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**PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT
OREX ROAD: ELANDS BAY - LAMBERTS BAY
CAPE WEST COAST**

Prepared for

JEFFARES & GREEN CONSULTING ENGINEERS

By

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Executive summary

Potentially significant archaeological sites were located during a Phase 1 Archaeological Impact Assessment of the proposed upgrading of the Orex Road between Elands Bay and Lamberts Bay on the Cape West coast.

The proposed project comprises upgrading the existing Orex Road from Elands Bay northwards, till the intersection with the Lamberts Bay - Palesheuvel Roads (the MR538), a distance of approximately 15 kms.

Two routes have been identified in the so-called Orex Corridor, Route 1 and Route 2. Both routes were searched for archaeological remains.

With regard to Route 1, substantial archaeological remains are aligned on top of a fossil dune cordon between km 0.2 and km 0.6. This series or cluster of sites, called Orex 1, forms part of a larger number of sites known to occur behind the dune cordon and have been given high significance ratings.

Occasional fragments of shellfish and a few stone tools were located in some open patches of ground, and on adjacent dune tops, between the level crossing at \pm km 6.8 and \pm km 8.6.

Two potentially significant sites (Orex 2 & 3) were located between \pm km 13.5 and \pm km 14.5.

With regard to Route 2, fragments of shellfish and a few stone artefacts were located alongside the Orex Road between km 0.0 and km 0.2. This area has been severely impacted by pedestrian traffic and is severely degraded.

Occasional fragments of shellfish were also located in the road and railway line reserves alongside the existing Orex Road, but these remains are severely disturbed as a result of past road and rail works.

With regard to Route 1

- The impact of the proposed project on Stone Age archaeological sites will likely be high.
- Additional sites may be exposed during vegetation clearing operations.
- Human burial remains and buried shell middens may be uncovered or exposed during earthworks and road construction activities.

With regard to Route 2

- The preferred route is Route 2, as almost the entire route is located within the existing road and railway line reserves.
- The overall impact of the proposed project on archaeological sites is likely to be low.
- The probability of locating significant archaeological remains during implementation of the proposed project is likely to be medium to low.
- The receiving environment is less archaeologically sensitive than Route 1.

With regard to the proposed upgrading of the Orex Road: Elands Bay - Lamberts Bay, the following recommendations are made.

Route 1

- Orex 1, 2 and 3 will require a programme of archaeological excavations and test sampling. The degree of mitigation is subject to the approval of the South African Heritage Resources Agency (SAHRA).
- Route 1 should be subjected to an archaeological assessment following final pegging of the route.
- The vegetation-clearing programme should be monitored by a professional archaeologist.
- Earthworks and excavations should be monitored by a professional archaeologist.
- Proposed borrow pits, work camps and plant sites should be inspected for archaeological sites.
- The Environmental Control Officer (ECO) is to be briefed by a professional archaeologist what to look out for during vegetation clearing operations and preparation of the site for construction purposes. Levelling and alteration of dunes, for example, may expose buried shell middens and human remains.
- Contractors, staff and particularly plant operators should be briefed what to look out for during vegetation clearing operations and road construction activities.
- Heritage remains uncovered or disturbed during vegetation clearing and earthworks should not be disturbed until inspected by the ECO and verified by a professional archaeologist.
- Should any human remains be disturbed, exposed or uncovered during earthworks, these should immediately be reported to a professional archaeologist, or SAHRA.

Burial remains should be treated sensitively at all times. Human remains should not be removed until inspected by a professional archaeologist.

- The construction EMP should detail reporting procedures to manage the discovery of any heritage artefacts during construction. This would include the recovery or exposure of human burials during construction activities, for example.

Route 2

- The vegetation-clearing programme should be monitored by a professional archaeologist.
- Earthworks and excavations should be monitored by a professional archaeologist.
- The ECO is to be briefed by a professional archaeologist what to look out for during vegetation clearing operations and preparation of the site for construction purposes. Levelling and alteration of dunes, for example, may expose buried shell middens and human remains.
- Contractors, staff and particularly plant operators should be briefed what to look out for during vegetation clearing operations and road construction activities.
- Heritage remains uncovered or disturbed during vegetation clearing and earthworks should not be disturbed until inspected by the ECO and verified by a professional archaeologist.
- Should any human remains be disturbed, exposed or uncovered during earthworks, these should immediately be reported to a professional archaeologist, or the SAHRA. Burial remains should be treated sensitively at all times. Human remains should not be removed until inspected by a professional archaeologist.
- Proposed borrow pits, work camps and plant sites should be inspected for archaeological sites/remains.
- The construction EMP should detail reporting procedures to manage the discovery of any heritage artefacts during construction. This would include the recovery or exposure of human burials during construction activities, for example.

The recommendations are subject to the approval of SAHRA.

1. INTRODUCTION

1.1 Background and brief

Jeffares and Green Consulting Engineers has requested the Agency for Cultural Resource Management to undertake a Phase 1 Archaeological Impact Assessment (AIA) of the proposed upgrading of the Orex Road between Elands Bay and Lamberts Bay on the Cape West coast.

