

Figure 120 – General view of DBAP 32. The scale is in 10cm increments.



Figure 121 – The lower grinder that was observed on the surface of site DBAP 32. The scale is in 1cm increments.

6.2.33 DBAP 33

Site Coordinates:

S 25.007769

E 30.129430

Site Description:

During a survey undertaken by Samancor in consultation with the Choma, Tsheshane and other families, this locality was simply identified as 'Tsheshane', which is believed to signify that the grave of this individual is buried here.

During the fieldwork, a loosely packed concentration of stones was identified 8m from the site identified during the Samancor survey. A broken lower grinder was observed nearby.

Site Extent:

The site is approximately 15m by 15m in extent.

Site Significance:

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance.

As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 122 – General view of site DBAP 33. The position recorded during the Samancor fieldwork is located near the trees in the back with the stone concentration identified near the scale in the foreground.



Figure 123 – General view of the loosely packed stone concentration. Scale in 10cm increments.

6.2.34 DBAP 34

Site Coordinates:

S 25.007497

E 30.129622

Site Description

The site comprises a low-density surface scatter of potsherds identified east of a non-perennial stream. A total of five potsherds were observed over an area approximately 10m by 10m in extent. The majority of these potsherds were found to be undecorated. However, two of the potsherds were found to be decorated. One of these decorated potsherds has fingernail impressions immediately below the rim.

The site can be associated with either the Iron Age or Historic Period. With no associated features or cultural material identified, it is not presently clear what the age of these sherds is. It is worth noting that according to the well-known ethnologist H.O. Mönnig, the surface of Pedi graves may contain broken potsherds with very little other surface marking used. It is especially the following section from Mönnig (1978:40) that is important: *"...as soon as the grave is filled, the female relative who officiated previously approaches with a clay pot filled with water and purifying medicines. In the case of a polygamist, all his wives have to come, each with a pot. All the persons who took part in the burial, and who were thus contaminated with ditshila, then cleanse themselves by washing their hands in the water. Each woman then drops her pot on the grave, where it is shattered."*

Site Extent

Potsherds were observed over an area roughly 10m x 10m in extent.

Site Significance

A low density scatter of potsherds was identified here, the exact reason for the presence of this potsherd scatter is not presently certain. Although the site has a low density of potsherds, it does contain two decorated sherds. Furthermore, as indicated in the text above, broken potsherds may indicate the presence of an unmarked grave. As a result, the site is deemed to be of **Medium Significance** and is rated as **Generally Protected B (GP.B)**. As a result, some mitigation measures would be required.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 124 – General view of site DBAP 34. Scale in 10cm increments.



Figure 125 – Sample of potsherds observed at site DBAP 34. Scale in 1cm and 5cm increments.

6.2.35 DBAP 35

Site Coordinates:

S 25.007048

E 30.131066

Site Description

The site comprises a relatively high-density surface scatter of potsherds identified 83m west of a non-perennial stream and 30m east of a furrow that was excavated in the relatively recent past. A total of 27 undecorated potsherds were observed over an area approximately 10m by 10m in extent. These potsherds were primarily found in amongst a number of relatively large boulders.

The low frequency of decorated sherds suggests that the pottery can be associated with either the Late Iron Age or Historic Period. With no associated features or cultural material identified, it is not presently clear why such a high concentration of ceramics is located here. It is worth noting that according to the well-known ethnologist H.O. Mönnig, the surface of Pedi graves may contain broken potsherds with very little other surface marking used. It is especially the following section from Mönnig (1978:40) that is important: *"...as soon as the grave is filled, the female relative who officiated previously approaches with a clay pot filled with water and purifying medicines. In the case of a polygamist, all his wives have to come, each with a pot. All the persons who took part in the burial, and who were thus contaminated with ditshila, then cleanse themselves by washing their hands in the water. Each woman then drops her pot on the grave, where it is shattered."*

Site Extent

Potsherds were observed over an area roughly 10m x 10m in extent.

Site Significance

A relatively high density scatter of largely undecorated potsherds was identified here. While the exact reason for the presence of these potsherds is not clear, broken potsherds may indicate the presence of an unmarked grave.

As a result, the site is deemed to be of **Medium Significance** and is rated as **Generally Protected C (GP.B)**. Mitigation measures would, therefore, be required.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 126 – General view of site DBE 35. Scale in 10cm increments.



Figure 127 – Sample of potsherds observed at site DBE 35. Scale in 1cm increments.

6.2.36 DBAP 36

Site Coordinates:

S 25.005168

E 30.130793

Site Description:

During a survey undertaken by Samancor in consultation with the Choma, Tsheshane and other families, a site defined as 'Petrus de Beer Mankge Farmer' was recorded here. During the current fieldwork, this site locality recorded by Samancor was visited in the field, and despite an intensive walkthrough of the coordinates for this site, no evidence for either a grave or homestead could be identified.

It is not presently known why no evidence for either a homestead or grave could be identified at the coordinates recorded by Samancor.

Site Extent:

Not known

Site Significance:

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.

6.2.37 DBAP 37

Site Coordinates:

S 25.004229

E 30.128641

Site Description:

A historic homestead that is associated with farming activities, is located here. The site is located in-between two historic agricultural fields and was clearly associated with these fields.

A rectangular stone foundation (approximately 9m x 6m) was identified near the center of a level portion of land. The north-western and north-eastern sides of this open area are enclosed by low stone wall sections that are relatively wide (approximately 80cm), with a large Marula tree (*Sclerocarya birrea*) growing out of the corner created by the two wall sections. The north-western wall acts as a terrace and has a watercourse (possibly a furrow) running below it.

Two broken well-used broken lower grinders were observed on the north-eastern end of the rectangular stone foundation, with two undecorated potsherds as well as an imported ceramic fragment identified nearby. A glass fragment and another undecorated potsherd were identified a short distance south-east of the rectangular structure.

The site is not depicted on the first and second editions of the 2530AA Topographical Sheets surveyed in 1969 and 1988. It is also not depicted on the aerial photograph taken in 1956. However, on the aerial photograph taken in 1962, a rectangular structure is depicted at the same, with a second unidentified feature shown a short distance to the west. This unidentified feature may have been a heap of soil or grass, but this is not certain. The rectangular structure is again depicted on the 1964 aerial photograph. However, no evidence for this structure could be seen on the 1975 aerial photograph. As a result, it would appear that the rectangular structure was occupied between 1956 and 1962, and again abandoned between 1964 and 1975. However, this is of course not absolutely certain.

The presence of undecorated potsherds and lower grinders, as well as the association of the site

with the nearby farming activities, suggest that it was a black farmer or farmworker dwelling.

It is possible for graves, including unmarked stillborn graves, to be associated with the site. As the site was abandoned some time ago, the presence (or not) of such graves here is not presently known.

A small stone enclosure is located a short distance north-east of the rectangular structure. It is not presently clear whether this stone enclosure is directly associated with the site, although this is possible.

Site Extent:

The site is approximately 60m by 50m in extent.

Site Significance:

The structural components of the site are not that old, nor unique, and as a result, are deemed to be of **Generally Protected B (GP. C) or Low Significance**.

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A) or High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 128 – General view of the site. The Marula tree referred to in the text is visible left of the scale. Scale in 10cm increments.



Figure 129 – Cross-view of a section of the straight walls enclosing two sides of the site. Scale in 10cm increments. Note the use of large rocks on the outside with smaller rocks in-between.



Figure 130 – A section of the foundation of the rectangular structure can be seen in the foreground. Scale in 10cm increments.



Figure 131 – Close-up view of one of the broken lower grinders. Scale is in 1cm and 5cm increments.



Figure 132 – The small oval-shaped enclosure on the north-eastern end of the site. Scale in 10cm increments.



Figure 133 – Depiction of site DBAP 37 on the 1962 aerial photograph (National Geo-spatial Information, Aerial Photograph, 267_1962_01_4853). This depiction also includes the area where sites DBAP 38 and DBAP 39 are located. As can be seen, these two sites cannot be seen in this image.

6.2.38 DBAP 38

Site Coordinates:

S 25.003708

E 30.130089

Site Description:

A multi-component site is located here which may have been associated with the Late Iron Age and Historic Period.

The site is located on the top and around a low rocky ridge which is densely overgrown with trees. Along the top of this rocky ridge, and especially on its western end, a few small circular stone enclosures were identified. Although a more recent association is also possible, these stone enclosures may be associated with the Late Iron Age (AD 1650 – AD 1820). Associated cultural material in the form of potsherds, including one with red (ochre) burnish, were observed on the surface of the site. This type of decoration is of course widespread, but also found on Marateng pottery (AD 1650 – AD 1840) and its associated Pedi pottery of historic to modern times.

Along the eastern end of the rocky ridge, a rectangular stone structure (10m x 5m) with an adjoining smaller rectangular stone structure (2m x 2m) were identified. Cultural material observed on the surface of the site in proximity to these rectangular structures include six white imported ceramic fragments, two glass items (one of which was evidently a historic glass bottle stopper), two cast iron artefacts (one of which has an embossed wheat ear design) as well as dressed stones and old sun-baked clay bricks. The presence of these rectangular structures with associated historic cultural material, clearly indicates that the site was also occupied during the historic period, which may have included the nineteenth and twentieth centuries.

A small number of potsherds were observed near the northern foot of the low rocky ridge along which most of the site features and structures were observed. It is possible for these potsherds to be associated with the Late Iron Age component of the site.

The site is not depicted on the first and second editions of the 2530AA Topographical Sheets

surveyed in 1969 and 1988. It is also not depicted on the aerial photographs taken in 1956, 1962 and 1975.

Both the Late Iron Age and Historic Period components of the site appear to be older than 100 years. This indicates that it is defined as an archaeological site within the current heritage legislation. Apart from the archaeological and historical significance of the site, it is of course also possible for graves to have been buried in association with either the Late Iron Age or Historic Period components of the site.

Site Extent:

The site is approximately 100m by 100m in extent.

Site Significance:

Although risk exists for graves to have been buried at the site, the Late Iron Age and Historic Period components of the site on its own is of enough historic value to be deemed of **Generally Protected B (GP. B)** or **Medium Significance**.

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 134 – General view of two attached circular enclosures which represent some of the tangible remains from the site that can possibly be associated with the Late Iron Age. Scale in 10cm increments.



Figure 135 – One of the rectangular structures identified at the site. Scale in 10cm increments.



Figure 136 – Dressed stone and sun-baked clay bricks identified near the rectangular structures. Scale in 10cm increments.



Figure 137 – Close-up view of one of the metal artefacts identified near the rectangular structures. Scale is in 1cm and 5cm increments.

6.2.39 DBAP 39

Site Coordinates:

S 25.003782

E 30.130746

Site Description:

Two broken lower grinders, as well as one undecorated potsherd, were identified immediately west of a non-perennial stream. It is not presently certain whether a Pedi homestead was located here. The site is located 67m east of site DBE 38, where a historic homestead was identified. It is possible for the two sites to be associated.

Apart from the above-mentioned cultural material, no further evidence for a homestead was identified, and in particular, no evidence for tangible remains of dwellings could be seen on the surface of the site. This relatively low visibility of the domestic structural aspects of this site was found to be characteristic of many of the sites identified within the Mareesburg Waste Rock Dump area. Furthermore, not any of the topographical map sheets surveyed in 1969 and 1988 nor any of the aerial photographs taken in 1956, 1962 and 1975 depicts the site. The reason for this is not certain. However, it is possible that the homestead located here was occupied and abandoned long before the 1956 aerial photograph was taken, and may even be older than 100 years. This is of course not presently certain.

It is possible for graves to have been buried in association with the homestead at site DBE 14. According to Mönnig, graves were buried in different localities across a Pedi settlement or *kgoro*. Mönnig (1978:139) states that *“Chiefs and heads of lineages and their wives, and the heads of households are buried in the cattle kraal. Young men and women of lesser importance are buried in the private courtyard (mafuri) behind the hut. Babies are buried inside the hut, and young children are buried under the eaves of the hut.”* Furthermore, Mönnig (1978: 140) provides the following description in terms of the marking of such graves: *“The grave is then filled up by the close male relatives, and a small stone placed in the center of the grave to indicate its position for future sacrifices.”* It is therefore clear that any graves associated with a particular *kgoro* may not be well marked and visible on the surface. However, Mönnig (1978:40) adds that *“...as soon as the grave is*

filled, the female relative who officiated previously approaches with a clay pot filled with water and purifying medicines. In the case of a polygamist, all his wives have to come, each with a pot. All the persons who took part in the burial, and who were thus contaminated with ditshila, then cleanse themselves by washing their hands in the water. Each woman then drops her pot on the grave, where it is shattered.”

Site Extent:

The site is approximately 20m by 20m in extent.

Site Significance:

Without the possible presence of graves, the site has little significance. This is due to the fact that very little of the site has remained preserved.

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance.

As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 138 – General view of site DBAP 39 with the non-perennial stream visible on the left.



Figure 139 – One of the broken lower grinders from the site. Scale in 1cm and 5cm increments.

6.2.40 DBAP 40

Site Coordinates:

S 25.005044

E 30.134788

Site Description:

A circular stone-lined feature (100cm x 80cm) was identified here. Although no grave goods or headstones could be observed, the possibility exists for a grave to be located here. This said it is of course also possible for the stone-lined feature to have had another origin and function as well, but this is not certain at present.

An intensive walkthrough of the surroundings of the stone-lined feature revealed only one lower grinding stone as well as a hammerstone and/or stone anvil. This hammerstone/stone anvil was identified underneath a Marula tree (*Sclerocarya birrea*), and appears to have been used to break open the pip stones of the Marula fruit to access the kernels. In his book on the Pedi, well-known ethnologist H.O. Mönnig (1978) states that the Pedi eat the dried kernels of Marula fruit pips as nuts.

Apart from the above-mentioned cultural material, no further evidence for a homestead was identified, and in particular, no evidence for tangible remains of dwellings could be seen on the surface of the site. This relatively low visibility of the domestic structural aspects of this site was found to be characteristic of many of the sites identified within the Maresburg Waste Rock Dump area. Furthermore, not any of the topographical map sheets surveyed in 1969 and 1988 nor any of the aerial photographs taken in 1956, 1962 and 1975 depicts the site. The reason for this is not certain. However, it is possible that the homestead located here was occupied and abandoned long before the 1956 aerial photograph was taken, and may even be older than 100 years. This is of course not presently certain.

It is possible for even more graves to have been buried in association with the homestead at site DBE 15. According to Mönnig, graves were buried in different localities across a Pedi settlement or *kgoro*. Mönnig (1978:139) states that "*Chiefs and heads of lineages and their wives, and the heads of households are buried in the cattle kraal. Young men and women of lesser importance are buried in*

the private courtyard (mafuri) behind the hut. Babies are buried inside the hut, and young children are buried under the eaves of the hut.” Furthermore, Mönnig (1978: 140) provides the following description in terms of the marking of such graves: “The grave is then filled up by the close male relatives, and a small stone placed in the center of the grave to indicate its position for future sacrifices.” It is therefore clear that any graves associated with a particular kgoro may not be well marked and visible on the surface. However, Mönnig (1978:40) adds that “...as soon as the grave is filled, the female relative who officiated previously approaches with a clay pot filled with water and purifying medicines. In the case of a polygamist, all his wives have to come, each with a pot. All the persons who took part in the burial, and who were thus contaminated with ditshila, then cleanse themselves by washing their hands in the water. Each woman then drops her pot on the grave, where it is shattered.”

Site Extent:

The site is approximately 50m by 50m in extent.

Site Significance:

Without the possible presence of graves, the site has little significance. This is due to the fact that very little of the site has remained preserved.

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 140 – General view of site DBAP 40. The Marula tree referred to in the text can be seen on the left with the possible graves located in the background on the right. The scale is located where the lower grinder was observed. Scale in 10cm increments.



Figure 141 – General view of the circular stone-lined feature at site DBAP 40. Scale in 10cm increments.



Figure 142 – Close-up view of the hammerstone/anvil stone found underneath a Marula tree.



