

# ARCHAEOLOGICAL CONSERVATION MANAGEMENT PLAN

**Pinnacle Point Resort (Pty) Ltd, Erf 15387 and a portion of Erf 2001,  
Pinnacle Point, Mossel Bay, Western Cape Province.**

Version: Draft

**NOTE: According to the ROD for development at Pinnacle Point, this ACMP  
must be reviewed and approved by HWC prior to finalization and  
implementation**

**Prepared For:**

**Heritage Western Cape  
&  
Pinnacle Point Resorts (Pty) Ltd  
Mr. Lance Kinnear**

**By:**



Peter Nilssen, Curtis Marean & Royden Yates

**MADCRM cc**

PO Box 176  
Great Brak River  
6525

Tel: (044) 690 4661 Fax: (044) 691 1915 Cell: 082 783 5896  
E-mail: [pnilssen\\_map@telkomsa.net](mailto:pnilssen_map@telkomsa.net)

**25 August 2006**

## **Table of Contents**

---

### **GLOSSARY**

#### **SECTION 1: BACKGROUND INFORMATION**

- 1.1 INTRODUCTION**
- 1.2 THE PINNACLE POINT ESTATE**
- 1.3 ABOUT THE ACMP**
- 1.4 LEGAL STATUS OF THE ACMP**
- 1.5 GENERAL ENVIRONMENTAL CHARACTERISTICS OF THE ESTATE**
- 1.6 SUMMARY OF ARCHAEOLOGY AT PINNACLE POINT**
- 1.7 POTENTIAL IMPACTS AND KEY CONSERVATION AND MANAGEMENT ISSUES**

#### **SECTION 2: IMPLEMENTATION OF THE ACMP**

- 2.1 RELEVANT ROLE PLAYERS AND THEIR RESPONSIBILITIES**
- 2.2 FINANCING FOR ARCHAEOLOGICAL CONSERVATION AND MANAGEMENT**
- 2.3 AUDITING AND REVIEW PROCEDURES**
- 2.4 FAILURE TO COMPLY WITH ACMP REQUIREMENTS**

#### **SECTION 3: ARCHAEOLOGICAL CONSERVATION AND MANAGEMENT REQUIREMENTS**

- 3.1 CONSERVATION AND MANAGEMENT GOALS**
- 3.2 GENERAL CONSERVATION & MANAGEMENT REQUIREMENTS**
- 3.3 RATING OF ARCHAEOLOGICAL RESOURCES AND SPECIFIC CONSERVATION & MANAGEMENT REQUIRMENTS**

### **REFERENCES**

### **FIGURES AND PLATES**

## GLOSSARY

<b>ACMP</b>	Archaeological Conservation Management Plan - this document and any amendments, updates and/or documents referred to as well as relating to it.
<b>Audit</b>	An archaeological audit will be undertaken on a regular basis to measure the success of conservation and management activities and adherence to specifications contained in this document.
<b>Archaeological Auditor</b>	An independent and suitably qualified archaeological consultant appointed by the developer and/or PPHOA to undertake audits of compliance with the ACMP (this may be a representative of HWC).
<b>Archaeological Fund</b>	A fund (in a bank account dedicated solely for the purpose of implementing the ACMP) that will finance the conservation and management of archaeological heritage resources as required by the ACMP. Funding is to be raised by the developer.
<b>Archaeological Resources</b>	Material remains representing the presence and behaviour of people in the past. Included here are resources such as fossil dunes, paleontological remains, stalactites, stalagmites and geological features that provide information on ancient environments and climates in which people once lived.
<b>Archaeological Trust</b>	A board of appointed trustees who ensure; 1) that the management structure of the ACMP is efficient in gauging the progress and success of the implementation of the ACMP and 2) that monies from the Archaeological Fund are used and managed appropriately and in a sustainable manner.
<b>CSBT</b>	Cape Saint Blaize Trail – a hiking trail that runs between the Cape St Blaize Cave at the point of Mossel Bay in the east and Danabaai in the west. To date, HWC request that the CSBT remains at the top of the cliffs and therefore, this document has been revised accordingly. A new proposed alignment avoiding sensitive archaeological sites is entertained.
<b>DEA&amp;DP</b>	Department of Environmental Affairs and Development Planning, the provincial authority responsible for authorising an activity in terms of Section 21 of the Environment Conservation Act 73 of 1989.
<b>Developer</b>	Pinnacle Point Developments, Pinnacle Point Resort (Pty) Ltd – represented by Mr. Ivor Stratford - with rights to undertake the development of Pinnacle Point Estate.

<b>Environment</b>	The biosphere in which people and other organisms live. It consists of renewable and non-renewable natural resources, natural or modified ecosystems and habitats, and places of cultural significance.
<b>ESA</b>	Early Stone Age – period during the Stone Age roughly dated between 2.6 million and 300 000 years ago.
<b>HWC</b>	Heritage Western Cape - the provincial authority responsible for authorising activities in terms of the National Heritage Resources Act 25 of 1999.
<b>LSA</b>	Later Stone Age - period during the Stone Age roughly dated between 30 000 and 2 000 years ago.
<b>MAPCRM</b>	Mossel Bay Archaeology Project: Cultural Resources Management cc
<b>Monitoring</b>	Regular inspection and verification of management activities for degree of compliance and success.
<b>MSA</b>	Middle Stone Age – period during the Stone Age roughly dated between 30 000 and 300 000 years ago.
<b>NHRA</b>	The National Heritage Resources Act (NHRA, No. 25 of 1999)
<b>'No-go' areas</b>	Areas identified as being archaeologically sensitive and demarcated on plan and on site with barricades, fencing and signboards and which are out of bounds to unauthorised persons. Authorisation must be obtained prior to entry.
<b>OEMP</b>	Operational Phase Environmental Management Plan - this document, as well as any amendments, annexures or documents referred to within it.
<b>Pottery/Herder Period</b>	The period of prehistory that is characterized by the presence of Cape Coastal pottery and remains of sheep and/or goat. Sites representing this period date between 2000 and 350 years ago.
<b>PPELC</b>	Pinnacle Point Environmental Liaison Committee - a management committee made up of various interested and affected parties, as detailed in <b>section 2.1.3</b> , who acts as an advisory body during the development phase of Pinnacle Point.
<b>PPHOA</b>	Pinnacle Point Home Owners' Association - the body corporate who is responsible for the enforcement of the Articles of Association, as detailed in <b>section 2.1.4</b> of this document.

<b>RoD</b>	Record of Decision (environmental authorisation) issued by the Department of Environmental Affairs and Development Planning.
<b>RA</b>	Resident Archaeologist - a suitably qualified archaeologist that deals with all matters affecting archaeological resources on the Pinnacle Point Estate. The Developer will appoint a RA for the Estate. The Developer and/or PPHOA (through the RA) will become responsible for the implementation of the ACMP.
<b>SAHRA</b>	The South African Heritage Resources Agency - the national authority responsible for authorising activities in terms of the National Heritage Resources Act 25 of 1999. At this time SAHRA is not involved in this ACMP, but may be involved at a later stage if Grade 1 sites are formally graded.
<b>Shell midden</b>	Deposit of archaeological materials dominated by remains of marine shell.

## SECTION 1: BACKGROUND INFORMATION

### 1.1 INTRODUCTION

Nationally and internationally important archaeological resources occur in abundance at and around Pinnacle Point. Given the significance of these remains, the preservation of these non-renewable assets was pivotal in the authorization of development at Pinnacle Point. From the outset, we realized that it was unlikely that local government would be in a position to ensure conservation and management of these resources. Consequently, we lobbied in favour of the development with the understanding and condition, that the developers assumed all responsibility for the medium and long-term conservation and management of archaeological resources at Pinnacle Point. As stated in the OEMP prepared for the development, "*The main aim of Pinnacle Point Estate is to protect its natural and archaeological assets for the benefit of existing and future generations*" (Berry 2006, 8). In order to realize this objective, the archaeological resources occurring on the property under development must be conserved, managed and utilized in a sustainable manner. To the best of our knowledge, this development contains the largest volume and highest quality prehistoric archaeological record of any development in the Western Cape. The success of this Archaeological Conservation Management Plan (ACMP) in achieving conservation and management goals is thus critical.

This ACMP focuses on short, medium and long term conservation and management measures for the property under development at Pinnacle Point and includes the construction and operational phases of development. Condition 12 of the RoD issued by DEA&DP to Mr. Ivor Stratford (Pinnacle Point Resort (Pty) Ltd) requires that "The applicant must develop and implement an [ACMP] for the entire development area" (RoD dated 29 October 2003, Ref No. EG12/2/1-74-ERF 2001 & ERF 3438).

Furthermore, condition 13 of the RoD states that the conditions set out by the archaeologist of the South African Heritage Resources Agency (SAHRA, now under the provincial heritage authority - HWC) must be implemented. The following (italicized) is from the letter (dated 14 June 2002) written by Mrs. Mary Leslie (archaeologist of SAHRA) that contains the conditions pertaining to the conservation and management of archaeological and heritage resources at Pinnacle Point. Ms Leslie concluded that SAHRA would not object to the development provided that:

1. *An archaeological conservation management plan is developed for the entire property within the next six months (including those areas which are not presently being developed) that will provide adequate measures for the conservation and management of the significant archaeological sites in the area, and that when approved by SAHRA (now HWC) the ... (developers) ... undertake to ensure that arrangements are made for the funding and implementation of this plan.*
2. *In the area above the cliffs where development is to take place:*
  - a. *All earthmoving must be monitored by an archaeologist.*
  - b. *It must be established for all sites either that suitable excavation of samples for analysis of content and dating of the sites have been undertaken to mitigate against the possibility that the sites are*

*destroyed during development or by the impact of visitors, or, in the case of more significant sites, that suitable conservation measures, perhaps interpretive boards and boardwalks are put in to ensure that they are not disturbed by the action of the increased numbers of people on the property.*

**3. In the area of the cliffs:**

- a. *Control measures must be put in place to ensure the protection of the very important archaeological cave deposits in perpetuity. These deposits require stabilisation and protection against increased traffic. The best way to achieve this must be addressed in the conservation management plan and funding must be made available for this. This will need to be undertaken in tandem with a program of interpretation of the sites to ensure that visitors understand their significance.*
- b. *All access to the areas below the extant hiking trail should be delineated and controlled. This must be done in conjunction with the archaeologists of the Mossel Bay Archaeological Project who have been studying these deposits.*
- c. *Assurance needs to be given that continued support and reasonable ease of access will be given to the scientists who are and will be wishing to study these sites.*

## **1.2 THE PINNACLE POINT ESTATE**

The Estate is on a 452 ha property and consists of an 18 hole golf course, club house, hotel (Golf Villas) of 119 units, 408 residential erven and a conservation area (see Figures 1 & 2).

