.6 Discussion of Wooden Artefacts

One wooden artefact was recovered from the three excavation blocks. Its provenience is shown in the table below.

Provenience	Wooden Pipe Stem
Block 3 Layer 6	1
Total	1

The wooden artefact under discussion here is a pipe stem.



Figure 66

The clay pipe bowl with partial stem as well as the wooden stem of another pipe can be seen. Scale in 10mm increments.

8.7 Discussion of Beads

Two beads were recovered from the site. Their provenience is provided in the table below.

Provenience	No. Glass	No. Plastic	No. of Beads
Block 3 Layer 3	1	0	1
Block 3 Layer 4	1	0	1
Total	2	0	2

The bead recovered from Block 3 Layer 4 is a small green-coloured glass one which has the appearance of a trade bead. Glass beads were originally introduced to Africa as trade items. The use of beads and beadwork became incorporated into various aspects of African culture not only for decoration but also for religious and social reasons. However, such trading beads did not only form part of the cultural makeup of Southern Africa's black communities, but formed part of white culture as well. The second bead is a relatively large violet glass sphere which appears to have formed part of a necklace.



Figure 67 The two beads recovered from the site. The one on the left was found in Block 3 Layer 3 with the bead on the right from Block 3 Layer 4. The scale is in 10mm increments.

8.8 Discussion of Buttons

A total of 12 buttons were recovered from the site. Their provenience is provided in the table below.

Provenience	Mother-Of-Pearl	Unknown	No. of Buttons
Block 1 Layer 6	4	0	4
Block 1 Layer 7	1	0	1
Block 2 Layer 3	1	0	1
Block 3 Layer 3	1	0	1
Block 3 Layer 4	1	0	1
Block 3 Layer 9	0	1	1
Block 3 Layer 11	2	0	2
Block 3 Layer 14	1	0	1
Total	11	1	12

With the exclusion of one, all of the buttons from the site were manufactured from mother-in-pearl.



Figure 66 All the buttons recovered from the site are depicted here. The provenience of these artefacts starting with the top row from the left are as follows: Block 3 Layer 9, Block 1 Layer 7, Block 1 Layer 6, Block 3 Layer 11, Block 3 Layer 4. The provenience of the buttons from the bottom row are: Block 1 Layer 6, Block 1 Layer 6, Block 2 Layer 3, Block 3 Layer 14, Block 3 Layer 3, Block 3 Layer 11 and Block 1 Layer 6. Scale in 10mm increments.

8.9 Discussion of Marine Shell

A total of 24 items can be classified into this category. The definition of this group was such that it included marine molluscs but excluded any items made from marine shells such as mother-of-pearl buttons. Although buttons will be discussed as a separate section below, it is worth noting that almost all of the buttons recovered from the site were mother-of-pearl buttons i.e. made from marine shell.

Of these 24 shells, 14 are oysters, six clams, three limpets, one abalone and one unidentified shell fragment. The provenience of these items is shown in the table below. In the right-hand column the minimum number of individual shells is provided.

Provenience	No. of Items	Minimum Number
Block 1 Layer 2	2	2
Block 1 Layer 3	1	1
Block 1 Layer 5	1	1
Block 1 Layer 7	6	4
Block 1 Layer 8	3	2
Block 1 Layer 9	7	4
Block 3 Layer 7	1	1
Block 3 Layer 8	1	1
Block 3 Layer 11	1	1
Block 3 Layer 12	1	1
Block 3 Layer 13	1	1
Total	25	19

The relatively high occurrence of marine shells in the midden warrants an explanation. Two reasons for this can be postulated. If one assumes that these shells are the discard material from utilising the molluscs as food, the relatively high number of oyster shells may suggest that at least sections of the midden are associated with the wealthier more opulent strata of early Johannesburg society. At the time, fresh seafood such as oysters would have been very difficult and expensive to obtain and transport from the ocean to the Witwatersrand. A second (though less likely) explanation for the presence of these shells in the midden may be found in the fact that barring the clams almost all these shells are known to have been used for obtaining mother-of-pearl. As a result it is possible for these shells to have been brought to Johannesburg to manufacture mother-of-pearl products such as buttons. However, none of these shells show signs of utilisation or cutting for such purposes.