Figure 143 – Close-up view of the lower grinding stone identified at site DBAP 40.

6.2.41 DBAP 41

Site Coordinates:

S 25.007234

E 30.135431

Site Description:

During a survey undertaken by Samancor in consultation with the Choma, Tsheshane and other families, a site defined as 'Village Probably Grave' was recorded here. During the current fieldwork, this site locality recorded by Samancor was visited in the field, and despite an intensive walkthrough of the coordinates for this site, no evidence of such a homestead or possible grave could be identified.

It is not presently known why no evidence for either a homestead or a possible grave could be identified at the coordinates recorded by Samancor.

Site Extent:

Not known

Site Significance:

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.

6.2.42 DBAP 42

Site Coordinates:

S 25.006507

E 30.137254

Site Description:

The site comprises four grindings surfaces located on rocks along a dyke. No upper grinders or other cultural material could be identified on the surface of the site.

The site that was indicated by the Choma family as their homestead at site DBAP 45 is located 90m to the north-east. It seems likely therefore for this site to be associated with DBAP 45, and also with the two possible grave sites (DBAP 43 and DBAP 45) located even closer to DBAP 42.

Apart from the above-mentioned grinding surfaces, no further evidence for a homestead was identified, and in particular, no evidence for tangible remains of dwellings could be seen on the surface of the site. This relatively low visibility of the domestic structural aspects of the site was found to be characteristic of many of the sites identified within the Maresburg Waste Rock Dump area. Furthermore, not any of the topographical map sheets surveyed in 1969 and 1988 nor any of the aerial photographs taken in 1956, 1962 and 1975 depicts the site. However, it is possible that the homestead located here was occupied and abandoned long before the 1956 aerial photograph was taken, and may even be older than 100 years. This is of course not presently certain.

It is possible for graves to have been buried in association with the homestead at site DBAP 42. According to well-known ethnologist H.O. Mönnig, graves were buried in different localities across a Pedi settlement or *kgoro*. Mönnig (1978:139) states that *“Chiefs and heads of lineages and their wives, and the heads of households are buried in the cattle kraal. Young men and women of lesser importance are buried in the private courtyard (mafuri) behind the hut. Babies are buried inside the hut, and young children are buried under the eaves of the hut.”* Furthermore, Mönnig (1978: 140) provides the following description in terms of the marking of such graves: *“The grave is then filled up by the close male relatives, and a small stone placed in the center of the grave to indicate its position for future sacrifices.”* It is therefore clear that any graves associated with a particular *kgoro* may not be well marked and visible on the surface. However, Mönnig (1978:40) adds that *“...as soon as the*

grave is filled, the female relative who officiated previously approaches with a clay pot filled with water and purifying medicines. In the case of a polygamist, all his wives have to come, each with a pot. All the persons who took part in the burial, and who were thus contaminated with ditshila, then cleanse themselves by washing their hands in the water. Each woman then drops her pot on the grave, where it is shattered.”

Site Extent:

Not known.

Site Significance:

Without the possible presence of graves, the site has little significance. This is due to the fact that very little of the site has remained preserved.

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 144 – General view of site DBAP 42 showing the area where the grinding surfaces were identified. Scale in 10cm increments.



Figure 145 – Closer view of two of the grinding surfaces. Scale in 10cm increments.

6.2.43 DBAP 43

Site Coordinates:

S 25.006606

E 30.137479

Site Description:

During the current fieldwork, a small number of stones packed loosely together were identified here. During a survey undertaken by Samancor in consultation with the Choma, Tsheshane and other families, this locality was simply identified as 'Kholo', which is believed to signify that the grave of this individual is buried here.

Site Extent:

The site is approximately 10m by 10m in extent.

Site Significance:

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance.

As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 146 – General view of the loosely packed stones at site DBAP 43. Scale in 10cm increments.

6.2.44 DBAP 44

Site Coordinates:

S 25.006580

E 30.137743

Site Description:

An oval-shaped stone-lined feature (200cm x 150cm) was identified here during the current fieldwork. The stone-lined feature is orientated north-west by south-east. Two undecorated potsherds as well as a historic plough made by the well-known company Rud. Sack was observed in proximity to this feature. This company dates to the period between 1863 and 1948 (www.agronaplo.hu).

During a survey undertaken by Samancor in consultation with the Choma, Tsheshane and other families, this locality was simply identified as 'Mmupi Choma', which is believed to signify that the grave of this individual is buried here.

Site Extent:

The site is approximately 15m by 15m in extent.

Site Significance:

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 147 – General view of the loosely packed stone-lined feature at site DBAP 44.



Figure 148 – The historic plough made by the company Rud. Sack. Scale in 1cm and 5cm increments.

6.2.45 DBAP 45

Site Coordinates:

S 25.006203

E 30.138077

Site Description:

One lower grinder was observed on the surface of the site during the current fieldwork. During a survey undertaken by Samancor in consultation with the Choma, Tsheshane and other families, this locality was identified as 'House of Choma'. Based on this latter information, it would appear that a Pedi homestead associated with the Choma family is located here.

Apart from the above-mentioned lower grinding stone, no further evidence for a homestead was identified, and in particular, no evidence for tangible remains of dwellings could be seen on the surface of the site. This relatively low visibility of the domestic structural aspects of the site was found to be characteristic of many of the sites identified within the Maresburg Waste Rock Dump area. Furthermore, not any of the topographical map sheets surveyed in 1969 and 1988 nor any of the aerial photographs taken in 1956, 1962 and 1975 depicts the site. The reason for this is not certain. However, it is possible that the homestead located here was occupied and abandoned long before the 1956 aerial photograph was taken, and may even be older than 100 years. This is of course not presently certain.

It is possible for graves to have been buried in association with the homestead at site DBAP 45. According to well-known ethnologist H.O. Mönnig, graves were buried in different localities across a Pedi settlement or *kgoro*. Mönnig (1978:139) states that *“Chiefs and heads of lineages and their wives, and the heads of households are buried in the cattle kraal. Young men and women of lesser importance are buried in the private courtyard (mafuri) behind the hut. Babies are buried inside the hut, and young children are buried under the eaves of the hut.”* Furthermore, Mönnig (1978: 140) provides the following description in terms of the marking of such graves: *“The grave is then filled up by the close male relatives, and a small stone placed in the center of the grave to indicate its position for future sacrifices.”* It is therefore clear that any graves associated with a particular *kgoro* may not be well marked and visible on the surface. However, Mönnig (1978:40) adds that *“...as soon as the grave is filled, the female relative who officiated previously approaches with a clay pot filled with*

water and purifying medicines. In the case of a polygamist, all his wives have to come, each with a pot. All the persons who took part in the burial, and who were thus contaminated with ditshila, then cleanse themselves by washing their hands in the water. Each woman then drops her pot on the grave, where it is shattered.”

Site Extent:

Not known.

Site Significance:

Without the possible presence of graves, the site has little significance. This is due to the fact that very little of the site has remained preserved.

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.

6.2.46 DBAP 46

Site Coordinates:

S 25.007417

E 30.138987

Site Description:

During a survey undertaken by Samancor in consultation with the Choma, Tsheshane and other families, this locality was identified as a 'Grinding Stone'.

During the fieldwork, a single grinding surface on a boulder was observed here. No evidence for any associated cultural material or features could be identified.

Not any of the topographical map sheets surveyed in 1969 and 1988 nor any of the aerial photographs taken in 1956, 1962 and 1975 depicts any evidence for a site here.

Site Extent:

The site is approximately 10m by 10m in extent.

Site Significance:

The site comprises a boulder containing a grinding surface. No associated cultural material or features could be observed. As such, the site is of **Generally Protected C (GP. C)** or **Low Significance**.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 149 – General view of site DBAP 46.



Figure 150 – General view of the grinding surface observed at feature DBAP 46. The scale is in 10cm increments.

6.2.47 DBAP 47

Site Coordinates:

| | |
|----------------------------|----------------------------|
| Feature DBAP 47A | Feature DBAP 47B |
| Communal Grinding Stone | Lower Grinding Stone |
| S 25.005660 E 30.137680 | S 25.005344 E 30.138245 |

Site Description:

The site comprises two grindings surfaces (see feature DBAP 47A), two lower grinders (one of these lower grinders was identified at feature DBAP 47B) and two upper grinders observed over an area roughly 80m by 50m in extent.

Apart from the above-mentioned cultural material, no further evidence for a homestead was identified, and in particular, no evidence for tangible remains of dwellings could be seen on the surface of the site. This relatively low visibility of the domestic structural aspects of this site was found to be characteristic of many of the sites identified within the Mareesburg Waste Rock Dump area. Furthermore, not any of the topographical map sheets surveyed in 1969 and 1988 nor any of the aerial photographs taken in 1956, 1962 and 1975 depicted the site. The reason for this is not certain. However, it is possible that the homestead located here was occupied and abandoned long before the 1956 aerial photograph was taken, and may even be older than 100 years. This is of course not presently certain.

It is possible for graves to have been buried in association with the homestead at site DBAP 47. According to well-known ethnologist H.O. Mönnig, graves were buried in different localities across a Pedi settlement or *kgoro*. Mönnig (1978:139) states that *“Chiefs and heads of lineages and their wives, and the heads of households are buried in the cattle kraal. Young men and women of lesser importance are buried in the private courtyard (mafuri) behind the hut. Babies are buried inside the hut, and young children are buried under the eaves of the hut.”* Furthermore, Mönnig (1978: 140) provides the following description in terms of the marking of such graves: *“The grave is then filled up by the close male relatives, and a small stone placed in the center of the grave to indicate its position for future sacrifices.”* It is therefore clear that any graves associated with a particular *kgoro* may not

be well marked and visible on the surface. However, Mönnig (1978:40) adds that “...as soon as the grave is filled, the female relative who officiated previously approaches with a clay pot filled with water and purifying medicines. In the case of a polygamist, all his wives have to come, each with a pot. All the persons who took part in the burial, and who were thus contaminated with ditshila, then cleanse themselves by washing their hands in the water. Each woman then drops her pot on the grave, where it is shattered.”

Site Extent:

The site is approximately 50m by 50m in extent.

Site Significance:

Without the possible presence of graves, the site has little significance. This is due to the fact that very little of the site has remained preserved.

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance.

As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 151 – General view of a section of DBAP 47.



Figure 152 – General view of the lower grinding stone at feature DBAP 47B. Scale in 10cm increments.

6.2.48 DBAP 48

Site Coordinates:

S 25.003916

E 30.139846

Site Description:

The site comprises what appears to be a Late Iron Age stonewalled site associated with a very low rocky outcrop. The site is located a short distance east of a construction camp that was built for the construction of the Mareesburg Tailings Storage Facility.

For the most part, the stonewalling from the site are in the form of terrace walling built against the foot of the rocky outcrop. A number of small stonewalled enclosures were also observed.

In terms of cultural material, some grinding surfaces were observed. Interestingly, no potsherds could be observed.

No evidence for any historic dwellings could be observed on the 1956, 1962 and 1975 aerial photographs, further supporting the older age of the site.

Similar stonewalling was observed at site DBAP 50, which is located approximately 300m to the south-east. It seems likely that these two sites formed part of the same Late Iron Age stonewalled site. A third site, comprising an isolated circular stonewalled enclosure identified at DBAP 49, also appears to be associated with this Late Iron Age stonewalled site.

Site Extent:

The site is approximately 150m by 80m in extent.

Site Significance:

As a Late Iron Age stonewalled site, DBAP 48 is quite unique. Only a few other tangible remains that

can be interpreted as Late Iron Age stonewalling were identified during the entire survey. The stonewalling at DBAP 50 also appears to be reasonably well preserved.

As a result, the site is deemed to be of **Generally Protected B (GP. B)** or **Medium Significance**.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 153 – General view of a section of site DBAP 48. Terrace walling can be seen in the foreground. The construction camp is just visible in the background Scale in 10cm increments.



Figure 154 – Closer view of a section of stonewalling from site DBAP 48. Scale in 10cm increments.



Figure 155 – One of the lower grinders observed at site DBAP 48. Scale in 1cm increments.

6.2.49 DBAP 49

Site Coordinates:

S 25.004193

E 30.141898

Site Description:

The site comprises an isolated circular stonewalled enclosure located on a rocky outcrop. No cultural material could be observed on the surface of the site. Late Iron Age stonewalling was observed at sites DBAP 48 and DBAP 50, which are approximately 200m and 100m from the present site. It appears likely for this site to be directly associated with a single Late Iron Age stonewalled site, elements of which were found to be preserved at the above-mentioned two sites.

Site Extent:

The site is approximately 20m by 20m in extent.

Site Significance:

The site appears to be associated with a single Late Iron Age stonewalled site, preserved elements of which were identified at sites DBAP 48 and DBAP 50. The present site only comprises a single small stonewalled enclosure. As a result, the site is deemed to be of **Generally Protected C (GP. C)** or **Low Significance**.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 156 – General view of a section of the stonewalled enclosure identified at DBAP 49. Scale in 10cm increments.

6.2.50 DBAP 50

Site Coordinates:

S 25.006528

E 30.140574

Site Description:

The site comprises what appears to be a Late Iron Age stonewalled site associated with a low rocky outcrop. A large fig tree was observed near the summit of the low rocky outcrop.

For the most part, the stonewalling from the site are in the form of terrace walling built against the foot and slopes of the rocky outcrop. Along the eastern slope of the rocky outcrop, a repetitive series of terracing was observed. The terrace walling is mostly built comprising a double row of stones and was found to be quite low (between 20cm – 30cm in height). A number of small stonewalled enclosures were also observed, with some of these built between larger natural boulders.

In terms of cultural material, at least three lower grinders and one undecorated potsherd were observed on the surface of the site.

No evidence for any historic dwellings could be observed on the 1956, 1962 and 1975 aerial photographs. It is therefore not clear why seemingly more recent graves were identified approximately 30m east of the site (see site DBAP 52). It is possible for the rocky outcrop to have had a multi-component history, but this is not presently certain.

Similar stonewalling was observed at site DBAP 48, which is located approximately 300m to the north-west. It seems likely that these two sites formed part of the same Late Iron Age stonewalled site. A third site, comprising an isolated circular stonewalled enclosure identified at DBAP 49, also appears to be associated with this Late Iron Age stonewalled site.

Site Extent:

The site is approximately 300m by 150m in extent.

Site Significance:

As a Late Iron Age stonewalled site, DBAP 50 is quite unique. Only a few other tangible remains that can be interpreted as Late Iron Age stonewalling were identified during the entire survey. The stonewalling at DBAP 50 also appears to be reasonably well preserved. As a result, the site is deemed to be of **Generally Protected B (GP. B)** or **Medium Significance**.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 157 – General view of a section of site DBAP 50. Terrace walling can be seen in the foreground. Scale in 10cm increments.



Figure 158 – One of the circular stonewalled enclosures from site DBAP 50. Scale in 10cm increments.



Figure 159 – One of the lower grinders observed at site DBAP 50. Scale in 1cm increments.

6.2.51 DBAP 51

Site Coordinates:

S 25.006700

E 30.141328

Site Description:

During a survey undertaken by Samancor in consultation with the Choma, Tsheshane and other families, this locality was identified as a cemetery containing the graves of Mogola and Mogolane Choma. The site record also states that these individuals were the sons of Mmaserodi Choma.

Two stone-packed features were observed here. These features are orientated along the East-West axis and may be grave dressings. Furthermore, one of the stone features appears to have an upright stone on its western end. No grave goods could be observed on the surface of the site.

Assessments of the 1956, 1962 and 1975 aerial photographs revealed that no structures or homesteads are depicted here. The suggestion from this is that the graves may have been associated with a homestead that pre-dates 1956 or post-dates 1975.

Site DBAP 51 is located approximately 30m east of what appears to be a Late Iron Age stonewalled site. See site DBAP 50.

Site Extent:

The site is approximately 20m by 20m in extent.