The property under development is a portion of Remainder Erf 2001 and Erf 3438, Mossel Bay and is owned and/or managed by Pinnacle Point Resort (Pty) Ltd, which is principally represented by Mr. Ivor Stratford. The Pinnacle Point Resort (Pty) Ltd address is PO Box 44458, Claremont, 7708.

## **1.3 ABOUT THE ACMP**

This document details the short, medium and long-term conservation, management and monitoring measures with respect to archaeological and heritage-related resources on the Estate. The ACMP must ensure that the provisions of the NHRA of 1999 are met and impacts on archaeological resources are avoided and/or minimized during the construction and operational phase of development. While certain measures are currently active, the ACMP will come into full effect when the final version of this document is approved by HWC. To be successful, the ACMP is open-ended in that it must be exposed to regular evaluation and, if necessary, subsequent revision.

This document is divided into three sections:

- **Section 1** gives background information to the ACMP and RoD, the purpose of the ACMP, its legal status, a brief sketch of the Estate, a description of the general environmental characteristics of the property (the latter copied verbatim

from Berry [2006] for the benefit of HWC), a summary of the archaeology at Pinnacle Point, potential impacts and key management issues.

- **Section 2** explains the implementation of the ACMP, identifies key role players and their responsibilities with respect to the ACMP, financing the ACMP, and monitoring and auditing requirements.
- **Section 3** details the objectives of archaeological conservation and management, required measures to accomplish the objectives, schedule and parties responsible for each of the goals.

#### **1.4 LEGAL STATUS OF THE ACMP**

The ACMP was developed in accordance with condition 12 of the RoD (Ref No. EG12/2/1-74-ERF 2001 & ERF 3438) and compliance with its contents and requirements is therefore legally binding. Moreover, in light of the conservation-worthy archaeological and heritage-related resources at Pinnacle Point the ACMP and its approval by HWC is a legal requirement with respect to Section 6(3) of the NHRA. Concerning archaeological resources endangered by impact from construction and pedestrian activities, Section 35(4)(a) of the NHRA states that “No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite” ...

***Note that the following section (1,5) is copied verbatim from Berry (2006, 2-4) for the benefit of HWC.***

#### **1.5 GENERAL ENVIRONMENTAL CHARACTERISTICS OF THE ESTATE**

##### **1.5.1 Topography**

The Estate is situated on top of a coastal platform that slopes down from 160 m above sea level to the edge of the platform, from where it drops steeply down onto a rocky shoreline. It enjoys southerly sea views overlooking the Indian Ocean. The slopes are relatively gentle, ranging between 1:10 and 1:20. The dune areas and sandy areas above the rocky coastline are susceptible to erosion and must be protected from disturbance.

Due to the rugged and spectacular setting of Pinnacle Point, it is of great importance that this wilderness character be respected in the development and that architectural styles are sensitive to this asset and strives to reduce visual impact. Architectural design guidelines (i.e. Architectural Code) have been drawn up and will be enforced during house construction.

##### **1.5.2 Geology and soils**

The site is covered by a mixture of non-shelly sand and calcrete of Quaternary age, overlaying older Bredasdorp Group sediments. Non-shelly sand is of aeolian origin and ranges in colour from off-white to yellow-brown. The calcrete forms a crust of yellow to grey coloured sediments that vary in thickness from a few centimetres to nearly one meter. Its close relationship with the underlying Bredasdorp Group can be ascribed to huge amount of shell material present in the latter. The lime-rich soils that derive from these sediments typically support limestone fynbos on the calcretes and dune thicket on the deeper soils.

The Quaternary sediments lie on top of Table Mountain Group sandstone (Skurweberg Formation), which is exposed along the base of the coastal platform. The Skurweberg Formation consists of light-grey quartzitic sandstone with subordinate shale layers. The latter has weathered through wave action to produce the shallow caves that characterise the coastline southwest of Mossel Bay.

### 1.5.3 Climate

The coastal area lies within the southern warm temperate climatic zone and experiences a relatively arid climate. Rainfall has a bimodal (spring and autumn) distribution pattern with a mean annual total of 410 mm in Mossel Bay (measured at Cape St Blaize). The dry season extends from November until July and a humid period generally prevails from August to October. The implications are that arid conditions exist for some two thirds of the year. Despite the generally low rainfall condition, extremes have been measured. Conditions that favour plant growth are limited to spring. Temperatures vary between 14°C and 24°C in January and between 10°C and 19°C in July.

Mossel Bay experiences the lowest recorded wind velocities for the Southern Cape coastline. Easterly and westerly winds prevail. The former are more frequent during the summer months than the westerlies. During the winter, winds are predominantly from the northwest. The strongest onshore component throughout the year is from the southwest at an annual average speed of 24 km/h. Although these winds occur throughout the year they are dominant in summer.

### 1.5.4 Hydrology

Groundwater found in the general area is of a relatively low quality and therefore not regarded as an important resource. Surface drainage is largely dictated by the coastal platform topography. There are no perennial floodplains or streams on or adjacent to Pinnacle Point. There are, however, seven depressions on site that collect and feed surface drainage towards the shore.

The site is covered by a generally thin sandy soil ranging in thickness from 0.1 to 3.3 m. This is underlain by a calcrete horizon across the larger site. A sporadically developed perched water table exists in the near-surface soils, with the water level varying from 1.0 to 1.75 m below the surface. The calcrete layer appears to form an impermeable base to the soils which will limit downward movement of groundwater.

### 1.5.5 Vegetation

The natural vegetation found at Pinnacle Point can be divided into three types, namely a coastal fynbos and thicket mosaic along the coastal edge of the Estate, limestone fynbos on the calcrete outcrops and proteoid fynbos on the deeper sandy soils further inland. Over 260 species were identified by Hilland Associates (2002) in their botanical survey. Earlier descriptions of the vegetation suggest that the area was predominantly fynbos on the coastal plateau and thicket in the valleys. The extent of this has been largely reduced by the encroachment of alien plants (mainly rooikrans and spider gum) and cultivation.

The limestone fynbos contains several Red Data plant species and limestone endemics (species restricted to limestone patches along the South Coast), including *Lampranthus diutinus*, *Acmadenia densifolia*, *Centella calcaria* and *Berkheya*

*coriacea*. Being situated at the eastern extreme of its distribution and containing unusual and interesting species, the limestone fynbos is highly conservation worthy.

The proteoid fynbos is described as a secondary habitat resulting from the breakdown of a mosaic of original habitats, perhaps as a result of too-frequent fires. Common species include *Anthospermum aethiopicum* (jakkalsstert), *Chrysanthemoides monilifera* (bietou), *Senecio ilicifolius*, *Hermannia flammula* and *Themeda triandra* (rooigras). Many of these species are typical of disturbed areas. Red Data species recorded here include *Protea lanceolata* (lance-leaf sugarbush), *Ruschia parviflora* (a vygie endemic to the Mossel Bay area), *Bobartia robusta* and *Diosma aristata* (also restricted to the Mossel Bay area). The latter is listed as 'critical endangered' and is regarded as the most threatened species to occur on site.

Coastal thicket occurs in the valleys and on the coastal dunes and sea-fronting cliffs. On the steep sea-facing cliffs it is characteristically stunted. Typical thicket species include *Rhus pterota*, *Carissa bispinosa*, *Cussonia thyrsiflora*, *Schotia afra*, *Capparis sepiaria*, *Crasulla perforata*, *Olea exasperata* and *Rhoicissus digitata*. The protected tree species *Sideroxylon inerme* (milkwood) is also associated with the thicket.

The new Vegetation Map of South Africa (Mucina and Rutherford 2004) classifies the vegetation as Canca Limestone Fynbos (on the top of coastal platform) and Groot Brak Dune Strandveld (along coastal edge). Canca Limestone Fynbos is the best represented vegetation type (87% remaining) found on the Estate as per the recently released National Spatial Biodiversity Assessment ([www.nbi.ac.za/biodiversity/nsba.htm](http://www.nbi.ac.za/biodiversity/nsba.htm)). Groot Brak Dune Strandveld is listed as 'Endangered' since less than 50% of its original habitat is left. It is also poorly protected.

#### 1.5.6 Fauna

No faunal studies were done for the site. However, some species known to be common to the general area include Grysbos, Bushbuck, Yellow Mongoose, Cape Dune Molerat, Red-bellied Tortoise and Cape Francolin. No Red Data species are known to occur or breed at Pinnacle Point.

#### 1.5.7 Archaeology

The region (Mossel Bay to Breede River) is well known for its wealth in pre-historic remains. Records indicate that it has been inhabited for more than half a million years. The archaeological record of Pinnacle Point is particularly rich in the preservation of sites that date roughly between 300 000 and 30 000 years ago, a time when modern humans arose (Nilssen and Marean 2005). The geological and palaeontological record is equally rich in evidence of sea level, climatic and environmental change.

Fifteen cave/shelter sites were recorded in the coastal cliffs. At least three of these are considered to be of "immense archaeological importance, both nationally and internationally" (Kaplan 1997). Large numbers of Middle Stone Age tools were recorded in the caves (Kaplan 1997). Large coastal cave sites dating back to the late Pleistocene are rare along the South African coastline. Several Middle Stone Age open sites comprising scatters of stone tools, as well as a few Later Stone Age shell middens were also located on site.

