

ANNEXURE D:

**ARCHAEOLOGICAL IMPACT ASSESSMENT
PROPOSED PROSPECTING FOR PHOSPHATE ON
PORTIONS 7 AND 12 OF THE FARM LANGEBERG
185 AND FARM 1043 LANGEBERG
(MALMESBURY DISTRICT)
LANGEBAANWEG**

Prepared for:

SITE PLAN CONSULTING

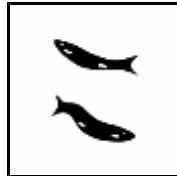
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Executive summary

An Archaeological Impact Assessment of proposed prospecting for phosphate, on Portions 7 and 12 of the Farm Langeberg 185 and Farm No. 1043 Langeberg (Malmesbury), near Langebaanweg on the West Coast, has identified no significant impacts to pre-colonial archaeological material that will need to be mitigated prior to, proposed prospecting activities.

The proposed site is situated west of the Langebaanweg Air Force Base and both south and north of the R45 (Hopefield Road). A portion of the property is located directly to the north of the West Coast Fossil Park, while a large portion is also situated west of the R27 (West Coast road). It is estimated that more than 95% of the subject property has already been heavily transformed as a result of years of agricultural activity.

While the entire property measures more than 2 200 ha in extent, only three target areas, measuring 399 ha, have been identified for (initial) prospecting purposes.

The aim of the archaeological study is to locate and map archaeological sites and remains that may be impacted by proposed prospecting activities, to assess the significance of the potential impacts and to propose measures to mitigate against any potential long term impacts should prospecting proceed to full scale mining.

Consulting palaeontologist, Dr John Pether, has been commissioned to undertake a Phase 1 Palaeontological Impact Assessment (Desk top study) of the proposed project.

The following findings were made:

- A few Later Stone Age, Middle Stone Age and Early Stone Age tools were documented during the study but these are spread very thinly and unevenly over the surrounding landscape. The archeological remains occur in severely disturbed context and have been rated as having low local significance.
- Some fragmented fossil bone was found in an old limestone quarry opposite the Transnet Iron Ore Railway Line west of the R27 (West Coast Road)
- The remains of an abandoned farm workers cemetery were also documented in one of the proposed target areas. Sadly, this `site' has been severely damaged by ploughing activities, but the integrity of the site (as a place of memory) remains intact. At least 35 graves (or their remains) were counted, most of them comprising piles of Koffieklip. All burials sites and graves are protected under the National Heritage Resources Act (No of 1999) and may not be damaged or disturbed without a permit issued by the South African Heritage Resources Agency (SAHRA).

With regard to the proposed prospecting for phosphate on Portions 7 and 12 of the Farm Langeberg 185 and Farm 1043 Langeberg, the following recommendations are made.

- A specialist palaeontologist must be appointed to inspect and examine all prospecting test pits, for possible vertebrate fossils (bones).
- The farm workers cemetery must be fenced off prior to any planned prospecting on the property and must remain fenced off and protected in perpetuity.
- Should any human remains be disturbed, exposed or uncovered during excavations and earthworks, these must immediately be reported to the archaeologist or the South African Heritage Resources Agency (Dr A. Jerardino @ 021 462 4502).

These measures must be included in the Environmental Management Plan (EMP) for the proposed project.

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1. INTRODUCTION

Site Plan Consulting, on behalf of Gecko Fest (Pty) Ltd requested that the Agency for Cultural Resource Management conduct an Archaeological Impact Assessment for the proposed prospecting for Phosphate (Calcium Phosphate), on Portions 7 and 12 of the Farm Langeberg 185 and Farm No 1043 Langeberg (Malmesbury), near Langebaanweg on the Cape West Coast.

Methods of prospecting will entail excavator trial pits to a depth of approximately 5m and tracked percussion drill rigs to a depth of 12m. Trial pits may be up to 5m long. In total, 270 test pits will be excavated (Site Plan Consulting 2008).

The extent of the three properties is 2 274.13 ha. However, only three target areas measuring 399 ha have been identified for prospecting purposes. The main prospecting area is located immediately to the north and east of the old Chemfos Phosphate Mine/West Coast Fossil Park.

The aim of prospecting is to determine the extent of the phosphate which occurs in a subsurface Koffieklip layer, which is overlain by younger Langebaan Limestone sands (Site Plan Consulting 2008).

Consulting palaeontologist, Dr John Pether, has been commissioned to undertake a Palaeontological Impact Assessment (desk top study) of the proposed project.