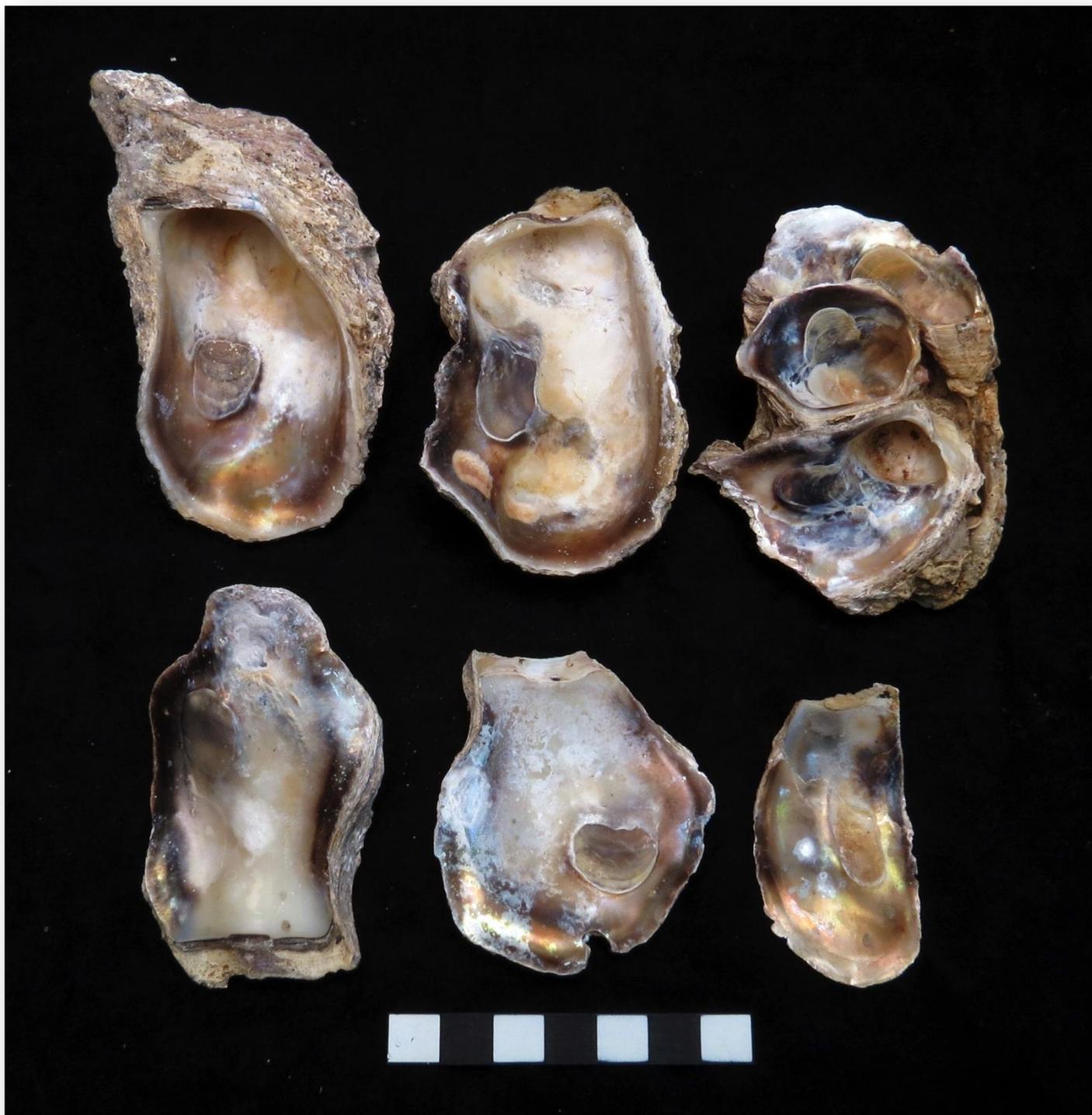


Figure 69 Six individual oyster shells recovered from Block 1 Layer 9. Note the shell in the top right hand corner which has two individual oysters. Scale in 10mm increments.



Figure 70 This abalone shell was recovered from Block 3 Layer 7. Scale in 10mm increments.



Figure 71 These clam shells were recovered from Block 1 Layer 9 (left) and Block 1 Layer 7 (two shells on the right). Scale in 10mm increments.

8.10 Discussion of Fauna

This brief faunal analysis was done by Stephany van der Walt, who has completed a comparative anatomy module as part of her Archaeology degree at the University of Southampton. It is acknowledged that a full faunal analysis will be undertaken for the final report by Annie R. Antonites of the Department of Anthropology, Yale University as well as the Department of Anthropology and Archaeology, University of Pretoria.

In summary, the faunal remains excavated from the midden, by definition, mainly consisted of domestic waste. A range of cattle (beef), sheep (lamb), birds (chicken and game) and fish (various) were present in the assemblage. It was evident that the bones had been through a butchery because of the saw and chop marks on the cattle and sheep bones. The sheep bones were of immature animals, denoting the utilisation of lamb's meat. Various sizes of bird bones were observed, suggesting that not only chicken bones but other larger bird bones were also discarded. A more detailed assessment of the bird bones would need to be done in order to establish which species of bird was had been consumed by the surrounding suburbs.

As this assemblage was from a site located in an inland city far removed from the nearest oceans, it was surprising to find that a large percentage of fish bones were present. As indicated elsewhere, oyster shells were also recovered from various units during the excavations. The low frequency or absence of pig bones appears to be significant, although this still has to be absolutely confirmed in the final report. However, if confirmed, the absence of pig bones can be ascribed to either religious or availability factors. This will be discussed in more detail in the final report.

9. INTERPRETATION OF SITE

It is important to note that for the purposes of this interim report, artefact analysis was conducted on the three excavation blocks only with the retrieved material from the Test Pits and Surface Collection earmarked for inclusion in the final report. As a result, all the conclusions made in this section of the report (as is the case with the whole document), are based on the analysis of the three excavated blocks only. As a result, although the overall interpretation of the site as outlined below is not expected to deviate to any significant extent in the final report, this section must be considered as provisional for the time being.

9.1 General Interpretation of the Site

The artefacts recovered during the excavation of the three blocks suggest a strong correlation with domestic waste and activities. For example, a comparison of the MNV figures for the glass collection indicates that excluding the flat glass component (which incidentally in terms of glass fragment amount far outweighs any of the other glass classification groups), tableware is best represented with a percentage of 32.73%. The second best represented

groups in terms of MNV is the medicine bottle group (21.82%) with food bottles (16.36%) in third position. Household ware is in the fifth position with a percentage of 12.73%. The liquor bottle group (9.09%) has the second least representation, with the non-liquor beverages group in last place with a 7.27% representation. The high MNV representation for tableware, followed by medicine bottles, food bottles and household ware point to a strong domestic and urban character and association to the midden. Furthermore, the high frequency of flat glass in terms of the number of fragments point to a strong association between the site and urban households, and may even point to a period during which the surroundings of the study area would have been characterised by intensive building activities with the establishment and expansion of early suburbs such as Froest Town from c. 1910 onward.

The analysis of the imported ceramics revealed a collection that is domestic in character and appear to be composed primarily of tea and tablewares with few health and hygiene related ceramics and no evidence of architectural ceramics.

Of the other artefact groups, items such as clothing buttons (primarily of mother-of-pearl), metal nails and shoes for animals (horses, mules and donkeys) all point to a domestic character.

Further support for the domestic character of the midden could be found in the fact that the analysis of the excavated artefacts has shown that the midden is not gender exclusive. While artefacts such as jars of Mum Deodorant and Oatine Face Cream as well as the aluminium lid of an Icilwa Vanishing Cream pot point to an association with women, items such as a clay smoking pipe, iron nails, animals shoes (horse, mule and donkey) and to a lesser extent bottles of Propert's Royal Navy Dressing (used to polish boots and especially polo shoes) and Three-in-One-Oil slant toward a male association.