In 2000, Drs Peter Nilssen and Curtis Marean initiated MAP, which is focused on research into the origins of modern humans through investigating archaeological sites at Pinnacle Point. Funding for this research project was received from the National Research Foundation (RSA), as well as the National Science Foundation (USA). All archaeological material is protected by the National Heritage Resources Act 25 of 1999 and may therefore not be removed from the locality without a permit from HWC.

### **1.5.8 Conservation area**

The conservation area consists of all the remaining fynbos and thicket areas outside the developed areas and residential erven, as well as previously alien infested and disturbed areas which are now being rehabilitated. To enhance this coastal environment all landscaping/planting outside residential erven will be done with locally indigenous species. Accent landscaping will be restricted to access roads, entrance features and at intersections. The ultimate aim would be to establish a conservation area entirely free of alien plants and all previously disturbed areas rehabilitated with locally indigenous species suitable to that habitat.

## **1.6 SUMMARY OF ARCHAEOLOGY AT PINNACLE POINT**

Discovery of the spectacular and globally significant archaeological cave sites at Pinnacle Point was a direct result of development. Subsequent to this discovery a large international research project has developed that will keep scientists busy for generations. Also, without excavations resulting from development we would not have learned about previously unknown Early Stone Age (ESA) occurrences that were identified during archaeological monitoring of construction activities (Nilssen 2005). A carnivore bone accumulation dated to at least 150 000 years ago was also recently exposed during trenching operations; offering an almost unprecedented research opportunity. Additionally, the archaeological record at Pinnacle Point includes several shell middens originating in the Later Stone Age (LSA) and pottery/herder period. To date, no sites of the colonial period were observed.

The range of sites at Pinnacle Point thus span the bulk of human prehistory from at least half a million years ago to the last 2000 years. The benefits derived from the discovery and research of these sites will not remain within academic circles: they will serve to promote, celebrate, and add more meaning to our common and deep past among people in general.

Both construction and operational phase activities of the development at Pinnacle Point, Mossel Bay (Figure 1 & Plate 1), threaten these important archaeological, geological, and paleontological resources (Plate 1). Resources of this kind differ in a fundamental and crucial way from nearly all environmental assets in that they are entirely irreplaceable and not renewable. Unless long-term conservation, mitigation and management plans are put in place, these resources are in grave danger of being quickly lost forever.

By world standards the quantity and quality of archaeological and geological sites along the coastline at Pinnacle Point are very impressive. The record is particularly rich in the preservation of sites that date roughly between 300,000 and 30,000 years ago, a time when modern humans first appeared. The geological and paleontological record is equally rich in evidence for sea level, climatic, and environmental change. Understanding this ancient evidence is the best source for understanding the impact of potential future sea level, climatic, and environmental

change. The latter is crucial for South Africa's future social and economic development plan. It follows that the protection, conservation and management of these sites is critical and a requirement of the RoD.

Due to conditions favourable to fossil bone preservation, and a long and ancient prehistoric record of human occupation embedded in a well preserved geologic and palaeontologic record, South Africa has become a country that is under intense international scientific investigation into the origins of humanity, and changes in climate and environment. In 2000, Nilssen and Mearan initiated the Mossel Bay Archaeology Project (MAP), which is focused on research into the origins of modern humans through investigating archaeological sites at Pinnacle Point (Mearan *et al* 2004). MAP is a globally renowned research unit and a recent proposal submission to NSF (USA) by the MAP team was awarded the biggest grant given to archaeology worldwide. This is testament to the international scientific and media focus on this area.

## **1.7 POTENTIAL IMPACTS AND KEY CONSERVATION AND MANAGEMENT ISSUES**

### **1.7.1 Construction Activities**

In accordance with the RoD, all earthmoving activities on the Estate are monitored by staff of MAPCRM and this monitoring will continue during the construction of private dwellings. This activity proved fruitful as large numbers of ESA and MSA stone artefacts are mapped and collected (Nilssen 2005). Mitigation in the form of archaeological excavation would not have been a viable option as densities of artefacts are generally low.

Development at Pinnacle Point, specifically the golf course, has expanded and in places destroyed the CSBT. The result is that several archaeological sites exposed in and near the original pedestrian path of the CSBT were threatened, damaged and/or destroyed by construction activities (these include PP 14, 15, 16, 17, 22, 24, 25, 26 and part of 23 [Plate 2]). Residential stands at the western extent of the property were to be moved off shell middens (PP 18, 19 and 20 [Plate 2]), but surveyor's markers for these plots indicated that they were not moved as recommended. Illegal construction activities in the vicinity of the last-named sites already negatively and permanently impacted these sites and remedial work by MAPCRM has begun. Adequate measures for mitigation, conservation and management must be adopted and implemented prior to construction activities commencing.

### **1.7.2 Increased Pedestrian Traffic**

Increased pedestrian traffic is associated with the development. Pedestrian traffic has access to areas where the archaeology, palaeontology, and geology are most rich and sensitive. Sites that are threatened by increased pedestrian traffic include PP 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 18, 19, 20, 21, 29, 31 and a previously unrecorded MSA cave site, previously unrecorded shell middens, geological features and fossil dunes (Plate 2). Unless adequate measures for mitigation, conservation and management are implemented, increased pedestrian traffic will have a permanent and negative impact on these sites.

## **SECTION 2: IMPLEMENTATION OF THE ACMP**

## **2.1 RELEVANT ROLE PLAYERS AND THEIR RESPONSIBILITIES**

### **2.1.1 The Developer**

The Developer must guarantee a successful implementation of the ACMP and establish an Archaeological Fund to finance it in the short, medium and long-term. The Developer will be involved in setting up a management structure for ongoing monitoring as well as archaeological conservation and management through the PPHOA and/or the trustees of the Archaeological Trust and the RA.

### **2.1.2 DEA&DP and HWC**

DEA&DP and HWC will make sure that the responsibilities and requirements placed on the Developer are complied with. DEA&DP will enforce legislation where necessary. HWC will also be required to;

- Provide budget for regular visits to monitor progress with respect to conservation and management measures and activities,
- establish an annual program for collecting and analyzing data captured by the RA so that positive and negative impacts can be assessed,
- evaluate effectiveness of conservation and management strategies and to take action if they are not,
- plan an overall review of the ACMP every three to five years (SAHRA 2002, 4; Australian Heritage Commission 1998).

### **2.1.3 Pinnacle Point Environmental Liaison Committee**

The PPELC provided a counselling platform to assimilate views of the community, and contributed to resolving environmental issues that arose during the construction phase. The PPELC will be dissolved at the end of the construction phase. Before that, the PPELC will be involved in establishing an adequate management structure for ongoing monitoring and archaeological conservation and management through the RA and the PPHOA and/or the trustees of the Archaeological Trust.

### **2.1.4 Archaeological Trust**

In the process of developing a management structure for the implementation of the ACMP, a board of trustees should be appointed to represent the Archaeological Trust. It is suggested that members of the board of trustees should include a representative of each of the following; 1) Pinnacle Point Resort (Pty) Ltd or PPHOA, 2) the research group (MAP) conducting work at Pinnacle Point (I propose Dr. Curtis Marean), 3) the current PPELC, 4) HWC and/or DEA&DP, and 5) the RA. The Archaeological Trust will have regular meetings (quarterly) to evaluate the progress and success of the ACMP and make decisions concerning the appropriate and sustainable use of finances in the Archaeological Fund bank account for the implementation of the ACMP.

### **2.1.5 The Pinnacle Point Home Owners' Association**

This is a legal entity that will ensure compliance with the Archaeological Conservation Management Plan. "The PPHOA operates according to the Articles of

Association. Its members constitute the owners of erven, who shall be jointly liable for expenditure incurred in connection with the PPHOA” (Berry 2006, 6). The PPHOA will also, in conjunction with the RA or an independent archaeologist, “monitor and enforce compliance by the individual owners and shall itself comply with the ... (ACMP) ... to ensure sustainable management” of archaeological resources (Berry 2006, 6).

### **2.1.6 The Resident Archaeologist**

The Developer will appoint a RA who will make sure that all requirements of the ACMP are implemented and will produce a comprehensive and regular record (diary and photographs) of archaeological resources and activities related to their conservation and management. The RA must prepare a quarterly report to submit to HWC as well as the PPHOA and trustees of the Archaeological Trust. The RA must attend PPHOA meetings and/or meetings of the trustees of the Archaeological Trust.

The RA will be available to the public and community with respect to archaeological matters. A continual assessment of the ACMP in conjunction with HWC will ensure that it remains effective and is renewed where necessary.

## **2.2 FINANCING FOR ARCHAEOLOGICAL CONSERVATION AND MANAGEMENT**

The Developer must establish an Archaeological Fund to finance the implementation of the ACMP in the short, medium and long-term. This fund should be managed by the appointed trustees of the Archaeological Trust by consulting the Business Plan and the appointed chartered accountant. A bank account – Archaeological Fund - for the sole purpose of financing the ACMP should be opened and the sum of monies deposited into that account will be based on an annual budget prepared by the trustees of the Archaeological Trust in consultation with the appointed chartered accountant. The following conservation and management aspects must be funded:

- Salaries for the appointed RA and staff
- Training and employment of museum/learning centre staff / monitors / security guards / guides
- Mitigation of sites or archaeological resources exposed during earthmoving activities associated with construction (such as archaeological investigations currently in progress at complex of shell middens PP18-20 and 31)
- Mitigation of sites or archaeological resources threatened by increased pedestrian traffic
- Urgent plans required for rescue/sampling and stabilization at selected sites
- Sub-surface testing at selected sites to finalize conservation and management plans
- Site specific requirements for conservation and management
- Installation and maintenance of CCTV to monitor all archaeological resources
- Installation and maintenance of interpretive/ information/ notice boards
- Installation and maintenance of boardwalks and balustrades where necessary
- Construction and maintenance of a field museum/learning centre
- Appointment of independent consulting archaeologist to conduct audits and review
- Equipment and its maintenance that will be required to implement the ACMP

## **2.3 AUDITING AND REVIEW PROCEDURES**

A suitably qualified independent archaeologist must conduct an archaeological audit one year after the completion of construction work and implementation of the ACMP. A report detailing the results of this audit must be submitted to HWC, as well as DEA&DP. Thereafter, an annual audit will be carried out and the ACMP will be reviewed and updated every three or five years, depending on the results of the audit. The auditor is to be appointed by HWC and acts under its instruction.