The proposed project comprises upgrading the existing Orex Road from Elands Bay, northwards till the intersection of the Lamberts Bay - Palesheuwel Roads, (the MR538) a distance of approximately 15 kms.

Several routes were identified and evaluated in the scoping report (Thomas 2001), suggesting Route 1 (Orex Corridor) as the most environmentally and economically feasible.

Two routes have been identified in the Orex Corridor, Route 1 and Route 2. Both routes were searched for archaeological remains.

The aim of the AIA is to locate, identify and map archaeological remains that may be negatively impacted by the proposed project, and to propose measures to mitigate against the impact.

2. TERMS OF REFERENCE

The terms of reference for the AIA were:

1. to determine whether there are likely to be any archaeological sites of significance within the proposed routes.
2. to identify and map any sites of archaeological significance within the proposed routes;
3. to assess the sensitivity and conservation significance of archaeological sites potentially affected by the proposed development;
4. to assess the status and significance of any impacts resulting from the proposed development, and
5. to identify mitigatory measures to protect and maintain any valuable archaeological sites that may exist within the proposed routes.

3. THE STUDY SITE

The study site and the proposed project are illustrated in Figure 1.

4. CONSTRAINTS AND LIMITATIONS

The study was constrained by thick vegetation cover along some sections of the proposed route(s), resulting in low archaeological visibility.

5. STUDY APPROACH AND DOCUMENTATION OF ARCHAEOLOGICAL SITES

5.1 Method of survey

The approach used in the archaeological study entailed a detailed foot survey of Route 1 and Route 2.

The immediate surrounding area within the proposed development envelope was also searched for archaeological remains.

The specialist consulted with archaeologists from the University of Cape Town who are actively involved in research in the Elands Bay - Lamberts Bay region.

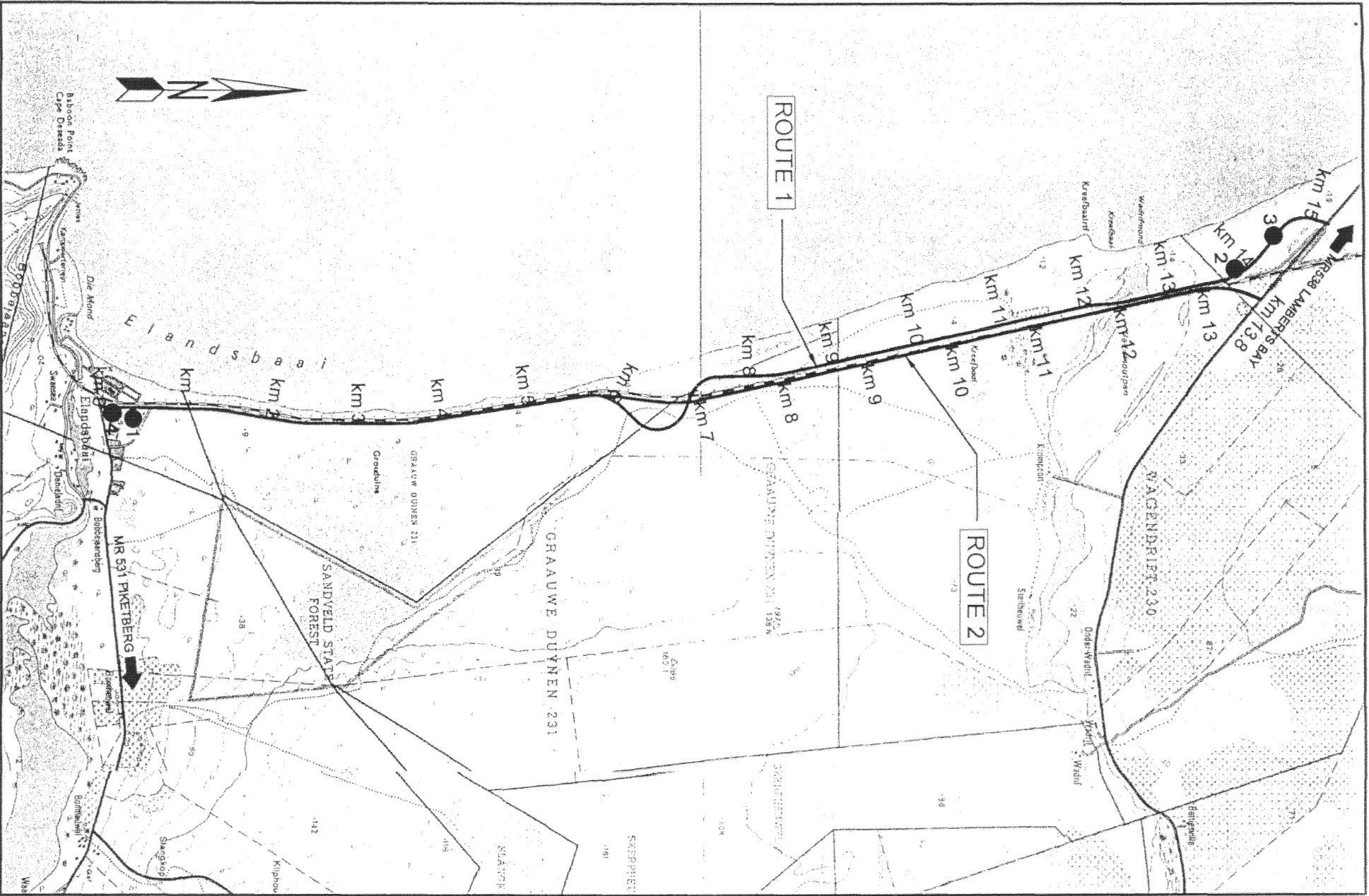
A desktop study was also undertaken.

