

**HERITAGE IMPACT ASSESSMENT FOR THE
PROPOSED CONSTRUCTION OF A SICK BAY
FACILITY ON FARM 284/2
SALDANHA BAY**

Assessment conducted under Section 38 (3) of the National Heritage
Resource Act (No. 25 of 1999)

Prepared for:

FOOTPRINT ENVIRONMENTAL SERVICES

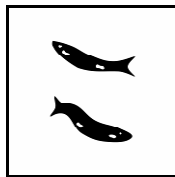
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**DECEMBER
2011**

Executive summary

Footprint Environmental Services requested that the Agency for Cultural Resource Management conduct a Heritage Impact Assessment (HIA) for the proposed construction of a new military sick bay facility on Farm 284/2 in Saldanha Bay in the Western Cape.

The HIA is part of the EIA process that is being conducted by Footprint Environmental Services.

Farm 284 is located within the grounds of the Saldanha Bay Military Academy in Saldanha Bay. The extent of the proposed footprint area is about 6000 m², and the total area to be developed is about 3100 m².

The proposed site is located alongside the main entrance road to the military academy adjacent a small shopping complex and parking area. There are no significant landscape features on the proposed site, which is quite severely degraded.

A Notification of Intent to Develop (NID) was completed by Footprint Environmental Services and submitted to Heritage Western Cape (HWC) Impact Assessment Review Committee (IARCom), for comment.

In a letter dated 16 November (Case No. 111027 JL18) HWC requested that a HIA, including a historic and stone age archaeology, and palaeontology study must be done.

In terms of the historic archaeology, there is no evidence of any historic archaeology on the proposed site. There are no buildings, structures, foundations, or features such as middens/ash/rubbish dumps on the subject property. No historical artefacts such as glass, buttons, or ceramics were found during the study. There are no visible graves on the proposed site.

According to the Palaeontological Impact Assessment (PIA) – desk top study that was undertaken by Dr John Pether, Farm 284/2 has low fossil potential and any sub-surface fossil bone and shell that may be exposed during diggings, is likely to be in an archaeological context.

With regard to the Stone Age archaeology, the HIA has shown that the most significant impact will be to the pre-colonial archaeological heritage.

Later Stone Age (LSA) shell midden deposits occur across much of the northern portion of the proposed site, but are very thinly dispersed over the landscape. The remains are associated with large dune mole rat heaps and it is clear that sub-surface archaeological deposits occur on the site. Most of the surface remains, however, comprise just a few fragments of weathered shellfish, but several thin, barely visible scatters of shellfish and some large whole shell were recorded among the thick dry grass. The shellfish is dominated by limpets, with small amounts of Black Mussel, perlemoen, whelk and barnacle. Some bone including tortoise, bird and seal was also found. Larger volumes of crushed, fragmented and weathered shellfish were also documented alongside the gravel road that cuts across the northern portion of the proposed site. Apart from one or two barely visible scatters of shellfish, the southern portion of the property appears devoid of archaeological remains. A small number of lithics were found, and these

comprise mostly flakes, chunks and a few utilised pieces, in quartz, quartzite, shale, and silcrete. In the formal tool category, one silcrete backed point and one silcrete high backed/boat shaped scraper was found. One fragment of ostrich eggshell, and one very small piece of undecorated pottery was also logged.

Farm 284/2 is also located less than 2 kms north east of the LSA site known as Diaz Street Midden (or DSM), where the lowermost deposits are dated to between 5000 and 6000 years ago. Thousands of stone flakes, including many micro-lithic tools such as retouched scrapers and backed pieces were recovered from the rescue excavation, including the complete and partial remains of six skeletons. Despite its almost total destruction, DSM was rated as having high local (Grade 3 A) significance,

It is conceivable, given the presence of backed tools that Farm 284/2 may date to the same time period as DSM. Unmarked human remains may also be uncovered during earthworks and excavations for foundations and services.

Subject to the approval of Heritage Western Cape, the following recommendations are therefore made:

Pre-colonial archaeology

1. Sampling and dating, by way of test excavations, of archaeological deposits across the northern portion of the proposed site, where shellfish deposits are associated with extensive dune mole rat activity.

Sampling should also take place alongside the gravel road that cuts across the northern portion of the site, where fairly large volumes of crushed and fragmented shellfish occur.

A grid line should be laid along the Saldanha Road and sampling of archaeological deposits in 1 x 1 m squares should take place every 10-15 m along the gridline. Essentially, archaeological material must be examined by sub-surface testing to determine the extent of the pre-colonial archaeological occupation. Sampling along the grid line will indicate how variable shell densities are across the site. Where sub-surface shellfish densities are determined to be high, at least 3-4 more squares should be sampled in that area.

Should significant sub-surface archaeological deposits and cultural remains be encountered during test sampling, further sampling may be recommended by the archaeologist.