The audit reports must include detailed descriptions of the effectiveness of the ACMP, problems and concerns, and recommendations for improvements where necessary. Where relevant, the auditor must emphasize concerns that are to be included in the ACMP. If the auditor recommends that changes to conditions in the ACMP are required, then those recommendations must be presented to HWC. If HWC concurs with the auditor's recommended changes, then those must be presented to DEA&DP for authorization, and included as amendments to the ACMP. This process will ensure that the ACMP remains effective and current.

## **2.4 FAILURE TO COMPLY WITH ACMP REQUIREMENTS**

Non-compliance with the ACMP must be referred to HWC. The transgression must be discussed at the next meeting of the heritage authorities' APM Committee meeting, which will recommend appropriate action against the responsible party. The matter will then be referred to DEA&DP who will impose the action. The responsible party will face prosecution and/or carry the expenses of any remedial action.

## **SECTION 3: ARCHAEOLOGICAL CONSERVATION AND MANAGEMENT REQUIREMENTS**

### **3.1 CONSERVATION AND MANAGEMENT GOALS**

The primary objective of the ACMP is to implement conservation and management strategies that will ensure the condition, significance and values of archaeological resources are protected, conserved and managed in perpetuity for the benefit of present and future generations.

To achieve this goal, the following general conservation and management measures are required:

- Develop and set up a management structure to ensure that the ACMP is implemented successfully. This includes establishing an Archaeological Trust that will be responsible for ensuring that implementing and financing the ACMP is successful.
- Develop a business plan and budget to ensure adequate funds are available for implementing requirements of the ACMP in the medium and long-term. This includes opening a bank account (Archaeological Fund) solely dedicated to financing the ACMP.

- Key archaeological resources or areas should be nominated and proclaimed as Provincial or National Heritage Sites, which will ensure that their level of protection will be enforced by the heritage authorities and DEA&DP.
- Establish current status of archaeological resources and make adequate provision to maintain or improve their condition.
- Develop an effective strategy to avoid and/or minimize impact during construction activities.
- Implement measures to avoid and/or minimize the impact of pedestrian traffic and activities.
- Develop a strategy and schedule for monitoring and reviewing the ACMP.
- Describe strategies, procedures and processes necessary for interventions such as mitigation.
- Recommend the manner in which archaeological resources are presented to the public to ensure that their significance and values are understood by visitors and local communities.
- A schedule for implementing different aspects of the ACMP including parties responsible for decisions and actions.

### **3.2 GENERAL CONSERVATION AND MANAGEMENT REQUIREMENTS**

NOTE: A summary of section 3.2 is presented below in Table 1.

#### **3.2.1 Management Structure**

A management structure must be developed and established in consultation with the estate manager(s) to ensure that the ACMP is implemented successfully. Establishing an Archaeological Trust will be part of this process.

**Objective:**

To gauge the progress and success of management and conservation measures.

**Method:**

- The RA, in consultation with the estate manager(s) and other relevant parties will develop a management structure that will be assessed by HWC prior to its finalization and implementation. The Archaeological Trust will act as the vehicle for gauging the progress and success of the ACMP.

**Time frame:**

Immediate and ongoing.

**Responsible parties:**

The Developer and/or PPHOA, estate manager(s), trustees of the Archaeological Trust, PPELC, RA, HWC

#### **3.2.2 Business Plan and Budget**

A business plan must be compiled to ensure that the ACMP is implemented in an organized and achievable manner. The business plan must include a budget and identify secure source(s) of funding and ensure that finances are adequate and sustainable for the long term implementation of the ACMP.

**Objective:**

To plan and finance the long term implementation of the ACMP.

**Method:**

- The Developer must appoint a suitably qualified person to compile the business plan and budget in consultation with the RA. A bank account (Archaeological Fund) must be opened for the sole purpose of financing the implementation of the ACMP. The trustees of the "Archaeological Trust" must ensure that monies are used and managed appropriately and in a sustainable manner for the implementation and maintenance of the ACMP.

**Time frame:**

Immediate and ongoing.

**Responsible parties:**

The Developer and/or PPHOA, suitably qualified professional (e.g., chartered accountant), trustees of the Archaeological Trust, RA

### **3.2.3 Status and Preservation of Archaeological Resources**

The current status of archaeological resources must be established and documented in order to make provision for their rescue, stabilization and/or maintenance, protection and management. This assessment also provides a baseline record against which future records can be checked when evaluating the efficiency of ACMP measures.

**Objective:**

To ensure that the condition of archaeological resources does not deteriorate and that they are rescued, upgraded and protected in a manner that will guarantee retention of their value and significance.

**Method:**

- Visit and examine each archaeological site and resource. Conduct a detailed examination of conservation status and generate an accurate record for each including comprehensive, high quality photographic and video record and written description (including site record forms as those issued by Iziko – South African Museum).
- Determine cause of deterioration and/or damage to archaeological resources and make adequate plans to remove and/or diminish the damaging agent(s).
- Recommendations for mitigation and remedial actions as well as strategies for stabilization and protection for relevant sites must be compiled and presented to HWC for evaluation and approval. Permit applications to HWC will be required to take remedial action if materials protected by the NHRA are disturbed as a result of such action.

**Time frame:**

Immediate and ongoing

**Responsible parties:**

The Developer and/or PPHOA, trustees of the Archaeological Trust, RA and HWC

### **3.2.4 Impact of Construction Activities**

As has happened during the construction phase of Pinnacle Point developments, earthmoving activities may expose and damage archaeological and palaeontological resources of great importance. Unless this negative and permanent impact is managed properly, the piecemeal destruction of the archaeological record

will result in the permanent loss of this non-renewable resource. Also see section 1.7.1 above where this threat was first raised.

**Objective:**

To avoid and/or minimize the negative and permanent impact of earthmoving activities - associated with construction activities - on sub-surface archaeological resources so that their value can be assessed. In the event of the discovery of buried archaeological resources, an evaluation of the risk and resource must determine the appropriate mitigation and/or conservation measures to be implemented before the construction activities can continue.

**Method:**

- In accordance with condition 11 of the RoD, all earthmoving activities (including vegetation clearing) must be monitored by suitably trained staff of the appointed archaeologist. This measure was implemented at the inception of construction activities and will continue for the remainder of earthmoving activities on the Estate. For a detailed description of protocols, procedures, recording and sampling, see Nilssen (2005).
- Archaeological monitoring will be implemented during all earthmoving activities associated with construction, repair and maintenance during the operational phase of the Estate.
- After full-time monitoring through the construction phase of development, the Estate Manager and/or PPHOA will inform the RA of earthmoving activities associated with construction, repair and maintenance. This is required as the RA may not always be able to attend meetings where details of intended earthmoving activities are divulged.

**Time frame:**

Current and ongoing as needed.

**Responsible parties:**

MAPCRM, RA, Estate Manager and PPHOA

### 3.2.5 Impact of Pedestrian Traffic

This threat to archaeological resources was raised in section 1.7.2 above. Inappropriate use of archaeological sites and resources at Pinnacle Point by the general public has already caused substantial and irreparable damage. Increased and uncontrolled pedestrian traffic and related activities will have a severe, negative and permanent impact on archaeological sources. It is critical, therefore, that adequate measures for mitigation, conservation and management are implemented as a matter of urgency.

**Objective:**

To stop effectively the permanent adverse impact of pedestrian traffic on, and public misuse of archaeological resources that are of immense scientific value.

**Method:**

- No unauthorized and uncontrolled pedestrian traffic can be allowed below the cliff at Pinnacle Point until adequate measures are in place to ensure infallible protection of the archaeological and heritage-related resources.
- No unauthorized and uncontrolled pedestrian traffic can be allowed in the vicinity of the shell middens at the western extent of the Estate that are earmarked

for protection and conservation in perpetuity until effective measures are in place to ensure their protection.

- CCTV must be installed to monitor all archaeological resources.
- Boardwalks and/or suitable pedestrian paths must be installed at appropriate locations to keep pedestrian traffic away from and off archaeological deposits. Locations requiring this treatment must be identified by the RA or contracted professional archaeologist.
- Interpretive/ information/ notice boards representing the archaeology, its value and protection by legislation must be installed at relevant locations such as the entrance to the Estate, PPHOA and sales offices, golf course club house, where the St Blaize Trail enters the Estate, appropriate archaeological localities below the cliffs and at sites to be conserved in perpetuity.
- The locations and layout of all the above-mentioned installations must be approved by HWC and mitigation must be adopted where necessary. Installation activities must also be monitored by the RA and HWC
- Staff of the museum/learning centre / monitors / security guards / guides must be employed on a full time basis and deployed to monitor all pedestrian traffic below the cliffs at Pinnacle Point where archaeology and heritage-related resources are most vulnerable and sensitive. At least 3 monitors should be on duty below the cliffs - where key archaeological resources are clustered - during hours that the coastal zone below the cliffs is accessible. This implies that access to the coastal zone should be restricted to specific hours – maybe sunrise to sunset. The heritage status of archaeological resources will provide the backbone to enforce this proposal. Monitoring must also be conducted to evaluate impacts resulting from unauthorized pedestrian visits and deterioration of archaeological resources resulting from natural processes.

Pedestrian traffic must be routed along and restricted to approved tracks that include stairs, boardwalks and existing foot paths.

**Time frame:**

Immediate and ongoing maintenance

**Responsible parties:**

Developer, PPHOA, Estate Manager, RA, HWC

**3.2.6 Strategy and Schedule for Monitoring and Reviewing the ACMP**

To evaluate the effectiveness of the ACMP, a baseline study must be conducted - after the objective of 3.2.3 above is achieved - to record the current status of archaeological resources. This will generate a detailed benchmark against which future records can be checked. Regular repetition of this process will provide data for comparison with the initial records to establish whether positive or negative changes occurred in the archaeological record. Results will determine required changes and/or additions to the ACMP. The data will also be presented to the auditor (see section 2.3 above) for independent evaluation. Along with the implementation of section 2.3 above, this strategy and schedule will ensure that the ACMP remains efficient and current.