Site Significance:

Graves and burial grounds have high levels of emotional, religious and historical significance. As a result, the site has a **Generally Protected A (GP. A)** or **High/Medium Significance**.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 160 – General view of the possible grave dressings. Scale in 10cm increments.



Figure 161 – Another view of the possible grave dressings. Scale in 10cm increments.

6.2.52 DBAP 52

Site Coordinates:

S 25.008203

E 30.140071

Site Description:

During a survey undertaken by Samancor in consultation with the Choma, Tsheshane and other families, this locality was identified as a cemetery containing amongst others graves of the 'Mosehla' family.

The author of this report assisted Anglo American Platinum with a grave identification process on 17 September 2014. During this work, a site visit was undertaken during which families with graves on the mining property were invited to show these known graves to the mine staff and PGS Heritage in an attempt to identify and record these cemeteries. With the assistance provided by the Mosehla family, the following information was recorded for this cemetery.

| Grave | Name of Deceased | Dates | Description of Graves |
|---------|-------------------|------------------------------|------------------------------------------------------------------------|
| AA89/01 | William Mosehla | * c. 1952 † c. 1980 | Stone-lined grave dressing with upright stone on its western end. |
| AA89/02 | Leshabane Mosehla | * 1920/02/18 † 1980/06/20 | Granite covered dressing with granite headstone which has fallen over. |
| AA89/03 | Mashokeng Mosehla | * Unknown † 1975/09/21 | Rectangular cement-lined dressing with cement headstone. |
| AA89/04 | Mathakadu Mosehla | * Unknown † 197?/08/20 | Rectangular cement-lined dressing with cement headstone. |
| AA89/05 | Malebocho Mosehla | * Unknown † c. 1950 | Circular stone-packed grave dressing. |

From this information, it is clear that the oldest graves at this cemetery were buried here during c. 1950 whereas the youngest two graves were buried here in 1980. It seems evident therefore that at least one of the graves from the cemetery is older than 60 years.

Site Extent:

The site is approximately 20m by 20m in extent.

Site Significance:

Graves and burial grounds have high levels of emotional, religious and historical significance. As a result, the site has a **Generally Protected A (GP. A)** or **High/Medium Significance**.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 162 – The grave of Malebocho Mosehla. His grave the oldest graves in the cemetery. Scale in 10cm increments. Photograph was taken on 17 September 2014.



Figure 163 – The headstone on the grave of Leshabane Mosehla. This is one of the youngest graves at the cemetery. Photograph was taken on 17 September 2014. Scale in 10cm increments.



Figure 164 – General view of the cemetery at site DBAP 52. Photograph was taken on 17 September 2014. The cemetery number recorded at the time for the site is AA89. Scale is in 10cm increments.

6.2.53 DBAP 53

Site Coordinates:

S 25.010396

E 30.141380

Site Description:

An oval stone enclosure was identified on the western side of a rocky outcrop near its summit. The enclosure was built using large boulders. Sections of the walling had already collapsed. What appears to be a deliberately created opening, not unlike a loophole, was observed on the southern end of the stone enclosure. If this opening is indeed a loophole, it would mean that the structure had a military function such as a sangar. The exact military association of the site is however not known. No cultural material could be observed on the surface of the site.

The site is not depicted on any of the topographical map sheets surveyed in 1969 and 1988 nor any of the aerial photographs taken in 1956, 1962 and 1975 depict the site. The reason for this is not certain.

Site Extent:

The site is approximately 40m by 40m in extent.

Site Significance:

If the structure from this site does indeed have a military association, the site would have historical significance. Furthermore, all military sites 75 years and older fall under the general protection offered by the National Heritage Resources Act. As such, the site is of **Generally Protected B (GP. B)** or **Medium Significance**.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 165 – General view of the oval-shaped structure at DBAP 53. Scale in 1cm increments.



Figure 166 – The possible loophole observed on the southern end of the oval-shaped structure. The scale is in 10cm increments.

6.2.54 DBAP 54

Site Coordinates:

S 25.011659

E 30.141505

Site Description:

A historic black homestead was identified here. The main tangible remains of the site that could be observed, comprise three rectangular-shaped structures (each of which is 4m x 3m in extent) as well as a single circular structure (approximately 3m in diameter). All that can be seen of the walls of these structures are raised soil.

No cultural material could be observed on the surface of the site.

At a distance of approximately 10m north of the site, an oval-shaped stone-packed feature was identified. This feature is orientated along the east-west axis with a low upright stone on its eastern end. It is possible that this stone feature is a grave.

The site is not depicted on any of the topographical map sheets surveyed in 1969 and 1988 nor the aerial photographs taken in 1956 and 1962. Interestingly, it appears to be depicted partially on the 1975 aerial photograph.

It is possible for graves to have been buried in association with the homestead at site DBAP 57. According to well-known ethnologist H.O. Mönnig, graves were buried in different localities across a Pedi settlement or *kgoro*. Mönnig (1978:139) states that *“Chiefs and heads of lineages and their wives, and the heads of households are buried in the cattle kraal. Young men and women of lesser importance are buried in the private courtyard (mafuri) behind the hut. Babies are buried inside the hut, and young children are buried under the eaves of the hut.”* Furthermore, Mönnig (1978: 140) provides the following description in terms of the marking of such graves: *“The grave is then filled up by the close male relatives, and a small stone placed in the center of the grave to indicate its position for future sacrifices.”* It is therefore clear that any graves associated with a particular *kgoro* may not be well marked and visible on the surface. However, Mönnig (1978:40) adds that *“...as soon as the grave is filled, the female relative who officiated previously approaches with a clay pot filled with*

water and purifying medicines. In the case of a polygamist, all his wives have to come, each with a pot. All the persons who took part in the burial, and who were thus contaminated with ditshila, then cleanse themselves by washing their hands in the water. Each woman then drops her pot on the grave, where it is shattered.”

Site Extent:

The site is approximately 60m by 60m in extent.

Site Significance:

Without the possible presence of graves, the site has little significance. This is due to the fact that very little of the site has remained preserved.

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 167 – General view of the site at DBAP 54. Scale in 1cm increments.



Figure 168 – General view of the possible grave at site DBAP 54. The scale is in 10cm increments.

6.2.55 DBAP 55

Site Coordinates:

S 25.014117

E 30.140878

Site Description:

A historic black homestead was identified here. The main tangible remains of the site that could be observed, comprise three rectangular-shaped structures. The extents of these structures are 5m x 4m, 7m x 3m & 5m x 3m. All that can be seen of the walls of these structures are raised soil.

Cultural material in the form of some undecorated potsherds, as well as a grinding surface on a boulder, were observed on the surface of the site. Furthermore, at a distance of approximately 30m south of the historic structures, a number of lower grinding stones were observed. It is not presently clear why such a high concentration of lower grinding stones is located here.

The site is not depicted on any of the topographical map sheets surveyed in 1969 and 1988. However, it is shown on the 1956 aerial photograph and possibly also on the 1962 aerial photograph. Its depiction on the 1975 aerial photograph shows fewer dwellings and features.

It is possible for graves to have been buried in association with the homestead at site DBAP 57. According to well-known ethnologist H.O. Mönnig, graves were buried in different localities across a Pedi settlement or *kgoro*. Mönnig (1978:139) states that *“Chiefs and heads of lineages and their wives, and the heads of households are buried in the cattle kraal. Young men and women of lesser importance are buried in the private courtyard (mafuri) behind the hut. Babies are buried inside the hut, and young children are buried under the eaves of the hut.”* Furthermore, Mönnig (1978: 140) provides the following description in terms of the marking of such graves: *“The grave is then filled up by the close male relatives, and a small stone placed in the center of the grave to indicate its position for future sacrifices.”* It is therefore clear that any graves associated with a particular *kgoro* may not be well marked and visible on the surface. However, Mönnig (1978:40) adds that *“...as soon as the grave is filled, the female relative who officiated previously approaches with a clay pot filled with water and purifying medicines. In the case of a polygamist, all his wives have to come, each with a pot. All the persons who took part in the burial, and who were thus contaminated with ditshila, then*

cleanse themselves by washing their hands in the water. Each woman then drops her pot on the grave, where it is shattered."

Site Extent:

The site is approximately 100m by 100m in extent.

Site Significance:

Without the possible presence of graves, the site has little significance. This is due to the fact that very little of the site has remained preserved. Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.

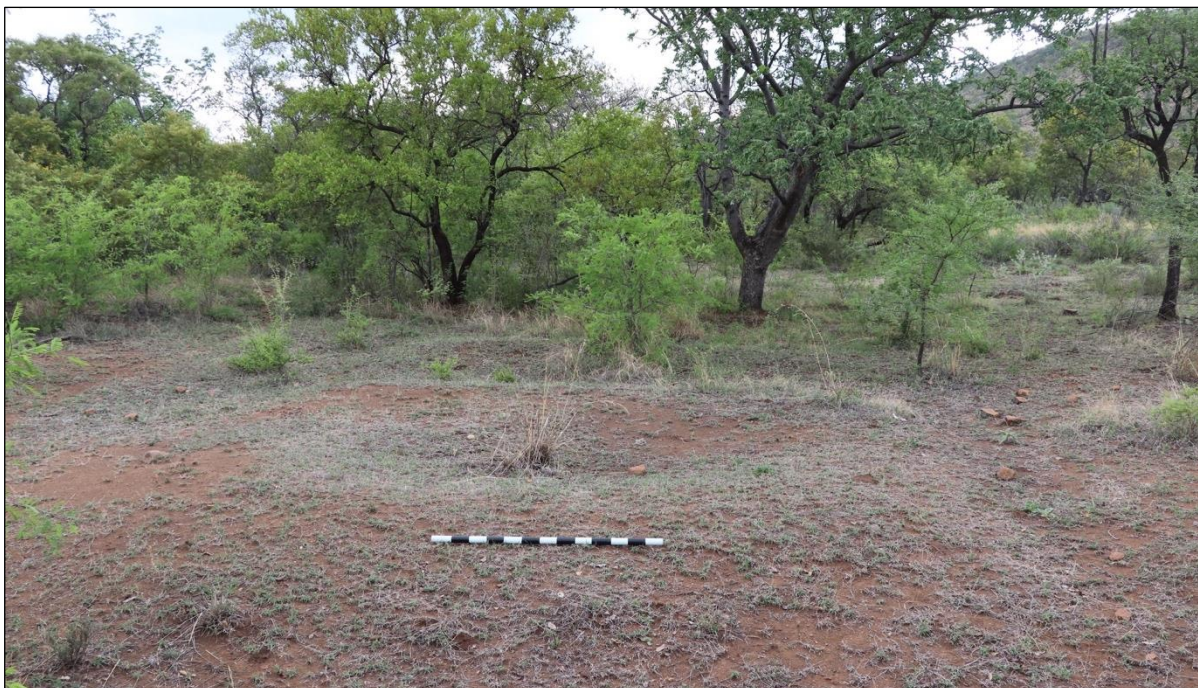


Figure 169 – General view of one of the rectangular structures identified at site DBAP 55. The scale is in 10cm increments.



Figure 170 – Sample of undecorated potsherds observed on the surface of site DBAP 55. Scale in 1cm increments.



Figure 171 – These lower grinding stones were observed in a single locality approximately 30m south of the rectangular structures from site DBAP 55. The scale is in 10cm increments.

6.2.56 DBAP 56

Site Coordinates:

S 25.014947

E 30.139273

Site Description:

The site was first identified on the 1956 aerial photograph, which depicts two associated black homesteads. An overlay of this aerial photograph using Google Earth was made, and an estimated position for the site by way of its positional coordinates was obtained. The site was subsequently identified during the present fieldwork using these coordinates.

A historic black homestead was identified here. The main features of the site comprise two adjoining rectangular-shaped structures (both 4m x 3m in extent). All that can be seen of the structures are the raised soil walling. The eastern side of the two structures was cut by a gravel road. Cultural material in the form of an undecorated potsherd, a metal rod, a glass fragment, and an upper grinder were observed on the surface of the site.

Apart from the depiction of the site on the 1956 aerial photograph, the site also appears to be shown on the 1962 aerial photograph. However, it is not shown on the 1975 aerial photograph or any of the topographical map sheets surveyed in 1969 and 1988.

It is possible for graves to have been buried in association with the homestead at site DBAP 57. According to well-known ethnologist H.O. Mönnig, graves were buried in different localities across a Pedi settlement or *kgoro*. Mönnig (1978:139) states that *“Chiefs and heads of lineages and their wives, and the heads of households are buried in the cattle kraal. Young men and women of lesser importance are buried in the private courtyard (mafuri) behind the hut. Babies are buried inside the hut, and young children are buried under the eaves of the hut.”* Furthermore, Mönnig (1978: 140) provides the following description in terms of the marking of such graves: *“The grave is then filled up by the close male relatives, and a small stone placed in the center of the grave to indicate its position for future sacrifices.”* It is therefore clear that any graves associated with a particular *kgoro* may not be well marked and visible on the surface. However, Mönnig (1978:40) adds that *“...as soon as the grave is filled, the female relative who officiated previously approaches with a clay pot filled with*

water and purifying medicines. In the case of a polygamist, all his wives have to come, each with a pot. All the persons who took part in the burial, and who were thus contaminated with ditshila, then cleanse themselves by washing their hands in the water. Each woman then drops her pot on the grave, where it is shattered.”

Site Extent:

The site is approximately 60m by 60m in extent.

Site Significance:

Without the possible presence of graves, the site has little significance. This is due to the fact that very little of the site has remained preserved.

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 172 – Sample of cultural material observed on the surface of site DBAP 56. As shown, these include an undecorated potsherd, glass fragment, and metal rod. The scale is in 1cm increments.



Figure 173 – General view of the area where the two structural remains were identified. The road visible in the back cut through the eastern sides of both structures. The scale is in 10cm increments.

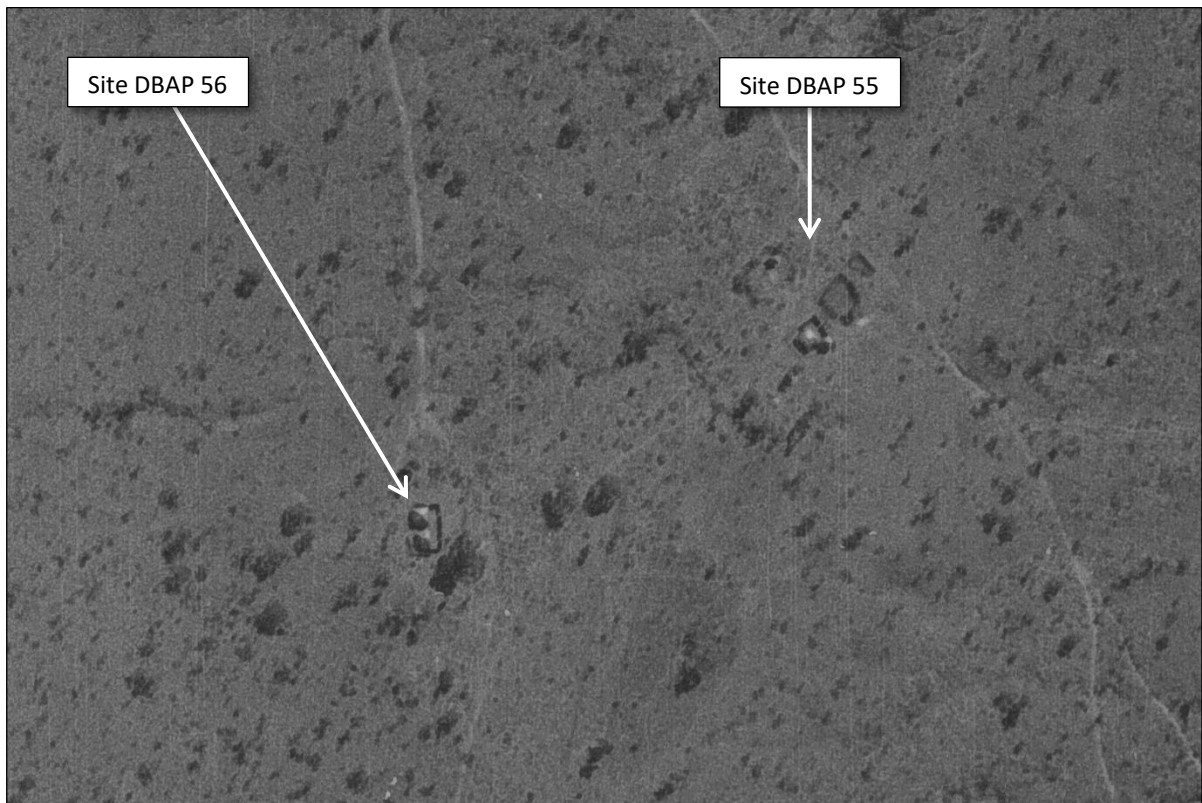


Figure 174 – Depiction of sites DBAP 56 and DBAP 55 on the 1956 aerial photograph (National Geospatial Information, Aerial Photograph, 367_1956_02_4328).