The Elands Bay - Lamberts Bay region has been subjected to research by archaeologists for nearly three decades. Research has shown that people have occupied the coast for well over a million years.

Later Stone Age ¹(LSA) people were attracted to the rocky coastline, which provided a predictable marine food supply. As a result of this, the existing late Holocene coastline (last 2000 years) is exceptionally rich in archaeological sites (Hart & Halkett 1995; Halkett & Mutti 1998; Jerardino 1994; Kaplan 1993; Parkington et al 1988).

Commenting on the likely impact of the proposed West Coast Highway on archaeological sites, Parkington and Manhire (1988:4) note that there are very sensitive areas 'within a kilometre of so' of the existing Orex Road.

¹ A term referring to the last 20 000 years of precolonial history in southern Africa.



OREX ROAD - ROUTE 1 & 2



JEFFARES & GREEN

SCALE
1:62 000

Figure 1. Phase 1 Archaeological Impact Assessment, Orex Road, Elands Bay - Lamhate Bay Shindv eita and location of proposed routes and archaeological sites.

6. LEGISLATIVE REQUIREMENTS

6.1 The National Heritage Resources Act (Act No. 25 of 1999)

6.1.1 Archaeology (Section 35 (4))

No person may, without a permit issued by SAHRA, destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object.

6.1.2 Burial grounds and graves (Section 36 (3))

No person may, without a permit issued by SAHRA, destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority.

7. IDENTIFICATION OF RISK SOURCES

The following project actions may likely impact negatively on archaeological sites. The actions are most likely to occur during the construction phase of the proposed project.

- Vegetation clearing operations may expose shell middens and artefact scatters.
- Earthworks and excavations may expose or uncover buried shell middens and human burials. Parkington et al (1992) has shown that archaeological sites aligned behind the fossil dunes at Elands Bay are covered by up to 2 m of aeolian sands totally without archaeological content.
- Excavations for borrow pits, and the clearing of land and vegetation for the establishment of work camps and plant sites may also expose or uncover archaeological remains.

8. RESULTS OF THE IMPACT ASSESSMENT

8.1 Route 1

Orex 1

The site comprises an extensive scatter of shellfish remains, which occur along the top of an abandoned coastal dune cordon between km 0.2 and 0.6 (Figures 1-3). This dune cordon is a relict feature of a mid-Holocene (last 5000 years) slightly higher sea level (Parkington et al 1992).

Two large nodes of shellfish were identified along the top of the dune cordon, but scattered shellfish remains are aligned all along the crest of the fossil dune running alongside the Orex Road. Shellfish fragments and the occasional stone tool also occur in the vegetated the dune slacks.

Shellfish remains are also associated with dune mole rat activity along the dune cordon, indicating the possible presence of buried shell middens. The Orex 1 shellfish remains are dominated by mainly fragments of black mussel, with smaller amounts of white mussel, limpets and whelks also occurring.

Stone tools, comprising modified and unmodified flakes, chunks and cores, predominantly in silcrete and quartz, were identified on the site. A few larger quartzite flakes were also found.

Research in this area has established that large numbers of LSA hunter-gatherer campsites are located some two-km north of Elands Bay and about 600 m from the present shoreline. In this area, incorporating the Orex Road study area, shellfish remains are partly exposed at the surface but mostly covered by up to 2 m of aeolian sand (Parkington et al 1992 and pers. comm. 2002).

Importance of finds: **potentially high**

Impact: **road construction will destroy the sites**

Suggested mitigation: **archaeological rescue excavation is required**

Orex 2

The site is located at ± km 13.5 and comprises a relatively extensive, but thin scatter, of fragmented shellfish remains, with a few whole shell occurring, in open spaces among the well vegetated terrain of low scrub and bush, about 300 m west of the Orex Road. The shellfish is dominated by fragments of black mussel, with some whelks and limpets also occurring. One quartz flake and chunk, and one piece of ochre were found.

It is unclear whether the site is located in the proposed alignment.