The aim of this study is to locate and map archaeological heritage sites and remains that may be negatively impacted by proposed prospecting activities, to assess the significance of the potential impacts and to propose measures to mitigate against any potential long term impacts should prospecting proceed to full scale mining.

2. TERMS OF REFERENCE

The terms of reference for the archaeological study were:

- to determine whether there are likely to be any archaeological sites within the proposed prospecting areas;
- to identify any sites of archaeological significance within the proposed prospecting area;
- to assess the sensitivity and conservation significance of archaeological sites;
- to assess the status and significance of any impacts resulting from proposed prospecting; and
- to identify mitigatory measures to protect and maintain any valuable archaeological sites that may exist within the proposed prospecting areas.

Although the focus of the study was on the proposed target areas, the archaeologist was also instructed to scan the remainder of the property.

3. THE STUDY SITE

A locality map is illustrated in Figure 1.

An aerial photograph of the proposed site is illustrated in Figure 2.

The proposed mining operation is illustrated in Figure 3. It is important to note that proposed site layout plan (indicating the locations of proposed test holes on the farm) has taken cognizance of the existing natural vegetation on site and the relevant grid patterns have been altered to ensure there is no disturbance of any natural vegetation.

The subject property is located immediately west of the Langebaanweg Air Force Base and both north and south of the R45 (Hopefield Road). A large portion is situated west of the R27 (West Coast Road). A portion of the property also lies directly north of the West Coast Fossil Park.

It is estimated that more than 95% of the proposed site has been heavily transformed as a result of many years of agricultural activity. Virtually no natural vegetation occurs on the affected property, and it is surrounded by vast tracts of similarly transformed farmland. A large swathe of vegetated dunes occurs in a north south direction, directly north of the West Coast National Park. These dunes will not be mined.