6.2.57 DBAP 57

Site Coordinates:

S 25.015684

E 30.140124

Site Description:

A historic black homestead was identified here. The only tangible remains of the site that could be observed on site, comprises a rectangular-shaped structure (4m x 4m). All that can be seen of the walls of the structure is raised soil.

Not any of the topographical map sheets surveyed in 1969 and 1988 nor any of the aerial photographs taken in 1956, 1962 and 1975 depict the site. The reason for this is not certain. However, it is possible that the homestead located here was occupied and abandoned long before the 1956 aerial photograph was taken, and in fact, may even be older than 100 years. This is of course not presently certain.

It is possible for graves to have been buried in association with the homestead at site DBAP 57. According to well-known ethnologist H.O. Mönnig, graves were buried in different localities across a Pedi settlement or *kgoro*. Mönnig (1978:139) states that *“Chiefs and heads of lineages and their wives, and the heads of households are buried in the cattle kraal. Young men and women of lesser importance are buried in the private courtyard (mafuri) behind the hut. Babies are buried inside the hut, and young children are buried under the eaves of the hut.”* Furthermore, Mönnig (1978: 140) provides the following description in terms of the marking of such graves: *“The grave is then filled up by the close male relatives, and a small stone placed in the center of the grave to indicate its position for future sacrifices.”* It is therefore clear that any graves associated with a particular *kgoro* may not be well marked and visible on the surface. However, Mönnig (1978:40) adds that *“...as soon as the grave is filled, the female relative who officiated previously approaches with a clay pot filled with water and purifying medicines. In the case of a polygamist, all his wives have to come, each with a pot. All the persons who took part in the burial, and who were thus contaminated with ditshila, then cleanse themselves by washing their hands in the water. Each woman then drops her pot on the grave, where it is shattered.”*

Site Extent:

The site is approximately 50m by 50m in extent.

Site Significance:

Without the possible presence of graves, the site has little significance. This is due to the fact that very little of the site has remained preserved. Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A) or High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Impact Assessment and Mitigation:

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.



Figure 175 – General view of the structure identified at site DBAP 57. The scale is in 10cm increments.

7 ASSESSMENT OF IMPACT OF PROPOSED DEVELOPMENT ON IDENTIFIED HERITAGE SITES

7.1 Introduction

In this section, an assessment will be made of the impact of the proposed development on the identified heritage sites.

The following general observations will apply for this impact assessment:

- The impact assessment methodology utilised in this section is prescribed by SRK Consulting. This impact assessment methodology is outlined and explained in more detail in **Section 3.2** of this report.
- Heritage sites with a Low Significance are not included in these impact risk assessment calculations. The reason for this is that sites of Low Significance will not require mitigation. These sites are DBAP 4, DBAP 14, DBAP 17, DBAP 24, DBAP 46 and DBAP 49.
- A number of identified heritage sites of Medium to High Significance are located far enough from the proposed footprints that no development impacts are expected on these sites. As a result, no impact assessments will be undertaken for these sites and no site-specific mitigation measures compiled. General mitigation measures will still apply. These sites are DBAP 3, DBAP 10, DBAP 12, DBAP 13, DBAP 25, DBAP 26, DBAP 27, DBAP 28, DBAP 29, DBAP 30, DBAP 37, DBAP 56 and DBAP 57.
- By the time of writing of this report, mitigation measures for two identified heritage sites (DBAP 5 & DBAP 16) had already been undertaken. This means that no impact assessments will be undertaken for these two sites. Please note that all the required mitigation measures for DBAP 16 had already been completed some time ago, so no further mitigation is required for this site. However, the mitigation still required for site DBAP 5 is outlined in Chapter 8.
- Two sites recorded during a survey undertaken by Samancor could not be identified in the field using the provided coordinates. These sites appear to comprise a grave site (DBAP 36) and a historic black homestead (DBAP 41) with the potential for graves to be located. As the exact location of these sites are not presently known, no impact assessments can be undertaken for these sites. However, mitigation measures are outlined in Chapter 8.

- In terms of sites located within and near the so-called DMS Complex on the farm Mareesburg, only sites falling within the yellow-lined polygons titled 'DMS Stockpile' and 'DMS PCD's' on the Google Earth imagery were seen as being directly impacted upon by the proposed development. This means that sites located within the purple-lined polygon titled 'DMS Complex – Specialist Investigation Area' but outside the previously mentioned yellow polygons, were not assessed to be directly impacted upon by the proposed development in the impact assessments undertaken in this chapter.

The following development phases and phase-related activities were used for these impact assessment calculations. This section was provided by SRK Consulting.

Pre-Construction Phase

- Planning phase (* for Social component only)
- Site clearing of all footprint areas associated with the proposed project infrastructure
- Stockpiling of topsoil
- Use of existing gravel roads for pre-construction activities

Construction Phase

- Construction of infrastructure (DMS Plant, DMS Stockpile area and associated PCDs, conveyor belt systems, North and South Shafts, Ventilation shafts, staff accommodation and explosive destruction bay)
- Construction of gravel maintenance roads to the proposed ventilation shafts
- Upgrading of existing gravel roads to tar roads to serve as main access roads

Operational Phase

- Underground mechanised mining at North and South Shafts
- Temporary hauling of ore from shafts to Mototolo Concentrator along the corridor associated with the Ore Conveyor System (whilst conveyor system is being constructed)
- Operation of the Conveyor Systems
- Stockpiling of ore material at Mototolo Concentrator
- Operation of the Chrome Recovery Inter-Stage Plant
- Operation of the DMS Plant

- Deposition of DMS material onto the DMS Stockpile area
- Utilisation of storm water management infrastructure at shafts, and PCD's at DMS stockpile
- Utilisation of the Staff Accommodation near the Der Brochen Dam
- Utilisation of tar access roads
- Utilisation of gravel maintenance roads associated with the ventilation shafts
- Dangerous Goods storage (including hydrocarbons/chemicals/explosives)
- Waste management

Decommissioning and Rehabilitation Phase

- Pre-Decommissioning planning (* for Social component only)
- Removal of all plant equipment including conveyor belt systems and staff accommodation
- Rehabilitation of the DMS Stockpile and PCD
- Closure of the Shafts and underground workings

7.2 Assessment of Pre-Mitigation Impact on the identified Heritage Sites

7.2.1 Assessment of the Pre-Mitigated Impact on sites DBAP 33, DBAP 43, DBAP 44, DBAP 51 and DBAP 52

In this section, the unmitigated impact of the proposed development on sites DBAP 33, DBAP 43, DBAP 44, DBAP 51 and DBAP 52 will be assessed.

All five these sites are grouped together in this impact assessment as they are either confirmed graves and cemeteries based on their appearance and characteristics or sites where possible graves are located which had been corroborated by prior stakeholder engagement as graves. Additionally, these sites are also all located within the proposed development footprints.

Without mitigation, all five these sites are expected to be completely destroyed during the Pre-Construction Phase. This is due to the fact that site clearing of all development footprint areas will be undertaken during this first development phase. For the purposes of this report, the term 'site clearing' is taken to mean the clearing of vegetation and removal of topsoil from the development footprints.

With their destruction complete during the Pre-Construction Phase, no impacts are expected during the Construction, Operational and Decommissioning and Rehabilitation Phases.

Table 3 - Assessment of Pre-Mitigated Impact of Proposed Development on sites DBAP 33, DBAP 43, DBAP 44, DBAP 51 and DBAP 52

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | Significance |
|---------------------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|---|--------------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | | |
| Pre-Construction Phase | | | | | | | |
| Complete destruction of five sites containing graves and cemeteries | - | 5 | 5 | 3 | 8 | 3 | 80 High |
| Construction Phase | | | | | | | |
| No further impacts expected | 0 | 0 | 0 | 0 | 0 | 0 | 0 None |
| Operational Phase | | | | | | | |
| No further impacts expected | 0 | 0 | 0 | 0 | 0 | 0 | 0 None |
| Decommissioning and Rehabilitation Phase | | | | | | | |
| No further impacts expected | 0 | 0 | 0 | 0 | 0 | 0 | 0 None |

The calculation of the assessment of the unmitigated impact of the proposed development on the cemeteries and grave sites located within the development footprints is expected to be of **High Significance**. This means that mitigation measures would be required. See Chapter 8 for required mitigation measures for these sites.

7.2.2 Assessment of the Pre-Mitigated Impact on sites DBAP 11, DBAP 15 and DBAP 21

In this section, the unmitigated impact of the proposed development on sites DBAP 11, DBAP 15 and DBAP 21 will be assessed.

DBAP 11 comprises a cemetery that is located no more than 7m west of the proposed North Pit area. DBAP 15 comprises a historic farmstead where at least two unmarked graves are also buried. While the original farmstead at DBAP 15A is located within the proposed North Pit area and will be destroyed, the unmarked stillborn graves located at DBAP 15B and DBAP 15C are located no more than 6m and 27m from the proposed North Pit area respectively. DBAP 21 comprises a cemetery which is located 32m west of the actual conveyor footprint and 12m from the buffer area around the conveyor footprint.

Please note that the impacts assessed in this section will comprise the pre-mitigation impact, in other words, the impact without any mitigation measures in place.

Although these grave sites are not located within any of the development footprints, their close

proximity to these footprints requires an impact assessment to be undertaken for these sites. Without mitigation, significant impacts are expected on the site during the Pre-Construction Phase, to the extent that a section of the site may be destroyed. Some impacts may still be expected during the Construction, Operational and Decommissioning & Rehabilitation Phases.

Table 4 - Assessment of Pre-Mitigated Impact of Development on DBAP 11, DBAP 15 and DBAP 21

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|--------------------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | |
| Pre-Construction Phase | | | | | | | |
| <i>A relatively high probability exists for these site to be partially destroyed during this phase</i> | - | 4 | 5 | 3 | 8 | 3 | 64 High |
| Construction Phase | | | | | | | |
| <i>The probability exists for the site to be impacted upon by activities relating to this phase</i> | - | 4 | 4 | 3 | 8 | 3 | 60 High |
| Operational Phase | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities relating to this phase</i> | - | 3 | 3 | 3 | 8 | 3 | 42 Moderate |
| Decommissioning and Rehabilitation Phase | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities relating to this phase</i> | - | 3 | 3 | 3 | 8 | 3 | 42 Moderate |

The calculation of the assessment of the unmitigated impact of the proposed development on sites DBAP 11, DBAP 15 and DBAP 21 is expected to be of **High Significance** during the Pre-Construction and Construction Phases and **Moderate Significance** during the remaining project phases.

This means that mitigation measures would be required. See Chapter 8 for required mitigation measures for this site.

7.2.3 Assessment of the Pre-Mitigated Impact on sites DBAP 19

In this section, the unmitigated impact of the proposed development on site DBAP 19 will be assessed. DBAP 19 comprises a historic black homestead that is associated with graves which had been confirmed as such by prior stakeholder engagement. Additionally, this site is also all located within the proposed development footprints.

Without mitigation, this site is expected to be completely destroyed during the Pre-Construction Phase. This is due to the fact that site clearing of all development footprint areas will be undertaken

during this first development phase.

With its destruction complete during the Pre-Construction Phase, no further impacts are expected during the Construction, Operational and Decommissioning and Rehabilitation Phases.

Table 5 - Assessment of Pre-Mitigated Impact of Proposed Development on site DBAP 19

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | | |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|-----------|-------------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Complete destruction of site containing historic black homestead with confirmed graves</i> | - | 5 | 5 | 3 | 8 | 3 | 80 | High |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

The calculation of the assessment of the unmitigated impact of the proposed development on the cemeteries and grave sites located within the development footprints is expected to be of **High Significance**. This means that mitigation measures would be required. See Chapter 8 for required mitigation measures for these sites.

7.2.4 Assessment of the Pre-Mitigated Impact on site DBAP 9

In this section, the unmitigated impact of the proposed development on site DBAP 9 will be assessed.

DBAP 9 comprises a historic black homestead where graves are also buried. The site is located partially within the footprint of the Explosive Destruction Bay. Please note that the impact assessed in this section will comprise the pre-mitigation impact, in other words, the impact without any mitigation measures in place.

The partial position of the site within the proposed Explosive Destruction Bay, coupled with the position of the remainder of the site in proximity to this and other development activities, requires

an impact assessment to be undertaken for the site. It is important to note, that the section of the site located within the development footprint is not where the confirmed graves are located.

Without mitigation, some impacts are expected on the site during all the project phases. During the Pre-Construction Phase, that section of the site located within the development will be completely destroyed, with no further impacts expected on that component of the site during the remainder of the project phases. However, some impacts are expected on the remainder of the site during the project phases following on the Pre-Construction Phase.

Table 6 - Assessment of Pre-Mitigated Impact of Development on sites DBAP 9

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | Significance |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|---|--------------------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | | |
| Pre-Construction Phase | | | | | | | |
| <i>Destruction of that section of the site located within the development footprint</i> | - | 3 | 5 | 3 | 8 | 3 | 48 Moderate |
| Construction Phase | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities relating to this phase</i> | - | 3 | 3 | 3 | 8 | 3 | 42 Moderate |
| Operational Phase | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities relating to this phase</i> | - | 3 | 3 | 3 | 8 | 3 | 42 Moderate |
| Decommissioning and Rehabilitation Phase | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities relating to this phase</i> | - | 3 | 3 | 3 | 8 | 3 | 42 Moderate |

The calculation of the assessment of the unmitigated impact of the proposed development on site DBAP 9, is expected to be of **Moderate Significance** during all the project phases.

This means that mitigation measures would be required. See Chapter 8 for required mitigation measures for this site.

7.2.5 Assessment of the Pre-Mitigated Impact on sites DBAP 1, DBAP 6, DBAP 8, DBAP 22, DBAP 31, DBAP 32, DBAP 39, DBAP 40, DBAP 42, DBAP 45, DBAP 47, DBAP 54 and DBAP 55

In this section, the unmitigated impact of the proposed development on the above-mentioned sites will be assessed. These sites comprise historic black homesteads located within the proposed development footprint areas. The highest impact risk associated with these sites is that graves, including unmarked stillborn graves, may be buried here.

Without mitigation, all these sites are expected to be completely destroyed during the Pre-Construction Phase. This is due to the fact that all site clearing activities are to take place during this development phase. With their destruction complete during the Pre-Construction Phase, no impacts are expected during the Construction, Operational and the Decommissioning and Rehabilitation Phases.

Please note that in the calculations undertaken below, the level of probability was taken to be the level of probability of unmarked graves to be located within these homestead sites.

Table 7 - Assessment of Pre-Mitigated Impact of Proposed Development on 13 historic black homesteads located within the proposed development footprints

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | Significance | |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|---|--------------|----------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Complete destruction of 13 historic black homesteads where the risk exists for unmarked graves to be located</i> | - | 3 | 5 | 3 | 8 | 3 | 48 | Moderate |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

The calculation of the assessment of the unmitigated impact of the proposed development on these 13 homestead sites, has revealed that the impact significance on these sites is expected to be of **Moderate Significance** during the Pre-Construction Phase. This means that mitigation measures would be required. See Chapter 8 for required mitigation measures for this site.