2. Bulk earthworks and excavations must be monitored by the archaeologist. Failure to do so may result in the loss of irretrievable archaeological deposits and associated remains.

3. Should any unmarked human remains be disturbed, exposed or uncovered during excavations, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or Heritage Western Cape (Ms Jenna Lavin or Mr Justin Bradfield 021 4839685). Burials must not be disturbed or removed until inspected by the archaeologist.

4. The ECO (Environmental Control Officer) must be briefed by the archaeologist prior to any earthworks commencing. This is very important so as not to have a repeat of the Diaz Police Station fiasco where important deposits were destroyed and a number of burials uncovered.

Palaeontology

1. The contracted Monitoring Archaeologist (MA) can monitor for the presence of fossils and make a field assessment of any material brought to attention. The MA is sufficiently informed to identify fossil material and this avoids additional monitoring by a palaeontologist.

2. The MA is the responsible field person and fulfils the role of liaison with the palaeontologist and coordinates with the developer and the Environmental Control Officer (ECO). If fossils are exposed in non-archaeological contexts, the palaeontologist Dr John Pether (083 744 6296) should be summoned to document and sample/collect them.

Historic archaeology

1. No mitigation action is required.

DECLARATION OF INDEPENDENCE

The author, Jonathan Michael Kaplan, is an independent specialist consultant who is in no way connected with the proponent, other than in terms of the delivery of consulting services.

The author currently holds a Masters degree in archaeology from the University of Cape Town and has been consulting since 1990. He is accredited as a Principal Investigator (PI) with the Association of Southern African Professional Archaeologists (ASAPA).

The Agency for Cultural Resource Management has been registered since 1992.

A handwritten signature in black ink, appearing to be 'JMK', located below the text of the declaration.

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1. INTRODUCTION

1.1 Background and brief

Footprint Environmental Services, on behalf of the National Department of Public Works, requested that the Agency for Cultural Resource Management (ACRM) conduct a Heritage Impact Assessment (HIA) for the proposed construction of a new military sick bay facility on Portion 2 of Farm 284 in Saldanha Bay in the Western Cape (Figures 1 & 2).

The HIA is part of the EIA process that is being conducted by Footprint Environmental Services.

The South African National Department of Defence (SANDF) intends to construct a new sick bay facility at the Saldanha Bay Military Base in Saldanha Bay. The current sick bay facility in town has fallen into disrepair and is not able to provide the required services. A site (Farm 284/2) has therefore been identified for the construction of a new facility.

The proposed facility will comprise a single building with an administrative section, waiting rooms, clinic, pharmacy, a playroom, staff lounge and kitchen, a functional support area and an area for data capturing and filing/archive for patient records.

The extent of the proposed footprint area is about 6000 m², and the total area to be developed is about 3100 m².

The proposed site is zoned for Military Use, but has lain vacant for many years. It has never been developed and is part of the more than 500 ha of land inside the base that is currently administered by the SANDF.

A Notification of Intent to Develop (NID) was completed by Footprint Environmental Services and submitted to Heritage Western Cape (HWC) Impact Assessment Review Committee (IARCom), for comment.

In a letter dated 16 November (Case No. 111027 JL18) HWC requested that a HIA, including a historic and stone age archaeology and palaeontology study must be done¹.

2. LEGAL FRAMEWORK

The National Heritage Resources (NHR) Act requires that "...any development or other activity which will change the character of a site exceeding 5 000m², or the rezoning or change of land use of a site exceeding 10 000 m², requires an archaeological impact assessment.

¹ Dr John Pether was commissioned to undertake a Palaeontological Impact Assessment (PIA) – desk top study of the proposed development. Refer to Appendix II

Heritage Impact Assessment, Farm 284/2 Saldanha Bay



Figure 1. Locality map



Figure 2. Google aerial photograph indicating the local context of the study site

3. THE STUDY SITE

Farm 284/2 is located within the grounds of the Saldanha Bay Military Academy (Figures 3-8). Access to the property is through the security gate at the entrance to the facility.

The proposed site is situated at the end of Saldanha Road adjacent to a small shopping complex and parking area. The site is less than 500 m from the coast. The proposed site is a flat, featureless, pie-shaped piece of land, and is quite severely degraded. It is covered in thick dry grass, scrub vegetation and succulent ground cover. A few sporadic Blue gum trees occur in places. A gravel road intersects the site in the north. Extensive grading and scraping has taken place alongside the shopping complex. Some diggings have also taken place in the south east. A long drainage channel has been excavated through the northern portion alongside the shopping centre. Dune mole rat activity is extensive across the site, where the deposits are quite loose, sandy and gritty. There are also some loose pieces of limestone on the property where the road has been scraped, but no outcroppings or exposures of limestone occur on the site. There are no old buildings or structures, or any historic features on the site. Surrounding land use is sports fields, schools, residential properties and large tracts of vacant land.