The geographic location of the archaeological site suggests an association with either the Johannesburg Zoo or alternatively with the adjacent suburb of Forest Town. While the zoo is old enough to have been associated with a midden which includes artefacts older than 100 years, as indicated above, the midden and its archaeologically retrieved contents decisively argue for a strong urban and domestic character. This is further supported by the archival and historical information which confirms that no historic dwellings or cottages of the zoo were located in any proximity to the archaeological site. In contrast, the suburb of Forest Town immediately south of the archaeological site, has been in existence for more than a century. While no direct information relating to a rubbish dump could be found during the archival and historical research, one interesting fact which came to light was that during the application process for the establishment of Forest Town, the Braamfontein Company provided the Johannesburg Town Council with written permission to use a portion of the Hermann Eckstein Park for the purposes of a 'works depot'. Even though such a depot can certainly not be interpreted as a midden, the principle for the municipality to utilise a section of the park for a municipal purpose, was certainly established by this event. Although no direct and irrefutable documentary evidence for a rubbish dump associated with Forest Town could be found, the

utilisation of the works depot or alternatively an adjacent or nearby parcel of land as a rubbish dump for the new suburb of Forest Town appears to have been a real possibility.

9.2 Chronological Framework

The cultural material recovered from the site can be associated with the first few decades of the twentieth century. In terms of the imported ceramics, several maker's marks are present which support this date with the lower levels providing TPQ (*terminus post quem*) dates of 1906 and 1910. Similarly, of the 25 minimum number of glass vessels that could be linked to specific companies or brands, sixteen (or 64%) could be exclusively dated to the twentieth century. Furthermore, not a single one of the remaining nine bottles could be dated exclusively to the nineteenth century.

One of the most direct dates for the archaeological site was recovered from Block 1 Layers 6 and 7. Several fragments of a newspaper was found in these two layers. Subsequent research identified the newspaper as the 1 November 1916 edition of *Punch*, a well-known British weekly. While the date of this newspaper suggests that these layers can be dated to 1916, a fish paste bottle recovered from the bottom layer of the same block contained a British registration number indicating that the bottle design was registered on 6 July 1920. With the stratigraphic context of all three blocks seemingly intact, this find indicates that the entire Block 1 post-dates the registration date of 6 July 1920. The newspaper dated to 1916 may have been kept for a few years before it was discarded as rubbish, an observation supported by the fact that *Punch* was a well-designed paper containing fine drawings and humoristic writings throughout. In turn, the lowest levels at Block 3 yielded a Three-in-One bottle which dates to between c. 1905 and c. 1910. However, fragments of a Ball Fruit Jar from the same lowest level at Block 3 could be dated to between 1910 and 1923. The indication is that the *terminus post quem* for Block 1 is 1920 and c. 1910 for Block 3. The lower levels of the second excavation block (Block 2) did not yield any artefacts with clear chronological markers.

While the cultural material therefore points to the period after c. 1910, the *terminus ante quem* for the archaeological site is less clearly defined in the archaeological record. This said, the complete lack of plastics and foil in the collection coupled with the complete absence of stippling along the base perimeter for Automatic Bottling Machine bottles (dating from the 1940s to the present day) as well as glass bottles containing Applied Colour Labeling (ACL) (1950s to the present day) suggest that the use of the midden ceased during the 1930s or 1940s. From the archival and historical research it is known that a car park was established over a significant component of the site during at least the mid 1930s. It can be surmised that the establishment of the car park would have necessitated the end of the use of the rubbish dump by either the municipality or private citizens. Furthermore, the car park was graded and tarred in the 1939-1940 financial year, which suggests that the same significant component of the site would have been completely covered by a tar layer. As a result, the *terminus ante quem* for the site can comfortably be given as the mid 1930s.

9.3 Site Layout and Utilisation

Three blocks were excavated in the relatively small section of the site which had not yet been disturbed by the construction activities. A comparison of the three excavation blocks shows that Block 3 is significantly deeper than Blocks 1 and 2. From this it would appear that the latter two blocks were located on the northern periphery of the midden. Clear differences in age between Blocks 1 and 3 could also be identified, with the lowest levels of the former dating to after 1920 and the lower levels of Block 3 to after c. 1910. From this it would appear that the section of the midden excavated in Block 3 represents a slice through the entire history of the midden, from its beginning in c. 1910 to its demise in c. 1935.

It is not presently certain whether the midden was an official municipal one or rather used by private citizens. The profiles recorded in Block 1 as well as Test Pits 1 and 7 clearly show well defined near vertical stratigraphic edges between sterile red sand and grey midden material. The suggestion from this is that before the discard of rubbish commenced, pits or holes had been excavated on the site. The resulting depressions were then filled over a period of time with rubbish. The only alternative interpretation for the recorded vertical and near vertical stratigraphic edges would be that these holes or pits were excavated during the establishment of the car park. Within this scenario, it can be assumed that when the decision was made to use the site as a car park, a solution had to be found to the soft midden which would not have acted as a good base layer for the parking of cars. As a result the pits may have been excavated to allow for the easy removal and covering of the midden. However, within this scenario the resulting middens would have had to be completely disturbed with their stratigraphic sequence out of context. This was not found in any of the three excavation blocks. As a result, it would appear that the holes and pits were excavated before the start of the midden, and then gradually filled with rubbish. Once the decision was made to use the site as a car park, the resulting midden may not have been much higher than the ground surface and could with relative ease be flattened and covered with a soil capping layer (during the mid 1930s) and later graded and tarred (during the 1939-1940 financial year).

9.4 General Observations of the Site

The following general observations can be made:

- The archaeological mitigation has revealed that the archaeological site can be dated to the period between c. 1910 and c. 1935.
- The cultural material recovered from the site shows a strong correlation with domestic waste and activities.
- The archaeological site can almost certainly be associated with the adjacent suburb of Forest Town.

10. SIGNIFICANCE OF ARCHAEOLOGICAL SITE

The site was first identified during construction work on the new parkade at the Johannesburg Zoo. A site visit carried out by PGS Heritage revealed the presence of a historic midden which included artefacts older than 100 years. As a result the presence of an archaeological site was identified and a process implemented with which the site can be suitably mitigated to allow for the issuing of a destruction permit by SAHRA.