7.2.6 Assessment of the Pre-Mitigated Impact on site DBAP 23

In this section, the unmitigated impact of the proposed development on site DBAP 23 will be assessed. This site comprises a historic black homestead which is partially located within the proposed development footprint areas. In other words, even if this site is not mitigated, the proposed development is not expected to completely destroy the site, however, it will be disturbed. The highest impact risk associated with this site is that graves, including unmarked stillborn graves, may be buried here.

With mitigation, the site is expected to be disturbed during the Pre-Construction Phase. As a result, impacts are also still possible during the remainder of the project phases.

Please note that in the calculations undertaken below, the level of probability was taken to be both the level of probability of unmarked graves to be located within the homestead site as well as the probability of whether this site will be impacted upon by the proposed development.

Table 8 - Assessment of Pre-Mitigated Impact of Development on DBAP 23

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | Significance |
|--------------------------------------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|---|--------------------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | | |
| Pre-Construction Phase | | | | | | | |
| <i>Some level of disturbance is expected to occur to this site during this phase</i> | - | 3 | 3 | 3 | 6 | 3 | 36 Moderate |
| Construction Phase | | | | | | | |
| <i>Some level of disturbance is expected to occur to this site during this phase</i> | - | 3 | 3 | 3 | 6 | 3 | 36 Moderate |
| Operational Phase | | | | | | | |
| <i>Some level of disturbance is expected to occur to this site during this phase</i> | - | 3 | 3 | 3 | 6 | 3 | 36 Moderate |
| Decommissioning and Rehabilitation Phase | | | | | | | |
| <i>Some level of disturbance is expected to occur to this site during this phase</i> | - | 3 | 3 | 3 | 6 | 3 | 36 Moderate |

The calculation of the assessment of the unmitigated impact of the proposed development on this homestead site has revealed that the impact significance on this site is expected to be of **Moderate Significance** during all the project phases.

This means that mitigation measures would be required. See Chapter 8 for required mitigation measures for this site.

7.2.7 Assessment of the Pre-Mitigated Impact on sites DBAP 48 and DBAP 50

In this section, the unmitigated impact of the proposed development on the above-mentioned sites will be assessed.

Sites DBAP 48 and DBAP 50 comprise Late Iron Age stonewalled settlements located within the proposed development footprint areas.

Without mitigation, both sites are expected to be completely destroyed during the Pre-Construction Phase. With their destruction complete during the Pre-Construction Phase, no impacts are expected during the Construction, Operational and the Decommissioning and Rehabilitation Phases.

Table 9 - Assessment of Pre-Mitigated Impact of Proposed Development on two Late Iron Age stonewalled sites located within the proposed development footprints

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | | |
|--------------------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|----------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Complete destruction of two Late Iron Age stonewalled sites</i> | - | 4 | 5 | 2 | 6 | 3 | 52 | Moderate |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

The calculation of the assessment of the unmitigated impact of the proposed development on these two Late Iron Age stonewalled sites has revealed that the impact significance on these sites is expected to be of **Moderate Significance** during the Pre-Construction Phase.

This means that mitigation measures would be required. See Chapter 8 for required mitigation measures for this site.

7.2.8 Assessment of the Pre-Mitigated Impact on sites DBAP 18, DBAP 20, DBAP 34 and DBAP 35

In this section, the unmitigated impact of the proposed development on the above-mentioned sites will be assessed. These sites comprise surface scatters of potsherds which can either be associated with the Late Iron Age or Historic Period. The possibility of such potsherd scatters providing surface indications for the presence of unmarked Pedit graves, is mentioned by H.O. Mönnig (1978).

Without mitigation, these three sites are expected to be completely destroyed during the Pre-Construction Phase. With their destruction complete during the Pre-Construction Phase, no impacts are expected during the Construction, Operational and the Decommissioning and Rehabilitation Phases.

Table 10 - Assessment of Pre-Mitigated Impact of Proposed Development on sites DBAP 18, DBAP 20, DBAP 34 and DBAP 35 located within the proposed development footprints

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | | |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|----------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| Complete destruction of four sites containing potsherd scatters and which may be surface indications for unmarked graves | - | 3 | 5 | 3 | 6 | 3 | 42 | Moderate |
| Construction Phase | | | | | | | | |
| No further impacts expected | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| No further impacts expected | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| No further impacts expected | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

The calculation of the assessment of the unmitigated impact of the proposed development on these sites has revealed that the impact significance on these sites is expected to be of **Moderate Significance** during the Pre-Construction Phase.

This means that mitigation measures would be required.

7.2.9 Assessment of the Pre-Mitigated Impact on site DBAP 38

In this section, the unmitigated impact of the proposed development on site DBAP 38 will be assessed.

Site DBAP 38 comprises stonewalling and structures that can in all likelihood be associated with both the Late Iron Age and Historic Period. The possible presence of graves can also not be excluded.

The site is located 27m south-west of one of the Pollution Control Dams. The relative proximity of the site to the proposed development footprints requires an impact assessment to be undertaken for the site.

Without mitigation, some impacts are expected during all the project phases, starting with the Pre-Construction Phase.

Table 11 - Assessment of Pre-Mitigated Impact of Proposed Development on site DBAP 38

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|----------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Strong possibility exists for the site to be impacted upon by activities ancillary to the proposed operational work</i> | - | 4 | 4 | 3 | 6 | 3 | 52 | Moderate |
| Construction Phase | | | | | | | | |
| <i>Strong possibility exists for the site to be impacted upon by activities ancillary to the proposed operational work</i> | - | 4 | 4 | 3 | 6 | 3 | 52 | Moderate |
| Operational Phase | | | | | | | | |
| <i>Strong possibility exists for the site to be impacted upon by activities ancillary to the proposed operational work</i> | 0 | 4 | 4 | 3 | 6 | 3 | 52 | Moderate |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>Strong possibility exists for the site to be impacted upon by activities ancillary to the proposed operational work</i> | - | 4 | 4 | 3 | 6 | 3 | 52 | Moderate |

The calculation of the assessment of the unmitigated impact of the proposed development on site DBAP 38 is expected to be of **Moderate Significance** during all the project phases.

This means that mitigation measures would be required. See Chapter 8.

7.2.10 Assessment of the Pre-Mitigated Impact on site DBAP 7

In this section, the unmitigated impact of the proposed development on the above-mentioned site will be assessed.

Site DBAP 7 comprises a low-density surface scatter of Middle Stone Age lithics and is located within the proposed development footprint areas.

Without mitigation, the site is expected to be destroyed during the Pre-Construction Phase.

With its destruction completed during the Pre-Construction Phase, no impacts are expected during the Construction, Operational and the Decommissioning and Rehabilitation Phases. The impact assessment calculations shown below reflect this.

Table 12 - Assessment of Pre-Mitigated Impact of Proposed Development on site DBAP 7

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | Significance | |
|------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|---|--------------|----------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Complete destruction of Middle Stone Age site</i> | - | 4 | 5 | 2 | 2 | 3 | 36 | Moderate |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

The calculation of the assessment of the unmitigated impact of the proposed development on the low-density Middle Stone Age surface scatter at site DBAP 7, has revealed that the impact significance on this sites is expected to be of **Moderate Significance** during the Pre-Construction Phase.

This means that mitigation measures would be required. See Chapter 8 for required mitigation measures for this site.

7.2.11 Assessment of the Pre-Mitigated Impact on site DBAP 2

In this section, the unmitigated impact of the proposed development on site DBAP 2 will be assessed. This site comprises stonewalling which can either be associated with the Late Iron Age or Historic Period as well as possible rock engravings.

The site is located 85m north-east of the center point of a proposed ventilation shaft. With these shafts expected to have a development footprint with a radius of approximately 50m, site DBAP 2 is expected to be located roughly 35m from the edge of the ventilation shaft footprint area.

The relative proximity of the site to the proposed development footprint requires an impact assessment to be undertaken for the site.

Without mitigation, impacts are expected during all the project phases, starting with the Pre-Construction Phase.

Table 13 - Assessment of Pre-Mitigated Impact of Proposed Development on site DBAP 2

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | | |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|----------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities ancillary to the proposed construction work</i> | - | 3 | 4 | 3 | 6 | 4 | 39 | Moderate |
| Construction Phase | | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities ancillary to the proposed construction work</i> | - | 3 | 4 | 3 | 6 | 4 | 39 | Moderate |
| Operational Phase | | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities ancillary to the proposed operational work</i> | - | 3 | 4 | 3 | 6 | 4 | 39 | Moderate |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities ancillary to the proposed construction work</i> | - | 3 | 4 | 3 | 6 | 4 | 39 | Moderate |

The calculation of the assessment of the unmitigated impact of the proposed development on site DBAP 2 is expected to be of **Moderate Significance** during all the project phases.

This means that mitigation measures would be required. See Chapter 8 for required mitigation measures for this site.

7.2.12 Assessment of the Pre-Mitigated Impact on site DBAP 53

In this section, the unmitigated impact of the proposed development on the above-mentioned site will be assessed.

Site DBAP 53 comprises a stone enclosure which may have had a military association in the past. This is said as a possible loophole was identified in the wall of the structure.

Without mitigation, the site is expected to be destroyed during the Pre-Construction Phase.

With its destruction completed during the Pre-Construction Phase, no impacts are expected during the Construction, Operational and the Decommissioning and Rehabilitation Phases.

Table 14 - Assessment of Pre-Mitigated Impact of Proposed Development on site DBAP 53

| Nature of the impact | Significance of potential impact BEFORE mitigation | | | | | | | |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|----------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Complete destruction of a site containing a structure which may have had a military function</i> | - | 3 | 5 | 3 | 6 | 4 | 42 | Moderate |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

The calculation of the assessment of the unmitigated impact of the proposed development on site DBAP 53 has revealed that the impact significance on this site is expected to be of **Moderate Significance** during the Pre-Construction Phase.

This means that mitigation measures would be required. See Chapter 8 for required mitigation measures for this site.

7.3 Assessment of Post-Mitigation Impact on the identified Heritage Sites

7.3.1 Assessment of the Post-Mitigated Impact on sites DBAP 33, DBAP 43, DBAP 44, DBAP 51 and DBAP 52

In this section, the impact of the proposed development on sites DBAP 33, DBAP 43, DBAP 44, DBAP 51 and DBAP 52 will be assessed.

The above-mentioned sites are all graves and burial grounds located within the proposed development footprints areas.

For the impact assessment calculations included in this section, it is assumed that all the mitigation measures as outlined in Chapter 8 have been successfully completed.

Again, the only impacts are expected during the Pre-Construction Phase. With all the mitigation measures completed, the significance of the potential impact of the proposed development on these

graves and cemeteries, are estimated to be **Moderate Significance**.

With the significance of the impact of the development reduced from a pre-mitigation High Significance to a post-mitigation Moderate Significance, the degree to which the potential impact could be reversed and mitigated with the proposed mitigation measures is estimated to be 50%.

Table 15 - Assessment of Post-Mitigated Impact of Proposed Development on sites DBAP 33, DBAP 43, DBAP 44, DBAP 51 and DBAP 52

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|----------------------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|----------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Complete destruction of five sites containing graves and cemeteries</i> | - | 4 | 4 | 2 | 4 | 2 | 40 | Moderate |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Closure/Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Post-Closure Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

7.3.2 Assessment of the Post-Mitigated Impact on sites DBAP 11, DBAP 15 and DBAP 21

In this section, the impact of the proposed development on sites DBAP 11, DBAP 15 and DBAP 21 will be assessed.

For the impact assessment calculations included in this section, it is assumed that all the mitigation measures as outlined in Chapter 8 have been successfully completed.

The only impacts are expected during the Pre-Construction Phase. With all the mitigation measures completed, the significance of the potential impact of the proposed development on these graves and cemeteries, are estimated to be **Moderate Significance**.

With the significance of the impact of the development reduced from a pre-mitigation Moderate Significance to a post-mitigation Low Significance, the degree to which the potential impact could be

reversed and mitigated with the proposed mitigation measures is estimated to be 53.1%.

Table 16 - Assessment of Post-Mitigated Impact of Development on DBAP 11, DBAP 15 and DBAP 21

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|----------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>A relatively high probability exists for these site to be partially destroyed during this phase</i> | - | 3 | 4 | 2 | 4 | 2 | 30 | Moderate |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

7.3.3 Assessment of the Post-Mitigated Impact on site DBAP 19

In this section, the impact of the proposed development on sites DBAP 19 will be assessed.

DBAP 19 comprises a historic black homestead that is associated with graves which had been confirmed as such by prior stakeholder engagement. Additionally, this site is also all located within the proposed development footprints.

For the impact assessment calculations included in this section, it is assumed that all the mitigation measures as outlined in Chapter 8 have been successfully completed.

Again, the only impacts are expected during the Pre-Construction Phase. With all the mitigation measures completed, the significance of the potential impact of the proposed development on this historic black homestead with confirmed graves, is estimated to be Moderate.

With the significance of the impact of the development reduced from a pre-mitigation High Significance to a post-mitigation Moderate Significance, the degree to which the potential impact could be reversed and mitigated with the proposed mitigation measures is estimated to be 50%.

Table 17 - Assessment of Post-Mitigated Impact of Proposed Development on site DBAP 19

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|----------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Complete destruction of site containing historic black homestead with confirmed graves</i> | - | 4 | 4 | 2 | 4 | 2 | 40 | Moderate |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Closure/Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Post-Closure Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

7.3.4 Assessment of the Post-Mitigated Impact on site DBAP 9

In this section, the impact of the proposed development on site DBAP 9 will be assessed.

Site DBAP 9 comprises a historic black homestead where graves are also buried. The site is located partially within the footprint of the Explosive Destruction Bay. Please note that the impact assessed in this section will comprise the pre-mitigation impact, in other words, the impact without any mitigation measures in place.

For the impact assessment calculations included in this section, it is assumed that all the mitigation measures as outlined in Chapter 8 have been successfully completed.

Impacts are expected during all the project phases of the proposed development. With all the mitigation measures completed, the significance of the potential impact of the proposed development on site is estimated to be **Low Significance**.

With the significance of the impact of the development reduced from a pre-mitigation Moderate Significance to a post-mitigation Low Significance, the degree to which the potential impact could be reversed and mitigated with the proposed mitigation measures is estimated to be 54.2% during the Pre-Construction Phase and 47.6% during the other project phases.

Table 18 - Assessment of Post-Mitigated Impact of Proposed Development on DBAP 9

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|-----|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Destruction of that section of the site located within the development footprint</i> | 0 | 2 | 4 | 3 | 4 | 2 | 22 | Low |
| Construction Phase | | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities relating to this phase</i> | - | 2 | 4 | 3 | 4 | 2 | 22 | Low |
| Operational Phase | | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities relating to this phase</i> | - | 2 | 4 | 3 | 4 | 2 | 22 | Low |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities relating to this phase</i> | 0 | 2 | 4 | 3 | 4 | 2 | 22 | Low |

7.3.5 Assessment of the Post-Mitigated Impact on sites DBAP 1, DBAP 6, DBAP 8, DBAP 22, DBAP 31, DBAP 32, DBAP 39, DBAP 40, DBAP 42, DBAP 45, DBAP 47, DBAP 54 and DBAP 55

In this section, the post-mitigated impact of the proposed development on the above-mentioned sites will be assessed. These sites comprise historic black homesteads located within the proposed development footprint areas. The highest impact risk associated with these sites is that graves, including unmarked stillborn graves, may be buried here.

Impacts are only expected during the Pre-Construction Phase of the proposed development. With all the mitigation measures completed, the significance of the potential impact of the proposed development on site is estimated to be **Low Significance**.

With the significance of the impact of the development reduced from a pre-mitigation Moderate Significance to a post-mitigation Low Significance, the degree to which the potential impact could be reversed and mitigated with the proposed mitigation measures is estimated to be 54.2%.

Please note that in the calculations undertaken below, the level of Probability was taken to be the level of probability of unmarked graves to be located within these homestead sites, and not the probability of whether these sites will be destroyed by the proposed development.