**Objective:**

To generate data in a controlled manner to evaluate the effectiveness of the ACMP so that inefficiencies can be corrected to ensure that the condition of archaeological resources does not deteriorate.

**Method:**

- The current conservation status of archaeological resources must be established in order to make provision for their rescue, stabilization and/or maintenance, protection and management.
- Visit and examine each archaeological site and resource. Conduct a detailed examination of conservation status and generate an accurate record for each including comprehensive, high quality photographic and video record and written description (including site record forms as those issued by Iziko – South African Museum).
- The benchmark record as well as subsequent records generated at regular time intervals must be submitted to HWC, DEA&DP, Archaeological Trust, PPHOA and the Estate Manager for their records.
- In addition to the intended use of the above-described records, full time monitors will check for and record impacts of unauthorized visits as well as deterioration resulting from natural agents (e.g., erosion, burrowing animals, etc). This will provide a short-term and continual record that will be used to evaluate and update ACMP measures.
- Data collected by the monitors and RA must include, but is not restricted to:
  1. general and detailed records of archaeological and heritage-related resources (e.g., text, photography, video)
  2. number of visitors
  3. general conditions of site, weathering & erosion (and other natural impacts), vegetation cover, amenities (stairs, boardwalks, watering points, toilets, visitors book, etc)
  4. security, CCTV, litter and vandalism
  5. public response to information – opinion surveys, local media, reports to heritage authorities, etc
- Implement section 2.3 above.

**Time frame:**

Immediate and ongoing, quarterly and annual reports, update and/or change ACMP as required. An annual audit must be conducted by an independent professional archaeologist as appointed by HWC.

**Responsible parties:**

RA, full time monitors, HWC (to appoint independent professional archaeologist to conduct audit), DEA&DP, Archaeological Trust, PPHOA and the Estate Manager

**3.2.7 Strategies, Procedures and Processes Necessary for Interventions**

In the event that archaeological resources are exposed during earthmoving activities or threatened by impacts associated with pedestrian traffic, actions must be taken to avoid and/or minimize loss and deterioration of archaeological resources.

**Objective:**

To provide adequate means and formal channels through which to ensure that archaeological resources are not negatively affected by construction-related activities and pedestrian traffic.

**Method:**

- Implementation of 3.2.4 above will ensure that all earthmoving activities are monitored under the supervision of the RA. This will guarantee that any sub-surface archaeological resources will be detected and evaluated by the specialist.

- If archaeological resources are exposed, then work in that area must stop and the RA will inspect the find within 48 hours and make a decision as to the appropriate actions to follow.
- The affected area must be cordoned off, all construction supervisory and management staff informed of the need to remain clear of the cordoned area and security put in place if needed.
- Decisions regarding mitigation and conservation must be approved by the appropriate heritage authority (HWC). Additionally, necessary work or the manner to deal with the find will be dictated by the rating of the find.
- If mitigation involves archaeological excavation, then a permit must be obtained from HWC.
- Earthmoving activities may continue only after permitted mitigation is complete to the satisfaction of HWC **and** a permit to destroy archaeological resources has been applied for and issued by HWC to the relevant party.
- If pedestrian traffic results in unacceptable deterioration of archaeological resources then adequate measures must be put in place to avoid or minimize this impact. If no measures are effective in preventing the negative impact of pedestrian traffic, then pedestrian traffic must be removed entirely from the affected areas. Compliance with this requirement will be dealt with and enforced as described in section 2.4 above.

**Time frame:**

Immediate and ongoing

**Responsible parties:**

Developer and/or PPHOA, residents and visitors, RA, HWC, DEA&DP

### **3.2.8 Presentation of Archaeological Resources**

A strategy to engage the public in conserving archaeological resources entails education. For the most part, once people understand the significance and non-commercial value of archaeological resources, they are more likely to enjoy and use those resources in a positive and sustainable manner.

**Objective:**

To present information about archaeological resources to the public in a manner that will ensure that their significance and values are understood by visitors and local communities so that these resources can be used in a sustainable way. All visitors to the Estate must be aware of and conduct themselves in accordance with the sensitive nature of archaeological resources.

**Method:**

- An abbreviated version of this ACMP must be part of the documentation issued to property owners by the PPHOA.
- Pamphlets detailing the archaeology on the Estate including its value and legal status must be available at strategic locations such as the PPHOA office, information centre, sales office, golf course club house, sites to be conserved, etc.
- Interpretive/information/notice boards must be installed at strategic locations such as the entrance to the Estate, PPHOA offices, sales office, where the CSBT enters the property and at several locations in the vicinity of archaeological resources. These boards must minimally include text describing the significance and value of archaeological resources and their legal status. The boards should be designed by an appointed archaeologist and/or museum displays specialist in consultation with HWC and their placement should also be agreed on by HWC.

Ideally, text on these boards will include versions in three official languages of the Western Cape Province, but should at least include English and Afrikaans as the principal languages spoken in the area. Materials should be of a quality suited to the coastal environment and installation of boards should be supervised by the RA to ensure that sensitive deposits are not impacted.

- A public outreach project must be developed and implemented to educate the local community, special interest groups and school groups with respect to the value and conservation of archaeological resources. A partnership between the RA, PPHOA, HWC and all other role players, including the Mossel Bay Municipality, Publicity and Tourism Association and the Dias Museum Complex should be established to develop, manage, support and sustain such a project.
- Any use of images of archaeological sites or resources for financial gain requires a permit application to (Section 27(23) of the NHRA)

**Time frame:**

Medium term and ongoing.

**Responsible parties:**

Developer and/or PPHOA, residents and visitors, RA, HWC

**3.2.9 Schedule for Implementing Various Aspects of the ACMP**

A time frame for implementing different elements of the ACMP is required since prioritization is critical to ensure that various aspects and archaeological resources are dealt with in order of importance. Specific activities and their scheduling are given in Table 1 and section 3.3.

**Objective:**

To avoid and/or minimize continued deterioration of the archaeological record at Pinnacle Point.

**Time frame:**

See sections 3.2, 3.3 and Table 1.

**Immediate and short term:**

- Appoint RA to implement ACMP.
- Develop management structure and appoint board of trustees to Archaeological Trust to ensure ACMP is implemented successfully.
- Compile business plan and budget.
- Establish funding for implementing the ACMP (Archaeological Fund).
- Control pedestrian traffic below cliffs at Pinnacle Point.
- Stop all traffic and construction activities in the vicinity of shell middens at western extent of property.
- Refer to subsections of section 3.2 above.
- Complete exploratory investigations at erven 17876 and 17877.
- Complete conservation and mitigation measures at shell midden complex once permits are obtained from HWC.
- Complete basic analyses and write-up of mitigation at PP 30 and submit report.
- Complete write-up of AIA for sites below the cliffs.

**Ongoing, medium and long term:**

- See section 3.2 above, Table 1 and details given in section 3.3.

**Table 1. Summary of objectives, threats, methods, responsible parties and scheduling of archaeological conservation and management requirements.**

OBJECTIVE	THREATS OR RISKS	ACTION / MANAGEMENT MEASURES	TIME FRAME	RESPONSIBLE PARTIES	MONITORING CRITERIA	MONITORING FREQUENCY
Gauge progress & success of ACMP	ACMP may not be implemented successfully without the backing of a formal management structure	<ul style="list-style-type: none"> <li>▪ Develop management structure in consultation with estate manager and HWC</li> <li>▪ Develop Archaeological Trust and appoint trustees</li> <li>▪ Management structure to be assessed by HWC</li> <li>▪ Develop plan for the functioning of the management structure</li> <li>▪ Ensure that efficiency of management structure is assessed in terms of successful implementation of ACMP</li> </ul>	Immediate (complete by 24 October 2006) and ongoing	PP Resort (Pty) Ltd and/or PPHOA, estate manager(s), trustees of the Archaeological Trust, PPELC, RA	<ul style="list-style-type: none"> <li>▪ Assess efficiency of implementation of ACMP</li> <li>▪ Check status of heritage resources with reference to their status at initial implementation of ACMP</li> </ul>	<ul style="list-style-type: none"> <li>▪ A year after initial implementation of ACMP – or earlier if the need arises - and quarterly thereafter</li> </ul>
To finance the implementation of the ACMP	Successful implementation of ACMP will be compromised by insufficient and/or poorly managed funding	<ul style="list-style-type: none"> <li>▪ Developer appoints a professional to compile a business plan &amp; budget in consultation with RA</li> <li>▪ Account is opened for the sole purpose of financing the implementation of the ACMP</li> <li>▪ Trustees of the “Archaeological Trust” ensure that monies are used and managed appropriately in accordance with the ACMP</li> </ul>	Immediate (pending compilation of business plan and budget) and ongoing	PP Resort (Pty) Ltd and/or PPHOA, suitably qualified person, trustees of the Archaeological Trust, RA	<ul style="list-style-type: none"> <li>▪ Auditing by chartered accountant</li> <li>▪ Review financial statements</li> <li>▪ Review financial status in terms of implementing the ACMP</li> </ul>	<ul style="list-style-type: none"> <li>▪ Annually</li> </ul>
Ensure condition of archaeological resources are improved and/or retained	Deterioration of heritage resources due to natural agents, construction activities and pedestrian traffic	<ul style="list-style-type: none"> <li>▪ Assess and record preservation status of all archaeological and heritage-related resources</li> <li>▪ Develop plan to remove and/or minimize damaging agents with approval from HWC</li> <li>▪ Submit quarterly reports of preservation status of all archaeological and heritage-related resources</li> </ul>	Immediate (already initiated by detailed AIA of area below cliffs) and ongoing	PP Resort (Pty) Ltd and/or PPHOA, trustees of the Archaeological Trust, RA and HWC	<ul style="list-style-type: none"> <li>▪ Full photographic and descriptive records</li> <li>▪ Compare later records with those made during original and earlier assessment</li> </ul>	<ul style="list-style-type: none"> <li>▪ Monthly</li> <li>▪ Quarterly reports to HWC, PPHOA and trustees of Archaeological Trust</li> </ul>