The subsequent archaeological mitigation identified a domestic midden dating to between c. 1910 and c. 1935. Through the excavation of 16 STPs and eight Test Pits it was established that a significant component of the midden had already been disturbed by the time that construction work at the site was halted. The only remaining undisturbed section of the site was found to be located in a strip of land between two construction excavations. All three excavation blocks were therefore placed in a staggered approach within this relatively small section comprising the undisturbed components of the site. The resulting excavations were successfully completed on all three blocks and the original assumption of undisturbed midden was confirmed during the excavation. However, the excavations also revealed that the largest component of the cultural material recovered from the site is in fact younger than 100 years. Although small sections of the excavated stratigraphy can undoubtedly be dated to before 1915 (Block 3 Layers 15 in particular), the entire stratigraphic sequence at Block 1 certainly post-dates 1920.

While the research here has yielded a discrete, tightly dated and well provenienced domestic assemblage which has high historic significance and is ideal for longer term research objectives, the archaeological site has been satisfactorily mitigated and no further work is required. Furthermore, the fact that a significant component of the cultural material recovered from the three blocks can be dated to after 1915 means that the largest part of the site can not be classified as archaeological within the definition of an archaeological site provided by the National Heritage Resources Act (Act 25 of 1999). This act defines the term 'archaeological' *inter alia* as “...material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.”

Due to significant disturbance to the midden in the form of construction activities, the archaeological context and fabric of the site in its present state is diminished. Although these disturbances were made unwittingly by the construction team, they have had an impact on the archaeological context and content of the site. While the archaeological site can still be considered to have cultural historical significance, its value for providing scientific information on that cultural history other than what is contained in this report, can be considered low. Furthermore, the lack of preserved proximal and regional context for the site lowers its overall significance.

As a result the archaeological site in its entirety and in its present condition can be considered to be of medium/low significance.

11. CONCLUSIONS

The site can conclusively be defined as a domestic midden dating to the period between c. 1910 and c. 1935. The available information also suggest a strong likelihood for the midden to have been directly associated with the residential suburb of Forest Town, which is located immediately to its south. Significant sections of the site had been unwittingly disturbed before construction work was temporarily halted to allow mitigation to take place. Furthermore, the analysis of the recovered cultural material suggests that only a small component of the excavated middens can be dated to before 1915. It would appear that only a small component of the site is older than 100 years, which means by definition of the National Heritage Resources Act, only a small component of the site can be defined as archaeological. However, this study has combined the results from archival and historical desktop work with archaeological mitigation and excavation to provide a better understanding of the site .

12. RECOMMENDATIONS

The following recommendations are made:

- No further archaeological research is required at the site. This can be said as the completed archaeological excavations and associated mitigation measures resulted in a significant sample of the cultural material associated with the site. Combined with the thorough archival and historical studies undertaken, a detailed understanding of the history of the site was recorded.
- It is recommended that a destruction permit be issued for the site.
- The client has indicated that the Johannesburg Zoo would like to incorporate a display on the archaeological site and excavated material into the new parkade currently under construction. Such a display would provide information on the archaeological mitigation undertaken at the site as well as its interpretation and history. With large numbers of people visiting the zoo on an annual basis, this display would provide valuable information and awareness to the general public on archaeology in general and the site in particular. The archaeological and historical sample recovered during the mitigation is sufficiently extensive to allow for the utilization of a representative section of the assemblage in the display. For this purpose separate permitting would of course be required at a later stage.

13. REFERENCES

Published References

- Bergh, J.S. 1999. *Geskiedenisatlas van die Vier Noordelike Provinsies*. Van Schaik, Pretoria.
- Brooks, A. 2005. *An archaeological guide to British ceramics in Australia 1788-1901*. Sydney & Melbourne: The Australasian Society for Historical Archaeology and the La Trobe University Archaeology Program.
- Collins, J.C. & Gwilt, J.R. 2000. The Life Cycle of Sterling Drug, Inc. *Bulletin of Historical Chemistry* 25: 22 – 27.
- Die Lantern. 1987.
- Fike, R.E. 1987. *The Bottle Book: A Comprehensive Guide to Historic, Embossed Medicine Bottles*. The Blackburn Press: Caldwell.
- Fisher, J. W. 1995. Surface modifications in zooarchaeology. *Journal of Archaeological Method and Theory* 2: 7-68.
- Harrison, R. & Schofield, J. (eds). 2010. *After modernity. Archaeological approaches to the contemporary past*. Oxford: Oxford University Press.
- Hockey, P. A. R., Dean, W. R. J. and Ryan, P. G. (eds.). 2005. *Roberts Birds of Southern Africa*. Cape Town: The Trustees of the John Voelcker Bird Book Fund.
- Holtorf, C. & Piccini, A. (eds). 2011. *Contemporary archaeologies. Excavating now*. Frankfurt am Main: Peter Lang.
- Jackson, A. & E. Rosenthal. 1958, *Trader on the Veld*. A.A. Balkema: Cape Town.
- Klose, J. & Malan, A. 2000. The ceramic signature of the Cape in the nineteenth century, with particular reference to the Tennant Street Site, Cape Town. *South African Archaeological Bulletin* 55:49-59.
- Lastovica, E. & Lastovica, A. 1990. *Bottles & Bygones*. Don Nelson: Cape Town.
- Lastovica, E. 2000. *Ginger Beer Bottles: An Illustrated Guide for South African Collectors*. Gaffer Press.
- Legassick, M. 2010. The politics of a South African frontier: the Griqua, the Sotho-Tswana and the missionaries, 1780 – 1840. Basler Afrika Bibliographien, Basel.