Figure 3. Google aerial photograph of the study site



Figure 4. View of the site facing south. The parking lot is to the right of the plate



Figure 5. View of the site facing south west.



Figure 6. View of the site facing north west.



Figure 7. View of the site facing south east



Figure 8. View of the site facing north east

4. TERMS OF REFERENCE FOR THE STUDY

The terms of reference for the historic and stone age archaeology study were:

- To determine whether there are any archaeological remains on the proposed site;
- To identify and map any archaeological remains on the proposed site;
- To assess the significance of archaeological remains on the proposed site;
- To assess the significance of any impacts resulting from the proposed development, and
- To identify measures to protect any valuable archaeological remains that may exist on the proposed site.

5 STUDY APPROACH

5.1 Method

The approach followed in the archaeological study entailed a detailed and systematic foot survey of the proposed development site. A GPS track path of the survey was also created (refer to Figures 14 & 15 in Appendix I).

The site visit and assessment took place on the 6th December, 2011.

Archaeological remains were documented using a Garmin Oregon 300 GPS unit, set on map datum wgs 84. Not every fragment of shellfish, stone, or piece of bone was plotted by the archaeologist, but notable finds were logged.

A desk top study was also done.

5.2 Constraints and limitations

There were no constraints or limitations associated with the study. While much of the site is covered in thick dry grass, scrub and ground cover (especially in the southern portion), overall, archaeological visibility was still quite good.

5.3 Identification of potential risks

Shell midden deposits and unmarked pre-colonial human burials may be exposed or uncovered during excavations for services and foundations. It is noted that six Khoisan skeletons were recovered from the site of the Saldanha Bay Police station in Diaz Street in town, including the remains of shell midden deposits of high local (Grade 3 A) significance (Orton 2009).

5.4 Results of the desk top study

Since the mid-1990s, AIAs have been conducted in Saldanha Bay, north of the iron ore terminal (Kaplan 1994, 1996, 1997a, 2007a), where archaeological remains assigned mainly to the Early and Middle Stone Age have mostly been documented. Later Stone Age sites have also been recorded on and nearer to the coast south of the town (Kaplan 1997b, 1998, 2006, 2007b) where the remains typically comprise dispersed scatters of shellfish, a few stone artefacts, ostrich eggshell and pottery. None of these sites has been dated. There are also shell middens with stone artefacts dating to the Middle Stone Age (MSA) in Saldanha Bay. The evidence from Sea Harvest and Hoedjiespunt (in the harbour), for example, has provided some of the earliest evidence we have in the world for the human exploitation of coastal resources, more than 100 000 years ago. Beside evidence of well preserved bone, ostrich eggshell, ochre and stone implements, the Sea Harvest and Hoedjiespunt sediments also contains evidence of early modern human about 125 000 years ago (Grine & Klein 1993; Volman 1978; Berger & Parkington 1995).

There have not been many studies done in the Saldanha Bay Military Academy, but (damaged) shell middens were recorded by the archaeologist along the sandy and occasional rocky shoreline inside the military base. Bateman (1946) also documented several LSA middens in the vicinity of the site, as well as a few MSA occurrences. But it is the recent 'rescue' excavations and recovery of six Later Stone Age Khoisan

skeletons from the Diaz Street Midden (Orton 2009; Dewar 2009) that has re-focused attention on the important LSA industry in Saldanha Bay. More than 4000 stone artefacts were recovered from the small excavation (the site of the new Saldanha Bay Police Station), where tragically a large portion of the archaeological deposits had already been destroyed during construction work. While all of the recent upper deposits (probably dating to the last 2000-3000 years) were destroyed during initial earthworks, some of the underlying deposits were still intact by the time the archaeologists were notified, when the first of the burials were uncovered. These deposits were later dated to between 5000 and 6000 years ago, and comprised several thousand stone artefacts (including many retouched tools such as scrapers and backed artefacts), of which more than 95% were in silcrete. Ostrich eggshell (OES) beads, decorated fragments of OES and some worked bone were also found, as well as subsistence remains including shellfish, crayfish, terrestrial and marine fauna.

6. FINDINGS

6.1 Stone Age archaeology

Despite the fairly degraded nature of the proposed site, shell midden deposits and small numbers of stone implements, bone and other organic remains were documented during the study of Farm 284/2 (refer to Figures 14 and 15 in Appendix I).

Apart from one or two barely visible scatters of shellfish, the southern portion of the site appears devoid of archaeological remains.