OBJECTIVE	THREATS OR RISKS	ACTION / MANAGEMENT MEASURES	TIME FRAME	RESPONSIBLE PARTIES	MONITORING CRITERIA	MONITORING FREQUENCY
Avoid and/or minimize permanent negative impact of earthmoving activities	Construction related activities involve earthmoving activities that may damage and/or destroy sub-surface archaeological resources	<ul style="list-style-type: none"> <li>▪ RA to establish schedule and location of construction activities in consultation with PPHOA and Estate Manager</li> <li>▪ This includes earthmoving activities associated with maintenance of estate and associated services</li> <li>▪ RA ensures that all earthmoving activities are monitored and supervises same</li> <li>▪ If archaeological resources are uncovered, RA deals with same in consultation with - and under permit from - HWC</li> </ul>	In progress and ongoing as needed	MAPCRM, RA, PP Resort (Pty) Ltd, Estate Manager(s), PPHOA and HWC	<ul style="list-style-type: none"> <li>▪ Produce dated records of areas covered by archaeological monitoring</li> <li>▪ Record presence or absence of archaeological resources, their spatial location and nature</li> </ul>	<ul style="list-style-type: none"> <li>▪ Progress report already submitted</li> <li>▪ Quarterly till end of construction phase and then as needed pending maintenance work</li> </ul>
Stop the permanent adverse impact of pedestrian traffic on - and public misuse of - archaeological resources	Uncontrolled pedestrian traffic has and will continue to have a negative, permanent impact on archaeological resources	<ul style="list-style-type: none"> <li>▪ Deploy full-time monitors in 3 archaeologically sensitive areas</li> <li>▪ Install CCTV to monitor archaeologically sensitive areas</li> <li>▪ Install balustrades, boardwalks and signage to encourage controlled and delineated pedestrian access, information boards, etc (see detail in 3.2.5)</li> <li>▪ Produce pamphlet for PPHOA and visitors to promote protection and conservation of heritage resources</li> <li>▪ Ongoing recording of sites to monitor efficiency of protection and conservation measures and adjust same accordingly</li> </ul>	Immediate and ongoing	PP Resort (Pty) Ltd, PPHOA, Estate Manager, RA, HWC	<ul style="list-style-type: none"> <li>▪ Ensure that pedestrian traffic and activities do not negatively impact archaeologically sensitive areas</li> <li>▪ Generate ongoing record of conservation status of all archaeological sites</li> <li>▪ Generate data as detailed in section 3.2.5 above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Full-time and permanent</li> <li>▪ Areas below cliffs to be no-go zone "after hours"</li> <li>▪ Monthly inspection by RA and collection of data and records</li> </ul>

Pinnacle Point Developments ACMP

OBJECTIVE	THREATS OR RISKS	ACTION / MANAGEMENT MEASURES	TIME FRAME	RESPONSIBLE PARTIES	MONITORING CRITERIA	MONITORING FREQUENCY
Evaluate effectiveness of ACMP and to ensure that it remains efficient and current	Without systematic recording of status of archaeological and heritage-related resources through time, the success of the ACMP cannot be gauged or audited. Auditing must be conducted by independent professional to ensure objectivity.	<ul style="list-style-type: none"> <li>▪ Compile report including all records generated and data collected (as detailed in section 3.2.6)</li> <li>▪ Independent professional archaeologist appointed by HWC conducts audit based on records, data and site visit</li> <li>▪ Results of audit submitted as report to HWC and DEA&amp;DP, which includes effectiveness of the ACMP, problems and concerns, and recommendations for improvements where necessary</li> <li>▪ Auditor must emphasize concerns that are to be included in the ACMP</li> <li>▪ If auditor recommends changes to the ACMP, then those must be presented to HWC. If HWC concurs then recommended changes must be presented to DEA&amp;DP for authorization, and included as amendments to the ACMP</li> </ul>	Immediate and ongoing. Quarterley and annual reports produced by RA	RA, MAPCRM and staff, HWC and appointed independent archaeologist, DEA&DP, Archaeological Trust	<ul style="list-style-type: none"> <li>▪ Evaluate, through records, collected data and site inspection, whether management and conservation measures are meeting the goals of the ACMP</li> <li>▪ Change management and conservation measures where they fail to meet the ACMP's objectives</li> </ul>	<ul style="list-style-type: none"> <li>▪ Annual audits</li> <li>▪ Change and/or update ACMP every three to five years or as needed.</li> </ul>
Provide adequate means and formal channels to protect archaeological resources from construction activities and pedestrian traffic	Archaeological resources are likely to deteriorate and be lost without adequate means and formal channels for their protection	<ul style="list-style-type: none"> <li>▪ Monitoring of earthmoving activities will ensure that sub-surface archaeological resources are detected and evaluated</li> <li>▪ If archaeological resources are exposed, then construction must stop and the RA will inspect the find within 48 hours and decide on appropriate actions to follow</li> <li>▪ Affected area must be cordoned off, all construction supervisory and management staff informed of the need to remain clear of the cordoned area and security put in place if needed</li> <li>▪ Decisions regarding protection, mitigation and conservation must be approved by HWC. Additionally, necessary work or the manner to deal with the find will be dictated by the rating of the find.</li> <li>▪ If archaeological excavation is involved, then a permit must be obtained from HWC</li> <li>▪ Construction may continue after permitted mitigation is complete to the satisfaction of HWC and a permit to destroy archaeological resources has been issued by HWC</li> <li>▪ If pedestrian traffic has negative impact then measures must be deployed to avoid or minimize this impact. If no measures are effective, then pedestrian traffic must be removed from the affected areas. Compliance and enforcement is described in section 2.4.</li> </ul>	Monitoring of construction activities already in progress, immediate and ongoing, full-time monitoring in archaeologically sensitive areas	PP Resort (Pty) Ltd, PPHOA, residents and visitors, RA, HWC, DEA&DP	<ul style="list-style-type: none"> <li>▪ Exposure of sub-surface archaeological materials during construction and maintenance activities</li> <li>▪ Negative impact of pedestrian traffic and related activities on archaeological and heritage-related resources</li> </ul>	<ul style="list-style-type: none"> <li>▪ As needed</li> <li>▪ Immediate and ongoing</li> </ul>

OBJECTIVE	THREATS OR RISKS	ACTION / MANAGEMENT MEASURES	TIME FRAME	RESPONSIBLE PARTIES	MONITORING CRITERIA	MONITORING FREQUENCY
<p>Present information on archaeological resources to the public in a manner that will ensure that their significance and values are understood so that these resources can be used in a sustainable way</p>	<p>Improper use of archaeological and heritage-related resources</p>	<ul style="list-style-type: none"> <li>▪ A “public outreach” program is being developed by Dr. T Matthews, Mr. S. Smallberger and relevant parties</li> <li>▪ The goal of the outreach program is to educate the local community, special interest groups and school groups with respect to the value and conservation of archaeological resources. A partnership between all role players should be established to develop, manage, support and sustain such a project.</li> <li>▪ The following should be included in the outreach program:                             <ul style="list-style-type: none"> <li>• An abbreviated version of this ACMP must be issued to property owners by the PPHOA.</li> <li>• Pamphlets detailing the archaeology on the Estate including its value and legal status must be presented at strategic locations such as the PPHOA office, information centre, sales office, golf course club house, sites to be conserved, etc.</li> <li>• Interpretive/information/notice boards must be installed at strategic locations such as the entrance to the Estate, PPHOA offices, sales office, where the CSBT enters the property and at several locations in the vicinity of archaeological resources. See further detail in section 3.2.8.</li> <li>• Any use of images of archaeological sites or resources for financial gain requires a permit from HWC (Section 27(23) of the NHRA).</li> </ul> </li> </ul>	<p>Already initiated and in progress</p>	<p>PP Resort (Pty) Ltd, PPHOA, HWC, Dr. Matthews, Mr. Smallberger, RA, Mossel Bay Municipality, Publicity and Tourism Association and the Dias Museum Complex</p>	<ul style="list-style-type: none"> <li>▪ Records of archaeological resources</li> <li>▪ Data collected as detailed in 3.2.6</li> </ul>	<ul style="list-style-type: none"> <li>▪ Assess visitor impact on archaeological resources</li> <li>▪</li> </ul>

### 3.3 RATING OF ARCHAEOLOGICAL RESOURCES AND SPECIFIC CONSERVATION & MANAGEMENT REQUIREMENTS

The rating of archaeological resources presented in Table 1 below is based on recommendations made by SAHRA that are defined as follows: Grade 1 = national significance and should be nominated as a National Heritage Site, Grade 2 = provincial significance and should be nominated as a Provincial Heritage Site, Grade 3A = local significance and should not be mitigated, but retained in its entirety as a heritage site (high significance), Grade 3B = local significance and should be mitigated in part, but part should be retained as a heritage site (high significance), Generally Protected A = this site should be mitigated before destruction (high/medium significance), Generally Protected B = this site should be recorded before destruction (medium significance) and Generally Protected C = this site has been sufficiently recorded and requires no further recording before destruction (low significance).