Importance of finds: **potentially high**

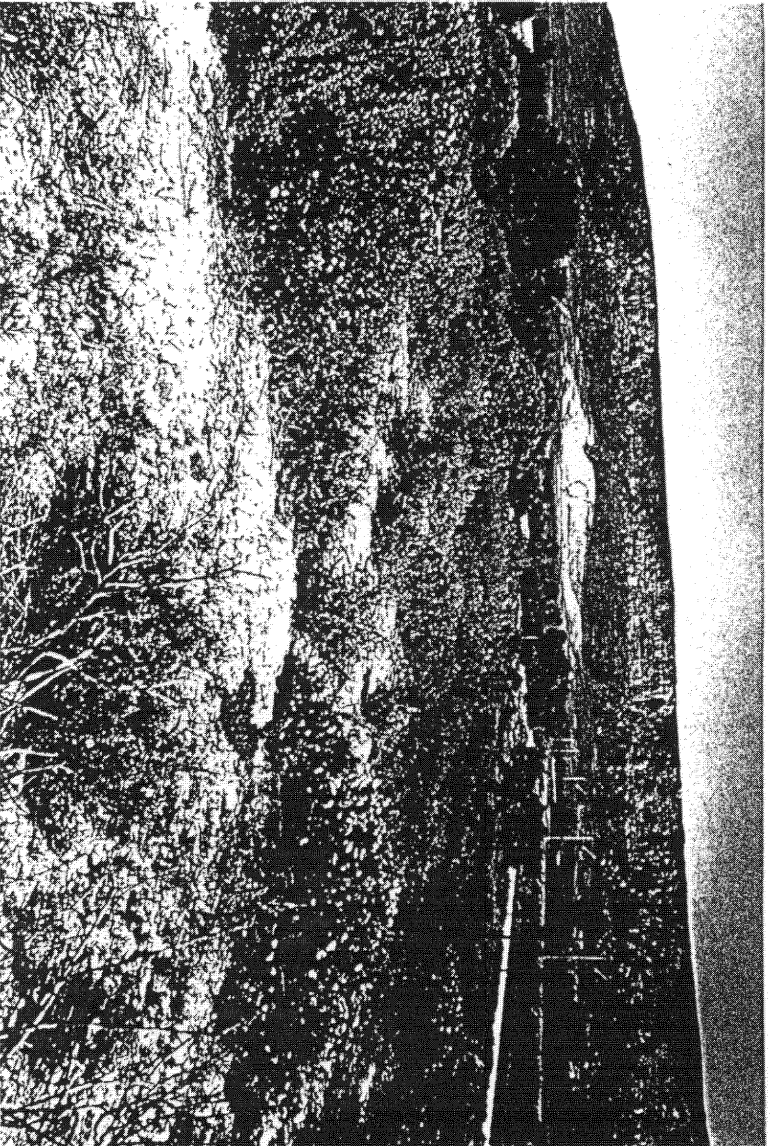


Figure 2. Phase 1 Archaeological Impact Assessment, Orex Road: Elands Bay - Lamberts Bay. **Orex 1**. Note the shellfish remains in the foreground.