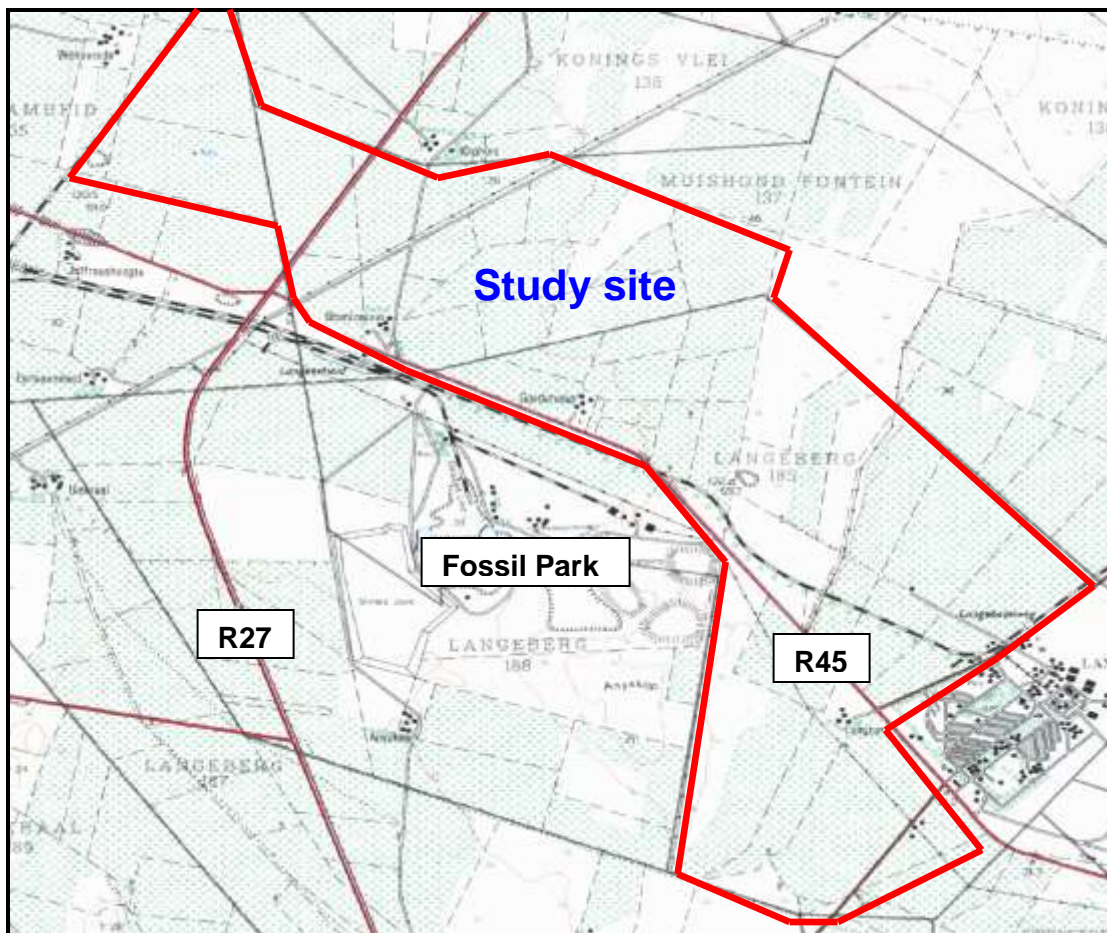


Figure 1. Locality Map (3218CA and CC Veldriff)



Figure 2. Aerial photograph of the study area

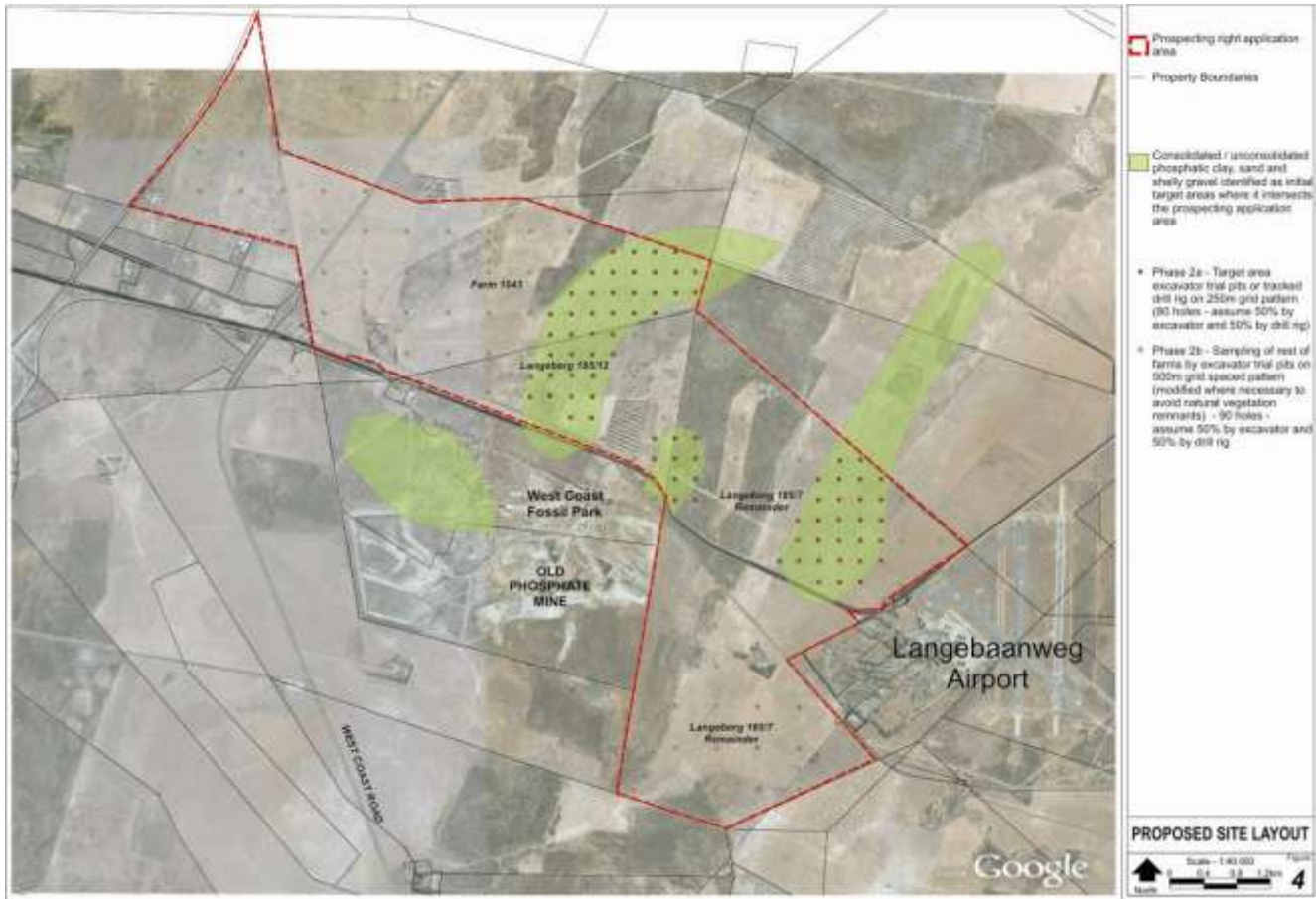


Figure 3. Proposed site layout

For ease of visual reference, the proposed site has been divided into 11 Blocks (A-K) (refer to Figure 2).