- Lyman, R. L. 2005. Zooarchaeology. In Maschner, H. D. G. and Chippindale, C. (eds.) *Handbook of Archaeological Methods Volume I*. Lanham: AltaMira Press, pp. 835-870.
- McManamon, F. 1984. Discovering sites unseen. In: Schiffer, M.B. (ed) *Advances in archaeological method and theory II*: 223-292. San Diego: Academic Press.
- Majewski, T. & O'Brien, M.J. 1987. The use and misuse of nineteenth-century English and American ceramics in archaeological analysis. In: Schiffer, M.B. (ed.) *Advances in archaeological method and theory II*: 98-209. San Diego: Academic Press.
- Miller, G.L. 1980. Classification and economic scaling of 19th century ceramics. *Historical Archaeology* 14(1): 1-40.
- Miller, G.L. 1991. A revised set of CC index values for classification and economic scaling of English ceramics from 1787 to 1880. *Historical Archaeology* 25(1): 1-25.
- Mitchell, P. 2002. *The Archaeology of Southern Africa*. Cambridge University Press, Cambridge.
- Nance, J.D. & Ball, B.F. 1986. No surprises? The reliability and validity of test pit sampling. *American Antiquity* 51(3): 457-483.
- Prossor, L., Lawrence, S., Brooks, A. & Lennon, J. 2012. Household archaeology, lifecycles and status in a nineteenth-century Australian coastal community. *International Journal of Historical Archaeology* 16: 809-827.
- Reader's Digest, 1994. *Illustrated History of South Africa: The Real Story*. The Reader's Digest Association Limited, Cape Town.
- Republic of South Africa, 1999. National Heritage Resources Act, No. 25.
- Thomas, L. 2009. Skin Lighteners in South Africa. Transnational entanglements and technologies of the self. In: Glenn, E.N. (ed) *Shades of difference. Why skin color matters*: 188-210. Stanford: Stanford University Press.
- Thomas, L. 2013. *Local manufacturing and divergent markets*. In Thomas, L. (forthcoming) *Race, Skin Lighteners, and Transnational Commerce*. Chapter available from: <http://wiser.wits.ac.za/content/local-manufacturing-skin-lighteners-and-divergent-markets-10944>
- Van Wyk, G. 2003. Style and Meaning in the Beadwork of the Xhosa- and Zulu-Speaking Peoples. *African Arts* 36: 12 – 33 + 93-94
- Worthy, L. 1982. Classification and interpretation of late-nineteenth-and early-twentieth-century ceramics. In

Dickens, R.S. (ed) *Archaeology of urban America: the search for pattern and process*, pp.329-360. Academic Press: New York.

Archival References

National Archives Repository

Maps, 3/652

MPY, 377, 56/1572

RHN, 888, 81/12/1

Internet References

<http://152.111.1.87/argief/berigte/dieburger/1995/10/30/9/3.html>

<http://www.angelfire.com>

<http://www.antiquebottles.co.za>

<http://www.britishbottleforum.co.uk>

<http://www.consol.com>

<http://www.ekey.co.uk>

<http://www.google.com/patents/USD176975>

<http://www.iaaforum.org>

www.lrc.org.za/Docs/Judgments/khosis.doc

<http://www.national.archives.gov.za>

<http://www.parks.ca.gov>

<http://www.photomemorabilia.co.uk>

<http://www.rb.com/rb-worldwide/rb-history>

<http://www.remington.com>

<http://www.rosemixers.com>

<http://www.sha.org>

<http://www.sodasandbeers.com>

<http://www.unilever.co.za>

<http://www.worldofbear.co.za>

<http://www.wikipedia.org>

Aerial Photographs

NGI, Aerial Photographs, Job356_07_1457

NGI, Aerial Photographs, Job589_03_2066

NGI, Aerial Photographs, Job861_04_5825

NGI, Aerial Photographs, Job962_04_0513

Google Earth

All satellite depictions and overlays used in this report are from Google Earth.

Annexure A
Glass Analysis Tables

LOCALE	JZCP_Site 1
Grid No	Block 1
Level	Surface Collection

315	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	253	71	35	4	21	23	2	97			
Aqua	26	6	1	0	4	0	0	15			
light green	0	0	0	0	0	0	0	0			
Green	8	1	4	0	1	0	0	2			
dark green	18	3	1	0	3	0	0	11			
Colourless	147	45	23	2	8	19	2	48			
opaque-white	14	8	0	0	1	1	0	4			
'solarised'	6	0	2	0	0	0	0	4			
light blue	9	0	2	0	1	2	0	4			
Blue	9	2	0	0	2	1	0	4			
Turquoise	0	0	0	0	0	0	0	0			
Pink	0	0	0	0	0	0	0	0			
Brown	16	6	2	2	1	0	0	5			
Yellow	0	0	0	0	0	0	0	0			
FLAT	43	0									
TABLEWARE	2	0									
ORNAMENTS	17	0									

LOCALE	JZCP_ Site 1
Grid No	Block 1
Level	Layer 2

42	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	38	1	0	11	1	3	0	22	8		
Aqua	1	0	0	1	0	0	0	0	1	12.5	Crystal Spring 1898-1925
light green	0	0	0	0	0	0	0	0	0		
green	1	0	0	0	0	0	0	1	1	12.5	
dark green	0	0	0	0	0	0	0	0	0		
colourless	34	0	0	10	1	3	0	20	4	50	
opaque-white	1	1	0	0	0	0	0	0	1	12.5	Ponds 1920's
'solarised'	0	0	0	0	0	0	0	0	0		
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	1	0	0	0	0	0	0	1	1	12.5	
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	4	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_ Site 1
Grid No	Block 1
Level	Layer 3

24	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	22	2	0	0	0	0	0	20	6		
aqua	0	0	0	0	0	0	0	0	0		
light green	3	0	0	0	0	0	0	3	2	33.3	
green	0	0	0	0	0	0	0	0	0		
dark green	0	0	0	0	0	0	0	0	0		
colourless	10	1	0	0	0	0	0	9	2	33.3	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	8	0	0	0	0	0	0	8	1	16.6	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	1	1	0	0	0	0	0	0	1	16.6	
yellow	0	0	0	0	0	0	0	0	0		
FLAT	0	0									
TABLEWARE	2	0	Glass/Drinking and Dispenser fragment								
ORNAMENTS	0	0									

24	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
Construction	1	0	Light bulb fragment								

LOCALE	JZCP_Site 1
Grid No	Block 1
Level	Layer 4

16	Number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	15	0	1	5	0	0	0	9	5		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	2	0	0	2	0	0	0	0	1	20	
dark green	0	0	0	0	0	0	0	0	0		
colourless	10	0	0	3	0	0	0	7	2	40	
opaque-white	1	0	1	0	0	0	0	0	1	20	
'solarised'	2	0	0	0	0	0	0	2	1	20	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	0	0									