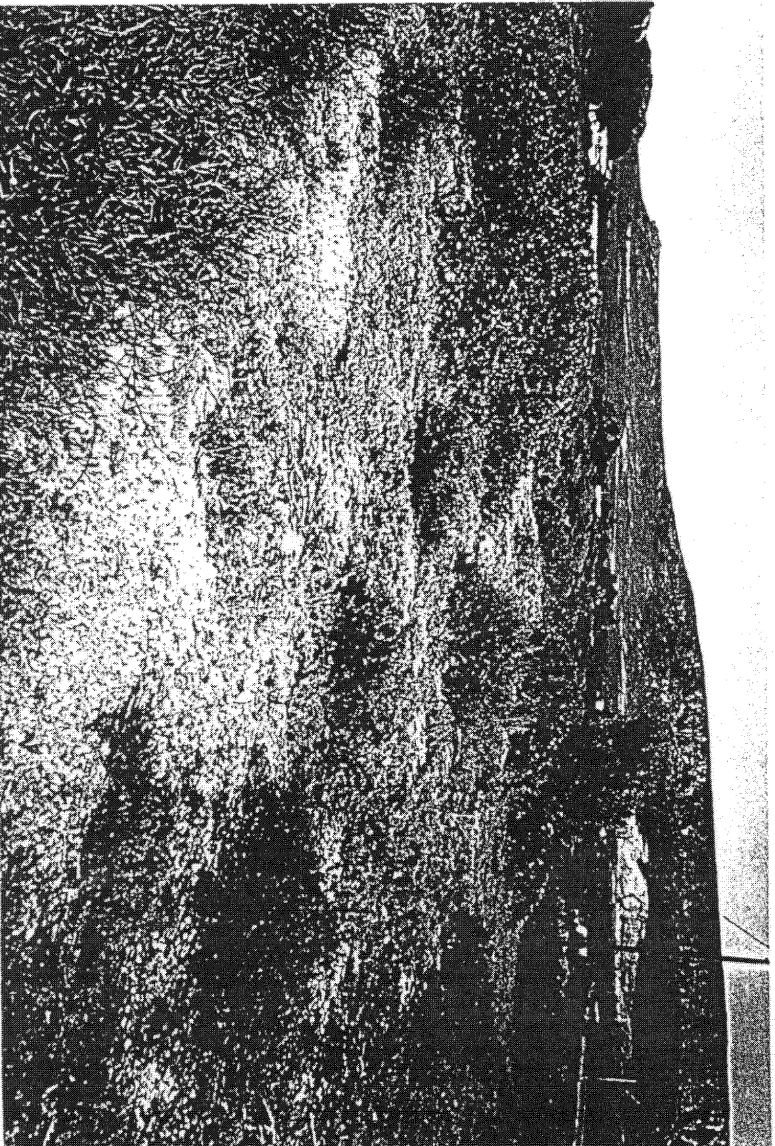


Figure 3. Phase 1 Archaeological Impact Assessment, Orex Road: Elands Bay - Lamberts Bay. **Orex 1**. Note the shellfish remains in the foreground.

Impact: road construction and associated activities may destroy or damage the site

Suggested mitigation: an archaeological sampling programme may be required in order to determine the significance of the archaeological deposit

Orex 3

The site is located at \pm km 14.5 and comprises a relatively widespread scatter of fragmented shellfish, including some whole pieces of shell, in open spaces among the well vegetated terrain, about 400 m north west of the railway bridge. The shellfish is dominated by black mussel, with some limpet and smaller amounts of whelk and barnacle also occurring. One quartz flake was found.

The Orex 3 remains are probably nodes of a larger scatter of marine shellfish and other debris, which form part of a continuum of sites in this area known as Grootdrif A, which has been recorded by archaeologists from the University of Cape Town (Jerardino pers. comm. 2002).

Although the scatter of shellfish remains is rather thin, test pits excavated at Grootdrif A indicate that the shell thickens to about 20 cm below the surface in places. (Jerardino pers. comm. 2002).

It is unclear whether the site is located in the proposed alignment.

Importance of finds: potentially high

Impact: road construction and associated activities may destroy or damage the site

Suggested mitigation: an archaeological sampling programme may be required in order to determine the significance of the archaeological deposit

It is important to note, that the affected environment between \pm km 5.8 and the junction of the MR538 is well vegetated, resulting in low archaeological visibility (Figures 4 & 5). Some larger open spaces do occur in places, however (Figure 6). A few fragments of shellfish and the occasional stone flake and chunk was located in some of these open spaces, as well as on some of the adjacent dune tops between \pm km 6.8 (the level crossing) and \pm km 8.6. Some important sites are known to occur closer to the coast in the general study area here (Jerardino pers. comm. 2002 & Parkington pers. comm. 2002).



Figure 4. Phase 1 Archaeological Impact Assessment, Orex Road: Elands Bay - Lamberts Bay. Facing north toward Lamberts Bay

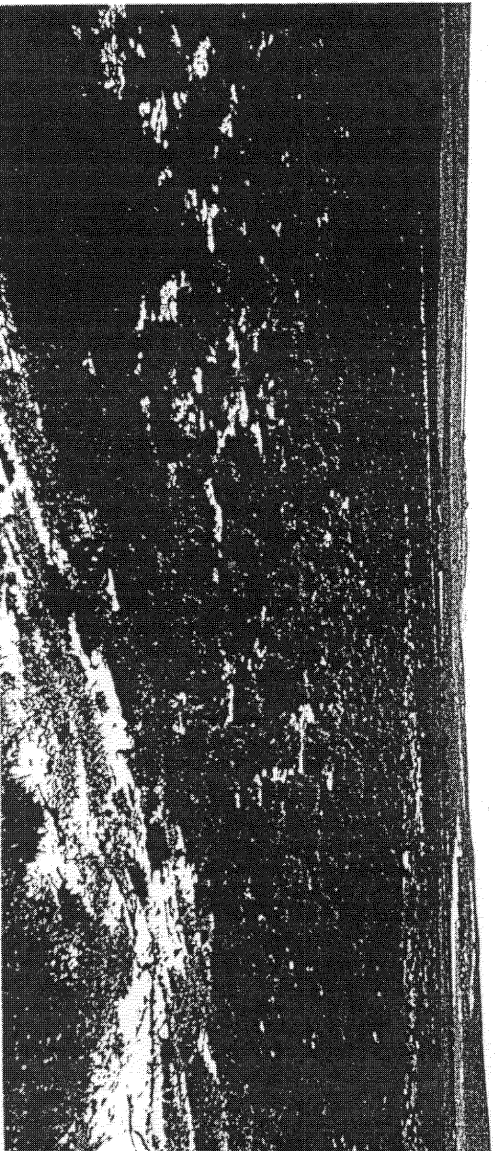
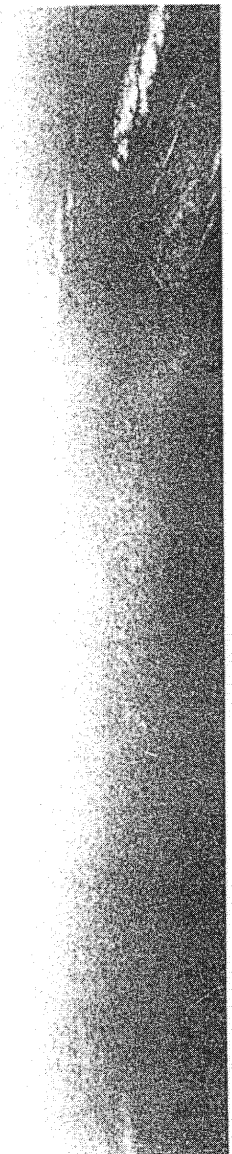


Figure 5. Phase 1 Archaeological Impact Assessment, Orex Road: Elands Bay - Lamberts Bay. Facing south toward Elands Bay.