Block A: Comprises old agricultural lands that have not been utilized for many years (Figures 4-10). The site is mostly level, except for an elevated limestone ridge in the south western portion of the property, alongside the Transnet Iron Ore Railway Line. An abandoned limestone quarry occurs in the extreme south western corner of the property (Figure 11). Natural vegetation (mainly grass and Restio) has recovered over some portions some of the site, while some wetland grasses and sporadic bush and scrub are also present. Some surface calcrete occurs in the western portion of the site (opposite the Transnet Railway Line) and in the far northern corner, but overall there is very little surface stone on the site, which consists mainly of unconsolidated sands. The site is currently being grazed by ostrich and springbok. Existing infrastructure includes a concrete dam in the centre of the property, and a few concrete drinking troughs. Surrounding land use comprises mainly agriculture and smallholdings. Dune mole rat activity is extensive over parts of the property.



Figure 4. Block A. View facing south



Figure 7. Block A. View facing north west



Figure 5. Block A. View facing south



Figure 8. Block A. View facing north west



Figure 6. Block A. View facing north west



Figure 9. Block A. View facing east



Figure 10. Block A. View facing north east



Figure 11. Block A. Limestone quarry.

Block B: Comprises mainly level, agricultural lands alongside (i.e. west of) the R27 (Figures 12-23). Some natural grasses occur in the south eastern corner of the proposed site (Figure 14), but overall there is virtually no natural vegetation occurring on the property, which is currently used for grazing (sheep). There is very little surface stone on the affected lands. Dune mole rat activity is extensive. There are no significant landscape features on the entire property. The surrounding land use comprises mainly agriculture, including some smallholding in the south.



Figure 12. Block B. View facing west (from the R27). Saldanha Steel (SS) in the distance



Figure 13. Block B. View facing west (from the R27). Saldanha Steel is in the distance



Figure 14. Block B. View facing west taken from the R27



Figure 17. Block B. View facing north east



Figure 15. Block B. View facing north east



Figure 18. Block B. View facing north



Figure 16. Block B. View facing south east



Figure 19. Block B. View facing north east



Figure 20. Block B. View facing south



Figure 22. Block B. View facing west



Figure 21. Block B. View facing south west



Figure 23. Block B. View facing south west

Block C: Comprises level agricultural lands alongside (i.e. east of) of the R27 (Figures 24-41). Access to the property is from the R45 at the entrance to Boontjeskloof Farm. Until recently much of the landholdings in the northern sector were under wheat cultivation, while some of the landholdings in the south are used for grazing and are heavily trampled. Some kweek grass is evident in the northwest. Most of the lands are characterised by loose, unconsolidated sands. There are also some undisturbed areas in the northwest comprising patches of natural veld (mainly Restio grasses). There is very little surface stone on the large site. Dune mole rat activity is extensive over large portions of the property. There are no significant landscape features on the site. Surrounding land use comprises agriculture.



Figure 24. Block C. View facing south east



Figure 27. Block C. View facing north west



Figure 25. Block C. View facing south east



Figure 28. Block C. View facing south west



Figure 26. Block C. View facing south west



Figure 29. Block C. View facing west



Figure 30. Block C. View facing west



Figure 33. Block C. View facing south west



Figure 31. Block C. View facing south



Figure 34. Block C. View facing south west



Figure 32. Block C. View facing west



Figure 35. Block C. View facing south



Figure 36. Block C. View facing south west



Figure 39. Block C. Facing north from the R45



Figure 37. Block C. View facing west



Figure 40. Block C. Facing north east from the R45



Figure 38. Block C. View facing south west



Figure 41. View facing north from the R45

Block D: Comprises mostly level agricultural lands, of which a large portion is aligned alongside the R45. Access to the property is from the R45 at the entrance to Goeie Hoop Farm. Much of the landholdings aligned alongside the R45 comprise fallow agricultural land (Figures 42-59) and this is currently used for grazing and is heavily trampled. Most of the landholdings in the north were recently under wheat cultivation. A small wetland system and seep is situated directly north and west of the Goeie Hoop Farm. A vegetated dune ridge is aligned alongside a fence line in the central portion of the property (Figure 46). Dune mole rat activity is extensive over much of the surrounding landscape. A patch of natural vegetation is situated in the north west (which will not be mined). Surrounding land use comprises agriculture.