16	Number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
TABLEWARE	1	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 1
Level	Layer 5

9	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	9	0	0	5	4	0	0	0	5		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	3	0	0	3	0	0	0	0	1	20	
colourless	3	0	0	1	2	0	0	0	2	40	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	3	0	0	1	2	0	0	0	2	40	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		

9	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
yellow	0	0	0	0	0	0	0	0	0		
FLAT	0	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 1
Level	Layer 6

24	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	21	0	0	1	3	0	0	17	6		
aqua	0	0	0	0	0	0	0	0	0		
light green	4	0	0	1	0	0	0	3	1	16.6	
green	1	0	0	0	1	0	0	0	1	16.6	
dark green	0	0	0	0	0	0	0	0	0		
colourless	8	0	0	0	0	0	0	8	2	33.3	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	8	0	0	0	0	0	0	8	2	33.3	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		

24	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	1	0									
TABLEWARE	0	0									
ORNAMENTS	2	0									

LOCALE	JZCP_Site 1
Grid No	Block 1
Level	Layer 7

12	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	11	1	2	0	1	0	0	7	7		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	1	0	0	0	0	0	0	1	1	14.3	
dark green	1	0	0	0	0	0	0	1	1	14.3	
colourless	8	1	2	0	1	0	0	4	4	57.1	Forsters Glass Co.
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	1	0	0	0	0	0	0	1	1	14.3	
light blue	0	0	0	0	0	0	0	0	0		

12	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	0	0									
TABLEWARE	0	0									
ORNAMENTS	1	0									

LOCALE	JZCP_Site 1
Grid No	Block 1
Level	Layer 8

13	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	10	2	0	2	1	0	0	5	5		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	1	0	0	1	0	0	0	0	1	20	
colourless	5	1	0	0	1	0	0	3	2	40	
opaque-white	0	0	0	0	0	0	0	0	0		

13	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
`solarised`	3	0	0	1	0	0	0	2	1	20	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	1	1	0	0	0	0	0	0	1	20	Bovril 1
yellow	0	0	0	0	0	0	0	0	0		
FLAT	1	0									
TABLEWARE	2	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 1
Level	Layer 9

17	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	2	0	0	2	0	0	0	0	2		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	0	0	0	0	0	0	0	0	0		

17	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
colourless	1	0	0	1	0	0	0	0	1	50	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	0	0	0	0	0	0	0	0	0		
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	1	0	0	1	0	0	0	0	1	50	
yellow	0	0	0	0	0	0	0	0	0		
FLAT	8	0									
TABLEWARE	7	0									
ORNAMENTS											

LOCALE	JZCP_Site 1
Grid No	Block 1
Level	Layer 10

4	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	4	2	0	1	0	0	0	1	3		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		

4	number	complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
green	0	0	0	0	0	0	0	0	0		
dark green	0	0	0	0	0	0	0	0	0		
colourless	3	1	0	1	0	0	0	1	2	66.6	WA Bailey 1920
opaque-white	1	1	0	0	0	0	0	0	1	33.3	
'solarised'	0	0	0	0	0	0	0	0	0		
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	0	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 2
Level	Layer 2

12	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	7	1	0	0	0	0	0	6	3		

12	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	2	0	0	0	0	0	0	2	1	33.3	
colourless	5	1	0	0	0	0	0	4	2	66.6	United glass bottle 1913-59
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	0	0	0	0	0	0	0	0	0		
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	5	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 2
Level	Layer 3

11	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	7	0	5	0	0	0	0	2	3		
aqua	1	0	0	0	0	0	0	1	1	33.3	
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	0	0	0	0	0	0	0	0	0		
colourless	6	0	5	0	0	0	0	1	2	66.6	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	0	0	0	0	0	0	0	0	0		
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	4	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 2
Level	Layer 4

94	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	33	0	1	7	0	2	0	23	5		
aqua	2	0	0	1	0	0	0	1	1	20	
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	22	0	0	6	0	1	0	15	1	20	
colourless	9	0	1	0	0	1	0	7	3	60	
opaque-white	0	0	0	0	0	0	0	0	0		
`solarised'	0	0	0	0	0	0	0	0	0		
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	61	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 2
Level	Layer 5

4	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	3	0	1	0	0	0	0	2	3		
aqua	1	0	0	0	0	0	0	1	1	33.3	
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	0	0	0	0	0	0	0	0	0		
colourless	2	0	1	0	0	0	0	1	2	66.6	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	0	0	0	0	0	0	0	0	0		
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	1	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3

Level	Layer 2
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20	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	17	1	1	0	1	0	0	14	5		
aqua	1	0	0	0	0	0	0	1	1	20	
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	1	0	0	0	0	0	0	1	1	20	
colourless	8	1	1	0	1	0	0	5	2	40	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	7	0	0	0	0	0	0	7	1	20	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	1	0									
TABLEWARE	2	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
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Grid No	Block 3
Level	Layer 3

29	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	22	0	0	0	0	0	0	22	7		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	0	0	0	0	0	0	0	0	0		
colourless	20	0	0	0	0	0	0	20	6	86	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	2	0	0	0	0	0	0	2	1	14.2	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	5	0									
TABLEWARE	2	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 4

31	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	27	0	0	4	1	0	0	22	6		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	1	0	0	0	1	0	0	0	1	16.6	
colourless	24	0	0	40	0	0	0	20	3	50	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	1	0	0	0	0	0	0	1	1	16.6	
light blue	0	0	0	0	0	0	0	0	0		
blue	1	0	0	0	0	0	0	1	1	16.6	
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	4	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 5

80	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	67	1	1	0	0	0	0	65	5		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	0	0	0	0	0	0	0	0	0		
colourless	43	1	1	0	0	0	0	41	3	60	Higgins 1
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	22	0	0	0	0	0	0	22	1	20	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	2	0	0	0	0	0	0	2	1	20	
FLAT	11	0									
TABLEWARE	2	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 6

15	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	13	1	3	1	0	0	0	8	5		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	1	0	1	0	0	0	0	0	1	20	
dark green	5	0	0	1	0	0	0	4	1	20	
colourless	7	1	2	0	0	0	0	4	3	60	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	0	0	0	0	0	0	0	0	0		
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	2	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 7