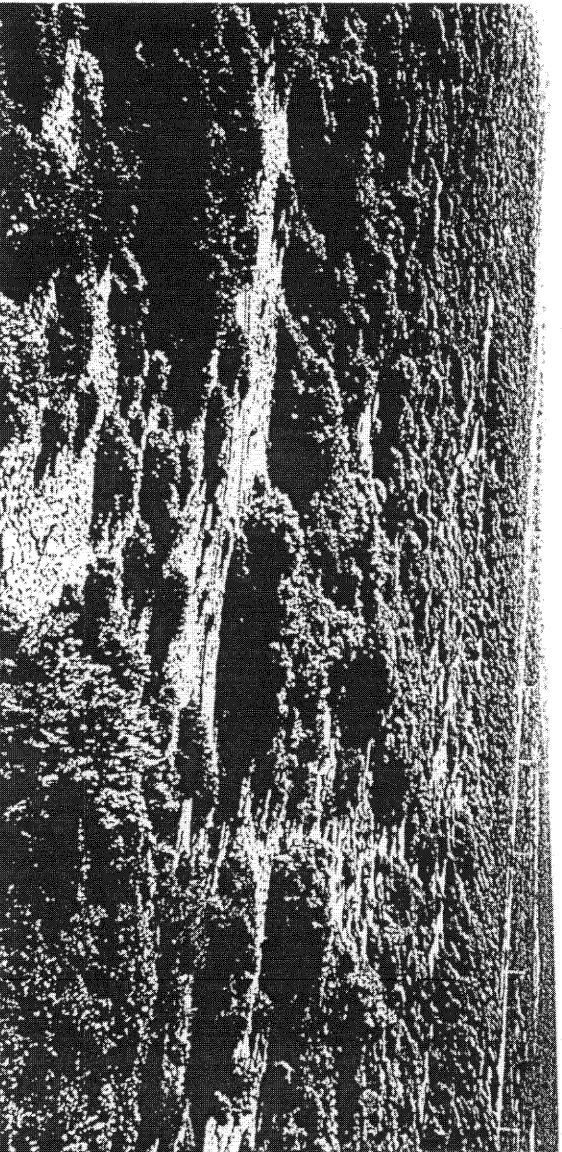


Figure 6. Phase 1 Archaeological Impact Assessment, Orex Road: Elands Bay - Lamberts Bay. Open spaces alongside the Orex Road, looking north toward Lamberts Bay.

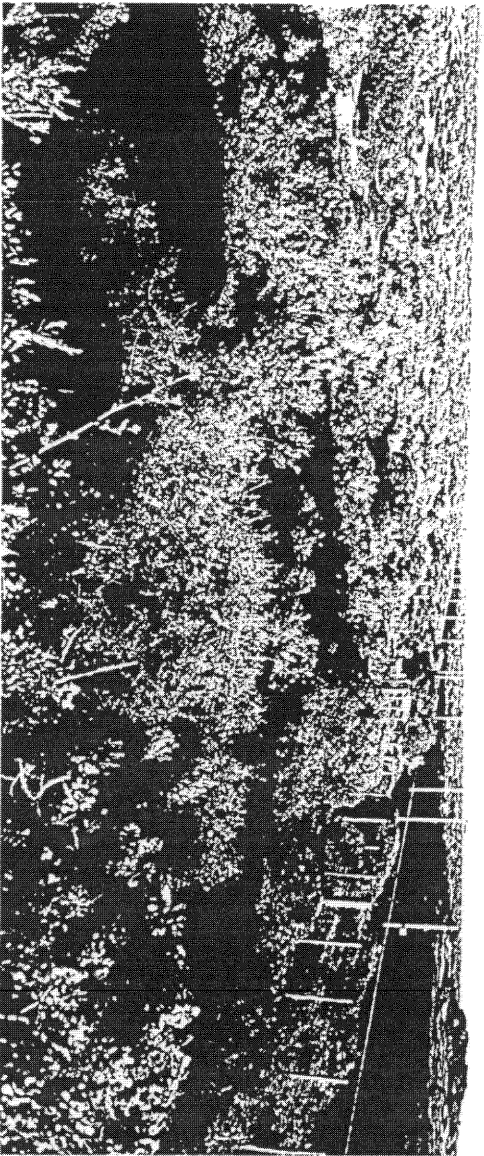


Figure 7. Phase 1 Archaeological Impact Assessment, Orex Road: Elands Bay - Lamberts Bay. Facing south toward Elands Bay.