Figure 42. Block D. View facing east



Figure 44. Block D. View facing south east



Figure 43. Block D. View facing north east



Figure 45. Block D. View facing south



Figure 46. Block D. View facing west



Figure 49. Block D. View facing south west



Figure 47. Block D. View facing south west



Figure 50. Block D. View facing south west



Figure 48. Block D. View facing west



Figure 51. Block D. View facing south



Figure 52. Block D. View facing south west



Figure 55. Block D. View facing



Figure 53. Block D. View facing south



Figure 56. Block D. View facing west



Figure 54. Block D. View facing south west



Figure 57. Block D. View facing east



Figure 58. Block D. View facing south east



Figure 59. Block D. View facing east

Block E: Comprises agricultural lands (Figures 60-69). Until recently the majority of these lands were covered in wheat, which has recently been harvested. The site is mostly level, but slopes gently from north to south. Apart from some natural veld in the south west, there is virtually no natural vegetation occurring on the site. **Most of the prospecting activities will take place in Block E.** There are no significant landscape features on the proposed site. Surrounding land use comprises agricultural and the large corridor of natural dune veld to the east, that will not be mined.



Figure 60. Block E. View facing south



Figure 61. Block E. View facing west



Figure 62. Block E. View facing north



Figure 65. Block E. View facing west



Figure 63. Block E. View facing south



Figure 66. Block E. View facing south west



Figure 64. Block E. View facing south



Figure 67. Block E. View facing south



Figure 68. Block E. View facing south west



Figure 69. Block E. View facing west

Block F: Comprises level agricultural land, now mostly used for grazing purposes (Figures 70 – 81). The southern boundary of the site borders an abandoned railway line. The north eastern portion of the site borders the Langebaanweg Airport road. An abandoned workers cottage occurs at the end of a gravel track that cuts across the central portion of the property. There is some surface stone (Koffieklip and some limestone) occurring to the north of the workers cottage, while some surface calcrete is present in the north eastern portion. Other than that there is very little surface stone occurring on the property. Several large piles of Koffieklip occur northwest of the workers cottage. Existing infrastructure includes some concrete drinking troughs and a concrete reservoir. There are no significant landscape features occurring on the property. Surrounding land use comprises agriculture, natural veld to the west and the Langebaan Airport to the east.



Figure 70. Block F. View facing south



Figure 71. Block F. View facing south west



Figure 72. Block F. View facing west



Figure 75. Block F. View facing north



Figure 73. Block F. View facing south east



Figure 76. Block F. View facing east



Figure 74. Block F. View facing west



Figure 77. Block F. View facing east



Figure 78. Block F. View facing south



Figure 80. Block F. View facing west



Figure 79. Block F. View facing south



Figure 81. Block F. View facing north east

Block G: Comprises old agricultural lands situated alongside (i.e. north of) the R45 and directly west of the Langebaanweg Airport road (Figures 82 - 87). Until recently the lands were covered in wheat, but have since been harvested. The site is fairly level, but slopes slightly from west to east and is characterised by loose unconsolidated sands. There is some natural vegetation in the western portion of the Block, where it borders the large corridor of dunes and natural veld (alongside Block E). There is some surface stone on the property, mainly small nodules of calcrete and some surface calcrete alongside the Langebaanweg Airport Road. There are no significant landscape features on the site. The surrounding land use comprises agriculture and the Langebaan Air Force base.



Figure 82. Block G. View facing west



Figure 85. Block G. View facing north east



Figure 83. Block G. View facing south west



Figure 86. Block G. View facing north east



Figure 84. Block G. View facing south



Figure 87. Block G. View facing east

Block H: Comprises old agricultural lands situated alongside (i.e. south of) the R45 that have not been utilized for some years (Figures 88 & 89). The site is level and is characterised by loose unconsolidated sands. Dune mole rate activity is extensive over the site. There is virtually no natural vegetation on the land. There are no significant landscape features on the site. The surrounding land use comprises agriculture. The land is currently being grazed by sheep and ostrich and is heavily trampled in parts.