13	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	6	0	0	0	0	0	0	6	4		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	1	0	0	0	0	0	0	1	1	25	
dark green	2	0	0	0	0	0	0	2	1	25	
colourless	1	0	0	0	0	0	0	1	1	25	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	2	0	0	0	0	0	0	2	1	25	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	7	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 8

31	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	21	2	2	12	3	2	0	0	5		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	10	0	0	9	1	0	0	0	1	20	
colourless	9	0	2	3	2	2	0	0	2	40	
opaque-white	1	1	0	0	0	0	0	0	1	20	
'solarised'	0	0	0	0	0	0	0	0	0		
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	1	1	0	0	0	0	0	0	1	20	Marmite 1
yellow	0	0	0	0	0	0	0	0	0		
FLAT	8	0									
TABLEWARE	2	0									

31	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 9

25	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	9	0	0	0	1	0	0	8	4		
aqua	2	0	0	0	1	0	0	1	1	25	
light green	0	0	0	0	0	0	0	0	0		
green	2	0	0	0	0	0	0	2	1	25	
dark green	0	0	0	0	0	0	0	0	0		
colourless	3	0	0	0	0	0	0	3	1	25	
opaque-white	0	0	0	0	0	0	0	0	0		
`solarised'	2	0	0	0	0	0	0	2	1	25	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		

25	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
FLAT	13	0									
TABLEWARE	3	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 10

61	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	41	1	1	0	0	1	0	38	7		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	1	0	0	0	0	0	0	1	1	14.3	
dark green	1	0	0	0	0	0	0	1	1	14.3	
colourless	38	1	1	0	0	1	0	35	4	57.1	Sutax 1 1925
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	1	0	0	0	0	0	0	1	1	14.3	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		

61	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	20	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 11

43	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	9	1	0	3	0	0	0	5	4		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	1	0	0	1	0	0	0	0	1	25	
colourless	3	1	0	2	0	0	0	0	2	50	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	5	0	0	0	0	0	0	5	1	25	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		

43	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	34	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 12

39	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	16	1	1	0	0	1	0	13	5		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	1	0	0	0	0	0	0	1	1	20	
colourless	9	0	1	0	0	1	0	7	2	40	
opaque-white	1	1	0	0	0	0	0	0	1	20	
`solarised'	5	0	0	0	0	0	0	5	1	20	

39	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	23	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 13

21	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	10	1	0	0	1	2	0	6	4		
aqua	0	0	0	0	0	0	0	0	0		
light green	0	0	0	0	0	0	0	0	0		
green	2	0	0	0	0	0	0	2	1	25	
dark green	1	0	0	0	1	0	0	0	1	25	
colourless	1	1	0	0	0	0	0	0	1	25	

21	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	6	0	0	0	0	2	0	4	1	25	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	11	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 14

27	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	12	2	1	3	0	0	0	6	6		
aqua	1	1	0	0	0	0	0	0	1	16.6	Chamberlain's 1
light green	0	0	0	0	0	0	0	0	0		
green	2	0	0	0	0	0	0	2	1	16.6	

27	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
dark green	1	0	0	1	0	0	0	0	1	16.6	
colourless	7	1	1	2	0	0	0	3	2	33.3	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	1	0	0	0	0	0	0	1	1	16.6	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	0	0	0	0	0	0	0	0	0		
yellow	0	0	0	0	0	0	0	0	0		
FLAT	13	0									
TABLEWARE	2	0									
ORNAMENTS	0	0									

LOCALE	JZCP_Site 1
Grid No	Block 3
Level	Layer 15

25	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
CONTAINER	23	2	3	2	1	1	0	14	7		
aqua	2	1	1	0	0	0	0	0	1	14.2	Three in one 1910

25	number	Complete	rim & neck	body	body & base	base	tubes	unidentifiable	MNV	% MNV	Diagnostic
light green	0	0	0	0	0	0	0	0	0		
green	0	0	0	0	0	0	0	0	0		
dark green	1	0	0	0	0	0	0	1	1	14.2	
colourless	15	0	1	0	1	0	0	13	3	43	
opaque-white	0	0	0	0	0	0	0	0	0		
'solarised'	4	0	1	2	0	1	0	0	1	14.2	
light blue	0	0	0	0	0	0	0	0	0		
blue	0	0	0	0	0	0	0	0	0		
turquoise	0	0	0	0	0	0	0	0	0		
pink	0	0	0	0	0	0	0	0	0		
brown	1	1	0	0	0	0	0	0	1	14.2	Kepler 1
yellow	0	0	0	0	0	0	0	0	0		
FLAT	2	0									
TABLEWARE	0	0									
ORNAMENTS	0	0									

Imported Ceramics Analysis Tables

JOHANNESBURG ZOO IMPORTED CERAMICS: BLOCK 1: WARE TYPE AND DECORATION

LEVEL	1		2		3		4		5		6		7		8		9		TOTAL	% TOTAL
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
WARE & DECORATION																				
STONEWARE																				
PORCELAIN																				
blue & white																				
gold & white							1	5.3							1	10.0			2	2.6
Moulded																				
painted																				
painted & gilded													2	33.3					2	2.6
printed (underglaze)																				
printed (underglaze) & gilded																				
enamelled																				
enamelled & gold																				
lithographic print			1	6.7	1	7.7	4	21.1					1	16.7			2	20.0	9	11.5
lined																				
lined & gilded			1	6.7	2	15.4							1	16.7					4	5.1
colour glazed											1	20.0	1	16.7					2	2.6
colour glazed & gilded															1	10.0			1	1.3
undecorated			1	6.7	4	30.8	3	15.8			1	20.0					1	10.0	10	12.8
REFINED INDUSTRIAL WARE (RIW)																				
Refined White-bodied: White Ware (non-semi & vitreous white-bodied wares: clear/coloured glazes)																				
painted blue																				
painted (harsh colours)																				