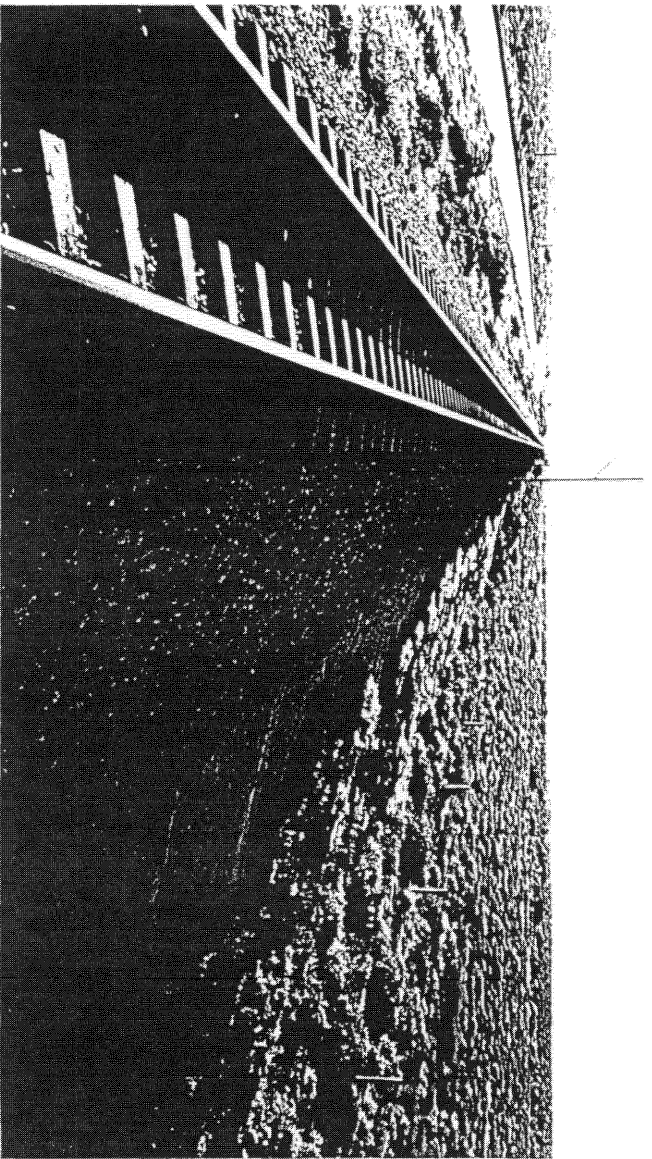


Figure 8. Phase 1 Archaeological Impact Assessment, Orex Road: Elands Bay - Lamberts Bay. Facing north toward Lamberts Bay.