Figure 88. Block H. View facing west



Figure 89. Block H. View facing south

Block I: Comprises a large block of agricultural lands that until recently were covered in wheat fields (Figures 90-97). The site is mostly flat, but slopes gently from south – north. There is virtually no natural vegetation on the land, but a few sporadic trees occur in places. The soils are very loose and sandy. Natural veld occurs alongside the western and southern boundary. Some remnant sand dunes occur in the north western corner but these have been quite severely damaged by 4 x 4 activity. There is some dispersed surface calcrete (mainly small nodules and chunks), but this occurs mainly near the eastern boundary (adjacent to Block J).



Figure 90. Block I. View facing north west



Figure 91. Block I. View facing south



Figure 92. Block I. View facing south



Figure 95. Block I. View facing north



Figure 93. Block I. View facing north



Figure 96. Block I. View facing south west



Figure 94. Block I. View facing south



Figure 97. Block I. View facing south

Block J: Comprises mostly old agricultural lands that have lain fallow for some years, but a long wide strip in the east and south was recently harvested for wheat (Figures 98 – 105). The site lies adjacent (i.e. west of) the road to Langebaan and alongside (i.e. south of) the R45. Natural veld occurs alongside the southern boundary. There are some remnant sand dunes in the south eastern corner of the site. The site is fairly level, but does slope gently from south to north. It is also contoured in the south. Old plough lines are evident. There is some calcrete (nodules and chunks) alongside the Langebaan road and alongside the R45, while some thin and dispersed scatters of calcrete occur sporadically over the remainder. Some surface calcrete is exposed in the central portion. There is virtually no natural vegetation on the land, apart the natural sporadic vegetation in the south east. A few (wild olive) trees occur sporadically in the east. There are no significant landscape features on the site. Surrounding land use comprises agriculture. Much of the land is currently being grazed by sheep.



Figure 98. Block J. View facing south



Figure 100. Block J. View facing north



Figure 99. Block J. View facing east



Figure 101. Block J. View facing north



Figure 102. Block J. View facing north west



Figure 104. Block J. View facing south



Figure 103. Block J. View facing west



Figure 105. Block J. View facing south

Block K: Comprises old agricultural lands. The northern portion of the farm was recently harvested for wheat, while the southern portion has not been utilized for some years (Figures 106-110). The triangular-shaped site is flat and lies adjacent to the Langebaan road and alongside (i.e. south of) the R45. The site is covered with large numbers of loose, calcrete, of which large piles are stacked alongside the Langebaan road next to a concrete reservoir and windmill. Some surface calcrete occurs in places. The site is quite heavily overgrazed and trampled in the south. There, are no significant landscape features on the site. Surrounding land use comprises agriculture.



Figure 106. Block K. View facing north



Figure 108. Block K. View facing south



Figure 107. Block K. View facing north west



Figure 109. Block K. View facing north east



Figure 110. Block K. View facing south west

4. APPROACH TO THE STUDY

4.1 Method

The focus of the archaeological study was on the proposed 399 ha target area (Phase 2a) which was searched in detail (see Figure 3), while the non-target area (Phase 2b) was scanned for archaeological remains.

The proposed target area corresponds to Block E and Block F.

The site visit and assessment took place over six days, on the 22nd and 23rd, 27th and 28th January and 23rd and 26th February, 2009.

A desktop study was also undertaken.

4.2 Constraints and limitations

There were no constraints or limitations associated with the archaeological study.

4.3 Identification of potential risks

- Vertebrate fossils (bones) may possibly be uncovered or exposed should test excavations penetrate into limestone deposits and associated fossil-bearing sediments.

4.4 Results of the desk top study

Several archaeological impact assessments have been undertaken on properties close to the proposed phosphate mine. A few Early Stone Age (ESA) tools were documented on a large portion of land alongside the R27 (Kaplan 2007a). A Later Stone Age (LSA) site with a few stone flakes and some ostrich eggshell was recorded in a wind deflated sand basin overlooking the south western boundary of Langeberg Farm (refer to archaeological site in Figure 2). A few ESA and Middle Stone Age (MSA) tools were also documented during the study of the proposed Parklands Industrial Development alongside the Orex Rail Terminal in Vredenburg, (Kaplan 2008a) while some dispersed LSA flakes were counted during an assessment of a proposed sand mine alongside the R45 in Vredenburg (Kaplan 2008b). All these occurrences were characterised by very low density scatters in highly disturbed (agricultural) environments.