Table 19 - Assessment of Post-Mitigated Impact of Proposed Development on 13 historic black homesteads located within the proposed development footprints

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| Complete destruction of 13 historic black homesteads where the risk exists for unmarked graves to be located | - | 2 | 4 | 3 | 4 | 2 | 22 | Low |
| Construction Phase | | | | | | | | |
| Complete destruction of 18 historic black homesteads where the risk exists for unmarked graves to be located | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| No further impacts expected | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| No further impacts expected | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

7.3.6 Assessment of the Post-Mitigated Impact on site DBAP 23

In this section, the post-mitigated impact of the proposed development on the above-mentioned site will be assessed.

Site DBAP 23 comprises a historic black homestead which is partially located within the proposed development footprint areas. In other words, even if this site is not mitigated, the proposed development is not expected to completely destroy this site, however, it will be disturbed. The highest impact risk associated with this site is that graves, including unmarked stillborn graves, may be buried here.

Impacts are only expected during all the project phases. With all the mitigation measures completed, the significance of the potential impact of the proposed development on the site is estimated to be **Low Significance**.

With the significance of the impact of the development reduced from a pre-mitigation Moderate Significance to a post-mitigation Low Significance, the degree to which the potential impact could be reversed and mitigated with the proposed mitigation measures is estimated to be 44.4%.

Please note that in the calculations undertaken below, the level of Probability was taken to be the

level of probability of unmarked graves to be located within this homestead site, and not the probability of whether the site will be destroyed by the proposed development.

Table 20 - Assessment of Post-Mitigated Impact of Proposed Development on sites DBAP 23

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|--------------------------------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|-----|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Some level of disturbance is expected to occur to this site during this phase</i> | - | 2 | 3 | 3 | 4 | 2 | 20 | Low |
| Construction Phase | | | | | | | | |
| <i>Some level of disturbance is expected to occur to this site during this phase</i> | - | 2 | 3 | 3 | 4 | 2 | 20 | Low |
| Operational Phase | | | | | | | | |
| <i>Some level of disturbance is expected to occur to this site during this phase</i> | - | 2 | 3 | 3 | 4 | 2 | 20 | Low |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>Some level of disturbance is expected to occur to this site during this phase</i> | - | 2 | 3 | 3 | 4 | 2 | 20 | Low |

7.3.7 Assessment of the Post-Mitigated Impact on sites DBAP 48 and DBAP 50

In this section, the post-mitigated impact of the proposed development on the above-mentioned sites will be assessed.

These sites comprise Late Iron Age stonewalled sites located within the proposed development footprint areas.

Impacts are only expected during the Pre-Construction Phase of the proposed development. The reason for this is that all site clearing activities of the proposed development footprints will take place during this development phase.

With all the mitigation measures completed, the significance of the potential impact of the proposed development on site is estimated to be **Low Significance**.

With the significance of the impact of the development reduced from a pre-mitigation Moderate Significance to a post-mitigation Low Significance, the degree to which the potential impact could be reversed and mitigated with the proposed mitigation measures is estimated to be 48.1%.

Table 21 - Assessment of Post-Mitigated Impact of Proposed Development on sites DBAP 48 and DBAP 50 located within the proposed development footprints

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|--------------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Complete destruction of two Late Iron Age stonewalled sites</i> | - | 3 | 4 | 1 | 4 | 2 | 27 | Low |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

7.3.8 Assessment of the Post-Mitigated Impact on sites DBAP 18, DBAP 20, DBAP 34 and DBAP 35

In this section, the post-mitigated impact of the proposed development on the above-mentioned sites will be assessed.

For the impact assessment calculations included in this section, it is assumed that all the mitigation measures as outlined in Chapter 8 have been successfully completed.

Sites DBAP 18, DBAP 20, DBAP 34 and DBAP 35 comprise surface scatters of potsherds which can either be associated with the Late Iron Age or Historic Period. The possibility of such potsherd scatters providing surface indications for the presence of unmarked Pedit graves, is mentioned by H.O. Mönnig (1978).

Impacts are only expected during the Pre- Construction Phase of the proposed development. With all the mitigation measures completed, the significance of the potential impact of the proposed development on site is estimated to be **Low Significance**.

With the significance of the impact of the development reduced from a pre-mitigation Moderate Significance to a post-mitigation Low Significance, the degree to which the potential impact could be reversed and mitigated with the proposed mitigation measures is estimated to be 52.4%.

Table 22 - Assessment of Post-Mitigated Impact of Proposed Development on sites DBAP 18, DBAP 20, DBAP 34 and DBAP 35 located within the proposed development footprints

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Complete destruction of four sites containing potsherd scatters and which may be surface indications for unmarked graves</i> | - | 2 | 4 | 2 | 4 | 2 | 20 | Low |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

7.3.9 Assessment of the Post-Mitigated Impact on site DBAP 38

In this section, the impact of the proposed development on site DBAP 38 will be assessed.

Site DBAP 38 comprises stonewalling which may either be associated with the Late Iron Age or Historic Period. The risk also exists for graves to be located here.

For the impact assessment calculations included in this section, it is assumed that all the mitigation measures as outlined in Chapter 8 have been successfully completed.

Impacts are expected during all the project phases. With all the mitigation measures completed, the significance of the potential impact of the proposed development on site is estimated to be **Low Significance**.

With the significance of the impact of the development reduced from a pre-mitigation High Significance to a post-mitigation Moderate Significance, the degree to which the potential impact could be reversed and mitigated with the mitigation measures proposed in this report, is estimated to be 61.5%.

Table 23 - Assessment of Post-Mitigated Impact of Proposed Development on DBAP 38

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|-----|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Strong possibility exists for the site to be impacted upon by activities ancillary to the proposed operational work</i> | - | 2 | 3 | 3 | 4 | 2 | 20 | Low |
| Construction Phase | | | | | | | | |
| <i>Strong possibility exists for the site to be impacted upon by activities ancillary to the proposed operational work</i> | - | 2 | 3 | 3 | 4 | 2 | 20 | Low |
| Operational Phase | | | | | | | | |
| <i>Strong possibility exists for the site to be impacted upon by activities ancillary to the proposed operational work</i> | - | 2 | 3 | 3 | 4 | 2 | 20 | Low |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>Strong possibility exists for the site to be impacted upon by activities ancillary to the proposed operational work</i> | - | 2 | 3 | 3 | 4 | 2 | 20 | Low |

7.3.10 Assessment of the Post-Mitigated Impact on site DBAP 7

In this section, the post-mitigated impact of the proposed development on the above-mentioned site will be assessed.

Site DBAP 7 comprises a low-density surface scatter of Middle Stone Age lithics which is located within the proposed development footprint areas.

It is important to note that for this assessment, it is assumed that the required mitigation measures outlined in Chapter 8 had already been successfully completed.

Impacts are only expected during the Pre-Construction Phase of the proposed development. With all the mitigation measures completed, the significance of the potential impact of the proposed development on site is estimated to be **Low Significance**.

With the significance of the impact of the development reduced from a pre-mitigation Moderate Significance to a post-mitigation Low Significance, the degree to which the potential impact could be reversed and mitigated with the proposed mitigation measures is estimated to be 33.3%.

Table 24 - Assessment of Post-Mitigated Impact of Proposed Development on site DBAP 7 which is located within the proposed development footprints

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|-----------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>No impacts are expected to these sites during this phase</i> | - | 3 | 4 | 2 | 2 | 3 | 24 | Low |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

7.3.11 Assessment of the Post-Mitigated Impact on site DBAP 2

In this section, the impact of the proposed development on sites DBAP 2 will be assessed.

For the impact assessment calculations included in this section, it is assumed that all the mitigation measures as outlined in Chapter 8 have been successfully completed.

Site DBAP 2 comprises stonewalling that can either be associated with the Late Iron Age or Historic Period. Additionally, possible rock engravings were identified a short distance from the site. These rock engravings appear to be associated with the Late Iron Age.

Impacts are expected to take place during all the project phases. With all the mitigation measures outlined in Chapter 8 completed, the significance of the potential impact of the proposed development on site is estimated to be **Low Significance**.

With the significance of the impact of the development reduced from a pre-mitigation High Significance to a post-mitigation Moderate Significance, the degree to which the potential impact could be reversed and mitigated with the mitigation measures proposed in Chapter 8, is estimated to be 53.8%.

Table 25 - Assessment of Post-Mitigated Impact of Proposed Development on site DBAP 2

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|-----|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities ancillary to the proposed construction work</i> | - | 2 | 3 | 2 | 4 | 2 | 18 | Low |
| Construction Phase | | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities ancillary to the proposed construction work</i> | - | 2 | 3 | 2 | 4 | 2 | 18 | Low |
| Operational Phase | | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities ancillary to the proposed construction work</i> | - | 2 | 3 | 2 | 4 | 2 | 18 | Low |
| Decommissioning and Rehabilitation Phase | | | | | | | | |
| <i>The possibility exists for the site to be impacted upon by activities ancillary to the proposed construction work</i> | - | 2 | 3 | 2 | 4 | 2 | 18 | Low |

7.3.12 Assessment of the Post-Mitigated Impact on site DBAP 53

In this section, the post-mitigated impact of the proposed development on the above-mentioned site will be assessed.

For the impact assessment calculations included in this section, it is assumed that all the mitigation measures as outlined in Chapter 8 have been successfully completed.

Site DBAP 53 comprises a stonewalled enclosure which may have had a historic military association. This assumption is made as a possible loophole was identified in the wall of the enclosure.

Impacts are only expected during the Pre-Construction Phase of the proposed development. With all the mitigation measures outlined in Chapter 8 completed, the significance of the potential impact of the proposed development on site is estimated to be **Low Significance**.

With the significance of the impact of the development reduced from a pre-mitigation High Significance to a post-mitigation Moderate Significance, the degree to which the potential impact could be reversed and mitigated with the mitigation measures proposed in Chapter 8, is estimated to be 52.4%.

Table 26 - Assessment of Post-Mitigated Impact of Proposed Development on site DBAP 53

| Nature of the impact | Significance of potential impact AFTER mitigation | | | | | | | |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------|--------|-----------|-----------------------|--------------|----|------|
| | Probability | Duration | Extent | Magnitude | Loss of Resources (%) | Significance | | |
| Pre-Construction Phase | | | | | | | | |
| <i>Complete destruction of a site containing a structure which may have had a military function</i> | - | 2 | 4 | 2 | 4 | 2 | 20 | Low |
| Construction Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Operational Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Closure/Rehabilitation Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |
| Post-Closure Phase | | | | | | | | |
| <i>No further impacts expected</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | None |

8 REQUIRED MITIGATION MEASURES

8.1 Introduction

In this chapter, required mitigation measures for each of the sites affected by the proposed development will be outlined.

As shown in Chapter 7, no mitigation is required for sites with a Low Significance. This means that no mitigation is required for sites DBAP 4, DBAP 14, DBAP 17, DBAP 24, DBAP 46 and DBAP 49.

In terms of the remaining sites for which mitigation is required, site-specific mitigation measures are provided below.

8.2 Required Mitigation Measures for the Identified Sites

8.2.1 Required Mitigation for DBAP 11, DBAP 15, DBAP 21, DBAP 33, DBAP 43, DBAP 44, DBAP 51 and DBAP 52

The impact significance calculations undertaken in Chapter 7 have shown that the significance of the unmitigated impact of the proposed development on these sites is estimated to be of High Significance. As a result, mitigation measures are required for this site.

As cemeteries and graves have Medium to High Heritage Significance, the best option is to change the development footprint to allow for the *in situ* preservation of these sites. However, should it not be possible to preserve these sites *in situ*, the required mitigation measures are outlined below.

- A grave relocation process must be undertaken.
- A detailed social consultation process, at least 60 days in length, comprising the attempted identification of the next-of-kin in order to obtain their consent for the relocation.
- Bilingual site and newspaper notices indicating the intent of the relocation.
- Permits from all the relevant and legally required authorities.
- An exhumation process that keeps the dignity of the remains and family intact.
- An exhumation process that safeguards the legal rights of the families as well as that of the mining company.
- The process must be done by a reputable company well versed in the mitigation of graves.

8.2.2 Required Mitigation for site DBAP 19

The impact significance calculations undertaken in Chapter 7 have shown that the significance of the unmitigated impact of the proposed development on this six sites is estimated to be of High Significance. As a result, mitigation measures are required for this site.

As cemeteries and graves have Medium to High Heritage Significance, the best option is to change the development footprint to allow for the *in situ* preservation of these sites. However, should it not be possible to preserve these sites *in situ*, the required mitigation measures are outlined below.

- A grave relocation process must be undertaken.
- A detailed social consultation process, at least 60 days in length, comprising the attempted identification of the next-of-kin in order to obtain their consent for the relocation.
- Bilingual site and newspaper notices indicating the intent of the relocation.
- Permits from all the relevant and legally required authorities.
- An exhumation process that keeps the dignity of the remains and family intact.
- An exhumation process that safeguards the legal rights of the families as well as that of the mining company.
- The process must be done by a reputable company well versed in the mitigation of graves.

Additionally, should it not be possible to preserve these sites *in situ*, the required mitigation measures as outlined for historic black homesteads regarding unmarked stillborn graves must also be undertaken. See **Section 8.2.5** below.

8.2.3 Required Mitigation Measures for site DBAP 9

The impact significance calculations undertaken in Chapter 7 have shown that the significance of the unmitigated impact of the proposed development on this site is estimated to be of Moderate Significance. As a result, mitigation measures are required for this site.

The following mitigation measure is required:

- A social consultation process to assess whether any local residents or the wider public is aware of the presence of graves here.

- The confirmed positions of all unmarked stillborn graves and graves must be fenced, signposted and plotted on all project and construction maps.
- The required mitigation measures as outlined for historic black homesteads regarding unmarked stillborn graves must also be undertaken. See **Section 8.2.5** below.

8.2.4 Mitigation for DBAP 1, DBAP 6, DBAP 8, DBAP 22, DBAP 31, DBAP 32, DBAP 39, DBAP 40, DBAP 42, DBAP 45, DBAP 47, DBAP 54 & DBAP 55

The impact significance calculations undertaken in Chapter 7 have shown that the significance of the unmitigated impact of the proposed development on these 13 sites is estimated to be of Moderate Significance. As a result, mitigation measures are required for this site.

The following initial mitigation measure is required:

- A social consultation process to assess whether any local residents or the wider public is aware of the presence of graves here.

Depending on the outcome of the social consultation process, three different outcomes would be the result, namely:

- Outcome 1: The social consultation absolutely confirms that no graves are located here.
- Outcome 2: The social consultation absolutely confirms that graves are located here.
- Outcome 3: The social consultation does not yield any confident results.

The following mitigation measures would be required for sites falling under Outcome 1:

- No further mitigation would be required.

The following mitigation measures would be required for sites falling under Outcome 2:

- A grave relocation process must be undertaken.
- A detailed social consultation process, at least 60 days in length, comprising the attempted identification of the next-of-kin in order to obtain their consent for the relocation.
- Bilingual site and newspaper notices indicating the intent of the relocation.

- Permits from all the relevant and legally required authorities.
- An exhumation process that keeps the dignity of the remains and family intact.
- An exhumation process that safeguards the legal rights of the families as well as that of the mining company.
- The process must be done by a reputable company well versed in the mitigation of graves.

The following mitigation measures would be required for sites falling under Outcome 3:

- Test excavations to physically confirm the presence or absence graves.
- If no evidence for graves is found, the site will fall within Outcome 1 as outlined above. This means that no further mitigation measures would be required.
- If evidence for graves is found, the site will fall within Outcome 2 as outlined above. This means that a full grave relocation process must be implemented.

Additionally, the following mitigation measures must be undertaken for all these sites:

- All structures and site layouts from each site must be recorded using standard survey methods and/or measured drawings. The end result would be a site layout plan.
- A mitigation report must be compiled for these sites within which all the mitigation measures and its findings will be outlined. The recorded drawings from the previous item must also be included in this mitigation report.
- The completed mitigation report must be submitted to the relevant heritage authorities.