Site 345 (S 33° 01' 466" E 17° 55' 908")

Shell midden deposits occur across much of the northern portion of the proposed site adjacent to the small convenience store and alongside Saldanha Road. These deposits are very thin on the ground, and barely visible among the thick dry grass. The deposits are associated with dune mole rat activity which is quite extensive in the surrounding area and are overlain by loose gritty, sands. Most of the shellfish comprises just a few small pieces of weathered shellfish, which have been brought to the surface by the rodents, but several slightly more visible scatters are discernable (Figures 9-11). While mostly small fragments, a few large whole shells also occur. The shellfish is dominated by the limpets Scutellastra argenvillei, with some Cymbula granatina, C. miniata and S cochlear occurring in smaller numbers. Smaller quantities of Black Mussel (Choromytilus meridionalis), perlemoen (Haliotis), whelk and barnacle were also noted. Some of the dune mole dumps were sifted by the archaeologist, and a few fragments of shellfish and some whole shell were uncovered, including several stone flakes. Shellfish fragments are also present in the long drainage channel that has been excavated alongside the parking area.

Crushed and fragmented weathered shellfish also occur alongside the gravel road that cuts across the northern portion of the property, adjacent to the small store (refer to Figure 13). It is unclear whether these deposits were originally on the surface, or brought to the surface by dune mole rats and later crushed during construction of the road.

About 25 stone implements were counted among the dune mole rat heaps alongside Saldanha Road. Waste pieces including flakes, chunks, chips, broken cobbles, and a few cortex flakes in silcrete, quartz, quartzite and shale make up the majority of the lithics, while several utilised and miscellaneous retouched silcrete flakes were also counted. While the numbers of formal retouched tools is very low, the types of tools found are quite telling. One silcrete backed point (347), and one silcrete high backed/boat shaped scraper (346) were found (Figure 12). A hammerstone and a possible broken bored stone fragment were also counted. Only one piece of ostrich eggshell was found. Some bone, including tortoise, bird and possibly seal were also identified.

Site 348 (S 33° 01' 536" E 17° 55' 848")

One quartz chip and a few fragments of weathered shellfish, including two large whole limpets (*S. argenvillei*) were found among a series of dune mole rat dumps alongside Boonzaier Street, in the south western portion of the site.

Site 349 (S 33° 01' 567" E 17° 55' 895")

A very thin scatter of shellfish, dominated by a few large whole weathered, *Patella* (*S. argenvillei*) and a few smaller fragments of weathered *S. argenvillei* and *C. granatina* occur in the much more vegetated south eastern portion of the property. A few fragments of Black Mussel were also counted. One broken shale flake and one very small piece of blackened undecorated pottery were also found.

Site 350 (S 33° 01' 617° E 17° 55' 899")

A very thin scatter of a few fragments of weathered shellfish and a few whole shells (*S. argenvillei*) occurs in the south eastern corner of the proposed site. No cultural items were found.



Figure 9. Site 345 alongside Saldanha Road. View west



Figure 10. Site 345 alongside Saldanha Road. View north west



Figure 11. Site 345 alongside Saldanha Bay Road. View north



Figure 12. Cultural remains from Farm 284/2. Scale is in cm



Figure 13. The main archaeological observations described in the text. The red dashed circle indicates more or less the extent of the visible remains in the northern portion of the study site alongside the parking area and Saldanha Road.

6.2 Significance of the archaeological remains

Given the Diaz Shell Midden (DSM) experience where important shell midden deposits were destroyed during construction of the Saldanha Bay Police Station; the archaeological remains on Farm 284/2 have been provisionally rated as having high (Grade 3 B) local significance.

The boat-shaped/high backed scraper and backed point suggests that underlying (sub-surface) deposits on Farm 284/2 may also date to between 6000 and 5000 years ago, the same age as the lower most deposits at DSM.

The presence of pottery also indicates that the site was occupied after 2000 years ago.

Excavations at Lentjiesklip (Hart 2001, 1997; Parkington *et al* 1988) on the eastern shore, of the Langebaan Lagoon, for example, show that shell middens in the region date to between 4000 and 1800 years ago, some of which have been found buried up to three metres below the sand body.

6.3 Historic archaeology

There is no evidence of any historic archaeology on the site. There are no buildings, structure, foundations, features (such as middens/ash/rubbish dumps), or any old equipment on the proposed site.

No historical artefacts such as glass, buttons or ceramics, or any metal items were found during the baseline study.

There are no visible graves on the proposed site.

There is some fairly extensive dumping of (modern) building rubble alongside the gravel road on the eastern boundary of the property, but this material has not originated from the proposed site, and was brought in from elsewhere.

6.4 Palaeontology

The Palaeontological Impact Assessment (PIA)² desk top study has shown that no significant palaeontological material is expected to occur during implementation of the proposed project.

Bulk earthworks will disturb the geologically young cover sand and according to consulting palaeontologist, Dr John Pether (2012), any sub-surface fossil bone and shell that are exposed during construction activities, is likely to be in an archaeological context.

² Refer to Appendix II for full report

7. IMPACT STATEMENT

The HIA has shown that the most significant impact will be to the archaeological heritage.

Shell midden deposits associated with dune mole rat dumps indicates that there is archaeological material in a sub surface context.

Unmarked human remains/burials may also be uncovered during earthworks and excavations for foundations and services.