Close to the coast, however, the density and visibility of archaeological remains is much higher. Scatters of shellfish and LSA flakes were documented on the Farm Pienaars Poort in Saldanha Bay (Kaplan 2006a, 2007b). LSA flakes, ostrich eggshell and pottery were found among the Spreeuwal Dunes about 2.5 km south east of Blue Water Bay in Saldanha Bay (Kaplan 1994). LSA artefacts, glass, ceramics and other domestic items were documented at Salamander Cove in Saldanha Bay (Kaplan 1997a). MSA and LSA flakes were documented on the Duferco Steel Mill site (Kaplan 1997b) in the Saldanha Industrial Development Zone (IDZ). ESA MSA, and LSA tools and pottery were documented monitoring of construction activities at Saldanha Steel (Kaplan 1996a). A surface collection of glass, ceramics, bone, buttons and other artefacts from a late 19th century shepherds hut (veewagterhuis) was also carried out at Saldanha Steel (Kaplan 1996b).

Middle Pleistocene occurrences and the recovery of human remains in the limestone deposits at Sea Harvest, in Saldanha Bay, has also provided some of the earliest evidence we have in the world for the human exploitation of coastal resources, more than 100 000 years ago (Grine & Klein 1993; Volman 1978).

Beside evidence of well preserved bone, ostrich eggshell, ochre and MSA stone implements, the Hoedjiespunt (limestone) sediments in Saldanha Bay also contains evidence of early modern human about 125 000 years ago (Berger & Parkington 1995).

5. FINDINGS

Block A: One Early Stone Age quartzite flake was found alongside the railway line in the far north western portion of the site.

Some fragmented fossil bone was found in the old limestone quarry opposite the Transnet Iron Ore Railway Line west of the R27 (see Figure 2).

Block B: No archaeological remains were documented in Block B.

Block C: No archaeological remains were documented in Block C.

Block D: No archaeological remains were documented in Block D.

Block E: No archaeological remains were documented in Block E.

Block F: One Middle Stone Age (MSA) quartzite flake was found in the small gravel road leading to the abandoned farm workers cottage. One broken quartzite MSA flake was found among a surface scatter of calcrete and Koffieklip to the north of the workers cottage, while one ESA flake was found among several large piles of Koffieklip about 150 m north west of the farm workers cottage.

Block G: No archaeological remains were documented in Block G.

Block H: No archaeological remains were documented in Block H

Block I: No archaeological remains were documented in Block I

Block J: One broken quartzite cobble and one partially ground rounded quartzite cobble was found in a small sand track on the northern boundary of the Black J. Block J borders natural veld and stable dunes and it is possible that some sites may occur in this area.

Block K: No archaeological remains were documented in Block K.

The archaeological remains have been rated as having low local significance

5.1 Other finds

The remains of an abandoned and neglected farm workers cemetery was located in Block F, in a slight depression about 25m north of the railway line, and about 350m south of the ruined workers cottage (see Figure 2 and Figure 111). Sadly this 'site' has been severely damaged by ploughing activities, but the integrity of the site (as a place of memory) remains intact (Figures 112-113). At least 35 graves (or their remains) were counted in three defined rows in a north-south axis, all of them comprising mounds or loose piles of Koffieklip¹. Some glass jars, broken pieces of glass and small pieces of bleached marine shellfish are scattered about, as well as one small wooden cross. Some rusted fencing was also noted. A few of the graves have Koffieklip head and footstones, while much Koffieklip is dispersed over a fairly wide area (most likely the result of ploughing activities). One concrete cross, bearing the name of Daniel Rapitsh – died 31-9-1962, was also identified (Figure 114). The surrounding area has been heavily trampled and overgrazed. A few sporadic trees and bush are scattered about, while a large pile of calcrete and Koffieklip is located alongside the graves, on the western side.

All burials sites and graves are protected under the National Heritage Resources Act (No of 1999) and may not be damaged or disturbed without a permit issued by the South African Heritage Resources Agency (SAHRA).

