Executive Summary

The Westbrook Beach Midden is of medium-high significance. This significance is based on the relatively well preserved material remains, cultural horizons, and the academic insight it may yield. Further development of the affected land should require further negotiations between all interested and affected parties. These negotiations should determine the exact location of built structures, servitudes to the site and to the beach in order to assess the potential impact on the archaeological site. Further archaeological mitigation in terms of excavation may be necessary.

INTRODUCTION

The Institute for Cultural Resource Management (ICRM) was contacted by Environmental Design Partnership to comment on an area south of Westbrook Beach proposed for development (fig. 1). I noted the occurrence of a shell midden on the face of a small dune and suggested that excavation would be necessary in order to determine the full significance of the site. Simon Elliot and Associates contracted the ICRM to undertake the archaeological excavation in early February this year. Excavations occurred over five days with the intention of assessing the significance of the site.

The terms of reference for the contract are:

- Excavate areas to be affected by proposed development
- Analyse the material remains from the excavations and assess the significance of the site
- Suggest further mitigation if necessary

The occurrence of shell middens (or kitchen dumps) along the coast is a well known occurrence. Many sites have been noted in previous surveys (Anderson 1996a, 1996b), however, few have been excavated (Anderson 1997; Horwitz et al 1991). These shell middens date to either the Late Stone Age or the Iron Age, and vary in size and content. According to field notes from various surveys and excavations, the shell middens may be living areas are food processing areas. Each midden is, however, unique in that it reflects the remains of a single group of people often undertaking a specific activity through various periods in time.

DESCRIPTION OF TERMINOLOGY

Archaeological sites are divided into three general periods: Stone Age, Iron Age and Historical. These classifications are used for convenience and do not reflect a social evolutionary trajectory of human development; rather, they refer to the artefacts found on the site. I have omitted Stone Age definitions since these sites do not occur, in the affected area, so far.

The Iron Age refers to the period of settlement in southern Africa by agriculturists. These people spoke a Bantu language, herded cattle, sheep and goats, and cultivated crops such as sorghum, millet, legumes and various squashes. The Iron Age is divided into two main phases: Early Iron Age (EIA) and Late Iron Age (LIA). The main differences between these two periods is in the pottery styles, settlement patterns and vernacular architecture. Both phases are restricted to summer rainfall areas in southern Africa.

The EIA dates from 1 700 to 1 000 years ago. Settlements occur below the 1 000m contour line and in areas with more than 300mm of rainfall per annum. They have been found in major river valleys such as the Tugela River Valley, close to rivers and around coastal lakes. Settlements may be approximately twelve hectares in size, although they are often smaller (Maggs 1980, 1984a, 1984b). The pottery styles tend to show diachronic change; that is, there are stylistic similarities between sub-periods.

The LIA dates from 1 000 to 180 years ago. These sites are different to those of the EIA in their pottery styles and settlement patterns. Settlements are located in savannah and grassland areas and often on the upper slopes of hills. The introduction of maize in the 1700s resulted in a change in the form of several artefacts such as grindstones. There is also an introduction of foreign, or exotic, artefacts such as ceramics and glass beads from the Middle and Far East and Europe, possibly indicating a more extensive trade network than existed during the EIA.

The Historical period dates from approximately AD 1829 to fifty years ago in KwaZulu-Natal. These sites, in general, include those associated with both black and white agriculturists.

The artefacts from archaeological sites can be dated to the following time periods:

Period	Abbreviation	Approximate Age
Early Stone Age	ESA	2 million years ago to 200 000 years ago
Middle Stone Age	MSA	200 000 years ago to 30 000 years ago
Late Stone Age	LSA	30 000 years ago to the last century
Early Iron Age	EIA	1 700 years ago to 1000 years ago
Late Iron Age	LIA	1000 years ago to AD 1829
Historical period		post-1829 AD

These nomenclatures are, however, used for convenience in dating and when referring to A specific technology and or economy. They do not reflect the subtle differences between each group, nor do they imply some form of lineal social evolution or spatial separateness on the landscape. The people living in this area were hunter-gatherers, Bantu-speaking farmers, and European colonists.