The PIA desk top study has shown that the proposed site has low fossil potential. Any sub-surface fossil bone and shell is likely to be in an archaeological context

The historic archaeology study has shown that there is no evidence of any historic archaeology on the site.

8. RECOMMENDATIONS

With regard to the proposed construction of a new sick bay facility on Farm 284/2 in Saldanha bay, the following recommendations are made:

Stone Age Archaeology

1. Sampling and dating, by way of test excavations, of archaeological deposits across the northern portion of the proposed site, where shellfish deposits are associated with extensive dune mole rat activity.

Sampling should also take place alongside the gravel road that cuts across the northern portion of the site, where fairly large volumes of crushed and fragmented shellfish occur.

A grid line should be laid along the Saldanha Road and sampling of archaeological deposits in 1 x 1 m squares should take place every 10-15 m along the gridline. Essentially, archaeological material must be examined by sub-surface testing to determine the extent of the pre-colonial archaeological occupation. Sampling along the grid line will indicate how variable shell densities are across the site. Where sub-surface shellfish densities are determined to be high, at least 3-4 more squares should be sampled in that area.

Should significant sub-surface archaeological deposits and cultural remains be encountered during test sampling, further sampling may be recommended by the archaeologist.

2. Bulk earthworks and excavations must be monitored by the archaeologist. Failure to do so may result in the loss off irretrievable archaeological deposits and associated remains.

3. Should any unmarked human remains be disturbed, exposed or uncovered during excavations, these must immediately be reported to the archaeologists (Jonathan Kaplan 082 321 0172), or Heritage Western Cape (Ms Jenna Lavin or Mr Justin

Bradfield (021) 483 9685). Burials must not be disturbed or removed until inspected by the archaeologist.

4. The ECO (Environmental Control Officer) must be briefed by the archaeologist prior to any earthworks commencing. This is very important so as not to have a repeat of the Diaz Police Station fiasco where important deposits were destroyed and a number of burials uncovered.

Palaeontology

1. The contracted Monitoring Archaeologist (MA) can monitor for the presence of fossils and make a field assessment of any material brought to attention. The MA is sufficiently informed to identify fossil material and this avoids additional monitoring by a palaeontologist.

2. The MA is the responsible field person and fulfils the role of liaison with the palaeontologist and coordinates with the developer and the Environmental Control Officer (ECO). If fossils are exposed in non-archaeological contexts, the palaeontologist Dr John Pether (083 744 6296) should be summoned to document and sample/collect them.

Historic archaeology

1. No mitigation action is required.

9. REFERENCES

Bateman, P. 1946. Archaeological notes on the Saldanha Bay District. South African Archaeological Bulletin 1: 41-45.

Dewar, G. 2010. Late Holocene burial cluster at Diaz Street Midden, Saldanha Bay, Western Cape, South Africa. South African Archaeological Bulletin 65:191 26-34

Hart, T. 1997. Phase 2 archaeological excavations at Lentjiesklip 2, Langebaan. Report prepared for Langebaan Waterfront (Pty) Ltd. Archaeology Contracts Office, University of Cape Town.

Hart, T. 2001. Phase 2 archaeological excavations at Lentjiesklip 3, Club Mykonos, Langebaan. Report prepared for CML Developers (Pty) Ltd. Archaeology Contracts Office University of Cape Town.

Kaplan, J. 1994. Saldanha Steel Project Phase 2 Environmental Impact Assessment – Archaeological Study. Report prepared for CSIR Environmental Services. Agency for Cultural Resource Management

Kaplan, J. 1996. Archaeological investigation, Saldanha Steel Project. Report prepared for van Riet and Louw Landscape Architects. Agency for Cultural Resource Management. Riebeek West.

Kaplan, J. 1997a. Archaeological Study: Duferco Steel Mill Project. Report prepared for Duferco. Agency for Cultural Resource Management. Riebeek West

Kaplan, J. 1997b. Archaeological Survey: Salamander Cove. Report prepared for Salamander Cove Development Company (Pty) Ltd. Agency for Cultural Resources Management. Riebeek West

Kaplan, J. 1998. Archaeological Study Proposed Public Access Road to the Port of Saldanha. Report prepared for Crowther Campbell and Associates. Agency for Cultural Resource Management. Riebeek West

Kaplan, J. 2006. Phase 1 Archaeological Impact Assessment proposed development Portion 5 of the Farm Pienaars Poort No. 197. Report prepared for IC @ Plan. Agency for Cultural Resource Management. Riebeek West

Kaplan, J. 2007a. Phase 1 Archaeological Impact Assessment Proposed development Harbour View Industrial Park Sal Dan Ha Bay Portion 9 of Farm No. 957, Malmesbury. Report prepared for Enviro Logic. Agency for Cultural Resource Management. Riebeek West.