8.2.5 Required Mitigation Measures for site DBAP 23

The impact significance calculations undertaken in Chapter 7 have shown that the significance of the unmitigated impact of the proposed development on this site is estimated to be of Moderate Significance. As a result, mitigation measures are required for this site.

The following initial mitigation measure is required:

- A social consultation process to assess whether any local residents or the wider public is aware of the presence of graves here.

Depending on the outcome of the social consultation process, three different outcomes would be the result, namely:

- Outcome 1: The social consultation absolutely confirms that no graves are located here.
- Outcome 2: The social consultation absolutely confirms that graves are located here.
- Outcome 3: The social consultation does not yield any confident results.

The following mitigation measures would be required for sites falling under Outcome 1:

- No further mitigation would be required.

The following mitigation measures would be required for sites falling under Outcome 2:

- A grave relocation process must be undertaken.
- A detailed social consultation process, at least 60 days in length, comprising the attempted identification of the next-of-kin in order to obtain their consent for the relocation.
- Bilingual site and newspaper notices indicating the intent of the relocation.
- Permits from all the relevant and legally required authorities.
- An exhumation process that keeps the dignity of the remains and family intact.
- An exhumation process that safeguards the legal rights of the families as well as that of the mining company.
- The process must be done by a reputable company well versed in the mitigation of graves.

The following mitigation measures would be required for sites falling under Outcome 3:

- Test excavations to physically confirm the presence or absence graves.
- If no evidence for graves is found, the site will fall within Outcome 1 as outlined above. This means that no further mitigation measures would be required.
- If evidence for graves is found, the site will fall within Outcome 2 as outlined above. This means that a full grave relocation process must be implemented.

Additionally, the following mitigation measures must be undertaken for this site:

- All structures and site layouts from each site must be recorded using standard survey

methods and/or measured drawings. The end result would be a site layout plan.

- A mitigation report must be compiled for these sites within which all the mitigation measures and its findings will be outlined. The recorded drawings from the previous item must also be included in this mitigation report.
- The completed mitigation report must be submitted to the relevant heritage authorities.

8.2.6 Required Mitigation Measures for sites DBAP 48 and DBAP 50

The impact significance calculations undertaken in Chapter 7 have shown that the significance of the unmitigated impact of the proposed development on these two sites is estimated to be of Moderate Significance. As a result, mitigation measures are required for this site.

The following mitigation measures are required for the three sites:

- An archaeological site layout plan must be compiled using accepted archaeological techniques.
- During the recording of the archaeological site layout plan, an attempt must be made to identify any archaeological middens associated with these sites. Should such middens be identified, archaeological test excavations would be required. If no such middens are found, the next two mitigation measures comprising an archaeological excavation permit application and archaeological test excavations would not be required.
- A permit application to SAHRA for archaeological test excavations to take place.
- Once the permit is received, limited archaeological test excavations may also be required, should a deposit be identified.
- An archaeological mitigation report must be compiled.
- A destruction permit application must be lodged with (SAHRA) to allow for the destruction of the site.

8.2.7 Required Mitigation Measures for sites DBAP 18, DBAP 20, DBAP 34 and DBAP 35

The impact significance calculations undertaken in Chapter 7 have shown that the significance of the unmitigated impact of the proposed development on these three sites is estimated to be of Moderate Significance. As a result, mitigation measures are required for these sites.

The following initial mitigation measure is required for the four sites:

- A social consultation process to assess whether any local residents or the wider public is aware of the presence of graves here.

Depending on the outcome of the social consultation process, three different outcomes would be the result, namely:

- Outcome 1: The social consultation absolutely confirms that no graves are located here or does not yield any confident results.
- Outcome 2: The social consultation absolutely confirms that graves are located here.

The following mitigation measures would be required for sites falling under Outcomes 1 and 2:

- A permit application to SAHRA for archaeological mitigation to take place.
- Once the permit is received, a surface collection of the potsherds from each site can be made.
- Limited archaeological test excavations may also be required, should a deposit be identified.
- An archaeological mitigation report must be compiled. The completed mitigation report must be submitted to the relevant heritage authorities.

The following mitigation measures would be required for sites falling under Outcome 2:

- A grave relocation process must be undertaken.
- A detailed social consultation process, at least 60 days in length, comprising the attempted identification of the next-of-kin in order to obtain their consent for the relocation.
- Bilingual site and newspaper notices indicating the intent of the relocation.
- Permits from all the relevant and legally required authorities.
- An exhumation process that keeps the dignity of the remains and family intact.
- An exhumation process that safeguards the legal rights of the families as well as that of the mining company.
- The process must be done by a reputable company well versed in the mitigation of graves.

8.2.8 Required Mitigation Measures for site DBAP 38

The impact significance calculations undertaken in Chapter 7 have shown that the significance of the unmitigated impact of the proposed development on this site is estimated to be of Moderate Significance. As a result, mitigation measures are required for this site.

The following initial mitigation measure is required for the three sites:

- A social consultation process to assess whether any local residents or the wider public is aware of the presence of graves here.
- An archaeological site layout plan must be compiled using accepted archaeological techniques.

Depending on the outcome of the social consultation process, three different outcomes would be the result, namely:

- Outcome 1: The social consultation absolutely confirms that no graves are located here or does not yield any confident results.
- Outcome 2: The social consultation absolutely confirms that graves are located here.

The following mitigation measures would be required for sites falling under Outcomes 1 and 2:

- A permit application to SAHRA for archaeological mitigation to take place.
- Once the permit is received, limited archaeological test excavations may be required, should a deposit be identified during the site recording stage.
- An archaeological mitigation report must be compiled. The completed mitigation report must be submitted to the relevant heritage authorities.

The following mitigation measures would be required for sites falling under Outcome 2:

- A grave relocation process must be undertaken.
- A detailed social consultation process, at least 60 days in length, comprising the attempted identification of the next-of-kin in order to obtain their consent for the relocation.
- Bilingual site and newspaper notices indicating the intent of the relocation.
- Permits from all the relevant and legally required authorities.

- An exhumation process that keeps the dignity of the remains and family intact.
- An exhumation process that safeguards the legal rights of the families as well as that of the mining company.
- The process must be done by a reputable company well versed in the mitigation of graves.

8.2.9 Required Mitigation Measures for site DBAP 7

The impact significance calculations undertaken in Chapter 7 have shown that the significance of the unmitigated impact of the proposed development on this site is estimated to be of Moderate Significance. As a result, mitigation measures are required for this site.

The following mitigation measure is required for the three sites:

- The site must be assessed in the field by a suitably qualified and experienced Stone Age specialist.
- The recommendations made by the Stone Age specialist must be adhered to.

8.2.10 Required Mitigation Measures for site DBAP 2

The impact significance calculations undertaken in Chapter 7 have shown that the significance of the unmitigated impact of the proposed development on this site is estimated to be of Moderate Significance. As a result, mitigation measures are required for this site.

The following mitigation measures are required:

- Before construction commences, the site must be archaeologically recorded. Subsequently, the site must be fenced. This fencing must enclose both the walling and possible rock engravings and must be erected in the presence of the project archaeologist.
- Signposts must be erected that clearly indicates the fenced area as a heritage site.
- The position of the site at DBAP 2 must be shown on all the construction and operation maps to ensure that all individuals associated with construction and mining activities are aware of the presence of these sites.

8.2.11 Required Mitigation Measures for site DBAP 53

The impact significance calculations undertaken in Chapter 7 have shown that the significance of the unmitigated impact of the proposed development on site DBAP 53 is estimated to be of Moderate Significance. As a result, mitigation measures are required for this site.

The following mitigation measures are required for the three sites:

- An archaeological site layout plan must be compiled using accepted archaeological techniques. Furthermore, the site must be cleared of vegetation and both recorded and photographed.
- Archival and historical research must be undertaken to attempt to obtain information with which the site can better be interpreted.
- A permit application to SAHRA for archaeological mitigation to take place.
- Once the permit is received, limited archaeological mitigation may be undertaken. This will likely take the form of using a metal detector to screen the site for metal artefacts as well as the excavation and archaeological screening of soil from within the stone enclosure. As no archeological deposit per se is expected to be located here, these measures will be aimed at obtaining information with which the site can be better interpreted.
- An archaeological mitigation report must be compiled.
- A destruction permit application must be lodged with (SAHRA) to allow for the destruction of the site.

8.2.12 Mitigation Measures Required for sites DBAP 36 and DBAP 41

The following mitigation measures are required for sites DBAP 36 and DBAP 41:

- The author of the report dealing with the Samancor survey must be asked to confirm the positions of these two sites, and preferably point them out on site.
- Should these site positions be confirmed in localities not yet identified as such sites, and without the possibility for *in situ* preservation, the mitigation measures outlined elsewhere for grave sites (DBAP 36) and historic black homesteads (DBAP 41) must be undertaken.

8.2.13 Mitigation Measures Required for site DBAP 5

The following mitigation measures are still required for site DBAP 5

- All structures and site layouts from each site must be recorded using standard survey methods and/or measured drawings. The end result would be a site layout plan.
- A mitigation report must be compiled for these sites within which all the mitigation measures and its findings will be outlined. The recorded drawings from the previous item must also be included in this mitigation report.
- The completed mitigation report must be submitted to the relevant heritage authorities.

8.2.14 Mitigation Measures Required for the Historic Farmstead at site DBAP 15

The following mitigation measures are still required for the historic farmstead at site DBAP 15:

- Recording of the buildings i.e. (a) map indicating the position and footprint of all the buildings and structures (b) photographic recording of all the buildings and structures (c) measured drawings of the floor plans of the three principal buildings.
- A mitigation report must be compiled for the site within which the recorded drawings from the previous item as well as all existing information on the farmstead can be included.
- The completed mitigation report must be submitted to the relevant heritage authorities with a permit application to allow for the destruction of the site.

9 CONCLUSIONS AND RECOMMENDATIONS

Introduction

PGS Heritage (Pty) Ltd was appointed by SRK Consulting (South Africa) Pty Ltd to undertake a Heritage Impact Assessment (HIA), which forms part of the environmental process for the proposed Der Brochen Amendment Project, located south of Steelpoort, Greater Tubatse Local Municipality, Greater Sekhukhune District Council, Limpopo Province.

General Desktop Study

An archaeological and historical desktop study was undertaken to provide a historical framework for the project area and surrounding landscape. This was augmented by an assessment of previous archaeological and heritage studies completed for the study area and surrounding landscape as well as an assessment of old aerial photographs. The desktop study revealed that the study area is located in surroundings characterised by a long and significant history.

Palaeontology

Ms. Elize Butler of Banzai Environmental (Pty) Ltd was commissioned to undertake a desktop Palaeontological Impact Assessment. Her report and findings are attached in full in **Appendix C**.

Ms. Butler found that the proposed development area is “...*is completely underlain by the Dwars River and Dsjate Subsuite, Rustenburg layered Suite, Bushveld Complex. These malific rocks of the Bushveld Complex is igneous in origin and thus unfossiliferous. The Palaeomap of SAHRIS also indicates that these rocks have a palaeontological significance of zero.*”

The palaeontological report concludes that it is “...***therefore considered that the construction and operation of the proposed Der Brochen Amendment Project near Lydenburg, Limpopo Province is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area. Thus, the construction and operation of the facility may be authorised as the whole extent of the development footprint is not considered sensitive in terms of palaeontological resources.***”

Fieldwork

The study area was assessed in the field by way of intensive walkthroughs of the proposed development footprint areas. The fieldwork was undertaken by an experienced team comprising one archaeologist/heritage specialist (Polke Birkholtz) and one fieldwork assistant (Derrick James). The fieldwork resulted in the identification of 57 archaeological and heritage sites. These identified archaeological and heritage sites comprise the following:

- Nine sites where graves and cemeteries were identified (DBAP 11, DBAP 16, DBAP 21, DBAP 25, DBAP 33, DBAP 43, DBAP 44, DBAP 51 & DBAP 52)
- A total of 25 sites comprising historic black homesteads where the risk for unmarked graves exist (DBAP 1, DBAP 3, DBAP 5, DBAP 6, DBAP 8, DBAP 10, DBAP 22, DBAP 23, DBAP 26, DBAP 27, DBAP 28, DBAP 29, DBAP 30, DBAP 31, DBAP 32, DBAP 37, DBAP 39, DBAP 40, DBAP 42, DBAP 45, DBAP 47, DBAP 54, DBAP 55, DBAP 56 & DBAP 57)
- Two sites comprising historic black homesteads (where the risk for unmarked graves exist) associated with confirmed graves and cemeteries (DBAP 9 & DBAP 19).
- Five sites comprising surface occurrences of Iron Age or historic potsherds (DBAP 17, DBAP 18, DBAP 20, DBAP 34 & DBAP 35)
- Two Iron Age stonewalled sites (DBAP 48 & DBAP 50)
- A multi-component site comprising Iron Age stonewalling as well as what appears to be a historic black homestead (DBAP 38)
- A multi-component site comprising a historic farmstead associated with two unmarked stillborn graves (DBAP 15)
- One Iron Age stonewalled site and/or historic black homestead associated with possible rock engravings (DBAP 2)
- One Stone Age site (DBAP 7)
- Two sites where adits, shafts, and workings relating to historic mining activities were identified (DBAP 12 & DBAP 13)

- Three sites where grinding surfaces with little associated cultural material or features were identified (DBAP 4, DBAP 24 & DBAP 46)
- One historic structure which may have been associated with the historic farmstead at DBAP 15 (DBAP 14)
- One site comprising a single stonewalled enclosure which may have been associated with the nearby Iron Age stonewalled sites (DBAP 49)
- One site comprising a single stonewalled enclosure which may have had a military association (DBAP 53)
- Two sites identified during a previous study undertaken by Samancor that could not be located during the present fieldwork. These sites appear to comprise a grave (DBAP 36) and a historic black homestead (DBAP 41)

Impact Assessment and Mitigation

An overlay of the identified archaeological and heritage sites over the proposed development footprint areas was made, which was used to assess the impact of the proposed development on these identified archaeological and heritage sites. Both pre-mitigation and post-mitigation impact assessments were undertaken. Please refer Chapter 7 for the impact assessment calculations. A series of site-specific mitigation measures are outlined in Chapter 8 of this report.

General Recommendations

The following general recommendations are made:

- All sites of Medium to High Significance not located close enough to the present development footprints to warrant site-specific mitigation, must be included in an overall conservation management plan.
- Should the development footprints change or be altered in any way, these changes must be assessed in the field by a heritage specialist/archaeologist before construction commences.

Conclusions

While the unmitigated impact of the proposed development is expected to result in a high negative impact in terms of the identified archaeological and heritage sites located here, these impacts can be suitably mitigated to acceptable levels by way of a range of mitigation measures outlined in this report. As a result, on the condition that the recommendations made in this report are adhered to, no heritage reasons can be given for the development not to continue.

10 PREPARERS

This Heritage Impact Assessment was written by the following preparers:

- Polke Birkholtz – Project Manager / Archaeologist / Author

11 REFERENCES

Published References

Amery, L.S. 1909: *The Times History of the War in South Africa: 1899 – 1902*. Volume VII. Sampson, Law, Marston and Company Limited, London.

Antrobus, E.S.A. 1986. *Witwatersrand Gold - 100 Years: A review of the discovery and development of the Witwatersrand Goldfield as seen from the geological viewpoint*. Geological Society of South Africa, Pretoria.

Bergh, J.S. (ed.). 1999: *Geskiedenis Atlas van Suid-Afrika: Die Vier Noordelike Provinsies*. J.L. van Schaik. Pretoria.

Bhushan, K. and G. Katyal. 2002. *Nuclear, Biological and Chemical Warfare*. Efficient Offset Printers, India.

De Jong, R.C., G.M. van der Waal and D.H. Heydenreich. 1988. *NZASM 100: The Buildings, Steam Engines and Structures of the Netherlands South African Railway Company*. Chris van Rensburg Publications, Pretoria.