**Table 2. Rating of archaeological resources for their heritage significance.**

Site Number	Basic Description	Rating as Recommended by SAHRA
PP 1, 9, (newly discovered cave site)	Large coastal caves with MSA deposits & geological features	Grade 1
PP 2	Small cave with few artefacts	Grade 3B
PP 3 & 4	Open air shell middens of LSA origin with stone artifacts	Grade 3B
PP 5 & 6	Large coastal cave with LSA & MSA deposits and geological features	Grade 1
PP 7	Small rock shelter with fragmented marine shell	Generally Protected B
PP 8	Large coastal cave with few MSA artefacts outside cave	Generally Protected B
PP 10, 11 & 12	Small coastal caves with MSA deposits and geological features	Grade 1
PP 13A, 13B, 13C, 13D, 13E, 13F & 13G	Suite of large and small coastal caves with MSA deposits and geological features	Grade 1
PP 14, 15, 16, 17, 22, 24, 25, 26, 27 & 28	Open air, extensive and mostly low density scatters of MSA artefacts (a few artefacts of ESA origin were noted at PP 26) Note: most already destroyed by construction activities	Generally Protected B & C
PP 18, 20 & others in "midden complex"	Open air shell midden of LSA origin	Generally Protected A
PP 19 (part of "midden complex")	Open air, stratified shell midden of LSA origin	Grade 2 (3B)
PP 21	Large coastal cave with few MSA artefacts at mouth and geological features	Grade 1
PP 23	Open air quarry site of MSA origin	Grade 2 (3B)
PP 30	Subterranean deposit of probable Pleistocene age with mostly carnivore accumulated bones	Grade 1 (3B)
PP 31	Open air, stratified shell midden of pottery period origin	Grade 2 (3B)
Crevasse Cave	Coastal cave with geological features	Grade 1
Staircase Cave	Relic coastal cave with geological features	Grade 1
Tunnel Cave	Coastal cave with geological features	Grade 1

### 3.3.1 Specific Conservation and Management Requirements for the Pinnacle Point Estate and Cape Saint Blaize Trail

*NOTE: HWC require that the CSBT remain at the top of the cliffs at Pinnacle Point. As requested by HWC, an archaeological study of sites below the cliffs was conducted by MAPCRM and is in the write-up phase. The latter study forms an integral part of the first phase of the ACMP, which involves a detailed examination and assessment of each site and occurrence as well as recommendations for their protection, conservation and management. This study will also provide substantial detail for revising and updating numbers (names) and precise locations of archaeological and heritage-related resources. This ACMP will be amended as soon as this study is written up.*

Running along the cliffs and beaches between the point of Mossel Bay (Cape St Blaize) and Danabaai, the CSBT is an increasingly popular hiking path enjoyed by local and international visitors to the region. An advertised attraction of the trail is that it allows hikers to experience a spectacular stretch of South African coastline away from the built environment. A specialized hiking trail - "The Oystercatcher Trail" – that uses the CSBT has attained local and international interest. Due to rapid and widespread development on the South African coast, hiking trails like this are becoming scarce and the CSBT has potential to become as popular as the world famous Otter Trail on the Tsitsikamma portion of the South African south coast.

Stretches of the CSBT in the vicinity of Pinnacle Point were destroyed by construction activities and as a result the trail now runs in places close to the development and future houses (Figure 2 & Plate 2). This has detracted from the appeal of the trail, namely that it is removed from the built environment. In fact, it has already had a negative impact on the popularity of the CSBT and "The Oystercatcher Trail". It is in the interest of the developer, CSBT and "The Oystercatcher Trail" that the alignment of the trail changes. Maintaining an altered alignment of the CSBT above the cliffs at this time appears certain and is a requirement of the RoD. Also being proposed is the possibility of re-routing a portion of the trail to run along the beach – near the eastern extent of the property - at the bottom of the cliffs (see green line in Plate 2). While this latest proposal does not take the trail past archaeologically sensitive areas, the same measures for conservation and management of archaeological resources apply regardless of the final alignment of the CSBT. The positive impact is that increased exposure of heritage resources of the area has significant and as yet untapped potential for education, promotion, tourism and job creation.

Archaeological, geological and palaeontological sites and features that occur below the cliffs and in the original alignment of the CSBT are listed in section 1.7 above (Plate 1 & 2). The new proposed alignment of two detour portions on the CSBT is indicated with green lines in Plate 2.

- The trail descends to the main beach via steps that are out of sight from the beach and plateau above as indicated on the Cape St Blaize Trail map of 18 April 2005 (also see Figure 2).
- The trail then follows the sandy or boulder beaches. In no way can the trail enter the vegetation zone along the edge of the main beach except where the trail runs over vegetated and rocky areas or where vegetation will be trimmed to clear existing pedestrian trails. Because middens occur along these areas, it is critical that the final route does not diverge from the existing trail(s).
- Two shell middens (PP 3 & 4) are truncated and severely damaged by erosion gullies and plans for rescue, stabilization and conservation are necessary. Plans

should include redirecting the current trajectory of water and storm water flow, cleaning and sandbagging the exposed profiles as well as re-vegetating the immediate surrounding where possible. While exposed, representative samples should be excavated from archaeological sediments so that the middens can be characterized and dated as part of the heritage resources conservation and management process.

- The trail then turns away from the coast and up to the top of the cliffs (see western portion of green line crossing beach near eastern extent of property in Plate 2). The ascent is via a pedestrian track and a wooden boardwalk that is built atop a foundation of poles that are “hammered” in to sediments and sand. Post holes are not excavated to install foundation poles. The boardwalk and pedestrian path will not directly impact any archaeological sites.
- The trail exits the property at its western extent with the last 500m running past and cutting through archaeological and geological sites (PP 18, 19, 20 and 31). While the proposed trail will not impact these sites directly if the suggested alignment is maintained, this area requires further archaeological investigation and mitigation before final conservation and management plans are made. A few shell middens must be conserved in perpetuity and the nature of their protection must still be determined. Notice/ information/ interpretive boards should be erected.
- The location and layout for the installation of boardwalks and notice/ information/ interpretive boards must be evaluated and approved by HWC and activities associated with these installations must be supervised by the RA.
- Concerning interpretive/ information/ notice boards; these should be designed by an appointed archaeologist in consultation with HWC and their placement should also be agreed on by HWC. Ideally, text on these boards will include versions in three official languages of the Western Cape Province, but should at least include English and Afrikaans as the principal languages spoken in the area. Installation of boards should be supervised by the RA to ensure that sensitive deposits are not impacted.

The following site/category-specific observations and recommendations apply to sites below the cliffs (Plate 2).

- PP 1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 21 and 29 are cave sites of variable significance that contain LSA and/or MSA materials as well as geological features of significant heritage-related value. PP 5 and 6 are damaged by storm-related erosion and these sites urgently require rescue and stabilization measures. PP 5 and 6 form a core part of research by the Mossel Bay Archaeology Project (MAP). Investigations are planned at both PP 5 & 6 including excavations and as mentioned in Mrs. Leslie’s letter above, developers should work with MAP to develop plans for stabilization and protection that fits the schedule for research operations. The latter was initiated in June 2006 and we wait to hear from engineers. Some sites were tested through archaeological excavation, but most have not and therefore the extent and nature of sub-surface materials are unknown at this time. The interior of caves and exposed archaeological resources must be out of bounds to the general public, but scientists require continued access for research purposes. If sites are included for education, guided tours or tourism purposes then suitably placed platforms – at appropriate sites - must be constructed under archaeological guidance and supervision once approved by HWC. The manner in which caves are protected from general pedestrian traffic should still permit reasonable ease of access to scientists and authorized persons. While developers plan to install a CCTV system to monitor the areas below the cliffs, such monitoring cannot entirely prevent the damage and/or disturbance to irreplaceable archaeological, geological and associated

resources. Trained monitors/security guards/guides must be employed to be present on site - three persons must be on duty in the coastal zone where archaeological sites are clustered - at all times when the coastal zone is accessible to pedestrians to ensure that no unauthorized persons enter caves and that no heritage-related resources are damaged and/or destroyed. In addition, interpretive/ information/ notice boards must be erected informing visitors about sites, their importance and legislation concerning their protection.

- PP 3, 4, 18, 19, 20, 31 and previously unidentified shell middens and geological occurrences are open air locations. The alignment of the CSBT at the western extent of the property (see Plate 2) should only be finalized after mitigation is complete and conservation measures are in place for the protection of shell middens (PP 18, 19, 20 and 31). Increased pedestrian traffic in general and that associated specifically with future houses in the vicinity of PP 18, 19, 20 and 31 will have a cumulative and negative impact on heritage resources unless deposits are protected. Until these sites are sampled and stabilized through archaeological mitigation, pedestrian and vehicular traffic should be kept out of the affected area. Detailed mitigation, conservation and management plans for these sites are not included here. These details will be included in this ACMP as soon as they are approved by HWC.
- The installation of boardwalks must be supervised by the RA.
- Concerning interpretive/information/notice boards; these should be designed by an appointed archaeologist in consultation with HWC and their placement should also be agreed on by HWC. Ideally, text on these boards will include versions in three official languages of the Western Cape Province, but should at least include English and Afrikaans as the principal languages spoken in the area. Installation of boards should be supervised by an appointed archaeologist to ensure that sensitive deposits are not impacted.

Measures for the mitigation, conservation and management of the above-mentioned sites are summarized in Table 2. Note that collection and sampling of archaeological and heritage-related materials require permits from HWC and sufficient time (usually about 1 month) should be allowed to obtain permits and prepare for mitigation.

**Table 3. Mitigation, conservation and management measures for sites below the cliffs and/or along the proposed alignment of the CSBT.**

Site Number	Mitigation	Conservation and Management
PP 1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13 & 31	Plans for rescue/sampling and stabilization are urgently required for PP 5 and 6. Plans and scheduling for the above should be finalized between developers and MAP.	Out of bounds to general public, monitor by personnel & CCTV, boardwalks & platforms (at selected sites), interpretive /information /notice boards
PP 21 & 29	Sub-surface archaeological testing for final conservation and management plans	Out of bounds to general public, monitor by personnel & CCTV, balustrades, boardwalks & platforms (at selected sites), interpretive /information /notice boards
PP 3, 4,	Plans for rescue/sampling and stabilization are urgently needed	Out of bounds to general public, monitor by personnel & CCTV, balustrades, boardwalks & platforms (at selected sites), interpretive /information /notice boards

PP 18, 19, 20 and 31	Plans for rescue and sampling needed in near future.	Temporary balustrades until mitigation completed. Cover with biddum (geo-textile), topsoil and re-vegetate after mitigation. Include in title deeds for protection in perpetuity
----------------------	--	--

All recommended measures for conservation and management given below should be conducted prior to the upgrading and/or realignment of the CSBT and the operational phase of the development. Regardless of the alignment of the CSBT, the recommended measures for mitigation, conservation and management apply. According to the ROD, developers are responsible for financing and ensuring the implementation of the ACMP.