Archaeological sites may range from highly significant to insignificant. An archaeological site includes all aspects and artefacts of the site. An assemblage refers to a specific aspect or time period within the site. Sites which are defined as significant require further mitigation in the form of excavation or sampling if they are threatened by development. Significance is judged according to several factors:

Significance is usually determined by the following factors:

- Is the site the only one of its kind so far recorded in the province or area?
- Does the site have any rare or unusual features?
- Is there good preservation of artefacts and is the site relatively undisturbed?
- Has the site the potential to answer any questions currently asked in the related research and/or literature?

Archaeological sites in KwaZulu-Natal usually occur in areas that are characterised by:

- close proximity of a water source;
- close proximity to the sea;
- sandstone outcrops;
- Sweetveld and Bushveld vegetation;
- areas with fertile soil conducive to the cultivation of crops;
- the top of hills; iron ore bodies

METHODOLOGY

In general excavations began near on the easternmost part of the dune cordon. Subsequent squares extended towards the more dense undergrowth, or westwards, and roughly southwards. This allowed me to make an assessment of the extent of the site and its relative degree of depth and preservation. That is, excavated squares were placed in various parts of the site to determine the extent of occupation, areas of good/poor preservation, and depth of human occupation below the current surface. An alternative excavation strategy would be to excavate several trenches , however, time constraints did not allow for this method.

Excavated squares were mostly 1.5m x 1.5m, while two were 1m x 1m. The latter excavations were smaller due to the more dense vegetation surrounding the squares. All excavations used natural stratigraphic markers to differentiate between cultural horizons. I used 10cm spits to further differentiate the deeper cultural horizons.

All artefacts were removed and curated at the Natal Museum Shell middens do however yield a high volume of shellfish remains, which is cumbersome to curate. To counter this potential large volume of material, each square has a bulk sample removed. A bulk sample is a representative sample of all of the remains in that square/lense. The sample was then analysed at the Natal Museum. I removed bulk samples from all squares that had well defined shell lenses. Those squares with poorly defined lenses had representative samples of shellfish remains removed.

Stratigraphy

In this section I describe the cultural horizons per excavated square, and then link these squares together.

Square 1:
Square 1 is a 1.5m x 1.5m square and is divided into four distinct lenses (fig. 2). Lense 1 occurs mainly from 40cm to 50cm below the surface. While a few sherds and shell are found above this lense, these are probably a result of root disturbance. The lense is ±5cm deep and consists mainly of fragmented brown mussel and a few limpets. Beneath this lense is a light brown sand varying between ±10 and ±1cm deep. This sterile layer is probably beach sand indicating a hiatus between Lenses 1 and 2. Lense 2 may include the lenses that were divided in Lenses 1 and 2 of Squares 2, 5 and 6.

Lense 2 occurs mainly from 45cm to 55cm below the surface. The lense consists mainly of brown mussel, a few limpets and pottery. The lense varies from 5cm to 10cm in depth, and is less fragmented than Lense 1. As with Lense 1, Lense 2 occurs throughout the square. Below Lense 2 is another sterile light brown layer indicating an occupation hiatus between Lenses 2 and 3.

Lense 3 is a fragmentary brown mussel lense, with a few limpets. This lense occurs ±80cm below the surface. The lower half of Lense 3 becomes more fragmented. Lense three does not extend throughout the whole square and peters out towards the southwestern corner (fig. 3).

Lense 4 is a highly fragmented brown mussel lense occurring ±90cm below the surface. It is between 1cm and 3cm in depth and is highly ephemeral .

Squares 2, 5, and 6:

These four squares are each 1.5m x 1.5m in size, or 3m x 3m in total. The lenses occur throughout the squares and extend further inland. These squares have the densest occupation debris of all squares (fig. 4).

Lense 1 occurs at ±30cm below surface and is for between 10cm – 15cm deep in places. This lense is dominated by P. perna and sherds. Several (near) complete vessels occur at the base of this lense. Below this pottery sublayer is lense 2. There is a fine stratigraphic distinction between the two lenses, and appears to represent two occupation levels shortly after each other . There is very little, if any, sterile beach between the two lenses in square 5. Lense 2 is similar to Lense 1 in content and depth.

Lense 3 occurs ±70cm below the surface. It is more fragmented than the lenses above it, and is separated from these upper lenses by the light brown beach sand. The northernmost section has been disturbed by termite activity and does not occur on parts of the square. Lense 4 appears to be the remains of Lense 3, with the shell filtering into the dark brown humic sand. Lense 4 was the most fragmented square. A 50cm deep test pit was excavated beyond spit 4, however no further material remains were observed.