Kaplan, J. 2007b. Phase 1 Archaeological Impact Assessment proposed development Portion 13 of the Farm Pienaars Poort No. 197 Saldanha Bay. Report prepared for Creative Profile. Agency for Cultural Resource Management. Riebeek West

Orton, J. 2009. Rescue excavations at Diaz Street Midden Saldanha Bay, South Africa. Azania: Archaeological Research in Africa. 44:1 107-120

Parkington, J., Poggenpoel, C. & Hart, T. 1988. Report on the first phase of excavations at Lynch Point, Langebaan. Report prepared for Club Mykonos, Langebaan. Archaeology Contracts Office, University of Cape Town.

Pether, J. 2012. Brief Palaeontological Impact Assessment. Proposed establishment of sick bay, Saldanha Military Base, Farm 284, Portion 2, Vredenburg District, Western Cape. Kommetjie

Appendix I



Figure 14. GPS track path and illustration of waypoints. The proposed site in relation to the nearby shoreline.



Figure 15. Track paths and illustration of GPS waypoints

Appendix II

BRIEF PALAEOLOGICAL IMPACT ASSESSMENT

**PROPOSED ESTABLISHMENT OF SICK BAY, SALDANHA MILITARY
BASE, FARM 284 PORTION 2, VREDENBURG DISTRICT, WESTERN
CAPE**

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4 JANUARY 2012

HWC CASE NO. 111027JL18

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SUMMARY

The context of this report is the proposed new Sick Bay within the Saldanha Military Base. The current sick bay facilities are aged and in a state of disrepair. Mr Charl du Plessis of Footprint Environmental Services is conducting the EIA process for the proposed development. In response to the Notification of Intent to Develop (NID) submitted to Heritage Western Cape (HWC), the latter issued a decision to the effect that a palaeontological assessment is required (HWC CASE NO. 111027JL18).

Figure 1 shows the location of the proposed new Sick Bay, presented as Alternative 1, the preferred alternative. The repair of the existing sick bay (Alternative 2) is not preferred because, in addition to its state of dilapidation, it has proved to be a security risk.

Bulk earth works at the proposed new Sick Bay site will disturb the geologically young coversand unit Q1. This has low fossil potential. When sub-fossil bone and shell is encountered in Q1 it is likely to be in an archaeological context. (The same applies to the existing sick bay site.)

The Archaeological Impact Assessment (AIA) recommends that the bulk earthworks be monitored for the occurrence of archaeological material (Jonathan Kaplan, pers. comm.). This is deemed adequate as such monitoring will also identify any material in a palaeontological context.

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DECLARATION

The author, John Pether, is an independent consultant/researcher and is a recognized authority in the field of coastal-plain and continental-shelf palaeoenvironments and is consulted by exploration and mining companies, by the Council for Geoscience, the Geological Survey of Namibia and by colleagues/students in academia pursuing coastal-plain/shelf projects.

Expertise

- Shallow marine sedimentology.
- Coastal plain and shelf stratigraphy (interpretation of open-pit exposures and on/offshore cores).
- Marine microfossil taxonomy (molluscs, barnacles, brachiopods).
- Marine microfossil taphonomy.
- Sedimentological and palaeontological field techniques in open-cast mines (including finding and excavation of vertebrate fossils (bones)).
- Analysis of the shelly macrofauna of modern samples e.g. for environmental surveys.

Membership Of Professional Bodies

- South African Council of Natural Scientific Professions. Earth Science. Reg. No. 400094/95.
- Geological Society of South Africa.
- Palaeontological Society of Southern Africa.
- Southern African Society for Quaternary Research.
- Heritage Western Cape. Member, Permit Committee for Archaeology, Palaeontology and Meteorites.
- Accredited member, Association of Professional Heritage Practitioners, Western Cape.

The author does not have any financial interest in the undertaking of the activity, other than the remuneration for the compilation of this report.

1. Introduction

The context of this report is the proposed new Sick Bay within the Saldanha Military Base, Department of Defence. The current sick bay and the available facilities are aged and in a state of disrepair. Mr Charl du Plessis of Footprint Environmental Services is conducting the EIA process for the proposed development. In response to the Notification of Intent to Develop (NID) submitted to Heritage Western Cape (HWC), the latter issued a decision to the effect that a palaeontological assessment is required (HWC CASE NO. 111027JL18).