LEVEL	1		2		3		4		5		6		7		8		9		TOTAL	% TOTAL
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
WARE & DECORATION																				
painted (other colours)													1	16.7					1	1.3
gold & white																				
enamelled																				
enamelled & gold																				
lustre																				
u/g printed: blue Willow																				
u/g printed: blue other																				
u/g printed: grey																				
u/g printed: green																				
u/g printed: other																				
print & paint																				
printed multi-colour																				
printed o/g (lithographic)					2	15.4					1	20.0			2	20.0			5	6.4
printed o/g (lithographic) & enamelled																				
sponged																				
spatter																				
relief decorated							4	21.1			1	20.0					1	10.0	6	7.7
lined																	2	20.0	2	2.6
lined & gold			2	13.3	2	15.4													4	5.1
cream-coloured																				
coloured glaze																				
undecorated			10	66.7	2	15.4	7	36.8			1	20.0			4	40.0	4	40.0	28	35.9
unidentified																				

LEVEL	1		2		3		4		5		6		7		8		9		TOTAL	% TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			
WARE & DECORATION																					
Refined Coloured-Bodied Ware																					
'teapot' ware																					
brown-bodied: brown glazed																					
Refined Stoneware																					
'Hotel-ware' (undecorated)																					
'Hotel-ware' (gold & white)																					
GLASS-CERAMIC																					
CASED GLASS																					
DOLL															1	10.0				1	1.3
BUILDING TILE																					
UNIDENTIFIED															1	10.0				1	1.3
TOTAL			15	100.1	13	100.1	19	100.1			5	100.0	6	100.0	10	100.0	10	100.0	78	100	
% TOTAL			15	19.2	13	16.7	19	24.4			5	6.4	6	7.7	10	12.8	10	12.8	78	100	

JOHANNESBURG ZOO IMPORTED CERAMICS: BLOCK 2: WARE TYPE AND DECORATION

LEVEL	1		2		3		4		5		TOTAL	% TOTAL
	No.	%	No.	%	No.	%	No.	%	No.	%		
WARE & DECORATION												
STONEWARE												
PORCELAIN												
blue & white												
gold & white			2	4.3							2	1.7
moulded					2	12.5					2	1.7
painted												
painted & gilded												
printed (underglaze)												
printed (underglaze) & gilded												
enamelled												
enamelled & gold												
lithographic print			4	8.7							4	3.5
lined												
lined & gilded												
colour glazed												
colour glazed & gilded												
undecorated			6	13.0	1	6.3	30	69.8			37	32.2
REFINED INDUSTRIAL WARE (RIW)												
Refined White-bodied: White Ware (non-semi & vitreous white-bodied wares: clear/coloured glazes)												
painted blue			4	8.7	2	12.5					6	5.2
painted (harsh colours)												

LEVEL	1		2		3		4		5		TOTAL	% TOTAL
	No.	%	No.	%	No.	%	No.	%	No.	%		
WARE & DECORATION												
painted (other colours)												
gold & white							5	11.6			5	4.3
enamelled												
enamelled & gold												
lustre												
u/g printed: blue Willow												
u/g printed: blue other					1	6.3	2	4.7	6	60.0	9	7.8
u/g printed: grey												
u/g printed: green												
u/g printed: brown			1	2.3							1	0.9
print & paint												
printed multi-colour												
printed o/g (lithographic)												
printed o/g (lithographic) & enamelled												
sponged												
spatter												
relief decorated			3	6.5	1	6.3					4	3.5
lined												
lined & gold												
cream-coloured												
coloured glaze												
undecorated			26	56.5	7	43.8	6	14.0	4	40.0	43	37.4
unidentified												

LEVEL	1		2		3		4		5		TOTAL	% TOTAL
	No.	%	No.	%	No.	%	No.	%	No.	%		
WARE & DECORATION												
Refined Coloured-Bodied Ware												
'teapot' ware												
brown-bodied: brown glazed												
Refined Stoneware												
'Hotel-ware' (undecorated)												
'Hotel-ware' (gold & white)												
GLASS-CERAMIC					1	6.3					1	0.9
CASED GLASS												
DOLL												
BUILDING TILE												
UNIDENTIFIED					1	6.3					1	0.9
TOTAL			46	100.0	16	100.3	43	100.1	10	100.0	115	100
% TOTAL			46	40.0	16	13.9	43	37.4	10	8.7	115	100

LEVEL	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		
WARE & DECORATION	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	TOTAL
u/g printed: blue Willow			11	27.5									2	20.0																	13
u/g printed: blue other													2	20.0	1	20.0	2	18.2	1	14.3	3	33.3	1	14.3							10
u/g printed: grey																															
u/g printed: green													1	10.0																	1
u/g printed: other																															
print & paint			3	7.5																											3
printed multi-colour																															
printed o/g (lithographic)			1	2.5																						3	12.5	1	8.3		5
printed o/g (lithographic) & gilded															2	18.2															2
sponged																															
spatter																															
relief decorated									2	15.4					1	20.0	1	9.1								3	12.5				7
lined																										1	4.2				1
lined & gold																															
cream-coloured																															
coloured glaze																						1	14.3								1
undecorated					3	7.0			2	15.4	1	9.1			4	36.7	2	28.6	2	22.2	4	57.1	5	71.4	9	37.5	2	16.7			34
unidentified																															
Refined Coloured-Bodied Ware																															
'teapot' ware			1	2.5														1	14.3												2
brown-bodied: brown glazed																										1	4.2				1
yellow-ware																												1	8.3		1
Refined Stoneware									2	18.2																					2
'Hotel-ware' (undecorated)																															
'Hotel-ware' (gold & white)																															
GLASS-CERAMIC					1	2.3	1	100.0			1	9.1			1	20.0															4
CASED GLASS													1	10.0																	1
DOLL					9	20.9			1	7.7	1	9.1																			11
BUILDING TILE																															

LEVEL	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		
WARE & DECORATION	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	TOTAL
UNIDENTIFIED													1	10.0																	1
TOTAL			40	100.0	43	99.9	1	100.0	13	100.0	11	100.1	10	100.0	5	100.0	11	101.0	7	100.1	9	99.9	7	100.0	7	100.0	24	100.1	12	100.0	200
% TOTAL			40	20.0	43	21.5	1	0.5	13	6.5	11	5.5	10	5.0	5	2.5	11	5.5	7	3.5	9	4.5	7	3.5	7	3.5	24	12.0	12	6.0	100