All of the lenses appear to continue westwards, or interior, for some distance.

Square 7:

Lense 1 begins between ±45cm – 50cm below the surface (fig. 5). Most of this lense has a feature that is black in colour, and associated with a lot of charcoal. The position of Lense 1, suggests that there is continuity between the Lense 1 in Squares 1, 7, 2, 5 and 6.

Lense 2 is ±55cm – 60cm below surface and is very ephemeral. Both Lenses are dominated by P. perna, some oyster and fewer limpets (as is the general pattern for all shell lenses). This lense may correlate with Lenses 3 and 4 of adjacent squares, except that it is more ephemeral in this square.

Squares 8 & 12:

These 2 squares were 1m x 1m excavations. Lense 1 occurs between 30cm and 40cm below the surface and is similar to that of Squares 2, 5, 6 and 7, however, there is not a high density of sherds in this square as there was in previous squares (fig. 6).

Lense 2 occurs between 40cm and 60cm. It is a highly fragmented lense interspersed with brownish sand. Lense 3 occurs between 60cm and 80cm below surface and is also a highly fragmented lense interspersed with dark brown sand. The fragmentary nature of the remains and the darker humic soil is probably a result of root activity.

Square 9:
Square 9 was excavated on the westernmost border of the affected area. A 1m x 1m square was excavated to the depth of 1.5m, and no artefacts or any other cultural remains were observed.

Square 10:
Square 10 was excavated on the opposite side of the first river crossing to the main site. While no material remains were observed in the square, several thin lenses were noted in the sections of the river bed. These are however, very thin and highly fragmented layers that do not appear to be significant.

Square 11:

Square 11 is 1 1m x 1m square and the southernmost excavated square of the site. Lense 1 occurs between 40cm and 50cm below surface. Very little pottery is present in this square, however there is a notable increase in faunal remains. Below Lense 1 is ±10cm of sterile beach sand (fig. 7).

Lense 2 is less fragmented and less compact than the upper lense, but of lower density. Lense 3 is a very fragmented shell and bone lense separated from Lense 2 by a ±10cm sterile beach sand layer.

In summary the site can be divided into four main living horizons, or stratigraphic groups:
Lense 1: A deep shell lense covering most of the site. The shell is mainly brown mussels, followed by oyster and/or limpets. There is a light brown beach sand layer below.
Lense 2: A thinner lense of similar content to Lense 1. It is often just below Lense 1 indicating a shorter hiatus than subsequent lenses. Lense 1 and 2 are often separated by a thin layer of pottery.
Lense 3: A thick, well preserved shell lense with sterile beach sand below it. Where possible it was differentiated from the underlying Lense 4, which is similar to the Lense 1-2 interface.
Lense 4: Lense four only occurs in Squares 1 and 5 and 6. This is a very fragmented lense with few whole shells. This lense tends to be thin.

Small Finds

This section describes the archaeological remains, or artefacts, from the site, and are grouped according to similar categories. Table 1 lists the artefacts per excavated square.

Ceramic Vessels

Ceramic vessels are found in all excavated squares and stratigraphic lenses. Most of the lenses have decorated pottery similar to those excavated at Msuluzi Confluence (Maggs 1980), and the Emberton Way and Mhlanga Lagoon sites (Horwitz et al 1991). These vessels fall mostly into the Msuluzi Phase of the Early Iron Age and date from AD 615 to AD 879.

The Msuluzi vessels have the characteristic decorations associated with other excavated sites. These have been described elsewhere (Horwitz et al 1991; Maggs 1980a, 1980b, 1984; Maggs and Michael 1976) and I continue with this classification system.