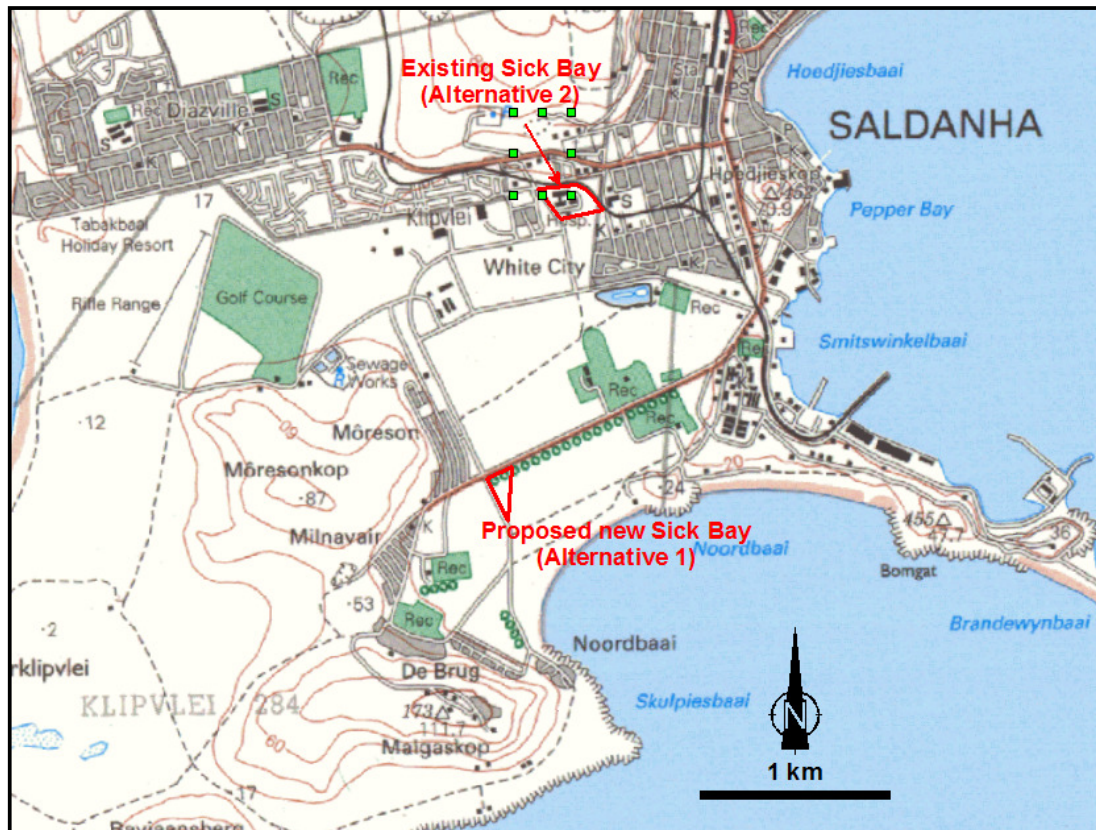


Figure 1. Location of the proposed new Sick Bay. Extract of 1:50000 topo-cadastral map 3317BB_3318AA_19983_ED4_GEO. Chief Directorate: Surveys & Mapping.

Figure 1 shows the location of the proposed new Sick Bay, presented as Alternative 1, the preferred alternative. The repair of the existing sick bay (Alternative 2) is not preferred because, in addition to its state of dilapidation, its proximity to low-income housing has proved to be a security risk.

The preparation of the new site would entail relatively minor bulk earth works such as the levelling of the site and the digging of trenches for foundations and services infrastructure. The site is previously ploughed agricultural land.

2. Geological and palaeontological Setting



Figure 2. Geology of the Saldanha town area. From Visser & Schoch (1972), overlain in Google Earth.

Q5: Recent windblown sands and dunes along the beach are mapped as unit Q5.

Q1: Another surface unit is the recent soil-unit Q1, white to slightly-reddish sandy soil, which is mainly a stabilized sand sheet blanketing the underlying geology.

Q2: An older surface unit Q2, shallow sandy soil with heuweltjies (heuweltjiesveld), occurs inland the coast. Incipient calcretes occur in Q2. It overlies the Langebaan "Limestone" Formation.

QC: The Langebaan "Limestone" Formation, aeolianite Unit QC, is underlain mainly by marine deposits of Pliocene age (Varswater & Uyekraal fms).

PH: The Prospect Hill Formation. Part of the Langebaan Fm between Saldanha Bay and Paternoster has now been separated as this new formation, due to fossil finds indicating that it is significantly older than the other aeolianites included in the Langebaan Formation. This is shown by the magenta outline in Figure 2.

G2:- Saldanha Quartz Porphyry, of the Cape Granite Suite.

The main information for the area is Visser & Schoch (1972, 1973) and the accompanying geological map, the relevant part of which is reproduced as Figure 2. Important fossil sites nearby in the area are annotated on the map.

The site of the proposed new Sick Bay is underlain by unfossiliferous quartz porphyry (G2), this under a thin coversand related to surface unit Q1. To the immediate east is the thin edge of Langebaan Formation aeolianite limestones (QC) and it is possible that a veneer of calcrete may extend under the coversand in places.

The existing sick bay is situated on thicker Q1 coversands, underlain at depth by G2 Saldanha Quartz Porphyry.

3. Recommendations

Bulk earth works at the proposed new Sick Bay site will disturb the geologically young coversand unit Q1. This has low fossil potential. When sub-fossil bone and shell is encountered in Q1 it is likely to be in an archaeological context. (The same applies to the existing sick bay site.)