Du Plessis, W.F. 1952: *Die Beknopte Geskiedenis van Klerksdorp*.

Erasmus, B.J. 2004. *On Route in South Africa*. Jonathan Ball Publishers, Johannesburg.

Goldmann, C.S. 1892: *The Witwatersrand Gold Fields: The Financial, Statistical and General History of the Gold and other companies of the Witwatersrand, South Africa*. Argus Printing and Publishing Company, Johannesburg.

Goldmann, C.S. 1895/1896: *South African Mines: Their Position, Results and Developments*. Argus Printing and Publishing Company, Johannesburg.

Groves, L.R. 1962. *Now It Can Be Told: The Story of the Manhattan Project*. Harper, New York.

Guest, H. 1938: *Klerksdorp's Fifty Years of Mining*. Mine Manager's Association, Klerksdorp.

Gurney, R. and W.J. Jervis. 1935. *History of the Northamptonshire Regiment*. Gale & Polden, London.

Hocking, A. 1987. *A Court of Kings: the Story of South Africa's Association of Mine Managers*. Hollards Corporate.

Huffman, T.N. 2007. *Handbook to the Iron Age: The archaeology of Pre-Colonial Farming Societies in Southern Africa*. University of KwaZulu-Natal Press, Scottsville.

- Jones, J.D.F. 1995. *Through Fortress and Rock: The Story of Gencor*. Jonathan Ball, Johannesburg.
- Marx, R. 1987: *Klerksdorp Groeiende Reus: 1837 – 1987*. Klerksdorp City Council, Klerksdorp.
- Orkney Diary. 1990: *Commemorative Diary of Orkney: 1940-1990*. Gutenberg Publishers, Pretoria.
- Raath, A.W.G. 2007. *De La Rey: 'n Stryd vir Vryheid*. Kraal Uitgewers, Brandfort.
- South African Mining and Engineering Journal. 1982.
- Standard Encyclopaedia of Southern Africa, 1972. NASOU.
- The Mining Magazine, 1952.
- Theal, G.M. 2010. *History of South Africa since September 1795*. Cambridge University Press, Cambridge.
- Van Schoor, M.C.E. 2007. *Christiaan Rudolph de Wet: Krygsman en volksman*. Protea Boekhuis, Pretoria.
- Visagie, J.C. 2000. *Voortrekkerstamouers: 1835 -1845*. University of South Africa, Pretoria.
- Warwick, P. 1983. *Black People and the South African War: 1899-1902*. Ravan Press, Johannesburg.

Unpublished References

- Birkholtz, P.D. 2014. *Heritage Inventory of the Mines Waste Solutions (MWS) Areas located on certain portions of the farms Stilfontein 408 IP, Kromdraai 420 IP, Hartebeestfontein 422 IP, Modderfontein 440 IP, Buffelsfontein 443 IP and Kareerand 444 IP, to the east and south-east of Klerksdorp, North West Province*. For AngloGold Ashanti Limited.
- Coetsee, F. 2012. *Cultural Heritage Survey of the Proposed Kabi Vaalkop PV Solar Facility, near Orkney, Dr Kenneth Kaunda District, North West Province*. For Savannah Environmental (Pty) Ltd.
- Dreyer, K. 2005. *Archaeological and Historical Investigation of the Proposed Residential Developments on Subdivision 13 of the farm Pretoriuskraal 53, Viljoenskroon, Free State*.
- Matlosana Municipality, n.d. *Catalogue of Heritage Sites*.
- Miller, S. 2015. *Cultural Heritage Impact Assessment for Shafts #1 to #7, Orkney, Northwest Province, South Africa*. For CAPM Gold.
- Pistorius, J.C.C. 2008. *A Phase 1 Heritage Impact Assessment Study for the Proposed Tailings Reclamation Project near the Mine Village of Stilfontein in the North West Province of South Africa*.

An unpublished report.

Pistorius, J.S.S. 2011. *A Phase I Heritage Impact Assessment (HIA) Study for a Proposed Tailings Reclamation Project near the Mine Village of Stilfontein in the North West Province of South Africa*. For Ground Water Consulting Services.

Van der Walt, J. 2016. *Archaeological Impact Assessment for the Proposed Buffels Solar 1 Solar Energy Facility, North West province*. For Savannah Environmental (Pty) Ltd.

Van der Walt, J. 2016. *Archaeological Impact Assessment for the Proposed Buffels Solar 2 Solar Energy Facility, North West province*. For Savannah Environmental (Pty) Ltd.

Newspapers

Mining Mirror, June 2013

Potchefstroom Herald, 28 February 2014

Sydney Morning Herald, 15 December 1900

The Advertiser, 19 December 1900

The Star, 13 September 1983

The Transvaler, 20 February 1981

Archival References

National Archives, Maps, 3/614

National Archives, Photographs, 16342

CJC, 35, 656

CJC, 128, 2493

CJC, 994, 925

MHG 1880/38

MHG 3385/40

MHG 41445/19

MHG 49765

RAK 2875

Historic Aerial Photographs and Topographic Maps

All the historic aerial photographs and early topographic maps used in this report were obtained

from the Directorate: National Geo-spatial Information of the Department of Rural Development and Land Reform in Cape Town.

Internet

<http://www.antiquarianauctions.com/lots/16-original-anglo-boer-war-photographs>
www.nwpg.gov.za
www.sanbi.org
www.wikipedia.org

Google Earth

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

Appendix A

LEGISLATIVE REQUIREMENTS – TERMINOLOGY AND ASSESSMENT CRITERIA

General principles

In areas where there has not yet been a systematic survey to identify conservation worthy places, a permit is required to alter or demolish any structure older than 60 years. This will apply until a survey has been done and identified heritage resources are formally protected.

Archaeological and palaeontological sites, materials, and meteorites are the source of our understanding of the evolution of the earth, life on earth and the history of people. In terms of the heritage legislation, permits are required to damage, destroy, alter, or disturb them. Furthermore, individuals who already possess heritage material, are required to register it. The management of heritage resources is integrated with environmental resources and this means that, before development takes place, heritage resources are assessed and, if necessary, rescued.

In addition to the formal protection of culturally significant graves, all graves which are older than 60 years and are not located in a cemetery (such as ancestral graves in rural areas), are protected. The legislation also protects the interests of communities that have an interest in the graves: they should be consulted before any disturbance takes place. The graves of victims of conflict and those associated with the liberation struggle are to be identified, cared for, protected and memorials erected in their honour.

Anyone who intends to undertake a development must notify the heritage resources authority and, if there is a reason to believe that heritage resources will be affected, an impact assessment report must be compiled at the construction company's cost. Thus, the construction company will be able to proceed without uncertainty about whether work will have to be stopped if an archaeological or heritage resource is discovered.

According to the National Heritage Act (Act 25 of 1999 section 32) it is stated that:

An object or collection of objects, or a type of object or a list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object, including –

- Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, meteorites and rare geological specimens;
- visual art objects;
- military objects;
- numismatic objects;

- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;
- objects of scientific or technological interest;
- books, records, documents, photographic positives and negatives, graphic material, film or video or sound recordings, excluding those that are public records as defined in section 1 (xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996), or in a provincial law pertaining to records or archives; and
- any other prescribed category.

Under the National Heritage Resources Act (Act No. 25 of 1999), provisions are made that deal with and offer protection to, all historic and prehistoric cultural remains, including graves and human remains.

Graves and cemeteries

Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) as well as the Human Tissues Act (Act 65 of 1983) and are under the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the Office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning, or in some cases the MEC for Housing and Welfare. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws, and by-laws must also be adhered to. In order to handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

Graves older than 60 years, but younger than 100 years, fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act) as well as the Human Tissues Act (Act 65 of 1983) and are under the jurisdiction of the South African Heritage Resources Agency (SAHRA). The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administered by a local authority. Graves in the category located inside a formal cemetery administered by a local authority will also require the same authorisation as set out for graves younger than 60 years, over and above SAHRA authorisation.

If the grave is not situated inside a formal cemetery but is to be relocated to one, permission from the local authority is required and all regulations, laws, and by-laws set by the cemetery authority must be adhered to.

Appendix B
CURRICULUM VITAE

**PROFESSIONAL CURRICULUM
FOR POLKE DOUSSY BIRKHOLTZ**

Name: Polke Doussy Birkholtz

Date & Place of Birth: 9 February 1975 – Klerksdorp, North West Province, South Africa

Place of Tertiary Education & Dates Associated:

Institution: University of Pretoria

Qualification: BA (Cum Laude) - Bachelor of Arts Specializing in Archaeology, History & Anthropology

Date: 1996

Institution: University of Pretoria

Qualification: BA Hons (Cum Laude) - Bachelor of Arts with Honours Degree Specializing in Archaeology

Date: 1997

Qualifications:

BA - Degree specialising in Archaeology, History and Anthropology

BA Hons - Professional Archaeologist

Memberships:

Association of Southern African Professional Archaeologists (ASAPA)

Professional Member of the CRM Section of ASAPA

Overview of Post Graduate Experience:

1997 – 2000 – Member/Archaeologist – Archaeo-Info

2001 – 2003 – Archaeologist/Heritage Specialist – Helio Alliance

2000 – 2008 – Member/Archaeologist/Heritage Specialist – Archaeology Africa

2003 - Present – Director / Archaeologist / Heritage Specialist – PGS Heritage

Languages: English: Speak, Read & Write & Afrikaans: Speak, Read & Write

Total Years' Experience: 19 Years

Experience Related to the Scope of Work:


- Polke has worked as a **HERITAGE SPECIALIST / ARCHAEOLOGIST / HISTORIAN** on more than 300 projects, and acted as **PROJECT MANAGER** on almost all of these projects. His experience includes the following:
 - Development of New Sedimentation and Flocculation Tanks at Rand Water's Vereeniging Pumping Station, Vereeniging, Gauteng Province. Heritage Impact Assessment for *Greenline*.

- EThekweni Northern Aqueduct Project, Durban, KwaZulu-Natal. Heritage Impact Assessment for *Strategic Environmental Focus*.
- Johannesburg Union Observatory, Johannesburg, Gauteng Province. Heritage Inventory for *Holm Jordaan*.
- Development at Rand Water's Vereeniging Pumping Station, Vereeniging, Gauteng Province. Heritage Impact Assessment for *Aurecon*.
- Comet Ext. 8 Development, Boksburg, Gauteng Province. Phase 2 Heritage Impact Assessment for *Urban Dynamics*.
- Randjesfontein Homestead, Midrand, Gauteng Province. Baseline Heritage Assessment with Nkosinathi Tomose for Johannesburg City Parks.
- Rand Leases Ext. 13 Development, Roodepoort, Gauteng Province. Heritage Impact Assessment for *Marsh*.
- Proposed Relocation of the Hillendale Heavy Minerals Plant (HHMP) from Hillendale to Fairbreeze, KwaZulu-Natal. Heritage Impact Assessment for *Goslar Environmental*.
- Portion 80 of the farm Eikenhof 323 IQ, Johannesburg, Gauteng Province. Heritage Inventory for *Khare Incorporated*.
- Comet Ext. 14 Development, Boksburg, Gauteng Province. Heritage Impact Assessment for *Marsh*.
- Rand Steam Laundries, Johannesburg, Gauteng Province. Archival and Historical Study for *Impendulo and Imperial Properties*.
- Mine Waste Solutions, near Klerksdorp, North West Province. Heritage Inventory for *AngloGold Ashanti*.
- Consolidated EIA and EMP for the Kroondal and Marikana Mining Right Areas, North West Province. Heritage Impact Assessment for *Aquarius Platinum*.
- Wilkoppies Shopping Mall, Klerksdorp, North West Province. Heritage Impact Assessment for *Center for Environmental Management*.
- Proposed Vosloorus Ext. 24, Vosloorus Ext. 41 and Vosloorus Ext. 43 Developments, Ekurhuleni District Municipality, Gauteng Province. Heritage Impact Assessment for *Enkanyini Projects*.
- Proposed Development of Portions 3, 6, 7 and 9 of the farm Olievenhoutbosch 389 JR, City of Tshwane Metropolitan Municipality, Gauteng Province. Heritage Impact Assessment for *Marsh*.
- Proposed Development of Lotus Gardens Ext. 18 to 27, City of Tshwane Metropolitan Municipality, Gauteng Province. Heritage Impact Assessment for *Pierre Joubert*.
- Proposed Development of the site of the old Vereeniging Hospital, Vereeniging, Gauteng Province. Heritage Scoping Assessment for *Lekwa*.
- Proposed Demolition of an Old Building, Kroonstad, Free State Province. Phase 2 Heritage Impact Assessment for *De Beers Consolidated Mines*.
- Proposed Development at Westdene Dam, Johannesburg, Gauteng Province. Heritage Impact Assessment for *Newtown*.
- West End, Central Johannesburg, Gauteng Province. Phase 1 Heritage Impact Assessment for the *Johannesburg Land Company*.
- Kathu Supplier Park, Kathu, Northern Cape Province. Heritage Impact Assessment for *Synergistics*.
- Matlosana 132 kV Line and Substation, Stilfontein, North West Province. Heritage

- Impact Assessment for *Anglo Saxon Group* and *Eskom*.
 - Marakele National Park, Thabazimbi, Limpopo Province. Cultural Resources Management Plan for *SANParks*.
 - Cullinan Diamond Mine, Cullinan, Gauteng Province. Heritage Inventory for *Petra Diamonds*.
 - Highveld Mushrooms Project, Pretoria, Gauteng Province. Heritage Impact Assessment for *Mills & Otten*.
 - Development at the Reserve Bank Governor's Residence, Pretoria, Gauteng Province. Archaeological Excavations and Mitigation for the *South African Reserve Bank*.
 - Proposed Stones & Stones Recycling Plant, Johannesburg, Gauteng Province. Heritage Scoping Report for *KV3*.
 - South East Vertical Shaft Section of ERPM, Boksburg, Gauteng Province. Heritage Scoping Report for *East Rand Proprietary Mines*.
 - Proposed Development of the Top Star Mine Dump, Johannesburg, Gauteng Province. Detailed Archival and Historical Study for *Matakoma*.
 - Soshanguve Bulk Water Replacement Project, Soshanguve, Gauteng Province. Heritage Impact Assessment for *KWP*.
 - Biodiversity, Conservation and Participatory Development Project, Swaziland. Archaeological Component for *Africon*.
 - Camdeboo National Park, Graaff-Reinet, Eastern Cape Province. Cultural Resources Management Plan for *SANParks*.
 - Main Place, Central Johannesburg, Gauteng Province. Phase 1 Heritage Impact Assessment for the *Johannesburg Land Company*.
 - Modderfontein Mine, Springs, Gauteng Province. Detailed Archival and Historical Study for *Consolidated Modderfontein Mines*.
 - Proposed New Head Office for the Department of Foreign Affairs, Pretoria, Gauteng Province. Heritage Impact Assessment for *Holm Jordaan Group*.
 - Proposed Modification of the Lukasrand Tower, Pretoria, Gauteng Province. Heritage Assessment for IEPM.
 - Proposed Road between the Noupoort CBD and Kwazamukolo, Northern Cape Province. Heritage Impact Assessment for *Gill & Associates*.
 - Proposed Development at the Johannesburg Zoological Gardens, Johannesburg, Gauteng Province. Detailed Archival and Historical Study for *Matakoma*.
- Polke's **KEY QUALIFICATIONS:**
 - Project Management
 - Archaeological and Heritage Management
 - Archaeological and Heritage Impact Assessment
 - Archaeological and Heritage Fieldwork
 - Archival and Historical Research
 - Report Writing
 - Polke's **INFORMATION TECHNOLOGY EXPERIENCE:**
 - *MS Office – Word, Excel, & Powerpoint*

- *Google Earth*
- *Garmin Mapsource*
- *Adobe Photoshop*
- *Corel Draw*

I, Polke Doussy Birkholtz, hereby confirm that the above information contained in my CV is true and correct.



PD Birkholtz

5 January 2019
Date

Appendix C

PALAEONTOLOGICAL REPORT