1 Shape

1.1 Everted neck with well defined point of inflection (figs 8.1, 8.2, 8.3, 8.4, 8.5)

1.2 Everted neck with less defined point of inflection (figs 8.6, 8.7)
1.3 Straight, upward necks (figs 8.8, 8.9, 8.10, 8.11)

2 Position of decoration

2.1 Undecorated (figs 8.11)
2.2 Whole of neck (figs 8.1, 8.3, 8.4, 8.5, 8.6, 8.12)
2.3 Lower neck (figs 8.13, 8.14)
2.4 Just below the body/neck junction (fig. 8.2)
2.5 On body - not attached to body/neck junction (fig. 8.)
2.6 Whole of body/neck (figs 8.9, 8.15)

3 Decorative motifs - continuous

3.1 Band of oblique hatching (figs 8.6, 8.16)
3.2 Band or bands of uneven cross-hatching (figs 8.9, 8.17)
3.3 Band of horizontal and oblique or vertical cross-hatching (fig. 8.15)
3.4 Bands of opposed hatching with intervening grooves (figs 8.2, 8.12, 8.13, 8.14, 8.18, 8.19)
3.5 Bands of opposed hatching without intervening grooves (figs 8.1, 8.20)
3.6 Band of interlocking triangles or rectangles, hatched alternately vertically and horizontally (figs 8.4, 8.21)

4 Decorative motifs - discontinuous

4.1 V shapes (fig. 8.5)
4.2 Interruption of band of decoration by oblique or vertical grooves (fig. 8.22)
4.3 Vertical quadrilaterals hatched or unhatched (ladders) (fig. 8.9)

Decorated pottery was consistent in all lenses, except in Square 1, Lense 1. These vessels were however similar in structure to those found in other Lense 1 squares. I have thus retained them with the Msuluzi Phase. A few sherds (±3) suggest decorations that may be part of the Msuluzi/Ndondodwane 'transition'. Similarly two sherds in the lower lenses (Lense 4, Square 5) have decorative motifs similar to the earlier Matola Phase. These variations, through the sequence are to be expected and occur at other Early Iron Age sites.

Many of the sherds are from the same vessel, and these have reconstruction potential. These whole vessels tend to occur in the upper lenses, especially Lense 1 and 2 (in Squares 2, 5,6, and 12).

Stone artefacts

Several varieties of stone occurred in the site. Most of these were beach pebbles and fire cracked rocks. However, a few artefacts were recorded. These included lower (n=7) and upper (n=10) grindstone fragments, hammer stones (n=2), anvils (n=2) and smoothed/rubbed stones (n=2).

Shellfish

Shellfish are the most commonly occurring remains at the site. Table 2 lists the shellfish species of the bulk sample from Square 1 and is representative of the shellfish remains from the site. Appendix A lists the occurrence of shellfish species from each square. I have included terrestrial snails in these tables.

The most commonly occurring shellfish is the brown mussel (*Perna perna),* followed by Oyster *(Ostridae spp.)* and Limpets (specifically *Patella barbara*). Other species include smaller limpets, whelks and cowries. Barnacles and worm shells tend to attach themselves onto limpets and mussels, and are unlikely to be a food source.

Due to time constraints I have analysed Square 1 bulk samples, and thus a comparison between lenses and squares is not possible.

Worked Shell

Several pieces of marine shell had been worked into the form of pendants. These pendants were mostly on cowries, but one was made from an oyster fragment.

Faunal Remains

I have undertaken a basic faunal analyses from the site. Table 3 lists the faunal remains from the bulk sample from Square 1, while Appendix B lists the faunal remains from the rest of the site.

In general there appears to be an emphasis on small animals, especially bovids. These bovids fall within the size range of sheep and grysbok, steenbok and duiker. The body part remains are mostly the limbs, especially the lower extremities.

Lense 1 has the highest frequency of faunal remains, while the other lenses have relatively similar frequencies of faunal remains. Squares 2, 5, and 6 have the highest frequency of faunal remains. Frequencies are however misleading, since Lenses 1 and 2 tend to have deeper deposits than Lenses 3 and 4. If density was used as a criteria, then Lense 3 would have a higher density of faunal remains.

Excavated Features

Only two features were excavated at the site. Squares 6 had a small area of black soil in the eastern section,. It was 15cm deep and 20cm in diameter. No artefacts were found in this feature.

Square 7 had a large black patch ±90cm in diameter. Shellfish and pottery occurred in the feature. Many pieces of charcoal were observed in the feature suggesting a hearth-like function. The shellfish remains in this feature did not show signs of being burnt.