The Archaeological Impact Assessment (AIA) recommends that the bulk earthworks be monitored for the occurrence of archaeological material (Jonathan Kaplan, pers. comm.). The contracted Monitoring Archaeologist (MA) can also monitor for the presence of fossils and make a field assessment of any material brought to attention. The MA is sufficiently informed to identify fossil material and this avoids additional monitoring by a palaeontologist.

The MA then becomes the responsible field person and fulfils the role of liaison with the palaeontologist and coordinates with the developer and the Environmental Control Officer (ECO). If fossils are exposed in non-archaeological contexts, the palaeontologist should be summoned to document and sample/collect them.

4. References

- Visser, H.N. & Schoch, A.E. 1972. Map Sheet 255: 3217D & 3218C (St Helenabaai), 3317B & 3318A (Saldanha Baai). *Geological Survey of South Africa*.
- Visser, H.N. and Schoch, A.E. 1973. The geology and mineral resources of the Saldanha Bay area. *Memoir Geological Society of South Africa* **63**.

5. GLOSSARY

~ (tilde): Used herein as “approximately” or “about”.

Aeolian: Pertaining to the wind. Refers to erosion, transport and deposition of sedimentary particles by wind. A rock formed by the solidification of aeolian sediments is an aeolianite.

AIA: Archaeological Impact Assessment.

Archaeology: Remains resulting from human activity which is in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.

asl.: above (mean) sea level.

Bedrock: Hard rock formations underlying much younger sedimentary deposits.

Calcrete: An indurated deposit (duricrust) mainly consisting of Ca and Mg carbonates. The term includes both pedogenic types formed in the near-surface soil context and non-pedogenic or groundwater calcretes related to water tables at depth.

ESA: Early Stone Age. The archaeology of the Stone Age between 2 000 000 and 250 000 years ago.

EIA: Environmental Impact Assessment.

EMP: Environmental Management Plan.

Fossil: Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage: That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

HIA: Heritage Impact Assessment.

LSA: Late Stone Age. The archaeology of the last 20 000 years associated with fully modern people.

LIG: Last Interglacial. Warm period 128-118 ka BP. Relative sea-levels higher than present by 4-6 m. Also referred to as Marine Isotope Stage 5e or “the Eemian”.

MSA: Middle Stone Age. The archaeology of the Stone Age between 20-300 000 years ago associated with early modern humans.

Palaeontology: The study of any fossilised remains or fossil traces of animals or plants which lived in the geological past and any site which contains such fossilised remains or traces.

Palaeosol: An ancient, buried soil whose composition may reflect a climate significantly different from the climate now prevalent in the area where the soil is found. Burial reflects the subsequent environmental change.

Palaeosurface: An ancient land surface, usually buried and marked by a palaeosol or pedocrete, but may be exhumed by erosion (*e.g.* wind erosion/deflation) or by bulk earth works.

Pedogenesis/pedogenic: The process of turning sediment into soil by chemical weathering and the activity of organisms (plants growing in it, burrowing animals such as worms, the addition of humus *etc.*).

Pedocrete: A duricrust formed by pedogenic processes.

PIA: Palaeontological Impact Assessment.

SAHRA: South African Heritage Resources Agency – the compliance authority, which protects national heritage.

5.1 Geological Time Scale Terms (youngest to oldest).

Ka: Thousand years or kilo-annum (10^3 years). Implicitly means “ka ago” *i.e.* duration from the present, but “ago” is omitted. The “Present” refers to 1950 AD. Generally not used for durations not extending from the Present. Sometimes “kyr” is used instead.

Ma: Millions years, mega-annum (10^6 years). Implicitly means “Ma ago” *i.e.* duration from the present, but “ago” is omitted. The “Present” refers to 1950 AD. Generally not used for durations not extending from the Present.

Holocene: The most recent geological epoch commencing 11.7 ka till the present.

Pleistocene: Epoch from 2.6 Ma to 11.7 ka. Late Pleistocene 11.7–135 ka. Middle Pleistocene 135–781 ka. Early Pleistocene 781–2588 ka (0.78–2.6.Ma).

Quaternary: The current Period, from 2.6 Ma to the present, in the Cenozoic Era. The Quaternary includes both the Pleistocene and Holocene epochs.

Pliocene: Epoch from 5.3-2.6 Ma.

Miocene: Epoch from 23-5 Ma.

Oligocene: Epoch from 34-23 Ma.

Eocene: Epoch from 56-34 Ma.

Paleocene: Epoch from 65-56 Ma.

Cenozoic: Era from 65 Ma to the present. Includes Paleocene to Holocene epochs.

Cretaceous: Period in the Mesozoic Era, 145-65 Ma.

Jurassic: Period in the Mesozoic Era, 200-145 Ma.

Precambrian: Old crustal rocks older than 542 Ma (pre-dating the Cambrian).

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