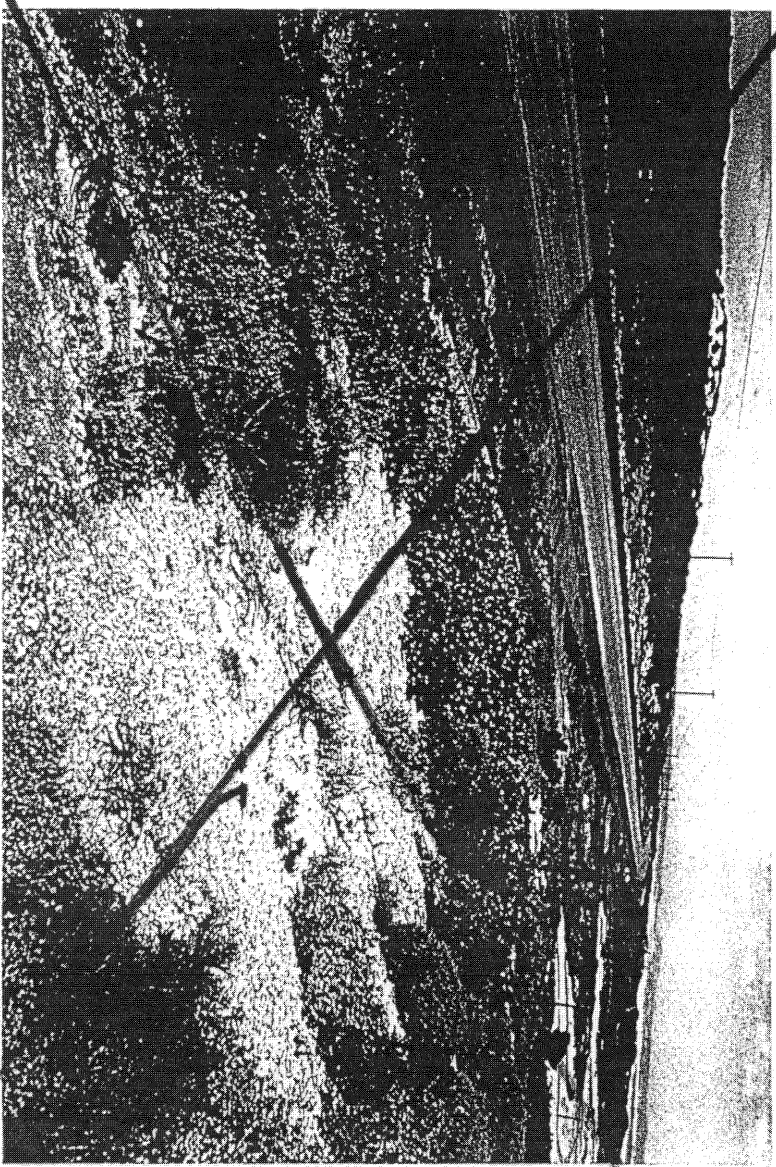


Figure 9. Phase 1 Archaeological Impact Assessment, Orex Road: Elands Bay - Lamberts Bay. Shell midden remains alongside the proposed Northern Section.

8.2 Route 2

Route 2 is located within the existing road reserve (Figure 1). Where the Orex Road crosses the Sishen - Saldanha railway line at about km 6.8, the route is located within the railway line reserve, except for a section at the end, where the road intersects with the MR538. The receiving environment is alternately infested with alien vegetation and natural bush and scrub (Figures 7 & 8), resulting in low archaeological visibility.

Orex 4

A few thin and highly dispersed patches of fragmented shellfish and a few stone artefacts were located between km 0.0 and km 0.2, in loose sandy terrain alongside the Orex Road. This area is fairly well vegetated and also heavily impacted by pedestrian traffic and the archaeological remains are severely disturbed. Dune mole rat activity is present, but no shellfish remains were noted which would otherwise suggest the presence of buried sites.

Importance of finds: low

Impact: road construction may damage or destroy the remains

Suggested mitigation: some selected archaeological sampling and collection
of shell for dating may be required

Occasional fragments of shellfish were located in the road and railway line reserves alongside the Orex Road, but these remains are severely disturbed as a result of past road and rail works.

9. IMPACT STATEMENT

9.1 Route 1

With mitigation, the overall impact of the proposed project on archaeological sites is likely to be low.

Orex 1, 2 and 3 will be negatively impacted by the proposed project.

Additional sites may be located during vegetation clearing operations.

Human burial remains and buried shell middens may also be uncovered or exposed during road construction activities, excavations and earthworks

9.2 Route 2

The overall impact of the proposed project on archaeological remains is likely to be low.

The probability of locating significant archaeological remains during implementation of the proposed project is likely to be low to medium.

Human burial remains and buried shell middens may, however, be uncovered or exposed during road construction activities, excavations and earthworks.

10. RECOMMENDATIONS

With regard to the proposed upgrading of the Orex Road: Elands Bay - Lamberts Bay, the following recommendations are made.

Route 1

- Orex 1, 2 and 3 will require a programme of archaeological excavations and test sampling. The degree of mitigation is subject to the approval of SAHRA.
- Route 1 should be subjected to an archaeological assessment following final pegging of the route.
- The vegetation-clearing programme should be monitored by a professional archaeologist.
- Earthworks and excavations should be monitored by a professional archaeologist.
- Proposed borrow pits, work camps and plant sites should be inspected for archaeological sites.
- The Environmental Control Officer (ECO) is to be briefed by a professional archaeologist what to look out for during vegetation clearing operations and preparation of the site for construction purposes. Levelling and alteration of dunes, for example, may expose buried shell middens and human remains.
- Contractors, staff and particularly plant operators should be briefed what to look out for during vegetation clearing operations and road construction activities.
- Heritage remains uncovered or disturbed during vegetation clearing and earthworks should not be disturbed until inspected by the ECO and verified by a professional archaeologist.
- Should any human remains be disturbed, exposed or uncovered during earthworks, these should immediately be reported to a professional archaeologist, or SAHRA.
- Burial remains should be treated sensitively at all times. Human remains should not be removed until inspected by a professional archaeologist.
- The construction EMP should detail reporting procedures to manage the discovery of any heritage artefacts during construction. This would include the recovery or exposure of human burials during construction activities, for example.

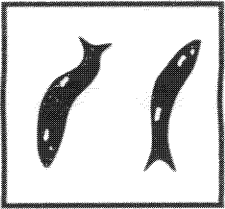
Route 2

- The vegetation-clearing programme should be monitored by a professional archaeologist.
- Earthworks and excavations should be monitored by a professional archaeologist.
- The ECO is to be briefed by a professional archaeologist what to look out for during vegetation clearing operations and preparation of the site for construction purposes. Levelling and alteration of dunes, for example, may expose buried shell middens and human remains.
- Contractors, staff and particularly plant operators should be briefed what to look out for during vegetation clearing operations and road construction activities.
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- The construction EMP should detail reporting procedures to manage the discovery of any heritage artefacts during construction. This would include the recovery or exposure of human burials during construction activities, for example.

The recommendations are subject to the approval of SAHRA.

11. REFERENCES

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30.10.02

Dear Mrs

please find list report.

Regards

Jonathan