Sites threatened, damaged and/or destroyed by construction activities on and in the vicinity of the original alignment of the CSBT are listed in section 1.7 above (Plate 2). The author inspected, recorded and photographed these localities above the cliffs and includes the following recommendations for mitigation, conservation and management (see Plate 2 and Kaplan 1997):

- PP 14 is a site of low significance and comprises a very low density scatter of MSA artefacts that was partly disturbed by construction activities. Although parts of this occurrence were disturbed, it is recommended that the remaining artefacts be piece-plotted and collected.
- PP 15 is a site of low significance and contains very low densities of MSA artefacts that are not affected by development. Due to increase in pedestrian traffic it is recommended that artefacts at this locality be piece-plotted and collected.
- PP 16 is no longer visible as it was covered by construction-related debris. The site was documented to be of low significance (Kaplan 1997). No mitigation, conservation or management measures are required.
- PP 17 is of low significance and consists of low numbers of MSA artefacts. Because artefacts occur in and adjacent to the CSBT it is recommended that artefacts are piece-plotted and collected.
- PP 22 is of low significance and the site was totally destroyed by construction activities. No mitigation, conservation or management measures are required.
- PP 23 is a MSA quarry site of high significance that is partly damaged by construction activities. The site lies in and adjacent to the original alignment of the CSBT next to the 3<sup>rd</sup> hole on the golf course. Because of its significance and the pending increase in pedestrian traffic in the general area, it is recommended that a representative sample of the MSA artefacts be piece-plotted and collected. The site also requires sub-surface testing as there are likely buried *in situ* (in original or primary context) deposits that will require sampling. After sampling of buried materials the remainder of the site should be covered with biddum (geo-textile), then a layer of topsoil and finally re-vegetated. The site should be surveyed before it is covered and coordinate data and conservation status must be written into the relevant title deeds for protection in perpetuity.
- PP 24 and 25 are MSA artefact scatters of medium to low significance that were completely destroyed by construction activities. No mitigation, conservation or management measures are required.
- PP 26 could not be located and was likely destroyed by construction activities. Nevertheless, the site was rated to be of low significance even though MSA and ESA artefacts were noted during the initial impact assessment (Kaplan 1997). No mitigation, conservation or management measures are required.

Measures for the mitigation, conservation and management of the above-mentioned sites are summarized in Table 3. Note that collection and sampling of

archaeological and heritage-related materials require permits from HWC and sufficient time (usually about 1 month) should be allowed to obtain permits and prepare for mitigation.

**Table 4. Mitigation, conservation and management measures for sites threatened, damaged and/or destroyed by construction activities on and in the vicinity of the original alignment of the CSBT.**

Site Number	Mitigation	Conservation and Management
PP 14, 15 & 17	Piece-plot and collect all artifacts	None
PP 16, 22, 24, 25 & 26	None	None
PP 23	Piece-plot and collect a representative sample of artefacts. Sub-surface testing and sampling of buried materials if present.	Cover remaining artefact scatter and deposits with biddum (geo-textile), topsoil and re-vegetate. Include in title deeds for protection in perpetuity.

## REFERENCES

- Australian Heritage Commission. 1998. Protecting local heritage places. A guide for communities. Canberra: Australian Heritage Commission.
- Avierinos, C. 2002. Impact on Flora at Pinnacle Point Golf Resort, Mossel Bay. Hilland Associates.
- Berry, M. 2006. Pinnacle Point Estate: Operational Phase Environmental Management Plan. Mark Berry Environmental Consultants.
- Kaplan, J. (1997) Archaeological Study: Proposed Pinnacle Point Development. Riebeek West, South Africa, Agency for Cultural Resource Management.
- Marean, C. W., Nilssen, P. J., Brown, K., Jerardino, A., and D. Styrder (2004) "Paleoanthropological Investigations of Middle Stone Age Sites at Pinnacle Point, Mossel Bay (South Africa): Archaeology and Hominid Remains from the 2000 Field Season." *PaleoAnthropology*
- Mucina, L. and Rutherford, M.C. (eds.) 2004. Vegetation Map of South Africa, Lesotho and Swaziland: Shapefiles of basic mapping units. Beta version 3.0, January 2004, National Botanical Institute, Cape Town.
- Nilssen, P.J. (2005). Archaeological Monitoring of vegetation clearing and all earthmoving activities during development at Pinnacle Point, Mossel Bay. Progress report to HWC. MAPCRM cc, Great Brak River.
- SAHRA 2002. General Introduction to Surveys, Impact Assessments and Management Plans. SG 2.1 SAHRA APMHOB Permit Committee.

## FIGURES & PLATES (on following pages)

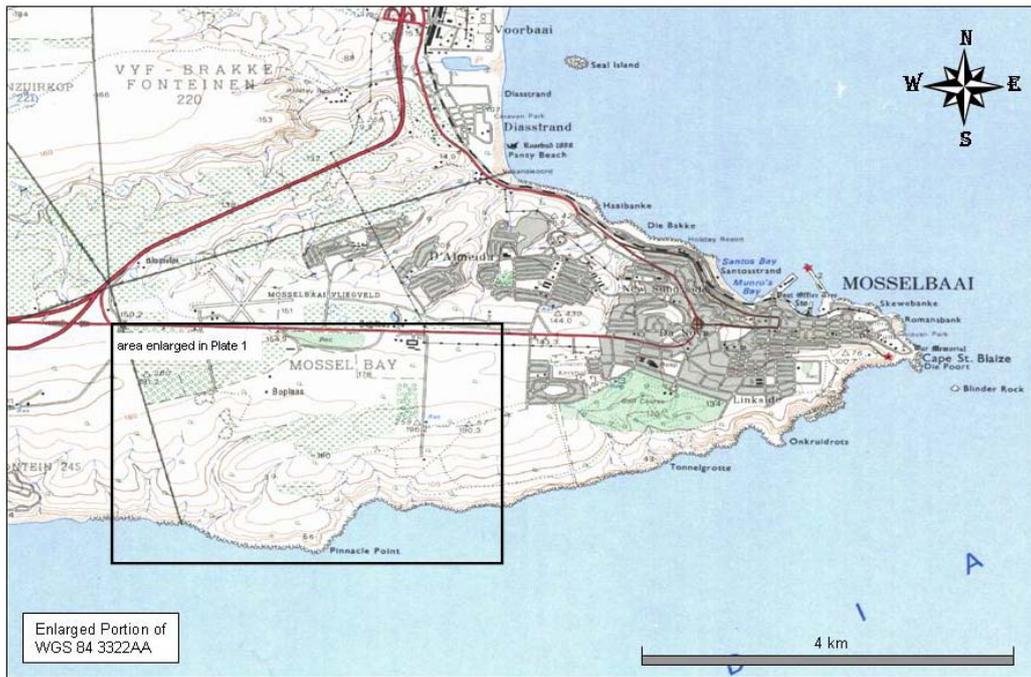


Figure 1. General location of Pinnacle Point relative to the coastal town of Mossel Bay, Western Cape Province.

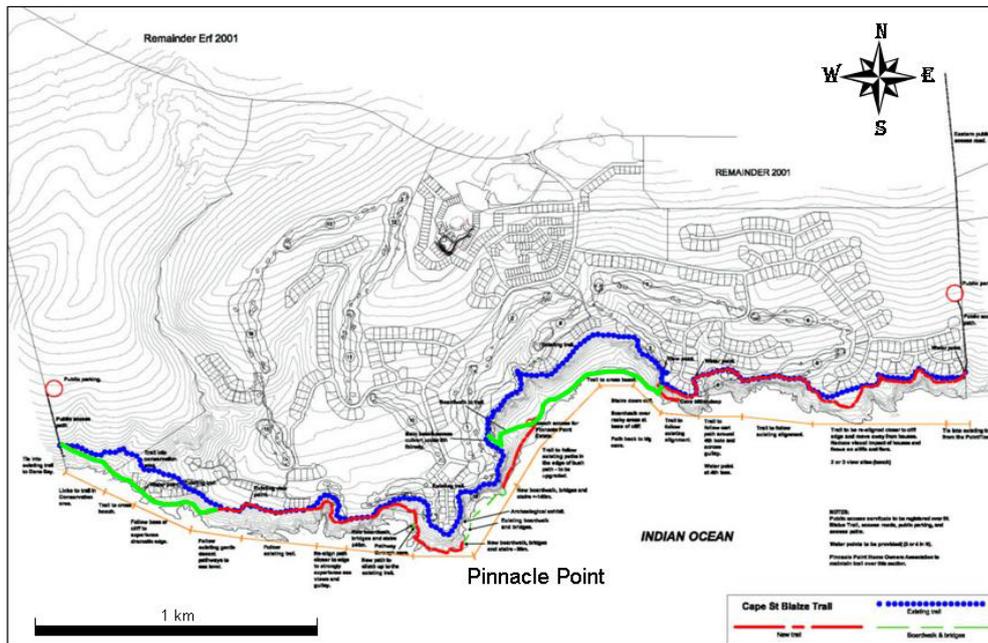


Figure 2. Shown above is the layout plan of development and the Cape St Blaize Trail within the boundary of the property under development (see Plate 1). The original and formerly proposed alignments of the CSBT are shown in blue and red respectively while green lines – overlying red - show the current proposed alignment (see detail in Plate 2).



Plate 1. Enlarged area as indicated in Figure 1. The white line depicts the boundary of the property under development at Pinnacle Point. Recorded archaeological, geological and paleontological resources are indicated with red dots (approximate locations). The green frame is enlarged as Plate 2.



Plate 2. Enlarged area as indicated in Plate 1. The original and formerly proposed alignments of the CSBT are shown in blue and red respectively while green lines – overlying red - show the current proposed alignment. Note that the latter do not run past highly sensitive archaeological sites. Recorded archaeological and environmental resources are indicated with red dots (approximate locations).