Discussion

The excavations of the Westbrook Beach Midden has yielded interesting results. While many shell middens occur along the KwaZulu-Natal coast, few have been excavated. These excavated sites have either been the remains of single occupations, or the result of repeated occupations over a long time period. The Westbrook Beach Midden site is a repeatedly occupied midden through a single phase of the Early Iron Age – the Msuluzi Phase. The Musulzi phase dates from AD 615 to AD 879 at various sites in KwaZulu-Natal. A more detailed analyses of material remains and bulk samples should yield further valuable information.

The site can be divided into two main phases of occupation, each with sub-occupation levels. These occupation levels are most well defined in squares 2, 5, and 6. The upper occupation, i.e. Lenses 1and 2, are the more recent occupation levels. It appears to be two occupations shortly after each other. These occupations are mostly divided by a thin layer of pottery throughout all of the squares, and probably further westwards as well.

The second level of occupation is the oldest occupation level, however, also dating to the Msuluzi Phase. It is separated by 10cm - 20cm of beach sand. Depending on climatic influences the hiatus between the two lenses may vary from 1 year to several decades. I would need to carbon date each main level to determine the length of non-occupation. In this second occupation level the two lenses are separated by a thin layer of black-brown sand, not pottery. Again this appears to indicate a short period of non-occupation between the two lenses.

In terms of subsistence patterns there appears to be a heavy reliance on brown mussel and small bovids. However, shellfish exploitation appears to be more dominant than terrestrial food exploitation. This would be in accordance with an interoperation of the site being used as a shellfish processing site, as opposed to a living area. Waselkov (1987 in Horwitz *et al* 1991) noted that the meat of brown mussels is more easily processed when the shell is cracked or pryed open, and then boiled or baked, since it relaxes the mussels in

the shell. The occurrence of fire cracked stones, hammerstones, grindstones and a hearth-like feature in Lense 2 supports this notion. The dense concentration of pottery, especially whole pots in Lense 2 further supports this.

The occurrence of fewer pottery sherds and stone artefacts in the lower 2 lenses suggests that there may be a slight change in the use of the site through time. This is in accordance with other archaeological and ethnographical sites reported by Horwitz *et al* (1991).

Conclusion and Management

The Westbrook Beach Midden site is a relatively well preserved shell midden on the last dune cordon along the KwaZulu-Natal coast. The site itself dates between AD 615 and AD879, although it is more likely closer to the older date. The site consists of two main occupation horizons, with each main occupation having two periods of human occupation shortly after each other. Other excavated shell middens have had cultural sequences dating across the whole EIA – each of these have been single occupations.

I argue that the Westbrook Beach Midden has the potential to inform archaeologists about changing subsistance patterns and site use from a specific phase in the Early Iron Age (EIA). In addition, the good preservation of both faunal and shellfish remains rates this site as having medium to high significance.

The terms of reference for this excavation was to assess the significance of the site and to suggest future site management. The site appears to extend approximately 30m further inland, or towards the Strelitzia 'forest'. The commercial development of this plot thus has the potential to affect the site, depending on the type of structures erected. At the time of excavation only a caravan park or camping area was proposed. I t is unlikely that such a development would have a high negative impact on the site, provided that built structures occur in the current location of the Strelitzia 'forest'. However, an indirect impact may arise with servitudes or access routes to the beach itself. Increased human traffic has the potential to increase erosion of the dune cordon, and thus facilitate in the damage to the site as a whole. While I cannot comment on the environmental impact , the erection of a boardwalk over the site may reduce such damage. If this development is followed, then further mitigation may not be necessary, however, the various interested and affected parties should negotiate the location of these built structures.

An alternative proposition to the above development was that of duplexes. I believe that this alternative would have a higher negative impact on the site. As with the above proposal, the exact location of these structures would determine the degree of further archaeological management. I believe it would be more beneficial to excavate the rest of the site, than to inhibit the development of duplexes. This option will thus require further consultation with all interested and affected parties.

In summary, the Westbrook Beach Midden is of medium-high significance. This significance is based on the relatively well preserved material remains, cultural horizons, and the academic insight it may yield. Further development of the affected land should require further negotiations between all interested and affected parties. These negotiations should determine the exact location of built structures, servitudes to the site and to the beach in order to assess the potential impact on the archaeological site. Further archaeological mitigation in terms of excavation may be necessary.

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APPENDIX A
Shellfish remains from Westbrook Beach Midden

APPENDIX B
Faunal remains from Westbrook Beach Midden