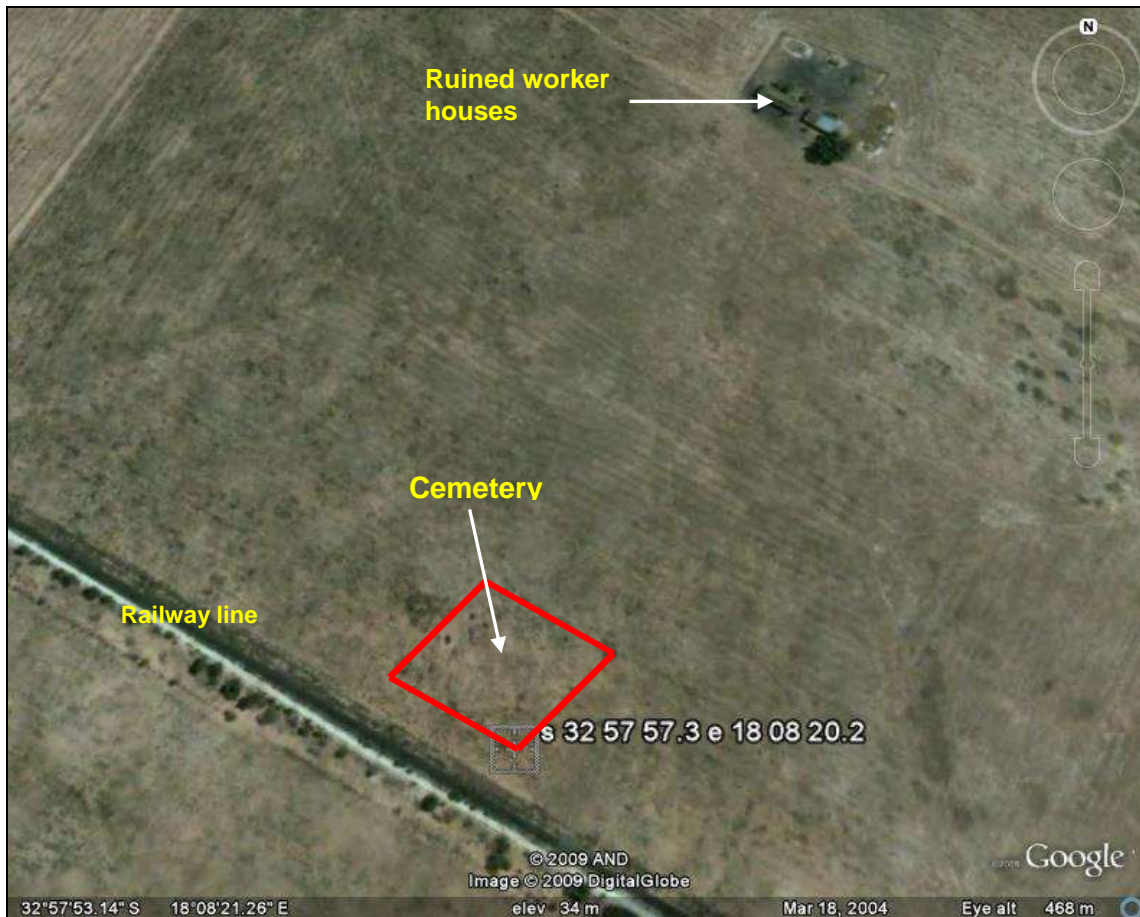


Figure 111. Aerial photograph showing the location of the grave site

¹ GPS co-ordinates for four corners of the cemetery have been taken by the archaeologist



Figure 112. Grave site facing north west



Figure 114. Grave site facing south



Figure 113. Grave site facing east



Figure 115. Concrete cross in the foreground

6. IMPACT STATEMENT

The Phase 1 Archaeological Impact Assessment has identified no significant impacts to pre-colonial archaeological material that will need to be mitigated prior to the proposed prospecting for grade exploitable phosphate. It is estimated that more than 95% of the proposed site has already been transformed and modified as a result of farming activities.

The probability of locating important pre-colonial archaeological heritage remains during implementation of the project is likely to be **low**.

Unmarked pre-colonial human burials may possibly be uncovered or exposed during earthmoving operations.

Potentially important vertebrate fossils (bones) may be uncovered or exposed should test excavations penetrate or intersect any limestone or associated fossil bearing sediments.

Prospecting in the `target area' (Block F) alongside the railway line (refer to Figure 2 and 3) will definitely impact on the abandoned farm labourers cemetery.

7. RECOMMENDATIONS

With regard to the proposed prospecting for phosphate on Portions 7 and 12 of the Farm Langeberg 185 and Farm 1043 Langeberg (Malmesbury District), the following recommendations are made.

- A specialist palaeontologist must be appointed to inspect and examine all prospecting test pits, for possible vertebrate fossils (bones).
- The farm workers cemetery must be fenced off prior to any planned prospecting on the property and must remain fenced off and protected in perpetuity.
- Should any human remains be disturbed, exposed or uncovered during excavations and earthworks, these must immediately be reported to the archaeologist or the South African Heritage Resources Agency (Dr A. Jerardino @ 021 462 4502).

These measures must be included in the Environmental Management Plan (EMP) for the proposed project.

8. REFERENCES

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